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SECTION 01010
SUMMARY OF WORK

1. PROJECT NAME: WASHINGTON PARK

2. PROJECT LOCATION: DOWNTOWN HUNTSVILLE

3. OWNER: CITY OF HUNTSVILLE
 P.O. BOX 308
 HUNTSVILLE, AL 35801

4. DESCRIPTION OF WORK:
 In general, work of this Contract includes:
 Cleaning and repair of existing ornamental ironwork and installation of signage; Installation of bollards at alleys; installation of bubbling rock, landscaping, and irrigation; Installation of landscape furniture; installation of raised staging; Painting of public alley surface.

5. SCOPE OF WORK:
 - A. Except for work noted "BY OWNER" or "N.I.C." (not in contract) or specifically excluded by the Contract Documents, the work under this contract includes the work indicated on the Drawings and described in the Project Manual.

 - B. All work shall be provided in compliance with the "Contract Documents" for this project.

6. DRAWINGS AND SPECIFICATIONS:
 Specifications governing this work shall contain the Divisions and Sections listed in the "TABLE OF CONTENTS" in this Project Manual.

END OF SECTION

SECTION 01011
INCIDENTAL WORK

1. SCOPE:

This Section covers incidental construction work and services which relate to the entire project rather than to any certain trade or part thereof.

2. SUPERINTENDENT:

A. The Contractor shall employ a competent Superintendent and necessary assistants who shall be in attendance at the project site during the progress of the work. The Superintendent shall represent the Contractor and all communications given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

B. SUPERINTENDENT'S QUALIFICATIONS:

The Contractor's project Superintendent shall be highly skilled at directing, coordinating and supervising all trades, not just those forces of the General Contractor. He shall have the experience of having been superintendent on at least three projects (all under the observation of an Architect) similar in scope to this project. He shall keep informed of all transactions relative to the work such as correspondence, shop drawings, etc. He shall thoroughly acquaint himself with all divisions of the Project Manual and shall have a thorough understanding of the requirements, and the ability to see that the requirements are fulfilled. He shall be expected to exhibit an aggressive attitude of leadership. The Architect shall have the right to reject any Superintendent who does not, in his opinion, fulfill these requirements.

The Project Superintendent shall be a full-time employee of the Contractor whose sole function is to supervise, check and coordinate all phases of the construction and he shall be present at site while any and all construction activities are in process.

3. PROGRESS SCHEDULE:

A. The Contractor, within 10 (ten) days of being awarded the Contract, shall submit for the Owner's and Architect's information an estimated progress schedule for the work. The progress schedule shall be related to the entire project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the work.

B. Progress Schedule shall be of the CPM (Critical Path Method) Bar chart, or similar approved system for scheduling and control of work. Contractor shall update original schedule monthly, reflecting any change to original schedule. This updated schedule shall accompany Contractor's monthly request for payment, and the first application will not be approved until the progress schedule is received and approved by the Architect. Contractor's failure to substantially adhere to progress schedule shall be sufficient cause to withhold payment.

4. COORDINATION:

A. The General Contractor shall coordinate all construction activities between trades as necessary for proper and timely execution and completion of the entire project.

5. ARCHITECT NOTIFICATION:

Contractor shall present to the Architect, in writing, written notification of the following events at least three working days before their occurrence:

A. Pouring of footings - The time frame for inspection is immediately after the installation of the

reinforcing steel and prior to pouring.

- B. Structural erection - The time frame for inspection is immediately after all structural members are in place and before they are concealed by supplemental framing or finish materials.
 - C. Discretionary events - Any significant event which would reasonably require inspection by the Architect.
6. TOLERANCE COMPLIANCE:
Contractor shall inspect all completed work for compliance with specified tolerances.
7. RECORD DRAWINGS:
- A. Contractor shall maintain one (1) complete set of drawings, one (1) project manual at the site for marking all changes, modifications, and/or deviations made in the actual construction.
 - B. This complete set of construction documents, as well as a digital copy, shall be submitted to Architect with closeout documents
8. INSTALLATION OF OWNER'S FURNISHED EQUIPMENT:
- A. Contractor shall install all items and equipment noted on drawings "FURNISHED BY OWNER - INSTALLED BY CONTRACTOR". These items shall be installed in strict accord with manufacturer's instructions.
 - B. Contractor shall permit Owner, or persons other than the Contractor, to place or install items and equipment not covered by Paragraph A above, during progress of work, if necessary.
 - C. Contractor agrees to cooperate with the Owner in coordinating proper and timely installation of Owner's items and equipment.
 - D. Contractor agrees that such placing and installation shall not in any way affect the completion of any work of this contract.
10. PROTECTION:
Contractor shall provide temporary barriers, guards, coverings, closures and other items and materials necessary to protect existing work to remain and completed work from damage and to protect workers and other people on the site from injury.
11. TEMPORARY FENCES:
Temporary fences are not required. Should Contractor choose to provide temporary fences for protection of his equipment and materials, the locations shall be approved by Architect.

END OF SECTION

SECTION 01012
GUARANTEES

1. The Contractor warrants to the Owner and the Architect that all materials and equipment furnished under this contract will be new unless otherwise specified, and that all work will be of good quality, free from faults and defects and in conformance with the Contract Documents. All work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective, if required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not limited by the provisions of Paragraph 12.2 of General Conditions.
2. It is the intention of the documents that the Contractor guarantee the satisfactory performance, as determined by the Architect, of all components of work included under this contract for a period of one (1) year.
3. The Contractor shall provide, on a form prescribed by Architect, a written guarantee, properly executed by appropriate Subcontractor or material supplier, or both, countersigned and guaranteed by Contractor, that their work will be free from defects of materials and workmanship, and shall remain in proper operating condition for a period of one (1) year.
4. This guarantee shall state and agree that Contractor, Subcontractor, and material supplier, if applicable, shall be responsible for repair or replacement of defective materials or work, including work or materials damaged thereby, at their own expense, with no additional cost to the Architect or Owner, for a period of one (1) year.
5. Date of Commencement of all guarantees shall be date of the "Certificate of Substantial Completion". Should a "Certificate of Substantial Completion" not be issued, the date of commencement of all guarantees shall be the date the Architect certifies the final "Pay Request."
6. Some guarantees extend beyond one (1) year, as specified in individual sections.
7. Work performed under this Guarantee and Article 12, item 12.2, shall be guaranteed for a period of one (1) year from date such work is completed.

END OF SECTION

SECTION 01080
CODES AND STANDARDS

1. Wherever reference is made in the technical sections to standard specifications of nationally known organizations, the latest edition in effect on date of this Specification shall govern unless otherwise stated herein. Where specific articles, sections, divisions or headings are not given, such specifications shall apply in full. Standard specifications when included herein, by abbreviations, or otherwise, shall form a part of this specification the same as if quoted in full. These organizations and their abbreviations include, but are not limited to, the following:

AAMA	Architectural Aluminum Manufacturers Association
AASHO	American Association of State Highway Officials
ACI	American Concrete Institute
ADT	Alabama Department of Transportation Standard Specifications for Highway Construction
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
APA	American Plywood Association
ASHRAE	American Society of Heating, Refrigeration, and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing Materials
AWI	American Woodwork Institute
AWPI	American Wood Preservers Institute
AWS	American Welding Society
CS	Commercial Standard, U.S. Department of Commerce
DFPA	Douglas Fir Plywood Association
FIA	Factory Insurance Association
FS	Federal Specification (of the U.S. Government)
IBC	International Building Code
IFC	International Fire Code
IPC	International Plumbing Code
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
NBS	National Bureau of Standards (of the Department of Commerce of the U.S. Government) for Commercial Standards and Simplified Practice Recommendations
NEC	National Electric Code of NBFU (National Bureau of Fire Underwriters)
NEMA	National Electric Manufacturing Association
NFPA	National Fire Protection Association
PCA	Portland Cement Association
SDI	Steel Deck Institute
SJI	Steel Joist Institute
SPIB	Southern Pine Inspection Bureau
USASI	United States of America Standards Institute
UL	Underwriter's Laboratories

2. Furnish, if requested, certificates from manufacturers to the effect that products or materials provided for use in this work comply with requirements for materials or products specified.

END OF SECTION

SECTION 01300
MATERIALS AND SUBMITTALS

1. GENERAL:

Unless required otherwise in the Contract Documents, the Contractor shall provide and pay for all labor, materials, equipment, tools construction equipment and machinery, utilities, transportation, and other facilities and services necessary for the proper execution and completion of the Work, whether temporary or permanent, and whether or not incorporated or to be incorporated in the Work.

2. MATERIALS:

- A. All materials, equipment, systems, and/or products furnished under this contract shall be new, unless required otherwise by the Contract Documents.
- B. Whenever any material, equipment system or product is specified to be provided in accord with a Federal Specification an ASTM Standard, United States Standard Specification, or other association standard, Contractor shall present an affidavit from manufacturer certifying that product complies with particular standard specification. Where necessary and requested or specified, support test data shall be submitted to substantiate compliance.

3. DEFINITIONS:

- A. Submittals are Shop Drawings, Product Data, Samples and/or other descriptive literature prepared by the Contractor to demonstrate to the Architect that he (the Contractor) understands the design intent and the requirements of the Contract Documents by indicating the exact materials, equipment, systems and/or items he (the Contractor) intends to furnish and install including fabrication and installation methods.
- B. Shop Drawings are drawings, diagrams, schedules, and other data especially prepared for the Work by the Contractor or any Subcontractor, Manufacturer, Supplier, or Distributor to illustrate some portion of the Work.
- C. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.
- D. Samples are physical examples which illustrate materials, equipment, or workmanship and establish standards by which the Work will be judged.
- E. Where the word "PRODUCT" appears herein, it shall mean materials, assembly, equipment, manufacturer's brands, trade name, items or similar description as applicable.

4. SUBMITTALS:

- A. Unless specified otherwise in other sections of this Project Manual, Contractor shall submit six (6) copies of Shop Drawings and any other information submitted for approval.
- B. Contractor shall legibly mark or stamp the Work "APPROVED", his name, and the date of each submittal indicating his approval of the submission and compliance with requirements of Contract Documents. Use of the word "CHECKED" or "REVIEWED" in lieu of "APPROVED", will not be accepted. Shop Drawings will not be accepted directly from Subcontractors or Suppliers.

- C. The Contractor shall review, approve, and submit, with reasonable promptness and such sequence as to cause no delay in the Work or in the Work of the Owner or any separate Contractor, all Shop Drawings, Product Data and Samples required by the Contract Documents.
- D. By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.
- E. The Contractor will not be relieved of responsibility for any deviation from the requirement of the Contract Documents by the Architect's approval of Shop Drawings, Product Data or samples under subparagraph 4.2.7 of the General Conditions", unless the Contractor has specifically informed the Architect in writing of such deviation at the time of submission and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Architect's approval thereof.
- F. The Contractor shall direct specific attention, in writing, with, or on, submitted, Shop Drawings, Product Data or Samples, to revisions other than those requested by the Architect.
- G. No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the Architect as provided in Subparagraph 4.2.7, of the "General Conditions". All such portions of the Work shall be in accordance with approved submittals.
- H. No note or comment, by Architect, on a Shop Drawing, shall be considered as authorization for an increase in Contract Amount. Should the Supplier or Contractor consider an increase warranted, he shall notify Architect and clarify the matter before proceeding with fabrication or delivery.
- I. For submission of items, such as catalogs, Contractor shall delete or strike out information not pertinent to Work so that there is no possible area of confusion.
- J. Contractor shall be responsible for delivery of Shop Drawings and Samples to the office of Architect with handling charges prepaid or assumed by him.
- K. Architect reserves the right to review and approve Shop Drawings and Samples in a proper sequence, reflecting logical sequence or erection, installation, and assembly of various parts of Work.

5. Samples:

- A. Shall be submitted in triplicate, except where other provisions are specified. Should Contractor desire more than one (1) Sample returned, he shall submit a fourth Sample in each instance, unless Architect has indicated he will keep only one (1) Sample of the item submitted.
- B. Contractor shall assemble and deliver to Architect within one month of the signing of the Contract, a single package containing manufacturer's actual Samples, new and current, of materials requiring color, pattern, or texture approval. These Samples shall include, but are not limited to, the following:

1. Paint manufacturer's Samples of custom colors, including color deck, and removable color chips.

6. INTERFERENCE DRAWINGS:

- A. In instances where Shop Drawings affect Work of more than one trade, and when directed by Architect, Contractor shall prepare and submit "INTERFERENCE DRAWINGS", which indicate and define Work under affected trades, and obtain approval of Architect. Upon receipt, Contractor shall distribute print copies of approved drawings to affected trades. Affected trades shall cooperate in preparation of "INTERFERENCE DRAWINGS" to assure proper coordination.
- B. Layout of equipment, accessories, and piping system are diagrammatic except as specifically dimensioned. Coordinate Work to achieve proper room, clear access to pipes and ducts and maximum usable area. At mechanical equipment rooms and like spaces, equipment, pipes, conduit, and ducts shall be carefully fitted into space provided in orderly, neat, and accessible manner and position.

7. SUBSTITUTIONS:

- A. The intent of this paragraph is to encourage and permit competition on qualified products by reputable and qualified Contractors, Suppliers, and Manufacturers, whose products, reputations, and performances warrant approval for conditions, intent of design, and performance consideration.
- B. Whenever any product is specified or indicated by describing proprietary items, model numbers, catalog number, manufacturer, trade names, or similar reference, Bidder obligates himself to submit proposals and accept awards of contracts based upon use of such products. Use of such reference is intended to establish measure of quality which Architect has determined as requisite and necessary for project. Where two or more products are shown or specified, Bidder has his option of which to use, provided product used meets requirements of specifications and design criteria. The right is reserved to approve or disapprove proposed deviations in design, function, construction, or similar differences that affect the design intent.
- C. APPROVAL OF SUBSTITUTIONS PRIOR TO EXECUTION OF OWNER/CONTRACTOR AGREEMENT:
 1. For acceptance of substitutions prior to bid opening, Bidders shall submit a request in writing at least seven (7) days prior to bid date and hour. Requests received after this time will not be reviewed or considered regardless of cause until after opening of bids and only through the successful Bidder.
 2. Requests shall clearly define and describe products for which approval is requested.
 3. Requests shall be accompanied by Manufacturer's literature, specifications, drawings, cuts, performance data, list of references, or other information necessary to completely describe the substitute.
 4. Acceptance by Architect will be in the form of an Addendum to drawings and specifications issued to prospective prime contract Bidders on record. The Addendum will indicate additional products which are approved for this project.
- D. APPROVAL OF SUBSTITUTIONS AFTER EXECUTION OF OWNER/CONTRACTOR AGREEMENT WILL BE CONSIDERED ONLY UNDER THE FOLLOWING CONDITIONS:

1. Contractor shall place order for specified materials and equipment promptly upon award of contract. No substitutions will be considered for materials and equipment due to unavailability unless proof is submitted that firm orders were placed 10 days after approval by Architect of the item listed in specifications.
2. The reason for the unavailability is beyond the control of the Contractor. Unavailability will be construed as being due to strikes, bankruptcy, discontinuance by Manufacturer of a product, or Acts of God.
3. Requests for such substitutions shall be made in writing to Architect after award of Contract and within 10 days of the date on which Contractor ascertains that he cannot obtain materials or equipment specified, or approved equals.
4. Requests shall be accompanied by a complete description of materials or equipment which Contractor wishes to use as a substitute.

END OF SECTION

SECTION 01410
QUALITY CONTROL

PART I - GENERAL

1.01 TESTING:

Contractor shall contract and pay for the services of an independent testing laboratory to perform inspection and tests of materials and construction as defined in the General Conditions. In the event of a test failure, the Contractor shall pay for retesting.

1.02 COOPERATION OF CONTRACTOR:

The Contractor shall cooperate with the laboratory and:

- A. Make available, without cost, samples of all materials to be tested in accordance with applicable standard specifications.
- B. Furnish such nominal labor and sheltered working space as is necessary to obtain samples at the project.
- C. Advise the laboratory of the identity of material's sources and instruct the suppliers to allow test or inspections by the laboratory.
- D. Notify the laboratory sufficiently in advance of operations to allow for completion of initial tests and assignment of inspection personnel.
- E. Notify the laboratory sufficiently in advance of cancellation of required testing operations. The Contractor shall be responsible to the laboratory for charges due to failure to notify if requirements for testing are canceled.

1.03 TEST METHODS:

Tests and inspections shall be conducted in accordance with the latest standards of ASTM or other recognized authorities.

1.04 TEST REPORTS:

The laboratory shall promptly submit written reports of each test and inspection made to the Owner, Architect, Engineer, Contractor and to such other parties the Owner may specify.

END OF SECTION

SECTION 01500
TEMPORARY FACILITIES

1. GENERAL:

The term "Contractor" as used throughout this Section is the person or entity identified as such in the Owner-Contractor Agreement unless otherwise noted. Contractor shall pay costs for all temporary facilities, until such time as provided for in General Conditions, Article 9.8.1.

2. SIGNS:

Owner reserves the right to erect such signs of kind or character deemed appropriate on or about premises in connection with project. Contractor shall in no instance display or permit to be displayed on or about premises a sign, trademark, poster, or other advertising device, except as may be approved by Architect.

3. STORAGE FACILITIES:

Contractor shall provide and maintain on the site watertight storage sheds for storage of materials which might be damaged by weather.

4. TOILET FACILITIES:

Contractor shall provide sanitary temporary toilet facilities and shall maintain toilet facilities in sanitary conditions at all times. Toilet shall comply with local sanitary requirements and be approved by Local Department of Health. Remove temporary toilet from site when project is complete.

5. TEMPORARY LIGHT AND POWER:

- A. Contractor shall make arrangements with Electric Utility Company to provide temporary electric service of size and type necessary for execution of Work.
- B. Contractor shall provide, install, and maintain temporary lighting and power systems from point of service to any on-site location and requiring lighting and/or power.
- C. Light sources shall consist of 100 watt lamps, and equipped with lamp guards. Provide wiring, service control switches, and fuse protection to comply with local, state and underwriter's codes, rules and regulations.
- D. Trailers for use in convenience outlets shall be provided by trades using or requiring same.
- E. Permanent installation may be used for temporary Work.
- F. Cost of temporary power including current shall be paid for by the Contractor.
- G. Power tools not exceeding one (1) h.p. each may be operated from temporary electric system. Subcontractor shall, at his own expense, furnish, install, and maintain, power wiring and equipment necessary to supply power for tools exceeding one (1) h.p. each for his work, and, upon completion of his work, shall remove any temporary power lines installed by him.

8. TEMPORARY WATER:

Contractor shall provide and maintain, or arrange to have provided and maintained, a temporary water service. He shall extend, from point of service, a water supply adequate for construction purposes. He shall pay for water used, protect lines against freezing, and be fully responsible for temporary installation in every way. He shall provide any and all hoses needed.

9. JOB TELEPHONE AND FACSIMILE MACHINE:

Contractor shall provide and maintain a telephone at the site for the duration of the project. The telephone shall be located in field office and shall be provided with bell facility to be heard about project when field office is unoccupied. Alternately, the Superintendent may carry a cellular phone

on his person at all times. A facsimile machine shall be provided in the field office. Contractor shall pay all costs of telephone and facsimile installation, service and removal.

10. PROTECTIVE COVERING:

- A. Finished surfaces, including factory-finished and job-finished items, shall be clean and not marred upon delivery of to Owner. Contractor shall, without extra compensation, refinish such spaces where such surfaces have been inadequately protected and are damaged.
- B. In performing processes requiring use of water or in cleaning operations, Contractor shall insure that no leakage of water to other portions of structure occurs. Contractor shall contain flow of moisture to the extent that no damage occurs to work in place.

11. CONSTRUCTION LOADS ON STRUCTURES:

- A. Structures are designed to support loads of completed work. No provision has been included for unusual stresses or loads imposed by construction operations or equipment.
- B. Should Contractor desire to place loads in excess of design loads of part of structure, he shall prepare and submit for Architect's approval, drawings, and stress calculations prepared by a registered professional structural engineer of new work indicated and substantiating the proposed method for supporting materials, scaffolding, machines, and similar heavy or vibrating pieces.
- C. Cost of engineering checking and additional inspection, if required of Architect or his Consultants, and additional labor and materials, required to support loads other than those encompassed in the original design, shall be included in the Proposal for entire work.
- D. Do not load structures in excess of design loads prior to submission and approval of necessary drawings and calculations.

12. TEMPORARY FENCE:

Shall be installed as indicated on the drawings. Fence shall be a manufactured fence suitable for its purpose, with location and type approved by Architect before installation and shall be kept in good repair throughout the course of the project.

13. JOB SIGN:

If required, see specification section, PROJECT IDENTIFICATION AND SIGNS.

END OF SECTION

SECTION 01580
PROJECT SIGNAGE

PART I - GENERAL

1.01 DESCRIPTION OF WORK

- A. PROJECT IDENTIFICATION SIGN
- B. MAINTENANCE
- C. APPROVAL

1.02 RELATED REQUIREMENTS

- A. SUMMARY OF WORK
- B. TEMPORARY FACILITIES

PART II - PRODUCTS

2.01 PRODUCTS:

- A. STRUCTURE AND FRAMING:
Existing ornamental iron framing.
- B. SIGN SURFACE:
High density polyethylene; 1/2" minimum thickness. Install prefabricated vinyl sign face material to both sides

PART III - EXECUTION

3.01 INSTALLATION

- A. Erect supports and framing secure, rigidly braced and framed to resist wind loadings.
- B. Install sign surface plumb and level, anchor securely.
- C. Paint sight-exposed surfaces on sign, supports and framing.

3.02 PROJECT SIGN:

- A. CONTENT:
As shown on Drawings attached herein.
- B. GRAPHIC DESIGN COLORS, STYLE OF LETTERING:
As shown and called for on Drawings attached herein and as designated by Owner.

END OF SECTION

SECTION 01600
MATERIALS DELIVERY, STORAGE, AND HANDLING

1. Secure supplier's specific recommended storage requirements for products and materials to be stored.
2. The following storage requirements are in addition to suppliers recommended storage requirements:
 - A. DELIVERY:
 1. Deliver materials in manufacturer's original unopened packaging with identification labels intact and legible.
 2. Replace damaged or contaminated containers and materials.
 - B. STORAGE:
 1. Store materials off of ground and concrete floors.
 2. Cover and protect materials from damage due to weather and construction operations.
 3. Maintain stored materials clean and free of dirt, grease, foreign matter and construction debris.
 4. Store sheet materials stacked flat.
 5. Store roll materials on end.
 6. Store emulsion and liquid type products in temperatures above 40 degrees F.
 - C. HANDLING:
 1. Handle sheet material, such as drywall, to avoid undue sagging.
 2. Handle rolled goods so as to prevent damage to edges and ends.
 - D. PROTECTION:
 1. Protect steel materials from corrosion.
 2. Protect finished surfaces from damage.
 3. Protect insulation from direct sunlight and moisture.
 4. Protect edges of sheet material from damage.
3. Contractor shall be responsible for compliance with storage requirements.
4. Materials damaged due to improper storage shall be replaced by the Contractor at no cost to the Owner.
5. OWNER-FURNISHED ITEMS AND EQUIPMENT:
Store and handle Owner furnished items and equipment per the requirements of this Section.

END OF SECTION

SECTION 01605
PRODUCTS AND SUBSTITUTIONS

PART I - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 DESCRIPTION OF REQUIREMENTS:

A. DEFINITIONS:

"Products" is defined to include purchased items for incorporation into the work, regardless of whether specifically purchased for project or taken from Contractor's stock of previously purchased products. "Materials", is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed or applied to form units of work. "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, etc.). Definitions in this paragraph are not intended to negate the meaning of other terms used in contract documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

B. SUBSTITUTIONS:

The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to contract documents, where requested by Owner, Architect or Engineer, are "changes" not "substitutions." Requested substitutions during bidding period, which have been accepted prior to Contract Date, are included in contract documents and are not subject to requirements for substitutions as specified herein. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute "substitutions" and do not constitute a basis for change orders, except as provided for in contract documents. Otherwise, Contractor's requests for changes in products, materials and methods of construction required by contract documents are considered requests for "substitutions", and are subject to requirements hereof.

C. STANDARDS:

Refer to Division 1 section "Definitions and Standards" for applicability of industry standards to products of project, and for acronyms used in text of specification sections.

1.03 QUALITY ASSURANCE:

A. SOURCE LIMITATIONS:

To the greatest extent possible of each unit of work, provide products, materials or equipment of a singular generic kind and from a single source.

B. COMPATIBILITY OF OPTIONS:

Where more than one choice is available as options for Contractor's selection of a product or material, select an option which is compatible with other products and materials already selected (which may have been from among options for those other products and materials). Total compatibility among options is not assured by limitations within contract documents, but must be provided by Contractor. Compatibility is a basic general requirement of product/material selections.

1.04 SUBMITTALS:

A. REQUESTS FOR SUBSTITUTIONS:

Submit three (3) copies, fully identified for product or method being replaced by substitution, including related specification section and drawing number(s), and fully documented to show compliance with requirements for substitutions. Include product data/drawings, description of methods, samples where applicable, Contractor's detailed comparison of significant quantities between specified item and proposed substitution, statement of effect on construction time and coordination with other's affected work, cost information or proposal, and Contractor's statement to the effect that proposed substitution will result in overall work equal-to-or-better-than work originally indicated.

1.05 PRODUCT DELIVERY, STORAGE & HANDLING:

A. GENERAL:

Deliver, handle and store products in accordance with manufacturer's recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Control delivery schedules to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.

1.06 WARRANTIES (GUARANTEES):

A. CATEGORIES OF SPECIFIC WARRANTIES:

Warranties on the work are in several categories, including those of General Conditions, and including (but not necessarily limited to) the following specific categories related to individual units of work specified in sections of Divisions 2 through 16 of these specifications.

1. SPECIAL PROJECT WARRANTY (GUARANTEE):

A warranty specifically written and signed by Contractor for a defined portion of the work; and, where required, countersigned by subcontractor, installer, manufacturer or other entity engaged by Contractor.

2. SPECIFIED PRODUCT WARRANTY:

A warranty which is required by contract documents, to be provided for a manufactured product incorporated into the work; regardless of whether manufacturer has published a similar warranty without regard for specific incorporation of product into the work, or has written and executed a special project warranty as a direct result of contract document requirements.

3. COINCIDENTAL PRODUCT WARRANTY:

A warranty which is not specifically required by contract documents (other than as specified in this section); but which is available on a product incorporated into the work, by virtue of the fact that manufacturer of product has published warranty in connection with purchases and uses of product without regard for specific applications except as otherwise limited by terms of warranty.

B. REFER TO INDIVIDUAL SECTIONS:

Refer to individual sections of Divisions 2 through 16 for the determination of units of work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).

C. GENERAL LIMITATIONS:

It is recognized that specific warranties are intended primarily to protect Owner against failure of the work to perform as required, and against deficient, defective and faulty materials and workmanship, regardless of sources. Except as otherwise indicated, specific warranties do not cover failures in the work which result from: 1) Unusual and abnormal phenomena of the elements, 2) The Owner's misuse, maltreatment or improper maintenance of the work, 3) Vandalism after time of Substantial Completion, or 4) Insurrection or acts of aggression including war.

D. RELATED DAMAGES AND LOSSES:

In connection with Contractor's correction of warranted work which has failed, remove and replace other work of project which has been damaged as a result of such failure, or must be removed and replaced to provide access for correction of warranted work.

1. CONSEQUENTIAL DAMAGES:

Except as otherwise indicated or required by governing regulations, special project warranties and product warranties are not extended to cover damage to building contents (other than work of Contract) which occurs as a result of failure of warranted work.

E. REINSTATEMENT OF WARRANTY PERIOD:

Except as otherwise indicated, when work covered by a special project warranty or product warranty has failed and has been corrected by replacement or restoration, reinstate warranty by written endorsement for the following time period, starting on date of acceptance of replaced or restored work.

A period of time ending upon date original warranty would have expired if there had been no failure.

F. REPLACEMENT COST, OBLIGATIONS:

Except as otherwise indicated, costs of replacing or restoring failing warranted units or products is Contractor's obligation, without regard for whether Owner has already benefitted from use through a portion of anticipated useful service lives.

G. REJECTION OF WARRANTIES:

Owner reserves the right, at time of Substantial Completion or thereafter, to reject coincidental product warranties submitted by Contractor, which in opinion of Owner tend to detract from or confuse interpretation of requirements of contract documents.

H. CONTRACTOR'S PROCUREMENT OBLIGATIONS:

Do not purchase, subcontract for, or allow others to purchase or sub-subcontract for materials or units of work for project where a special project warranty, specified product warranty, certification or similar commitment is required, until it has been determined that entities required to countersign such commitments are willing to do so.

I. SPECIFIC WARRANTY FORMS:

Where a special project warranty (guarantee) or specified product warranty is required, prepare a written document to contain terms and appropriate identification, ready for execution by required parties. Submit draft to Owner (through Architect/Engineer) for approval prior to final executions.

PART II - PRODUCTS

2.01 GENERAL PRODUCT COMPLIANCES:

A. GENERAL:

The compliance requirements, for individual products as indicated in contract documents, are multiple in nature and may include generic, descriptive, proprietary, performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with. Also "allowances" and similar provisions of contract documents will have a bearing on selection process.

B. PROCEDURES FOR SELECTING PRODUCTS:

Contractor's options for selecting products are limited by contract document requirements, and governing regulations, and are not controlled by industry traditions or procedures experienced by Contractor on previous construction projects. Required procedures include, but are not necessarily limited to, the following for various indicated methods of specifying:

1. SINGLE PRODUCT/MANUFACTURER NAME:

Provide product indicated, except advise Architect/Engineer before proceeding, where known that named product is not a feasible or acceptable selection.

2. TWO OR MORE PRODUCT/MANUFACTURER NAMES:

Provide one of the named products, at Contractor's option; but excluding products which do not comply with requirements. Do not provide or offer to provide an unnamed product, except where none of named products comply with requirements or are a feasible selection; advise Architect/Engineer before proceeding.

3. "OR EQUAL":

Where named products in specifications text are accompanied by the term "or equal", or other language of similar effect, comply with those contract document provisions concerning "substitutions" for obtaining Architect's/Engineer's approval (by change order) to provide an unnamed product.

4. "NAMED"

Except as otherwise indicated, is defined to mean manufacturer's name for product, as recorded in published product literature, of latest issue as of date of contract documents. Refer requests to use products of a later (or earlier) model to Architect/Engineer for the acceptance before proceeding.

5. STANDARDS, CODES AND REGULATIONS:

Where only compliance with an imposed standard, code or regulation is required, selection from among products which comply with requirements including those standards, codes and regulations, is Contractor's option.

6. PERFORMANCE REQUIREMENTS:

Provide products which comply with specific performances indicated, and which are recommended by manufacturer (in published product literature or by individual certification) for application indicated. Overall performance of a product is implied where product is specified with only certain specific performance requirements.

7. PRESCRIPTIVE REQUIREMENTS:
Provide products which have been produced in accordance with prescriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in manufacturing process.
8. VISUAL MATCHING:
Where matching with an established sample is required, final judgment of whether a product proposed by Contractor matches sample satisfactorily is Architect's judgment. Where no product within specified cost category is available, which matches sample satisfactorily and complies with requirements, comply with contract document provisions concerning, "substitutions" and "change orders" for selection of a matching product outside established cost category or, of a product not complying with requirements.
9. VISUAL SELECTION:
Except as otherwise indicated, where specified product requirements include "...as selected from manufacturer's standard colors, patterns, textures...", or words of similar effect, the selection of manufacturer and basic product (complying with requirements) is Contractor's option, and subsequent selection of color, pattern and texture is Architect's selection. Where specified product requirements include "...as selected from standard colors, patterns, textures available within the industry...", or words to that effect, selection of product (complying with requirements, and within established cost category) is Architect's selection, including designation of manufacturer where necessary to obtain desired color, pattern or texture.

2.02 SUBSTITUTIONS:

- A. CONDITIONS:
Contractor's request for substitution will be received and considered when extensive revisions to contract documents are not required and changes are in keeping with general intent of contract documents; when timely, fully documented and properly submitted; and when one or more of following conditions is satisfied, all as judged by Architect/Engineer. Otherwise, requests will be returned without action except to record non-compliance with these requirements.
 1. Where request is directly related to an "or equal" clause or other language of same effect in contract documents.
 2. Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the work promptly to coordinate various activities properly.
 3. Where required product, material or method cannot be provided in a manner which is compatible with other materials of the work, or cannot be properly coordinated therewith, or cannot be warranted as required, or cannot be used without adversely affecting Owner's insurance coverage on completed work, or will encounter other substantial non-compliances which are not possible to otherwise overcome except by making requested substitution, which Contractor thereby certifies to overcome such non-compatibility, non-coordination, non-warranty, non-insurability or other non-compliance as claimed.
 4. Where required product, material or method cannot receive required approval by a governing authority, and requested substitution can be so approved.

5. Where substantial advantage is offered Owner, in terms of cost, time, energy conservation or other valuable considerations, after deducting offsetting responsibilities Owner may be required to bear, including additional compensation to Architect/Engineer for redesign and evaluation services, increased cost of other work by Owner or separate contractors, and similar considerations.

B. WORK RELATED SUBMITTALS:

Contractor's submittal of (and Architect's/Engineer's acceptance of) shop drawings, product data or samples which relate to work not complying with requirements of contract documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.

2.03 GENERAL PRODUCT REQUIREMENTS:

A. GENERAL:

Provide products which comply with requirements, and which are undamaged and unused at time of installation, and which are complete with accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for intended use and effect.

1. STANDARD PRODUCTS:

Where available, provide standard products of types which have been produced and used previously and successfully on other projects and in similar applications.

2. CONTINUED AVAILABILITY:

Where additional amounts of a product, by nature of its application, are likely to be needed by Owner at a later date for maintenance and repair or replacement work, provide a standard, domestically produced product which is likely to be available to Owner at such later date.

B. NAMEPLATES:

Except as otherwise indicated for required approval labels, and operating data, do not permanently attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on exterior of the work.

1. LABELS:

Locate required labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface which, in occupied spaces, is not conspicuous

2. EQUIPMENT NAMEPLATES:

Provide permanent nameplate on each item of service-connected or power operated equipment. Indicate manufacturer, product name, model number, serial number, capacity, speed, ratings and similar essential operating data. Locate nameplates on an easily accessed surface which, in occupied spaces, is not conspicuous.

END OF SECTION

SECTION 01700
PROJECT CLOSEOUT

1. PROJECT CLOSEOUT SHALL FOLLOW THE FOLLOWING SEQUENCE:

A. SUBSTANTIAL COMPLETION:

As defined by Articles 8.1.3 and 9.8 of the General Conditions. Should a "Certificate of Substantial Completion" not be issued, Contractor shall notify Architect, in writing, of his readiness for the "Pre-Final" inspection.

B. COMPLETION OF PUNCH LIST:

Contractor shall complete all items on Punch List from "SUBSTANTIAL COMPLETION" or "PRE-FINAL" inspection, and so inform Architect in writing, and submit Closeout Documents A, B, C, and D listed in Item 2 of this section to Architect.

C. FINAL INSPECTION:

Architect and Owner, with Contractor, will verify that all Punch List items have been completed or otherwise resolved.

D. SUBMISSION OF REMAINING CLOSEOUT DOCUMENTS:

As defined in Item No. 2 below.

E. EXECUTION OF CHANGE ORDER FOR ADDITIONAL WORK AND/OR TIME.

F. ARCHITECT ISSUES CERTIFICATE OF FINAL PAYMENT:

Only after Items "A" through "E" above have been completed will the Certificate for Final Payment be approved by the Architect.

2. CLOSEOUT DOCUMENTS:

Contractor shall submit 2 each of the following documents to the Architect before the final certificate for payment is approved. Original and one copy is acceptable. They are to be submitted to the Architect in 2 three ring binders. The items are as follows:

- A. Maintenance Manual as specified in "INCIDENTAL WORK" section of Division 1.
- B. Heating, Air Conditioning, Plumbing, and Electrical Operation Manual, with letter from Owner acknowledging receipt of operating instructions.
- C. "Record" drawings as specified in "INCIDENTAL WORK" section of Division 1 (**drawings and CD-R**).
- D. Letter listing Maintenance Materials turned over to Owner.
- E. *Consent of Surety to Final Payment*, AIA Form G707.
- F. *Contractor's Affidavit of Release of Lien*, AIA Form G706A.
- G. *Contractor's Affidavit of Payment of Debts and Claims*, AIA Form G706.
- H. Release of Liens from all Subcontractors and Materials Suppliers, with Contract amounts of \$1,000.00 or more.
- I. Guarantee on all Major Sub-Contracts.
- J. General Contractor's Guarantee.
- K. **Affidavit of Advertisement of Job Completion (4 consecutive weeks) (PUBLIC JOBS ONLY)**

One (1) copy of forms for E, F, and G will be furnished by Architect, upon request of Contractor.

3. Contractor may consult with Architect and arrange a schedule for minimum time lapse between release of liens and final payment.

END OF SECTION

SECTION 01710
CLEANING

PART I - GENERAL

1.01 DESCRIPTION:

- A. Execute cleaning during progress of the work and at completion of the work, as required by General Conditions.
- B. Related requirements in other parts of the Specifications:

General Conditions

1.02 DISPOSAL REQUIREMENTS:

Conduct cleaning and disposal operations to comply with codes, ordinances, regulations and anti-pollution laws.

PART III - PRODUCTS

2.01 MATERIALS:

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART III - EXECUTION

3.01 DURING CONSTRUCTION:

- A. Execute daily cleaning to keep the work, site, and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
- B. Provide on-site containers for the collection of waste materials, debris and rubbish. Debris shall not be thrown into foundation trenches.
- C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 DUST CONTROL:

- A. Clean spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.
- B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

3.03 FINAL CLEANING:

- A. Employ skilled workmen for final cleaning.

- B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and other foreign materials from sight-exposed interior and exterior surfaces.
- C. Hardware shall have stains, dust, dirt, paint and other disfigurement removed and shall be thoroughly cleaned and polished.
- D. Scratched, marred or otherwise disfigured aluminum or other finished metals shall be replaced.
- E. Broom clean exterior paved surfaces, rake clean other surfaces of the grounds.
- F. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed surfaces, and all work areas, to verify that the entire work is clean.
- G. Upon completion of final cleaning, cleaning equipment, materials and debris shall be removed from building and premises left clean.

END OF SECTION

SECTION 02810

LANDSCAPE IRRIGATION SPECIFICATIONS

PART 1 GENERAL

- A. Extent of underground irrigation system is shown on Drawings and in the schedules.
 - 1. Provide all labor, materials and equipment required by or inferred from Drawings and Specifications to complete the Work of the Section.
 - 2. Provide additional Work and materials required by local authorities at no extra cost to Owner.
 - 3. Contractor shall provide all permits, applications, licenses and other qualifications to complete work at no additional cost to owner.
 - 4. Reference Standards: American Society for Testing and Materials, Annual Book of ASTM Standards, latest edition.
- B. Contracts: Irrigation Work to a single firm specializing in irrigation installation, acceptable to Landscape Architect.
- C. Codes and Standards: Perform Irrigation Work in compliance with applicable requirements of governing authorities having jurisdiction including all national and local electrical codes. Notify Landscape Architect in writing of all discrepancies immediately.
- D. Do not make substitutions: If Contractor desires to make substitutions of materials; sufficient descriptive literature and material samples must be furnished to establish the material as an equal substitute. In addition, Contractor must state his reasons for desiring substitute materials. Submit this request and information to Landscape Architect.
- E. Approval and Selection of Materials and Work: The selection of all materials and execution of all operations required under the Drawings and Specifications is subject to the approval of Owner and Landscape Architect. They have the right to reject any and all materials and any and all Work, which in their opinion does not meet requirements of the Contract Documents at any state of operations. Contractor is to remove rejected Work and or materials from Project Site and replace promptly.
- F. "As-Built" Drawings: Any changes in layout and/or arrangements of the proposed irrigation system, or any other differences between proposed system and actual installed conditions are to be recorded by Irrigation Contractor in the form of an "As-Built" Drawing. All drawings are to be clearly and neatly drawn on a Mylar sepia base of original design provided by Landscape Architect. Provide Owner and Landscape Architect with a reproducible Mylar copy of the "As-Built" Drawings before Work under this Contract will be considered for acceptance. All automatic and manual valves, hose bibs or quick couplers and wire splice shall be shown with actual dimensions to reference points so they may be located easily in the field. Submittal of approved "As-Built" Drawings will preclude any Application for Final Payment by Contractor.
- G. Delivery, Storage and Handling: Deliver material and equipment in such a manner as to not damaged parts or decrease the useful life of equipment.
 - 1. Store materials away from detrimental elements. Coordinate with General Contractor to secure a safe staging area.
 - 2. Handle, load, unload, stack and transport materials for irrigation system carefully to avoid damage. Handle pipe in accordance with Manufacturer's recommendations.

- H. Verify Tap: Test water conditions, as they exist immediately down stream from tap: If they do not meet design demands, notify Landscape Architect immediately of existing conditions.
- I. The irrigation system is designed to operate under the following conditions; a minimum of 60 psi of water pressure at tap and at least #36 gallons per minute available water supply 1" tap & meter as part of aide to construction.
- J. Job Conditions: Insurance on irrigation materials or equipment stored or installed is the responsibility of Irrigation Contractor. Such insurance shall cover fire, theft and vandalism. Should Contractor elect not to provide for such insurance, he will in no way hold Owner responsible for any losses incurred by the aforementioned acts. The Contractor is responsible for all costs incurred in replacing damaged or stolen materials.
1. Obtain all required permits and pay all required fees, at no additional cost to Owner. Any penalties imposed due to failure to obtain permits or pay fees are the responsibility of the Contractor.
 2. Provide and maintain all passageways, guard fences, warning lights and other protection devices required by local authorities.
 3. Existing site improvements shall be performed in a manner that will avoid possible damage. The Contractor is responsible for any damage of a mechanical nature as well as damage resulting from leaks in irrigation system whether due to negligence or otherwise.
 4. Keep project site clean and orderly at all times during construction.
- K. Sleeves to be installed by the **General Contractor**. Coordination and scheduling for excavation of sleeve ends is the responsibility of the Irrigation Contractor.
1. Coordinate and schedule all Work with General Contractor and Landscape Architect.
 2. Damages resulting from irrigation installation to Work of other trades must be repaired at the expense of the Irrigation Contractor in a timely fashion.
 3. Make adjustments to system layout as may be required and requested to provide complete coverage at no additional cost to the Owner.
- L. Warranty: All Work for a period of one year, starting on Date of Substantial Completion, against defects in material, equipment, Workmanship and any repair required resulting from leaks or other defects of Workmanship, material or equipment.
1. Repair unsatisfactory conditions promptly at no cost to Owner.
 2. Owner may make emergency repairs without relieving the Contractor of this warranty obligation.
 3. Irrigation Contractor to repair settling of backfilled trenches occurring during warranty period, including restoration of damaged plantings, paving or improvements resulting from settling of trenches or repair operations.
 4. Respond to Owner's request for repair Work within ten days. If not, Owner may proceed with such necessary repairs at Contractor's expense. In addition, Contractor shall be held responsible for replacement of any plant material (tree, shrubs, sod or seed) that becomes damaged or dies due to a lack of water during periods in which irrigation system is inoperable.

PART 2 PRODUCTS

- A. Specific requirements concerning the various materials and arrangements which safe to be installed are shown on drawings.
- B. Quality and Size: Material specified by name and/or model number in the Specifications, on the site or detailed drawings are used for the purpose of identification of materials and to insure

specific use of that material in the construction of the system. No substitutions will be permitted without approval. (See Substitutions).

1. Plastic pipe for all main lines is schedule 40 (PVC while laterals 1 ½" size and over is Class 200 PVC Type 1120 or 1220 as manufactured Cabot, John-Mansville (or approved equal) unless otherwise specified herein or on the drawings. All pipe, 1" size and less, is Class 160.
 2. PVC pipe is to be continuously marked with Manufacturer's identification, type, class and size and installed with these markings on the top of the pipe.
 3. All fittings should be Schedule 40 PVC Type 1, of domestic manufacture and identified as to pressure rating or schedule.
- C. Solvent Weld: Solvent weld for PVC pipe over 20' length must be installed with standard 20' length sections. Unnecessary joints or couplings are not acceptable.
- D. Risers: Provide threaded Schedule 80 PVC risers. All risers above grade to be either dark gray or black PVC pipe. (no risers are a part of this irrigation package)
- E. Electric Wiring: All 110 volt AC wiring to controller must consist of three wires: one black, one white and one ground. Electrical service to be provided by General Contractor unless otherwise directed by Owner.
1. All splices in controller wiring shall be waterproofed by 3m DBR/Y-600 Connectors or approved equal.
- F. Sprinkler Heads: Provide as indicated on the plan. Heads to perform to Manufacturer's specifications concerning radius of throw and volume in gallons per minute at given pressure.
- G. Automatic Controller: HUNTER PCC-600 CONTROLLER.** Exact location onsite. The controller location will be accessible as shown on drawing for maintenance. Provide for the possibility of making minor timing adjustments to the controller in the field. **General Contractor to provide power and sleeving through walk to controller location on building. Or approved equal.**
- H. Water Meter: A 1" tap, backflow and water meter is to be installed in the location shown on the drawing as part of the aide to construction. Coordination is the responsibility of the General Contractor.
- I. Backflow Preventer: To be installed by General Contractor as part of the aide to construction package. Provide Watts Double Check Assembly Backflow Preventer Model 007. The backflow preventer is a double check valve assembly type, capable of having a flow rate of 80 gpm, with a pressure loss not to exceed 5 Psi and suitable for supply up to 150 psi. The backflow preventer body to be bronze, internal parts stainless steel and check valve assemblies with tight seating rubber. The backflow preventer assembly must include two gage valves for isolating unit and two ball valve test clocks for testing unit to insure proper operation. Provide backflow preventer as manufactured by Watts Sprinkler Manufacturing Corporation.
- J. Pressure Regulator: Provide Wilkins #600 or equal. (if necessary)
- K. Mastervalue: Provide Hunter Master Valve Size per Mainline. Or approved equal.

- L. Valve Boxes: Ametek 12" rectangular valve box with cover or jumbo mechanical box with cover. Place a minimum of 6" depth of gravel under each valve box, meter, and all pertinent equipment. Or approved equal.
- M. Sleeves: Schedule 40: Size as indicated on Plans by **General Contractor**.
- N. Quick Couplers: Provide Hunter quick coupler as shown on plans off the mainline: (Size and type as indicated on Plan). Quick Couplers to conform to Manufacturer's Specifications concerning performance. Quick Couplers shall be installed below grade in Ametek 12" x 18" valve boxes. The cover over Quick Coupler boxes shall be clearly marked with "non-potable water".
- O. Control Valves: Provide Rainbird Electric Remote Control Valve (size as indicated on Plan). Valve to conform to Manufacturer's Specifications concerning performance and at a given pressure.
- P. Surge Protection Equipment: General Contractor to provide Intermatic AG2401CE primary side surge protection in a junction box.
- Q. Rain Sensor: Hunter Industries Mini-Clik. The rain sensor shall be capable of interrupting the power from the irrigation controller to the valves when rainfall exceeds a pre-selected amount. The rain sensor circuitry shall be housed in an UV and corrosion resistant plastic casing and shall utilize 2 sets of hygroscopic disks to activate switches in the unit. One switch will be for the total rainfall compensation unit and the other for the Quick Response™ unit. The Quick Response™ unit will turn off the irrigation system within 5 minutes of the onset of precipitation, depending on the intensity.

The sensor shall be adjustable by turning a plastic collar on the device that regulates an opening, thus varying the rate of evaporation from the disks.

The sensor shall have mounting options that allow installation on a rain gutter, on conduit, with a telescoping extension to bring the unit away from an eave, or on a flat vertical surface.

The sensor shall be installed in accordance with the manufacturer's published instructions. The sensor shall carry a conditional five-year exchange warranty. The rain sensor shall be the Rain-Clik series as manufactured by Hunter Industries Incorporated, San Marcos, California. Or approved equal.

PART 3 EXECUTION

- A. Provide a competent superintendent and necessary assistants on the job while Work is progress. The Superintendent represents Contractor in all functions and directives given to him by Owner are binding as if given to Contractor in person.
- B. During the installation Landscape Architect may make regular site visits and reject any Work and materials that do not meet the Standards called for in Contract Documents. Rejected work must be promptly corrected and no time extension will be allowed for this reason.
- C. Inspection: Inspect project area prior to start of Work to determine that all site conditions are acceptable for irrigation Work to begin. Inform Landscape Architect of unsuitable conditions. Do not proceed with installation of irrigation system until unsatisfactory conditions have been corrected in a manner acceptable to installer.

- D. Preparation: Flag all existing underground utilities prior to trenching and/or boring operations. Obtain utility locations from Owner and/or General Contractor and Utilize utility locating services when necessary.
- E. Excavation: All excavation is unclassified and includes all materials encountered.
1. Prior to excavation, remove sod, preserve and replace after backfilling is completed.
 2. After excavation and backfilling is completed, regrade trenched area consistent with surrounding area and re-establish with 100 percent pure of type grass existing. Maintain as necessary for establishment and survival of grass.
 3. Backfill material is to be free from rock, large stones and other unsuitable substances that could damage the pipe or create unusual settling problems. Back fill in 6" layers and tamp after each layer to prevent excessive settling.
 4. Backfill trenches containing plastic pipe when pipe is cool to avoid excessive contraction in cold weather. Such backfilling can be done in early morning hours or pipe may be water cooled prior to backfilling procedures.
 5. Backfill material evenly in lifts not to exceed 6" and compact to 100 percent of maximum density.
 6. Contractor is responsible for establishing compaction in trenches equal to or exceeding overall compaction of paving base. Leave top of trench ready for asphalt by others.
Minimum depth of cover of all pipe is as follows:
 $\frac{3}{4}$ " – 1" pipe – minimum depth cover is 12"
 1 $\frac{1}{2}$ " – 1 $\frac{1}{2}$ " pipe – minimum depth cover is 18".
- F. Sleeving: Location of sleeving shown on plans is schematic. Sleeving Contractor to make adjustments necessary to accommodate existing vegetation, utilities and other existing conditions. Repair of damage to existing utilities, structures or other construction resulting from installation of sleeves is the responsibility of Sleeving Contractor. Verify those installed previous by others. Install PVC sleeves according to detail.
- G. Pipe Joints: Follow Manufacturer's Recommendation.
1. Solvent weld PVC pipe, assemble according to Manufacturer's Recommendations, using appropriate PVC pipe cleaner/primer and solvent cement.
 2. PVC to metal connection, Work metal connection first then use Teflon pipe fitting
 3. Main line shall be installed according to Manufacturer's Recommendations.
- H. Pipe and Fittings Installation: Install according to Manufacturer's Recommendations including snaking-in of PVC pipe to prevent excessive strain when contracting in cold weather. Solvent weld fittings must conform to Schedule 40 or Schedule 80 PVC dimensions and specifications for solvent weld fittings and as manufactured by Lasco, Inc.
- I. Lateral lines shall be as follows:
1. Install according to Manufacturer's Recommendations using standard techniques.
 2. Combine lateral lines and main supply lines in common trenches wherever possible with specified minimum depth of coverage over all pipe (see Backfilling).
 3. Exchange of 4" pip-up to 12" high pop-in field by Landscape Architect is incidental.
 4. Plug lines immediately upon installation to minimize infiltration of foreign matter.
 5. Flush lateral lines and risers prior to installation of sprinkler heads.
- J. Sprinkler Heads: Low pop-up sprinkler heads shall be installed in such a manner that tip is 1" above finished grade. Where finish grade has not been established, extend a riser a minimum of 12" above existing grade to mark location of head. After finish grade is established, install heads at specified height on triple elbow swing joint or flex piping.

1. High pop-up heads: High pop-up shrub heads shall have the finished height determined by Landscape Architect.
 2. Backfill around sprinkler head assembly in such a manner that sprinkler head is stabilized so that no lateral motion is exhibited during operation.
 3. Install control wire in orderly fashion, locate in main line trench. Bundle wires together and tape at 10' intervals. Position wires under main line.
 4. Allow for contraction of wires by providing looped slack at directional changes in supply line.
 5. Keep wire splices to a minimum. All splice locations to be indicated on "as-built drawings".
 6. Pass Wires under existing or future paving, construction, etc. through PVC sleeves provided by **General Contractor**.
- K. Control Equipment: Install automatic valves and controller according to Manufacturer's Recommendations. Appropriate locations are shown on the drawings. All Irrigation valves and splice boxes are to occur on the property. Some locations on the plan may be shown in pavement for clarity.
- L. Valve Boxes: All valves are to be housed in valve boxes. Install according to Manufacturer's Recommendations and according to details. Position boxes at a height that will not cause them to interfere with maintenance machinery (e.g., mowers) and such that soil and mulch do not wash into the box. **Locate all valve boxes within plant bed areas wherever possible.**
- M. Install surge protection equipment on primary (110 VAC) power lines. Connect each surge protect unit to at least on 5/8" diameter by 9' long copper clad grounding electrode driven into the soil to its full depth. Place electrodes no closer than 2' from controller cabinet or any control or power wire. Be consistent in locating ground rods throughout installation with respect to controller position and not locations on "As-Built" Drawings.
- N. Operational Testing: Upon completion of irrigation system and after head installation, test entire system for proper operation. Flush all air from system and check components for proper operation.
- O. "As-Built" Drawings: "As-Built" Drawings are to include locations of all wire splices, valves (automatic and manual) with triangulated measurements to each location as well as any deviations in location of piping and heads as represented by Contract Documents.
- P. Owner Orientation: Upon completion of Work and final acceptance by Owner and Landscape Architect, Contractor is responsible for orientation of maintenance personnel in the operation, maintenance and repair of system. Furnish copies of all available parts lists, trouble-shooting lists and specification sheets to Owner prior to final payment.
1. Set initial watering schedules and programming on automatic controllers at the direction of Landscape Architect. Changes in schedules and programming and instructions on how to make such changes are under the responsibility of the Landscape Architect.
- Q. Clean Up: During Irrigation Work, keep project site clean and orderly. Upon completion of Work, clear grounds of debris, superfluous materials and all equipment. Remove from site to the satisfaction of Landscape Architect and Owner.
- R. Protection: Protect Irrigation Work and materials from damage due to irrigation operations, operations by other contractors, trades and trespassers. Maintain protection until Date of Substantial Completion. Cover all openings into system as it is being installed to prevent obstructions in pipe and breakage, misuse or disfigurement of equipment.

1. Contractor is responsible for theft of equipment and material at job site before, during and after installation, until Date of Substantial Completion of the Work in total.
- S. Inspection and Acceptance: Upon completion of Work, notify Landscape Architect and Owner at least three days prior to requested Date of Inspection for Substantial Completion. Prior to contacting Landscape Architect for the purpose of demonstrating all or any part of the system, thoroughly test the system for proper operation and make adjustments and replace any defective parts prior to inspection for Substantial Completion. Where inspected irrigation Work does not comply with requirements, replace rejected Work promptly, within two weeks of inspection. In unusual circumstances Owner may grant a longer time period. If such replacements are not completed within time specified, Contractor may be considered to be in default of Contract and Owner may use Contract Retainage to hire other Contractors to finish the Work.

PART 4 ACCEPTANCE AND GUARANTEE

- A. Substantial Completion: Submit written requests for inspection for Substantial Completion to Landscape Architect at least three calendar days prior to anticipated Date of Inspection and Testing. Substantial Completion cannot be granted, and at the same time no further applications for payment shall be approved for more than 85% of contract until there has first been a walk-through for head coverage. At this time the Landscape Architect or Owner's Representative will prepare a "punch list" that consists of items to be addressed and corrected by Contractor immediately. Depending on the extent of the Work on the "punch list", the Landscape Architect will determine whether Substantial Completion is to be granted at that time or at a later date, pending the completion of the "punch list".
1. Submit record drawings and maintenance manuals to Landscape Architect with written request for inspection.
 2. Review "punch list" Work jointly with Owner and Landscape Architect for Substantial Completion of total (contract) Work. (See "General Conditions").
 3. Upon satisfactory completion of repairs and replacements and completion of "As -Built" drawings, Landscape Architect and Owner will verify system for Substantial Completion and issue AIA Certificate of Substantial Completion if all items on "punch list" have been completed. If necessary another "punch list" will be written to itemize any deficiencies still existing and will be attached to AIA Certificate. Contractor shall complete all "punch list" items within 30 days while continuing maintenance.
- B. Date of Substantial Completion: Date of Substantial Completion will constitute beginning Date of One-Year Guarantee. This Date also constitutes the beginning of the warranty responsibilities and acceptance by Owner and Landscape Architect.
1. Guarantee all Work, products, equipment and materials for one year, beginning at Date of Substantial Completion as per **Written letter of notification.**
 2. Make good any damage, loss, destruction or failure. Repairs and replacements shall be done promptly and at no additional cost to Owner.
 3. Repair damage to grade, plants and other Work or property as necessary.
 4. If replacement are not acceptable during or at end of Guarantee Period Owner may elect either subsequent replacement or credit. Replacement products shall have a similar one-year guarantee from time of replacement.
 5. Guarantee applies to all unacceptable conditions or losses with exception of those due to acts of nature, vandalism or Owner neglect, as determined by Landscape Architect. Acts of Nature include, but may not be limited to, high winds or hurricane or tornado force, sleet, hail, freezing rain and extreme cold (as determined by Landscape Architect). Contractor agrees to replace losses due to Acts of Nature at fifteen percent (15%) less than original contract price for the damaged Work.

- C. Final Inspection and Acceptance: One year after the Date of Substantial Completion of Work in total, the Landscape Architect and Owner will inspect Work for Final Acceptance. Upon satisfactory completion of repairs and/or replacements Landscape Architect certifies, in writing, the Final Acceptance of Work.
1. At the end of Guarantee Period and upon request for inspection, jointly review all guaranteed Work for Final Acceptance.
 2. Submit written request for inspection for Final Acceptance to Landscape Architect at least two weeks prior to anticipated Date of Inspection; include list of Work Substantially Complete and list of Work replaced during Guarantee Period.
 3. Upon completion by Contractor of all required replacements, Owner and Landscape Architect will confirm the Date of Final Acceptance of Work.
- D. Applications for Payment will be covered in the contract. (Refer to "General Conditions").

END OF SECTION

SECTION 02900

LANDSCAPE SPECIFICATIONS

PART 1 GENERAL

- A. Extent of the planting is shown on the drawings and in the schedules.
- (1) **General Contractor** to provide entire set of site drawings including but not limited to grading, piping, and electrical drawings to **Landscape Contractor** for bidding purposes.
 - (2) Provide all labor, materials and equipment required by or inferred from the Drawings and Specifications to complete the work of this section.
 - (3) Providing, placing, grading topsoil for landscape grading as indicated in the Drawings.
 - (4) Providing and installing trees, shrubs, seeding and solid sod for landscape planting, as per details.
 - (5) To successfully dig existing plants and store them on or off-site during construction for replanting on-site per plans where they will reestablish and thrive.
- B. Contracts: Landscape Work to a single firm specializing in irrigation installation acceptable to Landscape Architect.
- C. Specified Maintenance Period, and One-Year Guarantee Period.
- D. Verify plant count from plan, and provide and install all plant material on plan.
- E. All plants shall conform to or surpass minimum quality standards as defined by the American Association of Nurserymen; current edition of American Standards for Nursery Stock published by American Association of Nurseryman, Inc. and in addition shall conform to sizes and descriptions in the plant list. All work to be performed by a firm specializing in Landscaping, not a subcontractor.
- F. The Landscape Architect will consider alternate growers only if submitted with **15 days or more prior to bid date**. The Landscape Architect will tentatively accept (subject to tagging) or reject alternate growers within 5 days of date submitted. Landscape Contractor must have written conditional acceptance from Landscape Architect of any proposed alternate growers to submit with the Bid Package, otherwise, substitutions will not be permitted. Substitution from the specified plant list will be accepted only when satisfactory evidence in writing is submitted to the Landscape Architect, prior to submitting bid – tree list, showing that the plant material is not available. This list shall be submitted prior to submitting bid.
- (1) Requests for approval of alternate growers for trees and for approval of alternate plant material shall include:
 - a. Include grower name, contact person, current address and phone number
 - b. Common and botanical names
 - i. Size now and size at delivery
 - c. Photos of each tree proposed
 - i. Entire tree with size pole
 - ii. Close up of trunk flare
 - iii. Each photo watermarked with grower name
 - iv. Representative photo (each photo watermarked with grower name) of a tree root system (with soil freshly removed) for each variety and size proposed.
 - d. Signed statement from grower describing and certifying:
 - i. Root pruning and root enhancement history

- ii. That all root systems have been field grown in heavy clay soil, irrigated with drip irrigation, and have been transplanted and 100% mechanically root pruned with a vibrating blade during the first three years of the trees' life.
 - iii. All trees have been grown in no container larger than one gallon
 - iv. All trees are grown from rooted cuttings. No trees have been grafted or budded.
 - v. Trunk flares are visible above ground for all trees.
- e. Canopy Development
- i. Strong central leader to the top of the canopy. The tip of the leader on the main trunk must be intact and its terminal bud must be the highest part of the tree.
 - ii. No branch shall have a diameter greater than 2/3 the trunk diameter measured directly above the branch crotch. The tree crown must be structurally uniform. Branches shall be evenly distributed around the trunk. The crown shall be full of foliage which is evenly distributed around the tree.
- (2) If acceptable, the Landscape Architect will tentatively accept (subject to tagging) alternate growers for trees and also any proposed alternate trees within 10 weekdays of date submitted. Landscape Contractor must have written conditional acceptance from Landscape Architect for the grower of each tree on the tree list and also for any proposed alternate trees to submit with the bid package, otherwise, the bid will not be accepted.
- (3) If Contractor with successful bid has been granted written conditional acceptance for alternate materials prior to bid then the Landscape Architect will select and tag 100% of plant materials from acceptable alternate growers within 30 days after date contract is awarded to General Contractor. The Landscape Contractor will be responsible for all expenses related to tagging trips to alternate growers including usual fees charged by Landscape Architect. The Contractor shall arrange for and provide transportation for the Landscape Architect. Contractor shall provide the Landscape Architect a minimum of **TWO WEEKS** advance notice of any proposed tagging trip. Contractor shall limit tagging trips to no more than two at a maximum of two days each. **All tagging trips will be completed within 30 days after date contract is awarded** to the general contractor or landscape contractor, whichever occurs first.
- (4) **Orders for plant material:** Submit to Landscape Architect within 35 days from date contract is awarded to General Contractor confirmed orders for materials from approved growers listed on attached **PLANT SCHEDULE II** and any approved alternate growers. Contractor is responsible for payment of deposits required by approved growers. If the Landscape Architect does not receive all copies of all confirmed orders by 45 days from date contract is awarded, contractor will be charged ½ of 1% of the total contract per day beginning on the 46st day.

G. Plant Schedule/Bid Document Cost Breakdown:

Landscape Contractor to submit a breakdown sheet of the following as shown with their bid. Any bid submitted without the Cost Breakdown shall be considered incomplete.

The following is a cost breakdown of specific work areas to be included in the contractor's base bid. These values are provided for the owner's information and are not intended to be used as alternates to adjust the proposed scope of work.

Bidders shall verify quantities listed below by his own take-off from the drawings and notify the landscape architect of discrepancies before submitting his bid.

All trees shall be tagged by the Landscape Architect at one of the nurseries on the planting details, or approved equal by the Landscape Architect prior to bidding. See section F above.

Quantity:	Botanical Name	Common Name	Source	Unit Tree Cost (Not including Freight)	Unit Installation Cost Excluding Cost of Tree	Unit Cost for Freight for each tree based on full trucks
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- H. Approval and selection of materials and work: The selection of all materials and the execution of all operations required under the Drawings and Specifications is subject to the approval of the owner and Landscape Architect. They have the right to reject any and all materials and any and all Work, which in their opinion does not meet the requirements of the Contract Documents at any stage of the operations. Remove rejected Work and or materials from the Project Site and replace promptly at no additional cost to the owner. Prior to bid, Landscape Contractor to submit photos for trees from approved growers and include growers name, contact, address, and phone number.
- I. Workmanship: Install all plant materials neatly.
- (1) Make minor adjustments to layout as may be required and requested by Landscape Architect at no additional cost to the owner.
 - (2) Coordinate delivery of all plant material with time of installation to prevent any plant material from being stockpiled on site longer than 24 hours.
 - (3) Deliver materials in such manner as to not damage or decrease the health and vigor of the plant materials.
 - (4) Store materials away from detrimental elements. Coordinate with General Contractor to secure a safe staging area.
 - (5) Handle, load, unload, and transport materials carefully to avoid damage.
 - (6) Maintain and protect plant materials as necessary to insure health and vigor.
 - (7) Guarantee plant materials and lawn areas for one year from the date of substantial completion. Contractor shall replace plants that fail to grow properly with plants as originally specified at the earliest practical date following plant failure, without additional charges to the owner.
 - (8) Replacement materials will be guaranteed for one year from the date of replacement.
 - (9) The Contractor shall not be responsible for replacing plants that are damaged by abuse or improper maintenance by Owner as reported by Contractor outlined below or by acts of nature occurring after acceptance.
- J. Acts of nature may include, but may not be limited to high winds of hurricane or tornado force, sleet, hail, freezing rain and extreme cold (as determined by the Landscape Architect). Contractor agrees to replace losses due to Acts of Nature at fifteen percent (15%) less than the original contract price for the damaged work.
- K. Contractor's Periodic Inspection: During guarantee period, Contractor shall make periodic inspections of the project to satisfy himself that maintenance by the owner is adequate.
- (1) Any methods or products that he deems not normal or detrimental to good plant growth shall be reported to the Owner in writing.
 - (2) Failure to inspect and report shall be interpreted as approval and the Contractor shall be held responsible for any and all necessary replacements.
- L. Soil Testing: **General Contractor** shall have soil tested by a suitable laboratory chosen by the **General Contractor** and subject to written approval of the Landscape Architect.

- (1) Soil test shall be completed in all planting areas to determine lime and fertilizer and soil mixture requirements. Submit test results to Landscape Architect for approval. **Landscape Contractor** shall adjust pH and fertility based upon these results. No addition to or placement of soil is to be done prior to initial soil test report approval.

PART 2 PRODUCTS

- A. Topsoil: All topsoil shall be supplied from **Off-site** stockpile and spread by the **General Contractor**. The Landscape Contractor shall be responsible for fine grading. Topsoil shall be fertile, friable, sandy loam and a natural surface soil obtained from areas reviewed by Landscape Architect and possessing characteristics of representative soils in the project vicinity that produce heavy growths of crops, grass, or other vegetation. In the event that On-site topsoil is available, it shall be subject to the same Soil test and Characteristics listed above.
- B. Topsoil shall be free of subsoil, brush, organic litter, or objectionable weeds, clay, clots, stumps, stones, roots or other material harmful to plant growth or hindrance to planting or maintenance operations. Should regenerative materials be present in the soil, Landscape Contractor shall eradicate and remove such growth, both surface and root, which may appear in the imported materials at any point within 1 year following acceptance of the Work.
- C. Topsoil shall not be handled in a frozen muddy condition. The acidity range for topsoil in planting beds shall be between 5.0 and 7.0 inclusive. The acidity range for topsoil to be placed in areas to receive sod shall be 6.0 – 7.0. The mechanical analysis of the soil shall be as follows:
- | Sieve Size | Percent Passing |
|--------------|------------------|
| 1" mesh | 99 – 100 percent |
| ¼" mesh | 97 – 99 percent |
| No. 100 mesh | 40 – 60 percent |
| No. 200 mesh | 20 – 40 percent |
- D. Topsoil, regardless of source, shall meet all requirements of the paragraph above. Stockpile material that does not meet the requirements may, at the option of the Contractor, be improved by screening and the addition of organic matter and chemical admixtures.
- E. Planting Soil Mixture: Provide soil mix amended as per laboratory recommendations. Soil testing will determine the 50% additive breakdown necessary. Basic planting soil mix consists of:
- (1) 50% topsoil (as described above)
 - (2) 50% prepared additives (by volume as follows)
 - (3) 3 parts humus (forest peat or Nature's Helper)
 - (4) 1 part sterilized cow manure, commercial fertilizer and lime as recommended in soil test analysis.
- F. The components shall be thoroughly mixed to uniform consistency by hand or machine methods prior to placement in and around plantings.
- G. Trees: All large deciduous shade trees and ornamental trees are to be field grown from rooted cuttings true to variety and not grafted material. No grafted material will be accepted for the initial installation or as guarantee replacement material.
- H. Alternate Growers – (See substitutions above Part I Section E.) The Landscape Architect will select and tag 100% of plant materials from acceptable alternate growers. The contractor will be responsible for all expenses related to tagging trips to alternate growers including usual fees charged by the Landscape Architect. The Contractor shall arrange for and provide transportation and room and board for the Landscape Architect if

necessary. Contractor shall provide the Landscape Architect a minimum of **THREE WEEKS** advance notice. Contractor shall limit tagging trips to no more than two at a maximum of two days each. All tagging trips will be completed within 45 days from date contract is awarded to General Contractor.

- I. Contractor will submit confirmed orders from both acceptable specified growers and alternate growers within ten days of tagging by the Landscape Architect. Contractor is responsible for payment of deposits required by acceptable alternate growers.
- J. Fertilizer: Fertilizer for all trees, plants and ground covers shall be Sta-Green Nursery Special delivered to the site in unopened containers.
- K. Fertilize all areas according to the manufacturer's recommended rates in accordance with the monthly maintenance guideline herein.
- L. Cultivate and waterbeds or pits thoroughly after application.
- M. Adjust fertilizer in accordance with interim soil test reports.
- N. Fertilizer for sod: Fertilizer for sod shall be Sta-Green and sod fertilizer containing the following percentages by weight:
 - 18% nitrogen
 - 24% phosphorous
 - 10% potash
- O. Nursery Special or approved equal.
- P. Fertilizer shall be uniform in composition, dry and free flowing, and shall be delivered to the site in the original, unopened container, bearing the Manufacturer's guaranteed analysis. Fertilizer shall not have been exposed to weather prior to delivery to the site. After delivery, until used, it shall be completely protected at all times. It shall not be stored in direct contact with the ground.
- Q. Plants: All plants shall conform to or surpass minimum quality standards as defined by the American Association of Nurserymen (AAN), current edition of American Standard for Nursery Stock published by the ANN, Inc. and in addition, shall conform to sizes and descriptions in the plant list.
- R. Certificates of Inspection for Plant Material: All necessary Inspection certificates shall be supplied, if requested, to the Landscape Architect's representative for each shipment of plant material, as required by law. Certificates showing source of origin shall be filed with Landscape Architect prior to acceptance of the material.
- S. Inspection: All plant materials shall be subject to inspection and approval. The Landscape Architect reserves the right to reject any and all plants that fail to meet this specification at any point during the installation of the job. The Contractor at no additional cost shall promptly remove all rejected materials from the site to the owner.
- T. Quality and size: All plant materials furnished shall be well branched, proportioned width to height, or normal habit, sound, healthy and vigorous in growth. The minimum acceptable sizes of plants shall be measured before pruning with branches in normal position and shall conform to measurements specified. Plants used where symmetry is required shall be matched as closely as possible. It is the responsibility of the Landscape Contractor to determine from the planting plan where matching plants should be used. Ask for clarification by Landscape Architect when necessary and do so before bids are submitted. Plants shall meet all requirements as listed in the plant list.
- U. Source of Plants: Plants shall be field nursery, container grown or collected material subject to the requirements of the Specifications.
- V. Field Tagged Plants: All deciduous and evergreen trees are to be sourced by the contractor at any of the approved nurseries, of the provided list, or equal as approved by the Landscape Architect. **The Owner will pay the Landscape Architect for tree tagging trips to approved nurseries, plus all travel expenses incurred. Tree Tagging trips to alternate growers is the responsibility of the Landscape**

Contractor as discussed above in Part II Section H. The landscape contractor should anticipate accompanying the Landscape Architect on the tagging trips but is not required to do so.

- W. Insect, Pests and Plant Diseases: All plants shall be of healthy stock, free from disease, insects, eggs, larvae and parasites of an objectionable or damaging nature.
- X. Substitutions: Substitutions from the specified list will be accepted only when satisfactory evidence in writing is submitted to the Landscape Architect, showing that the plant specified is not available. Requests for approval of substitute material shall include common and botanical names and size of plant material. Only those substitutions or at least equivalent size and having the essential characteristics similar to the originally specified material will be approved. The Landscape Architect will issue acceptance or rejection of substitute plant materials in writing. Substitutions may be made only prior to bidding. (See Part I Section E)
- Y. Balled and burlapped plant material are to be wrapped with organic burlap wrapping only. Synthetic material will not be accepted. Remove all nursery-loading straps once plant material is placed in the pit.
- Z. Guying of trees: Stakes for supporting trees shall be sound timber, straight, sized as shown in planting details and of sufficient length to adequately support the plant. All visible surfaces shall be painted flat black.
- AA. Deadmen or stakes for anchoring guy wires in the ground shall be of size, material and strength adequate to hold guy taut and maintain tree firmly in an upright position.
- BB. Wire shall be # 12 gauge galvanized wire in double twisted strand to adjust tension.
- CC. Hose for encasing guy wires shall be new or suitable used 3/4" diameter rubber or plastic garden hose, black in color.
- DD. Wrapping material for trees with 2" caliper trunks or larger shall be standard crinkled paper cemented together with bituminous material in strips 8 to 10" wide.
- EE. Twine for tying wrapping material shall be lightly tarred, medium or sisal yarn; no synthetic cord shall be used.
- FF. Mulch: **Pine Bark Mulch** fresh, free of noxious weeds, seed, fire ants, Japanese beetles and/or fringed beetles. No Dyed or colored mulch will be acceptable.
- GG. Sod: Sod shall be 100% specified grass, free of weeds, freshly dug.
- HH. Lime: Ground dolomitic limestone not less than 85 percent total carbonates and magnesium, ground so that 50 percent passes 100 mesh sieve and 90 percent 20 mesh sieve.
- II. Inoculants: Pure culture of nitrogen-fixing bacteria prepared specifically for the legume species. A mixing medium as recommended by the manufacturer shall be used to bond the inoculant to the seed.
- JJ. All necessary hand tools and materials typically used in planting operations.
- KK. Plastic labels or tags on which identification can be made.
- LL. Milorganite 5-1-1 fertilizer
- MM. 'Nature's Helper' Soil conditioner
- NN. Follar insecticide as needed to control damage
- OO. Anti-desiccant spray for minimizing transpiration during storage
- PP. Bailing twine
- QQ. Burlap – 36" wide, rolled.

PART 3 EXECUTION

- A. Landscape Contractor is responsible for the demolition and removal of all existing plant material in the bedding areas including the removal of the stumps.

- B. Execution of Digging and Holding: All transplanting work, and storage of plants is to be carefully coordinated with the General Contractor. Prior to digging, thoroughly water all plant material to be dug to moisten the root area. Root prune all plants using a sharpened shovel a minimum of one week in advance of the anticipated day when digging and storage will occur. Using a shovel, root prune by encircling the plant to be dug by pushing the shovel down at a 75-85° angle not less than 10" deep. Do not attempt to lift the plant or remove it from its current location at this time. Prune the circle around the plant per the following root size schedule. Deep water each plant and foliar mist in the first day to help the plant transition. Monitor the water and mist during the first week and until the digging occurs. Not less than one week after the root pruning carefully dig each plant by using the shovel to raise the plant slowly and onto a sheet of burlap cloth twice the size of the root ball. The plant should be then carried to the holding area supported equally on all four corners. When the plant is laid down in the holding area, the burlap is to be folded over the root ball/mass and secured with bailing twine. Then cover the entire root ball with a soil conditioner. Clum's "Nature's Helper" or approved equal, and thoroughly water. Do not allow the rootball/mass dry out during the transplanting process. All dug plants are to be maintained and watered continuously where held until such time that they can be replanted. Maintenance should include pruning to thin, removal of dead branches, wilt-proof sprayings, insect treatments, etc., in addition to regular watering.

Root Ball Size:

Plant Height / Size	Minimum root ball diameter
10' – 12'	24" – 30"
8' – 10'	22" – 24"
4' – 8'	20" – 22"
12" – 4'	18" – 20"
1" – 12"	Spread of foliage

- B. Layout of major plants: Before commencing planting operations, location of major plants and outlines of areas to be planted shall be marked out on the ground, by the Contractor for approval by the Landscape Architect. Contact the Landscape Architect a minimum of 24 hours in advance of the anticipated review of the layout. Unapproved items planted will be subjected to relocation by the Landscape Contractor if not coordinated.
- C. Time and planting: Planting operations shall be during favorable weather in which conditions are neither extremely cold nor hot, nor to a point that the risk of loss is too great. The Contractor shall inform the Landscape Architect of high risks due to weather.
- D. Preparation of planting beds: **General Contractor** will provide and spread a minimum of **12" topsoil** and provide finish grades in all planting beds. The **Landscape Contractor** will fine grade and provide minimum 3% positive drainage in all beds. This is to include debris removal and any grading required bringing the finished grade to the proper level for planting trees, shrubs, and ground covers. **Landscape Contractor** shall grade for proper drainage at the minimum required above. Contractors shall anticipate and allow for settling of soils.
- E. Circular plant pits with vertical sides shall be dug by hand or machine methods for planting and transplanting of trees and shrubs. Sides of pits should be scarified to allow for water percolation.
- F. Shrub pit diameter shall be a minimum of one foot greater than the spread of the root mass.
- G. All transplanted material is to be replanted the same day it is dug.
- H. Test excavated plant pits to determine if sufficient drainage is present for proper plant survival.

- I. Fill the area between the pits, if the individual pits are arranged in a group, to the required grade with **Pine Bark Mulch** to a depth of 3". Plant beds shall be neatly edged and kept free of weeds until the work is accepted. No Dyed or colored mulch will be accepted.
- J. Excavation for planting ground covers: Ground cover beds shall be scarified by hand or machine method to a minimum depth of 8". 4" of pine bark additive and **20 lbs. / 1000 sq. ft.** of Sta-Green Nursery Special fertilizer shall be uniformly incorporated into the soil to the full 6" of minimum depth.
- K. Drainage test for trees: Tree pits shall be filled with water. If percolation is less than 100% within a period of twelve hours, drill a 12" auger to a depth of 4' below the bottom of the pit. Retest the pit. In case drainage is still unsatisfactory, notify Landscape Architect, in writing of the condition before planting the trees in the questionable areas. Contractor is fully responsible for warranty of the trees.
- L. Drainage Test for Plants and Ground covers: Plants and ground cover beds shall be spot tested.
 - (1) Dispose of topsoil removed from landscape excavations. Do not mix with the planting soil. Do not use as back fill or to construct saucers around pits.
 - (2) Balled and container plants shall be placed firmly upon scarified sub-grade and back filled with planting soil mixture. Remove all wire, cords, and burlap from top of root ball. Hand tamp carefully around and under ball to fill all voids. Water during back filling. Form saucer from planting soil mixture in order to retain water.
 - (3) Gently loosen outer roots of container grown plants to encourage outward growth.
 - (4) Fertilizer shall be thoroughly mixed and soaked into the top two inches of soil for all plant pits.
- M. Setting plants: Set plants uniformly **2-4"** higher than surrounding grade or as necessary to provide adequate positive drainage away from roots. Slope soil gradually from saucer.
 - (1) Cut rope, wire or string from top of ball after plant has been set; turn down and bury burlap.
- N. Tree transportation: The Contractor shall be responsible not only for the safe transportation of the plants to the site but also their condition upon arrival. Trees with abrasions of the bark, sunscalds, fresh cuts, or breaks of limbs that have not completely callused will be rejected. The Contractor at no additional cost will replace trees that have been damaged during transit. All plant unit costs will reflect all above listed specifications.
- O. Tree tags: All plants accepted at the nursery by the Landscape Architect shall be tagged with serialized self-locking tags. Trees delivered to the site without these tags or with broken tags will be rejected. The tags shall remain on the trees until the Landscape Architect for their removal has given the Contractor instructions.
 - (1) Tree tags shall be removed immediately following the final Punch-list. The Contractor will replace any trees on which tags remain and become in grown.
- P. Planting:
 - (1) Preparation: Before planting, remove any plastic wrap & any circling roots from the rootball. Handle tree only by rootball and be certain the equipment including strap and chain cradles are rated for the weight being lifted.
 - (2) Hole Width: Excavate planting hole at least two times the diameter of rootball. Rootball must be set on compacted foundation that can not settle when saturated.
 - (3) Hole Depth: Excavate planting hole at least two times the diameter of rootball.
 - (4) Equipment: Whenever possible a telehandler with side-tilt carriage forks machine rated to handle weights of rootballs and trees should be used to set rootballs in planting pits. Forks should always be carefully positioned above rootball to lift rootball by strapping on top of the rootball with four pick-up points for even weight

distribution. Prior to setting rootball in planting pit, forks should be adjusted so that tree is plumb. Place rootball at a level where the trunk flare will be 2" above surrounding finished grade after settling.

- (5) Straight and Plumb: Maintain the tree with forks in a straight & Plumb position while Backfilling and watering.
- (5) Backfill / water: Backfill and tamp in 6" lifts until ½ complete. Saturate the planting hole with water. After ½ backfill, watering and the tree is plumb add backfill to just below the top of horizontal ring of the wire basket, completely saturate planting hole. Adjust rootball (if necessary) by adjusting forks to make tree straight and plumb and at proper depth. Do not remove forks until tree is straight and plumb, backfill is settled and rootball is stable.
- (6) Remove forks: After above items have been completed and the tree is straight and plumb and at proper depth, gently remove forks and also remove synthetic strap, any cardboard packaging, the top portion of the wire basket down to and including the first horizontal ring, and the burlap from the top portion of the rootball down 9-12" of the ball.
- (7) Backfill / water: Complete the backfill & thoroughly saturate with water. Repeat this step as necessary to make absolutely certain that air pockets do not exist in the back fill.
- (8) When soil on top of rootball is distorted or not perpendicular to the tree trunk: Even rootballs with excellent root systems grown and harvested at proper depth can sometimes become distorted during shipping and handling.
 - (a) If soil is bulging or distorted on the top surface of the rootball:
 1. Very gently tamp the area of bulging or distorted soil as much as possible so that soil is perpendicular to trunk.
 2. If soil is still bulging or distorted, very gently (with a sharp shovel or spade) cut and remove any remaining buldge.
 - (b) Rootball distortion can be minimized by:
 1. Providing as much advance notice as possible so that nurseries will be able to best manage soil moisture during harvest, loading and shipping.
 2. Coordinating scheduling so that trees will not be shipped during significant rain.
 3. Follow the previous handling planting and are specifications. When tree is handled, moved, adjusted, straightened, etc. more than the minimum steps covered above, the possibility of rootball distortion and other damage increases. Rootballs that are moved when extremely wet are the most likely to become distorted or damaged.
- (9) Staking: Immediately after backfill has settled and the tree is straight and plumb, stake tree to provide stability until rootsystem is thoroughly established in the backfill. Stake all trees 2" caliper and over. Space two untreated wood stakes just outside of the rootball a minimum of two feet in the ground. Connect to the tree with Arbor Tie web fabric tape. Tape to be tied to form a figure eight twist that is not actually tied to the trunk of the tree allowing for movement and trunk growth. Arbor-Tie to be around tree no higher than four feet above finished grade. Check staking as needed to verify that no trunk damage has occurred. Check to confirm that tree and rootball are stable before removing staking.
- (10) Mulch: Mulch the area over the rootball to a depth no deeper than 1 ½". Keep all mulch away from trunk flare.
- (11) Straightening: If for any reason trees need straightening, trees can be straightened by carefully digging out all backfill around the rootball, attaching seatbelt strap to the wire basket and lifting. Never pull, push or put pressure on the trunk. If tree roots are significantly established in the backfill, it is best for the health of the trees to wait until dormancy to straighten trees since roots outside of the original rootball will be cut. Additional straightening during the first year is considered incidental.

- Q. Stockpile of trees: All plant material stored on site will be untied and/or cut loose for proper storing and inspections periodically.
- R. Pruning deciduous trees: Deciduous trees and shrubs shall be pruned only to thin out heavy growth.
 - (1) Do not top or remove terminal growing point or leader of any plant.
 - (2) Cuts over **3/4"** in diameter shall be painted with tree dressing paint. No paint containing lead shall be permitted.
- S. Mulch all planting beds and other areas designated to be mulched, with **3"** "settled" depth of specified mulch type. Individual plants are to be mulched as detailed. Mulch is to be measured after settlement and maintained as specified.
- T. Removal of existing grass: The **Landscape Contractor** is to remove existing grass and weeds from all areas for planting and resodding as designated on the plans. The existing stands are to be removed to a maximum depth of **1"** so as not to disturb existing tree roots where present in those areas.
 - (1) Aerate with a tined tiller to break up the upper **3"** lightly not to damage tree roots. Pick up solids for discarding and cut cleanly any roots damaged.
 - (2) Spread a light layer of topsoil not more than **1"** in depth over the aerated area and fine grade to meet acceptance by the Landscape Architect. Apply fertilizer and lime to these areas as specified previously under "Areas to receive sod" or "Preparation of planting beds" whichever the case may be.

PART 4 CLEANUP & PROTECTION

- A. Keep project site clean and orderly during planting operations.
- B. Clear grounds of debris, superfluous materials and all equipment upon completion of Work. Remove from site to the satisfaction of the Landscape Architect and Owner.
- C. Protect all work and materials from damage due to landscape operations and operations by other contractors, trades and trespassers. Maintain protection until Date of Substantial Completion.
- D. Contractor is responsible for theft of equipment and material at the job site before, during and after installation, until Date of Substantial Completion of Work in total.

PART 5 LANDSCAPE MAINTENANCE GUIDELINES

- A. Begin maintenance at commencement of Work of this section and continue until Substantial Completion, as part of Work of this section.
- B. Continue maintenance for a Maintenance Period of 1 month after date of Substantial Completion.
- C. Provide labor, materials, equipment and means for proper maintenance of all materials and workmanship.
- D. Supervision: submit a written report and conduct joint inspection with Landscape Architect maintenance program and procedures, at inspection for Substantial Completion.
- E. Maintenance of trees, shrubs, sod and seed: Maintain all plants in a growing, well formed, healthy condition by watering, fertilizing, pruning, weeding, spraying, wrapping, straightening, replacement or by other necessary maintenance operations.
- F. Watering: Monitor owner's automatic watering system and schedule for proper watering of all plant material.

- G. Advise Landscape Architect immediately in writing of recommended alterations due to weather or other conditions.
- H. Water landscaped areas not covered by automatic watering system as frequently as necessary to maintain proper moisture level, using the following schedule as a guide:
 - I. Twice a month during March, April, May
 - J. Once a week during June, July, August, September
 - K. No watering from October through February, except in drought conditions
- L. Fertilizing:
 - Mid March application of 23-3-3 (slow release nitrogen)
 - April 1 application of iron chalet
 - Mid April application of 12-6-6
 - August 1 application of 15-0-15
- M. Mowing: Mow grass to a height of **2-2 1/2"** when it reaches a height of **3"**, or as directed by Landscape Architect. Seeded and sodded lawns shall have at least one mowing before receiving Substantial Completion.
- N. Resodding: Rework and resod areas that fail to show a uniform stand of grass. Perform work with the same kind of sod applied and repeated until all areas are covered with a uniform stand of grass.
- O. Reseeding: Rework and reseed areas, which fail to show a uniform stand of grass. Perform work with the same kind of seed applied and repeated until all areas are covered with a uniform stand of grass.
- P. Site annual planting: Replace annual plantings according to schedule in Drawings. Blooming plants shall be in bloom at the time of planting and shall be replaced as necessary throughout specified Maintenance Period to maintain blooming condition.
- Q. Pruning: Remove dead wood as it becomes evident. Remove living portions of plants only at the direction of Landscape Architect.
- R. Wilt-proofing: Apply approved anti-desiccant to all evergreen trees during last two weeks of October (except pines).
- S. Spraying: For each spraying combine approved insecticide and fungicide to provide maximum protection for all plant materials. Three sprayings annually; in March, May and August.
- T. Weeding: Two applications (Spring and Fall) of chemical pre-emergent spray, approved. Two applications (during growing season) of chemical contact spray (Round-up, by Monsanto, or approved equal). Two days per month (every two weeks) manual weeding (by hand) during the period from March 1 through September 30; remove all visible weeds.
- U. Mulching: Keep planting areas neat and uniformly mulched to specified depth on a continuous basis. In addition to replacing and re-spreading mulch as necessitated during the maintenance period completely replenish mulch in all planting areas one time (during the last month of the one-year guarantee period or as directed by the Landscape Architect.)
- V. Straightening: Maintain plants in their stable upright position and at the proper grade by straightening and tightening staking and guying apparatus and as approved by the Architect.
- W. Clean-up: Keep all planting areas neat, weeded and uniformly mulched on a continuous basis. Clean up adjacent walks and pavement where lettered as a result of maintenance operations, on a continuous basis.
 - (1) The 1 month maintenance period following Substantial Completion will be considered a lump sum item to be addressed as included in the contract.

PART 6 ACCEPTANCE & GUARANTEE

- A. Substantial Completion: Submit written requests for inspection for Substantial Completion to the Landscape Architect at least three calendar days prior to anticipated date of inspection and testing.
- B. Substantial Completion cannot be granted and at the same time no further applications for payment shall be for more than 85% or less if the owner requests of the Contract until there has been a walk-through for planting at which time a "punch-list" will be written consisting of items to be addressed and corrected by the Contractor immediately. Depending on the extent of work on the "punch-list", the Landscape Architect will determine the job to be "Substantially Complete" or pending the completion of the "Punch-list".
- C. Submit Record Drawings and Maintenance manuals to the Landscape Architect with written request for inspection.
- D. Review the "punch-list" work jointly with the Owner and Landscape Architect for Substantial Completion of the total (contract) work. (See "General Conditions")
- E. Upon completion of repairs and replacements found necessary at the time of review, the Owner and Landscape Architect will confirm the date of Substantial Completion and issue the **Written Notice of Completion** if all items on the punchlist have been completed. If necessary, another punchlist will be written to itemize and deficiencies still existing and will be attached to the **Written Notice of Completion**. The contractor shall complete all "punchlist items within 30 days while continuing maintenance. Landscape Contractor is responsible for the Landscape Architect's time after one subsequent review for completion of punchlist.
- F. The date of Substantial Completion will constitute the beginning date of the One-Year Guarantee. This date also constitutes the beginning of warranty responsibilities and acceptance by the Owner and Landscape Architect.
- G. Guarantee all work, products, equipment and materials for one year, beginning at the Date of Substantial Completion as per **Written Notice of Completion**.
- H. Make good any damage, loss destruction or failure. Repairs and replacements shall be done promptly and at no additional cost to the Owner.
- I. Repair damage to grade, plants and other work as necessary.
- J. If the replacement is not acceptable during or at the end of the Guarantee Period, the Owner may elect either subsequent replacement or credit. Replacement products shall have a similar one-year guarantee from the time of replacement.

END OF SECTION

SECTION 03301
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SCOPE:

This section covers Cast-In-Place Concrete, including all materials, labor, equipment and services necessary to complete this work. General Conditions, Supplementary Conditions, and applicable portions of Division 1 apply to work of this section.

1.02 REFERENCE SPECIFICATIONS:

The following reference specifications are hereby made a part of this specification as if fully reproduced herein:

- A. ACI 301 *Specifications for Structural Concrete for Buildings*
- B. ACI 306 *Recommended Practice for Cold Weather Concreting*
- C. ACI 315 *Manual of Practice for Detailing Reinforced Concrete Structures*
- D. ACI 318 *Building Code Requirements for Reinforced Concrete*
- E. ACI 347 *Recommended Practice for Concrete Form Work*
- F. ASTM C94 *Ready-Mixed Concrete*

1.03 QUALITY ASSURANCE:

- A. Contractor shall employ a testing laboratory, approved by Architect, to perform concrete tests. Included in the responsibilities for concrete testing are the taking, handling, protecting and storing of test specimens, and the accurate reporting of compressive strength, weight of cylinders, content of concrete, slump, air content, and location of concrete. If the concrete fails to meet any part of the specifications, immediately notify Architect for instructions. Payment for tests will be made by Contractor. See QUALITY CONTROL section in Division 1.
- B. Obtain samples in accord with ASTM C31-69. Perform compression tests per ASTM C39-72; air content tests per ASTM C 173-78; slump tests per ASTM C 143-78. Make four (4) test cylinders of each type of concrete for each 100 cubic yards in each day's placing.
- C. Test one cylinder at seven (7) days and one set of two cylinders at 28 days for compressive strength. If the cylinders tested at 28 days do not indicate design strength, the remaining cylinder will be tested at a later time as directed by the Architect.
- D. Additional tests may be required if evidence of faulty workmanship, failure of laboratory tests, or questionable concrete exists. Additional tests shall be paid for by the Contractor, without additional cost to the Owner.

1.04 CONCRETE QUALITY DESIGN

- A. Establish concrete mix design proportions in accord with ACI 318-77, Chapter 4. If a suitable past record of strength test performance is not available, select proportions which produce an average of at least 1,200 psi greater than the specified strength for each type of concrete required.
- B. Retain ready-mix delivery tickets at job site for inspection by Architect.

1.05 SUBMITTALS:

Submit two (2) copies of the laboratory test report indicating type of concrete furnished, compressive strength, slump, air content, and water added to concrete after batching.

1.06 DEFECTIVE CONCRETE:

Where concrete fails to meet specified strength or where defects which cannot be repaired exist, the work shall be removed and replaced at Contractor's expense with work which meets specification requirements. The Contractor is solely responsible for furnishing concrete of the strength, quality, and appearance specified.

PART II - PRODUCTS

2.01 FORMS:

A. FOR EXPOSED CONCRETE:

Materials shall be B-B Plyform DFPA Class 1, exterior 3/4" thick or metal forms.

B. EXPANSION JOINTS:

Shall be 1/2" thick full depth of slab and shall comply with ASTM D 1751.

2.02 GRAVEL FILL:

3/4" and smaller (N. 78) crushed limestone washed free of fines.

2.03 REINFORCING:

A. REINFORCING STEEL:

ASTM A 615, Grade 60.

B. WELDED WIRE FABRIC:

ASTM A 185, W2 x W2 unless noted otherwise on drawings.

C. TIE WIRE:

Annealed wire, 16 gauge or larger.

D. ACCESSORIES:

Accessories used in exposed concrete shall be galvanized except footing and slab-on-grade reinforcement may be supported on solid blocks of concrete or concrete brick. Clay brick is not acceptable.

2.04 CONCRETE MATERIALS AND ADMIXTURES:

A. PORTLAND CEMENT:

ASTM Specification C 150, Type I or III. One brand of cement shall be used for all exposed work.

B. AGGREGATE:

1. Normal Weight Concrete:

a. Fine: ASTM C 33.

b. Coarse: ASTM C 33, size 57.

2. Exposed Aggregate Concrete Coarse:

AHD size #8910, brown river gravel.

C. AIR ENTRAINING ADMIXTURES:

ASTM C 260.

D. WATER REDUCING ADMIXTURES:

ASTM C 494, Type A.

E. WATER:

Clean potable water, free of elements which could adversely affect concrete and embedded items. Calcium Chloride shall not be used.

2.05 TYPES OF CONCRETE:

- A. CONCRETE NOT EXPOSED TO WEATHER:
3,000 psi at 28 days, 4% to 6% air entrainment, slump of 2" to 6".
- B. CONCRETE EXPOSED TO WEATHER:
Same as interior except 4,000 psi, unless noted otherwise on drawings.

2.06 CURING COMPOUND:

Meet requirements of ASTM C 309, Type I, with allowable moisture loss of 0.055 gms per square cm. Compound shall be clear or translucent, non-staining causing no adhesion problems with specified coverings and have a flash point above 100 degrees F.

2.07 BOND BREAKER:

30# and 90# asphalt saturate roofing felt.

2.08 ANCHORAGE ITEMS:

- A. Anchorage items such as slots, inserts, bolts, sleeves, etc., shall be of standard manufactured and of approved types.
- B. Slots for anchoring masonry shall be dovetail type, minimum 24-gauge, galvanized steel, with felt or fiber filler strips.

PART III - INSTALLATION

3.01 FORMS:

- A. EARTH FORMS:
May be used for footing forms providing earth is clean cut and bottoms are level and sound.
- B. FORMS:
Construct to shape, lines, grades and dimensions indicated on drawings. Make forms substantial and tight to prevent leakage of concrete and brace or tie together to maintain position and shape of finish work within tolerances specified without deflecting under the dead load weight of the liquid concrete.
- C. Forms for Cylindrical Columns and Supports: Metal, glass-fiber-reinforced plastic, or paper or fiber tubes that will produce smooth surfaces without joint indications. Provide units with sufficient wall thickness to resist wet concrete loads without deformation.

3.02 REINFORCEMENT:

- A. METAL REINFORCEMENT:
Where not otherwise shown on drawings, thickness of concrete over reinforcement shall be as follows:

Slabs.....3/4" clear to top and bottom.
Slabs-On-Ground..2" clear to top.
Footings.....3" clear to sides and bottom, 2" clear to top.
- B. WIRE MESH:
Install wire mesh reinforcing, size as indicated on drawings. Lap joints 6" and extend mesh to within 1" of sides and ends of slabs.

- C. INSPECTION:
Before concrete is placed, inspect to see that reinforcing steel is of proper size and placement, and that items to be embedded in concrete are positioned correctly.

3.03 CONDITION OF SURFACES:

- A. Notify Architect at least 48 hours before starting concrete placement. Do not start concrete placing until Architect has approved surfaces, reinforcement placement, and other embedded items.
- B. Place no concrete until reinforcement and other embedded items are positioned and secured.
- C. Forms, surfaces, and trenches shall be free from water, mud, ice, frost and debris when concrete is placed.
- D. Wet surfaces before placing concrete.

3.04 PLACING OF CONCRETE:

- A. Do not place concrete when temperature is below 40 degrees F. (45 degree C) or forecast to go below 40 degrees F within 24 hours, unless adequate heating and protecting equipment is on hand to warm concrete. In these circumstances, use heating and protecting equipment continuously until concrete has set and for at least 72 hours after placing.
- B. Perform cold weather concrete work in accord with ACI 306R-78. Perform hot weather concrete work in accord with ACI 305R-77.
- C. Place concrete in manner to prevent segregation of mix. Truck mixer shall discharge mix within one hour of initial mixing. No concrete shall be placed which has been discharged from mixer more than 30 minutes.
- D. Mechanically vibrate concrete while being placed with internal type vibrator. Vibrate concrete as necessary to produce a dense, homogenous mass, free of air bubbles and honey combing. Take care not to separate materials by excessive vibrating. Vibrator shall not be used as a transporting facility.

3.05 BUILT-IN ITEMS:

- A. Install items specified to be furnished under other sections as concrete work progresses.
- B. EXPANSION JOINTS:
Install ½" thick x full slab thickness expansion joints where indicated on drawings and at all walls, columns, etc. Cut filler strips down to top surface of slabs.

3.06 FINISH:

- A. After placing concrete, screed to levels and slopes indicated. Do not use tamping tools to force aggregate away from surface.
- B. When the water sheen has disappeared, use a wood float to bring concrete to a true level or slope as indicated. The maximum allowed variation from a true plane shall be 1/4" (6mm) in 10'-0" (90mm) after floating, but before troweling. Trowel finish all interior floor slabs. Broom finish all exterior concrete walks and pads, rub finish all exposed vertical surfaces and retaining walls.

- C. TROWELED FINISH:
After concrete has hardened sufficiently to bear a man's weight without imprint, trowel with power and hand tools. Remove small imperfections left by troweling until a ringing sound is produced as the trowel is moved over the surface. No repair or rubbing of concrete surfaces shall be made prior to inspection and approval by the Architect. Do not use dry materials, such as sand and cement, on surfaces during finishing. Maximum variation in troweled surfaces shall be 1/8" in 10'-0".
- D. BROOM FINISH:
Immediately after trowel finishing, slightly roughen concrete surface by brooming in direction perpendicular to main traffic route. Coordinate required final finish with Architect before application.
- E. SCRATCH FINISH:
Shall consist of removing surface water and laitance and roughening the surface with a stiff brush to leave the aggregate slightly exposed and rough to provide good mechanical bond.

3.07 SCHEDULE OF FINISHED ON FLATWORK:

- A. BROOM FINISH:
All exterior platforms, steps, landings and walkways, after which a coating of concrete sealer shall be applied to seal from mud stains.
- B. STEEL TROWELED FINISH:
All interior floor slabs which are to be exposed or covered with floor covering.

3.08 CURING:

- A. WETTING METHOD:
Place garden type soaker hose on concrete immediately after finishing is complete. Adjust water flow from hose to keep a constant film of water on slabs for at least seven (7) days.
- B. CURING COMPOUND METHOD:
Apply compound immediately after finishing operation is completed. Apply curing compound in accord with manufacturer's directions, covering all surfaces.
- C. If the strength of concrete at seven (7) days does not meet 2/3 of the specified strength, continue curing by wet method prescribed above until tests indicate that concrete has achieved specified strength.

3.09 PROTECTION:

- A. Protect finished concrete against traffic for at least 48 hours. Erect barriers as necessary to protect uncured areas. Provide wood covers to protect concrete step-ups from all construction traffic.
- B. Protect concrete from abusive traffic, paint and other stains.

3.10 CLEAN-UP:

Remove stains and mortar spills from floors and other materials. Leave areas free from any debris. Remove excess materials, equipment and debris from site.

END OF SECTION

SECTION 05500
METAL FABRICATIONS

PART I - GENERAL

1.01 SCOPE:

This section covers Metal Fabrications, including all materials, labor, equipment, and services necessary to complete this work. General Conditions, Supplementary Conditions and applicable portions of Division 1 apply to work of this section.

1.02 QUALITY CRITERIA:

A. ALLOWABLE TOLERANCES:

Machine, field and shop assemble mechanical joints to fit within plus/minus 1/32". Install free-standing items to plus/minus 1/4" of proper position. Sizes of each element of an assembly shall be correct within 1/8". Total size of a free-standing assembly shall be correct within 1/2".

B. APPLICABLE STANDARDS:

Comply with the requirements of the following, except where more stringent requirements are specified:

1. American Institute of Steel Construction (AISC) "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings", 1978 edition with supplements.
2. American Welding Society (AWS).
 - a. AWS D1.1-80, "Structural Welding Code."
 - b. AWS B3.0-77, "Welding Procedure and Performance Qualification."
3. American Iron and Steel Institute (AISC).
4. American Society for Testing and Materials (ASTM).

C. QUALIFICATIONS OF WELDERS:

1. Welders shall have passed AWS D1.1-80 qualification tests for type of welding required within the past 12 months.
2. Contractor shall require any welder to re-take the qualification test, when, in the opinion of the Architect, the work of the welder creates a reasonable doubt as to the proficiency of the welder. Re-qualification tests shall be conducted at no additional expense to the Owner. Re-certification shall be submitted to Architect after the welder has passed the re-test.

PART II - MATERIALS

2.01 GENERAL REQUIREMENTS:

- A. Materials shall have structural properties necessary to withstand strains and stresses on a permanent basis, free of defects in strength, durability and appearance.
- B. Exposed surfaces shall have same texture and color as similar items throughout the project.
- C. Fasteners shall be non-corrosive, non-staining, and concealed where possible unless indicated otherwise on drawings. Exposed fasteners shall be same materials, color and

finish as materials to which applied, countersunk and finished flush.

- D. Remove slag and prime paint concealed welds. Exposed welds shall be ground smooth to form neat, uniform fillet without weakening base metal and finished same as adjacent surfaces.
- E. Molded, bent or shaped members shall be formed with clean, sharp and straight surfaces free of dents, scratches, cracks and other defects.
- F. Provide necessary anchors, bolts, shims, and accessories of size, kind, and type necessary for a complete installation.

2.02 STRUCTURAL MATERIALS:

- A. STRUCTURAL STEEL SHAPES:
Meeting ASTM A36-81a.
- B. HOT-ROLLED CARBON STEEL SHEETS AND STRIPS:
Meeting ASTM A568-81 and ASTM A570-79; Grade B.
- C. COLD-ROLLED CARBON STEEL SHEETS:
Meeting ASTM A366-72 (1979).
- D. STEEL PIPE:
Meeting ASTM A53-81a, Type S, Grade A.
- E. ALUMINUM:
6063-T6 alloy meeting ASTM B221-82.
- F. PRIMER PAINT:
Compatible with required finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Painting section.

2.03 MISCELLANEOUS CONSTRUCTION:

In addition to items specified in this section, provide items indicated or required to complete the work, including, but not limited to, the following:

- A. ASSORTED ITEMS:
 - 1. Structural supports for signage.
 - 2. HANGER RODS NOT PROVIDED BY OTHER TRADES:
In size and length indicated or required, threaded full length or at ends. Anchors, exterior galvanized. Interior, mild steel.

PART III - EXECUTION

3.01 FABRICATION:

- A. Form work true to line and level with accurate angles and surfaces and straight sharp edge. Ease exposed edges to radius of approximately 1/32". Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- B. Weld corners and seams continuously and in accord with AWS recommendations. Grind exposed welds smooth and flush, to match and blend with adjoining surfaces.
- C. Provide anchorage of appropriate type for supporting structure. Fabricate and space

anchoring devices as required to provide adequate support.

3.02 SHOP PRIME PAINTING:

Remove scale, rust, and other deleterious materials and apply one (1) shop coat of primer paint. Coat anchors built into masonry with asphalt paint unless galvanized. Metal work encased in concrete shall be left unpainted unless specified otherwise. Hot-dip galvanized or zinc-coated metals shall be chemically treated to produce a surface the primer paint will bond to.

3.03 PREPARATION:

A. INSERTS AND ANCHORAGES:

Furnish inserts and anchoring devices which must be set in concrete or masonry to other trades sufficiently in advance for proper installation.

B. COORDINATE:

Setting drawings, diagrams, templates, and instructions, for installation of concrete and masonry inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction.

C. SHOP ASSEMBLY:

Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly of units at project site. Dis-assemble units only to extent necessary for shipping and handling limitations. Mark units for coordinated installation.

3.04 INSTALLATION:

A. Provide anchorage devices and fasteners where necessary for securing items to in-place construction, including threaded fasteners for concrete inserts, toggle bolts and through bolts.

B. Perform cutting, drilling, and fitting required for installation of work. Set work in location, alignment, and elevation, plumb and level, true and free of rack and stress.

C. Fit exposed connections together to form tight hairline joints. Field weld connections which cannot be shop welded. Grind joints smooth and touch-up shop primer coat.

D. Leave metal fabrication items ready to receive finish, where applicable, in accord with Painting section.

3.05 CLEAN-UP:

Remove all excess materials and debris from site.

END OF SECTION

Guide Specification Section 07760

Boulevard Thermally-Modified Structural Wood Tiles

1.0 GENERAL

1.1 WORK INCLUDED

- A. Provision of complete, pre-engineered wood tiles

1.2 RELATED WORK

- A. Section 033000 Cast-in-Place concrete
- B. Section 042200 Concrete Masonry Units
- D. Section 061520 Composite Synthetic & Other Decking
- I. Section 321400 Unit Pavers

1.3 REFERENCES

- A. American Wood Protection Association (AWPA)
 - Guidance Document N – *Data Requirements for Listing Thermally Modified Wood*
 - Standard U1 - *Use Category System: User Specification for Treated Wood*
 - Standard E1- *Method for Laboratory Evaluation to Determine Resistance to Subterranean Termites*
 - Standard E7 - *Method of Evaluating Wood Preservatives by Field Tests with Stakes*
 - Standard E9 - *Field Test for the Evaluation of Wood Preservatives to be Used in Non-Soil Contact*
 - Standard E10 - *Method of Testing Wood Preservatives by Laboratory Soil-Block Cultures*
 - Standard E12 - *Method of Determining Corrosion of Metal in Contact with Treated Wood*
 - Standard E14 - *Method of Evaluating Wood Preservatives in a Soil Bed*
 - Standard E21 - *Test Method for the Evaluation of Preservative Treatments for Lumber and Timbers Against Subterranean Termites in Above-Ground, Protected Applications*
- B. American Society for Testing and Materials (ASTM)
 - ASTM D5664 - *Standard Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber*
 - ASTM D3201 - *Standard Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood-Based Products*
 - ASTM E1354 - *Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter*

1.4 SUBMITTALS

- A. Product Data: Manufacturer's standard catalog cut sheets, including storage, handling and installation instructions.
- B. Shop Drawings: Contractor to submit shop drawings indicating the tile size, pattern and grid layout, starting point and finished elevation as endorsed by the manufacturer or its approved representative.
- C. Samples as required for typical wood color & characteristics

1.5 DELIVERY, STORAGE AND HANDLING

- A. Inspect tiles after delivery for signs of damage during transit.
- B. Protect tiles from damage during storage and handling.
- C. Store tiles out of sunlight. Do not allow tiles to be stored tightly wrapped in plastic.

1.6 PROJECT CONDITIONS

- A. Contractor to provide adequate structural support for tiles and/or pedestals.
- B. Tiles and pedestals are designed for pedestrian traffic only. Other heavy architectural elements require additional support. Surfaces must be bounded by blocking or walls, whether on rooftops or on grade.

1.7 WARRANTIES

- A. Standard manufacturer's warranty against defect in materials or workmanship, outlining terms & conditions for minimum period of three years from installation.

2.0 PRODUCTS

2.1 ACCEPTABLE PRODUCTS/MANUFACTURERS

- A. Boulevard thermally-modified Structural Wood Tiles provided by Tournesol Siteworks, 30955 San Antonio St., Hayward, CA 94544 Tel: (800)542-2282 FAX (510)471-6243 or approved equal.

2.2 THERMALLY-MODIFIED STRUCTURAL WOOD TILES

- A. Materials
 - 1. Slats and supports shall be manufactured from Boulevard thermally-modified wood, certified conforming to AWWA Use-Class UC3B, Above Ground, Exposed (see AWWA Guidance N for required tests). Tile manufacturer should be able to present certification, and documentation of the quality processes used during thermal modification. Base woods shall be FSC-certified Red Oak or Ash (if forest sourced), or certified Urban Forest Products Alliance (UFPA) urban-sourced wood. Tiles shall be sourced & processed entirely in the U.S. Manufacturer shall provide certification of Class A fire spread rating.
 - 2. Fasteners shall be star-head stainless steel wood screws designed for outdoor applications.
- B. Construction
 - 1. Structural wood slats shall be glued with waterproof wood glue prior to fastening with wood screws
 - 2. Wood screws shall be located a minimum of 1" from end of each slat, and each hole shall be pre-drilled prior to screwing.

3. Slats shall be available in either grooved/anti-slip or smooth tread, as determined by architect
 4. Corners shall be notched with ¼" wide x 1" slot to accommodate tile fastener
- C. Color: Medium brown/190deg toast. Dark brown/210deg toast is available as special order. Color and appearance is a natural feature of wood, and may vary slightly from slat to slat and tile to tile. Wood will naturally patina when left untreated.
- D. Sizes: 23-7/8" x 23-7/8" x 1-5/8" (weight 13 lbs), 47-7/8" x 23-7/8" x 1-5/8" (weight 26 lbs)

2.3 TILE ACCESSORIES

- A. Structural Wood Tile Fastening System
1. For use with VersiJack or Spirapave paver support systems
 2. Part No. EA-TF01 fastener required with each pedestal. Includes ¼" spacer tab, sliding fastener support and SS304 attachment screw. Sliding fastener shall allow for removal of two tiles at a time.

3.0 EXECUTION

3.1 PREPARATION

- A. Surface on which tiles will be placed must be capable of supporting load, clean and free of debris.
- B. The finished elevation less the timber deck or paver thickness shall be established and marked around the perimeter with laser leveling devices or other water level
- C. Mark grid lines representing intersections of pavers across area, corresponding to plans.

3.2 INSTALLATION

- A. Boulevard Structural Wood Tiles may be cut, drilled, or otherwise modified similar to red oak or ash lumber. No special precautions or tools are required.
- B. For installation on pedestals, refer to paver support manufacturer's instructions.
- C. For installation on joist systems, refer to engineer's or architect's plans.

3.3 POST-INSTALLATION

- A. Repair or touch-up any damaged tiles
- B. Inspect that all paver spacing is ¼" on all sides and at edge of deck.
- C. Verify that the entire deck is contained, and that no areas are unsupported
- D. Inspect that there is no "rocking" of tiles on pedestals
- E. Perform periodic inspections of deck to ensure that structural wood tiles do not separate or rock, creating a tripping hazard. If tiles are fire-proofed, reapplication of fire retardant coating should be performed every 3-5 years.

Guide Specification

Section 07760 Roof Pavers

VersiJack Deck & Paver Pedestals

1.0 GENERAL

1.1 WORK INCLUDED

- A. Provision of complete, pre-engineered deck & paver pedestals.

1.2 RELATED WORK

- A. Section 033000 Cast-in-Place concrete
- B. Section 042200 Concrete Masonry Units
- C. Section 044100 Dry-Placed Stone, US, Mexican & Canadian Quarries
- D. Section 061520 Composite Synthetic & Other Decking
- F. Section 075000 Membrane Roofing
- G. Section 077200 Roof Accessories
- G. Section 077600 Roof Pavers
- H. Section 096900 Access Flooring
- I. Section 321400 Unit Pavers

1.3 SUBMITTALS

- A. Product Data: Manufacturer's standard catalog cut sheets, including storage, handling and installation instructions.
- B. Shop Drawings: Contractor to submit shop drawings indicating the paver size, pattern and grid layout, starting point and finished elevation as endorsed by the manufacturer or its approved representative.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Inspect pedestals after delivery for signs of damage during transit.
- B. Protect pedestals and their boxes from damage during storage and handling.
- C. Store pedestals out of harm's way, in their original packaging.

1.5 PROJECT CONDITIONS

- A. Contractor to provide adequate structural support for pedestals. Surfaces to receive pedestals shall have at least a wood float finish, and be clean and free of debris that will impair performance of pedestals. Concrete substrate must be cured for a minimum of 28 days and dried.
- B. Surfaces supported by pedestals are designed for pedestrian traffic only. Other heavy architectural elements require additional support. Surfaces must be bounded by blocking or walls, whether on rooftops or on grade.
- C. Roof surfaces covered by insulation (either on top of or integrated into the roofing membrane) must have a minimum of 40psi bearing capacity.
- D. On grade surfaces should be compacted, and have adequate drainage.

2.0 PRODUCTS

2.1 ACCEPTABLE PRODUCTS/MANUFACTURERS

A. VersiJack high strength, height-adjustable and indexing slope-compensating pedestals and accessories provided by Tournesol Siteworks, 30955 San Antonio Rd., Hayward, CA 94544 Tel: (800) 542-2282 FAX (510) 471-6243 or approved equal.

2.2 HEIGHT ADJUSTABLE AND SLOPE CORRECTING PEDESTALS

A. Materials

1. Pedestals shall be manufactured in 100% post-consumer recycled polypropylene

B. Construction

1. Polypropylene screw-adjustable pedestals with range from 1.5" to 40".
2. Pedestals shall be capable of indexing slope compensation either at the base or at the top, and will be secured with locking rings.
3. Pedestal shall have an open internal core for additional ballast, and drainage holes at the base to avoid water retention and prevent bacteria, mold or mildew.
4. Pedestals shall have paver spacer tabs ranging from 1/16" to 3/8", adjustable width beam support, and spacers for irregular-shaped pavers.
5. Pedestals shall support 20 kN (4496 lbf), which will support up to 3600 lbs.

C. Color: Black

D. Sizes: 6-3/8" diameter for all models

EVJ-0000	1-1/2" – 2" range
EVJ-000	2" – 3" range
EVJ-00	3" – 4-5/8" range
EVJ-0	4-5/8" – 8" range
EVJ-1	8" – 11" range
EVJ-2	11" – 17-1/2" range
EVJ-3	14" – 20-3/4" range
EVJ-4	17-1/4" – 27-1/4"
EVJ-5	20-3/8" – 30-3/8" range
EVJ-6	23-1/2" – 36-3/8" range
EVJ-7	26-5/8" – 40" range

2.3 PEDESTAL ACCESSORIES (OPTIONAL)

A. Indexing Slope Compensation

1. Platform slope compensation: Indexing top slope compensation from 0-5% in 1% increments. 6-3/8" diameter, accepts either paver spacer tab or bearer support. 100% post-recycled consumer polypropylene.
2. Base slope compensation: Indexing basal slope compensation from 0% - 5% in 1% increments. 9" diameter. 100% post-recycled consumer polypropylene.

B. Paver Spacer Tabs

1. Fixed-width spacer tabs: Available in 1/16", 1/8", 1/4", and 3/8" widths, may be used with any height VersiJack, with or without platform slope compensation. 100% post-recycled consumer polypropylene.
2. Variable angle spacer tabs: For use with irregular or non-rectangular pavers and tiles. 100% post-recycled consumer polypropylene.

C. Beam Support: For use with or without platform slope compensation, supports all beams, joists, and stringers between 1-3/4" and 3-3/4". 100% post-recycled consumer polypropylene.

- D. Adjusting Shims: For minor adjustment required for pedestals, or use on their own. Flexible neoprene shims in 1mm and 2mm (.039" & 0.078").
- E. Power pedestal adjusting tool: Pedestal turning tool may be fastened to standard drill for faster adjustment of pedestals to correct levels.

3.0 EXECUTION

3.1 PREPARATION

- A. Surface on which the pedestals will be placed must be capable of supporting load, clean and free of debris.
- B. The finished elevation less the timber deck or paver thickness shall be established and marked around the perimeter with laser leveling devices or other water level
- C. Mark grid lines representing intersections of pavers across area, corresponding to plans.

3.2 INSTALLATION

- A. For installation of pavers in large areas, one paver shall be installed onto 4 pedestals at random positions at every 2000 sq. ft. The paver shall be installed at the correct elevation using a laser leveling device (or water level) and serve as reference point to verify exact elevation of remaining pavers.
- B. Checks shall be made constantly for correct elevation of the installed beam supports or pavers using laser level, automatic leveler or mason's line.
- C. Minor irregularities in beam or paver thickness may be compensated for by use of neoprene shim.
- D. Paver spacer tabs may be snapped off to accommodate perimeter and corner pedestals.
- E. Slope compensation shall be indexed in 1% increments to the slope of the roof. The yellow arrow should always be pointing directly up slope.
- F. Locking rings shall be used where possible for maximum strength and long-term stability of pedestals.
- G. Complete raised finish level shall be sturdy, rigid and free of overall rocking, rattles, squeaks, and noises. Finished floor shall be level within +/- 1/8", and +/- 1/16" in any 10' direction.
- H. For pedestal heights in excess of 24", stainless steel bracing wires should be inserted through the bracing tabs on the extenders for stability.

SECTION 09900
PAINTING

PART I - GENERAL

1.01 SCOPE:

This section covers Painting and finishing, including all materials, labor, equipment, services, and necessary surface preparation to complete this work. General Conditions, Supplementary Conditions, and applicable portions of Division 1 apply to work of this section.

1.02 RELATED WORK SPECIFIED IN OTHER SECTIONS:

- A. Shop Prime Coat
- B. Special Coatings

1.03 GENERAL:

- A. Examine specifications and drawings for various other trades and become familiar with all their provisions regarding painting.
- B. Surfaces that are left unfinished by requirements of other sections shall be painted or finished as part of the work of this section.

1.04 SURFACES NOT TO BE PAINTED:

- A. PLATED METAL:
Except galvanized metal.
- B. NON-FERROUS METAL:
Unless scheduled to be painted.
- C. STAINLESS STEEL:
Unless scheduled to be painted.
- D. PRE-FINISHED METALS:
- E. EXTERIOR CONCRETE OR MASONRY:
Unless scheduled to be painted.
- F. FACTORY FINISHED ITEMS:
Such as flooring, acoustic tile, glass, aluminum, finish hardware, etc.
- G. OTHER SURFACES:
Those noted on drawings or specified herein as NOT requiring painting.

1.05 DELIVERY AND STORAGE:

- A. DELIVERY:
Deliver materials to job in manufacturer's original unopened containers with labels intact and seal unbroken and with manufacturer's application instructions printed thereon.
- B. STORAGE:
Store material and painter's tools in a single room assigned for this use only. Keep storage

- place heated to above 60 degrees F, clean and neat.
- 1.06 SUBMITTALS:
- A. MATERIALS LIST:
Submit three (3) copies of materials list of products to be provided. This submittal shall include fully identifying product names and catalog numbers.
 - B. SITE SAMPLES:
For each wall color, paint one (1) 4'-0" wide by full height section of wall, on site, where instructed by Architect. This approved sample wall shall remain as an example of work required.
- 1.07 COOPERATION WITH OTHER TRADES:
- A. Schedule and coordinate work of this section with other trades. Do not proceed until other work and/or job conditions are suitable to produce acceptable results.
 - B. Examine specifications for various other trades and become familiar with all their provisions regarding painting. Surfaces that are left unfinished by requirements of other sections shall be painted or finished as part of the work of this section.
- 1.08 MAINTENANCE MATERIALS:
At completion of project, deliver the following maintenance materials to the Owner:
- A. PAINTED SURFACES:
One gallon of each final coat, the exact to match of final coat in sheen and color, together with instructions on ingredients required to achieve final results together with complete description of undercoats.
 - B. STAINED OR NATURAL SURFACES:
One gallon of touch-up material with a description of ingredients together with complete step by step instructions on how finish was achieved.
 - C. Mark each container with color and room names or number where paint was used, without obscuring manufacturer's label

PART II - MATERIALS

- 2.01 ACCEPTABLE MANUFACTURERS:
Subject to compliance of the contract documents, provide materials by one of the following manufacturers:
- A. ICI Dulux (Glidden) – Identified in schedules as ICI, www.dulux.com
 - B. Pittsburgh Paints – Identified in schedules as PP, www.ppg.com
 - C. Sherwin Williams – Identified in schedules as SW, www.sherwin-williams.com
- 2.02 PAINT:
- A. Should a substitution of manufacturer be desired, submit proposed substitution for each type of material called for in list form, showing the identification number of each proposed substitution compared to identification number of each specified material.
 - B. Paint shall be well-ground, shall not settle badly, cake or thicken in container, shall be readily broken with a paddle to a smooth consistency, and shall have easy brushing properties.
 - C. Deliver paint to job ready-mixed, except for tinting of undercoats and possible thinning.

- D. Thinning and tinting materials shall be as recommended by manufacturer for particular material to be tinted or thinned.
 - E. Successive coats of material applied to a surface shall be of compatible chemical composition.
- 2.03 PUTTY:
Non-bleeding base type.
- 2.04 LINSEED OIL:
Boiled conforming to ASTM D260.
- 2.05 TURPENTINE:
Gum spirits, steam distilled, sulfate wood and destructively distilled conforming to Federal Specification TT-T-801.
- 2.06 APPLICATION EQUIPMENT:
Provide application equipment of adequate and appropriate size and type for work and workmanship specified.
- 2.07 ACCESSORY EQUIPMENT:
Provide ladders, scaffolding, drop cloths, maskings, scrapers, tools, sandpaper dusters, cleaning solvents, and waste as required to perform work and achieve results specified, including moisture testing equipment.

PART III - APPLICATION & WORKMANSHIP:

- 3.01 JOB, WEATHER & TEMPERATURE CONDITIONS:
- A. Do no exterior painting when temperature is below 50 degrees F., while surface is damp, during cold, foggy, rainy, or frosty weather, or when temperature is likely to drop to freezing within 24 hours. Avoid painting surfaces while they are exposed to hot sun.
 - B. Before painting is started, broom-clean and remove excessive dust from areas to be painted.
 - C. Provide adequate illumination in all areas where painting operations are in progress.
- 3.02 INSPECTION OF SURFACES:
- A. Before starting work, inspect surfaces to be painted, or finished for defects which cannot be corrected by the procedures specified in the "Preparation of Surfaces" paragraph in this section.
 - B. Report all defects which could prevent proper painting or finishing to Architect.
 - C. DO NOT paint or finish improper surfaces.
 - D. Commencing of work shall constitute acceptance of surface as proper to receive paint of finish specified.
- 3.03 PREPARATION OF SURFACES:
- A. GENERAL:
 - 1. Prepared surfaces shall be clean, dry, smooth, even, true to plane, free of foreign materials which could adversely affect adhesion or appearance of coating.

2. Remove or mask electrical plates, hardware, light fixture trim, and similar fittings prior to beginning painting operations.

B. WOOD:

Sand smooth. Wash sap spots and knots with mineral spirits. When dry, touch up spots, knots and sap wood with shellac sealer. After prime coat has dried, fill voids with a putty tinted to final color.

C. FERROUS SURFACES:

1. Remove dirt and grease with mineral spirits and wipe dry with clean cloths.
2. Remove rust, mill scale, and defective paint down to sound surface, using scraper, sandpaper or wire brush as necessary. Grind, if necessary, to remove shoulders at edge of sound paint to prevent flaws from photographing through finish coats.
3. Touch up bare metal and damaged shop coats with specified rust-inhibitive primer.
4. Touching up shop primer coat on ferrous metal surfaces of items installed adjacent to plaster, concrete, masonry and stucco, prior to any openings between metal surfaces and adjacent surfaces being filled in or caulked.
5. Where shop prime coat on ferrous metal surfaces is touched up as required above, the metal coat listed in paint schedule may be omitted.

D. GALVANIZED SURFACES:

1. Remove dirt and grease with mineral spirits and wipe clean with clean cloths.
2. Pre-treat galvanized steel surfaces with proprietary acid bound resinous or crystalline zinc phosphate preparation, prior to painting, unless manufacturer of primer used, directs otherwise.

3.04 LABOR, TOOLS & MATERIALS:

- A. Only skilled mechanics shall be employed. Unless otherwise specified, application may be by brush, roller, or spray, at Contractor's option.
- B. Keep equipment clean and in condition to provide quality job specified.
- C. Material shall be mixed, thinned, modified and applied in accord with manufacturer's directions on container.

3.05 COLORS & SCHEDULING:

- A. Secure approval of color samples before applying any paint or finish. Priming coats and undercoats shall be tinted to approximate shade of final coat.
- B. Furnish schedule showing when respective coats of paint for the various areas and surfaces are to be applied. Keep schedule current as job progress dictates. If Architect so directs, succeeding coats shall not be applied until completed coat is inspected.
- C. **Maximum of three (3) wall colors, three (3) trim colors, and three (3) doors and frame colors.**

3.06 PROTECTION:

- A. Protect painted surfaces and adjacent work and materials by suitable covering or other method. Remove rubbish and debris caused by painting operations and leave work in clean, orderly and acceptable condition.
- B. Remove and protect hardware, accessories, device plates, lighting fixtures, factory finished work and similar items or provide ample in-place protection. Upon completion of each space, carefully replace all removed items.
- E. Remove electrical panel box covers and doors before painting. Paint separately and reinstall after all paint is dry.

3.07 APPLICATION:

- A. Apply materials evenly spread and smoothly flowed on with type and sizes of brushes, roller covers, bucket grids and spray equipment required to avoid runs, sags, holidays, brush marks, air bubbles, and excessive roller stipple or cracks. Paint shall be applied in the number of coats specified and at the manufacturer's recommended dry film thickness for each material or thicker to achieve uniform color and complete coverage.
- B. When color, stain, dirt, or undercoats show through final coat of paint, cover surface with additional coats until paint film is of uniform finish, color, and appearance. This shall be done at no additional cost to the Owner.
- C. Coats shall be thoroughly dry, dusted and clean before application of succeeding coats.
- D. Enamel or varnish finish applied to wood or metal shall be sanded with fine sandpaper and then cleaned between coats to produce an even, smooth finish.

3.08 PRIMING & BACK PRIMING:

- A. Shall be done immediately after items to receive this treatment are delivered to job, except items primed at shop.
- B. BACK PRIMING:
In addition to priming and finishing coats, back-prime concealed surfaces of plywood, millwork and metal items with one (1) coat of primer.

3.09 CLEANING & PROTECTION:

- A. Protect painted surfaces and adjacent work and materials by suitable covering or other method.
- B. Protect work adjacent to painting operations from paint spatters and spills. Immediately remove paint that falls on finished surfaces not scheduled to receive pain, using materials and techniques that will not damage affected surfaces.
- C. Remove and protect hardware, accessories, device plates, lighting fixtures, factory finished work and similar items or provide ample in-place protection. Upon completion of each space, carefully replace all removed items.
- D. Keep project premises free of painting-related debris. Collect material that may constitute a fire hazard, place in closed metal containers, and remove daily from site. Leave work in clean, orderly and acceptable condition.

3.12 EXTERIOR PAINT SCHEDULE:

Number of coats is a minimum based on application at manufacturer's recommended application millage. Additional coats may be required for satisfactory coverage.

A. GALVANIZED METAL:

SW	1 coat 2 coats	Pro-Cryl Universal Acrylic Primer, B66-310 Series Industrial Enamel, B54 Series
ICI	1 coat 2 coats	4160 Devguard Tank & Structural Primer 4308 Devguard Alkyd Industrial Enamel Gloss
PP	1 coat 2 coats	90-712 Pitt Tech Interior/Exterior DTM Primer Finish 90-374 Pitt Tech DTM Acrylic Gloss Enamel

B. FERROUS METAL AND HOLLOW METAL DOORS & FRAMES:

SW	1 coat 2 coats	Kem Kromik Universal Metal Primer, B50Z Industrial Enamel, B54 Series
ICI	1 coat 2 coats	Equal to S-W and approved by the Architect Equal to S-W and approved by the Architect
PP	1 coat 2 coats	Equal to S-W and approved by the Architect Equal to S-W and approved by the Architect

END OF SECTION

**FGP Litter receptacle
Product Guide Specification**

SECTION 12600 TRASH AND LITTER RECEPTORS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Litter receptacles.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations, installation methods and available colors, styles, patterns and textures.
- B. Shop Drawings: Submit manufacturer's shop drawings, including plans and elevations, indicating overall dimensions.
- C. Samples: Submit manufacturer's samples of materials, finishes, and colors.
- D. Warranty: Manufacturer's standard warranty.

1.3 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer regularly engaged in manufacture of site furnishings since 1969.
- B. Product Support: Products are supported with complete engineering drawings and design patents.
- C. Base Worth: An installed base of products worth in excess of one hundred million dollars.
- D. Assets: Excess of twenty million dollars in assets.
- E. Production: Orders are filled within a 40-day schedule.
- F. Facility Operator: Welders and machine operators are certified.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until installation.
- C. Handling: Protect materials and finish during handling and installation to prevent damage.

1.5 WARRANTY

- A. Warranty Information:
- Products will be free from defects in material and/or workmanship for a period of three years from the date of invoice.
 - The warranty does not apply to damage resulting from accident, alteration, misuse, tampering, negligence, or abuse.
 - Landscape Forms, Inc. shall, at its option, repair, replace, or refund the purchase price of any items found defective upon inspection by an authorized Landscape Forms service representative.
 - Purchasers should be aware that normal use of these high quality products can result in superficial damage affecting the finish. Scratches, nicks, and dents are to be considered normal wear and tear, and are not the responsibility of the manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Landscape Forms, Inc., 7800 E. Michigan Ave, Kalamazoo, Michigan 49048.
Phone: (800) 521-2546. Fax (269) 381-3455. Website www.landscapeforms.com
E-mail: specify@landscapeforms.com or approved equal.

2.2 **TRASH AND LITTER RECEPTORS**

- A. "FGP" Litter Receptacle
- B. Style:
 - 1. Side opening unit
- C. Mounting:
 - 1. Surface mount: Non-corrosive anchoring hardware not included.

2.4 **MATERIAL**

- A. Lid and top ring: cast aluminum
- B. Side panel:
 - 1. Wood for Exterior Use:
 - a. Ipe: Solid stock, select South American hardwood.
 - b. Jarrah: Solid stock, select Australian hardwood.
- C. Liner: Rotationally molded linear low density polyethylene. Color is black.
- D. Base: Rotationally molded linear low density polyethylene. Color is black. Base is filled with concrete for stability.
- E. Hardware: Wood slats are attached to base and top ring with carbon steel with Magni-coated hardware.
- F. Lid bumpers: Nylon 6/6. Color is gray.

2.5 **RECYCLED CONTENT**

	Post Consumer Content	Post Industrial Content	Total Recycled
Side opening litter, jarrah	0%	3%	3%

Unit is 100% recyclable.

2.6 **FABRICATION**

- A. Shop assembled litter receptacles.

2.7 **FINISHES**

- A. Finish on aluminum components:
 - 1. Clear Anodized
- B. Finish on Wood:
 - 1. Wood for Exterior Use: Unfinished.
 - 2. Wood for Interior Use: Finished with "LF-80" catalyzed lacquer.

PART 3 EXECUTION

3.1 **EXAMINATION**

- A. Examine areas to receive litter receptacles.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

3.2 **INSTALLATION**

- A. Install litter receptacles in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Install litter receptacles level and plumb.
- C. Anchor litter receptacles securely in place, if required.

3.3 **ADJUSTING**

- A. Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.

- B. Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 CLEANING

- A. Clean litter receptacles promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

3.5 PROTECTION

- A. Protect installed litter receptacles to ensure that, except for normal weathering, receptacles will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

**Parallel 42 bench
Product Guide Specification**

SECTION 12600 BENCHES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Benches.

1.2 REFERENCES

A. ASTM Testing Standards:

1. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.
2. ASTM D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
3. ASTM D 523 – Standard Test Method for Specular Gloss.
4. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
5. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
6. ASTM D 3359 – Standard Test Methods for Measuring Adhesion by Tape Test.
7. ASTM D 3363 – Standard Test Method for Film Hardness by Pencil Test.
8. ASTM G 155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.

B. ISO Testing Standards:

1. ISO 1520 – Paints and Varnishes – Cupping Test.
2. ISO 2815 – Paints and Varnishes – Buchholz Indentation Test.

C. ANSI/BIFMA Testing Standards:

1. ANSI/BIFMA X5.4-2005 – Standard Test for Lounge Seating.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations, installation methods and available colors, styles, patterns and textures.
- B. Shop Drawings: Submit manufacturer's shop drawings, including plans and elevations, indicating overall dimensions.
- C. Samples: Submit manufacturer's samples of materials, finishes, and colors.
- D. Warranty: Manufacturer's standard warranty.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer regularly engaged in manufacture of site furnishings since 1969.
- B. Product Support: Products are supported with complete engineering drawings and design patents.
- C. Base Worth: An installed base of products worth in excess of one hundred million dollars.
- D. Assets: Excess of twenty million dollars in assets.
- E. Production: Orders are filled within a 40-day schedule.
- F. Facility Operator: Welders and machine operators are certified.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

- B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until installation.
- C. Handling: Protect materials and finish during handling and installation to prevent damage.

1.6 **WARRANTY**

A. Warranty Information:

- Products will be free from defects in material and/or workmanship for a period of three years from the date of invoice.
- The warranty does not apply to damage resulting from accident, alteration, misuse, tampering, negligence, or abuse.
- Landscape Forms, Inc. shall, at its option, repair, replace, or refund the purchase price of any items found defective upon inspection by an authorized Landscape Forms service representative.
- Purchasers should be aware that normal use of these high quality products can result in superficial damage affecting the finish. Scratches, nicks, and dents are to be considered normal wear and tear, and are not the responsibility of the manufacturer.

PART 2 PRODUCTS

2.1 **MANUFACTURER**

- A. Landscape Forms, Inc., 7800 E. Michigan Ave, Kalamazoo, Michigan 49048.
Phone: (800) 521-2546. Fax (269) 381-3455. Website www.landscapeforms.com
E-mail: specify@landscapeforms.com or approved equal.

2.2 **BENCHES**

- A. "Parallel 42" Benches
- B. Style:

1. Straight backless

- C. Mounting:

1. Freestanding

2.3 **MATERIALS**

- A. Seat: Bench consists of 1-3/8" x 1-1/4", 1-5/8" x 1-1/4" and 1-7/8" x 1-1/4". All boards have eased edges. Attached to plates/supports with stainless steel hardware.
 1. Exterior Use:
 - a. Jarrah, solid stock select Australian hardwood.
- B. Supports: constructed of 10 gauge HRPO steel
- C. Mounting:
 1. Freestanding: Adjustable glides, Black nylon base, 2-3/16" diameter, with 3/8-16 thread on stainless steel stem.
 2. Surface Mount: cast stainless steel glide, 2-1/4" diameter, with 3/8-16 thread on stem. Surface mount capturing block is stainless steel round bar, with 1/2" diameter thru hole for anchor bolt.

2.4 **ACCESSORIES**

2.5 **RECYCLED CONTENT**

- A. Parallel 42 Benches: All options are 100% recyclable. Pre-consumer content is a range, dependent on how much wood scrap is available at the time of manufacture.

	Post Consumer Content	Pre Consumer Content	Total Recycled Content
left/right unit, jarrah	21.6%	11.6% - 66.9%	33.2% - 88.5%
wedge unit, jarrah	23.9%	12.8% - 74.0%	36.7% - 97.9%
Straight unit, jarrah	20.6%	11.1% - 68.6%	31.6% - 89.1%

2.6 **FABRICATION**

- A. Shop assembled benches.

2.7 **FINISHES**

- A. Finish on Metal: Landscape Forms, Inc. "Pangard II".
1. Primer: Rust inhibitor on ferrous supports.
 2. Topcoat: Thermosetting TGIC polyester powder coat. UV, chip, and flake resistant.
 3. Test Results: "Pangard II".
 - a. Gloss Consistency, Gardner 60 Degrees, ASTM D 523: Plus or minus 5 percent from standard.
 - b. UV Resistance, Color and Gloss, ASTM G 155, Cycle 7: Delta E less than 2 at 2.0 mils and less than 20 percent loss.
 - c. Cross-Hatch Adhesion, ASTM D 3359, Method B: 100 percent pass.
 - d. Flexibility Test, Mandrel, ASTM D 522: 3 mm at 2 mils.
 - e. Erichsen Cupping, ISO 1520: 8 mm.
 - f. Impression Hardness, Buchholz, ISO 2815: 95.
 - g. Impact Test, ASTM D 2794: 60 inch-pounds at 2.5 mils.
 - h. Pencil Hardness, ASTM D 3363: 2H minimum.
 - i. Corrosion Resistance, 1,500-Hour Test, ASTM B 117: Max. undercutting 1 mm.
 - j. Humidity Resistance, 1,500-Hour Test, ASTM D 2247: Max. blisters 1 mm.
 4. Color: Blue Bell
- B. Finish on Wood:
1. Wood for Exterior Use: Unfinished.

PART 3 EXECUTION

3.1 **EXAMINATION**

- A. Examine areas to receive benches.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

3.2 **INSTALLATION**

- A. Install benches in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Install benches level.
- C. Anchor benches securely in place.

3.3 **ADJUSTING**

- A. Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- B. Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 **CLEANING**

- A. Clean benches promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

3.5 **PROTECTION**

- A. Protect installed benches to ensure that, except for normal weathering, benches will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

**Sorella Planter
Product Guide Specification**

SECTION 12700 Planters

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Planters.

1.2 REFERENCES

A. ASTM Testing Standards:

1. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.
2. ASTM D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
3. ASTM D 523 – Standard Test Method for Specular Gloss.
4. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
5. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
6. ASTM D 3359 – Standard Test Methods for Measuring Adhesion by Tape Test.
7. ASTM D 3363 – Standard Test Method for Film Hardness by Pencil Test.
8. ASTM G 155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.

B. ISO Testing Standards:

1. ISO 1520 – Paints and Varnishes – Cupping Test.
2. ISO 2815 – Paints and Varnishes – Buchholz Indentation Test.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations, installation methods and available colors, styles, patterns and textures.
- B. Shop Drawings: Submit manufacturer's shop drawings, including plans and elevations, indicating overall dimensions.
- C. Samples: Submit manufacturer's samples of materials, finishes, and colors.
- D. Warranty: Manufacturer's standard warranty.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer regularly engaged in manufacture of site furnishings since 1969.
- B. Product Support: Products are supported with complete engineering drawings and design patents.
- C. Base Worth: An installed base of products worth in excess of one hundred million dollars.
- D. Assets: Excess of twenty million dollars in assets.
- E. Production: Orders are filled within a 40-day schedule.
- F. Facility Operator: Welders and machine operators are certified.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until installation.
- C. Handling: Protect materials and finish during handling and installation to prevent damage.

1.6 **WARRANTY**

A. Warranty Information:

- Products will be free from defects in material and/or workmanship for a period of three years from the date of invoice.
- The warranty does not apply to damage resulting from accident, alteration, misuse, tampering, negligence, or abuse.
- Landscape Forms, Inc. shall, at its option, repair, replace, or refund the purchase price of any items found defective upon inspection by an authorized Landscape Forms service representative.
- Purchasers should be aware that normal use of these high quality products can result in superficial damage affecting the finish. Scratches, nicks, and dents are to be considered normal wear and tear, and are not the responsibility of the manufacturer.

PART 2 PRODUCTS

2.1 **MANUFACTURER**

- A. Landscape Forms, Inc., 7800 E. Michigan Ave, Kalamazoo, Michigan 49048.
Phone: (800) 521-2546. Fax (269) 381-3455. Website www.landscapeforms.com
E-mail: specify@landscapeforms.com or approved equal.

2.2 **PLANTERS**

A. "Sorella" Planters

B. Style:

1. Square 15" x 15"
 - a) Height: 18"
 - Capacity: 13 Gallons (1.7 ft³)
 - Freestanding only

- C. With (2) 1/2" diameter drain holes, drilled through interior base.

2.3 **MATERIAL**

- A. Side Panels: Carbon steel ASTM A 1011 hot rolled pickled and oiled commercial steel type B, 14 gauge (.0747") formed. Seams are welded.
- B. Corner Glides and Interior Base: Constructed of compression-molded recycled plastic resulting from an innovative, patented melting process that utilizes 100% post-consumer and post-industrial waste, attached to metal panels with black magni-coated carbon steel 1/4-10 Pan head torx drive screws.
- C. Watertight sealing gasket: Constructed of black butyl tape, 3/8" wide.

2.4 **RECYCLED CONTENT**

A. Carbon Steel Planter:

- Recycled Material Content: Minimum 90 percent.
- Post-Consumer Material Content: Minimum 57 percent.
- Pre-Consumer Material Content: Minimum 33 percent.
- Recyclable: 100 percent.

2.5 **FABRICATION**

- A. Shop assembled planters.

2.6 **FINISHES**

- A. Finish on carbon steel: Landscape Forms, Inc. "Pangard II".

1. Primer: Rust inhibitor on ferrous supports.
2. Topcoat: Thermosetting TGIC polyester powder coat. UV, chip, and flake resistant.
3. Test Results: "Pangard II".

- a. Gloss Consistency, Gardner 60 Degrees, ASTM D 523: Plus or minus 5 percent from standard.
 - b. UV Resistance, Color and Gloss, ASTM G 155, Cycle 7: Delta E less than 2 at 2.0 mils and less than 20 percent loss.
 - c. Cross-Hatch Adhesion, ASTM D 3359, Method B: 100 percent pass.
 - d. Flexibility Test, Mandrel, ASTM D 522: 3 mm at 2 mils.
 - e. Erichsen Cupping, ISO 1520: 8 mm.
 - f. Impression Hardness, Buchholz, ISO 2815: 95.
 - g. Impact Test, ASTM D 2794: 60 inch-pounds at 2.5 mils.
 - h. Pencil Hardness, ASTM D 3363: 2H minimum.
 - i. Corrosion Resistance, 1,500-Hour Test, ASTM B 117: Max. undercutting 1 mm.
 - j. Humidity Resistance, 1,500-Hour Test, ASTM D 2247: Max. blisters 1 mm.
4. Color: Blue Bell

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive planters.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

3.2 INSTALLATION

- A. Install planters in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Install planters level and plumb.

3.3 ADJUSTING

- A. Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- B. Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 CLEANING

- A. Clean planters promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

3.5 PROTECTION

- A. Protect installed planters to ensure that, except for normal weathering, planters will be without damage or deterioration at time of Substantial Completion.

END OF SECTION