



Division of Finance and Business Operations

Procurement & Strategic Sourcing  
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Detroit, Michigan 48202  
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September 8, 2016

**Addendum #2 To  
Request for Proposal  
For Student Center Building Loading Dock Leak Repairs: Project 034-282276**

**Dated August 22, 2016**

**The Addendum must be acknowledged on your lump sum bid.**

**IMPORTANT – PLEASE NOTE:** Effective December 1, 2007, bid notices will be sent only to those Vendors registered to receive them via our Bid Opportunities Listserve service. To register, to [http://www.forms.procurement.wayne.edu/Adv\\_bid/Adv\\_bid.html](http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html), and click on the “Join our Listserve” link at the top of the page. Instructions are at the top of the page, and the Construction Listserv service is under “Construction Bid Opportunities”.

**Question:**

There is a large HVAC duct at the ceiling of the Lower Level running north and south just west of column line ‘G’ which is in the way of making repairs to the structural slab above. How much of an allowance shall we include for the removal of the duct in order to do the structural repairs and for the reinstallation of the duct after the repair work is complete?

**Answer:**

Please include a \$5,000 allowance for the removal and reinstallation of all duct work, piping, and conduits that interfere with the structural repair work.

**Question:**

What area does that duct serve?

**Answer:**

Unknown. This will be determined during construction.

**Question:**

Will the shut-down of the ductwork to that area cause the repair work to be completed at non-standard working hours?

**Answer:**

Unknown. This will be determined during construction.

**There is a new Form of Proposal Section 300 at the bottom of this addendum.**

**NOTE:** You must have attended a pre-bid conference in order to be eligible to bid on a particular project. Receipt of minutes or addenda without being at a pre-bid conference does not qualify your company to bid.

A copy of this Addendum will be posted to the Purchasing web site at [http://www.forms.procurement.wayne.edu/Adv\\_bid/Adv\\_bid.html](http://www.forms.procurement.wayne.edu/Adv_bid/Adv_bid.html).

**As a reminder, the questions due date is September 12, 2016 at 10:00 am and the bid due date is September 15, 2016, at 2:00 pm.** If you have any further questions, please do not hesitate to email them to me at [rfpteam2@wayne.edu](mailto:rfpteam2@wayne.edu) and copy [leiann.day@wayne.edu](mailto:leiann.day@wayne.edu).

Thank you,  
**Valerie Kreher, Senior Buyer**

VENDOR NAME \_\_\_\_\_

**GENERAL CONTRACT - PROPOSAL FORM (revised 1 - 2011)**

**Please Note – Vendors must Pre-qualify themselves when responding to this bid opportunity. Our Prequalification questions can be found on page 4 of this section.**

**OWNER:** Board of Governors  
Wayne State University

**PROJECT:** Student Center Building Loading Dock Leak Repairs

**PROJECT NO.:** WSU PROJECT NO. 034-282276

**PROJECT TYPE:** General Construction.

**PURCHASING AGENT:** Valerie Kreher, Senior Buyer  
WSU – Procurement & Strategic Sourcing  
5700 Cass, Suite 4200  
Detroit, Michigan 48202  
313-577-3720/ 313-577-3747 fax  
rfpteam2@wayne.edu & copy leiann.day@wayne.edu

**OWNER'S REPRESENTATIVE:** Chrystal Camilleri , Project Manager  
Design & Construction Services  
Facilities Planning & Management  
Wayne State University  
5454 Cass Avenue  
Detroit, Michigan 48202

**TO:** Board of Governors  
Wayne State University  
Detroit, Michigan

**BASE PROPOSAL:**

The undersigned agrees to enter into an Agreement to complete the entire work of the **Student Center Building Loading Dock Leak Repairs** project (WSU Project No. **034-282276**) in accordance with the Bidding Documents for the following amounts:

\_\_\_\_\_ \$ \_\_\_\_\_ Dollars

**ALTERNATES:** The following alternates to the base proposal(s) are required to be offered by the respective bidder. The undersigned agrees that the following amounts will be added to or deducted from the base bid as indicated, for each alternate which is accepted.

**ALTERNATE NO. 1:**

The undersigned agrees to enter into an agreement to complete the Alternate # 1 work of the See specification number 01 2300 Alternates \_\_\_\_\_ project and to provide all labor and material associated with the work in accordance with the Bidding Documents for the following amounts:

(select one) ADD \_\_\_\_\_ \$ \_\_\_\_\_ Dollars

or  
DEDUCT \_\_\_\_\_ \$ \_\_\_\_\_ Dollars

**ALTERNATE NO. 2:**

The undersigned agrees to enter into an agreement to complete the Alternate # 2 work of the See the Alternates Specification No. 01 2300 for details project and to provide all labor and material associated with the work in accordance with the Bidding Documents for the following amounts:

(select one) ADD \_\_\_\_\_ \$ \_\_\_\_\_ Dollars

or  
DEDUCT \_\_\_\_\_ \$ \_\_\_\_\_ Dollars

**UNIT PRICING (as listed in the detailed specifications, section - \_\_\_\_\_).**

Item No.	Description	Price per
<b>Unit Price 1</b>	Concrete Surface Scaling Repairs - overhead surface (1/2" depth). Contractor is to include 12 sf as part of the base bid, Unit Price is for additional if required.	\$ / sq ft
<b>Unit Price 2</b>	Partial Depth Wall Repairs (3" approximate depth). Contractor is to include 150 sf as part of the base bid. Unit Price is for additional if required.	\$ / sq ft
<b>Unit Price 3</b>	Partial Depth Overhead Concrete Repairs (3" approximate depth). Contractor is to include 15 sf as part of the base bid. Unit Price is for additional if required.	\$ / sq ft
<b>Unit Price 4</b>	Concrete wall cover removal and replacement. Contractor is to include 650 sf as part of the base bid. Unit Price is for additional if required.	\$ / sq ft
<b>Unit Price 5A</b>	Reinforce existing beams w/ welded steel plate per detail G4/S202 "Step 2A". Contractor is to include 30 LF as part of the base bid. Unit Price is for additional if required.	\$ / lf ft
<b>Unit Price 5B</b>	Reinforce existing beams w/ welded WT section per detail G4/S202 "Step 2B". Contractor is to include 10 LF as part of the base bid. Unit Price is for additional if required.	\$ / lf ft
<b>Unit Price 5C</b>	Reinforce existing beam webs w/ welded plate per detail G4/S202 "Step 2C". Contractor is to include 30 LF as part of the base bid. Unit price is for additional if required.	\$ / lf ft
<b>Unit Price 6</b>		\$ / lf ft

	Clean steel of corrosion and coat with corrosion inhibiting paint. Contractor is to include 90 lf as part of the base bid. Unit Price is for additional if required.	
<b>Unit Price 7</b>	Remove and Replace Joint Sealants. Contractor is to include 600 lf as part of the base bid. Unit Price is for additional if required.	\$ / lf ft
<b>Unit Price 8</b>	Route and Seal Cracks (overhead). Contractor is to include 140 lf as part of the base bid. Unit Price is for additional if required.	\$ / lf ft
<b>Unit Price 9</b>	Route and Seal Cracks (vertical). Contractor is to include 25 lf as part of the base bid. Unit Price is for additional if required.	\$ / lf ft
<b>Unit Price 10</b>	Plaster Repair. Contractor is to include 300 sf as part of the base bid. Unit Price is for additional if required.	\$ / sq ft
<b>Unit Price 11</b>	Paint. Contractor is to include 1,200 sf as part of the base bid. Unit Price is for additional if required.	\$ / sq ft
<b>Unit Price 12</b>	Remove concrete encasement around steel beams to be repaired per detail G4/S202 "Step 1". Contractor is to include 90 LF as part of the base bid. Unit price is for additional if required. Include replacement of concrete encasement as part of base bid and unit price.	\$ / lf ft

**LAWN REPLACEMENT:**

The undersigned agrees that, in the event of existing lawn or landscaping damage, due to the Contractor's work, that has not been properly addressed and repaired to the satisfaction of the University, the University may repair/replace the lawn and/or landscaping, and that the expense will be at a **unit cost of \$10.00 per square yard for lawn, and landscaping at a rate of 1.5 times the cost of said repairs**, the full cost of which shall be reimbursed by the contractor.

**CONTRACT CHANGE  
ORDERS: (revised 4-01-2011)**

The undersigned agrees to the following pricing formula and rates for changes in the contract work:

1. For subcontract work, Contractor's markup for handling, overhead, profit and bonding on subcontractors sell price, shall not exceed **5%**.
  - 1.1. **For subcontract work that is provided on a time and material basis, the subcontractor shall be permitted a single markup for handling, overhead, profit and bonding of 5%. When a markup is identified in the subcontractor's hourly labor rate, additional markup on labor is not permitted.**
    - 1.1.1 **For changes that are based upon a lump sum value, subcontractor shall provide all labor and material back-ups to ensure that duplicative charges are avoided and authorized mark-ups for OH&P can be confirmed**
2. For work by his own organization, Contractor's markup for job\* and general overhead, profit and bonding shall not exceed **5%** of the net labor\*\* and material costs.

**Within 14 days of the project's contract execution Contractor shall provide to the Owner; Subcontractor's hourly labor rate breakdown details. This requirement shall extend to the lowest level of subcontractor participation.**

\* Job and general overhead includes supervision and executive expenses; use charges on small tools, scaffolding, blocking, shores, appliances, etc., and other miscellaneous job expenses.

\*\* Net labor cost is the sum of the base wages, fringe benefits established by governing trade organizations, applicable payroll taxes, and increased expense for contractor's liability insurance (Workman's Compensation, P.L. and P.D.).

**TIME OF COMPLETION:**

***(revised 4-01-2011)***

The Contract is expected to be fully executed on or about 25 calendar days after successful bidder qualification and recommendation of award. The undersigned agrees to start construction **immediately after** receipt of a fully executed contract, and to complete the work as follows:

Substantial Completion will be completed no later than **December 2, 2016**.

**LIQUIDATED DAMAGES:**

It is understood and agreed that, if project is not completed within the time specified in the contract plus any extension of time allowed pursuant thereto, the actual damages sustained by the Owner because of any such delay, will be uncertain and difficult to ascertain, and it is agreed that the reasonable foreseeable value of the use of said project by Owner would be the sum of **\$500.00, Five Hundred Dollars per day**, and therefore the contractor shall pay as liquidated damages to the Owner the sum of **\$500.00, Five Hundred Dollars per day** for each day's delay in substantially completing said project beyond the time specified in the Contract and any extensions of time allowed thereunder.

**TAXES:**

The undersigned acknowledges that prices stated above include all applicable taxes of whatever character or description. Michigan State Sales Tax is applicable to the work. Bidder understands that the Owner reserves the right to reject any or all bids and to waive informalities or irregularities therein.

**ADDENDA:**

The undersigned affirms that the cost of all work covered by the following Addenda are included in the lump sum price of this proposal.

Addendum No. _____ Date _____	Addendum No. _____ Date _____
Addendum No. _____ Date _____	Addendum No. _____ Date _____
Addendum No. _____ Date _____	Addendum No. _____ Date _____
Addendum No. _____ Date _____	Addendum No. _____ Date _____
Addendum No. _____ Date _____	Addendum No. _____ Date _____

**CONTRACTOR'S PREQUALIFICATION STATEMENT & QUESTIONNAIRE:**

**Our Minimum Requirements for Construction Bids are:**

Criteria	Small Project bid less than \$50,000	Medium Project bid between \$50,001 and \$250,000	Large Project bid between \$250,001 and \$2 million	Very Large Project bid greater than \$2 million
EMR Rating (Experience Modification Rating)	1.0 or Less	1.0 or Less	1.0 or Less	1.0 or Less
Bondable Vendor	N.A.	Required	Required	Required
Length of Time in Construction Business	2 Years	3 Years	5 Years	5 Years
Demonstrated Experience in Projects Similar in Scope and Price in the last 3 years	1 or more	1 or more	2 or more	3 or more

Unsuccessful Projects on Campus in last 3 years	None Allowed	None Allowed	None Allowed	None Allowed
Failure to comply with Prevailing Wage and/or Project Labor requirements	None Allowed	None Allowed	None Allowed	None Allowed
Withdrawn University Bid (with or without Bond forfeiture) within the last 3 years **	1 or less	1 or less	1 or less	1 or less
Company currently not in Chapter 11 of the US Bankruptcy Code	1 Year	2 Years	3 Years	3 Years

\*\* Withdrawal of a bid is subject to the University suspension policy, for a period up to one year.

**Contractors must complete the following information to determine their eligibility to participate in this bid.** This information is required with your Bid to the University

**Failure to complete this form in its entirety will result in your bid being disqualified.**

Check one of the following on the makeup of your company:

☐ Corporation
 ☐ Individual  
☐ Partnership
 ☐ Joint Venture  
☐ Other (Explain below):

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**Diversity Classification:** Please indicate the appropriate diversity classification for your company. The University recognizes the following groups as diverse or disadvantaged:

- Majority Owned ☐
- Minority Business Enterprises (MBE) ☐
- Women Business Enterprises (WBE) ☐
- Disabled Veteran Enterprises (DVBE) ☐
- Disabled Person Enterprises (DBE) ☐
- Veteran Owned Businesses (VBE) ☐
- Small Businesses per the US Small Business Administration (SBE) ☐
- Other (Please Explain): ☐

1. How many years has your organization been in business as a contractor?

2. How many years has your organization been in business under its present business name?

3. List states in which your organization is legally qualified to do business.

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4. Provide the Name and Address of your Liability Insurance Carrier.

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5. What is your current EMR Rating?

The minimum requirement is an EMR Rating of 1.0 or less for all projects. Bidders with a rating higher than 1.0 understand that their bid may be disqualified, at the sole discretion of the University.

6. What percentage of work performed on projects are by company employees; excluding any hired subcontracting and outsourced relationships, for the bid submitted? \_\_\_\_\_ %
7. What percentage of work performed on your companies behalf are by subcontracted business relationships; disallowing 1099 contracting work forces, for the bid submitted? \_\_\_\_\_ %
8. Have you ever failed to complete any work awarded to you? If so, attach a separate sheet of explanation. Include the name of the Project, the customer, the dates of the work, and the amount of the contract?
9. \_\_\_\_\_  
Have you withdrawn a bid after a University bid opening and/or refused to enter into a contract with the University upon notification of award within the last 3 years? If so, state the Project Name and Number, and the date of bid submission below.
10. \_\_\_\_\_  
Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction contract? If so, attach a separate sheet of explanation.

11. List the construction experience of the principals and superintendents of your company.

Name: \_\_\_\_\_ Title: \_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_ Title: \_\_\_\_\_

\_\_\_\_\_

Name: \_\_\_\_\_ Title: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

12. List the construction Projects, and approximate dates, when you performed work similar in Scope to this project.

Project: \_\_\_\_\_ Owner: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Project: \_\_\_\_\_ Owner: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Project: \_\_\_\_\_ Owner: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

13. List the construction Projects, and approximate dates, when you performed work similar in Dollar Amount to this project.

Project: \_\_\_\_\_ Owner: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Project: \_\_\_\_\_ Owner: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

Project: \_\_\_\_\_ Owner: \_\_\_\_\_

Contract Amount: \_\_\_\_\_ Date Completed: \_\_\_\_\_

14. Is your Company "bondable"? Yes \_\_\_\_\_ No \_\_\_\_\_

15. What is your present bonding capacity? \$ \_\_\_\_\_

16. Who is your bonding agent?

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

PHONE: ( \_\_\_\_\_ ) \_\_\_\_\_

CONTACT: \_\_\_\_\_

17. Does your company agree to provide financial reports to the University upon request? Failure to agree may result in disqualification of your bid. Yes \_\_\_\_\_ No \_\_\_\_\_

18. Does your company agree that all of the Terms and Conditions of this RFP and Vendor's Response Proposal become part of any ensuing agreement? Yes \_\_\_\_\_ No \_\_\_\_\_

19. Does your company agree to execute a contract containing the clauses shown in Section 00500 "Agreement Between Contractor and Owner for Construction"? Yes \_\_\_\_\_ No \_\_\_\_\_

If "No", clearly note any exceptions to any information contained in the contract documents and include with your proposal.

20. Did your company quote based upon **Prevailing Wage Rates**? Yes \_\_\_\_\_ No \_\_\_\_\_

21. Does your company agree to comply with the University **Smoke and Tobacco Free Policies**? Yes \_\_\_\_\_ No \_\_\_\_\_

**Note:** Contractors submitting proposals for this project may, at the discretion of the University, be required to submit references including contact information to be used to assist in the post bid evaluation process for the subject project

**ACKNOWLEDGEMENT OF  
MINIMUM QUALIFICATIONS:**

The undersigned has read and understands the minimum qualifications for University construction projects, and has completed the Prequalification section completely and accurately. The undersigned understands that a contractor, who fails to meet the minimum qualifications **in the category identified for this project, will be disqualified from consideration for the project.**

**ACCEPTANCE OF PROPOSAL:**

The undersigned agrees to execute a Contract, being the Wayne State University standard form titled "Agreement Between Contractor and Owner for Construction" (see section 00500 of the bid documents), provided that we are notified of the acceptance of our Proposal within sixty (60) days of the date set for the opening thereof.

**The undersigned below understands that the bid will be disqualified if the Prequalification information above is not completed in its entirety.**

NAME OF COMPANY: \_\_\_\_\_

OFFICE ADDRESS: \_\_\_\_\_

PHONE NUMBER: \_\_\_\_\_ DATE \_\_\_\_\_

FAX NUMBER: \_\_\_\_\_

SIGNED BY: \_\_\_\_\_



Signature

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(Please print or type name here)

TITLE

EMAIL ADDRESS:

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## **SECTION 01 2300 - ALTERNATES**

### **PART 1 GENERAL**

#### **1.01 RELATED DOCUMENTS**

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

#### **1.02 SECTION INCLUDES**

- A. Administrative and procedural requirements governing Alternates.
  - 1. The Owner reserves the right to accept or decline alternates.
  - 2. The Owner reserves the right to accept, decline, and/or enter negotiations to modify Voluntary Alternates proposed by the Contractor and/or any subcontractor.

#### **1.03 DEFINITIONS**

- A. Definition: An alternate is an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to, or deducted from, the Base Bid amount if the Owner decides to accept a corresponding change in the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

#### **1.04 PROCEDURES**

- A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate that Work into the Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.
- B. Notification: Immediately following the award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate whether alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.
- C. Execute accepted alternates under the same conditions as other Work of this Contract.
- D. Schedule: A "Schedule of Mandatory Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each alternate.
  - 1. Only principle items of Work are highlighted in each mandatory alternate. Include as part of each alternate, miscellaneous devices, appurtenances, and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.
  - 2. Voluntary alternates, as proposed by the Bidder, are as shown on the Proposal Form submitted by such Bidder.

### **PART 2 PRODUCTS (NOT APPLICABLE)**

### **PART 3 EXECUTION**

#### **3.01 SCHEDULE OF MANDATORY ALTERNATES**

Alternate No. 1: Second Shift

- 1. Contract to be based on a 40 work day construction duration to achieve substantial completion. Provide alternate cost to accelerate work to complete full project scope in 30 work days.

**Alternate No. 2: Gypsum Board Enclosure at Steel Beams**

- 1. **Contract to be based on Plaster repairs at beams to be uncovered during repair work. Provide alternate cost to provide gypsum board patches in lieu of plaster.**

**END OF SECTION 01 2300**

## **SECTION 042613 - MASONRY VENEER**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

- A. Section Includes:
  - 1. Clay face brick.
  - 2. Concrete face brick.

#### **1.02 ACTION SUBMITTALS**

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type and color of replacement brick required.

#### **1.03 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For each type and size of product.

#### **1.04 FIELD CONDITIONS**

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
  - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F (4 deg C) and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

### **PART 2 - PRODUCTS**

#### **2.01 UNIT MASONRY, GENERAL**

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects will be exposed in the completed Work.

## **2.02 BRICK**

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:
  - 1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
  - 2. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.
- B. Clay Face Brick: To match existing brick in size, shape, color and type to the satisfaction of owner.

## **2.03 MORTAR MATERIALS**

- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C 91/C 91M.
- E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979/C 979M. Use only pigments with a record of satisfactory performance in masonry mortar.
- F. Aggregate for Mortar: ASTM C 144.
  - 1. White-Mortar Aggregates: Natural white sand or crushed white stone.
  - 2. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
- H. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with concrete bricks containing integral water repellent from same manufacturer.
- I. Water: Potable.

## **2.04 TIES AND ANCHORS**

- A. General: Ties and anchors shall extend at least 1-1/2 inches (38 mm) into veneer but with at least a 5/8-inch (16-mm) cover on outside face.

- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A 153/A 153M, Class B-2 coating.
  2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
- C. Adjustable Anchors for Connecting to Concrete: Provide anchors that allow vertical or horizontal adjustment but resist tension and compression forces perpendicular to plane of wall.
1. Tie Section: Triangular-shaped wire tie made from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire.
  2. Corrugated-Metal Ties: Metal strips not less than 7/8 inch (22 mm) wide with corrugations having a wavelength of 0.3 to 0.5 inch (7.6 to 12.7 mm) and an amplitude of 0.06 to 0.10 inch (1.5 to 2.5 mm) made from 0.060-inch- (1.52-mm-) thick steel sheet, galvanized after fabrication with dovetail tabs for inserting into dovetail slots in concrete.
- D. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf (445-N) load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch (1.5 mm).
  2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.075-inch- (1.90-mm-) thick steel sheet, galvanized after fabrication.
  3. Fabricate wire ties from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized-steel wire unless otherwise indicated.
  4. Fabricate wire connector sections from 0.187-inch- (4.76-mm-) diameter, hot-dip galvanized, carbon-steel wire.
  5. Contractor's Option: Unless otherwise indicated, provide any of the adjustable masonry-veneer anchors specified.
  6. Screw-Attached, Masonry-Veneer Anchors: Wire tie and a rib-stiffened, sheet metal anchor section with screw holes top and bottom, with a projecting vertical tab having a slotted hole for inserting wire tie.

## **2.05 EMBEDDED FLASHING MATERIALS**

- A. Metal Flashing: Provide metal flashing complying with Section 076200 "Sheet Metal Flashing and Trim" and as follows:
1. Fabricate metal drip edges from stainless steel. Extend at least 3 inches (76 mm) into wall and 1/2 inch (13 mm) out from wall, with outer edge bent down 30 degrees.
  2. Fabricate metal sealant stops from stainless steel. Extend at least 3 inches (76 mm) into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself for 3/4 inch (19 mm) and down into joint 1/4 inch (6 mm) to form a stop for retaining sealant backer rod.
- B. Flexible Flashing: Use one of the following unless otherwise indicated:
1. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.030 inch (0.76 mm).

2. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.030 inch (0.76 mm).
  3. Elastomeric Thermoplastic Flashing: Composite flashing product consisting of a polyester-reinforced ethylene interpolymer alloy.
  4. EPDM Flashing: Sheet flashing product made from ethylene-propylene-diene terpolymer, complying with ASTM D 4637/D 4637M, 0.040 inch (1.02 mm) thick.
- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

## **2.06 MISCELLANEOUS MASONRY ACCESSORIES**

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC.
- B. Weep/Vent Products: Use one of the following unless otherwise indicated:
1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch (3 mm) less than depth of outer wythe, in color selected from manufacturer's standard.
  2. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth 1/8 inch (3 mm) less than depth of outer wythe; in color selected from manufacturer's standard.
  3. Aluminum Weep Hole/Vent: Units made from sheet aluminum, designed to fit into a head joint and consisting of a vertical channel, with louvers stamped in web and with a top flap to keep mortar out of the head joint; factory primed and painted before installation to comply with Section 099113 "Exterior Painting" in color selected by Architect.
  4. Vinyl Weep Hole/Vent: Units made from flexible PVC, designed to fit into a head joint and consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color selected by Architect.

## **2.07 MASONRY CLEANERS**

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.



## **2.08 MORTAR MIXES**

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
  - 1. Do not use calcium chloride in mortar or grout.
  - 2. Use portland cement-lime mortar unless otherwise indicated.
  - 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Use Type N unless another type is indicated.
- D. Pigmented Mortar: Use colored cement product.
  - 1. Pigments shall not exceed 10 percent of portland cement by weight.
  - 2. Application: Use pigmented mortar for exposed mortar joints to match existing color.
- E. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
  - 1. Application: Use colored aggregate mortar for exposed mortar joints to match existing.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION, GENERAL**

- A. Use full-size units without cutting if possible. Re-use units removed during demolition if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- C. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. (30 g/194 sq. cm) per minute when tested according to ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

### **3.02 TOLERANCES**

- A. Dimensions and Locations of Elements:
  - 1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch (12 mm) or minus 1/4 inch (6 mm).

2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch (12 mm).
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch (6 mm) in a story height or 1/2 inch (12 mm) total.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet (6 mm in 3 m), or 1/2 inch (12 mm) maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet (3 mm in 3 m), 1/4 inch in 20 feet (6 mm in 6 m), or 1/2 inch (12 mm) maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet (6 mm in 3 m), 3/8 inch in 20 feet (9 mm in 6 m), or 1/2 inch (12 mm) maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm), with a maximum thickness limited to 1/2 inch (12 mm).
2. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch (3 mm). Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch (3 mm).

### 3.03 MORTAR BEDDING AND JOINTING

- A. Lay masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

### 3.04 ANCHORED MASONRY VENEERS

- A. Anchor masonry veneers to wall framing and concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
  1. Fasten screw-attached anchors through sheathing to wall framing and to concrete and masonry backup with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
  2. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
  3. Space anchors as indicated, but not more than 16 inches (406 mm) o.c. vertically and 25 inches (635 mm) o.c. horizontally, with not less than one anchor for each 2.67 sq. ft. (0.25 sq. m) of wall area. Install additional anchors within 12 inches (305 mm) of openings and at intervals, not exceeding 36 inches (914 mm), around perimeter.
- B. Provide airspace between back of masonry veneer and face of sheathing to match existing.

### **3.05 FLASHING, WEEP HOLES, AND VENTS**

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
- B. Install flashing as follows unless otherwise indicated:
  - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
  - 2. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch (13 mm) back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
- C. Install weep holes in veneers in head joints of first course of masonry immediately above embedded flashing.
  - 1. Use specified weep/vent products to form weep holes.
  - 2. Space weep holes 24 inches (600 mm) o.c. or to match existing unless otherwise indicated.

### **3.06 FIELD QUALITY CONTROL**

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5.
  - 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
- C. Testing Prior to Construction: One set of tests.
- D. Clay Masonry Unit Test: For each type of unit provided, according to ASTM C 67 for compressive strength.
- E. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.

### **3.07 REPAIRING, POINTING, AND CLEANING**

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
  - 1. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.

2. Protect adjacent stone and nonmasonry surfaces from contact with cleaner.
3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
4. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
5. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

### **3.08 MASONRY WASTE DISPOSAL**

- A. Waste Disposal: Dispose of masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units legally off site.

**END OF SECTION 042613**

## **SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES**

### **PART 1 GENERAL**

#### **1.01 RELATED DOCUMENTS**

- A. Division 00 - Procurement and Contracting Requirements, and Division 01 - General Requirements, are hereby made part of this Section.

#### **1.02 SECTION INCLUDES**

- A. Performance criteria for gypsum board assemblies.
- B. Gypsum wallboard.
- C. Joint treatment and accessories.

#### **1.03 REFERENCE STANDARDS**

- A. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board; 2013.
- B. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base; 2014a.
- C. ASTM C1396/C1396M - Standard Specification for Gypsum Board; 2014.
- D. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction Materials ; 2008a.
- E. GA-216 - Application and Finishing of Gypsum Board; 2013.
- F. UL (FRD) - Fire Resistance Directory; current edition.

#### **1.04 SUBMITTALS**

- A. See Section 01 3323 - Shop Drawings, Product Data, and Samples, for submittal procedures.
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
- C. Product Data: Provide data on gypsum board, accessories, and joint finishing system. Provide manufacturer's specifications and installation instructions for each gypsum wallboard component, including other data as required to show compliance construction documents.

#### **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing gypsum board installation and finishing , with minimum 5 years of documented experience.
- B. Fire-Test-Response Characteristics: Where fire-rated gypsum board assemblies are indicated, provide assemblies to comply with the following:
  - 1. Provide gypsum board assemblies with materials and construction identical to those assemblies tested for fire resistance per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
  - 2. Fire Resistance Ratings: As indicated by reference to GA File Numbers in GA-600 "Fire Resistance Design Manual", to design designations in UL "Fire Resistance Directory" or in listing of other testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Source Limitations: Obtain each type of steel framing, gypsum board and finishing materials through one source, from a single manufacturer.

#### **1.06 DELIVERY, STORAGE, AND PROTECTION**

- A. Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.
- B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.
- C. Handle board materials to prevent damage to edges, ends and surfaces. Do not bend or otherwise damage metal corner beads and trim.

## **1.07 ENVIRONMENTAL REQUIREMENTS**

- A. Environmental Conditions: Establish and maintain environmental conditions for application and finishing gypsum board per ASTM C 840 and with gypsum board manufacturer's recommendations.
- B. Minimum Room Temperatures: For non-adhesive attachment of gypsum board to framing, maintain not less than 40 degF (4 degC). For adhesive attachment and finishing of gypsum board maintain not less than 50 degF (10 degC) for 48 hours prior to application and continuously thereafter until drying is complete.
- C. Ventilate building spaces to remove water not required for drying joint treatment materials. Avoid drafts during dry, hot weather to prevent materials from drying too rapidly.

## **PART 2 PRODUCTS**

### **2.01 GYPSUM BOARD ASSEMBLIES**

- A. Provide completed assemblies complying with ASTM C840 and GA-216.
- B. Fire Rated Assemblies: Provide completed assemblies with UL Design numbers as indicated on Drawings.
  - 1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).

### **2.02 BOARD MATERIALS**

- A. Manufacturers - Gypsum-Based Board:
  - 1. CertainTeed Corporation : [www.certainteed.com](http://www.certainteed.com).
  - 2. Georgia-Pacific Gypsum : [www.gpgypsum.com](http://www.gpgypsum.com).
  - 3. Continental Building Products: [www.continental-bp.com](http://www.continental-bp.com).
  - 4. National Gypsum Company : [www.nationalgypsum.com](http://www.nationalgypsum.com).
  - 5. USG Corporation : [www.usg.com](http://www.usg.com).
- B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
  - 1. Thickness: Provide gypsum board in thickness indicated, or if not otherwise indicated, in 5/8 inch thickness.
  - 2. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
    - a. Types:
      - 1) Regular, unless otherwise indicated.
      - 2) Type X and Type C for fire-resistant rated assemblies and where indicated.
    - b. Edges: Tapered.
  - 3. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
  - 4. Paper-Faced Products:
    - a. CertainTeed Corporation; ProRoc Brand Gypsum Board.
    - b. Continental Building Products; Regular Drywall and Firecheck Type X and Type C.
    - c. USG Corporation; Sheetrock Brand Gypsum Panels.

### **2.03 ACCESSORIES**

- A. Interior Finishing Accessories: ASTM C 1047, galvanized steel or rolled zinc, unless otherwise indicated. Provide with either knurled or perforated expanded flanges for nailing or stapling, and beaded for concealment of flanges, in joint compound.
  - 1. Shapes: As indicated below by reference to Figure 1 designations per ASTM C1047.
    - a. Corner bead on outside corners, unless otherwise indicated.
    - b. LC-bead with both face and back flanges; face flange formed to receive joint compound. Use LC beads for edge trim, unless otherwise indicated.
    - c. L-bead with face flange only; face flange formed to receive joint compound.
    - d. U-bead with face and back flanges; face flange formed to be left without application of joint compound. Use U-bead where indicated.

- e. One piece control joint formed with V-shaped slot and removable strip covering slot opening.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine substrates to which board attaches or abuts, installed hollow metal frames, cast in anchors and structural framing with installer(s) present for compliance with requirements for installation tolerances and other conditions affecting performance of gypsum board assemblies specified in this Section.
  - 1. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### **3.02 BOARD INSTALLATION**

- A. Install wall/partition boards in manner to minimize end-butt joints or avoids them entirely where possible. At high walls, install boards horizontally with end joints staggered over studs.
  - 1. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 24 inches in alternate courses of board.
- B. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for light contact at edges and ends with not more than 1/16 inch open space between boards. Do not force into place.
- C. Locate both edge or end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints.
  - 1. Position boards so like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends.
  - 2. Do not place tapered edges against cut edges or ends.
  - 3. Stagger vertical joints over different studs on opposite sides of partitions.
- D. Attach gypsum board to steel studs so leading edge or end of each board is attached to open (unsupported) edge of stud flange first.
- E. Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.
- F. Spot grout hollow metal door frames for solid core wood doors, hollow metal doors and doors over 32 inches wide except where full grout shown. Apply spot grout at each jamb anchor clip just before inserting board into frame.
- G. Form control joints and expansion joints at locations indicated or as recommended, with space between edges of boards, prepared to receive trim accessories.
  - 1. Provide fire-rated construction for control joints in rated walls and partitions to maintain fire rating.
- H. Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceiling, etc.), except in chase walls which are braced internally.
  - 1. Except where concealed application is indicated or required for sound, fire, air or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. area, and may be limited to not less than 75 percent of full coverage.
  - 2. Fit gypsum board around ducts, pipes and conduits.
- I. Isolate perimeters of non-load-bearing drywall partitions at structural abutments. Provide 1/4 to 1/2 inch space and trim edge with "U" bead edge trim. Seal joints with acoustical sealant unless fire resistant sealant shown.
- J. Space fasteners in gypsum board in accordance with referenced gypsum board application and finishing standard and manufacturer's recommendations.
- K. Space fasteners in panels that are tile substrates maximum 8 inches o.c.

#### **3.03 METHODS OF GYPSUM BOARD APPLICATION**

- A. Single-Layer Application: Install gypsum wallboard as follows:
  - 1. On ceilings apply gypsum board prior to wall/partition board application to greatest extent possible.

2. On partitions/walls apply gypsum board vertically (parallel to framing), unless otherwise indicated or required by fire resistance rated assembly, and provide sheet lengths which will minimize end joints.
  - a. On partitions/walls 8'-1" or less in height, apply gypsum board horizontally (perpendicular to framing); use maximum length sheets possible to minimize end joints.
- B. Single-Layer Fastening Methods: Apply gypsum boards to metal supports with screws and to wood supports with nails.
- C. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

### **3.04 INSTALLATION OF TRIM AND ACCESSORIES**

- A. General: Where feasible, use same fasteners to anchor trim accessory flanges as required to fasten gypsum board to supports. Otherwise, fasten flanges to comply with manufacturer's recommendations.
- B. Install corner beads at external corners.
- C. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound except where "U" bead (semi-finishing type) is indicated.
  1. Install "LC" bead where drywall construction is tightly butted to other construction and back flange can be attached to framing or supporting substrate.
  2. Install "LK" bead where substrate is kerfed to receive long flange of trim.
  3. Install "L" bead where edge trim can only be installed after gypsum board is installed.
  4. Install U-type trim where edge is exposed, gasketed or sealant-filled (including expansion joints).
- D. Install control joints at locations indicated, or if not indicated, at spacings and locations required by ASTM C 840 and manufacturer's recommendations; and approved by Architect for visual effect.

### **3.05 JOINT TREATMENT**

- A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim and control joints; penetrations; fastener heads, surface defects and elsewhere as required to prepare work for decoration.
- B. Prefill open joints using setting-type joint compound.
- C. Apply joint tape at joints between gypsum boards, except where trim accessories are indicated.
- D. Finish interior gypsum wallboard by applying the following joint compounds in three coats (not including prefill of openings in base), sand between coats, and after last coat.
  1. Embedding and First Coat: Setting-type joint compound.
  2. Fill (Second) Coat: Setting-type joint compound.
  3. Finish (Third) Coat: Ready-mix drying all-purpose or topping compound.
- E. Partial Finishing: Omit third coat and sanding on concealed drywall construction indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as air or smoke barrier.
- F. Finish gypsum board in accordance with levels defined in Gypsum Association GA-214 "Recommended Levels of Gypsum Board Finish, as follows:
  1. Level 1: Ceiling plenum areas and concealed areas, except provide higher level of finish as required to comply with fire resistance ratings and acoustical ratings.
    - a. Embed tape in joint compound. Tool marks and ridges are acceptable.
  2. Level 2: Gypsum board substrate at tile, except remove tool marks and ridges.
    - a. Embed tape in joint compound and apply first coat of compound. Cover fastener heads with joint compound.



- 3. Level 3: Gypsum board substrate at areas of textured finishes and heavy duty wall coverings.
  - a. Embed tape in joint compound and apply first and second coats of compound. Cover fastener heads with 2 coats of joint compound.
- 4. Level 4: Gypsum board surfaces, except where another finish level is indicated.
  - a. Embed tape in joint compound and apply first, second, and finish coats of compound over joints, angles, fastener heads, and accessories. Touch up and sand between coats and after last coat to produce a surface free of visual defects, ready for decoration.
- G. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
  - 1. Feather coats of joint compound so that camber is maximum 1/32 inch.
  - 2. Taping, filling and sanding is not required at base layer of double layer applications.
- H. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

### **3.06 CLEANING AND PROTECTION**

- A. Promptly remove any residual joint compound from adjacent surfaces.
- B. Provide final protection and maintain conditions, in manner suitable to Installer, to ensure gypsum board assemblies are without damage or deterioration at time of Substantial Completion.

### **3.07 TOLERANCES**

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

**END OF SECTION 09 2116**



## **SECTION 312000 - EARTH MOVING**

### **PART 1 - GENERAL**

#### **1.01 SUMMARY**

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for slabs-on-grade, pavements.
3. Excavating and backfilling for buildings and structures.
4. Drainage course for concrete slabs-on-grade.
5. Subbase course for concrete pavements.

#### **1.02 DEFINITIONS**

A. Backfill: Soil material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

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

C. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.

D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

E. Fill: Soil materials used to raise existing grades.

F. 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.

G. Subbase Course: Aggregate layer placed between the subgrade and a cement concrete pavement.

H. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

I. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

### **1.03 INFORMATIONAL SUBMITTALS**

- A. Material test reports.

### **1.04 FIELD CONDITIONS**

- A. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

## **PART 2 - PRODUCTS**

### **2.01 SOIL MATERIALS**

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.
  - 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 294/D 2940M 0; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- G. Drainage Course: 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 (37.5-mm) sieve and zero to 5 percent passing a No. 8 (2.36-mm) sieve.

### **2.02 ACCESSORIES**

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches (150 mm) wide and 4 mils (0.1 mm) thick,

continuously inscribed with a description of the utility; colored to comply with local practice or requirements of authorities having jurisdiction.

- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored to comply with local practice or requirements of authorities having jurisdiction.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

#### **3.02 EXCAVATION, GENERAL**

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

#### **3.03 EXCAVATION FOR STRUCTURES**

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

#### **3.04 EXCAVATION FOR WALKS AND PAVEMENTS**

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

### **3.05 SUBGRADE INSPECTION**

- A. Proof-roll subgrade **below pavements** with a pneumatic-tired dump truck to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

### **3.06 UNAUTHORIZED EXCAVATION**

- A. 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, with 28-day compressive strength of 2500 psi (17.2 MPa), may be used when approved by Architect.
  - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

### **3.07 STORAGE OF SOIL MATERIALS**

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### **3.08 SOIL FILL**

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  - 1. Under walks and pavements, use satisfactory soil material.
  - 2. Under steps and ramps, use engineered fill.

### **3.09 SOIL MOISTURE CONTROL**

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
  - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
  - 2. 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.

### **3.10 COMPACTION OF SOIL BACKFILLS AND FILLS**

- A. Place backfill and fill soil 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.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
  - 1. Under pavements and walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 92 percent.

### **3.11 GRADING**

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
  - 1. Pavements: Plus or minus 1/2 inch (13 mm).

### **3.12 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS**

- A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course under pavements and walks as follows:
  - 1. Place subbase course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
  - 2. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 92 percent of maximum dry unit weight according to ASTM D 698.

### **3.13 FIELD QUALITY CONTROL**

- A. Special Inspections: Owner will engage a qualified special inspector to perform inspections:
- B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

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

### **3.14 PROTECTION**

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. 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.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### **3.15 DISPOSAL OF SURPLUS AND WASTE MATERIALS**

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

### **END OF SECTION 312000**