

SECTION 32 13 16.15

INTECRETE® ARCHITECTURAL CONCRETE PAVING

PART 1 GENERAL

1.1 GENERAL CONDITIONS

- A. Requirements of both General Conditions and General Requirements of the Contract apply to work in this Section with same force and effect as though repeated in full herein.

1.2 SCOPE OF WORK

- A. Furnish materials, labor, transportation, services, and equipment necessary to install Intecrete® architectural concrete paving as indicated on Drawings and as specified herein.

- B. Work included in this Section:

1. Only experienced and qualified Architectural Concrete contractors are allowed to perform work specified under this Section. Acceptance will be based on acceptable similar seeded aggregate project experience, samples, and mock-ups. Installation of Intecrete® architectural concrete paving is under US Trademark #4,228,217 and is patent-pending. Specific Work will include but not be limited to following procedures:

- a. Acceptance of subgrade.
- b. Placement of formwork.
- c. Placement of reinforcing steel.
- d. Placement of concrete.
- e. Placement of Intecrete® aggregates.
- f. Finishing.
- g. Exposure of Intecrete® aggregates.
- h. Jointing.
- i. Curing.
- j. Cleaning.
- k. Sealing.
- l. Protection.
- m. Cleanup.

- C. Work related in other Sections:

1. Section 32 11 23 – Aggregate Base Courses: Subgrade preparation.

2. Section 32 13 73 – Concrete Joint Sealants: Installation of isolation joints in paving and walls.
3. Section 32 84 00 – Planting Irrigation: Coordination of irrigation sleeving.
4. Section 32 90 00 – Planting: Coordination of planting.

1.3 REFERENCES AND STANDARDS

A. American Concrete Institute (ACI):

1. ACI 117 – *“Tolerances for Concrete Construction and Materials”*.
2. ACI 302.1R-15 – *“Guide for Concrete Floor and Slab Construction”*.
3. ACI 304R-00 – *“Guide for Measuring, Mixing, Transporting and Placing Concrete”*.
4. ACI 305R-99 – *“Guide to Hot Weather Concreting”*.
5. ACI 306R-10 – *“Guide to Cold Weather Concreting”*.
6. ACI 308.1-98 – *“Standard Specification for Curing Concrete”*.
7. ACI 309R-05 – *“Guide for Consolidation of Concrete”*.
8. ACI 347-01 – *“Guide to Formwork for Concrete”*.
9. ACI 522.1-13 – *“Specification for Pervious Concrete Pavement”*.

B. American Society of Testing Materials (ASTM):

1. ASTM A615 – *“Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement”*.
2. ASTM C33 – *“Standard Specification for Concrete Aggregates”*.
3. ASTM C 39 – *“Standard Test Measurement for Compressive Strength of Cylindrical Concrete Specimens”*.
4. ASTM C94 – *“Standard Specification for Ready-Mixed Concrete”*.
5. ASTM C150 – *“Standard Specification for Portland Cement”*.
6. ASTM C172 – *“Standard Practice for Sampling Freshly Mixed Concrete”*.
7. ASTM C227 – *“Test Method for Potential Alkali-Silica Reactivity of Aggregates”*.
8. ASTM C309 – *“Standard Specifications for Liquid Membrane-Forming Compounds for Curing Concrete”*.
9. ASTM C494 – *“Standard Specification for Chemical Admixtures for Concrete”*.

10. ASTM C618 – “Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use in Concrete.
 11. ASTM C979 – “Standard Specification for Pigments For Internally Colored Concrete.
 12. ASTM C1077 – “Standard Practice for Agencies Testing Concrete and Concrete Aggregates for use in Concrete and Criteria for Testing Agency Evaluation.
 13. ASTM F609 – “Standard Test Methods for Static Slip Resistance of Footwear Sole, Heel, or Related Materials by Horizontal-Pull Slipmeter.
- C. “Concrete Mix Design, Quality Control and Specification”, Fourth Edition.
- D. “Design and Control of Concrete Mixtures”, 2013 Edition - Portland Cement Association (PCA).
- E. *Manual of Standard Practices* - Concrete Reinforcing Steel Institute (CRSI); www.global.ihs.com.
- F. United States Green Building Council (USGBC); www.usgbc.org:
1. Leadership in Energy and Environmental Design (LEED®).
 2. Green Building Rating System for New Construction and Major Renovations (NC), Version 3.0.

1.4 QUALITY ASSURANCE

- A. Regulatory Agencies:
1. Federal, State and Local laws governing this Work are hereby incorporated into and made part of this Section. When this Section calls for certain materials, workmanship, or a level of construction that exceeds level of Federal, State, or local requirements, provisions of this Section take precedence.
- B. Intecrete® Contractor Qualifications:
1. Trained and certified to install Intecrete® architectural concrete by Intecrete, LLC.
 2. Provide written evidence to indicate successful experience in installing Intecrete® architectural concrete paving, or similar, on at least (5) projects with a combined installed square footage of at least 75,000 SF with (3) projects located within a 100 mile radius of Project site.
 3. Provide documentation for (3) Intecrete® architectural concrete paving projects containing following information:

- a. (2) digital .jpg photos of each Intecrete® installation to include (1) overall photo and (1) close-up photo taken no more than 3-feet from paving surface.
 - b. Project Owner name and telephone number.
 - c. Project Architect, if any, including name and telephone number.
 - d. Project Landscape Architect, if any, including name and telephone number.
4. ACI (American Concrete Institute) Certified Personnel:
- a. *Concrete Flatwork Finisher:*
 - 1) Minimum of 1,500 hours of field experience having installed at least (5) projects containing Intecrete® architectural concrete paving.
 - 2) Must be present during important stages of concrete production such as layout, formwork, or concrete placement and finishing.
 - 3) Project must have a minimum of (1) ACI certified Concrete Flatwork Finisher at important phases of production.
 - 4) Submit verification of current ACI certification.
 - b. *Concrete Flatwork Technician:*
 - 1) Minimum of (1) ACI certified Concrete Flatwork Technician able to render technical assistance on project, if requested.
 - 2) Submit verification of current ACI certification.
- C. Ready-Mix Concrete Producer:
1. Ensure that concrete mixes have been designed by a qualified concrete batch plant using standard concrete materials.
 2. Confirm that concrete batch plant serving this Project will guarantee in writing that they will single-source their cement, fine aggregate and coarse aggregates, admixtures, and color pigments for each paving type specified on Drawings for entire duration of Project.
 3. Ready-Mix Concrete Producer to comply with ASTM C94/C94M requirements for production facilities and equipment.
 4. Ready-Mix Concrete Producer to be certified accordingly to NRMCA's "Certification of Ready mixed Concrete Production Facilities" requirements.

5. Due to potential of different concrete materials in use at different concrete batch plant even from same parent company, use of one specific concrete batch plant is required for each specific paving type indicated on Drawings.

D. Pre-Construction Meeting:

1. Attend a Pre-Construction Meeting on site organized by General Contractor or Construction Manager at last two weeks prior to beginning of Work with Owner, General Contractor, Construction Manager, Architect, Landscape Architect, and contractors that may be affected by Intecrete® Contractor's work.
2. General Contractor or Construction Manager will record and distribute relevant meeting minutes based on Pre-Construction Meeting which include decisions, directions, and agreements reached that effect Intecrete® Contractor's Work.
3. Review methods and procedures related to work of this Section, including, but not limited to:
 - a. Required testing, inspections, reviews, and procedures for approvals.
 - b. Life safety procedures.
 - c. Submittals.
 - d. Information routing protocol.
 - e. RFI's.
 - f. Required details and finishes.
 - g. Required materials, tools, and procedures.
 - h. Construction schedule and sequencing of work.
 - i. Construction details.
 - j. Coordination with other trades and site conditions.
 - k. Procedures for coping with unfavorable weather conditions.
 - l. Waste disposal.
 - m. SWWPP requirements.
 - n. Testing, inspections, reviews and procedures for approvals.
 - o. Mock-up requirements including on-site location and size.

E. Testing:

1. Owner will incur costs for required tests, inspections, and other site related procedures. Re-tests and re-inspections will be paid by Owner.

2. Concrete Testing Service:

- a. Owner will choose concrete testing agency. If not, a qualified testing agency may be suggested by Intecrete® Contractor with all related costs to be borne by Owner.
- b. Selected testing agency must meet requirements of ASTM C1077 whereas personnel conducting laboratory tests must be certified as ACI Concrete Laboratory Technician - Grade 1. Field testing to be conducted by personnel certified as ACI Concrete Field Testing Technician - Grade.
- c. Samples of materials may be taken and analyzed for conformity to this Section. If requested, furnish samples to Owner.

F. Concrete Batch Plant Tickets:

1. If requested, provide Owner with concrete batch plant tickets for each concrete load delivered. Ensure that each ticket contains mix design number, type of cement, fine and coarse aggregates, admixtures, initial mix time, initial quantity of water added, total quantity of water allowed and signature of ready-mix plant dispatcher.
2. List color additives by designating manufacturer, product number and name.

G. Inspections and Permits:

1. Owner, Construction Manager, or General Contractor will provide and incur related costs for inspections and permits required by Federal, State, and Local authorities as they apply to Intecrete® Contractor's Work.

H. Environmental Conditions:

1. Do not place concrete when ambient temperature is 35 degrees F or lower or is expected to go below that temperature within 24 hours of placement. Follow cold weather procedures in accordance with ACI 306R-88.
2. Follow hot weather procedures in accordance with ACI 305R-99. During hot weather, when air temperature is 90 degrees F or greater, reduce mixing and delivery time to a maximum of 60 minutes. Concrete deliveries made after that time may be rejected.
3. Do not place concrete during rain unless proper protection has been provided. Construct protective covers so as to be self-supporting and braced to support anticipated wind and rain loads. Provide sandbags or other physical barriers to

divert runoff from entering onto Work area.

I. Site Conditions:

1. Do not conceal Work until required tests and inspections have been performed and unconcealed Work has been approved by Owner.
2. Report major discrepancies between Drawings and actual site conditions to Owner prior to beginning Work.
3. Maintain vehicular and pedestrian traffic and provide flagmen, barricades, warning signs, and lights, as required, to facilitate adequate movement of traffic during Intecrete® concrete operations.

J. Paving Tolerances:

1. ADA (American Disabilities Act) Conditions:
 - a. Path of Travel Cross Slope: 2%.
 - b. Ramps: 8.33%.
2. Finish surface elevations: ¼-inch.
3. Slab thickness: Not more than 3/8-inch.
4. Slab flatness: Gap below 10-foot long unlevelled straightedge not to exceed 1/4-inch.
5. Lateral alignment of dowels: 1-inch.
6. Vertical alignment of dowels: 1/4-inch.

K. Alignment of dowel bar ends relative to line perpendicular to paving edge – length of steel dowel ¼-inch per 12-inches.

1. Joint spacing: 3-inches.
2. Contraction joint depth: Minimum 1/4th depth of slab.
3. Joint width: As indicated on Drawings but never more than 3/16-inch.

L. Provide proper drainage on concrete surfaces in order to minimize paving “birdbaths”. Discrepancies or omissions on Drawings and site conditions which prevent proper drainage should be brought to Owner’s attention prior to beginning Work.

M. Slip Resistance Testing:

1. Provide a finish surface slip resistance coefficient of friction equal to or greater than 0.60 for horizontal surfaces and 0.80 for accessible ramp surfaces, when

tested in accordance with ASTM F 489.

2. Owner will incur costs to have concrete samples tested, if requested for slip coefficient.

1.5 SUBMITTALS

A. Product Data:

1. Submit (1) package containing specified products and/or substitutions proposed to be installed under this Section. Include product cut sheets when available.

B. Certificates:

1. Provide certified mill test reports as to chemical and physical properties of reinforcing bars to be furnished.

C. Statement of Concrete Mix Design:

1. Submit (1) copy of Statement of Concrete Mix Design prepared by concrete batch plant servicing Project for each concrete type identified on Drawings. Statement of Concrete Mix Design to contain minimum information as follows:
 - a. Concrete mix design number.
 - b. Name, address, and telephone number of batch plant preparing Statement of Concrete Mix Design.
 - c. Date of mix design report.
 - d. Project location.
 - e. Contractor company name requesting concrete.
 - f. Integral color manufacturer, color name, and dosage rate.
 - g. Fine and coarse aggregate gradation chart.
 - h. Material weights, specific gravity, and absolute volumes.
 - i. Basis of testing such as UBC 2605 D4 or Title 24 2604 D4.
 - j. Water/cement ratio.
 - k. Admixtures including synthetic fibers.
 - l. PSI rating at 28 days.
 - m. Specific purpose of this concrete mix design such as "Paving Type 1".
 - n. Signature of testing laboratory manager.

D. Shop Drawings:

1. At Intecrete® Contractor's discretion, submit a *Paving Jointing Plan* containing following information:
 - a. Location of Intecrete® paving types as indicated on Drawings.
 - b. Locations of contraction, construction, and isolation joints.
- E. Concrete Mock-Ups:
1. Prepare on-site mock-ups as follows:
 - a. Prepare a minimum 5-foot square mock-up of each different Intecrete® paving type specified on Drawings. Label mock-ups (preferably on vertical side of mock-up) with specified paving type to facilitate mock-up review.
 - b. Construct mock-ups using identical concrete mix design, products, jointing, and methods of overall workmanship that will be employed during production.
 - c. Ensure that same crew preparing mock-ups will be responsible for production work.
 - d. Construct mock-ups in a protected location approved by Owner. Ideally mock-ups should be located as close to production work as possible to facilitate comparison review and be located in a sunny location.
 - e. Approved mock-ups will be used as standard for future production work review and assessment. Owner should be prepared to physically sign mock-up using a permanent black marker to attest Owner's approval of mock-up. Rejected mock-ups can remain on-site until removal of approved mock-ups is required.
 - f. Original 6-inch or 12-inch concrete samples, if they were prepared for this project, will not be used in future production paving review once mock-ups have been approved.
 - g. Owner will incur costs to redo mock-ups if Owner requires design changes during mock-up review. Intecrete® Contractor will incur costs to redo mock-ups if Owner rejects mock-ups due to Contractor error such as incorrect concrete mix design or unacceptable appearance.
 - h. Protect approved mock-ups from damage during course of Work.

- i. Clean mock-ups prior to Final Walkthrough for Acceptance to facilitate unencumbered comparison review by Owner between approved mock-ups and production work.
 - j. Remove mock-ups from site when directed by Owner.
- F. LEED™ Documentation:
 - 1. Submit material cost breakdowns for products used as part of this Work, submitted in format of Material Tracking Worksheets, per Division 01 - Section “Sustainable Design Requirements”.
 - 2. Submit additional materials information, i.e. recycled content, manufacturing location, etc. to complete information provided in Material Tracking.
 - 3. Worksheets where specified in this article or requested by Architect. Submit Letters of Certification, Product Cut Sheets, Material Safety Data Sheets, or other items to support information provided in Material Tracking Worksheets when requested by Architect.
 - 4. Submit Material Safety Data Sheets for applicable products. If MSDS does not show product’s Volatile Organic Compound (VOC) content, provide this information through other published product literature from manufacturer, or stated in a letter of certification (on manufacturer’s letterhead) from product manufacturer.
 - 5. LEED™ Credits:
 - a. Recycled Content Materials: (Credit MR4):
 - 1) Submit product data or other published information indicating separate percentages, by weight, of pre-consumer and post-consumer recycled content per unit of product. Also include material costs, excluding cost of installation.
 - 2) Include information on Material Tracking Worksheets.
 - b. Local/Regional Materials: (Credit MR5):
 - 1) Submit location of manufacturing facility including name, address and distance between manufacturing facility and project site.
 - 2) Provide manufacturer’s documentation indicating location where base materials were extracted, mined, quarried, harvested, etc. and distance between this location and project site. Include material costs, excluding costs of installation.
 - 3) Include information on Material Tracking Worksheets.

- G. Close-Out Documents:
1. Attic Stock:
 - a. Intecrete® Aggregate: (1) 5 gallon bucket or bag of each Intecrete® aggregate for each paving type installed. This aggregate will be useful should Intecrete® paving repairs be made in the future.
 - b. Washed Concrete Sand: (1) 5 gallon bucket of each washed concrete sand for each paving type installed. This sand will be useful should Intecrete® paving repairs be made in the future.
 - c. Cement: (1) sealed 5 gallon bucket of cement for each paving type installed. This cement will be useful should Intecrete® paving repairs be made in the future.
 2. (1) copy of each Concrete Mix Design for each Intecrete® paving type specified on Drawings. A Concrete Mix Design will assist in achieving a better concrete match should paving repairs be made in the future.
 3. Intecrete® Paving Operations and Maintenance Manual.
 4. Manufacturer's warranties.

1.6 SUBSTITUTIONS

- A. No substitution of Intecrete® proprietary procedures, materials or products as indicated in this Section will be allowed without written approval by Intecrete, LLC.

1.7 PRODUCT HANDLING

- A. Store materials, especially Intecrete® aggregates in a dry, protected location.
- B. Prior to placement, confirm that Intecrete® aggregates are of the correct manufacturer, size, color, and quality as specified on Drawings and/or as noted in approved samples.
- C. Ensure that Intecrete® aggregates prior to seeding are clean and contain no significant dust, dirt, or debris. Wash Intecrete® aggregates, as required, if deemed contaminated with dirt clods, clay particles, etc.
- D. Protect reinforcing steel, dowels, and tie wire, from rusting, deformation, staining, and moisture damage.

1.8 PROJECT CONDITIONS

- A. Keep Work area clean and in a safe and workmanlike condition so that rubbish, waste, and debris do not interfere with work of other trades.
- B. Ensure that subgrade to receive Intecrete® concrete paving is acceptable prior to beginning Work. Begin Work once unsatisfactory conditions have been rectified.

- C. Sequencing and Scheduling of Work:
 - 1. Project Trades:
 - a. Coordinate items that need to be furnished and set in place by other trades prior to beginning Work.
 - b. Contractors need to be approved by Intecrete® Contractor before allowed accessing Intecrete® Contractor's Work area.
 - c. Install embedded items or form-outs in concrete to facilitate other trades work.
 - 2. Formwork:
 - a. After paving formwork has been installed and approved by Owner, notify other trades in order to give sufficient time to complete their portion of work.

1.9 COORDINATION

- A. Notify other Project contractors performing work adjacent to or within Intecrete® Contractor's scope of work in ample time, so as to allow sufficient time for them to perform their own portion of work.
- B. Confirm that utility locations including drainlines, electrical conduit, irrigation piping, and utility box lids, have been reviewed and approved by Owner prior to placing concrete. Remedial work required to gain Owner approval to be borne by others.

1.10 SITE VERIFICATION

- A. Verify site conditions that may affect Work of this Section. Report significant discrepancies between field conditions and Drawings to Owner for resolution prior to commencing Work.

1.11 PROTECTION OF CONCRETE PAVING

- A. General Contractor or Owner will be responsible to prevent trade equipment or vehicular traffic onto finished concrete paving for entire duration of Project. This includes but not limited to manlifts, forklifts, skip loaders, bobcats, backhoes, scaffolding, pallet jacks, and scissor lifts.
- B. Pedestrian traffic should not be allowed access to finished concrete paving until 7 days after pour.
- C. Vehicular traffic should not be allowed access to finished concrete paving until 30 days after pour.

1.12 WARRANTY

- A. In addition to manufacturer's guarantees for products installed in conjunction with this Section, warrant Intecrete® architectural concrete paving for a period of (1) year from date of Substantial Completion by Owner against defects in materials, workmanship, and damage caused by Intecrete® Contractor's negligence.
- B. Intecrete® Contractor will not be held responsible for repair of damaged Intecrete® architectural concrete paving during contracted Intecrete® warranty period caused by damage outside of Intecrete® Contractor's control such damage, vandalism, or Acts of God.

PART 2 PRODUCTS

2.1 READY MIX CONCRETE

- A. Batched, mixed and transported in accordance with ASTM C94.
- B. To ensure consistency of paving color and finish, maintain a single concrete batch plant source supplier of cement and aggregates throughout duration of project.

2.2 PORTLAND CEMENT

- A. Refer to Drawings for specific cement types that may be specified.
- B. Type I, II/V, and III conforming to ASTM C150.
- C. Use same brand of cement from single source throughout duration of project for each specific Intecrete® paving type indicated on Drawings.

2.3 FLY ASH

- A. Due to variations in fly ash suppliers at any given concrete batch plant, fly ash has been known to cause color discrepancies in alternate slab pours, therefore, Intecrete® Contractor will not be held responsible to remove and replace mismatched concrete panels should fly ash be deemed a reason for color mismatch.
- B. Fly Ash conforming to ASTM C618 – Type F with low carbon content and low loss on ignition, 3 percent or less.
- C. Do not exceed 25% of total weight of cement.

2.4 FINE AGGREGATE

- A. Clean, hard, and durable washed concrete sand conforming to ASTM C33.
- B. Use same fine aggregate from single source throughout duration of Project.

2.5 COARSE AGGREGATE (Normal Weight)

- A. Clean, hard, and durable uniformly graded coarse aggregate conforming to ASTM C33.
- B. Use same coarse aggregate from single source throughout duration of Project.

- C. Refer to Paving Schedule on Drawings for sizing of coarse aggregate. Some paving types may require different coarse aggregate sizes.

2.6 WATER

- A. Clean, potable, free of deleterious materials such as oils, acids, and organic matter conforming to ASTM C94.

2.7 ADMIXTURES

A. Color Pigments:

1. Integral Liquid Color:

- a. Synthetic, color stable, non-fading, mineral oxide pigments conforming to ASTM C979.
- b. Liquid color pigments added to concrete to produce consistent, decorative color dispersion.
- c. Provide specific colors and manufacturer of pigments as indicated on Drawings. Specified pigment manufacturer may be substituted with an alternative manufacturer during as outlined in Division 1 – Substitutions.
- d. Refer to Paving Schedule on Drawings for specific color.
- e. Acceptable Manufacturers:
 - 1) HydroTint[®] by Davis Colors; www.daviscolors.com.
 - 2) Rheocolor[®] L by BASF; www.basf-admixtures.com.
 - 3) ColorFlo[®] by Solomon Colors; www.solomoncolors.com.
 - 4) Chromix[®] L by L.M. Scofield; www.scofield.com.
 - 5) Or Intecrete[®] LLC approved substitution.

2. Color Hardeners, also known as “Dust-On” dry color pigments:

- a. Dry, cementitious color pigments of high opacity conforming to ASTM C979 and typically applied to freshly-placed concrete.
- b. Acceptable Manufacturers:
 - 1) Dustone[™] Color Hardener by Pacific Concrete Images; www.pacificconcreteimages.com
 - 2) Lithochrome[®] Color Hardener by Scofield; www.scofield.com.
 - 3) Colorfull[®] Color Hardener by Admixtures; www.admixtures.biz.

- 4) Brickform Color Hardener™ by Brickform; www.brickform.com.
- 5) Floric Polytech; www.floricpolytech.com.
- 6) Or Intecrete® LLC approved substitution.

B. Set Modifiers:

1. Accelerating Set Modifiers – A non-corrosive, non-chloride admixture for placing concrete during cold weather conditions or to provide additional placement time resulting in shortened set time and increased early age PSI strength.

a. Acceptable Manufacturers:

- 1) PolarSet® by Grace Construction Products; www.na.graceconstruction.com.
- 2) Pozzolith® 122 HE by BASF; www.basf-admixtures.com.
- 3) AccelGuard AcN 200® by Euclid Chemical Company; www.euclidchemical.com.
- 4) Or Intecrete® LLC approved substitution.

2. Retarding Set Modifiers - An aqueous-based admixture designed to control concrete set times during hot weather conditions or extend concrete delivery times.

a. Acceptable Manufacturers:

- 1) Recover® by Grace Construction Products; www.na.graceconstruction.com.
- 2) Pozzolith® 122 HE by BASF; www.basf-admixtures.com.
- 3) Eucon HC® by Euclid Chemical Company; www.euclidchemical.com.
- 4) Or Intecrete® LLC approved substitution.

C. Water Reducers:

1. Conforming to ASTM C494, Type A and D added to concrete to lower concrete water content to achieve greater plasticity and PSI strength.

a. Acceptable Manufacturers:

- 1) WRDA® by Grace Construction Products; www.na.graceconstruction.com.
- 2) BASF; www.basf-admixtures.com.

- 3) Euclid Chemical Company; www.euclidchemical.com.
- 4) Or Intecrete® LLC approved substitution.

D. Shrinkage Reducers:

1. Added to concrete to reduce concrete shrinkage and curling due to evaporation.
 - a. Acceptable Manufacturers:
 - 1) Eclipse® by Grace Construction Products; www.na.graceconstruction.com.
 - 2) Eucon SRA™ by Euclid Chemical Company; www.euclidchemical.com.
 - 3) Tetraguard™ by BASF; www.basf-admixtures.com.
 - 4) Or Intecrete® LLC approved substitution.

E. Integral Waterproofers:

1. Use a waterproof admixture to reduce surface degradation when Intecrete® concrete will be installed within 5-feet of water features such as a fountain, swimming pool, etc.
 - a. Acceptable Manufacturers:
 - 1) Hycrete W1000™ by Hycrete; www.hycrete.com.
 - 2) C-2000® by Zypex; www.xypex.com.
 - 3) Penetron® by Penetron; www.penetron.com.
 - 4) Or Intecrete® LLC approved substitution.

F. Air Entrainers:

1. Air entrainment admixtures conforming to ASTM C260 added to concrete to provide freeze-thaw resistance, yield control and additional workability of surface finish.
 - a. Acceptable Manufacturers:
 - 1) Daravair by Grace Construction Products; www.na.graceconstruction.com.
 - 2) Micro-Air by Master Builders; www.masterbuilders.com.
 - 3) Euclid Chemical Company; www.euclidchemical.com.
 - 4) Or Intecrete® LLC approved substitution.

2.8 COLOR STAINS

- A. Acid-Based Stains:
 - 1. Low odor, low VOC, weather-resistant chemical-based reactive stains suitable for exterior concrete paving.
 - 2. Acceptable Manufacturers:
 - a. Lithochrome® Chemstain® Classic stains by Scofield; www.scofield.com.
 - b. Classic® Acid Stain by Classic Coating Systems; www.classiccoatingsystems.com.
 - c. Blush-Tone Acid Stain™ stains by Brickform; www.brickform.com.
 - d. Or Intecrete® approved substitution.
- B. Water-Based Stains:
 - a. Water-based stains manufactured with polymeric emulsion and colorant suitable for exterior concrete paving.
 - b. Acceptable Manufacturers:
 - 1) Color Floor stains by Smith Paint Products; www.smithpaints.com.
 - 2) SmartColor™ stains by NewLook International; www.getnewlook.com.
 - 3) Water Base Stain by Classic Coating Systems; www.classiccoatingsystems.com.
 - 4) Or Intecrete® LLC approved substitution.

2.9 PROPRIETARY INTECRETE® PRODUCTS

- A. Intecrete® architectural concrete paving system incorporates several proprietary products that include some, if not all, of following products:
 - 1. Intecrete® Aggregates:
 - a. Provided and placed on surface of concrete by Intecrete® Contractor.
 - b. Intecrete® aggregates will be supplied from same source throughout duration of Project.
 - 2. Alkali-Silica Reactivity (ASR) mitigation - Intecrete Protect LN™.
 - 3. Intecrete® aggregate exposure - Intecrete Reveal™.
 - 4. Intecrete® surface cleaner - Intecrete CleanEtch™.
 - 5. Intecrete® paving sealers for surface densification and stain reduction:

- a. Clear, invisible penetrating sealer (no surface color enhancement) - Intecrete® Clear Sealer™.
 - b. Matte finish sealer (slight surface color enhancer) - Intecrete® Matte Sealer™.
 - c. Gloss finish sealer (glossy surface color enhancer) - Intecrete® Gloss Sealer™.
6. Intecrete® Paving Densifier and Efflorescence Reducer:
- a. Densifies concrete surface and reduces efflorescence – Intecrete® Densify™.

2.10 FORMWORK

A. Straight Sections:

- 1. #2 construction grade S4S Douglas Fir minimum 1-1/2-inches thick, free of warping, loose knots, cupping, checks, bows, cracks, and other imperfections that would produce objectionable defects in finished work.
- 2. Depth of forms to be same depth as concrete being placed.
- 3. Form work to be new lumber or re-used lumber that has been cleaned of residual concrete and laitance. Treat new or re-used form work with Wood Form Release prior to placing concrete.

B. Curved Sections:

- 1. Use 1 ½-inch bender or back-cut boards or 1/2-inch wood siding, installed with sufficient bracing for construction of curved formwork.

2.11 ACCESSORY MATERIALS

A. Concrete Slurry Release Compound:

- 1. Tartatic-based compound that is spray or roller-applied to existing hardscape surfaces as a protection against concrete spatters and chemical overspray during concrete placement.
 - a. Acceptable Manufacturers:
 - 1) Pieri Face-Off by Grace Construction Products and locally distributed by Innovative Concrete Products; (949) 498-7077, or at www.na.graceconstruction.com.
 - 2) Kleen Kote™ by Progressive Solutions; www.4progressive.com.
 - 3) Or Intecrete® LCC approved substitution.

B. Wood Form Release:

1. Non-reactive, chemically inert wood form release to assist in a clean and quick wood form release.
 - a. Acceptable Manufacturers:
 - 1) Duogard® II by WR Meadows; www.wrmeadows.com.
 - 2) Or Intecrete® LCC approved substitution.
- C. Steel Dowel Anchor Adhesive:
 1. Two-component, non-shrink, epoxy-based adhesive.
 - a. Acceptable Manufacturers:
 - 1) Simpson Set22™ by Simpson Strong Tie; www.strongtie.com.
 - 2) Hit-HY 150™ Max by Hilti; www.us.hilti.com.
 - 3) Or Intecrete® LCC approved substitution.
- D. Slip-Resistant Granules:
 1. Finely graded aggregate or polymer additive designed to provide a slip-resistant surface.
 - a. Acceptable Manufacturers:
 - 1) Skid Guard™ by Advanced Surfaces; www.advancedsurfaces.com.
 - 2) Shur-Grip™ by Increte Systems; www.increte.com.
 - 3) Grip Aid™ by Dayton Superior; www.daytonsuperior.com.
 - 4) Or Intecrete® LCC approved substitution.

2.12 REINFORCEMENT

- A. Welded Wire:
 1. As-drawn steel wire in flat sheets conforming to ASTM A1064 and free of rust, dirt, grease or oils.
- B. Reinforcing Steel:
 1. Grade 60 steel conforming to ASTM A615 and free of rust, dirt, grease or oils.
- C. Steel Bar Mats:
 1. Grade 60 deformed steel bars assembled with clips conforming to ASTM A184 and free of rust, dirt, grease or oils.
- D. Tie Wire:

1. 16-gauge plain cold-drawn steel conforming to ASTM A82 and free of rust, dirt, grease or oils.
- E. Bar Supports:
1. Provide supports to center reinforcement in slab during concrete pour including chairs, spacers, bolsters, and 3,000 psi concrete dobies with tie wire for spacing, supporting and stabilizing steel bars in place.
 2. Where concrete will be exposed to view, support reinforcement and tie in-place to provide adequate coverage to eliminate support exposure.
 3. Equip wire bar supports with sand plates or horizontal runners where base material will not adequately support chairs.
 4. Do not use wood or bricks to support rebar.
- F. Synthetic Fibers:
1. 100% virgin polypropylene multifilament fibers added to concrete to reduce slab cracking caused by plastic shrinkage.
 - a. Application Rate: Per manufacturer's recommendations.
 - b. Acceptable Manufacturers:
 - 1) Fibermesh[®] 150 by Propex Fibermesh; www.fibermesh.com.
 - 2) MicroFiber[™] by Grace Construction Products; www.na.graceconstruction.com.
 - 3) UltraFiber[®] 500 by Buckeye Building Fibers; www.ultrafiber500.com.
 - 4) PSI Fiberstrand[™] 100 by Euclid Chemical; www.euclidchemical.com
 - 5) Or Intecrete[®] LCC approved substitution.

2.13 JOINT MATERIALS

- A. Construction Joints:
1. Dowel Baskets: Pre-manufactured dowel basket assembly to provide construction joint stability, eliminate tripping hazards, positive load transfer, maintain continuity of surface profile, reduce joint spalling, and reduce "checkerboard" pours, without prohibiting horizontal slab movement.
 - a. Acceptable Manufacturers:
 - 1) PD³ Basket Assembly[®] by PNA Construction Technologies; www.pna-inc.com.

- 2) PNA Square/Round Dowel Basket Assembly by PNA Construction Technologies; www.pna-inc.com.
 - 3) Or Intecrete® LCC approved substitution.
2. Steel Slip Dowels: 1/2-inch-diameter smooth steel bars, free of dirt, grease, and oils.
 3. Plastic Dowel Sleeves: Encase 50 percent of each dowel in a Speed Dowel® plastic alignment sleeve to allow parallel lateral movement of each dowel.
 - a. Acceptable Manufacturers:
 - 1) Speed Dowel® by Greenstreak Group; www.greenstreak.com.
 - 2) Or Intecrete® LCC approved substitution.
- B. Isolation Joints:
1. Refer to Section 32 13 73 – Concrete Joint Sealants.

2.14 CURING COMPOUNDS

- A. Liquid-Based Curing Compounds:
1. Liquid, membrane-forming, VOC compliant, curing and evaporation reducer (resin-based dissipating type) to facilitate curing and hardening of freshly placed concrete.
 2. Use liquid-based curing compounds that will not discolor concrete surface and will be compatible with concrete sealer.
 3. Acceptable Manufacturers:
 - a. 1100-Clear by WR Meadows; www.wrmeadows.com.
 - b. Colorful Clear Curing Compound™ by Admixtures; www.admixtures.biz.
 - c. Clear Cure™ by Anti-Hydro Company; www.anti-hydro.com.
 - d. Or Intecrete® LCC approved substitution.
- B. Liquid-Based Curing Compounds with Added Sealer:
1. Water-based, non-yellowing acrylic, membrane-forming, VOC compliant compound with curing and sealing properties to facilitate in proper curing and hardening of freshly placed concrete and in sealing of concrete surface to improve resistance to chemicals, and minor abrasive damage.
 2. Acceptable Manufacturers:
 - a. Vocomp-20® by WR Meadows; www.wrmeadows.com.

- b. Or Intecrete® LCC approved substitution.
- C. Curing Covers:
 - 1. Acceptable Manufacturers:
 - a. CureMat® by Skudo. Either (LT – Light traffic), (MT – Medium Traffic), or (HT-Heavy Traffic); www.skudousa.com.
 - b. UltraCure® by PNA Technologies; www.pna-inc.com.
 - c. Seekure 892™, reinforced and laminated protection paper, by Fortifiber; www.fortafiber.com.
 - d. Or Intecrete® LCC approved substitution.

2.15 CONCRETE PROTECTION COVERS

- A. Durable, temporary covering system for the protection of freshly placed Intecrete® concrete paving during on-going construction activities:
 - 1. Acceptable Manufacturers:
 - a. Seekure® 892 Finished Floor Protection Paper by Fortifiber; www.fortifiber.com.
 - b. Skudo® Tack-Mat, LT grade by Skud; www.skudousa.com.
 - c. Sisalcraft® Orange Label by Fortifiber; www.fortifiber.com.
 - d. Or Intecrete® LCC approved substitution.

PART 3 EXECUTION

3.1 SUBGRADE PREPARATION

- A. Prior to placing concrete on subgrade confirm with responsible party that:
 - 1. Subgrade is in conformance with requirements contained in Project’s geotechnical soils report and Drawings.
 - 2. Subgrade is free of compressible or expansive soils, exposed rocks, loose soil, and debris.
 - 3. Subgrade has positive drainage and extends 12-inches beyond outside edge of paving.
 - 4. Subgrade is within 1/10th-foot of paving finish surface grades.
 - 5. Subgrade pre-saturation has been performed and resulting data meets Project geotechnical engineer’s approval prior to placing concrete. Do not place concrete if subgrade is overly saturated.

6. Utilities under paving are in place and approved by Owner prior to placing concrete.
 7. Owner has approved subgrade and conditions noted above prior to placing of concrete.
- B. Moisten subgrade with an even spray prior to placing concrete to control initial loss of moisture from concrete slab. Do not place concrete over overly saturated subgrade.
 - C. Remove loose material from compacted subbase surface immediately before placing concrete.

3.2 FORMWORK

- A. Formwork to comply with ACI 347-01.
- B. Form lumber to be new Douglas Fir #2 grade, or better, however, if form lumber will be reused; ensure that it is clean, smooth, and free of significant damage.
- C. Review Drawings then provide necessary recesses and openings of proper sizes and shapes to accommodate required embeds. Secure anchor plates, inserts, and other items to be embedded in concrete as provided by others, accurately so that they will not be displaced during concrete placement.
- D. Set forms to meet alignment, shape, dimensions and grades as indicated on Drawings.
- E. Set straight line forms true, plumb with limited deviation.
- F. Construct radial formwork concentric with smooth transitions to adjoining straight sections.
- G. Provide forms of sufficient thickness to withstand pressure of newly placed concrete without noticeable deflection.
- H. Hold forms rigidly in-place with sufficient amount of stakes, clamps, spreaders and braces to ensure formwork will not move or deflect when loaded.
- I. Coat forms with form-release agent prior to concrete placement to ensure separation from concrete without damage to concrete.
- J. Obtain Owner approval of formwork layout prior to concrete placement.
- K. Allow formwork to remain in place long enough for concrete to set properly. Remove formwork when appropriate and discard offsite.

3.3 REINFORCEMENT

- A. Prior to placement, clean reinforcement of loose mill scale, dirt, and other bond-reducing materials.
- B. Place reinforcement in size and spacing as indicated on Drawings.

- C. Interrupt reinforcement at construction joints.
- D. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortion. Straighten bends, kinks, and other irregularities or replace units as required before placement. Set mats for a 2-inch overlap to adjacent mats.
- E. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace with splices and wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- F. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain specified concrete cover over reinforcement.
- G. Obtain Inspector's approval of reinforcing steel placement before placing concrete.

3.4 CONCRETE BATCHING

- A. Measure, batch, mix and deliver concrete in accordance with ACI 304R-00, from concrete batch plants certified under the NRMCA Certification of Ready Mix Concrete Production Facilities.
- B. Use only concrete mix designs previously approved by Owner.
- C. Deliver and discharge concrete from truck within 90 minutes after introduction of water to concrete mix or within 300 revolutions of drum. Concrete delivered to jobsite after 90 minutes time will be rejected.
- D. Do not add water to concrete during delivery or placement. To attain specified slump, additional water may be added to concrete at project site before placement, provided that the amount of water will not exceed total amount specified on designated concrete mix design.
- E. Concrete Performance Criteria:
 - 1. Slump Range:
 - a. Slabs 8-inches thick or less: 5-inches ^{+/-} 1-inch.
 - b. Slabs greater than 8-inches thick: 4-1/2-inches ^{+/-} 1-inch.
 - 2. Minimum PSI rating at 28 days – 3,000.
 - 3. Cement:
 - a. Type: As indicated on Drawings.
 - b. Quantity per cubic yard of concrete mix:
 - 1) Minimum: 6 sacks.
 - 2) Maximum: 7 ½ sacks.

4. Water/Cement (W/C) ratio:
 - a. Minimum: 0.50.
 - b. Maximum: 0.63.
5. Fine Aggregate:
 - a. No greater than 70% fine aggregate by ratio to coarse aggregate.
6. Coarse Aggregate:
 - a. Not less than 30% coarse aggregate by ratio to fine aggregate.
7. Admixtures:
 - a. Air entrainment: Do not exceed 2%.
 - b. Shrinkage Reducers: Do not exceed 2% of total cement weight.
8. Fly Ash:
 - a. Use only when using ASR-reactive Intecrete® aggregates.
 - b. Do not exceed 25% of total cement weight.
9. Accelerators:
 - a. Use accelerators with caution and do not use calcium chloride accelerators due to potential corrosion of steel reinforcement.
10. Concrete Delivery:
 - a. Do not use concrete loads that have exceeding 90 minutes from time of batching to jobsite delivery.

3.5 CONCRETE PLACEMENT

- A. Place concrete in conformance to ACI 304R-00.
- B. Use only concrete mix designs approved by Owner.
- C. Coordinate placement of concrete with adjacent trades during each concrete pour.
- D. Prior to placing concrete, apply Concrete Slurry Release Compound or plastic sheeting to adjacent improvements against concrete spatters and chemical overspray during concrete placement. Remove release compound or plastic including duct tape residue no later than 24 hours after placement of concrete.
- E. Place concrete no faster than it can be properly placed and finished with due regard to weather, temperature, and size of finishing crew.
- F. Place concrete in a continuous operation between pre-located construction joints, if present in slab.

- G. If vibrators are to be used, use cautiously in order not to over-vibrate concrete mix.
- H. Screed paving surfaces with a straightedge then strike-off to meet specified finish grades.
- I. Prior to accumulation of bleed water, bull float or darby to level and smooth concrete surface.
- J. After bleed water has evaporated, tool required joints and edges and hand float and finish as required.
- K. Protect existing paving and improvements by supporting concrete pump hose and metal connections on plywood, sand bags, or other protection material.
- L. When adjoining paving has recently been placed, do not operate equipment on that portion of paving until it has reached 85% of its specified 28-day compressive strength.
- M. Consolidate concrete by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping. Use equipment and procedures to consolidate concrete complying with ACI 309R-05. Areas directly adjacent construction joints should be vibrated to ensure proper bond between concrete and steel dowels.
- N. If required, consolidate concrete along face of forms with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Prevent dislocating reinforcing steel and dowels.
- O. Ensure that slab thicknesses in a specified thickness do not vary by more than 3/8-inch.
- P. Hot Weather Concrete Placement (90 degrees F and hotter) - refer to ACI 305R-99:
 - 1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F. Chilled water or ice may be used to control temperature provided water equivalent of ice is calculated into total amount of mixing water.
 - 2. Cover reinforcing steel with water-soaked burlap so temperature of steel will not exceed ambient air temperature immediately before embedding steel in concrete.
 - 3. Fog-spray forms, reinforcing steel and subgrade prior to placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas present.
- Q. Cold Weather Concrete Placement (40 degrees F and colder) - refer to ACI 306R-10:
 - 1. When air temperature has fallen or is 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 concrete placement.

2. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators, unless otherwise specified on approved Statement of Concrete Mix Design.
3. Protect concrete work from physical damage or reduced psi strength that could be caused by frost, freezing actions, or low temperatures.
4. Do not place concrete when ambient temperature is 35 degrees F or lower or is expected to go below that temperature within 24 hours of placement.

3.6 INSTALLATION OF INTECRETE® ARCHITECTURAL CONCRETE

- A. Intecrete® is a U.S. patent pending architectural concrete paving system. Installation of this product can only be provided by a licensed Intecrete® installer.
- B. Production Intecrete® architectural concrete paving to match Owner-approved mock-ups.

3.7 JOINTING

- A. Install paving joints in locations as indicated on Drawings or Intecrete® Contractor's approved *Paving Jointing Plan*.
- B. Construct paving joints perpendicular to plane of concrete paving.
- C. Unless approved in writing by Owner, do not exceed a joint spacing of 12-feet on centers in each direction for a 4-inch thick slab or 16-feet on center in each direction for a 6-inch slab.
- D. Construct contraction and construction joints straight and true to a tolerance not to exceed 3/16-inch in 10-feet.
- E. Install joints that match approved mock-ups.
- F. Paving Joints:
 1. Contraction Joints:
 - a. Hand-Tooled Joints:
 - 1) Install tooled contraction joints no less than 1/4th slab thickness and 3/16-inch in width unless approved in writing by Owner.
 - 2) Install tooled contraction joints in a straight line with no overcutting at joint intersections, i.e. running bond joint pattern.
 - b. Saw Cut Contraction Joints:

- 1) The ideal time to sawcut a freshly placed concrete slab is prior to random slab cracking and without spalling joint edge. At a minimum, sawcut slab no later than 12 hours after slab placement or as soon as slab has sufficient strength to support sawing equipment while not allowing joint edge spalling.
 - 2) Install sawcut contraction joints no less than 1/4th slab thickness and 3/16-inch in width unless approved in writing by Owner.
 - 3) Ensure that diamond sawcut blade is new or in a condition to provide specified joint width and a spall-less joint edge.
 - 4) Install sawcut contraction joints in a straight line with no overcutting at joint intersections, i.e. running bond joint pattern, or onto adjacent surfaces including vertical surfaces such as walls, steps, or columns. In these potential overcut conditions, use a 4-inch hand grinder in order to terminate a sawcut joint no further than ¼-inch from adjacent surfaces.
- c. Steel Dowel Baskets :
- 1) When approved by Owner and as an option to open-field expansion or “hidden” expansion joints, install metal dowel baskets to facilitate monolithic slab placement which will eliminate “checkerboard” or “Pour A/Pour B” concrete pours.
 - 2) Ensure that steel dowel baskets are spaced no greater than 25-foot o.c.e.w. for 4-inch slabs and 40-feet o.c.e.w. for 6-inch slabs unless approved by Owner.
 - 3) Install same type of contraction joint over dowel basket as remainder of concrete slab.
2. Construction Joints:
- a. Construct construction joints where contiguous paving operations have stopped for more than 90 minutes, adjacent different paving types abut, end of day pour, or other unforeseen delays in concrete placement.
 - b. Discontinue steel reinforcement across construction joints.
 - c. Steel Dowels:
 - 1) Place steel dowel sleeves on formwork as required. Ensure that dowel sleeves remain in horizontal alignment during concrete placement.

- 2) Provide steel dowels across construction joints to reduce differential movement across joint. Utilize steel dowels as follows:
 - a) 4-inch thick paving:
 - i. Diameter: 3/8-inch.
 - ii. Length: 12-inch minimum.
 - iii. On-center Spacing: As indicated on Drawings.
 - b) 6-inch thick paving:
 - i. Diameter: 1/2-inch.
 - ii. Length: 12-inch minimum.
 - iii. On-center Spacing: As indicated on Drawings.
- 3) To assist in correct alignment of steel dowels along construction joints use plastic dowel alignment sleeves, or approved equal:
 - a) Insure that wood edge forms are true to line and grade prior to installing plastic dowel alignment sleeves.
 - b) Install plastic dowel sleeves on wood forms at the specified on-center dowel spacing, centered between top and bottom of wood form.

G. Isolation Joints (Expansion Joints):

1. Other than adjacent to fixed vertical edges such as walls, columns, steps, vaults, etc. isolation joints are not required, especially in "open-field" concrete slabs.
2. When isolation joints are indicated on Drawings, refer to Section 32 13 73 – Concrete Joint Sealants for specific requirements.

3.8 CURING

- A. Cure concrete immediately after exposing Intecrete® aggregates.
- B. Do not apply sealers to concrete if air or surface temperature is below 50 degrees F or above 90 degrees F.
- C. Do not permit traffic, debris or material storage on surface of concrete during curing period.
- D. Do not allow concrete surface to alternate between wet and dry during curing period.
- E. Cure concrete that will not mottle, discolor, or stain concrete surface being cured. Use one of following two approved curing methods:

1. Liquid Curing:
 - a. Apply curing compound uniformly in continuous operation by spray or roller according to manufacturer's directions.
 - b. Recoat areas subjected to heavy rainfall within 3 hours after initial application.
 - c. Maintain continuity of coating and repair damage during curing period.
2. Curing Blankets:
 - a. Water saturate curing blankets and keep continuously wet. Lap joints 12-inches and seal with water-resistant pressure-sensitive tape.
 - b. Seal perimeter edges and penetrations with 12-inch laps.
 - c. Ensure that curing blankets are kept flat on concrete surface.
 - d. Maintain curing blankets for a minimum of 14 days.

F. CONCRETE STAINING

1. After concrete slab has adequately cured and if specified on Drawings to be stained perform staining procedures as follows:
 - a. Remove and neutralize chemical stain residue from concrete surface.
 - b. Ensure that concrete surface is pH neutral prior to applying stains.
 - c. Clean concrete surface using water with a mild soap or alkaline based cleaner and "swing-type" floor scrubber machine. Use caution when scrubbing concrete to avoid leaving permanent marks or paving surface.

3.9 FINAL WASHING

- A. Prior to Final Walkthrough for Acceptance or no later than 28 days after initial Intecrete® paving placement, power wash surface of paving with a modified muriatic acid cleaning solution.
- B. Allow surface of paving to dry sufficiently before applying final sealer.

3.10 SEALING

- A. Seal Intecrete® architectural concrete paving with one of three proprietary Intecrete® sealers as indicated on Drawings or as specified in this Section.
- B. Allow the surface of paving to dry thoroughly before applying sealer.
- C. Do not apply sealer if air temperatures are below 50 degree F or above 90 degrees F.
- D. Once the concrete surface has been sealed, protect from pedestrian and vehicular traffic until product has sufficiently dried.

E. Follow sealer manufacturer's directions for sealer application.

3.11 PROTECTION

A. Owner is responsible to protect finished Intecrete® architectural concrete paving as follows:

1. Pedestrian-rated paving: Minimum (7) days.
2. Vehicular-rated paving: Minimum (28) days.

B. Paving slab protection days can be reduced if concrete slab can be verified that it has reached 95% of its specified design strength or Owner has approved otherwise in writing.

3.12 MAINTENANCE

A. Maintain Intecrete® concrete paving to be free of stains, discoloration, dirt, and debris prior to Final Acceptance by Owner.

B. Paving to be cleaned but not wet at least 2 hours prior to Final Acceptance Walkthrough.

3.13 REPAIRS

A. Intecrete® Contractor will repair or replace Intecrete® architectural concrete paving at its own expense if determined to be defective and/or does not meet minimum requirements set forth in this Section.

B. Remove and replace concrete that is broken, damaged, or does not comply with requirements in this Section in completed sections from joint to joint, unless approved by Owner.

3.14 CLEANUP

A. Keep Work area clean, neat and orderly throughout duration of project.

B. Prior to Final Acceptance by Owner, cleanup and remove deleterious materials and debris from Work area.

3.15 MAINTENANCE OF INTECRETE® ARCHITECTURAL CONCRETE PAVING

A. Other than basic paving cleanup prior to Final Acceptance by Owner, on-going maintenance of Intecrete® architectural concrete paving is not included in Intecrete® Contractor's contracted scope of work.

B. Refer to Intecrete® Paving Operations and Maintenance Manual for proper long term maintenance of Intecrete® concrete paving.

END OF SECTION