

PROJECT MANUAL  
including Specifications

WHEELCHAIR RAMP ADDITION

FOR

**VINEYARD 9, 10**

1160 West 400 South  
Orem, UT

Property No.: 532604418010101

July 2018



Prepared By:

**RVA ARCHITECTS., INC.**

32 West Center St. Suite #203  
Provo, Utah 84601  
(801) 374-2100

## PROJECT DIRECTORY

Owner: Corporation of the Presiding Bishop  
of the Church of Jesus Christ of Latter-day Saints  
A Utah Corporation Sole  
50 East North Temple Street  
Salt Lake City, UT 84150

Facilities Manager: Orem Central FM Group  
P.O. Box 1497  
Orem, UT 84097  
801-222-3130

Architect: RVA Architects, Inc.  
32 West Center St., #203  
Provo, UT 84601  
801-374-2100

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# INVITATION TO BID (U.S.)

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**1. CONTRACTORS INVITED TO BID THE PROJECT:**

Concrete Concrete  
Durfee & Sons Construction  
Dynamic Construction  
LWC Construction  
Oasis Builder  
SRFCO

**2. PROJECT:**

Vineyard 9,10 Wheelchair Ramp Addition

**3. LOCATION:**

1160 West 400 South  
Orem, UT

**4. OWNER:**

Corporation of the Presiding Bishop of  
The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole  
c/o  
Orem Central FM Group  
PO Box 1497  
Orem, UT 84097

**5. CONSULTANT:**

RVA Architects, Inc.  
32 W. Center St. #203  
Provo, UT 84601

**6. DESCRIPTION OF PROJECT:**

- A. Addition of wheelchair ramp from parking lot to sidewalk, and from sidewalk to building entrance.
- B. Products or systems may be provided under a Value Managed Relationship (VMR) the Owner has negotiated with the supplier. VMR products and systems are indicated as such in the Specifications.

**7. TYPE OF BID:** Bids will be on a lump-sum basis. Segregated bids will not be accepted.

**8. TIME OF SUBSTANTIAL COMPLETION:** The time limit for substantial completion of this work will be 60 calendar days and will be as noted in the Agreement. Calendar days may be modified as necessary to accommodate product lead times.

**9. PRE-BID CONFERENCE:** A Pre-Bid Conference will be held on **Wednesday, July 11, 2018 @ 10:00 am** at the job site located at 1160 West 400 South, Orem, UT.

**10. BID OPENING:** Sealed bids will be received until **2:00 pm on Thursday, July 19, 2018** at the Orem Central FM Office located 140 North 400 West, Orem, UT. Bids will be opened at that time.

**11. BIDDING DOCUMENTS:**

- A. Bidding Documents may be examined at the following plan room locations:
- 1) Mountainland Area Plan Room @ [mapronline.com](http://mapronline.com)
  - 2) McGraw Hill Dodge @ [dodgeprojects.construction.com](http://dodgeprojects.construction.com)

**12. BIDDER'S QUALIFICATIONS:** Bidding by the Contractors will be by invitation only.

**13. OWNER'S RIGHT TO REJECT BIDS:** Owner reserves the right to reject any or all bids and to waive any irregularity therein.

END OF DOCUMENT

# **INSTRUCTIONS TO BIDDERS** (U.S.)

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## **1. DOCUMENTS:**

- A. Bidding Documents include Bidding Requirements and proposed Contract Documents. Proposed Contract Documents consist of:
  - 1) Contractor Bid Proposal and Project Agreement (U.S.)
  - 2) Other documents included by reference
  - 3) Addenda.
- B. Bidding Requirements are those documents identified as such in proposed Project Manual.
- C. Addenda are written or graphic documents issued prior to execution of the Contract which modify or interpret the Bidding Documents. They become part of the Contract Documents as noted in the Contractor Bid Proposal and Project Agreement (U.S.) upon execution of the Agreement by Owner.

## **2. BIDDER'S REPRESENTATIONS:**

- A. By submitting a bid proposal, bidder represents that
  - 1) Bidder has carefully studied and compared Bidding Documents with each other. Bidder understands the Bidding Documents and the bid is fully in accordance with the requirements of those documents,
  - 2) Bidder has thoroughly examined the site and any building located thereon, has become familiar with local conditions which might directly or indirectly affect contract work, and has correlated its personal observations with requirements of proposed Contract Documents, and
  - 3) Bid is based on materials, equipment, and systems required by Bidding Documents without exception.

## **3. BIDDING DOCUMENTS:**

- A. Copies
  - 1) Owner will provide the Bidding Documents as set forth in the Invitation to Bid.
  - 2) Partial sets of Bidding Documents will not be issued.
- B. Interpretation or Correction of Bidding Documents
  - 1) Bidders will request interpretation or correction of any apparent errors, discrepancies, and omissions in the Bidding Documents.
  - 2) Corrections or changes to Bidding Documents will be made by written Addenda.
- C. Substitutions and Equal Products
  - 1) Equal products may be approved upon compliance with Contract Document requirements.
  - 2) Base bid only on materials, equipment, systems, suppliers or performance qualities specified in the Bidding documents.
  - 3) Where a specified product is identified as a "quality standard", products of other manufacturers that meet the performance, properties, and characteristics of the specified "quality standard" may be used without specific approval as a substitute.
- D. Addenda. Addenda will be sent to bidders and to locations where Bidding Documents are on file no later than one week prior to bid opening or by fax no later than 48 hours prior to bid opening.



**4. BIDDING PROCEDURES:**

- A. Form and Style of Bids
  - 1) Use Owner's Bid Form titled "Contractor Bid Proposal and Project Agreement (U.S.)".
  - 2) Bid will be complete and executed by authorized representative of Bidder.
  - 3) Do not delete from or add to the information requested on bid form.
  
- B. Submission of Bids
  - 1) Submit bid in sealed opaque envelope containing only bid form.
  - 2) It is bidder's sole responsibility to see that its bid is received at or before the specified time. Bids received after specified bid opening time may be returned to bidders unopened.
  - 3) No oral, facsimile transmitted, telegraphic, or telephonic bids, modifications, or cancellations will be considered.
  
- C. Modification or Withdrawal of Bid
  - 1) Bidder guarantees there will be no revisions or withdrawal of bid amount for 45 days after bid opening.
  - 2) Prior to bid opening, bidders may withdraw bid by written request or by reclaiming bid envelope.
  - 3) Prior to bid opening, bidder may mark and sign on the sealed envelope that bidder acknowledges any or all Addenda.

**5. CONSIDERATION OF BIDS:**

- A. Opening Of Bids - See Invitation to Bid.
  
- B. Acceptance Of Bid
  - 1) No bidder will consider itself under contract after opening and reading of bids until Owner accepts Contractor's Bid Proposal by executing same.
  - 2) Bidder's past performance, organization, subcontractor selection, equipment, and ability to perform and complete its contract in manner and within time specified, together with amount of bid, will be elements considered in award of contract.

**6. FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR:**

- A. Agreement form will be "Contractor Bid Proposal and Project Agreement (U.S.)" provided by Owner.

**7. MISCELLANEOUS:**

- A. Pre-Bid Conference. A pre-bid conference will be held on Wednesday, July 11, 2018 @ 10:00 am at the job site located at 1160 West 400 South Orem, UT.
  
- B. Examination Schedule for Existing Building and Site:
  - 1) Lynn Adams @ 801-222-3130

END OF DOCUMENT

**CONSTRUCTION MATERIAL ASBESTOS STATEMENT (U.S.)**

**PROJECTS FOR:  
CORPORATION OF THE PRESIDING BISHOP OF  
THE CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS**

Building Name: Vineyard 9, 10

Building Plan Type: Wheelchair Ramp Addition

Building Address: 1160 West 400 South  
Orem, UT

Building Owner: Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole.

Project Number: 532604418010101

Completion Date:

As PROJECT CONSULTANT and principal in charge; based on my best knowledge, information, inspection, and belief; I certify that on the above referenced Project, no asbestos-containing building materials were specified in the construction documents or given approval in shop drawings or submittals.

Project Consultant and Principal in Charge (signature) Date

RVA Architects, Inc.  
Company Name

As GENERAL CONTRACTOR in charge of construction; based on my best knowledge, information, inspection, and belief; I affirm that on the above-referenced Project, no asbestos-containing building materials were used in the construction.

General Contractor (signature) Date

Company Name

# CONTRACTOR BID PROPOSAL AND PROJECT AGREEMENT (U.S.)

Corporation of the Presiding Bishop of The Church of Jesus Christ of Latter-day Saints, a Utah corporation sole, ("Owner") and the undersigned Contractor ("Contractor") enter into this *Contractor Bid Proposal and Project Agreement (U.S.)* ("Agreement") and agree as follows:

1. **Property/Project.**

Property/Project Number: 532604418010101  
Property Address ("Project Site"): 1160 West 400 South Orem, UT  
Project Type: Wheelchair Ramp Addition  
Project Name ("Project"): Vineyard 9, 10  
Stake Name: Vineyard, UT

2. **Scope of the Work.** Contractor will furnish all labor, materials, and equipment necessary to complete the Work in accordance with the Contract Documents. The Work is all labor, materials, equipment, construction, and services required by the Contract Documents.

3. **Contract Documents.** Contract Documents consist of:

- a. This Agreement;
- b. Supplementary Conditions for Bid Proposal and Project Agreement (U.S.);
- c. The Specifications (Division 01 and Divisions 03,05,08,10,26,32);
- d. Drawings entitled and dated Wheelchair Ramp Addition for Vineyard 9, 10 - July 2018;
- e. Addendum No. with date(s) \_\_\_\_\_; and
- f. All written Field Changes, written Construction Change Directives and written Change Orders when prepared and signed by Owner and Contractor.

4. **Compensation.** Owner will pay Contractor for performance of Contractor's obligations under the Contract Documents the sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_). This is the Contractor's Bid Proposal Amount.

5. **Payment.**

- a. If the Contractor's Bid Proposal Amount is over \$100,000 or if otherwise requested by Owner, Contractor will submit to Owner a schedule of values which allocates the Contractor's Bid Proposal Amount to various portions of the Work. This schedule, when accepted by Owner will be used as a basis for reviewing Contractor's payment requests.
- b. Not more than once each month, Contractor will submit a payment request to Owner. Owner will pay Contractor for work completed within thirty (30) days after Owner receives:
  - 1) Contractor's payment request for work to date;
  - 2) a certification by Contractor that Contractor has paid for all labor, materials, and equipment relating to the Work covered by prior payment requests and that Contractor will pay for all labor, materials, and equipment relating to the Work covered by the current payment request; and
  - 3) releases of all mechanics' liens and claims of subcontractors, laborers, or material suppliers who supplied labor and/or materials for the Work covered by the payment request.
  - 4) updated Construction Schedule.
- c. Owner may modify or reject the payment request if, in Owner's opinion, the Work for which payment is requested is not acceptable or is less complete than represented on the payment request.

6. **Extras and Change Orders.** Owner may order changes in the Work by altering, adding to, or deducting from the Work. In the event of such a change, Contractor's compensation and/or the time of completion will be adjusted to reflect the change. Contractor will not commence work on any change until either: (a) Contractor and Owner have agreed in writing to the amount of the adjustment resulting from the change; or (b) Owner has issued a written order for the change acknowledging that there is a dispute regarding the compensation adjustment relating to the change. If Contractor proceeds with a change in the Work without complying with the preceding sentence, Contractor agrees that it will not be entitled to any additional compensation for such change.

7. **Correction of Work.** Contractor will promptly correct, at its own expense,
  - a. any portion of the Work which
    - 1) fails to conform to the requirements of the Contract Documents, or
    - 2) is rejected by the Owner as defective or because it is damaged or rendered unsuitable during installation or resulting from failure to exercise proper protection.
  - b. any defects due to faulty materials, equipment, or workmanship which appear within a period of one year from the date of Substantial Completion or within such longer period of time as may be prescribed by law or the terms of any applicable special warranty required by the Contract Documents.
8. **Time of Completion.** Contractor will complete the Work and have it ready for Owner's inspection within Sixty (60) calendar days from Notice to Proceed issued by Owner. Time is of the essence. If Contractor is delayed at any time in the progress of the Work by any act or neglect of Owner, or by changes in the Work, or by strikes, lockouts, unusual delay in transportation, unavoidable casualties, or acts of nature beyond Contractor's control, then the time for completion will be extended by the time that completion of the Work is delayed. However, Contractor expressly waives any damages for any such delays other than those delays willfully caused by Owner.
9. **Permits, Surveys, and Taxes.** Contractor will obtain and pay for all permits and licenses, and also pay any applicable taxes. Contractor will also obtain and pay for any surveys it needs to perform the Work. Contractor will conform to all ordinances and covenants governing the Project Site and/or Work.
10. **Compliance with Laws.** Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public authorities relating to performance of the Work.
11. **Payment of Subcontractors and Materialmen.** Contractor will promptly pay for all labor, materials, and equipment used to perform the Work.
12. **Contractor's Insurance.** Prior to performing any work, Contractor will obtain and maintain during the term of this Agreement the following insurance:
  - a. Workers Compensation Insurance.
  - b. Employers Liability Insurance with minimum limits of the greater of \$500,000 E.L. each accident, \$500,000 E. L. disease-each employee, \$500,000 E.L. disease-policy limit or as required by the law of the state in which the Project is located.
  - c. Commercial General Liability Insurance – ISO Form CG 00 01 (12/07) or equivalent Occurrence policy which will provide primary coverage to the additional insureds (the Owner and the Architect) in the event of any Occurrence, Claim, or Suit with:
    - 1) Limits of the greater of: Contractor's actual coverage amounts or the following:
      - a) \$2,000,000 General Aggregate;
      - b) \$2,000,000 Products - Comp/Ops Aggregate;
      - c) \$1,000,000 Personal and Advertising Liability;
      - d) \$1,000,000 Each Occurrence; and
      - e) \$50,000 Fire Damage to Rented Premises (Each Occurrence)
    - 2) Endorsements attached to the General Liability policy including the following or their equivalent:
      - a) ISO Form CG-25-03 (05/09), Amendment of Limits of Insurance (Designated Project or Premises) describing the Agreement and specifying limits as shown above.
      - b) ISO Form CG 20 10 (07/04), Additional Insured – Owners, Lessees, Or Contractors (Form B), naming Owner and Architect as additional insureds.
  - d. Automobile Liability Insurance, with:
    - 1) Combined Single Limit each accident in the amount of \$500,000 or Contractor's actual coverage, whichever is greater; and
    - 2) Coverage applying to "Any Auto" or its equivalent.

Contractor will provide evidence of these insurance coverages to Owner by providing an ACORD 25 (2010/05) Form or its equivalent: (1) listing Owner as the Certificate Holder and Additional Insured on the general liability and any excess liability policies, (2) listing the insurance companies providing coverage (all companies listed must be rated in A.M. Best Company Key Rating Guide-Property-Casualty and each

company must have a rating of B+ Class VII or higher), (3) attaching the endorsements set forth above for the Certificate of Liability Insurance, and (4) bearing the name, address and telephone number of the producer and signed by an authorized representative of the producer. (The signature may be original, stamped, or electronic.) Notwithstanding the foregoing, Owner may, in writing and at its sole discretion, modify these insurance requirements.

13. **Independent Contractor Relationship.** The parties expressly agree that Contractor is not an agent or employee of Owner but is an independent contractor solely responsible for all expenses relating to Contractor's business.
14. **Comply with Intellectual Property Rights of Others.** Contractor represents and warrants that no Work (with its means, methods, goods, and services attendant thereto), provided to Owner will infringe or violate any right of any third party and that Owner may use and exploit such Work, means, methods, goods, and services without liability or obligation to any person or entity (specifically and without limitation, such Work, means, methods, goods, and services will not violate rights under any patent, copyright, trademark, or other intellectual property right or application for the same).
15. **Confidentiality / Property Rights.**
  - a. Owner will retain ownership and intellectual property rights in all plans, designs, drawings, documents, concepts, and materials provided by or on behalf of Owner to Contractor and to all work products of Contractor for or relative to Work performed under this Agreement, such products, services, and Work of Contractor constituting works made for hire. Contractor will not reuse any portions of such items provided by Owner or developed by Contractor for Owner pursuant to this Agreement, or disclose any such items to any third party without the prior written consent of Owner. Owner may withhold its consent in its' absolute discretion.
  - b. In addition, Contractor shall ensure that Contractor, Subcontractors, and the employees, agents and representatives of Contractor and its Subcontractors maintain in strict confidence, and shall use and disclose only as authorized by Owner all Confidential Information of Owner that Contractor receives in connection with the performance of this Agreement. Notwithstanding the foregoing, Contractor may use and disclose any information to the extent required by an order of any court or governmental authority, but only after it has notified Owner and Owner has had an opportunity to obtain reasonable protection for such information in connection with such disclosure. For purposes of this Agreement, "Confidential Information" means:
    - 1) The name or address of any affiliate, customer or contractor of Owner or any information concerning the transactions of any such person with Owner;
    - 2) Any information relating to contracts, agreements, business plans, budgets or other financial information of Owner to the extent such information has not been made available to the public by the Owner; and
    - 3) Any other information that is marked or noted as confidential by the Owner at the time of its disclosure.
16. **Ownership and Use of Renderings and Photographs.** Renderings representing the Work are the property of Owner. All photographs of the Work, whether taken during performance of the Work or at completion, are the property of the Owner. The Owner reserves all rights including copyrights to renderings and photographs of the Work. No renderings or photographs shall be used or distributed without written consent of the Owner.
17. **Public Statements Regarding Work or Property.** Contractor will not make any statements or provide any information to the media about the Work or Property without the prior written consent of Owner. If Contractor receives any requests for information from media, Contractor will refer such requests to Owner.
18. **No Commercial Use of Transaction or Relationship.**
  - a. Without the prior written consent of Owner, which Owner may grant or withhold in its sole discretion, neither Contractor nor Contractor's affiliates, officers, directors, agents, representatives, shareholders, members, Subcontractors, or employees shall make any private commercial use of their relationship to Owner or the Work or Property, including, without limitation:
    - 1) By referring to this Agreement, Owner, or the Work or Property verbally or in any sales, marketing or other literature, letters, client lists, press releases, brochures or other written materials except as may

- be necessary for Contractor to perform Contractor's obligations under the terms of this Agreement;
- 2) By using or allowing the use of any photographs of the Work or any part thereof, or of any service marks, trademarks or trade names or other intellectual property now or which may hereafter be associated with, owned by or licensed by Owner in connection with any service or product; or
  - 3) By contracting with or receiving money or anything of value from any person or commercial entity to facilitate such person or entity obtaining any type of commercial identification, advertising or visibility in connection with the Work or Property.

- b. Notwithstanding the foregoing, Contractor may include a reference to Owner and the services and equipment provided under this Agreement in a professional résumé or other similar listing of Contractor's references without seeking Owner's written consent in each instance; provided, that such reference to Owner, the services and equipment is included with at least several other similar references and is given no more prominence than such other references.

19. **Indemnity and Hold Harmless.**

- a. Contractor will indemnify and hold harmless Owner and Owner's representatives, employees, agents, architects, and consultants from and against any and all claims, damages, liability, demands, costs, judgments, awards, settlements, causes of action, losses and expenses (collectively "Claims" or "Claim"), including but not limited to attorney fees, consultant fees, expert fees, copy costs, and other costs and expenses, arising out of or resulting from performance of the Work, attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of real or personal property, including loss of use resulting therefrom, except to the extent that such liability arises out of the negligence of Owner, its representatives, agents, and employees. This indemnity includes, without limitation, indemnification of Owner from all losses or injury to Owner's property, except to the extent that such loss or injury arises out of the negligence of Owner, its representatives, agents, and employees. This indemnity applies, without limitation, to include Claims occurring both during performance of the Work and/or subsequent to completion of the Work. In the event that any Claim is caused in part by a party indemnified hereunder, that party will bear the cost of such Claim to the extent it was the cause thereof. In the event that a claimant asserts a Claim for recovery against any party indemnified hereunder, the party indemnified hereunder may tender the defense of such Claim to Contractor. If Contractor rejects such tender of defense and it is later determined that the negligence of the party indemnified hereunder did not cause all of the Claim, Contractor will reimburse the party indemnified hereunder for all costs and expenses incurred by that party in defending against the Claim. Contractor will not be liable hereunder to indemnify any party for damages resulting from the sole negligence of that party.
- b. In addition to the foregoing, Contractor will be liable to defend Owner in any lawsuit filed by any Subcontractor relating to the Project. Where liens have been filed against Owner's property, Contractor (and/or its bonding company which has issued bonds for the Project) will obtain lien releases and record them in the appropriate county and/or local jurisdiction and provide Owner with a title free and clear from any liens of Subcontractors. In the event that Contractor and/or its bonding company are unable to obtain a lien release, Owner in its absolute discretion may require Contractor to provide a bond around the lien or a bond to discharge the lien, at Contractor's sole expense.
- c. In addition to the foregoing, Contractor will indemnify and hold Owner harmless from any claim of any other contractor resulting from the performance, nonperformance or delay in performance of the Work by Contractor.
- d. The indemnification obligation herein will not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or a Subcontractor under worker's compensation acts, disability benefit acts, or other employee benefit acts.

20. **Resolution of Disputes.** In the event there is any dispute arising under the Contract Documents which cannot be resolved by agreement between the parties, either party may submit the dispute with all documentation upon which it relies to Director of Architecture, Engineering, and Construction, 50 East North Temple, Salt Lake City, Utah 84150, who will convene a dispute resolution conference within thirty (30) days. The dispute resolution conference will constitute settlement negotiations and any settlement proposal made pursuant to the conference will not be admissible as evidence of liability. In the event that the parties do not resolve their dispute pursuant to the dispute resolution conference, either party may commence legal action to resolve the dispute. Any such action must be commenced within six (6) months from the first day of the dispute resolution conference or be time barred. Submission of the dispute to the Director as outlined above

is a condition precedent to the right to commence legal action to resolve any dispute. In the event that either party commences legal action to adjudicate any dispute without first submitting the dispute to the Director, the other party will be entitled to obtain an order dismissing the litigation without prejudice and awarding such other party any costs and attorneys fees incurred by that party in obtaining the dismissal, including without limitation copy costs, and expert and consultant fees and expenses.

21. **Termination of Agreement by Contractor.** In the event Owner materially breaches any term of the Contract Documents, Contractor will promptly give Written Notice of the breach to Owner. If Owner fails to cure the breach within ten (10) days of the Written Notice, Contractor may terminate this Agreement by giving Written Notice to Owner and recover from Owner the percentage of the Contract Sum represented by the Work completed on the Project site as of the date of termination together with any out of pocket loss Contractor has sustained with respect to materials and equipment as a result of the termination prior to completion of the Work, less any offsets. Contractor will not be entitled to unearned profits or any other compensation or damages as a result of the termination and hereby waives any claim therefor. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Without limitation, Contractor's indemnities and obligations as well as all warranties relative to Work provided through the date of termination survive a termination hereunder.
22. **Termination of Agreement by Owner for Cause.** Should Contractor make a general assignment for the benefit of its creditors, fail to apply enough properly skilled workmen or specified materials to properly prosecute the Work in accordance with Contractor's schedule, or otherwise materially breach any provision of the Contract Documents, then Owner may, without any prejudice to any other right or remedy, give Contractor Written Notice thereof. If Contractor fails to cure its default within ten (10) days, Owner may terminate this Agreement by giving Written Notice to Contractor, take possession of the premises and all materials, tools, and appliances thereon, and finish the Work by whatever method Owner deems expedient. In such case, Contractor will not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Sum exceeds the expense of finishing the Work, including compensation for additional administrative, architectural, consultant, and legal services (including without limitation attorneys fees, expert fees, copy costs, and other expenses), such excess will be paid to Contractor, less any offsets and recoupment. If such expense exceeds the unpaid balance, Contractor will pay the difference to Owner. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Without limitation, Contractor's indemnities and obligations as well as all warranties relative to Work provided through the date of termination survive a termination hereunder.
23. **Termination of Agreement by Owner for Convenience.** Notwithstanding any other provision contained in the Contract Documents, Owner may, without cause and in its absolute discretion, terminate this Agreement at any time. In the event of such termination, Contractor will be entitled to recover from Owner the percentage of the Contract Sum equal to the percentage of the Work which Owner and/or its architect determines has been completed on the Project site as of the date of termination together with any out of pocket loss Contractor has sustained with respect to materials and equipment as a result of the termination prior to completion of the Work, less any offsets and recoupment. Contractor will not be entitled to unearned profits or any other compensation as a result of the termination and hereby waives any claim therefor. Contractor will provide to Owner all warranty, as built, inspection, and other close out documents as well as materials that Contractor has in its possession or control at the time of termination. Owner may, in Owner's sole discretion, take legal assignment of subcontracts and other contractual rights of Contractor. Without limitation, Contractor's indemnities and obligations as well as all warranties relative to Work provided through the date of termination survive a termination hereunder.
24. **Assignment of Contract.** The parties hereto will not assign any rights or obligations under this Agreement without the prior written consent of the other party.
25. **Integration Clause.** The Contract Documents reflect the full agreement of the parties with respect to the Project and the Work and supersede all prior discussions, agreements, and representations regarding the subject matter of the Contract Documents. The Contract Documents may be amended only in a written document signed by both parties hereto.

26. **Applicable Law.** The parties acknowledge that the Contract Documents have substantial connections to the State of Utah. The Contract Documents will be deemed to have been made, executed, and delivered in Salt Lake City, Utah. To the maximum extent permitted by law, (i) the Contract Documents and all matters related to their creation and performance will be governed by and enforced in accordance with the laws of the State of Utah, excluding conflicts of law rules, and (ii) all disputes arising from or related to the Contract Documents will be decided only in a state or federal court located in Salt Lake City, Utah and not in any other court or state. Toward that end, the parties hereby consent to the jurisdiction of the state and federal courts located in Salt Lake City, Utah and waive any other venue to which they might be entitled by virtue of domicile, habitual residence, place of business, or otherwise.
27. **Enforcement.** In the event either party commences legal action to enforce or rescind any term of the Contract Documents, the prevailing party will be entitled to recover its attorneys fees and costs, including without limitation all copy costs and expert and consultant fees and expenses, incurred in that action and on all appeals, from the other party.
28. **Bid Proposal/Agreement.** Contractor's submission to Owner of this agreement signed by Contractor will constitute Contractor's offer and bid proposal to perform the Work described in this agreement according to the terms thereof. Owner's signing of this agreement and delivery to Contractor of a signed copy will constitute acceptance of Contractor's offer and will convert this document to a binding agreement.
29. **Effective Date.** The effective date of this Agreement is the date indicated by the Owner's signature.



**OWNER:**

Corporation of the Presiding Bishop of  
The Church of Jesus Christ of Latter-day Saints,  
a Utah corporation sole.

Signature:

Print Name: Lynn Adams

Title: Facilities Manager

Address:  
Orem Central FM Group  
PO Box 1497  
Orem, UT 84097

Telephone No: 801-222-3130

Facsimile No:

Email: adamsle@ldschurch.org

Effective Date:

Reviewed By:

**CONTRACTOR:**

(company)

Signature:

Print Name:

Title:

Address:

Telephone No:

Facsimile No:

Email:

Fed. I.D. or SSN:

License No:

Date Signed:

# **SUPPLEMENTARY CONDITIONS**

## **FOR CONTRACTOR BID PROPOSAL AND PROJECT AGREEMENT (U.S.)**

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### **ITEM 1 - GENERAL**

1. Conditions of the Contract apply to each Division of the Specifications.
2. Provisions contained in Division 01 apply to all Divisions of the Specifications.

### **ITEM 2 - LIQUIDATED DAMAGES PAYABLE TO OWNER**

*This section may be included as a separate additional paragraph to the Bid Proposal and Project Agreement, at Owner's discretion:*

**Delay in Completion of the Work.** For each day after the expiration of the designated Time of Completion that Contractor has not completed the Work, Contractor will pay Owner the amount of Zero dollars (\$0.00) per day as liquidated damages for Owner's loss of use and the added administrative expense to Owner to administer the Project during the period of delay. In addition, Contractor will reimburse Owner for any additional Architect's fees, attorneys' fees, expert fees, consultant fees, copy costs, and other expenses incurred by Owner as a result of the delay. Owner may deduct any liquidated damages or reimbursable expenses from any money due or to become due to Contractor. If the amount of liquidated damages and reimbursable expenses exceeds any amounts due to Contractor, Contractor will pay the difference to Owner within ten (10) days after receipt of a written request from Owner for payment.

### **ITEM 3 - STATE SPECIFIC SUPPLEMENTARY CONDITIONS**

#### **Utah**

#### **UTAH STATE SALES TAX:**

*Add the following to the Bid Proposal and Project Agreement:*

1. Contractors should be exempt on purchases of material installed or converted into real property to be used by the Owner. The Contractor will furnish each vendor with a completed Exemption Certificate Form TC-721. The certificate will be prepared by the Contractor for each vendor in order to obtain the exemption.
2. The Owner's tax exempt number is 11871701-002-STC.

#### **UTAH NOTICE OF INTENT TO OBTAIN FINAL COMPLETION:**

*Add the following to the Bid Proposal and Project Agreement:*

- A. Contractor shall file with the State Construction Registry, on its own behalf and/or on behalf of Owner, a notice of intent to obtain final completion at least 45 days before the day on which the Owner or Contractor files or could file a notice of completion under Utah Code Ann. Section 38-1a-506 if:
  1. The completion of performance time under the original contract for construction work is greater than 120 days;
  2. The total original construction contract price exceeds \$500,000; and
  3. The original contractor or owner has not obtained a payment bond in accordance with Utah Code Ann. Section 14-2-1.

## UTAH NOTICE OF COMPLETION:

*Add the following to the Bid Proposal and Project Agreement:*

- A. Within five (5) calendar days of final completion of the Project and in compliance with Section 38-1a-507 Utah Code Annotated, Contractor shall file with the State Construction Registry, and copy to Owner, a notice of completion which shall include, without limitation, the following:
  1. The name, address, telephone number, and email address of the person filing the notice of completion;
  2. The name of the county in which the Project and/or Project site is located;
  3. The date on which final completion is alleged to have occurred;
  4. The method used to determine final completion; and
  5. One of the following:
    - a. The tax parcel identification number of each parcel included in the Project and/or Project site;
    - b. The entry number of a preliminary notice on the same project that includes the tax parcel identification number of each parcel included in the Project and/or Project site; or
    - c. The entry number of the building permit issued for the Project.
- B. Notwithstanding any other provision of the Contract Documents to the contrary, Contractor and Owner agree that any breach or failure to comply with this Section by the Contractor will constitute a breach of contract and the Contractor will be liable for any direct, indirect, or consequential damages to the Owner flowing from this breach.

## UTAH STATE PROGRESS PAYMENTS AND FINAL PAYMENT:

*Replace paragraph 5 of the Bid Proposal and Project Agreement with the following:*

### 5. Payment

- a. If the Contractor's Bid Proposal Amount is over \$100,000.00, Contractor will submit to Owner a schedule of values which allocates the Contractor's Bid Proposal Amount to various portions of the Work. This schedule, when accepted by Owner, will be used as a basis for reviewing Contractor's payment requests.
- b. Progress Payments: Not more than once each month, Contractor will submit a payment request to Owner. Owner will pay Contractor progress payments for work completed within fifteen (15) days after Owner receives:
  1. Contractor's progress payment request for work to date;
  2. A certification by Contractor that Contractor has paid for all labor, materials, and equipment relating to the Work covered by prior payment requests and that Contractor will pay for all labor, materials, and equipment relating to the Work covered by the current payment request; and
  3. Conditional Waiver and Release Upon Progress Payment documents submitted by Contractor (in content complying with Utah Code § 38-1a-802) executed by each of the subcontractors performing work and/or providing materials covered by the Contractor's progress payment request.
- c. Final Payment: Owner will make full and final payment of the Contract Sum due within thirty (30) days of the completion of all of the following requirements:
  1. Contractor has submitted its final payment request;
  2. Contractor has submitted a certification that Contractor has paid for all labor, materials, and equipment relating to the Work covered by prior payment requests and that Contractor will pay for all labor, materials, and equipment relating to the Work covered by the final payment request; and
  3. Contractor has submitted Waiver and Release Upon Final Payment documents (in content complying with Utah Code § 38-1a-802) executed by each of the subcontractors performing work and/or providing materials covered by the Contractor's final payment request.

Acceptance of final payment by Contractor or any Subcontractor will constitute a waiver of claims by the payee except for those claims previously made to Owner in writing and identified by Contractor in its affidavit as still pending.

If the aggregate of previous payments made by Owner exceeds the amount due Contractor,

Contractor will reimburse the difference to Owner.

- d. Owner may modify or reject any payment request if, in Owner's opinion, the Work for which payment is requested is not acceptable or is less complete than represented on the payment request.
- e. Upon receipt of any payment from Owner, Contractor will pay to each Subcontractor the amount paid to Contractor on account of such Subcontractor's portion of the Work.
- f. Contractor will maintain a copy of each payment request at the Project site for review by the Subcontractors.
- g. No payment made, either in whole or in part, by Owner will be construed to be an acceptance of defective or improper materials or workmanship.

END OF DOCUMENT

**DIVISION 01****SECTION 01 0000****GENERAL REQUIREMENTS: R&I PROJECT**

- 01 1000 SUMMARY**
- 01 1200 MULTIPLE CONTRACT SUMMARY**
- 01 1400 WORK RESTRICTIONS**
- 01 2100 ALLOWANCES**
- 01 3000 ADMINISTRATIVE REQUIREMENTS**
- 01 3100 PROJECT MANAGEMENT AND COORDINATION**
- 01 3300 SUBMITTAL PROCEDURES**
- 01 4000 QUALITY REQUIREMENTS**
- 01 4301 QUALITY ASSURANCE – QUALIFICATIONS**
- 01 5000 TEMPORARY FACILITIES AND CONTROLS**
- 01 6100 COMMON PRODUCT REQUIREMENTS**
- 01 6200 PRODUCT OPTIONS**
- 01 6400 OWNER-FURNISHED PRODUCTS**
- 01 6600 DELIVERY, STORAGE, AND HANDLING REQUIREMENTS**
- 01 7000 EXECUTION REQUIREMENTS**
- 01 7400 CLEANING AND WASTE MANAGEMENT**
- 01 7700 CLOSEOUT PROCEDURES**
- 01 7800 CLOSEOUT SUBMITTALS**

**SECTION 01 1000 SUMMARY**

- A. Work Covered By Contract Documents:
  - 1. Provisions contained in Division 01 apply to all other sections and divisions of Specifications. All instructions contained in Specifications are directed to Contractor. Unless specifically provided otherwise, all obligations set forth in Specifications are obligations of Contractor.
  - 2. Comply with applicable laws and regulations.
- B. Work By Owner:
  - 1. Owner may furnish and install some portions of the Work with its own forces. Complete the Work necessary to accommodate the Work to be performed by Owner before scheduled date for performance of such Work.
  - 2. Owner may provide furnishings and/or equipment for Project. Contractor will receive, store, and protect such items on site until the date Owner accepts Project.

**SECTION 01 1200 MULTIPLE CONTRACT SUMMARY**

- A. Separate Contracts:
  - 1. Contracts may be issued by Owner for performance of certain construction operations at Project site.
  - 2. Contractor will afford other contractors reasonable opportunity to place and store their materials and equipment on site and to perform their work and will properly connect and coordinate its work with theirs where applicable:

**SECTION 01 1400 WORK RESTRICTIONS**

- A. Project Conditions:
  - 1. During construction period, Contractor will have use of premises for construction operations. Contractor will ensure that Contractor, its employees, subcontractors, and employees comply with following requirements:
    - a. Confine operations to areas within Contract limits shown on Drawings. Do not disturb portions of site beyond Contract limits.
    - b. Do not allow alcoholic beverages, illegal drugs, or persons under their influence on Project Site.
    - c. Do not allow use of tobacco in any form on Project Site.
    - d. Do not allow pornographic or other indecent materials on site.
    - e. Do not allow work on Project Site on Sundays except for emergency work.

- f. Refrain from using profanity or being discourteous or uncivil to others on Project Site or while performing The Work.
  - g. Wear shirts with sleeves, wear shoes, and refrain from wearing immodest, offensive, or obnoxious clothing, while on Project Site.
  - h. Do not allow playing of obnoxious and loud music on Project Site. Do not allow playing of any music within existing facilities.
  - i. Do not build fires on Project Site.
  - j. Do not allow weapons on Project Site, except those carried by law enforcement officers and/or other uniformed security personnel who have been retained by Owner or Contractor to provide security services.
2. Existing Facilities:
    - a. Owner will occupy existing building. Reasonably accommodate use of existing facilities by Owner.

### **SECTION 01 2100 ALLOWANCES**

- A. Include an Allowance of \$1,500 for removal of existing tree.
- B. If actual purchase price differs from Allowance, change order will be issued adjusting Contract Sum by amount of difference.
- C. Actual purchase price is actual amount paid by Contractor, including applicable sales and use taxes, before taking into account cash discounts for prompt payment.

### **SECTION 01 3000 ADMINISTRATIVE REQUIREMENTS**

- A. Administrative Requirements:
  1. Coordination:
    - a. Coordinate construction activities to ensure efficient and orderly installation of each part of the Work.
    - b. Coordinate construction operations that are dependent upon each other for proper installation, connection, and operation.
    - c. Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

### **SECTION 01 3100 PROJECT MANAGEMENT AND COORDINATION**

- A. Multiple Contract Coordination:
  1. Contractor shall be responsible for coordination of Temporary Facilities and Controls, Construction Waste Management and Disposal services, and Final Cleaning for entire Project unless directed otherwise by Owner's Representative for those who perform work on Project from Notice to Proceed to date of Substantial Completion.
- B. Project Meetings And Conferences:
  1. Attend preconstruction conference and organizational meeting scheduled by Architect or Owner Representative at Project site or other convenient location.
  2. Be prepared to discuss items of significance that could affect progress, including such topics as:
    - a. Construction schedule, equipment deliveries, general inspection of tests, preparation of record documents and O&M manuals, project cleanup, security, shop drawings, samples, use of premises, work restrictions, and working hours.
  2. Pre-Installation Conferences.
    - a. Attend pre-installation conferences specified in Contract Document.

### **SECTION 01 3300 SUBMITTAL PROCEDURES**

- A. Submittal Procedure:
  1. Coordination: Coordination preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently before performance of related construction activities to avoid delay.
  2. Process Time: Allow sufficient review time so installation will not be delayed by time required to process submittals.

3. Identification: Place permanent label or title block on each submittal for identification. Include name of entity that prepared each submittal on label or title block.
  4. Transmittal: Package each submittal appropriately for transmittal and handling.
- B. Action Submittals:
1. Product Data: Submit product data, as required by individual Sections of Specifications.
  2. Shop Drawings: Submit shop drawings for review and designate (stamp) approval of shop drawings.
  3. Samples: Samples used for comparison with actual component to be installed. Samples when accepted will be used for quality comparisons throughout course of construction.
- C. Informational Submittals:
1. Informational submittals are design data, test reports, certificates, manufacturer's instructions, manufacturer's field reports, and other documentary data affirming quality of products and installations.
    - a. Return copies or PDF files marked with action taken and with corrections or modifications required.
- D. Closeout Submittals:
1. Submittals that occur during project closeout.

## **SECTION 01 4000 QUALITY REQUIREMENTS**

- A. Administrative Requirements:
1. Conflicting Requirements:
    - a. If compliance with two or more standards is specified and standards establish different or conflicting requirements for minimum quantities or quality levels, comply with most stringent requirement.
  2. Minimum Quantity or Quality Levels:
    - a. Quantity or quality level shown or specified shall be the minimum provided or performed. Actual installation may comply exactly with minimum quantity or quality specified, or it may exceed minimum within reasonable limits.
  3. Submit to Owner permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records establishing compliance with standards and regulations bearing upon performance of the Work.
- B. Quality Assurance:
1. Testing and inspecting services are used to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.
  2. Quality Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to verify compliance and guard against defects and deficiencies and substantiate that proposed construction will comply with requirements. Owner or Owner's designated representative(s) will perform quality assurance to verify compliance with Contract Documents.
  3. Notify Owner immediately if asbestos-containing materials or other hazardous materials are encountered while performing the Work.
- C. Quality Control:
1. Quality Control Services:
    - a. Quality Control will be sole responsibility of Contractor.
      - 1) Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements performed by Contractor.
        - a) They do not include inspections, tests or related actions performed by Architect or Owner Representative, governing authorities or independent agencies hired by Owner or Architect.
        - b) Quality assurance performed by Owner will be used to validate Quality Control performed by Contractor.
      - 2) Where services are indicated as Contractor's responsibility, engage qualified Testing Agency to perform these quality control services:
        - a) Contractor will not employ same testing entity engaged by Owner, without Owner's written approval.

**D. Repair And Protection:**

1. On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
2. Protect construction exposed by or for Quality Assurance and Quality Control activities.
3. Repair and protection are Contractor's responsibility, regardless of assignment of responsibility for Quality Assurance and Quality Control Services.

**SECTION 01 4301 QUALITY ASSURANCE - QUALIFICATIONS****A. Qualifications:** Qualifications in this Section establish minimum qualification levels required; individual Specification Sections specify additional requirements:

1. Fabricator / Supplier / Installer Qualifications:
  - a. Firm experienced in producing products similar to those indicated for this Project and with record of successful in-service performance, as well as sufficient production capacity to produce required units:
    - 1) Where heading '*VMR (Value Managed Relationship) Suppliers / Installers*' is used to identify list of specified suppliers or installers, Owner has established relationships that extend beyond requirements of this Project. No other suppliers / installers will be acceptable. Follow specified procedures to preserve relationships between Owner and specified suppliers / installers and advantages that accrue to Owner from those relationships.
    - 2) Where heading '*Acceptable or Approved Suppliers / Installers / Fabricators*' is used to identify list of specified suppliers / installers / fabricators, use only one of listed suppliers / installers / fabricators. No others will be acceptable.
1. Factory-Authorized Service Representative Qualifications:
  - a. Authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
2. Installer Qualifications:
  - a. Firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with record of successful in-service performance.
3. Manufacturer Qualifications:
  - a. Firm experienced in manufacturing products or systems similar to those indicated for this Project and with record of successful in-service performance, as well as sufficient production capacity to produce required units.
4. Manufacturer's Field Services Qualifications:
  - a. Experienced authorized representative of manufacturer to inspect field-assembled components and equipment installation, including service connections.
5. Professional Engineer Qualifications:
  - a. Professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of kind indicated:
    - 1) Engineering services are defined as those performed for installations of system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
6. Specialists:
  - a. Certain sections of Specifications require that specific construction activities will be performed by entities who are recognized experts in those operations:
    - 1) Specialists will satisfy qualification requirements indicated and will be engaged for activities indicated.
    - 2) Requirement for special will not supersede building codes and regulations governing the Work.

**SECTION 01 5000 TEMPORARY FACILITIES AND CONTROLS****A. Administrative Requirements:**

1. Contractor is responsible for security of materials, tools, and equipment. Do not permit others to use building keys provided by Owner. Safeguard building and contents while the Work is being performed and secure building when the Work is finished for day.
2. Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and reduce possibility that air, waterways, and subsoil might be contaminated or polluted, or that other undesirable effects might result:
  - a. Avoid use of tools and equipment that produce harmful noise.



- b. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near site.
  - c. Protect the Work, materials, apparatus, and fixtures from injury due to weather, theft, and vandalism.
  3. Existing restroom facilities may be used by Contractor. Clean restrooms and portions of existing building used in accessing restrooms daily. If existing facilities are not usable, provide and maintain temporary sanitary toilet.
- B. Temporary Barriers And Enclosures:
1. Protect existing trees and plants. Remove and replace vegetation that dies or is damaged beyond repair due to construction activities.
  2. Erect adequate barricades, warning signs, and lights necessary to protect persons from injury or harm.
  3. Provide temporary enclosures at exterior building openings for security and protection from weather, theft, and vandalism. Erect and maintain dust-proof partitions and enclosures as required to prevent spread of dust and fumes to occupied portions of building.
  4. Proprietary Camera Services: In its absolute discretion, and with or without notice to Contractor, Owner may provide from time to time, but is not obligated to provide, one or more cameras on or about Project site and/or signage or notices of the same:
    - a. If provided by Owner, such camera(s) and/or signage and notices are solely for Owner's benefit and convenience and shall not be for benefit of Contractor, Subcontractor(s) or for any third person.
    - b. Owner shall have no liability, obligation, or responsibility to Contractor, Subcontractors, or any third person relative to such camera(s), signage, or notices, or absence of camera(s), signage, or notices, including without limitation, installation, maintenance, operation, repair, testing, functionality, capacity, recording, monitoring, posting, etc., of the same (hereafter 'Proprietary Camera Services').
    - c. Contractor, with Owner's prior consent (which shall not be unreasonably withheld), may relocate such camera(s), signage, or notices as necessary to not unreasonably, materially and physically interfere with work at Project Site.
    - d. Contractor's obligations under Contract Documents, including but not limited to, Contractor's obligation for security of Project Site, are not modified by Owner's opportunity to provide, actually providing, or not providing Proprietary Camera Services and/or signage or notices regarding the same.
    - e. This Specification Section does not preclude Contractor from providing its own camera(s), signage, or notices pursuant to terms and conditions of this Agreement. Neither does this Section reduce, expand or modify any other right or obligation of Owner pursuant to terms of this Agreement.
- C. Utilities:
1. Electrical Power: Owner will provide electric power for construction activities within limits available at existing facility.
  2. Fire Protection: Exercise caution to avoid fire damage: Do not build fires on site.
  3. Heating, Cooling, And Ventilation:
    - a. Permanent mechanical system may be operated upon following conditions:
      - 1) Do not interfere with normal set-back temperature patterns except as approved by Project Manager.
      - 2) Do not operate system when the Work causing airborne dust is occurring or when dust caused by such Work is present without first installing temporary filtering system.
  4. Lighting: Existing lighting system may be used by Contractor.
  5. Water Service: Contractor will use existing water supply for construction purposes to extent of existing facilities.

## **SECTION 01 6100 COMMON PRODUCT REQUIREMENTS**

### **A. Administrative Requirements:**

1. Provide products that comply with Contract Documents, are undamaged, and, unless otherwise indicated, are new and unused at time of installation. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for complete installation and for intended use and effect.

## **SECTION 01 6200 PRODUCT OPTIONS**

- A. Product selection is governed by Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include:
1. Substitutions And Equal Products:

- a. Generally speaking, substitutions for specified products and systems, as defined in Uniform Commercial Code, are not acceptable. However, equal products may be approved upon compliance with Contract Document requirements.
- b. Approved Products / Manufacturers / Suppliers / Installers:
  - 1) Category One:
    - (a) Owner has established 'Value Managed Relationships' that extend beyond requirements of this Project. No substitutions or equal products will be allowed on this Project.
    - (b) Follow specified procedures to preserve relationships between Owner and specified manufacturers / suppliers and advantages that accrue to Owner from those relationships.
  - 2) Category Two:
    - (a) Owner has established National Contracts that contain provisions extending beyond requirements of this Project. No substitutions or equal products will be allowed on this Project.
    - (b) Follow specified procedures to preserve relationships between Owner and specified manufacturers / suppliers and advantages that accrue to Owner from those relationships.
  - 3) Category Three:
    - (a) Specified products are provided to Church Projects under a National Account Program. Use these products to preserve advantages that accrue to Owner from those programs. No substitutions or equal products will be allowed on this Project.
  - 4) Category Four:
    - (a) Provide only specified products available from manufacturers listed. No substitutions, private-labeled, or equal products, or mixing of manufacturers' products is allowed on this Project.
    - (b) In Sections where lists recapitulating Manufacturers previously mentioned in Section are included under heading '*Manufacturers*' or '*Approved Manufacturers*', this is intended as convenience to Contractor as listing of contact information only. It is not intended that all manufacturers in list may provide products where specific products and manufacturers are listed elsewhere in Section.
- c. Acceptable Products / Manufacturers / Suppliers / Installers:
  - 1) Type One: Use specified products / manufacturers unless approval to use other products / manufacturers has been obtained from Architect or Owner Representative by Addendum.
  - 2) Type Two: Use specified products / manufacturers unless approval to use other products and manufacturers has been obtained from Architect or Owner Representative in writing before installing or applying unlisted or private-labeled products.
  - 3) Use 'Equal Product Approval Request Form' to request approval of equal products, manufacturers, or suppliers before bidding or before installation, as noted in individual Sections.
- d. Quality / Performance Standard Products / Manufacturers:
  - 1) Class One: Use specified product / manufacturer or equal product from specified manufacturers only.
  - 2) Class Two: Use specified product / manufacturer or equal product from any manufacturer.
  - 3) Products / manufacturers used will conform to Contract Document requirements.

## **SECTION 01 6400 OWNER-FURNISHED PRODUCTS**

- A. Administrative Requirements:
  1. Install items furnished by Owner or receive and store in safe condition items purchased directly by Owner according to requirements of Contract Documents.

## **SECTION 01 6600 DELIVERY, STORAGE, AND HANDLING REQUIREMENTS**

- A. Administrative Requirements:
  1. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.
- B. Delivery, Storage, and Handling:
  1. Delivery and Acceptable Requirements:
    - a. Deliver, store, and handle products according to manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

- b. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  - c. Deliver products to site in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  - d. Inspect products upon delivery to ensure compliance with Contract Documents, and to ensure that products are undamaged and properly protected.
2. Storage and Handling Requirements:
- a. Store products at site in manner that will simplify inspection and measurement of quantity or counting of units.
  - b. Store heavy materials away from Project structure so supporting construction will not be endangered.
  - c. Store products subject to damage by elements above ground, under cover in weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

## **SECTION 01 7000 EXECUTION REQUIREMENTS**

- A. Administrative Requirements:
1. Require installer of each major component to inspect both substrate and conditions under which the Work is to be done:
    - a. Notify Owner in writing of unsatisfactory conditions.
    - b. Do not proceed until unsatisfactory conditions have been corrected.
- B. Common Installation Provisions:
1. Provide attachment and connection devices and methods necessary for securing the Work:
    - a. Secure the Work true to line and level.
    - b. Allow for expansion and building movement.
  2. Recheck measurements and dimensions before starting each installation.
  3. Design, furnish, and install all shoring, bracing, and sheathing as required for safety and for proper execution of the Work and, unless otherwise required, remove same when the Work is completed.
  4. Where mounting heights are not shown, install individual components at standard mounting heights recognized within industry or local codes for that application. Refer questionable mounting height decisions to Owner for final decision.
- C. Protection:
1. Cover and protect furniture, equipment, and fixtures from soiling and damage when demolition Work is performed in rooms and areas from which such items have not been removed.
- D. Completion Inspection:
1. Upon 100 percent completion of Project, Contractor will request Substantial Completion Inspection.
  2. Owner will conduct Substantial Completion Inspection in presence of Contractor and furnish list of items to be corrected.
  3. Contractor will notify Owner in writing when items have been corrected.

## **SECTION 01 7400 CLEANING AND WASTE MANAGEMENT**

- A. Disposal Of Waste:
1. Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in landfill or incinerator acceptable to authorities having jurisdiction:
    - a. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
    - b. Remove and transport debris in manner that will prevent spillage on adjacent surfaces and areas.
  2. Burning: Do not burn waste materials.
  3. Disposal: Transport waste materials off Owner's property and legally dispose of them.
- B. Progress Cleaning:
1. Keep premises broom-clean during progress of the Work.

2. During handling and installation, protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from soiling, damage, or deterioration until Substantial Completion.
  3. Clean and maintain completed construction as frequently as necessary throughout construction period.
  4. Remove waste materials and rubbish caused by employees, subcontractors, and contractors under separate contract with Owner and dispose of legally.
- C. Final Cleaning:
1. Clean each surface or unit to condition expected in normal, commercial-building cleaning and maintenance program. Comply with manufacturer's instructions. Remove all rubbish from under and about building and leave building clean and habitable.
  2. In addition to general cleaning noted above, perform cleaning for all trades at completion of the Work in areas where construction activities have occurred.
  3. If Contractor fails to clean up, Owner may do so and charge cost to Contractor.

## **SECTION 01 7700 CLOSEOUT PROCEDURES**

A. General:

1. Closeout process consists of three specific project closeout inspections. Contractor shall plan sufficient time in construction schedule to allow for required inspections before expiration of Contract Time.
2. Contractor shall conduct his own inspections of The Work and shall not request closeout inspections until The Work of the contract is reasonably complete and correction of obvious defects or omissions are complete or imminent.
3. Date of Substantial Completion shall not occur until completion of construction work, unless agreed to by Architect / Owner's Representative and included on Certificate of Substantial Completion.

B. Preliminary Closeout Review:

1. When Architect, Owner and Contractor agree that project is ready for closeout, Pre-Substantial Inspection shall be scheduled. Preparation of floor substrate to receive carpeting and any work which could conceivably damage or stain carpet must be completed, as carpet installation will be scheduled immediately following this inspection.
2. Prior to this inspection, completed test and evaluation reports for HVAC system and font, where one occurs, are to be provided to Project Manager, Architect, and applicable consultants.
3. Architect, Owner and Contractor review completion of punch list items. When Owner and Architect confirm that Contractor has achieved Substantial Completion of The Work, Owner, Architect and Contractor will execute Certificate of Substantial Completion that contains:
  - a. Punch list of items requiring completion and correction will be created.
  - b. Time frame for completion of punch list items will be established, and date for Substantial Completion Inspection shall be set.

C. Substantial Completion Inspection:

1. When Architect, Owner and Contractor agree that project is ready for Substantial Completion, an inspection is held. Punch list created at Pre-Substantial Inspection is to be substantially complete.
2. Prior to this inspection, Contractor shall discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups and similar elements.
3. Architect, Owner and Contractor review completion of punch list items. When Owner and Architect confirm that Contractor has achieved Substantial Completion of The Work, Owner, Architect and Contractor will execute Certificate of Substantial Completion that contains:
  - a. Date of Substantial Completion.
  - b. Punch List Work not yet completed, including seasonal and long lead items.
  - c. Amount to be withheld for completion of Punch List Work.
  - d. Time period for completion of Punch List Work.
  - e. Amount of liquidated damages set forth in Supplementary Conditions to be assessed if Contractor fails to complete Punch List Work within time set forth in Certificate.
4. Contractor shall present Closeout Submittals to Architect and place tools, spare parts, extra stock, and similar items required by Contract Documents in locations as directed by Facilities Manager.

D. Final Acceptance Meeting:

1. When punch list items except for any seasonal items or long lead items which will not prohibit occupancy are completed, Final Acceptance Meeting is held.

2. Owner, Architect and Contractor execute Owner's Project Closeout - Final Acceptance form, and verify:
  - a. All seasonal and long lead items not prohibiting occupancy, if any, are identified, with committed to completion date and amount to be withheld until completion.
  - b. Owner's maintenance personnel have been instructed on all system operation and maintenance as required by the Contract Documents.
  - c. Final cleaning requirements have been completed.
3. If applicable, once any seasonal and long lead items are completed, Closeout Inspection is held where Owner and Architect verify that The Work has been satisfactorily completed, and Owner, Architect and Contractor execute Closeout portion of the Project Closeout - Final Acceptance form.
4. When Owner and Architect confirm that The Work is satisfactorily completed, Architect will authorize final payment.

## **SECTION 01 7800 CLOSEOUT SUBMITTALS**

### **A. Administrative Requirements:**

1. Project Record Documents:
  - a. Do not use record documents for construction purposes:
    - 1) Protect from deterioration and loss in secure, fire-resistive location.
    - 2) Provide access to record documents for reference during normal Working hours.
  - b. Maintain clean, undamaged set of Drawings. Mark set to show actual installation where installation varies from the Work as originally shown. Give particular attention to concealed elements that would be difficult to measure and record at later date:
    - 1) Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work.
    - 2) Mark new information that is important to Owner, but was not shown on Contract Drawings.
    - 3) Note related Change Order numbers where applicable.
2. As Built Record Drawings:
  - a. Provide two full-size sets of prints and PDF file of As Built Record Drawings to Facilities Management Office, printed from the updated AutoCAD drawing files or updated Revit model files, as specified by Owner, that have been modified to show actual dimensions and location of equipment, material, utility lines, and other work as actually constructed, based upon information provided by Contractor. Architect will submit updated As Built Record Drawings in PDF (ISO32000 format) to Owner. In addition, Architect will submit to Owner updated AutoCAD as built record drawing files with associated plot style tables or the Revit as built record model files, as specified by Owner.

### **B. Operations And Maintenance Manual:**

1. General:
  - a. Include closeout submittal documentation as required by Contract Documentation. Include only closeout submittals as defined in individual specification section.
  - b. Submittal Format: Digital copies unless otherwise noted, required for each individual specification section that include 'Closeout Submittals'.
2. Project Manual:
  - c. Copy of complete Project Manual including Addenda, Modifications as defined in General Conditions, and other interpretations issued during construction:
    - (1) Mark these documents to show variations in actual Work performed in comparison with text of specifications and Modifications.
    - (2) Show substitutions, selection of options, and similar information, particularly on elements that are concealed or cannot otherwise be readily discerned later by direct observation.
3. Maintenance Contracts: (digital format only).
4. Operations and Maintenance Data (digital format only):
  - a. Operations and maintenance submittals includes cleaning instructions, maintenance instructions, operations instructions, equipment list, and parts lists.
5. Warranty Documentation: Digital format of final, executed warranties.
6. Record Documentation:
  - a. Documentation includes Certifications, color and pattern selections, Design Date, Geotechnical Evaluation Reports (soils reports), Manufacture Reports, Literature or cut sheets, Shop Drawings, Source Quality Control, Special Procedures, and Testing and Inspection Reports.

C. Warranties:

1. When written guarantees beyond one (1) year after substantial completion are required by Contract Documents, secure such guarantees and warranties properly addressed and signed in favor of Owner. Include these documents in Operations & Maintenance Manual(s) specified above.
2. Delivery of guarantees and warranties will not relieve Contractor from obligations assumed under other provisions of Contract Documents.

**END OF SECTION**

**SECTION 03 3112****CAST-IN-PLACE SIDEWALKS, CURBS AND GUTTERS****PART 1 - GENERAL****1.1 SUMMARY**

## A. Includes But Not Limited To:

1. Furnish and install concrete work as described in Contract Documents including:
  - a. Concrete Formwork:
    - 1) Required formwork ready for placing of concrete.
    - 2) Strip and dispose of formwork.
  - b. Concrete:
    - 1) Concrete mix information and use of admixtures.
  - c. Concrete Sealer:
    - 1) Sealer applied to new exterior concrete surfaces exposed to freeze/thaw cycles and deicing salts.
  - d. Elastomeric Joint Sealants for expansion joints.
  - e. Expansion Joint Filler Material.
  - f. Membrane Curing.
  - g. Site Materials:
    - 1) Aggregate base.
    - 2) Fill.
    - 3) Compaction requirements.

## B. Related Requirements:

1. Section 01 0000: 'General Requirements':
  - a. Section 01 3100: 'Project Management and Coordination' for pre-installation conference.
  - b. Section 01 4000: 'Quality Requirements' for administrative and procedural requirements for quality assurance and quality control.

**1.2 REFERENCES**

## A. Association Publications:

1. American Concrete Institute, Farmington Hills, MI [www.concrete.org](http://www.concrete.org). Abstracts of ACI Periodicals and Publications.
  - a. ACI 305R-10, '*Guide to Hot Weather Concreting*'.
  - b. ACI 306R-10, '*Guide to Cold Weather Concreting*'.

## B. Definitions:

1. Cementitious Materials: Portland cement alone or in combination with one or more of following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.
2. Concrete Membrane Curing: Process by which hydraulic-cement concrete matures and develops hardened properties, over time, as result of continued hydration of cement in presence of sufficient water and heat. Also used to describe action taken to maintain moisture and temperature conditions in freshly placed concrete.
3. Concrete Sealers: As used in this specification, sealers are applied to new exterior concrete surfaces to protect from surface damage, corrosion, and staining. Sealers either block pores in concrete to reduce absorption of water and salts or form impermeable layer which prevents such materials from passing. Concrete sealer, when selected and applied properly, will prevent intrusion of water and deicers, minimizing freeze/thaw damage.

- C. Reference Standards:
1. American Association of State and Highway Transportation Officials:
    - a. Membrane Concrete Curing:
      - 1) AASHTO M 148-05, 'Standard Specification for Liquid Membrane-Forming Compounds for Curing'.
  2. ASTM International:
    - a. Admixtures:
      - 1) ASTM C260/C260M-10a(2016), 'Standard Specification for Air-Entraining Admixtures for Concrete'.
      - 2) ASTM C494/C494M-16, 'Standard Specification for Chemical Admixtures for Concrete'.
      - 3) ASTM C618-15, 'Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete'.
      - 4) ASTM C1293-08b(2015), 'Standard Test Method for Determination of Length Change of Concrete Due to Alkali-Silica Reaction'.
    - b. Concrete:
      - 1) ASTM C33/C33M-16, 'Standard Specification for Concrete Aggregates'.
      - 2) ASTM C94/C94M-16a, 'Standard Specification for Ready-Mixed Concrete'.
    - c. Concrete Sealer:
      - 1) ASTM C672/C672M-12 'Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to Deicing Chemicals'.
    - d. Elastomeric Joint Sealant:
      - 1) ASTM C920-14a, 'Standard Specification for Elastomeric Joint Sealants'.
    - e. Expansion Joint Filler Material:
      - 1) ASTM D1751-04(2013), 'Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)'.
    - f. Membrane Concrete Curing:
      - 1) ASTM C309-11, 'Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete'.
    - g. Site Materials:
      - 1) ASTM D1557-12, 'Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>))'.
      - 2) ASTM D2487-11, 'Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)'.

### 1.3 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Conference:
1. Participate in MANDATORY pre-installation conference as specified in Section 01 3100 and held jointly with related specification included in this specification:
  2. In addition to agenda items specified in Section 01 3100, review following with Facilities Manager:
    - a. Review approved mix design requirements and use of admixtures.
    - b. Review placement, finishing, and curing of concrete including cold and hot weather requirements.
    - c. Review membrane curing requirements.
    - a. Review elastomeric joint sealant requirements.
    - b. Review expansion joint filler material requirements and joint layout for curbs and gutters.
    - c. Review location of sidewalk, curb, and gutter control joints and expansion joints. Contractor to provide layout plan showing locations if needed.
    - d. Review concrete sealer requirements.
    - e. Review site materials requirements.
- B. Scheduling:
1. Elastomeric Joint Sealant:
    - a. Schedule work after Membrane Concrete Curing is placed and before Concrete Sealer is applied.



## 1.4 SUBMITTALS

- A. Action Submittals:
1. Product Data:
    - a. Concrete Sealer:
      - 1) Manufacturer's product literature or cut-sheets for specified products.
    - b. Elastomeric Joint Sealant:
      - 1) Manufacturer's product literature or cut-sheets for specified products.
      - 2) Material Safety Data Sheets (MSDS).
    - c. Expansion Joint Filler Material:
      - 1) Manufacturer's product literature or cut-sheets for specified products.
    - d. Membrane Concrete Curing:
      - 1) Manufacturer's product literature or cut-sheets for specified products.
      - 2) Material Safety Data Sheets (MSDS).
- B. Informational Submittals:
1. Design Data:
    - a. Mix Design:
      - 1) Furnish proposed mix design to Facilities Manager for review prior to commencement of Work.
        - a) Mix design shall show proposed admixture, amount and usage instructions.
        - b) Mineral: An amount of specified Class F (or Class C where Class F is not available) fly ash not to exceed twenty-five (25) percent of weight of cement may be substituted for cement. If substituted, consider fly ash with cement in determining amount of water necessary to provide specified water / cement ratio.
        - c) Chemical: Specified accelerator or retarder may be used if necessary to meet environmental conditions.
  2. Source Quality Control Submittals:
    - a. Concrete mix design: Submit mix designs to meet following requirements:
      - 1) Proportions:
        - a) Mix Type B:
          - (1) 4500 psi (31.03 MPa) minimum at twenty-eight (28) days.
          - (2) Water / Cementitious Material: 0.40 maximum by weight.
          - (3) Use twenty-five (25) percent Class F (or Class C where Class F is not available) fly ash as part of cementitious material.
        - b) Air Entrainment: Six (6) percent, plus or minus 1-1/2 percent for exterior concrete and foundation walls exposed to freeze/thaw cycles.
        - c) Do not add water any time during mixing cycle above amount required to meet specified water / cement ratio. No reduction in amount of cementitious material is allowed.
      - 2) Slump:
        - a) 4 inch (100 mm) slump maximum before addition of high range water reducer.
      - 3) Admixtures:
        - a) Mineral: An amount of specified Class F (or Class C where Class F is not available) fly ash not to exceed twenty-five (25) percent of weight of cement may be substituted for cement. If substituted, consider fly ash with cement in determining amount of water necessary to provide specified water / cement ratio.
        - b) Chemical: Specified accelerator or retarder may be used if necessary to meet environmental conditions.

## 1.5 QUALITY ASSURANCE

- A. Regulatory Agency Sustainability Approvals:
1. Concrete Sealer:
    - a. Comply with applicable VOC standards and other local requirements.
  2. Membrane Concrete Curing:
    - a. Comply with applicable VOC standards and other local requirements.

- B. Qualifications: Requirements of Section 01 4301 applies, but is not limited to following:
  - 1. Installers and Installation Supervisor:
    - a. ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
  - 2. Ready-Mix Supplier:
    - a. Comply with ASTM C94/C94M requirements and be certified according to NRMCA's 'Certification of Ready Mixed Concrete Production Facilities'.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery And Acceptance Requirements:
  - 1. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage And Handling Requirements:
  - 1. Follow Manufacturer's written instructions for handling and storage of products.
  - 2. Concrete Sealer:
    - a. Store in unopened containers in clean, dry area between 35 deg F (2 deg C) and 110 deg F (43 deg C) or as directed by Manufacturer's instruction.
  - 3. Elastomeric Joint Sealant:
    - a. Handle, store, and apply materials in compliance with applicable regulations and material safety data sheets (MSDS).
    - b. Handle to prevent inclusion of foreign matter, damage by water, or breakage.
    - c. Store in a cool dry location, but never under 40 deg F (4 deg C) or subjected to sustained temperatures exceeding 90 deg F (32 deg C) or as per Manufacturer's written recommendations.
    - d. Do not use sealants that have exceeded shelf life of product.
  - 4. Expansion Joint Filler Material:
    - a. Store materials in clean, dry area in accordance with manufacturer's instructions.
    - b. Protect materials during handling and application to prevent damage.
  - 5. Membrane Concrete Curing:
    - a. Store in unopened containers in clean, dry area between 35 deg F (2 deg C) and 110 deg F (43 deg C) (Keep from freezing) or as directed by Manufacturer's instruction.
    - b. Shelf Life: Do not use curing compound that is over one (1) year from manufacturer date.

## 1.7 FIELD CONDITIONS

- A. Ambient Conditions:
  - 1. Concrete:
    - a. For Cold Weather and Hot Weather Limitations, see Preparation in Part 3 of this specification.
  - 2. Concrete Sealer:
    - a. Follow printed Manufacturer's instruction for environmental hazards.
    - b. Follow printed Manufacturer's instruction for ambient conditions for application of product including:
      - 1) Minimum and maximum application temperatures.
      - 2) Application precautions when rain is expected.
  - 3. Elastomeric Joint Sealant:
    - a. Do not install sealant during inclement weather or when such conditions are expected. Allow wet surfaces to dry.
    - b. Follow Manufacturer's temperature recommendations for installing sealants.
  - 4. Expansion Joint Filler Material:
    - a. Do not install sealant during inclement weather or when such conditions are expected. Allow wet surfaces to dry.
  - 5. Membrane Concrete Curing:
    - a. Do not apply curing compound when temperature of concrete is less than 40 deg F (4.4 deg C).

6. Site Materials (Aggregate Base and Fill):
  - a. Do not perform work during unfavorable conditions as specified including:
    - 1) Presence of free surface water.
    - 2) Over-saturated sub base materials.

## 1.8 WARRANTY

- A. Manufacturer Warranty:
  1. Elastomeric Joint Sealant:
    - a. Provide Manufacture standard warranty covering sealant materials.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturer Contact List:
  1. Admixtures:
    - a. BASF (Construction Chemicals Division), Cleveland, OH [www.master-builders-solutions.basf.us/en-us](http://www.master-builders-solutions.basf.us/en-us).
    - b. Euclid Chemical Company, Cleveland, OH [www.euclidchemical.com](http://www.euclidchemical.com).
    - c. Fritz-Pak Concrete Admixtures, Dallas, TX [www.fritzpak.com](http://www.fritzpak.com).
    - d. Grace Construction Products, Cambridge, MA [www.graceconstruction.com](http://www.graceconstruction.com) and Grace Canada Inc, Ajax, ON (905) 683-8561.
    - e. Sika Corporation, Lyndhurst, NJ [www.sikaconstruction.com](http://www.sikaconstruction.com) and Sika Canada, Pointe Claire, QC [www.sika.ca](http://www.sika.ca).
  2. Concrete Sealer:
    - a. BASF (Construction Chemicals Division), Cleveland, OH [www.master-builders-solutions.basf.us/en-us](http://www.master-builders-solutions.basf.us/en-us).
    - b. Euclid Chemical Company, Cleveland, OH [www.euclidchemical.com](http://www.euclidchemical.com).
    - c. Sika Corporation, Lyndhurst, NJ [www.sikaconstruction.com](http://www.sikaconstruction.com) and Sika Canada, Pointe Claire, QC [www.sika.ca](http://www.sika.ca).
    - d. TK Products, Minnetonka, MN [www.tkproducts.com](http://www.tkproducts.com).
  3. Elastomeric Joint Sealant:
    - a. Dow Corning Corp., Midland, MI [www.dowcorning.com](http://www.dowcorning.com).
    - b. Sika Corporation, Lyndhurst, NJ [www.sikaconstruction.com](http://www.sikaconstruction.com) or Sika Canada Inc, Pointe Claire, QC [www.sika.ca](http://www.sika.ca).
  4. Expansion Joint Filler Material:
    - a. W R Meadows, Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).
  5. Membrane Concrete Curing:
    - a. Dayton Superior Specialty Chemicals, Kansas City, KS [www.daytonsuperiorchemical.com](http://www.daytonsuperiorchemical.com).
    - b. L & M Construction Chemicals, Omaha, NE [www.lmcc.com](http://www.lmcc.com).
    - c. W R Meadows, Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).

### 2.2 SYSTEM

- A. Design Criteria:
  1. Concrete:
    - a. Conform to requirements of ASTM C94/C94M unless specified otherwise:
    - b. Capacities:
      - 1) Following concrete strengths are required:
        - a) At 7 days: 70 percent minimum of twenty-eight (28) day strengths.
        - b) At 28 days: 100 percent minimum of twenty-eight (28) day strengths.

## B. Materials:

1. Aggregates:
  - a. Cement: Meet requirements of ASTM C33/C33M.
2. Water: Clear, apparently clean, and potable.
3. Admixtures And Miscellaneous:
  - a. Mineral:
    - 1) Fly Ash: Meet requirements of ASTM C618, Class F (or Class C where Class F is not available) and with loss on ignition (LOI) of three (3) percent maximum.
  - b. Chemical:
    - 1) No admixture shall contain calcium chloride nor shall calcium chloride be used as an admixture. All chemical admixtures used shall be from same manufacturer and compatible with each other.
    - 2) Air Entraining Admixture:
      - a) Meet requirements of ASTM C260/C260M (USA Projects).
      - b) Meet requirements of CSA A23.1/A23.2 (Canadian Projects).
      - c) Type Two Acceptable Products:
        - (1) MasterAir VR 10 (formally MB-VR), Master AE 90 (formally MB-AE) or MasterAir AE 400 (formally EverAir Plus) by BASF.
        - (2) Air Mix 200 Series or AEA-92 Series by Euclid.
        - (3) Air Plus or Super Air Plus by Fritz-Pak.
        - (4) Sika Air by Sika.
        - (5) Daravair or Darex Series AEA by W R Grace.
        - (6) Equal as approved by Facilities Manager before use. See Section 01 6200.
    - 3) Water Reducing Admixture:
      - a) Meet requirements of ASTM C494/C494M, Type A and containing not more than 0.05 percent chloride ions.
      - b) Type Two Acceptable Products:
        - (1) MasterPozzolith (formerly Pozzolith) Series by BASF.
        - (2) Eucon WR 75 or Eucon 91 by Euclid.
        - (3) FR-2 or FR-3 by Fritz-Pak.
        - (4) Plastocrete 160 by Sika.
        - (5) Daracem, WRDA, or MIRA Series by W R Grace.
        - (6) Equal as approved by Facilities Manager before use. See Section 01 6200.
    - 4) Water Reducing, Retarding Admixture:
      - a) Meet requirements of ASTM C494/C494M, Type D and contain no more than 0.05 percent chloride ions.
      - b) Type Two Acceptable Products:
        - (1) MasterPozzolith (formerly Pozzolith) Series by BASF.
        - (2) Eucon Retarder 75 by Euclid.
        - (3) FR-1 or Modified FR-1 by Fritz-Pak.
        - (4) Plastiment by Sika
        - (5) Daratard Series or Recover by W R Grace.
        - (6) Equal as approved by Facilities Manager before use. See Section 01 6200.
    - 5) High Range Water Reducing Admixture (Superplasticizer):
      - a) Meet requirements of ASTM C494/C494M, Type F or G and containing not more than 0.05 percent chloride ions.
      - b) Type Two Acceptable Products:
        - (1) MasterRheobuild 1000 (formerly Rheobuild 1000) or MasterGlenium (formerly Glenium) Series by BASF.
        - (2) Eucon 37 or Eucon 537 by Euclid.
        - (3) Supercizer 1 through 7 by Fritz-Pak.
        - (4) Sikament 300 by Sika.
        - (5) Daracem or ADVA Series by W R Grace.
        - (6) Equal as approved by Facilities Manager before use. See Section 01 6200.
    - 6) Non-Chloride, Non-Corrosive Accelerating Admixture:
      - a) Meet requirements of ASTM C494/C494M, Type C or E and containing not more than 0.05 percent chloride ions.
      - b) Type Two Acceptable Products:

- (1) MasterSet AC 534 (formerly Pozzolith NC 534) or MasterSet AC 122 (formerly Pozzolith122HE) or MasterSet FP 20 (formerly Pozzutec 20+) by BASF.
  - (2) Accelguard 80 by Euclid.
  - (3) Daraset, Polarset or Lubricon by W R Grace.
  - (4) Equal as approved by Facilities Manager before use. See Section 01 6200.
- 7) Alkali-Silica Reactivity Inhibiting Admixture:
- a) Specially formulated lithium nitrate admixture for prevention of alkali-silica reactivity (ASR) in concrete. Admixture must have test data indicating conformance to ASTM C1293.
  - b) Type Two Acceptable Products:
    - (1) Eucon Integral ARC by Euclid.
    - (2) RASIR by W R Grace.
    - (3) Equal as approved by Facilities Manager before use. See Section 01 6200.

## 2.3 COMPONENTS

### A. Concrete Forms:

1. Wood, metal, or plastic as arranged by Contractor:
  - a. Forming material shall be compatible with form release agents and with finish requirements for concrete to be left exposed.

## 2.4 MATERIALS

### A. Site Materials:

1. General:
  - a. Required where new sidewalks, curbs, or gutters or where new compacted aggregate base and fill are included in Project.
  - b. Required under where site grades are revised.
  - c. Remove and replace existing soft or unstable aggregate base and subgrade with compacted fill and aggregate base.
2. Fill:
  - a. Well graded material conforming to ASTM D2487 free from debris, organic material, frozen materials, brick, lime, concrete, and other material which would prevent adequate performance of backfill.
  - b. Fill shall comply with soil classification groups GW, CL, GP, GM, SW, SP, or SM. Fill may not contain stones over **6 inches (150 mm)** diameter and ninety-five (95) percent minimum of fill shall be smaller than **1-1/2 inch (38 mm)** in any direction.
3. Aggregate Base:
  - a. Road Base to conform to State DOT Specifications or **3/4 inch (19 mm)** open graded gravel.

## 2.5 ACCESSORIES

### A. Concrete Sealer:

1. Description: Concrete sealer that protects new exterior concrete from freeze/thaw cycles and deicing salts.
2. Design Criteria:
  - a. Penetrating water repellent silane concrete sealers are to be used.
  - b. Silane Based Sealers:
    - 1) Protects concrete from freeze/thaw cycles and deicing salts.
    - 2) Resists penetration of water and deicing salts.
    - 3) One hundred (100) percent silane active ingredient content.
    - 4) Penetrating sealer.
    - 5) Water repellent.
    - 6) Clear (colorless, non-yellowing).
    - 7) Surface appearance after application: unchanged.

3. Limitations:
  - a. If Low VOC product are required or desired, use only those products listed as 'Low VOC' in acceptable products below.
4. Type One Acceptable Products. See Section 01 6200 for definition of Categories:
  - a. Silane Based Sealers:
    - 1) MasterProtect H 1000 by BASF, Cleveland, OH [www.master-builders-solutions.basf.us](http://www.master-builders-solutions.basf.us).
      - a) Low VOC.
    - 2) Weather Worker J29A by Dayton Superior Corporation, Miamisburg, OH [www.daytonsuperior.com](http://www.daytonsuperior.com).
    - 3) Baracade Silane 100 by Euclid, Cleveland, OH [www.euclidchemical.com](http://www.euclidchemical.com).
      - a) Low VOC.
    - 4) Sikagard 705L by Sika Corporation, Lyndhurst, NJ [www.usa.sika.com](http://www.usa.sika.com).
      - a) Low VOC.
    - 5) TK-590-100 by TK Products, Minnetonka, MN [www.tkproducts.com](http://www.tkproducts.com).
    - 6) Equal product meeting design criteria requirements as approved by Facilities Manager before use. See Section 01 6200.
- B. Membrane Concrete Curing:
  1. Description: Dissipating membrane curing agent that cures freshly placed concrete.
  2. Design Criteria:
    - a. VOC-compliant compound.
    - b. Meet requirements of ASTM C309 and AASHTO M 148, Type 1 or 1-D, Class B.
    - c. Gradually dissipate after twenty-eight (28) days without leaving stain or discoloring concrete surface.
  3. Type One Acceptable Products:
    - a. Exterior Concrete:
      - 1) Clear Cure J7WB by Dayton Superior Corporation, Miamisburg, OH [www.daytonsuperior.com](http://www.daytonsuperior.com).
      - 2) L&M Cure R by L&M Construction Chemicals, Inc. Omaha, NE [www.lmcc.com](http://www.lmcc.com).
      - 3) 1100-Clear by W. R. Meadows, Inc. Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).
    - b. Equal as approved by Facilities Manager before use. See Section 01 6200.
- C. Elastomeric Joint Sealant:
  1. Expansion Joints:
    - a. Design Criteria:
      - 1) Meet following standard for sealants: ASTM C920: Type S, Grade NS, Class 100/50 Use T, NT, M, G, A, and O.
    - b. Category Four Approved Products. See Section 01 6200 for definitions of Categories:
      - 1) Dow Corning:
        - a) Primer: 1200 Prime Coat.
        - b) Sealant: 790 Silicone Building Sealant.
      - 2) Sika:
        - a) Primer: Sikasil Primer-2100.
        - b) Sealant: Sikasil-728 NS Non-Sag Silicone Sealant.
- D. Expansion Joint Filler:
  1. Material:
    - a. Design Criteria:
      - 1) Resilient, flexible, non-extruding, expansion-contraction joint filler meeting requirements of ASTM D1751.
      - 2) **1/2 inch (12.7 mm)** thick.
      - 3) Resilience:
        - a) When compressed to half of original thickness, recover to minimum of seventy (70) percent of original thickness.
    - b. Type Two Acceptable Products:
      - 1) Sealtight Fibre Expansion Joint by W. R. Meadows.
      - 2) Equal as approved by Facilities Manager before use. See Section 01 6200.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Verification Of Conditions:
  - 1. Concrete Forms:
    - a. Verify dimensions and spot elevations for locations of forms for concrete sidewalks, curbs, gutters, and stairs if included are correct before concrete is placed.
      - 1) Notify Facilities Manager of incorrect dimensions or spot elevations in writing.
      - 2) Do not place concrete until corrections are made and verified.
  - 2. Elastomeric Joint Sealant:
    - a. Examine substrate surfaces and joint openings are ready to receive Work.
      - 1) Verify joint surfaces are clean and dry.
      - 2) Ensure concrete surfaces are fully cured.
    - b. Notify Facilities Manager of unsuitable conditions in writing:
      - 1) Do not proceed until unsatisfactory conditions are corrected.

**3.2 PREPARATION**

- A. General:
  - 1. Remove water and debris from space to be placed.
- B. Site Materials:
  - 1. Before placing fill, aggregate base, or finish work, prepare existing subgrade as follows:
    - a. Finish grade to match existing grades.
- C. Concrete Forms:
  - 1. General:
    - a. Assemble forms so forms are sufficiently tight to prevent leakage.
    - b. Use new forms, or used forms that have been cleaned of loose concrete and other debris from previous concreting and repaired to proper condition.
- D. Concrete Mixing:
  - 1. General:
    - a. All concrete shall be machine mixed.
    - b. Re-tempering partly set concrete will not be permitted.
  - 2. Cold Weather Concreting Procedures:
    - a. As per ACI 306R 'Standard Specification for Cold Weather Concreting'.
    - b. Protect soil supporting concrete footings from freezing under any circumstances.
  - 3. Hot Weather Concreting Procedures:
    - a. As per ACI 305R 'Specification for Hot Weather Concreting'.
- E. Concrete Sealer:
  - 1. Surface Preparation:
    - a. Take necessary precautions to protect adjoining property.
    - b. Do not contaminate any body of water by direct application, cleaning of equipment or disposal of wastes.
  - 2. Cleaning:
    - a. Clean concrete surface of membrane curing and all dirt, mud spots, silt spots, loose material, vegetation, grease or oil spots, and other objectionable and foreign material including any spillage of any material that has adhered to concrete.
    - b. Remove debris, sand, dirt, and dust from concrete surface.
    - c. Power brooms, power blowers, air compressors, water flushing equipment, and blowers are acceptable equipment for cleaning concrete surface.
    - d. Concrete surface is to be dry, clean and sound.

- F. Elastomeric Joint Sealant:
1. Surfaces shall be clean, dry, free of dust, oil, grease, dew, frost or incompatible sealers, paints or coatings that may interfere with adhesion. Prepare substrates in accordance with Manufacturer's instructions.
  2. Clean joint surfaces of contaminants capable of affecting sealant bond to joint surface using Manufacturer's recommended instructions for joint preparation methods.
  3. Remove dirt, dust, oils, wax, paints, and contamination capable of affecting primer and sealant bond.

### 3.3 INSTALLATION

- A. Site Materials:
1. Fill and Aggregate Base:
    - a. General:
      - 1) Do not place aggregate base material when subgrade is frozen or unstable.
      - 2) Uniformly spread aggregate base material with equipment except in limited or restricted areas where use of hand spreading is allowed.
      - 3) Remove all standing storm water.
    - b. Fill: Material shall be well-graded granular material with maximum size less than 3 inch (76 mm) and with not more than fifteen (15) percent passing No. 200 sieve.
    - c. Aggregate Base: Place 4 inches (100 mm) minimum of aggregate base, level, and compact.
    - d. Compaction:
      - 1) Testing and Inspection is not required for site materials.
      - 2) Fill:
        - a) Place in 8 inch (200 mm) maximum layers, dampen but do not soak, and mechanically tamp to ninety-five (95) percent minimum of maximum laboratory density as established by ASTM D1557.
      - 3) Aggregate Base:
        - a) Remove or repair improperly prepared areas as directed by Facilities Manager.
        - b) Compact to ninety-five (95) percent minimum density as determined by ASTM D1557.
        - c) Proof roll aggregate base using 35 ton roller with tire pressure of 120 psi (827 kPa) or by using comparable industry standard method to determine sufficient stability of subgrade surface.
- B. Placing Concrete:
1. General:
    - a. Place as soon after mixing as possible.
    - b. Deposit as nearly as possible in final position.
    - c. No concrete shall be deposited in water.
    - d. Placing of concrete shall be continuous until panel or section is complete.
    - e. Consolidate concrete.
    - f. Form vertical surfaces full depth. Do not allow concrete to flow out from under forms in any degree into landscaped areas.
    - g. Do not embed aluminum in concrete.
    - h. Do not use contaminated, deteriorated, or re-tempered concrete.
    - i. Avoid accumulation of hardened concrete.
  2. Concrete Sidewalks, Curbs and Gutters:
    - a. Sidewalks And Landings:
      - 1) Slope with cross slope of 1/8 to 1/4 inch per ft (3 to 6 mm per 300 mm) (one to two percent) in direction of intended drainage.
      - 2) Slope away from building 1/8 to 1/4 inch per ft (3 to 6 mm per 300 mm) (one to two percent) minimum.
      - 3) Do not dust with cement.
      - 4) Concrete walks shall be screeded to bring surface to grades and lines as indicated. Surface shall be floated with wood float with no coarse aggregate showing and then given broom finish before concrete sets.



3. Joints:

a. Control Joints:

- 1) Depth of control joints shall be approximately one quarter of concrete slab thickness, but not less than **one inch (25 mm)**.
- 2) Control joints to be hand tooled in sidewalks, curbs and gutters.
- 3) Table One:

Concrete Control Joint On-Center Spacing (+/-)		
Sidewalks	<b>4 feet to 6 feet</b>	<b>1.2 meters to 1.8 meters</b>
Curbs and Gutters	<b>10 feet</b>	<b>3.0 meters</b>

b. Elastomeric Joint Sealant:

- 1) Install so top of expansion joint material is **1/4 inch (6 mm)** below finished surface of concrete.
- 2) No expansion joint required between curbs and sidewalks parallel to curb.
- 3) Provide expansion joints at ends of exterior site concrete elements that are perpendicular to and terminate at curbs, building foundations or other concrete elements (i.e. sidewalks, mow strips, aprons).
- 4) Provide expansion joints between sidewalks that are parallel, and adjacent, to main building.
- 5) Table Two:

Concrete Expansion Joint (Isolation) On-Center Spacing (+/-)		
Sidewalks, Curbs and Gutters	<b>40 feet to 100 feet</b>	<b>12 meters to 30 meters</b>

- 6) Seal expansion joints for following areas:
  - a) Between entryway slabs and building foundations.
  - b) Between sidewalks and building foundations.
  - c) Within curbs and gutters.
- 7) Expansion joints are not required to be sealed for following areas:
  - a) Within sidewalks.

C. Finishing:

1. Concrete Sidewalks, Curbs and Gutters:

- a. After completion of floating, performed immediately after screeding and when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:
  - 1) Provide fine hair finish where grades are less than six (6) percent **1-1/4 inch (32 mm)**.
  - 2) Provide rough hair finish where grades exceed six (6) percent **1-1/4 inch (32 mm)**.
  - 3) Broom finish, by drawing broom across concrete surface, perpendicular to line of traffic. Repeat operation if required to provide fine line texture acceptable to Facilities Manager. At curb and gutter, apply broom finish longitudinal to curb and gutter flowline.
  - 4) On inclined slab surfaces, provide coarse, non-slip finish by scoring surface with stiff-bristled broom, perpendicular to line of traffic. At curb and gutter, apply broom finish longitudinal to curb and gutter flowline.
  - 5) Do not remove forms for twenty-four (24) hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Facilities Manager.
  - 6) Round edges exposed to public view to **1/2 inch (13 mm)** radius, including edges formed by expansion joints.
  - 7) Remove edger marks.

- D. Tolerances:
  - 1. General:
    - a. Maximum Variation Tolerances:
      - 1) Table Three:

Maximum Variation Tolerances		
Thickness, standard	plus 3/8 inch, minus 1/4 inch	plus 9.5 mm, minus 3 mm
Plan, 0 - 20 feet	1/2 inch	12.7 mm
Plan, 40 feet or greater	3/4 inch	19 mm

- E. Concrete Forms: Remove forms.

**3.4 APPLICATION**

- A. Concrete Sealer:
  - 1. General:
    - a. Apply concrete sealer after surface preparation has been completed as per Manufacturer's recommendations.
    - b. Follow Manufacturer's ambient conditions for minimum and maximum application temperatures and application precautions when rain is expected.
    - c. Stir material thoroughly before and during application if required by Manufacturer.
    - d. Do not apply sealer if standing water is visible on concrete surface to be treated.
    - e. Apply even distribution of sealer.
    - f. Do NOT over apply. All product should penetrate substrate with no surface build-up. Any excess or puddles of material must be removed.
  - 2. Apply Concrete Sealer:
    - a. Silane Based Sealers:
      - 1) Do not apply below 32 deg F (0 deg C).
      - 2) Apply at rate of about 1 gallon (3.785 liters) per 300 sq ft (27.8 sq meters) or as per Manufacturer's recommendations depending upon absorbency of concrete surface.
  - 3. Allow Concrete Sealer to dry as per Manufacturer's recommendations:
- B. Elastomeric Joint Sealant:
  - 1. General:
    - a. Apply silicone sealant in accordance with Manufacturer's instructions.
    - b. Do not use damaged or deteriorated materials.
    - c. Install primer and sealants in accordance with Manufacturer's instructions.
    - d. Install sealants immediately after joint preparation.
  - 2. Sealant:
    - a. Apply sealant with hand-caulking gun with nozzle of proper size to fit joints. Use sufficient pressure to insure full contact to both sides of joint to full depth of joint. Apply sealants in vertical joints from bottom to top.
    - b. Fill joint opening to full and proper configuration.
    - c. Apply in continuous operation.
    - d. Tool joints immediately after application of sealant if required to achieve full bedding to substrate or to achieve smooth sealant surface. Tool joints in opposite direction from application direction, i.e., in vertical joints, from the top down. Do not 'wet tool' sealants.
    - e. Depth of sealant bite shall be 1/4 inch (6 mm) minimum and 1/2 inch (12.7 mm) maximum, but never more than one half or less than one fourth joint width.
- C. Membrane Concrete Curing:
  - 1. Follow Manufacturer's written instructions for preparation, application rates, placement, and cleanup including:
    - a. Apply as soon as brooming or finishing of exterior concrete is complete.
    - b. Spraying application is required.
    - c. Do not dilute or thin product.
    - d. Do not apply when temperature of concrete is less than 40 deg F (4.4 deg C).

- e. Apply uniformly without puddles or ponding.
- f. Do not apply before bleed water has dissipated.
- g. Do not apply over standing water.

### **3.5 FIELD QUALITY CONTROL**

- A. Field Tests And Inspections:
  - 1. Not Required:
- B. Non-Conforming Work: Correct any work found defective or not complying with contract document requirements at no additional cost to Owner.

### **3.6 CLEANING**

- A. General:
  - 1. Concrete Sealer:
    - a. Clean drips and over spray while still wet.
- B. Waste Management:
  - 1. Follow Manufacturer's recommendations for approved disposal of product and containers.
    - a. Do not reuse empty containers.

### **3.7 PROTECTION**

- A. Concrete:
  - 1. Protect concrete that has not received its initial set from precipitation to avoid excess water in mix and unsatisfactory surface finish.
- B. Membrane Concrete Curing:
  - 1. Restrict foot or vehicle traffic as curing membrane dries as recommended by Manufacturer.

**END OF SECTION**



**SECTION 05 0523**

**METAL FASTENING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Requirements and standards for site welded metal-to-metal connections.
- B. Related Requirements:
  - 1. Performance of welding specified under Section concerned.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. American National Standards Institute / American Welding Society:
    - a. ANSI/AWS D1.1/D1.1M:2010, 'Structural Welding Code - Steel'.
    - b. ANSI/AWS D1.3/D1.3M:2010, 'Structural Welding Code - Sheet Steel'.

**1.3 QUALITY ASSURANCE**

- A. Qualifications: Requirements of Section 01 4301 applies, but not limited to the following:
  - 1. Welders shall be certified 30 days minimum before beginning work on Project. If there is doubt as to proficiency of welder, Architect may require welder to take another test, at no expense to Owner. Certification shall be by Pittsburgh Laboratories or other authority approved by Architect.
- B. Certifications:
  - 1. Maintain welder's certifications on job-site.

**PART 2 - PRODUCTS**

**2.1 ACCESSORIES**

- A. Arc-Welding Electrodes: Type E70XX AWS Iron and Steel Arc-welding electrodes and meeting current AISC Specifications.

**PART 3 - EXECUTION**

**3.1 PERFORMANCE**

- A. Welding shall meet requirements of ANSI / AWS D1.1 and D1.3.

**END OF SECTION**



**SECTION 05 5215****STAINLESS STEEL HANDRAILS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnish and install stainless steel pipe handrails as described in Contract Documents.
- B. Products Furnished But Not Installed Under This Section:
  - 1. Anchoring sleeves in concrete for stainless steel pipe handrails.
- C. Related Requirements:
  - 1. Section 03 3112: 'Cast-In-Place Sidewalks, Curbs and Gutters' for installation of anchoring sleeves cast into concrete.
  - 2. Section 05 0523: 'Metal Fastening' for quality of welding.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Non-shrink Grout: Structural grout used for filling voids between elements that is formulated with cement, fine aggregates and admixtures. Admixtures are used to provide expansive properties of the material during curing. This expansion counteracts the natural tendency of cement grouts to shrink during curing.
  - 2. Stainless Steel Alloys:
    - a. Type 304 (UNS S30400): Austenitic stainless steel with non-magnetic properties in annealed condition that provide good corrosion resistance to both chemical and atmospheric exposures, with high resistance to oxidations. Most common and widely used stainless steel.
- B. Reference Standards:
  - 1. ASTM International:
    - a. ASTM C1107/C1107M-14, 'Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)'.

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Shop Drawings: Show fabrication and installation of handrails and railings including floor plans, elevations, sections, details of components, and attachments to other elements of the Work.

**PART 2 - PRODUCTS****2.1 ASSEMBLIES**

- A. Materials:
  - 1. Handrails And Railings:
    - a. 1-1/2 inch (38 mm) outside diameter non-magnetic satin finish 16 gauge (0.063) (1.6002 mm) type 304 stainless tubing.
    - b. Sizes and configurations as indicated on Contract Drawings.

2. Pipe Sleeves: 2 inch (50 mm) diameter by 6 to 9 inch (150 to 225 mm) long non-magnetic stainless steel.

B. Fabrication:

1. Preassemble railing systems in shop to greatest extent possible to minimize field splicing and assembly.
2. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
3. Grind smooth welded joints and buff welds to same appearance as remainder of railing.
4. Form curves by bending pipe in jigs to produce uniform curvature for each configuration required. Maintain cylindrical cross-section of pipe throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of pipe.
5. Welded Connections:
  - a. Fabricate railing system and handrail connections by welding.
  - b. Weld corners and seams continuously to comply with following:
    - 1) Use materials and methods that minimize distortion and develop of metals.
    - 2) At tee and cross intersections, notch ends of intersecting members to fit contour of pipe to which end is joined and weld all around.
    - 3) At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and so contours of welded surfaces match adjacent surfaces.

## 2.2 ACCESSORIES

A. Rail Setting Grout:

1. Commercial non-shrink grout conforming to requirements of ASTM C1107, Type B or Type C.
2. Type Two Acceptable Manufacturers:
  - a. Normal Construction Grout A by Bonsal American, Charlotte, NC [www.bonsal.com](http://www.bonsal.com).
  - b. Advantage 1107 Grout by Dayton Superior Specialty Chemicals, Kansas City, KS [www.daytonsuperiorchemical.com](http://www.daytonsuperiorchemical.com).
  - c. NS Grout by Euclid Chemical Co, Cleveland, OH [www.euclidchemical.com](http://www.euclidchemical.com)
  - d. 5 Star Special Grout 110 by Five Star Products Inc, Fairfield, CT [www.fivestarprouducts.com](http://www.fivestarprouducts.com).
  - e. Duragrout by L&M Construction Chemicals Inc, Omaha, NE [www.lmcc.com](http://www.lmcc.com).
  - f. Sonneborn / BASF Building Systems, Shakopee, MN [www.chemrex.com](http://www.chemrex.com).
  - g. Tamms Grout 621 by TAMMS Industries, Mentor, OH [www.tamms.com](http://www.tamms.com).
  - h. U S Spec MP Grout by U S Mix Products Co, Denver, CO [www.usspec.com](http://www.usspec.com).
  - i. CG-86 Grout by W R Meadows, Hampshire, IL [www.wrmeadows.com](http://www.wrmeadows.com).
  - j. Equal as approved by Architect before use. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Touch up field welds to match finished material.

**END OF SECTION**



**SECTION 08 4113****ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Low energy swinging operators.
- B. Related Requirements:
  - 1. Division 26: 'Electrical' for power source, raceway, boxes, wiring for controls and operator.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. American National Standards Institute / Builders Hardware Manufacturers Association:
    - a. ANSI/BHMA A156.19-2013, 'Power Assist & Low Energy Operated Doors'.
  - 2. International Code Council / American National Standards Institute:
    - a. ICC / ANSI A117.1-2009, 'Accessible and Usable Buildings and Facilities'.

**1.3 SUBMITTALS**

- A. Action Submittals:
  - 1. Product Data:
    - a. Manufacturer's literature.
      - 1) Low-energy door operator.
    - b. Color and finish.
- B. Informational Submittals:
  - 1. Qualification Statement:
    - a. Installer:
      - 1) Provide Qualification documentation if requested by Architect or Owner.
- C. Closeout Submittals:
  - 1. Include following in Operations And Maintenance Manual specified in Section 01 7800:
    - a. Operations and Maintenance Data:
      - 1) Maintenance, adjustment, and repair instructions.
    - b. Warranty Documentation:
      - 1) Final, executed copy of Warranty.
        - a) Low-energy door operator.
    - c. Record Documentation:
      - 1) Manufacturers documentation:
        - a) Manufacturer's literature of cut sheets for low-energy door operators.
        - b) Color and finish selections.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery And Acceptance Requirements:
  - 1. Deliver all parts in original, unopened packages with labels intact to Project at same time.

**B. Storage And Handling Requirements:**

1. Store in clean, dry location, indoors in Manufacturer's unopened packaging until ready for installation and in accordance with Manufacturer's instructions.
2. Protect materials and finish from damage during storage, handling and installation.

**1.5 WARRANTY****A. Manufacturer Warranty:**

1. Low-Energy Door Operator:
  - a. Manufacturer's standard warranty.

**PART 2 - PRODUCTS****2.1 ASSEMBLIES****A. Manufacturers:**

1. Category One VMR Approved Manufacturers. See Section 01 6200 for definitions of Categories:
  - a. Arcadia Inc., Vernon CA [www.arcadiainc.com](http://www.arcadiainc.com).
    - 1) Contact Information: Ken Martinek, (602) 734-5327 [kmartinek@arcadiainc.com](mailto:kmartinek@arcadiainc.com).
  - b. Kawneer North America, Norcross, GA, [www.kawneer.com/kawneer/north\\_america](http://www.kawneer.com/kawneer/north_america).
    - 1) Contact Information: Bart Daniels cell (385) 214-4650 [bart.daniels@alcoa.com](mailto:bart.daniels@alcoa.com).

**B. Materials:**

1. Hardware:
  - a. Low-Energy Swing Door Operator:
    - 1) Meet requirements of ICC/ANSI 117.1 and BHMA A156.19.
    - 2) Wall-mounted push button operation.
    - 3) Solid state electronic control.
    - 4) Adjustable closing speed and hold-open range.
    - 5) Automatic and manual operating modes.
    - 6) Metal cover finished to match door.
    - 7) Category Four Approved Products. See Section 01 6200 for definitions of Categories:
      - a) Besam SW100 by Besam (subsidiary of ASSA ABLOY) US-Monroe, NC [www.besam.us](http://www.besam.us).
      - b) Horton Series 7100 Low Energy by Horton Automatics (Division of Overhead Door Corp.), Corpus Christi, TX [www.hortondoors.com](http://www.hortondoors.com).
      - c) Record 6100 Series Low Energy Swing Door Operator by Record-USA, Monroe, NC [www.record-usa.com](http://www.record-usa.com).
      - d) Stanley Magic-Force by Stanley Access Technologies, Farmington, CT [www.stanleyaccesstechnologies.com](http://www.stanleyaccesstechnologies.com).

**PART 3 - EXECUTION****3.1 INSTALLERS****A. Performance Standard Installers: See Section 01 6200 for definitions of Categories. See Section 01 4301 for Installer Qualifications of this specification:**

1. General Contractor responsible for Installer(s), verification of qualifications, and performance. Contact VMR Approved Manufacturer's Representative specified in Part 2 'Products' of this specification for potential installers if desired.

### **3.2 INSTALLATION**

- A. General:
  - 1. Installation shall meet or exceed all applicable federal, state and local requirements, referenced standards and conform to codes and ordinances of authorities having jurisdiction.
  - 2. All installation shall be in accordance with manufacturer's published recommendations.
  - 3. Do not install damaged components.
- B. Adjust to provide ninety (90) degree operation, tight fit at contact points and smooth operation.

### **3.3 FIELD QUALITY CONTROL**

- A. Field Tests And Inspections:
  - 1. Make all necessary final adjustments to attain normal operation of each door and its mechanical hardware.
- B. Non-Conforming Work: Non-conforming work as covered in the General Conditions applies, but is not limited to the following:
  - 1. Correct any work found defective or not complying with contract document requirements at no additional cost to the Owner.

### **3.4 ADJUSTING**

- A. Adjust for proper operation. After repeated operation of completed installation, re-adjust for optimum operating condition and safety if required.

### **3.5 CLEANING**

- A. Waste Management:
  - 1. Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**



**SECTION 10 1453****TRAFFIC SIGNAGE****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Furnishing and installing of exterior post-mounted site signage as described in Contract Documents.
- B. Related Requirements:
  - 1. Section 03 3112: 'Cast-In-Place Sidewalks, Curbs and Gutters' for quality requirements of concrete used for parking sign posts.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. International Code Council / American National Standards Institute:
    - a. ICC/ANSI A117.1-2010, 'Accessible and Usable Buildings and Facilities'.
  - 2. U.S. Department of Justice:
    - a. 2010 'ADA Standards for Accessible Design'.

**1.3 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
  - 1. Sign shall meet ANSI A117.1 accessibility code and ADA standards for accessible design and local and state authorities having jurisdiction (AHJ) requirements.

**PART 2 - PRODUCTS****2.1 ASSEMBLIES**

- A. Permanently Mounted:
  - 1. Post Foundation Concrete: One cu ft cement, 2 cu ft (0.0566 cu m) sand, 4 cu ft (0.1132 cu m) gravel, and 5 gallons (18.93 liters) minimum to 6 gallons (22.71 liters) maximum of water.
  - 2. Accessible Parking Signs:
    - a. Design Criteria:
      - 1) Meet regulatory agency requirements for accessibility.
      - 2) Sign graphics and lettering shall be minimum required by agency having jurisdiction:
        - a) International symbol of accessibility should be posted on all accessible parking spaces.
        - b) Letters must contain visual characters and high dark to light contrast between characters and background as per ADA requirements:
        - c) Provide reflective background.
        - d) Van-accessible parking spaces to have additional 'text' or 'sign' below the accessibility symbol to mark the van-accessible area specifically.
      - 3) Size: 12 inches (305 mm) x 18 inches (457 mm) aluminum sign.
      - 4) Sign shall have rounded corners.

- b. Type Two Acceptable Products:
  - 1) Parking signs by My Parking Sign, Brooklyn, NY [www.MyParkingSign.com](http://www.MyParkingSign.com).
  - 2) Equal as approved by Architect before use. See Section 01 6200.
- 3. Posts:
  - a. Type Two Acceptable Products:
    - 1) Nominal **2 inch (50 mm)** outside diameter by **7 feet (2.14 m)** high with wall thickness equivalent to Schedule 40 with satin-brushed natural finish for aluminum or factory galvanized for steel.
    - 2) Equal as approved by Architect before installation. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Permanently Mounted:
  - 1. Locate as shown on Site Plan.
    - a. Follow ADA guidelines and local and state authorities having jurisdiction (AHJ) for placement of sign requirements:
      - 1) Van accessible sign should be placed so that it is not obscured by anything including a standing van, vehicle or other obtrusive objects.
      - 2) Signs should be placed at such a height (at least **60 inches (1 500 mm)** above surface) that they do not get obscured by any parked vehicles or other obstructions. Signs must be viewable from drivers' seat of vehicle and located right in view of parking spaces.
  - 2. Install signs square and plumb.
  - 3. Post Foundations:
    - a. Mix concrete components thoroughly, place in post foundation holes **8 inches (200 mm)** in diameter by **36 inches (900 mm)** deep, and set mounting sleeves. Sleeves shall extend **2 inches (50 mm)** maximum above top of finish concrete elevation.
      - 1) At aprons, set top of post foundation below grade sufficient to allow for placing of aprons.
      - 2) Where posts are installed before installation of aprons, measure post foundation depth from top of apron. Extend bottom of slab footing sufficient to allow specified amount of concrete around post.
    - b. Install post in mounting sleeve so bottom of post is **6 inches (150 mm)** from top of sleeve. Rivet post to mounting sleeve or bolt using tamper-proof bolts.

**END OF SECTION**

**SECTION 26 0501****COMMON ELECTRICAL REQUIREMENTS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. General electrical system requirements and procedures.
  - 2. Make electrical connections to equipment provided under other Sections.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. National Fire Protection Association / American National Standards Institute:
    - a. NFPA 70, National Electric Code (NEC).
  - 2. National Electrical Manufacturing Association Standards (NEMA):
    - a. NEMA 250, 'Enclosure for Electrical Equipment (1000 Volts Maximum)'.

**1.3 SUBMITTALS**

- A. Informational Submittals:
  - 1. Qualification Statement:
    - a. Electrical Subcontractor:
      - 1) Provide Qualification documentation if requested by Architect or Owner.
    - b. Installer:
      - 1) Provide Qualification documentation if requested by Architect or Owner.

**1.4 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
  - 1. NEC and local ordinances and regulations shall govern unless more stringent requirements are specified.
  - 2. Material and equipment provided shall meet standards of NEMA or UL and bear their label wherever standards have been established and label service is available.
- B. Qualifications: Requirements of Section 01 4301 applies, but not limited to following:
  - 1. Electrical Subcontractor:
    - a. Company specializing in performing work of this section.
      - 1) Minimum five (5) years experience in electrical installations.
      - 2) Minimum five (5) satisfactorily completed installations in past three (3) years of projects similar in size, scope, and complexity required for this project before bidding.
    - b. Upon request, submit documentation.
  - 2. Installer:
    - a. Licensed for area of Project.
    - b. Designate one (1) individual as project foremen who shall be on site at all times during installation and experienced with installation procedures required for this project.
    - c. Upon request, submit documentation.

**PART 2 - PRODUCTS: Not Used****PART 3 - EXECUTION****3.1 INSTALLERS**

- A. Acceptable Installers:
1. Meet Quality Assurance Installer Qualifications as specified in Part 1 of this specification.

**3.2 EXAMINATION**

- A. Verification Of Conditions:
1. Confirm dimensions, ratings, and specifications of equipment to be installed and coordinate these with site dimensions and with other Sections.

**3.3 PREPARATION**

- A. Patch, repair, and finish surfaces affected by electrical demolition work, unless work is specifically specified to be performed under other Sections of the specifications.

**3.4 INSTALLATION**

- A. General:
1. Locations of electrical items shown on Drawings are approximate only. Field verify actual locations for proper installation.
  2. Coordinate electrical item locations and conduit runs with those providing equipment to be served before installation or rough in.
    - a. Notify Architect of conflicts before beginning work.
  3. Work related to other trades which is required under this Division, such as cutting and patching, shall be performed according to standards specified in applicable Sections.

**3.5 FIELD QUALITY CONTROL**

- A. Field Tests:
1. Test systems and demonstrate equipment as working and operating properly. Rectify defects at no additional cost to Owner.

**END OF SECTION**



**SECTION 26 0519****LINE-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Quality of conductors used on Project except as excluded below.
- B. Related Requirements:
  - 1. Section 26 0501: 'Common Electrical Requirements'.

**1.2 REFERENCES**

- A. Definitions:
  - 1. Line Voltage: Over 70 Volts.
- B. Reference Standards:
  - 1. National Fire Protection Association:
    - a. NFPA (Fire) 70, 'National Electric Code (NEC)' (2014 Edition or most recent edition adopted by AHJ including all applicable amendments and supplements).
      - 1) Article 334, "Nonmetallic-Sheathed Cable, Types NM, NMC And NMS'.

**PART 2 - PRODUCTS****2.1 SYSTEMS**

- A. Line Voltage Conductors:
  - 1. Copper with AWG sizes as shown:
    - a. Minimum size shall be No. 12 except where specified otherwise.
    - b. Conductor size No. 8 and larger shall be stranded.
  - 2. Insulation:
    - a. Standard Conductor Size No. 10 And Smaller: 600V type THWN or XHHW (75 deg F (24 deg C)).
    - b. Standard Conductor Size No. 8 And Larger: 600V Type THW, THWN, or XHHW (75 deg F (24 deg C)).
    - c. Higher temperature insulation as required by NFPA 70 or local codes.
  - 3. Colors:
    - a. 208Y / 120 V System:
      - 1) Black: Phase A.
      - 2) Red: Phase B.
      - 3) Blue: Phase C.
      - 4) Green: Ground.
      - 5) White: Neutral.
    - b. 480Y / 277 Volt System:
      - 1) Brown: Phase A.
      - 2) Orange: Phase B.
      - 3) Yellow: Phase C.
      - 4) Gray: Neutral.
      - 5) Green: Ground.
    - c. Conductors size No. 10 and smaller shall be colored full length. Tagging or other methods for coding of conductors size No. 10 and smaller not allowed.

- d. For feeder conductors larger than No. 10 at pull boxes, gutters, and panels, use painted or taped band or color tag color-coded as specified above.
- B. Line Voltage Cables:
1. Metal Clad Cable (MC) may be used as restricted below:
    - a. Copper conductors.
    - b. Sizes #12 through #8.
    - c. Use only in indoor dry locations where:
      - 1) Not subject to damage.
      - 2) Not in contact with earth.
      - 3) Not in concrete.
- C. Standard Connectors:
1. Conductors No. 8 And Smaller: Steel spring wire connectors.
  2. Conductors Larger Than No. 8: Pressure type terminal lugs.
  3. Connections Outside Building: Watertight steel spring wire connections with waterproof, non-hardening sealant.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. General:
1. Conductors and cables shall be continuous from outlet to outlet.
  2. Do not use direct burial cable.
- B. Line Voltage Conductors:
1. Install conductors in raceway where indicated on Contract Drawings. Run conductors of different voltage systems in separate conduits.
  2. Route circuits at own discretion, however, circuiting shall be as shown on Contract Drawings. Group circuit homeruns to panels as shown on Contract Drawings.
  3. Neutrals:
    - a. On three-phase, 4-wire systems, do not use common neutral for more than three circuits.
    - b. On single-phase, 3-wire systems, do not use common neutral for more than two circuits.
    - c. Run separate neutrals for each circuit where specifically noted on Contract Drawings.
    - d. Where common neutral is run for two or three home run circuits, connect phase conductors to breakers in panel which are attached to separate phase legs:
      - 1) Provide breaker tie so that all circuits that share common neutral are simultaneously disconnected.
      - 2) Neutral conductors shall be of same size as phase conductors unless specifically noted otherwise.
  4. Pulling Conductors:
    - a. Do not pull conductors into conduit until raceway system is complete and cabinets and outlet boxes are free of foreign matter and moisture.
    - b. Do not use heavy mechanical means for pulling conductors.
    - c. Use only listed wire pulling lubricants.
- C. Line Voltage Cables:
1. Route circuits at own discretion, however, circuiting and numbering shall be as shown in Panel Schedules.
  2. Support cables using approved staples, cable ties, straps, hangers, or similar fittings, spaced as required.
  3. Where installing in framing, do not bore holes in joists or beams outside center 1/3 of member depth or within **24 inches (600 mm)** of bearing points. Do not bore holes in vertical framing members outside center 1/3 of member width. Holes shall be one inch diameter maximum.

4. Conceal cables within ceilings and walls of finished areas. Cables may be exposed in unfinished areas but not run on floors of mechanical equipment spaces or in such a way that they obstruct access to, operation of, or servicing of equipment.
5. Install exposed cables parallel to or at right angles to building structure lines.
6. Keep cables 6 inches (150 mm) minimum from hot water pipes.
7. Do not support cables from mechanical ducts or duct supports without Architect's written approval.
8. Prohibited procedures:
  - a. Boring holes for installation of cables in vertical truss members.
  - b. Notching of structural members for installation of cables.

**END OF SECTION**



**SECTION 26 0533****RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
  - 1. Quality of material and installation procedures for raceway, boxes, and fittings used on Project but furnished under other Divisions.
  - 2. Furnish and install raceway, conduit, and boxes used on Project not specified to be installed under other Divisions.
- B. Related Requirements:
  - 1. Section 26 0501: 'Common Electrical Requirements' for general electrical requirements'.

**1.2 REFERENCES**

- A. Reference Standards:
  - 1. National Fire Protection Association:
    - a. NFPA (Fire) 70, 'National Electric Code (NEC)' (2014 Edition or most recent edition adopted by AHJ including all applicable amendments and supplements).

**PART 2 - PRODUCTS****2.1 SYSTEM**

- A. Manufacturers:
  - 1. Manufacturer Contact List:
    - a. Cooper B-Line, Highland, IL [www.b-line.com](http://www.b-line.com).
    - b. Hubbell Incorporated, Milford, CT [www.hubbell-wiring.com](http://www.hubbell-wiring.com) or Hubbell Canada Inc, Pickering, ON (905) 839-4332.
    - c. Square D, Palatine, IL [www.squared.com](http://www.squared.com).
    - d. Thomas & Betts, Memphis, TN [www.tnb.com](http://www.tnb.com) or Thomas & Betts Ltd, Iberville, PQ (450) 347-5318.
    - e. Walker Systems Inc, Williamstown, WV (800) 240-2601 or Walker Systems Inc / Wiremold Canada Inc, Fergus, ON (519) 843-4332.
    - f. Wiremold Co, West Hartford, CT [www.wiremold.com](http://www.wiremold.com).
- B. Materials:
  - 1. Raceway And Conduit:
    - a. Sizes:
      - 1) **3/4 inch (19 mm)** for exterior use, unless indicated otherwise.
      - 2) **1/2 inch (13 mm)** for interior use, unless indicated otherwise.
    - b. Types: Usage of each type is restricted as specified below by product.
      - 1) Galvanized rigid steel or galvanized intermediate metal conduit (IMC) is allowed for use in all areas. Where in contact with earth or concrete, wrap buried galvanized rigid steel and galvanized IMC conduit and fittings completely with vinyl tape.
      - 2) Galvanized Electrical Metallic Tubing (EMT) and Flexible Steel Conduit:
        - a) Allowed for use only in indoor dry locations where it is:
          - (1) Not subject to damage.
          - (2) Not in contact with earth.
          - (3) Not in concrete.

- b) For metal conduit systems, flexible steel conduit is required for final connections to indoor mechanical equipment.
  - 3) Schedule 40 Polyvinyl Chloride (PVC) Conduit:
    - a) Allowed for use only underground or below concrete with galvanized rigid steel or IMC elbows and risers.
  - 4) Listed, Liquid-Tight Flexible Metal Conduit:
    - a) Use in outdoor final connections to mechanical equipment, length not to exceed **36 inches (900 mm)**.
  - 5) Pre-wired **3/8 Inch (9.5 mm)** Flexible Fixture Whips: Allowed only for connection to recessed lighting fixtures, lengths not to exceed **72 inches (1 800 mm)**.
- c. Prohibited Raceway Materials:
  - 1) Aluminum conduit.
  - 2) Armored cable type AC (BX) cable.
- 2. Raceway And Conduit Fittings:
  - a. Rigid Steel Conduit And IMC: Threaded and designed for conduit use.
  - b. EMT:
    - 1) Compression type.
    - 2) Steel set screw housing type.
  - c. PVC Conduit:
    - 1) PVC type. Use PVC adapters at all boxes.
    - 2) PVC components, (conduit, fittings, cement) shall be from same Manufacturer.
  - d. Flexible Steel Conduit: Screw-in type.
  - e. Liquid-tight Flexible Metal Conduit: Sealtite type.
  - f. Expansion fittings shall be equal to OZ Type AX sized to raceway and including bonding jumper.
  - g. Prohibited Fitting Materials:
    - 1) Crimp-on, tap-on, indenter type fittings.
    - 2) Cast set-screw fittings for EMT.
    - 3) Spray (aerosol) PVC cement.
- 3. Outlet Boxes:
  - a. Galvanized steel of proper size and shape are acceptable for all systems. Where metal boxes are used, provide following:
    - 1) Provide metal supports and other accessories for installation of each box.
    - 2) Equip ceiling and bracket fixture boxes with fixture studs where required.
    - 3) Equip outlets in plastered, paneled, and furred finishes with plaster rings and extensions to bring box flush with finish surface.
  - b. Non-metallic boxes may be used only for control voltage wiring systems.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verification Of Conditions:
  - 1. Confirm dimensions, ratings, and specifications of materials to be installed and coordinate these with site dimensions and with other Sections.

### 3.2 INSTALLATION

- A. Interface With Other Work:
  - 1. Before rough-in, verify locations of boxes with work of other trades to insure that they are properly located for purpose intended.
  - 2. Install pull wires in raceways installed under this Section where conductors or cables are to be installed under other Divisions.

**B. Conduit And Raceway:**

1. Conceal raceways within ceilings, walls, and floors, except at Contractor's option, conduit may be exposed on walls or ceilings of mechanical equipment areas and above acoustical panel suspension ceiling systems. Install exposed raceway runs parallel to or at right angles to building structure lines.
2. Seal all raceways penetrating fire rated walls, ceilings and barriers.
3. Keep raceway runs **6 inches (150 mm)** minimum from hot water pipes.
4. Make no more than four quarter bends, 360 degrees total, in any conduit run between outlet and outlet, fitting and fitting, or outlet and fitting.
  - a. Make bends and offsets so conduit is not injured and internal diameter of conduit is not effectively reduced.
  - b. Radius of curve shall be at least minimum indicated by NFPA 70.
5. Cut conduit smooth and square with run and ream to remove rough edges. Cap raceway ends during construction. Clean or replace raceway in which water or foreign matter have accumulated.
6. Install insulated bushings on each end of raceway **1-1/4 inches (32 mm)** in diameter and larger, and on all raceways where cables emerge. Install expansion fittings where raceways cross building expansion joints.
7. Bend PVC conduit by hot box bender and, for PVC **2 inches (50 mm)** in diameter and larger, expanding plugs. Apply PVC adhesive only by brush.
8. Installation In Framing:
  - a. Do not bore holes in joists or beams outside center  $1/3$  of member depth or within **24 inches (600 mm)** of bearing points. Do not bore holes in vertical framing members outside center  $1/3$  of member width.
  - b. Holes shall be **one inch (25 mm)** diameter maximum.
9. Conduit And Raceway Support:
  - a. Securely support raceway with approved straps, clamps, or hangers, spaced as required.
  - b. Do not support from mechanical ducts or duct supports without Architect's written approval. Securely mount raceway supports, boxes, and cabinets in an approved manner by:
    - 1) Expansion shields in concrete or solid masonry.
    - 2) Toggle bolts on hollow masonry units.
    - 3) Wood screws on wood.
    - 4) Metal screws on metal.
10. Prohibited Procedures:
  - a. Use of wooden plugs inserted in concrete or masonry units for mounting raceway, supports, boxes, cabinets, or other equipment.
  - b. Installation of raceway that has been crushed or deformed.
  - c. Use of torches for bending PVC.
  - d. Spray applied PVC cement.
  - e. Boring holes in truss members.
  - f. Notching of structural members.
  - g. Supporting raceway from ceiling system support wires.
  - h. Nail drive straps or tie wire for supporting raceway.

**C. Boxes:**

1. Boxes shall be accessible and installed with approved cover.
2. Do not locate device boxes that are on opposite sides of framed walls in the same stud space. In other wall construction, do not install boxes back to back.
3. Locate boxes so pipes, ducts, or other items do not obstruct outlets.
4. Install outlets flush with finished surface and level and plumb.
5. Support switch boxes larger than two-gang with side brackets and steel bar hangers in framed walls.
6. At time of substantial completion, install blank plates on uncovered outlet boxes that are for future use.
7. Location:
  - a. Install boxes at door locations on latch side of door, unless explicitly shown otherwise on Contract Drawings. Verify door swings shown on electrical drawings with architectural drawings, and report discrepancies to Architect before rough-in. Distance of box from jamb shall be **6 inches (150 mm)** from door jamb.

- b. Properly center boxes located in walls with respect to doors, panels, furring, trim and consistent with architectural details. Where two or more outlets occur, space them uniformly and in straight lines with each other, if possible.

**END OF SECTION**



**SECTION 26 0613**

**ELECTRICAL EQUIPMENT MOUNTING HEIGHT SCHEDULE**

**PART 1 - GENERAL: Not Used**

**PART 2 - PRODUCTS: Not Used**

**PART 3 - EXECUTION**

**3.1 INSTALLATION**

- A. Unless otherwise indicated, mount center of outlets or boxes at following heights above finish floor. Refer special conditions to Architect before rough-in and locate outlet under his direction.
- B. Mounting Heights:
  - 1. Electrical:
    - a. Wall Switches, Push Buttons: 42 inches (1 065 mm).

**END OF SECTION**



**SECTION 32 1723****PAVEMENT MARKINGS****PART 1 - GENERAL****1.1 SUMMARY**

- A. Includes But Not Limited To:
1. Furnish acrylic paint and apply pavement markings as described in Contract Documents.

**1.2 REFERENCES**

- A. Reference Standards:
1. Federal Specifications and Standards:
    - a. FED-STD-595C, 'Federal Standard: Colors Used in Government Procurement' (16 Jan 2008).
    - b. FED TT-P-1952F, 'Paint, Traffic and Airfield Marking, Waterborne' (17 Feb 2015).
  2. U.S. Department of Transportation Federal Highway Administration:
    - a. FHWA MUTCD-10, 'Manual on Uniform Traffic Control Devices'.

**1.3 QUALITY ASSURANCE**

- A. Regulatory Agency Sustainability Approvals:
1. Paint must meet requirements of FED TT-P-1952-F and local regulations for VOC.
  2. Paint handicap spaces to conform to ADA Standards and local code requirements.

**1.4 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery and Acceptance Requirements:
1. Materials shall be delivered in original, unopened containers with labels intact.
    - a. Labels to include:
      - 1) Manufacturer's name and address.
      - 2) TT-P-1952F reference.
      - 3) Classification Type.
      - 4) Color.
- B. Storage And Handling Requirements:
1. Follow Manufacturer's storage and handling requirements.
  2. Protect stored material from freezing at temperatures above 35 deg F (2 deg C) or above 115 deg F (46.1 deg C).
  3. Do not invert or roll containers.

**1.5 FIELD CONDITIONS**

- A. Ambient Conditions:
1. Acrylic Paint:
    - a. Apply only on dry clean surfaces, during favorable weather (not excessively windy, dusty, or foggy), and when damage by rain, fog, or condensation not anticipated.
    - b. Paving surface and Ambient temperature shall be minimum 50 deg F (10 deg C) and rising.
    - c. Temperature shall not drop below 50 deg F (10 deg C) within twenty-four (24) hour period following application.

- d. Acetone based paints that are one hundred (100) percent acrylic shall not drop below 32 deg F (0 deg C) within twenty-four (24) hour period following application.

## PART 2 - PRODUCTS

### 2.1 MATERIAL

- A. Acrylic Paint:
  1. Description:
    - a. Low VOC, ready-mixed, one- component, acrylic waterborne traffic marking paint suitable for application on concrete, asphalt, sealers, and previously painted areas of these surfaces.
  2. Design Criteria:
    - a. General:
      - 1) Traffic Paint.
      - 2) Non-volatile portion of vehicle for all classification types shall be composed of one hundred (100) percent acrylic.
      - 3) Meet FED TT-P-1952F specification requirements.
      - 4) Fast drying when applied at ambient conditions requirement.
      - 5) Low VOC.
      - 6) Non-Reflectorized.
      - 7) Traffic paints not intended for use as floor paints. Do not use on pedestrian walkways or large surfaces such as ramps which may become slippery when wet.
    - b. Classification:
      - 1) Type I for use under normal conditions.
    - c. Composition:
      - 1) Non-volatile portion for all types shall be composed of one hundred (100) percent acrylic polymer as determined by infrared spectral analysis.
      - 2) Prohibited material:
        - a) Product does not contain mercury, lead, hexavalent chromium, toluene, chlorinated solvents, hydrolysable chlorine derivatives, ethylene-based glycol ethers and their acetates, nor any carcinogen.
    - d. Qualitative Requirements:
      - 1) Meet FED TT-P-1952F requirements for:
        - a) Abrasion resistance.
        - b) Accelerated package stability.
        - c) Accelerated weathering.
        - d) Appearance.
        - e) Color requirements:
          - (1) Color Match (all colors except white and yellow).
          - (2) Daylight directional reflectance.
          - (3) Yellow color match.
        - f) Condition in container.
        - g) Dry-through (early washout) for Type II only.
        - h) Flexibility.
        - i) Freeze/thaw stability.
        - j) Heat-shear stability.
        - k) Scrub resistance.
        - l) Skinning.
        - m) Titanium dioxide content.
        - n) Water resistance.
      - e. Quantitative requirements:
        - 1) Meet FED TT-P-1952F requirements (Table 1).
        - 2) Acetone based paints that are one hundred (100) percent acrylic and have exempt status under Federal law are exempt from meeting FED TT-P-1925F requirements.
    3. Colors:
      - a. General:
        - 1) Traffic Paint will be furnished in white and any Federal Standard 595 color in accordance to FED-STD-595C:

- a) Blue: 35180.
  - b. White:
    - 1) Lane lines, edge lines, transverse lines, arrows, words, symbol markings, speed bump markings, parking space markings, cross-hatching in medians, cross hatching in safety zones separating opposing traffic flows, crosswalk stripes, safety markings, centerlines, edge lines along left edge of one-way roadway or one-way ramp.
  - c. Blue And White:
    - 1) In parking spaces specifically designated as reserved for disabled.
4. Type Two Acceptable Products:
    - a. Any product meeting design criteria of this specification as approved by Architect/Owner's Representative before application. See Section 01 6200.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Acrylic Paint:
  1. Asphalt Surfaces:
    - a. Do not apply paint until asphalt has cooled.
    - b. Allow new seal coated surfaces to cure for at least twenty-four (24) hours before applying paint.
- B. Surfaces shall be dry and free of grease and loose dirt particles.
- C. Perform layout with chalk or lumber crayon only.

### 3.2 APPLICATION

- A. General:
  1. Mix in accordance and apply as per Manufacturer's instructions.
  2. Apply at locations and to dimensions and spacing as shown on Contract Drawings.
- B. Tolerances:
  1. General: Make lines parallel, evenly spaced, and with sharply defined edges.
  2. Line Widths:
    - a. 4 inches.
    - b. Plus or minus **1/4 inch (6 mm)** variance on straight segments.
    - c. Plus or minus **1/2 inch (13 mm)** variance on curved alignments.
- C. Coverage:
  1. Paint stripes applied to existing asphalt surfaces:
    - a. Apply single coat to existing asphalt parking lots which are being re-striped and where no surface treatments are being applied to asphalt.
  2. Paint stripes applied to new asphalt paving surface treatment over existing asphalt paving.
    - a. Except for slurry seal:
      - 1) Apply single coat after seal coat has completely dried.
    - b. Slurry seal coat:
      - 1) Apply first coat after seal coat has completely dried.
      - 2) Apply second coat after first coat has thoroughly dried and then wait thirty (30) to forty-five (45) days and after ravel sweeping to apply second coat.
  3. Apply traffic paint at rate of 13 to 15 mils minimum wet thickness, 8 to 9 mils dry thickness. Application at more than 15 mils may result in extended dry times and may cause lifting or cracking on some asphalt surfaces.

**3.3 FIELD QUALITY CONTROL**

A. Non-Conforming Work:

1. Replace or correct defective material not conforming to requirements of this specification or any work performed that is of inferior quality at no cost to Owner.

**3.4 CLEANING**

A. General:

1. Remove drips, overspray, improper markings, and paint material tracked by traffic by sand blasting, wire brushing, or other method approved by Architect/Owner's Representative before performance.

B. Waste Management:

1. Remove debris resulting from work of this Section. Dispose of or recycle all trash and excess material in manner conforming to current EPA regulations and local laws.

**END OF SECTION**