

**A1730**  
**Veteran's Memorial Plaza**  
**April 30 2019**  
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4-30-2019

# **SECTION 01000**

## **GENERAL REQUIREMENTS**

### **SPECIFICATION COORDINATION WITH DRAWINGS:**

Bidders shall thoroughly review and coordinate specification requirements and the corresponding items of Work in the Drawings.

Bids shall include costs of Work indicated in the Drawings and/or Specifications.

Prior to the Bid, submit in writing questions, discrepancies or conflicts to the Architect for clarification or resolution. Obtain satisfactory written resolution of submitted items prior to Bid; or include in the Bid the maximum costs of resolution options.

The Architect will resolve discrepancies or conflicts identified during execution of the Contract. Resolutions that include Items of Work that are indicated within the Drawings, Specifications or Addenda will not be subject to increases in the Contract Amount.

### **SPECIFICATION LANGUAGE:**

The specification language is directed to the Contractor who is obligated by contract to the Owner. The various specification sections are created and arranged for the convenience and clarity of organization of materials, items and construction. The Contractor is responsible for the complete project requirements and any determination of division of the work among various subcontractors.

"Provide" is defined to mean the furnishing, preparing and installing complete with necessary appurtenances and accessories, fully functional for the intended purpose.

### **REGULATORY COMPLIANCE:**

Conform to requirements of governing authorities having jurisdiction for the Work of this Project.

Conform to the requirements of the "Americans with Disabilities Act" (ADA) and Texas Accessibility Standards (TAS), latest versions, for the areas affected by these construction documents. Provide necessary options and accessories for manufactured items to meet minimum numbers of units required to be accessible.

### **QUALITY ASSURANCE:**

Provide like products from a single manufacturer to ensure uniformity in quality of appearance and construction.

### **SUBMITTALS:**

#### **Submittals, Shop Drawings, Product Data:**

Submit as required by Contract Documents and as appropriate to Work anticipated, clearly showing, at large scale, elevations, details, materials, shapes, sizes and methods of construction proposed, including required clearances, reinforcements, anchors, and accessories and relationship with adjacent materials. Submit product

data, as applicable, including manufacturer's installation instructions. Submit complete color charts or color samples if color selection is required.

Present submittals in a clear and thorough manner which illustrate the portion of the Work showing fabrication, layout, setting, or erection details. Drawings must be prepared by a qualified detailer and shall not be copies of the Architect's or Engineer's Construction Drawings. Indicate coordination with other Work. Identify field dimensions; show relation to adjacent or critical features of Work or products.

Title each submittal with Project name and number; identify each element by reference to sheets the Project Drawings number and detail, schedule, specification section or room number in the Contract Documents.

Review each submittal thoroughly prior to forwarding to the Architect. Affix Contractor's submittal review stamp with signature, date, results of review and submittal identification number (per CSI Format). Include a transmittal with each submittal group identifying submittals.

Provide submittals in electronic format. If hard copies are submitted, provide 2 copies of each submittal. The Architect will obtain electronic scans of the copies for his review. The cost of scanning will be invoice to the Contractor.

Samples: Submit or mock-up as necessary for Architect's selection and review. Provide adequate number of samples for the Architect to retain 2 copies for his records.

Fabricate Work in conformance with reviewed submittals.

**MATERIALS HANDLING:**

Deliver materials and products in manufacturer's labeled protective packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage by weather, excessive temperatures and construction operations.

**ACCEPTABLE MANUFACTURERS:**

Acceptable manufacturers are listed in groups. Manufacturer's item number indicated refers to the initial manufacturer listed in each group unless noted otherwise. Item numbers are listed to establish desired features and quality. Other manufacturers listed are presumed to offer similar products with equivalent features and quality. Substitutions of other manufacturers will be considered prior to Bid, provided adequate information is submitted in a timely fashion to allow Architect's review of proposed substitution.

Proposed equivalent products must additionally match specified color and finish selections to the satisfaction of the Architect to be considered as equivalent. Custom color and/or finish may be required for proposed equivalent products to be acceptable to the Project color and finish scheme.

**INSPECTION:**

Make detailed inspection of Work area and adjoining construction prior to beginning installation. Verify governing dimensions and other permissible dimensional tolerances. Report in writing unsatisfactory conditions encountered; do not begin installation until conditions are correct. Beginning installation signifies acceptance of conditions.

**INSTALLATION:**

Install Work in strict accordance with manufacturer's recommendations and referenced standards.

**CLEANING:**

Materials and equipment:

Use only cleaning materials recommended by manufacturer of surface to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer. Provide proper containers for storing and transporting waste. Provide proper equipment for specific cleaning functions.

Cleaning during construction:

Execute cleaning daily to insure that grounds and public properties are maintained free from accumulations of waste materials and rubbish; remove such accumulations from premises daily or properly store in waste containers for periodic removal from site. Wet down dry materials and rubbish to lay dust and prevent blowing dust. Schedule cleaning operation so that dust and other contaminants resulting from cleaning process will not damage Work.

Final cleaning:

Perform final cleaning just prior to, and as a condition of, Final Acceptance. Employ experienced workmen, or professional cleaner, for final cleaning. Remove waste materials, rubbish, tools, equipment, machinery and surplus materials and clean sight-exposed surfaces; leave project clean and ready for occupancy. Remove grease, dust, dirt, stains, labels, fingerprints and other foreign materials from sight-exposed interior and exterior finishes; polish surfaces so designated to shine finish. Broom clean paved surfaces; rake clean other surfaces of grounds. Clean and polish both sides of glass. Vacuum clean interior building areas.

Disposal:

Properly dispose of excess materials and debris away from site.

**PROTECTION:**

Protect Work against damage until Final Acceptance. Replace, or repair to the satisfaction of the Architect, Work that becomes damaged prior to Final Acceptance.

**END OF SECTION**

# **SECTION 01220**

## **UNIT PRICES**

### **SECTION INCLUDES:**

Measurement.

Payment.

### **UNIT PRICES**

Provide unit prices for items listed, for inclusion in Contract, guaranteed to apply for duration of Project as basis for additions to or deductions from Contract Sum.

Take measurements and compute quantities.

Quantities and measurements indicated are for Contract purposes only.

Actual quantities and measurements supplied or placed in the Work will determine payment.

Payment includes full compensation for all required labor, Products, tools, equipment, plant, transportation, services, and incidentals, and for erection, application, or installation of an item of the Work.

Adjustments to Contract Sum will be made by Change Order based on net cumulative change for each item of the Work.

### **UNIT PRICE SCHEDULE**

Deteriorated Concrete Sidewalk Demolition: Unit of measure: square feet including demolition and debris removal.

Basis of payment: Adjustments to Contract sum will be made using actual area of existing concrete sidewalks demolished, when so instructed by the Owner.

Concrete sidewalks:

Unit of measure: square foot including grading, forming, reinforcement, and concrete.

Basis of payment: Contract Sum to include sidewalk layout as indicated on drawings.

Should the Owner authorize sidewalk placement in addition layout indicated, adjustments to the Contract Sum will be made using actual area of additional sidewalk installed.

END OF SECTION



# **SECTION 01340**

## **SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

### **REQUIREMENTS INCLUDED:**

Procedures for submittals  
Schedule of submittals

### **SUBMITTAL REQUIREMENTS:**

Transmit submittals in sequence to avoid delay in the Work.

Provide 8 x 4 inch blank space on each submittal for Contractor and Architect review stamps.

Apply Contractor's stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of Work and Contract Documents.

Coordinate submittals into logical groupings to facilitate interrelation of the several items:

Finishes which involve Architect selection of colors, textures, or patterns  
Associated items which require correlation for efficient function or for installation

Submit one reproducible transparency and two (2) opaque copies of Shop Drawings.

Submit number of copies of product data and manufacturer's instructions Contractor requires, plus three (3) copies which will be retained by Architect.

Submit number of samples specified in individual Specifications sections; if number is not indicated, submit one (1) sample.

### **RESUBMITTALS:**

Make resubmittals under procedures specified for initial submittals; identify changes made since previous submittal.

### **CONTRACTOR REVIEW:**

Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, quantities and details, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.

Coordinate submittals with requirements of Work and of Contract Documents.

Sign or initial stamped review block format, each sheet of shop drawings and product data, and each sample label to certify compliance with requirements of Contract Documents. Notify Architect in writing at time of submittal, of deviations from requirements of Contract Documents.

Do not fabricate products or begin Work which requires submittals until return of submittal with Architect's successful review.

Contractor's responsibility for errors and omissions in submittals is not relieved by Architect's review of submittals.

Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Architect's review of submittals, unless specific written acceptance of deviations is given.

**ARCHITECT REVIEW:**

Architect will review submittals for general conformance to design intent only.

Architect will review shop drawings, product data, and samples and return submittals generally within fourteen (14) days.

Submittals will be available for the Contractor in the office of the Architect upon completion of review. The Contractor shall provide return shipping or delivery of submittals if not to be obtained directly from the office of the Architect.

Architect's review comments for Shop Drawings will be shown on the returned copies. Architect's review comments for Product Data, Samples and other submittals will be shown on each copy of the submittal or provided on supplemental documents returned with the review.

**DISTRIBUTION:**

The Architect will distribute reviewed submittals to the Owner and other applicable consultants.

Duplicate, as necessary, and distribute reproductions of reviewed Shop Drawings, copies of Product Data, and Samples to job site file, Record Documents file, subcontractors, suppliers, and other entities requiring information.

**SHOP DRAWINGS:**

Present in a clear and thorough manner original drawings which illustrate the portion of the Work showing fabrication, layout, setting, or erection details, prepared by a qualified detailer.

Title each drawing with Project name and number; identify each element of drawings by reference to sheet the Drawing number and detail, schedule, or room number in the Contract Documents.

Identify field dimensions; show relation to adjacent or critical features of Work or products.

**PRODUCT DATA:**

Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification Section number. Show

reference standards, performance characteristics, and capacities; wiring and piping diagrams and controls; component parts; finishes; dimensions; and required clearances.

Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work. Delete information not applicable.

**SAMPLES:**

Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures, and patterns, for Architect selection.

Submit samples to illustrate functional characteristics of products, including parts and attachments.

Samples which may be incorporated into the Work are indicated in the Specification section.

Label each sample with for proper identification.

Provide field samples of finishes at locations acceptable to Architect, when required by Specifications section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed Work.

**END OF SECTION**



# **SECTION 01452**

## **TESTING AND INSPECTION SERVICES**

### **WORK INCLUDED**

Laboratory selection and payment.  
Laboratory duties.  
Contractor's responsibilities.

### **RELATED SECTIONS:**

Individual specifications sections contain specific tests and inspections to be performed.

### **QUALITY ASSURANCE**

Contractor shall employ and pay for services of an independent testing laboratory to perform specified testing and inspection.

Employment of Testing Laboratory shall in no way relieve Contractor of his obligations to perform work in accordance with Contract Documents.

### **LABORATORY DUTIES**

Cooperate with Architect and Contractor; provide qualified personnel after due notice.  
Perform specified inspections, sampling, and testing of materials and methods of construction:

- Comply with specified standards.

- Ascertain compliance or noncompliance of materials with requirements of Contract Documents.

Promptly notify Architect and Contractor of observed irregularities or deficiencies of Work or products.

Promptly submit written report of each test and inspection; submit copies electronically in Adobe PDF format to Architect and Contractor.

- Each report to include:

  - Date issued.

  - Project title and number.

  - Testing Laboratory name, address, and telephone number.

  - Name of Inspector and signature of individual in charge.

  - Date and time of sampling or inspection.

  - Record of temperature and weather conditions.

  - Date of test.

  - Identification of product and specification section.

  - Location of sample or test in project.

  - Type of inspection or test.

  - Results of tests and compliance or noncompliance with Contract Documents

  - Interpretation of test results when requested by Architect or Contractor.

Perform additional tests when required by Architect or Contractor.

Laboratory is not authorized to:

- Release, revoke, alter, or enlarge on requirements of Contract Documents.

Approve or accept any portion of work.  
Perform any duties of Contractor.

**CONTRACTOR'S RESPONSIBILITIES**

Cooperate with Laboratory personnel, provide access to Work, and to manufacturer's operations.

When materials require testing prior to being incorporated into Work, secure and deliver to Laboratory adequate quantities of representative samples of materials proposed to be used. Furnish copies of product test reports as required.

Furnish incidental labor and facilities:

To provide access to work to be tested.

To obtain and handle samples at site or at source of product to be tested.

To facilitate inspections and tests.

For safe storage and curing of test samples.

Notify Laboratory sufficiently in advance of operations to allow for Laboratory assignment of personnel and scheduling of tests.

END OF SECTION

# **SECTION 01560**

## **TEMPORARY SECURITY FENCING**

### **WORK INCLUDED:**

Erection, maintenance, and dismantling of temporary fencing around construction site and materials storage areas.

### **SUBMITTALS:**

Submit shop drawing indicating layout of temporary fencing, location and size of gates, existing pavement and roads, access to fire hydrants and hose connections, and other site specific conditions. Prepare drawing after consultation with Construction Manager, site observation and verification of existing conditions.

### **TEMPORARY CHAIN LINK FENCING:**

Type of temporary chain link fencing shall be Contractor's option. Following types are acceptable: New materials or previously used salvaged chain link fencing in good condition.

Posts: Galvanized steel pipe of diameter to provide rigidity. Post shall be suitable for setting in concrete footings, driving into ground, anchoring with base plates, or inserting in precast concrete blocks.

Fabric: Woven galvanized steel wire mesh. Provide in continuous lengths to be wire tied to fence posts or prefabricated into modular pipe-framed fence panels.

Gates: Provide two (2) personnel and two (2) vehicle gates to be located as directed by the Construction Manager. Fabricate of same material as used for fencing.

Vehicle gates: Provide minimum width of 20 feet to allow access for emergency vehicles. Provide gates capable of manual operation by one person.

### **LAYOUT:**

Installation of temporary fencing shall not deter or hinder access to existing and new hose connections and fire hydrants. Maintain 3 feet diameter clear space around fire hydrants. Where fire hydrant or hose connection is blocked by fencing, provide access gate.

### **INSTALLATION:**

Chain link posts: Space at 10 maximum. Drive posts, set in holes and backfill, or anchor in precast concrete blocks. For soft and unstable ground conditions, cast concrete plug around post. For posts over pavement use steel post plates or precast concrete blocks.

Gate posts: Use bracing or concrete footings to provide rigidity for accommodating size of gate.

Fabric: Securely attach to posts.

Gates: Install with necessary hardware. Provide padlockable gate hasps or heavy duty chain of sufficient length to secure gates with padlock.

**MAINTENANCE AND REMOVAL:**

Maintain fencing in good condition. If damaged, immediately repair. Remove temporary fencing upon completion of Work or when instructed by the Construction Manager . Backfill holes and compact. Patch holes in pavement to match existing paving. Repair damage caused by installation of temporary fencing to the satisfaction of the Construction Manager.

**END OF SECTION**

# **SECTION 01630**

## **PRODUCT OPTIONS AND SUBSTITUTIONS**

### **REQUIREMENTS INCLUDED:**

Contractor's options in selection of products

Products list

Requests for substitution of products

### **OPTIONS:**

#### **Products Specified by Reference Standards or by Description Only:**

Any product meeting those standards.

#### **Products Specified by Naming Manufacturer and/or Product:**

Products of manufacturers listed in the specifications are considered a minimum standard. Equivalent products of other manufacturers will be considered.

Provide sufficient information with proposed substitution request to verify equality of products, including model number, size, available colors, finishes, features, etc. as may be indicated in the Drawings or specification section referenced.

### **LIMITATIONS ON SUBSTITUTIONS:**

Requests for substitutions of products will be considered prior to Bid Date if submitted at least ten (10) days prior to Bid. The Architect will determine acceptability of substitutions, subject to the Owner's agreement to the decision.

Requests subsequent to Bid may be considered by the Architect or Owner; however, denial of requests after Bid will not be cause for increase in Contract Amount.

Substitution requests will be considered in the event of product unavailability or other conditions beyond control of Contractor.

Substitute products shall not be installed without written acceptance.

### **SUBSTITUTION REQUEST SUBMITTAL:**

Within ten (10) days prior to bid date, Bidder shall submit products which are proposed for substitution. Include pertinent data sufficient to determine equality with specified items.

Architect will reply to proposed requests in the form of written decision. Addenda indicating the substitution as accepted may be issued as well.

Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.

Identify product by Specifications section and Article numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and suppliers as appropriate.

Where colors and finishes are identified in the Contract Documents, include proposed product color and finish selections with proposed color and finish identified to compare with Project selections. Custom color and/or finish may be required for proposed equivalent products to be acceptable to the Project color and finish scheme.

State effect of substitution on construction schedule, and changes that may be required in other work or products, if any.

**CONTRACTOR REPRESENTATION:**

Request for substitution constitutes a representation that Contractor has investigated proposed product and has determined that it is equal to or superior in all respects to specified product or that the cost reduction offered (if any) is ample justification for accepting the offered substitution.

Contractor shall coordinate installation of accepted substitute products, making such changes as may be required for Work to be complete in all respects.

Contractor waives claims for additional costs related to substitution which may later become apparent.

**WARRANTY:**

Contractor shall provide same warranty for substitution as for specified product, unless otherwise specifically noted and high-lighted on request. Lesser warranty may be cause for request denial.

**SUBMITTAL PROCEDURES:**

Submit written request for substitution.

Architect will review Contractor's requests for substitutions with reasonable promptness.

Architect will notify Bidders, in Addendum, of decision to accept requested substitution prior to Bid Date, as appropriate.

**SUBSTITUTION REQUESTS SUBMITTED AFTER CONTRACT EXECUTION:**

Substitution requests submitted subsequent to contract execution will be reviewed or rejected at the discretion of the Architect and the Owner. If the Architect and Owner agree to review such substitution requests, the Construction Manager/Contractor shall implement the requested substitution per the review. Review or rejection of such requests shall not be justification for increase of contract amount.

**END OF SECTION**

## **SECTION 02640**

### **PAVEMENT JOINT SEALERS**

#### **WORK INCLUDED:**

Pavement sealant for concrete paving, walks, curbs, and gutters

#### **JOINT SEALANT:**

Cold-poured joint sealant, polyurethane two-part, conforming to FS-TT-S-000227E, Class A, Type I (self-leveling) and ASTM-920.

Color: gray.

Acceptable products:

Pecora NR-200,  
Sonneborn-Contech,  
Sonolastic Paving Joint Sealant,  
Tremco, THC-900/90.

Substitutions: Permitted under provisions of Section 01630

#### **INSTALLATION OF JOINT SEALANT:**

Seal expansion joints and paving control joints with joint sealant with primer and backer rod as recommended by manufacturer.

**END OF SECTION**



# **SECTION 02785**

## **CONCRETE AND CLAY PAVERS**

### **WORK INCLUDED:**

Concrete pavers mortar set with concrete base preparation

Clay pavers on sand bed with sand joints with concrete base preparation

### **CONCRETE PAVERS:**

Manufacturers: Acceptable manufacturers include  
Pavestone

Concrete Pavers: CityLock Series, 4x4x16, colors and mix as indicated on the Drawings.

Substitutions: Permitted under provisions of Section 01630.

### **BONDING AGENT:**

Provide Bonding Agent as recommended by the paver manufacturer.

### **MORTAR MATERIALS:**

#### Mortar:

Laticrete 254 Platinum, polymer fortified, thin-set mortar

Water: Potable.

Mixing: Thoroughly mix mortar and water in quantities needed for immediate use. Do not use anti-freeze compounds to lower freezing point of mortar.

Color: as indicated on the Drawings

### **GROUT MATERIALS:**

#### Grout:

Laticrete MVIS Pointing Mortar, factory prepared.

Water: Potable.

Mixing: Thoroughly mix grout and water in quantities needed for immediate use. Do not use anti-freeze compounds to lower freezing point of mortar.

Color: as indicated on the Drawings

### **CLAY PAVERS:**

#### Manufacturers:

Acceptable manufacturers include  
Belgard,

Belden  
Acme.

Clay Pavers: ASTM C-902 Clay Paver, 4x8x2-1/4, colors and mix as indicated on the Drawings.

Sand:

Bedding Sand (Cushion Material): ASTM C 33- Specification for Concrete aggregates.

Jointing Sand: washed mason sand smaller than the bedding course material and graded to the limits of ASTM C 144-Aggregates for Masonry Mortar

**ACCESSORIES:**

Cleaner: Nonacid cleaner as recommended by the paver manufacturer.

**PREPARATION:**

Establish and maintain lines, levels, and coursing. Protect from disturbance. Obtain items from other Sections of Work as necessary for building into Concrete Paver Work. Verify correct installation and location of built-in items with Section of Work furnishing the item.

**SUBSTRATE PREPARATION:**

Thoroughly clean concrete substrates to eliminate oils, release agents, dirt and other contaminants which may prevent proper bonding of paver work.

Apply bonding agent on concrete substrates after cleaning, if recommended by the mortar manufacturer.

Apply nominal 1/2" thick scratch coat. Scratch or roughen finish.

**CONCRETE PAVER INSTALLATION:**

Install mortar, pavers and grout in accordance with manufacturer's instructions. Mortar and place pavers plumb and true to lines and levels indicated. Lay in pattern bond as indicated. Install accessory pieces as work progresses, using same techniques as units in paver field. Plan work to minimize jobsite cutting. Perform necessary cutting with proper tools to provide uniform edges; take care to prevent breaking unit corners or edges. Do not install units with cracked, chipped or otherwise damaged faces, corners or edges. Remove excess mortar; do not allow mortar to dry on face of units. Cut and shape pavers accurately with proper tools designed for intended purpose to provide straight unchipped edges. Do not expose cut edges in finished Work.

Clean and finish joints in accordance with manufacturer's instructions. Grout joints solid. Tool joints concave unless otherwise indicated.

**PROTECTION OF INCOMPLETE WORK:**

During erection, cover pavers with strong waterproof membrane at end of Work each day. Cover partially completed paver installation when Work is not in progress. Extend cover minimum of 24" beyond sides, and hold cover securely in place.

**JOINING WORK:**

Where fresh paver work joins partially set work remove loose pavers and mortar before proceeding with new Work. Stop off horizontal runs by racking back normal bond unit in each course. Tothing will not be permitted.

**BUILT-IN WORK:**

As Work progresses, build-in accessories as required to be installed in Paver Work. Build-in items plumb and level. Do not build-in organic materials subject to deterioration.

**CUTTING AND FITTING:**

Cut and fit pavers as necessary. Cooperate with other sections of Work to provide correct size, shape, and location. Obtain approval of Architect prior to cutting or fitting areas not indicated or where appearance or strength of Work may be impaired.

**PATCHING AND POINTING:**

Cut out defective joints and holes in exposed Paver Work; reset with mortar as necessary and repoint with grout.

**CLEANING:**

Remove excess mortar, grout and smears. Perform initial cleaning with stiff brushes and water. Use non-metallic tools and manual brushing in cleaning operations. Use of high pressure sprayer or other method which significantly adds water to Paver Work is prohibited.

**CLAY PAVER INSTALLATION:**

Spread bedding sand over base and screed to 1" thickness. Lay pavers in pattern bond as indicated. Maintain straight lines. Install monogrammed pavers furnished by the Owner. Install accessory pieces as work progresses, using same techniques as units in paver field. Fill out area with cut pavers along edge restraints and interruptions Plan work to minimize jobsite cutting. Perform necessary cutting with proper tools to provide uniform edges; take care to prevent breaking unit corners or edges. Do not install units with cracked, chipped or otherwise damaged faces, corners or edges. Cut and shape pavers accurately with proper tools designed for intended purpose to provide straight unchipped edges. Do not expose cut edges in finished Work. Vibrate the brick pavers into the sand using a plate vibrator equipped with a rubber plate or roller feet to avoid chipping the pavers. After the first pass of the plate vibrator, sweep mortar sand into the joints and vibrate again. Repeat the process until the joints are full. Do not vibrate within two feet of all unrestrained edges. Sweep excess sand off pavement.

**END OF SECTION**



# **SECTION 03200**

## **CONCRETE REINFORCEMENT**

### **SCOPE:**

Fabrication and placement of deformed reinforcing steel, welded wire fabric and accessories.

### **QUALITY ASSURANCE:**

#### Reference Standards:

ACI 301 - Specifications for Structural Concrete for Buildings

ACI 318 - Building Code Requirements for Reinforced Concrete

ASTM A615 - Specifications for Deformed Billet Steel Bars for Concrete

ASTM A185 - Specifications for Welded Steel Wire Fabric for Concrete Reinforcement

Concrete Reinforcing Steel Institute, Manual of Standard Practice

American Welding Society Standards (AWS D12.1)

### **ALLOWABLE TOLERANCES:**

#### Fabricating:

Sheared Length: +/-1"

Stirrups and Ties: +/-1/2"

All Other Bends: +/-1"

#### Placing:

Concrete Cover to Formed Surfaces: +/-1/4"

Minimum Spacing Between Bars: +/-1/4"

#### Top Bars in Slabs and Beams:

Members 8" deep or less: +/-1/4"

Members more than 8" but not over 2'-0" deep: +/-1/2"

Members more than 2'-0" deep: +/-1"

Crosswise of members: Space evenly within 1" of stated separation

Lengthwise of members: +/-1"

Maximum bar relocation to avoid interference with other reinforcing steel, conduits, or other embedded item: 1 bar diameter

### **REINFORCING BARS:**

ASTM A615, deformed billet steel bars, domestic manufacture.

Grade 60: Use for bars larger than No. 3, unless shown otherwise.

Grade 40: Use for No. 3 bars

Weldable ASTM A706: Use for bars welded to steel members.

**STEEL WIRE:**

ASTM A82, minimum 16 gage annealed wire, galvanized.

**WELDED WIRE FABRIC REINFORCING (WWF):**

ASTM A185, domestic manufacture, steel wire spot welded at intersections, size indicated. Furnish in flat sheets, not rolls.

**COLUMN AND PIER SPIRALS:**

Plain cold-drawn wire, ASTM A82; or hot-rolled rods for spirals, ASTM A615.

**SUPPORTS FOR REINFORCEMENT:**

Bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcement in place. Use wire bar type supports complying with CRSI recommendations. Do not use plastic, wood, brick, or other unacceptable materials.

For slabs on grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with either hot-dip galvanized, plastic protected, or stainless steel protected legs.

Over waterproof membranes, use precast concrete block or 1/2" asphalt saturated boards and bar supports to prevent penetration of membrane.

**METAL ACCESSORIES:**

Support bars in forms and space with the accessories meeting the requirements of the ACI 315.

**TIE WIRE:**

FS QQ-W-461, black annealed steel, 16 gage minimum

**FABRICATION:**

Fabricate in accordance with CRSI "Manual of Standard Practice". Form to dimensions and bends shown. Use cold forming methods that will not injure the material. Heating of reinforcing will not be permitted. Do not splice at points of maximum stress, do not splice adjacent bars at the same point. When several bars are spliced, stagger laps.

**PREPARATION:**

Cleaning: Before placing in work, thoroughly clean reinforcement of loose rust, mill, scale, dirt, oil, and other coatings which might tend to reduce bonding. Reinspect reinforcing left protruding for future bonding, or following delay in Work, and reclean if necessary.

**INSTALLATION:**

Bar Placement: Place in accordance with ACI 301, ACI 318 and CRSI "Manual of Standard Practice".

Bending: Bend bars cold; do not heat reinforcing or bend by make-shift methods. Discard bent, kinked or otherwise damaged bars.

Splices: Class "B" splices in accordance with ACI 301.

Placing: Accurately position reinforcement; securely saddle tie at intersections. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.

Wire Fabric Placement: Install in longest practicable length. Do not make end laps midway between supporting beams, or directly over beams of continuous structures. Offset end laps in adjacent widths to prevent continuous lap. Keep wire in proper position during concrete placement.

Supports: Support bars in accordance with ACI 301 for number, type, spacing and placing.

Provide sufficient number of supports and of strength to carry reinforcement. Do not place reinforcement bars more than 2" beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.

Built-In Items: Place and fasten inserts, sleeves, ties, hangers, anchors, bolts, frames, structural steel members, etc, required to secure work of other trades to concrete work. Maintain in proper positions during the placement operations.

Welding: Comply with the requirements of AWS D12.1 for field welding. Prior to field welding, determine the weldability of reinforcing bars by laboratory chemical analysis of steel. Only steel conforming to the chemical requirements specified in AWS D12.1 may be welded.

**CLEANING:**

Dispose of excess materials and debris away from site.

**END OF SECTION**



# **SECTION 03300**

## **CAST-IN-PLACE CONCRETE**

### **WORK INCLUDED**

Cast-in-place concrete for foundations, slabs on grade, sidewalks  
Integrally colored concrete.

### **RELATED SECTIONS:**

Section 03200 Concrete Reinforcing Steel  
Section 03350 Special Concrete Finishes

### **REFERENCES**

American Concrete Institute (ACI):

- 301 - Structural Concrete for Buildings.
- 305R - Hot Weather Concreting.
- 306R - Cold Weather Concreting.
- 308 - Standard Practice for Curing Concrete.
- 318 - Building Code Requirements for Structural Concrete.

ASTM International (ASTM):

- C31 - Standard Test Method for Method of Making and Curing Concrete Test Specimens in the Field.
- C33 - Standard Specification for Concrete Aggregates.
- C39 - Standard Test Method for Test Method for Compressive Strength of Cylindrical Concrete Specimens.
- C94 - Standard Specification for Ready-Mixed Concrete.
- C143 - Standard Test Method for Slump of Portland Cement Concrete.
- C150 - Standard Specification for Portland Cement.
- C171 - Standard Specification for Sheet Materials for Curing Concrete.
- C172 - Standard Test Method for Method of Sampling Freshly Mixed Concrete.
- C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
- C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
- C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
- C494 - Standard Specification for Chemical Admixtures for Concrete.
- C618 - Standard Specification for Fly Ash and Raw or Calcined Natural Pozzolans for Use as a Mineral Admixture in Portland Cement Concrete.

### **SUBMITTALS**

#### **Submittals for Review:**

Concrete Mix Designs: Include:  
Proportions of cement, fine and coarse aggregates, and water.

Combined aggregate gradation.  
Water/cement ratio, design strength, slump, and air content.  
Type of cement and aggregates.  
Type and proportion of admixtures.  
Special requirements for pumping.

## **QUALITY ASSURANCE**

Concrete Mix Design: In accordance with ACI 301, Method 1 or 2.

## **DELIVERY, STORAGE AND HANDLING**

Mix and deliver concrete to project ready mixed in accordance with ASTM C94.  
Schedule delivery so that pours will not be interrupted for over 15 minutes.  
Place concrete on site within 90 minutes after proportioning materials at batch plant.

## **PROJECT CONDITIONS**

**Cold Weather Placement** - Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Comply with ACI 306R and following requirements:

Air temperature at or expected to fall below 40 degrees F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F and not more than 80 degrees F at point of placement.

Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

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

**Hot Weather Placement** - Place concrete in accordance with ACI 305R and following requirements:

Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F. Use chilled mixing water or chopped ice if water equivalent of ice is calculated in total amount of mixing water.

If required, cover reinforcing steel with water soaked burlap so that steel temperature will not exceed ambient air temperature.

Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.  
Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions.

## **MATERIALS**

Portland Cement: ASTM C150, Type I or III, gray color.

Aggregates:

Fine: ASTM C33, clean, hard, durable, uncoated natural sand, free from silt, loam, and clay.

Coarse: ASTM C33, clean, hard, durable, uncoated crushed stone, maximum size No. [467,] [\_\_,] Table No. 2.

Lightweight: ASTM C330, expanded shale or clay produced by rotary kiln method.

Fly Ash: ASTM C618, maximum 2 percent loss on ignition.

## **ACCESSORIES**

Water: Clean and potable.

Vapor Barrier: Polyethylene sheet not less than 15 mils (0.15m) thick.

### **Admixtures:**

Water reducing or water reducing/set retarding: ASTM C494, Type A or D.

Air entraining: ASTM C260.

Expansion Joint Filler: ASTM D1752, non asphaltic type.

Bonding Agent: Two component modified epoxy resin.

Curing Paper: ASTM C171, waterproof paper or polyethylene film.

## **MIXES**

Proportions: In accordance with ACI 301.

Design concrete to yield characteristics indicated on Drawings.

Air Entrained Concrete: Provide air entraining admixture to produce 5 to 7 percent air by volume of concrete.

Use accelerating admixture in cold weather only when approved by Architect. Use of admixtures will not reduce cold weather placement requirements.

## **PREPARATION**

Notify Testing Laboratory minimum 24 hours prior to placing concrete.

Accurately position anchor bolts, sleeves, conduit, inserts, and accessories. Do not cut reinforcing steel to facilitate installation of inserts or accessories.

Remove water and debris from forms and excavations.

Close openings left in forms for cleaning and inspection.

Prepare previously placed [and existing] concrete surfaces by cleaning with steel wire brush and applying bonding agent in accordance with manufacturer's instructions.

Where new concrete is doweled to existing, drill holes in existing concrete, insert steel dowels, and pack holes solid with non shrink grout.

### **VAPOR BARRIER:**

Place under floor slabs on grade prior to placing reinforcing. Lap joints min. 6", with top lap in direction concrete will be spread. Seal joints using manufacturer's recommended tape.

Stagger laps of each layer.

Cut to fit around projections through slab; tape around penetrations.

Protect vapor barrier from rupture during reinforcing and concreting operations

### **PLACEMENT OF CONCRETE**

Place concrete in accordance with ACI 301 and ACI 318.

Ensure reinforcement, inserts, and embedded parts are not disturbed during concrete placement.

Deposit concrete as nearly as possible in its final position to minimize handling and flowing.

Place concrete continuously between predetermined expansion, control, and construction joints.

Do not place partially hardened, contaminated, or retempered concrete.

Do not allow concrete to free fall over 5 feet; provide tremies, chutes, or other means of conveyance.

Consolidate concrete with mechanical vibrating equipment. Hand compact in corners and angles of forms.

Screed slabs level, to flatness tolerance of 1/8 inch in 10 feet.

### **Control Joints:**

Provide control joints in slabs-on-grade to form panels or patterns as indicated. Make joint by cutting a slot 1/8" wide x depth equal to 1/4 slab thickness while concrete is "green" or as soon as possible without damage to the slab surface

### **MONOLITHIC SLAB FINISHES:**

Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive mortar setting beds. After placing slabs, plane the surface to a tolerance not exceeding 1/4" in 10 ft. when tested with a 10 ft. straight edge. After leveling, roughen the surface before the final set with stiff brushes, broom or raked.

Refer to Section 03350 for special concrete finishes.

### **PROTECTION**

Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

Provide artificial heat to maintain temperature of concrete above minimum specified temperature for duration of curing period.  
Keep forms sufficiently wet to prevent cracking of concrete or loosening of form joints.

## **CURING**

Start initial curing as soon as free moisture has disappeared from the concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 72 hours.

Cure concrete in accordance with ACI 308:

Horizontal surfaces:

Surfaces to receive special finishes or setting beds: Use moisture retaining cover method.

**Moisture-Cover Curing:** Cover the concrete surfaces with the moisture-retaining cover for curing concrete, placed in the widest practicable width with sides and ends lapped at least 2" and sealed by waterproofing tape or adhesive. Immediately repair any holes or tears during the curing period using cover material and waterproof tape.

When the atmospheric temperature is 80° F and above, or during other climatic conditions which will cause too rapid drying of the concrete, make arrangements before the start of concrete placing for the installation of wind breaks or shading, and for fog spraying, wet sprinkling, or moisture-retaining covering. Protect the concrete continuously for the concrete curing period. Provide hot weather protections complying with the requirements of ACI 305

## **CLEANING**

Remove efflorescence, stains, oil, grease, and foreign materials from exposed surfaces.

## **FIELD QUALITY CONTROL**

### **Testing and Inspection Services:**

Certify each delivery ticket.

Record time at which concrete was discharged from truck.

Monitor and record amount of water and water reducing admixture added to concrete at project site. Refer to Notes on Sheet S0.1

Determine ambient temperature and temperature of concrete sample for each set of test cylinders.

Test cylinders:

Make test cylinders in accordance with ASTM C172; one set of 5 cylinders for each 50 cubic yards placed in any one day, for each different class of concrete.

Mold and cure cylinders in accordance with ASTM C31; test cylinders in accordance with ASTM C39; one at 7 days and two at 28 days.

Slump tests: Make slump tests at beginning of each day's placement and for each set of test cylinders in accordance with ASTM C143.

Air content: Determine total air content of air entrained concrete for each strength test in accordance with ASTM C231.

END OF SECTION

# **SECTION 03350**

## **SPECIAL CONCRETE FINISHES**

### **SECTION INCLUDES:**

Finishing concrete slabs and formed surfaces.  
Concrete sealer/hardener.  
Integrally colored sandblasted concrete finish.  
Integrally colored rock salt finished concrete

### **RELATED SECTIONS:**

Section 03300 - Cast-In-Place Concrete.

### **REFERENCES**

American Concrete Institute (ACI)  
301 - Structural Concrete for Buildings.  
302.1 - Guide for Concrete Floor and Slab Construction.

### **SUBMITTALS**

Submit product data and manufacturer's instructions for:

- Color additives.
- Sealer/hardener.

Samples for Color Verification:

- Submit Colorant manufacturer's samples showing full range of colors available, indicating color additive numbers and required dosage rates.
- Submit samples of rock salt, abrasive sparkling aggregate, and colored sealants.

### **QUALITY ASSURANCE**

Installer Qualifications: Minimum 5 years experience in work of this Section.

Concrete Mix Design: Free from admixtures and additives not specifically approved by colorant manufacturer.

Mockup:

- Show: Colored concrete salt finish and colored concrete sandblasted finish.

- Size: 6 x 8 feet minimum

- Salt Finish Test Panels: ( 3) test panels, sized 2 feet x 4 feet each, with sparkling, abrasive aggregate spread at rate of ¼ lb per square foot, and rock salt spread at rates of 3 lbs, 6lbs, and 9 lbs, per 100 square feet respectively for initial pattern selection.

- Sandblasted Test Panels 3 test panels sized 2 feet x 4 feet of variable textures as follows:

- Light Blast Finish: Fine aggregate exposed with occasional exposure of coarse aggregate, maximum 1/8 inch reveal

- Medium Blast Finish: General exposure of coarse aggregate. 3/16 inch to ¼ inch reveal

- Hard Blast Finish: Significant exposure of coarse aggregate, ¼ inch to 3/8" reveal.

Sandblasted test panels shall be prepared using test stencil with same characteristics of main stencil.

Treat test panels with the specified wet-look concrete sealer.

Locate on-site where directed.

Notify Architect in advance of proposed mock-up construction. Obtain mock-up acceptance from Architect and Owner prior to starting Project concrete. Demolish and reconstruct mock-up as necessary for acceptance.

Maintain approved mock-up and use as standard for the aesthetic quality of the surface finish.

Approved mockup may not remain as part of the Work. Remove mock-up when directed.

### **PRE-INSTALLATION CONFERENCE:**

Convene at site one week prior to beginning work of this Section.

Attendance: Architect, General Contractor, concrete subcontractor, Owner's representative, Ready-Mix representative and related trades.

Review and discuss Contract Documents, project conditions, scheduling, curing, finishing, map layout, and other matters affecting application.

### **PROJECT CONDITIONS**

Colored Concrete Environmental Requirements:

Schedule placement to minimize exposure to wind and hot sun before curing method is begun.

Avoid placing concrete if rain, snow, or frost is forecast within 24 hours. Protect fresh concrete from moisture and freezing.

### **DELIVERY, STORAGE AND HANDLING:**

Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage, mixing with other components and application.

Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

### **MIXES**

Color Additives: Mix in accordance with manufacturer's instructions. Mix until color additives are uniformly dispersed throughout mixture and disintegrating bags, if used, have disintegrated.

Match colors selected.

Dosage rate of color additive shall not exceed 10 percent of weight of cementitious materials in mix.

### **MANUFACTURERS**

Acceptable Manufacturers - Concrete Colorants:

BASF Corporation. [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com)

Davis Colors. [www.daviscolors.com](http://www.daviscolors.com)

L.M. Scofield Co., Inc. [www.scofield.com](http://www.scofield.com)

Solomon Colors. [www.solomoncolors.com](http://www.solomoncolors.com)

#### Acceptable Manufacturers - Concrete Sealers:

BASF Corporation. [www.buildingsystems.basf.com](http://www.buildingsystems.basf.com)  
Dayton Superior Corporation. [www.daytonsuperior.com](http://www.daytonsuperior.com)  
Euclid Chemical Company, [www.euclidchemical.com](http://www.euclidchemical.com)  
W. R. Meadows, Inc. [www.wrmeadows.com](http://www.wrmeadows.com)  
L.M. Scofield, [www.scofield.com](http://www.scofield.com)  
H&C Decorative Concrete Products, [www.hcconcrete.com](http://www.hcconcrete.com)

Substitutions: Under provisions of Section 01630

#### **MATERIALS**

Rock Salt: Coarse rock salt, 1/8" to 3/8". Sifted to remove all materials smaller than 1/8

#### **Aggregates:**

Gap graded aggregate: 3/8" and less, 3/4 inch to 1-1/2 inch, sand, 25-30%.

Abrasive, Sparkling Aggregate: Black silicon carbide grains

#### **Coloring Admixture:**

Coloring admixture shall conform to the requirements of ASTM C 979/C 979M and ACI 303.1.

Liquid Coloring Admixture: MasterColor by BASF Corporation

#### **Concrete Sealer**

Rock salt finished concrete: Water-based siloxane/silane penetrating water repellent sealer: Barracade WB 244 by Euclid Chemical Company

Sandblasted finished concrete: Clear, water-based, wet-look sealer: Clarishield by H&C Concrete.

#### **Blasting Abrasives**

Abrasive type and gradations will be selected by the sand blasting contractor to achieve the desired finish.

Abrasives must be free of foreign matter. Fine particles shall be no smaller than those retained on a #40 mesh screen.

Stencil material: Self-adhesive rubber mats of size, thickness, and durability as recommended by the stencil manufacturer to achieve the desired finish. Graphics shown on the plans will be made available for the template manufacturer's use.

#### **FINISHING OF COLORED CONCRETE**

**Trowel:** Use steel trowel to produce a smooth, dense surface. Do not over-trowel or start troweling late.

**Rock Salt:** Trowel concrete. Uniformly spread carbide grains over surface and lightly trowel to embed in surface, then spread salt evenly onto concrete at rate selected and press into surface leaving only tops of salt grains exposed. After 24 hours, thoroughly wash salt away with water and brush. Allow surface and impressions to dry before applying sealing compound.

**Sandblast:**

Methods of abrasive blasting finishes to be carried out by the generally accepted methods of the trade by qualified tradesmen and equipment.

Allow concrete to cure to sufficient strength that it will not be damaged by blasting but not less than seven days.

Mask and protect existing adjacent finishes from damage.

Apply stencils and sandblasting surfaces to remove cement mortar from surface to depth selected and expose aggregate.

**Cleanup**

Wash down sandblasted surfaces to remove residue material.

Remove equipment, masking materials, and residue and leave area broom clean

**Sealers**

Apply sealers in accordance with manufacturer's instructions.

Apply penetrating sealer to salt finished concrete.

Apply wet-look sealer to sandblasted finished concrete.

**FINISHING WALK AND RAMP SURFACES**

Finish concrete surfaces in accordance with ACI 301.

Steel trowel and broom finish surfaces unless otherwise indicated.

Steel trowel and cross-rake ramp surfaces.

END OF SECTION

# **SECTION 04100**

## **MASONRY MORTAR AND GROUT**

### **WORK INCLUDED:**

Mortar for bed-set, load bearing and non-load bearing masonry, pre-blended  
Grout for load bearing and non-load bearing masonry, pre-blended

### **QUALITY ASSURANCE:**

Conform to applicable ASTM Standards:

Standard Specification for Mortar for Unit Masonry: ASTM C270

Standard Specification for Preblended Dry Mortar Mix for Unit Masonry: ASTM C1714

Standard Specification for Grout for Masonry: ASTM C476

### **MORTAR AND GROUT:**

Manufacturers: Acceptable manufacturers include:

Amerimix Preblended Mortar and Grout by Oldcastle Architectural

Substitutions: Permitted under provisions of Section 01630

### **MORTAR:**

Pre-Blended Mortar Mix: Water Repellent Mortar, AMX 410 WRM with RainBloc GP, source blended cementitious materials.

Type S for load bearing masonry, exterior single wythe masonry, and masonry back-up for exterior veneers.

Water: Clean and potable.

Color: As indicated on the Drawings.

### **GROUT:**

Pre-Blended Grout Mix: AMX 600 CG, coarse grout or AMX 600 FG, fine grout; source blended cementitious materials. Provide slump of 8" to 11" and 3000 psi compressive strength, unless otherwise indicated on Structural Drawings and Specifications.

Water: Clean and potable.

### **MORTAR MIXING:**

Thoroughly mix pre-blended mortar in quantities needed for immediate use in accordance with manufacturer's instructions. Only add as much water as necessary to produce workable consistency or meet required slump. Do not use anti-freeze compounds to lower the freezing point of mortar. If water is lost by evaporation, do not re-temper. Do not use mortar or grout after it has begun initial set. Mix color pigmentation per manufacturer's instructions. Do not retemper pigmented mortar.

**GROUT MIXING:**

Thoroughly mix pre-blended grout in quantities needed for immediate use in accordance with manufacturer's instructions. Only add as much water as necessary to produce workable consistency or meet required slump. Do not use anti-freeze compounds to lower the freezing point of grout. Re-temper grout by adding additional mixing water only to replace water lost due to evaporation. Discard standard grout 1.5 hours after mixing.

**INSTALLATION:**

Install mortar and grout in accordance with **04200 – Unit Masonry**

**END OF SECTION**

# **SECTION 04200**

## **UNIT MASONRY**

### **WORK INCLUDED:**

Load bearing unit masonry  
    Concrete masonry units  
Weeps  
Installation of accessories

### **RELATED SECTIONS:**

Refer to **Section 04100 – Masonry Mortar and Grout** for mortar and grout.  
Refer to Section 10425 for furnishing of cast bronze plaques installed under this section.

### **SUBMITTALS:**

Submit four samples of each type of masonry unit to illustrate texture, and extremities of color range,  
    submittal of standard finish concrete masonry units is not required.  
Submit proposed control joint locations, if recommended or required in locations other than indicated on Drawings.

### **QUALITY ASSURANCE:**

Conform to applicable ASTM Standards:  
    Hollow concrete masonry units: ASTM C90  
    Solid load-bearing concrete masonry units: ASTM C145

Conform to applicable requirements of National Concrete Masonry Association for manufacture and installation of concrete masonry units.

Provide units having material composition and cross-sectional areas as required to meet building code requirements for hourly fire-resistive wall ratings where indicated.

### **ENVIRONMENTAL REQUIREMENTS:**

Hot Weather Requirements: If ambient temperature is over 95°F and/or relative humidity is less than 50%, protect from direct sun and wind exposure for min. 48 hours after installation.

Cold Weather Requirements: Maintain materials and surrounding air temperature to minimum 50° F prior to, during, and 48 hours after completion of Masonry Work.

If environmental conditions prohibit the above, conform to Cold Weather Requirements: IMIAC - Recommended Practices and Specifications for Cold Weather Masonry Construction. Do not use frozen materials or build upon frozen Work.

### **CONCRETE MASONRY UNITS:**

Manufacturers:  
Oldcastle Building Products

Substitutions: Permitted under provisions of Section 01630.

Concrete Masonry Units: Normal weight concrete units manufactured with integral polymer water repellent, hollow core units. Modular sized as indicated on Drawings. Provide special units as indicated or required, including lintels, bond beams, corners, expansion and control.

Split Face Concrete Masonry Units:

Normal weight concrete units with integral metal oxide pigments and integral polymer water repellent, hollow core units, nominal width as indicated. Provide color as selected.

### **MASONRY REINFORCEMENT AND ANCHORING DEVICES:**

Masonry Joint Reinforcement: Truss type, pre-fabricated from cold drawn steel wire per ASTM 82, hot dip galvanized per ASTM A153, with (2) 3/16 " diameter deformed longitudinal rods with 9 gage trussed cross ties butt welded, width slightly less than masonry width. Provide matching factory prefabricated units at corners and tee intersections.

Manufacturers:

Hohmann & Barnard Lox All Truss Reinforcement; Dur-O-Wa

Substitutions: Permitted under provisions of Section 01630.

### **WEEPS:**

Manufacturers:

Hohmann and Barnard, Inc

Horizontal cavity weep strip:

MTI Cavity Weep CV 5010 continuous horizontal cavity weep strip.

### **STEEL REINFORCEMENT FOR GROUTED MASONRY:**

Provide deformed steel reinforcement bars, sizes and shapes indicated. Refer to Structural Drawings and Specifications.

### **ACCESSORIES BUILT-IN BY OTHER SECTIONS:**

Supply masonry anchors and accessories to be incorporated in Work of other Sections as necessary for placement in concrete and/or substrate materials. Direct correct placement of supplied items.

### **INSPECTION:**

Verify that anchors, accessories, connections, etc are properly sized and located.

### **PREPARATION:**

Provide, erect, maintain, relocate, and remove scaffolding and staging required for masonry installation. Construct and maintain scaffolding in compliance with applicable ordinances, laws, rules and regulations. Establish and maintain lines, levels, and coursing. Protect from disturbance. Provide temporary bracing during erection of Work. Maintain in place until building structure provides permanent bracing. Obtain items from

other Sections of Work as necessary for building into Masonry Work. Verify correct installation and location of built-in items with Section of Work furnishing the item.

Steel Separation: Wrap structural steel members that are enclosed in masonry with Building Paper, lapped 8" minimum. Securely tie felt with 16 gage annealed, galvanized steel wire at 12" on centers. Do not bond masonry to structural members unless specifically noted.

Aluminum materials: Protect uncoated aluminum materials from contact with Portland cement-based products.

### **MASONRY UNITS:**

Wet masonry units prior to laying if required to reduce excessive absorption of mortar moisture by the unit. Place masonry plumb and true to lines and levels indicated. Lay in running bond unless otherwise indicated. Lay courses to standard modular dimensions for the selected units. Refer to Drawings for special coursing, projections, or other installation requirements. Do not install masonry units with cracked, chipped or otherwise damaged faces, corners or edges.

### **PLACING:**

Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints and deep or excessive furrowing of mortar joints are not permitted. Fully bond intersections, external and internal corners. Lay units with bed and head joints filled from the faces of the units to a distance in not less than the thickness of the face shell. Fully mortar webs in courses of piers, columns, pilasters and starting course on footings or foundations, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. Spread out full mortar bed, including areas under cells, for starting course on footings where cells are not to be grouted. Align vertical cells to be filled or grouted and maintain openings unobstructed. Fill cells in below grade masonry with grout.

Do not shift or tap masonry units after mortar has taken initial set. Where adjustment must be made, remove mortar and replace. Immediately remove excess mortar from exposed surfaces and from cavities. Cut masonry accurately with proper tools designed for intended purpose to provide straight unchipped edges. Do not expose cut edges in finished Work.

### **MASONRY REINFORCEMENT AND ANCHORING DEVICES:**

#### Horizontal reinforcement:

For 6" and above nominal width concrete masonry: Install horizontal joint reinforcement at 16" on centers typically and 8" on centers at intersections of walls. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend 16" minimum each side of opening and along each wall at intersections. Place joint reinforcement continuous in first and second joint below top of walls. Lap joint reinforcement ends minimum 6".

### **PLACING STEEL REINFORCEMENT:**

Place reinforcing bars supported and secured against displacement. Maintain position within 1/2" of true dimension. Lap reinforcing splices minimum 36 bar diameters, unless otherwise indicated by Structural Drawings or Specifications.

### **GROUTED COMPONENTS:**

Provide grouted reinforced masonry as indicated, including filled cells, lintels, bond beams and pilasters; refer to Structural Drawings and Specifications.

Maintain cavities to be filled free from materials that may decompose over time, such as wood, foam, paper, or organic material. Clean areas of contact with grout free from loose debris, oil, and paint.

Place and consolidate grout fill without voids and without disturbing reinforcing; fill masonry cores at bond beam and lintel bearing points with grout, a minimum of 12" beyond openings.

### **BUILT-IN WORK:**

As Work progresses, build-in anchor bolts, plates, and other accessories as required to be installed in Masonry Work. Build-in items plumb and level. Bed anchors of metal door and glazed frames in mortar joints. Fill frame voids solid with mortar. Do not build-in organic materials subject to deterioration.

### **JOINT TOOLING:**

Maintain courses accurate and level with evenly spaced 3/8 inch joints. Make vertical and horizontal joints equal, of uniform thickness, tightly tucked. Form concave tooled mortar joints on exposed work and strike flush joints on work to receive subsequent wall covering, unless noted otherwise. Strike mortar joints flush where resilient base is scheduled, or where other adhesive-backed materials are to be applied. Use tool with large enough radius that mortar is not raked from joint.

### **MASONRY CONTROL JOINTS:**

#### Control joints:

Provide 3/8" wide open vertical masonry control joints as indicated and not to exceed any of the following spacing:

Maximum of 24 feet on centers

Maximum of 1.5 times the wall height

Maximum of 6 feet from corners

Minimum of 12 inches from opening jambs with loose lintels.

Notify the Architect for resolution of discrepancies if conflicts exist between drawings and spacing listed above.

Provide 3/8" open horizontal masonry control joints immediately below fixed lintels attached to building structural elements and other locations where indicated.

#### Expansion joints:

Provide expansion joints in masonry where indicated.

Sealant:

Refer to **Section 07900 – Joint Sealers** for installation of sealant in expansion and control joints.

**PROTECTION OF INCOMPLETE WORK:**

During erection, cover top of wall with strong waterproof membrane at end of Work each day. Cover partially completed walls when Work is not in progress. Extend cover minimum of 24" down both sides, and hold cover securely in place.

**JOINING WORK:**

Where fresh masonry joins partially set masonry remove loose masonry and mortar before proceeding with new Work. Stop off horizontal runs by racking back normal bond unit in each course. Tothing will not be permitted.

**TOLERANCES:**

Maintain the following tolerances in Masonry Work:

Alignment of Columns: Maximum 1/4 inch from true line.

Variation from Unit to Adjacent Unit: 1/32 inch maximum.

Variation from Plane of Wall: 1/4 inch in 10 feet and 3/8 inch in 20 feet, 1/2 inch maximum.

Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

Variation from Level Coursing: 1/8 inch in 3 feet; 1/4 inch in 10 feet; 1/2 inch maximum.

Variation of Joint Thickness: 1/8 inch in 3 feet.

Maximum Variation from Cross Sectional Thickness of Walls: Plus or minus 1/4 inch.

**CUTTING AND FITTING:**

Cut and fit for chases, pipes, conduit, sleeves, and grounds. Cooperate with other Sections of Work to provide correct size, shape, and location. Obtain approval of Architect prior to cutting or fitting areas not indicated or where appearance or strength of Masonry Work may be impaired.

**PATCHING AND POINTING:**

Cut out defective joints and holes in exposed masonry and repoint with mortar.

**CLEANING:**

Remove excess mortar and smears. Dry brush exposed masonry prior to the end of each day. Perform initial cleaning with stiff brushes and water. Use non-metallic tools

and manual brushing in cleaning operations. Prior to applying masonry cleaner, clean sample panel in area as directed by Architect. If acceptable, use same materials and techniques as used for sample panel for cleaning balance of masonry. Apply masonry cleaner in strict accordance with manufacturer's directions. Properly protect adjacent surfaces. Pre-wet masonry prior to applying cleaner. Thoroughly rinse surfaces with clean water after completion of cleaning and remove cleaning solution. Use of high pressure sprayer or other method which significantly adds water to masonry is prohibited.

**PROTECTION:**

Maintain protective boards at exposed external corners which may be damaged by construction activities. Provide protection without damaging completed work.

**END OF SECTION**

# **SECTION 05500**

## **METAL FABRICATIONS**

### **GENERAL:**

Miscellaneous metal work generally fabricated from steel shapes  
Steel pipe handrails and accessories

### **MATERIALS:**

#### Steel shapes:

Conform to ASTM Designation A36; 36,000 pounds per square inch tensile strength. Use materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness for items exposed to view.

#### Fasteners:

Provide standard bolts and nuts conforming to ASTM A307, Grade A hexagonal head.

### **HANDRAILS:**

#### Materials:

Steel pipe or tube, standard grade, sizes indicated. Provide fabricated elbows, bends, and terminations with smooth transitions for connections and turns in rails. Mitered connections will not be acceptable. Tee intersections may be coped.

Post brackets: Wagner R140 steel weld-on 5/8" diameter bracket arm with S101 steel saddle

### **FABRICATION:**

Form metal work to shape and size with sharp lines, angles and arrises. Shearing and punching shall leave clean, true lines and surfaces.

Use welds for permanent connections where possible. Tack weldings are prohibited on exposed surfaces. Grind smooth, fill and dress welds exposed to view. Grind welds to be flush with adjacent surfaces and with smooth radius transitions. Fill pits and depressions with automobile body filler. Ease sharp edges to smooth even radius. Dress smooth to provide invisible welded fastening after applied finish.

Thickness of metal, details of metal, details of assembly and support shall give ample strength and stiffness for intended purpose. Include supplementary parts necessary to complete each item.

Fit and shop assemble components in largest practical sections, for delivery to site. Fabricate components with joints tightly fitted and secured. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

Accurately form components required for anchorage of railings to each other and to structure.

finish. Provide necessary protection against galvanic reaction between aluminum skate deterrents and steel railings.

**RAIL JOINTING:**

Provide 8" minimum length internally sleeved pipe joint for joining railing sections in the field. Permanently affix pipe sleeve to one of the sections. Allow slip joint to the adjacent section. Provide field joints centered between posts. Finish pipe sleeve to match railing.

**GALVANIZING:**

Provide Galvanized coating on ferrous metal exposed to exterior or concrete (other than reinforcing steel) and other locations as indicated. Galvanized units shall be fabricated into the largest practical section before galvanizing. Steel shapes and other minor assemblies shall be hot dip galvanized in accordance with ASTM A123. Small steel shapes, sheet articles and rough hardware (bolts, nuts, washers, etc) shall be hot dip galvanized in accordance with ASTM A386 for assembled steel products.

Coat welds, grinds and other damages to galvanized areas with Sherwin-Williams Zinc Clad II inorganic zinc-rich coating. Prepare as recommended by the manufacturer.

**POLYESTER POWDER COATING:**

Provide railings and accessories with electrostatically applied colored polyester powder coating heat cured to chemically bond finish to metal substrate.

Minimum hardness measured in accordance with ASTM D3363: 2h.

Direct impact resistance tested in accordance with ASTM D2794: withstand 160 inch-pounds.

Salt spray resistance tested in accordance with ASTM B117: no undercutting, rusting, or blistering after 500 hours in 5 percent salt spray at 95 degrees f and 95 percent relative humidity and after 1000 hours less than 3/16 inch undercutting.

-Weatherability tested in accordance with ASTM D822: no film failure and 88 percent gloss retention after 1 year exposure in South Florida with test panels tilted at 45 degrees.

Colors: As selected.

**INSTALLATION**

Install items in accordance with reviewed submittals. Install components plumb, level, and rigid. Install sleeved components with anchoring cement.

**TOUCH-UP:**

Touch-up damaged coatings and finishes as recommended by the manufacturer. Repair minor damage to rails and accessories. Unacceptable touch-up and repair areas shall be replaced to the satisfaction of the Architect.

**END OF SECTION**

# **SECTION 10425**

## **CAST BRONZE PLAQUES**

### **SUMMARY:**

Exterior mounted cast bronze plaques

### **SUBMITTALS:**

Shop Drawings: Submit scaled shop drawings showing fabrication method, finish, anchoring methods, layout, and installation method.

### **ACCEPTABLE MANUFACTURERS:**

A.R.K Ramos Architectural Signage Systems, 1321 South Walker, Oklahoma City, OK 73109, [www.arkramos.com](http://www.arkramos.com)

Substitutions: Under provisions of Section 01630 Product Options and Substitutions.

### **CAST BRONZE PLAQUES:**

Cast bronze plaque to be installed by the Contractor with actual design and lettering for the plaque to be determined by Owner. Refer to the Drawings for plaque designs and locations.

### **INSTALLATION:**

Locate plaque units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.

Install plaques level, plumb, and at the height indicated with surfaces free from distortion or other defects in appearance.

After installation, clean soiled surfaces according to the manufacturer's instructions.

### **PROTECTION:**

Protect Work against damage until Final Acceptance. Replace, or repair to the satisfaction of the Architect, Work that becomes damaged prior to Final Acceptance.

**END OF SECTION**



# **SECTION 10750**

## **FLAGPOLES**

### **SUMMARY:**

Aluminum flagpole with external halyard  
American flag

### **FLAGPOLES:**

#### **Manufacturers:**

Flagpoles Etc.

Substitutions: Under provisions of Section 01630 Product Options and Substitutions

**Flagpole:** Aluminum, external halyard, ECH40, 8" diameter butt, 0.25" wall thickness, 150 mph wind speed rated

#### **Mounted height:**

40 feet

**Color:** satin aluminum

#### **Accessories:**

Provide manufacturer's standard accessories for a complete operational system. Provide mounting cleats and hardware for two flags. Provide standard corrugated ground sleeve with lighting spike.

#### **Flags:**

Provide one 6' x 10' American Flag – Super Duty nylon mesh, item #1237

### **INSTALLATION:**

Provide foundation and installation as recommended by flagpole manufacturer.

### **FINAL ADJUSTMENT:**

Prior to Final Acceptance date, readjust and re-lubricate as necessary. Instruct Owner's designated personnel in proper adjustments and maintenance of hardware.

### **CLEANING:**

Dispose of excess materials and debris away from site. Clean exposed surfaces using non-abrasive materials and methods recommended by manufacturer.

### **PROTECTION:**

Protect Work against damage until Final Acceptance. Replace, or repair to the satisfaction of the Architect, Work that becomes damaged prior to Final Acceptance.

## **END OF SECTION**

