ADDENDUM NUMBER 1

MITCHELL PARK
GREENHOUSE FACILITIES
Site #782, Bldg. #4161
524 South Layton Boulevard
Milwaukee, WI

Project Number: P143-08451

Date of Addendum: August 16, 2012

This Addendum to the Contract Documents is issued to modify, explain or correct the original documents, dated July 30, 2012, and is hereby made part of the Contract Documents. Acknowledge receipt of this Addendum in the space provided on the Bid Form, or bid may be rejected.

PROJECT MANUAL

Document 00400 - Bid Form
REPLACE Page 00400-1 with Page 00400-1rev attached to and issued as part of this Addendum 1.

Section 01 21 00 - Allowances
REPLACE Entire Section with Section 01 21 00 attached to and issued as part of this Addendum 1.

Section 01 33 10 - Required Submittals
REPLACE Entire Section with Section 01 33 10 attached to and issued as part of this Addendum 1.

Section 14 20 20 - Freight Elevators
CHANGE Subparagraph 2.02(A)(4) Hoistway and Cab Entrance Frame Opening Sizes; to 120" x 98" from 120" x 120".
CHANGE Subparagraph 2.02(A)(7) Cab Ceiling Height; to 98" from 120".

DRAWING SET

Sheet A5.4, Detail 1
CHANGE Opening height of elevator door to 9'-0" from 10'-0".

End of Addendum No. 1

DOCUMENT 00400
BID FORM
for
MITCHELL PARK
GREENHOUSE FACILITIES
Site #782, Bldg. #4161
524 South Layton Boulevard
Milwaukee, WI

Project No. P143-08451

Bids Due: August 29, 2012 at 2:00 P.M.

Contract 1: Greenhouse Facilities

At the Office of: MILWAUKEE COUNTY CLERK
Room 105 - Courthouse
901 North 9th Street
Milwaukee, Wisconsin 53233

We, _____
(A Corporation)(A Partnership)(An Individual)-(Cross Out Inapplicable)

of _____
Street

_____
City State Zip Code

_____
Telephone No. Fax Number email address

hereby agree to execute contract and furnish a satisfactory surety bond in the amount specified to complete the above project in strict accordance with Contract Documents dated July 30, 2012.

CONTRACT 1: GREENHOUSE FACILITIES
Base Bid: The Work for the sum of:

_____
(In words)

_____ Dollars $ _____
(In figures)

Miscellaneous Allowance (Add to Base Bid from Section 01210)

General Miscellaneous Allowance $ 200,000.00

Communications & Data Systems Miscellaneous Allowance $ 430,000.00

Planting Miscellaneous Allowance $ 60,000.00

TOTAL BASE BID :_____
(In words)

_____ **Dollars $** _____
(In figures)

ALTERNATIVES
Fill in Alternatives as listed. Where no change in base Bid occurs for Alternative, mark "No Change" or if "Add to or Deduct from base Bid occurs, cross out the description that does not apply. See Section 01230. If an Alternative is left blank it shall mean Contractor shall perform the Work without addition or deduction in the Contract sum.

SECTION 01 21 00
ALLOWANCES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Miscellaneous allowances.

1.2 MISCELLANEOUS ALLOWANCES

A. Subparagraph 3.8.1 of the AIA General Conditions shall be supplemented as follows: Discretion in the use of funds in the Allowance shall rest with the Owner.

B. Miscellaneous Allowance is stated on Bid Form.

C. Work directed to be done under the Miscellaneous Allowance shall have costs determined on the basis of Subparagraphs 7.3.6 and 7.3.10 of the General Conditions and Supplementary Conditions.

D. Payment for expenditures from the Miscellaneous Allowance will be authorized by an Allowance Authorization.

E. At closeout of Contract, funds remaining in Miscellaneous Allowance will be credited to Owner by Change Order.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 33 10
REQUIRED SUBMITTALS

PROJECT: **MITCHELL PARK GREENHOUSES** PROJECT NO: **P 143-08451**

CONTRACTOR: _____ CONSTRUCTION COORDINATOR: _____

SECTION SHEET	DESCRIPTION OF SUBMITTAL	O & M INCL.	DATE SCHEDULED	DATE RECEIVED	DATE TO DESIGNER	DATE RETURNED	COMMENTS
03 20 00	Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices						
	Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in Wisconsin.						
03 30 00	Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.						
	Prepare shop drawings under seal of a Professional Structural Engineer experienced in design of work of this type and licensed in Wisconsin. Quantities, type and name of admixtures						
	Samples: Submit samples of underslab vapor retarder to be used.						
03 35 11	Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.	✓					
	Maintenance Data: Provide data on maintenance and renewal of applied finishes.						
03 45 00	Product Data: Manufacturer's information on accessory products, including pigments, admixtures, inserts, plates, etc.						
Alt No 2	Shop Drawings: Indicate layout, unit locations, configuration, unit identification marks, reinforcement, connection details, support items, location of lifting devices, dimensions, openings, and relationship to adjacent materials. Provide erection drawings.						
	Include details of mix designs.						
	Include structural design calculations.						

SECTION SHEET	DESCRIPTION OF SUBMITTAL	O & M INCL.	DATE SCHEDULED	DATE RECEIVED	DATE TO DESIGNER	DATE RETURNED	COMMENTS
03 47 13	Product Data: Submit manufacturers' current data on manufactured items used, including recommended methods of installation, relevant installation limitations, and safety precautions.						
	Shop Drawings: Indicate layout, tilt-up unit locations, configuration, unit identification marks, reinforcement, connection details, support items, location of lifting devices, dimensions, openings, and relationship to adjacent components.						
04 05 11	Product Data: Include design mix and indicate whether the Proportion or Property specification of ASTM C270 is to be used. Also include required environmental conditions and admixture limitations.						
04 20 00	Product Data: Provide data for masonry units, fabricated wire reinforcement, and masonry accessories.						
04 43 01	Product Data: Provide data on stone units, trim, mortar, and reinforcement.						
	Samples: Submit two stone samples illustrating minimum and maximum stone sizes, color range, texture, and markings.						
05 12 00	Shop Drawings:						
	Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.						
	Connections.						
	Indicate loads.						
	Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.						
05 21 00	Shop Drawings: Indicate standard designations, joist coding, configurations, sizes, spacings, cambers, locations of joists, joist leg extensions, bridging, connections, and attachments						
	Indicate compliance with loadings indicated on structural drawings. Cloud any variations to connections shown on drawings						

05 31 00	Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.							
	Shop Drawings: Indicate standard designations, joist coding, configurations, sizes, spacings, cambers, locations of joists, joist leg extensions, bridging, connections, and attachments.							
	Indicate compliance with loadings indicated on structural drawings. Cloud any variations to connections shown on drawings							
05 40 00	Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations and design criteria.							
	Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.							
	Shop Drawings: Indicate component details, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.							
	Indicate stud layout.							
	Describe method for securing studs to tracks and for bolted framing connections.							
	Provide details and calculations for factory-made framing connectors, stamped by a Professional Structural Engineer.							
	Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention, and recommendations.							
05 44 00	Product Data: Manufacturer's data sheets on each product to be used, including:							
	Span charts.							
	Storage and handling requirements and recommendations.							
	Installation methods.							
	Shop Drawings:							
	Include detailed roof truss layout.							
	Show member type, location, spacing, size and gage, methods of attachment, and erection details. Indicate supplemental bracing, strapping, splices, bridging, and accessories.							
	Include truss design drawings, signed and sealed by a qualified professional engineer registered in Wisconsin, verifying ability of each truss design to meet applicable code and design requirements.							

05 50 00	Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.							
	Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.							
	Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.							
05 10 00	Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.							
	Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.							
	Include the design engineer's stamp or seal on each sheet of shop drawings.							
05 52 13	Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.							
	Include the design engineer's stamp or seal on shop drawings.							
06 10 00	Product Data: Provide technical data on insulated sheathing, wood preservative materials, and application instructions.							
06 20 00	Product Data:							
	Provide manufacturer's data on products included in this Section							
	Provide instructions for attachment hardware, finish hardware, and other products listed in this Section.							
06 40 10	Product Data: Manufacturer's data sheets on each standard product to be used.							
	Shop Drawings: Show materials, layout, dimensions, profiles, fasteners and anchors, and interface with adjacent construction.							
	Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.							
	Product Data: Provide data for hardware accessories.							
	Samples: Submit actual samples of architectural cabinet construction, minimum 12 inches square, illustrating proposed cabinet substrate and finish.							

07 13 00	Product Data: Provide data for membrane.							
	Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.							
07 21 00	Product Data: Provide data on product characteristics, performance criteria, and product limitations.							
07 24 00	Shop Drawings: Indicate wall and soffit joint patterns, joint details, and molding profiles.							
	Product Data: Provide data on system materials, product characteristics, performance criteria, and system limitations.							
	Verification Samples: Submit actual samples of selected coating on specified substrate, minimum 12 inches square, illustrating project colors and textures.							
	Manufacturer's Installation Instructions: Indicate preparation required and installation techniques.							
07 25 00	Product Data: Provide data on material characteristics.							
	Manufacturer's Installation Instructions: Indicate preparation and installation methods.							
07 41 13	Product Data: Manufacturer's data sheets on each product to be used, including:							
	Storage and handling requirements and recommendations.							
	Installation methods.							
	Specimen warranty.							
	Shop Drawings: Include layouts of roof panels, details of edge and penetration conditions, spacing and type of connections, flashings, underlayments, and special conditions.							
	Show work to be field-fabricated or field-assembled.							
	Selection Samples: For each roofing system specified, submit color chips representing manufacturer's full range of available colors and patterns.							
	Verification Samples: For each roofing system specified, submit samples of minimum size 12 inches square, representing actual roofing metal, thickness, profile, color, and texture.							
	Warranty: Submit specified manufacturer's warranty and ensure that forms have been completed in Owner's name and are registered with manufacturer.							

07 46 46	Product Data: Manufacturer's data sheets on each product to be used, including:							
	Manufacturer's requirements for related materials to be installed by others.							
	Preparation instructions and recommendations.							
	Storage and handling requirements and recommendations.							
	Installation methods, including nail patterns.							
	Warranty: Submit copy of manufacturer's warranty, made out in Owner's name, showing that it has been registered with manufacturer.							
07 62 00	Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.							
	Samples: Submit 3 samples 6 inch in size illustrating metal finish color.							
07 84 00	Product Data: Provide data on product characteristics.							
07 90 05	Product Data: Provide data indicating sealant performance criteria.							
	Samples: Submit three samples, 1/2 x 6 inch in size illustrating sealant colors for selection.							
07 95 13	Product Data: Provide joint assembly profiles, profile dimensions, anchorage devices, available colors and finish.							
	Shop Drawings: Indicate joint and splice locations, miters, layout of the work, affected adjacent construction, anchorage locations.							
	Manufacturer's Installation Instructions: Indicate rough-in sizes; provide templates for cast-in or placed frames or anchors; required tolerances for item placement.							
	Maintenance Materials: Furnish the following for Owner's use in maintenance of project.							
08 11 13	Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.							
	Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any.							

08 14 16	Product Data: Indicate door core materials and construction; veneer species, type and characteristics.							
	Specimen warranty.							
	Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, special beveling, special blocking for hardware, factory machining criteria, factory finishing criteria, identify cutouts for glazing.							
	Samples: Submit three samples of door veneer, 6 x 6 inch in size illustrating wood grain, stain color, and sheen.							
	Manufacturer's Installation Instructions: Indicate special installation instructions.							
	Warranty, executed in Owner's name.							
08 31 00	Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.							
	Manufacturer's Installation Instructions: Indicate installation requirements.							
08 33 23	Product Data: Provide general construction, component connections and details, electrical equipment, and indicate number, location, and minimum sizes of access doors.	✓						
	Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.							
	Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.							
08 36 13	Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.	✓						
	Product Data: Show component construction, anchorage method, and hardware.							
	Operation Data: Include normal operation, troubleshooting, and adjusting.							
	Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.							
	Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.							

08 43 13	Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, internal drainage details.							
	Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.							
	Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.							
	Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.							
08 71 00	Shop Drawings:	✓						
	Indicate locations and mounting heights of each type of hardware, schedules, catalog cuts, electrical characteristics and connection requirements.							
	Hardware Schedule: Detailed listing of each item of hardware to be installed on each door. Use door numbering scheme as included in the Contract Documents. Identify electrically operated items and include power requirements.							
	Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.							
	Project Record Documents: Record actual locations of concealed equipment, services, and conduit.							
	Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.							
	Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.							
08 80 00	Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.							

09 21 16	Product Data: Provide data on metal framing, gypsum board, accessories, joint finishing system, and cement board.							
	Product Data: Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.							
	Test Reports: For all stud framing products that do not comply with ASTM C645 or C 754, provide independent laboratory reports showing maximum stud heights at required spacings and deflections.							
09 30 00	Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.							
	Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, and thresholds.							
	Samples: Provide 6 by 6 inch samples of each tile color, unmounted, with 3-inch long manufacturer's grout sample.							
09 51 00	Product Data: Provide data on suspension system components.							
	Samples: Submit three samples 6 x 6 inch in size illustrating material and finish of acoustical units.							
09 65 00	Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.							
	Verification Samples: Submit three samples, 8 x 8 inch in size illustrating color and pattern for each resilient flooring product specified.							
09 67 00	Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns and colors available.	✓						
	Samples: Submit two samples, 8 x 8 inch in size illustrating color and pattern for each floor material for each color specified.							
	Maintenance Data: Include maintenance procedures, recommended maintenance materials, procedures for stain removal, repairing surface, and suggested schedule for cleaning.							
09 90 00	Product Data: Provide data on all finishing products, including VOC content.							
	Samples: Submit two painted samples, illustrating selected colors and textures for each color and system selected. Submit on coated paper, 8.5 x 11 inch in size.							

10 11 01	Product Data: Provide manufacturer's data on chalkboard, markerboard, tackboard, tackboard surface covering, trim, and accessories.						
10 14 23	Shop Drawings: Indicate sign styles, lettering font, foreground and background colors, locations, overall dimensions of each sign.						
10 21 13	Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.						
	Product Data: Provide data on panel construction, hardware, and accessories; and provide sample card of manufacturer's standard colors.						
	Samples: Submit three samples of partition panels, 6 x 6 inch in size illustrating panel finish, color, and sheen.						
10 26 01	Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.						
10 28 00	Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.						
10 44 00	Product Data: Provide extinguisher operational features.						
10 51 00	Product Data: Provide data on locker types, sizes and accessories.						
	Shop Drawings: Indicate locker plan layout, numbering plan.						
	Samples: Submit three samples 3 x 6 inches in size, of each color scheduled; applied to specified base metal.						
10 56 13	Product Data: Manufacturer's data sheets on each product to be used, including:						
	Rated uniform shelf loads.						
	Details of shelving assemblies, including reinforcement.						
	Accessories.						
	Test Reports: Provide independent agency test reports documenting compliance with specified structural requirements.						
11 13 13	Product Data: Indicate unit dimensions, method of anchorage, and details of construction.						
	Manufacturer's Installation Instructions: Indicate special installation requirements.						

11 13 16	Shop Drawings: Indicate framed wall opening, dimensions and tolerances, adjacent construction and fittings required for anchorages, and anchor points.	✓						
	Maintenance Data: Provide unit maintenance information, lubrication cycles, spare parts manual.							
11 13 19 .13	Product Data: Provide materials and finish, installation details, roughing-in measurements, and operation of unit and safety lock device.	✓						
	Shop Drawings: Indicate required opening dimensions, tolerances of opening dimensions, placement dimensions of safety lock device, perimeter conditions of construction.							
	Operation Data: Provide operating instructions, identify unit limitations.							
	Maintenance Data: Provide unit maintenance information, lubrication cycles, spare parts manual.							
11 31 00	Product Data: Manufacturer's data indicating dimensions, capacity, and operating features of each piece of residential equipment specified.							
	Copies of Warranties: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.							
12 21 13	Product Data: Provide data indicating physical and dimensional characteristics.							
	Samples: Submit two samples, 6 inch long illustrating slat materials and finish, color, cord type and color.							
12 35 53	Product Data: Details of materials, component dimensions and configurations, construction details, joint details, attachments; manufacturer's catalog literature on hardware, accessories, and service fittings, if any.							
	Shop Drawings: Casework locations, large-scale plans, elevations, cross sections, rough-in and anchor placement dimensions and tolerances, clearances required, and utility locations, if any.							

12 36 00	Product Data: Manufacturer's data sheets on each product to be used, including:							
	Preparation instructions and recommendations.							
	Storage and handling requirements and recommendations.							
	Specimen warranty.							
	Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.							
	Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.							
12 51 00	Product Data: Provide manufacturer's literature including accessories and options	✓						
	Shop Drawings: Indicate final layout of systems furniture and all components required for assembly							
	Samples: Submit two swatches, 10 x 10 inch in size, illustrating color pattern and texture for selected fabrics							
	Maintenance Data: Include cleaning instructions and maintenance procedures							
	Warranty: Provide manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer							
13 21 26	Shop Drawings: Indicate layout, room dimensions, materials, components, fasteners, doors, hardware, equipment, finishes, method of installation and assembly, panel placement, supplementary support or bracing, controls, and service rough-in.	✓						
	Product Data: Provide data on hardware and fixtures, joint details.							
	Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.							
	Operation Data: Include operating equipment, service and lubrication schedules.							
	Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.							

13 35 13	Product Data: Provide manufacturer's literature on greenhouse systems, including products, and equipment included	✓					
	Shop Drawings: Indicate assembly dimensions, locations of structural members, connections; wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, erection, and mechanical, electrical and plumbing components provide under this Section and connection points for work by others; framing anchor bolt settings, sizes, and locations from datum, foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths.						
	Following review by Architect provide professional seal and signature and submit greenhouse design to Authorities Having Jurisdiction for approval						
	Include environmental control system network layout drawings, data sheets, and logic model						
	Structural Calculations: Indicate loads, reactions and resultant sizing of primary and secondary structural components based on required loading conditions under seal of structural engineer licensed in the State of Wisconsin.						
	Manufacturer's Instructions: Indicate preparation requirements, anchor bolt placement, and requirements for plumbing, mechanical, electrical and communication systems.						
	Erection Drawings: Indicate members by label, assembly sequence, and temporary erection bracing.						
	Maintenance and Operations Manuals: Submit under provisions of Section 01 78 00 – Closeout Submittals. Provide for all mechanical, plumbing, electrical, communication and controls sytems.						

14 20 20	Shop Drawings: Indicate the following information:	✓						
	Hoistway components: Car, counterweight, sheaves, machine and sheave beams, guide rails, buffers, ropes, and other components.							
	Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.							
	Individual weight of principal components; load reaction at points of support.							
	Loads on hoisting beams and location of trolley beams.							
	Clearances and over-travel of car and counterweight.							
	Locations in hoistway and machine room of traveling cables and connections for car light.							
	Location and sizes of access doors, doors, and frames.							
	Expected heat dissipation of elevator equipment in machine room.							
	Electrical characteristics and connection requirements.							
	Product Data: Provide data on the following items:							
	Signal and operating fixtures, operating panels, indicators.							
	Cab design, dimensions, layout, and components.							
	Cab and hoistway door and frame details.							
	Electrical characteristics and connection requirements.							
	Maintenance Data: Include:							
	Parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.							
	Technical information for servicing operating equipment.							
	Legible schematic of hydraulic piping and wiring diagrams of installed electrical equipment and changes made in the Work. List symbols corresponding to identity or markings on machine room and hoistway apparatus.							
21 05 00	Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings.							
	Shop Drawings: Indicate pipe materials used, jointing methods, supports, floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.							
	Project Record Documents: Record actual locations of components and tag numbering.							

21 13 16	Product Data: Provide data on sprinkler heads, piping materials, joining methods, supports, valves, flow switches, tamper switches and all other components and accessories intended to be installed. Include manufacturers' catalog information, Code and Standards compliance, performance ratings, rough-in details, weights, finishes, support and connection requirements						
	Shop Drawings: a. Submit detailed and accurate Shop Drawings electronically of entire systems prior to fabrication. Indicate system controls, hydraulic reference points, detailed pipe layout, valves, hangers and supports, components and accessories. b. Hydraulic calculations: Submit flow test results and comprehensive hydraulic data sheets complying with NFPA 13. Verification of the adequacy of water pressure and other pertinent water supply data shall be the responsibility of the design engineer. Provide a 10-psi safety factor for all sprinkler system hydraulic calculations. c. Sprinkler heads shall be shown on Drawings and specifically identified by the style or series designation as published in the appropriate agency listing or approval.						
	Submit preliminary layout showing head locations within coordinated ceiling grid and inspector's test station locations for review by Architect/Engineer/Project Manager.						
	Submit certification letter by engineer of record stating that the fire protection systems design and installation complies with Referenced Standards.						
	Submit verification of Contractor's design and installation qualifications						
	Provide certificate of compliance from authority having jurisdiction indicating approval of field acceptance tests. Refer to paragraph 3.04 B, within this specification section.						
	Provide full written description of manufacturer's warranty						
	Record Documents: Provide three sets of As-Built Record Drawings indicating actual installed locations, sizes and types of sprinkler heads, piping, valves, supports, equipment and all other system components. Identify all deviations from approved submittal Drawings. Provide two sets of final hydraulic calculations and ACAD 2008 edition discs of As-Built Drawings						

	Operation and Maintenance Data: include components of system, servicing requirements, inspection data, replacement part numbers, location and numbers of service depot. Provide a preventive maintenance schedule for all applicable equipment and systems.	✓					
	The Contractor shall provide supply of spare heads of each type installed under the Contract in quantities as required by National Fire Protection Association Standard No. 13. The heads shall be packed in a suitable wall mounted sprinkler cabinet and shall be representative of and in proportion to, the number of each type and temperature rating installed. In addition to the spare heads, the Contractor shall provide not less than three special sprinkler head wrenches for each type of head. The cabinet shall be permanently affixed to a wall near the fire pump controller.						
22 05 16	Product Data: Flexible Pipe Connectors: Indicate maximum ıture and pressure rating, face-to- face length, live length, hose kness, hose convolutions per foot and per assembly, ental frequency of assembly, braid structure, and total number of braid. Expansion Joints: Indicate maximum temperature and e rating, and maximum expansion compensation						
	Shop Drawings: Indicate layout of piping systems, including flexible connectors, expansion joints, expansion compensators, loops, offsets and swing joints.						
	Project Record Documents: Record actual locations of flexible pipe connectors, expansion joints, anchors, and guides						
	Operation and Maintenance Data: Submit adjustment instructions.	✓					
22 05 53	Product Data: Provide manufacturers catalog literature for each product required.						
	List: Submit list of wording, symbols, letter size, and color-coding for mechanical identification.						
	Manufacturer's Installation Instructions: Indicate special procedures, and installation						

22 07 19	Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.						
	Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.						
22 10 05	Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.						
	Project Record Documents: Record actual locations of valves.						
22 10 06	Product Data: Provide component sizes, rough-in requirements, service sizes, and finishes.						
	Shop Drawings: Indicate dimensions, weights, and placement of openings and holes.						
	B. Manufacturer's Instructions: Indicate Manufacturer's Installation Instructions: Indicate assembly and support requirements.						
	C. Project Record Documents: Record actual locations of equipment, cleanouts, backflow preventers, water hammer arrestors						
	Maintenance and Operation Data: Indicate frequency of treatment required for interceptors. Include installation instructions, spare parts lists, exploded assembly views						
22 14 50	Product Data: Manufacturer's literature on each component and system						
	Shop Drawings: Indicate component size, utility connection points, and connection of other components within the system.						
	Installation Instructions: Indicate sequence, clearances, tolerances,						
	Maintenance and Operation Data: Indicate operational procedures, lubrication and maintenance points and procedures for each component in the system.						
	Warranty: Provide manufacturer's standard limited liability warranty.						

22 30 00	Product Data: a) Provide dimension drawings of water heaters indicating components and connections to other equipment and piping. B) Indicate pump type, capacity, power requirements. C) Provide certified pump curves showing pump performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. D) Provide electrical characteristics and connection requirements.						
	Shop Drawings: Indicate dimensions of tanks, tank lining methods, anchors, attachments, lifting points, tappings, and drains.						
	Operation and Maintenance Data: Include operation, maintenance, and inspection data, replacement part numbers and availability, and service depot location and telephone number.						
	Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.						
22 40 00	Product Data: Provide catalog illustrations of fixtures, sizes, rough-in dimensions, utility sizes, trim, and finishes.						
	Manufacturer's Instructions: Indicate installation methods and procedures.						
	Maintenance Data: Include fixture trim exploded view and replacement parts lists.						
	Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer						
23 05 13	Product Data: Provide wiring diagrams with electrical characteristics and connection requirements						
	Test Reports: Indicate test results verifying nominal efficiency and power factor for three phase motors larger than 1/2 horsepower.						
	Test Reports: Indicate test results verifying nominal efficiency and power factor for three phase motors larger than 1/2 horsepower.						
	Maintenance and Operation Data: Include instructions for safe operating procedures. Include assembly drawings, bearing data including replacement sizes, and lubrication instructions						

23 05 14	Product Data: A) Submit product data for components and accessories. B) All VFD's for this Project shall be supplied by one manufacturer. C) Submit Shop Drawings indicating outline dimensions, enclosure construction, lifting and supporting points, electrical one-line diagram, equipment electrical ratings, noise levels (including driven equipment) and total harmonic distortion (voltage and current). D) Manufacturer shall provide terminal block to terminal block wiring diagrams coordinated with the Owner to provide a complete and functional operating system. Furnish detailed Drawings showing construction, dimensions, wiring diagrams, and installation procedures for Engineer's approval.						
	Operation and Maintenance Data: A) Submit manufacturer's written installation instructions. B) Submit training outline. C) Furnish harmonic analysis verifying compliance with specified distortion levels. E) Furnish a list of recommended spare parts.						
	Warranty: See Section for more information						
23 05 16	Shop Drawings: Indicate layout of piping systems, including flexible connectors, expansion joints, expansion compensators, loops, offsets and swing joints.						
	Product Data: A) Flexible Pipe Connectors: Indicate maximum temperature and pressure rating, face-to- face length, live length, hose wall thickness, hose convolutions per foot and per assembly, fundamental frequency of assembly, braid structure, and total number of wires in braid. B) Expansion Joints: Indicate maximum temperature and pressure rating, and maximum expansion compensation						
	Project Record Documents: Record actual locations of flexible pipe connectors, expansion joints, anchors, and guides.						
	Operation and Maintenance Data: Submit adjustment instructions.						
23 05 19	Product Data: Provide list that indicates use, operating range, total range and location for manufactured components.						
	Project Record Documents: Record actual locations of components and instrumentation.						

23 05 29	Shop Drawings: Indicate system layout with location including critical dimensions, sizes, and pipe hanger and support locations and detail of trapeze hangers						
	Product Data: A) Hangers and Supports: Submit manufacturers catalog data including load capacity. B) Firestopping: Submit data on product characteristics, performance and limitation criteria.						
	Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly						
	Design Data: Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers. Indicate calculations used to determine load carrying capacity of trapeze, multiple pipe, and riser support hangers. Submit sizing methods and calculations sealed by a registered professional engineer.						
	Manufacturer's Installation Instructions: A) Hangers and Supports: Submit special procedures and assembly of components. B) Firestopping: Submit preparation and installation instructions.						
	Manufacturer's Certificate: Certify products meet or exceed specified requirements.						
	Engineering Judgments: For conditions not covered by UL or WH listed designs, submit judgments by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.						
23 05 48	Product Data: Provide schedule of vibration isolator type with location and load on each.						
	Shop Drawings: Indicate inertia bases and locate vibration isolators, with static and dynamic load on each. Indicate seismic control measures.						
	Manufacturer's Instructions: Indicate installation instructions with special procedures and setting dimensions						

23 05 53	Chart and Schedule: Submit valve chart and schedule, including valve tag number, location, function, and valve manufacturer's name and model number.						
	Product Data: Provide manufacturers catalog literature for each product required.						
	Manufacturer's Installation Instructions: Indicate special procedures, and installation.						
	Project Record Documents: Record actual locations of tagged valves.						
23 05 93	Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance. 1) Submit under provisions of Section 01 40 00. 2) Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect. 3) Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.						
	Project Record Documents: Record actual locations of balancing valves and rough setting.						
23 07 13	Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations						
	Manufacturer's Instructions: Indicate installation procedures necessary to ensure acceptable workmanship and that installation standards will be achieved						
23 07 19	Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations						
	Manufacturer's Instructions: Indicate installation procedures that ensure acceptable workmanship and installation standards will be achieved.						

23 09 13	Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.						
	Shop Drawings: Indicate complete operating data, system drawings, wiring diagrams, and written detailed operational description of sequences. Submit schedule of valves indicating size, flow, and pressure drop for each valve. For automatic dampers indicate arrangement, velocities, and static pressure drops for each system.						
	Manufacturer's Instructions: Provide for all manufactured components.						
	Project Record Documents: Record actual locations of control components, including panels, thermostats, and sensors. Accurately record actual location of control components, including panels, thermostats, and sensors. 1) Revise shop drawings to reflect actual installation and operating sequences						
	Operation and Maintenance Data: Include inspection period, cleaning methods, recommended cleaning materials, and calibration tolerances.						
	Warranty: Submit manufacturer's warranty and ensure forms have been filled out in Owner s name and registered with manufacturer.						
23 09 23	Submittals for all automation, control and monitoring systems shall include complete schematic/flow drawings, logic diagrams, wiring diagrams, manufacturer's literature/submittal sheets for all components, control points list, bill of materials and a bound booklet of all instruments and devices to be installed.						
	Mechanical contractor shall red-line one set of submittal drawings, showing any and all deviations of installed system from that shown in the submittal drawings for this use in developing record drawings.						
	Warranty: See Section for additional data.						

23 09 93	Shop Drawings: Label with settings, adjustable range of control and limits. Submit written description of control sequence. Submit flow diagrams for each control system, graphically depicting control logic. Submit draft copies of graphic displays indicating mechanical system components, control system components, and controlled function status and value. Coordinate submittals with information requested in other Sections						
	Project Record Documents: Record actual locations of components and set points of controls, including changes to sequences made after submission of shop drawings.						
23 11 23	Product Data: 1) Piping: Submit data on pipe materials, fittings, and accessories. 2) Valves: Submit manufacturers catalog information with valve data and ratings for each service. 3) Piping Specialties: Submit manufacturers catalog information including capacity, rough-in requirements, and service sizes for the following: a) Strainers b) Natural gas pressure regulators c) Natural gas pressure relief valves.						
	Design Data: Indicate pipe size. Indicate load carrying capacity of trapeze, multiple pipe, and riser support hangers.						
	Test Reports: Indicate results of piping system pressure test.						
	Manufacturer's Certificate: Certify Products meet or exceed specified requirements.						
	Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within previous 12 months.						
23 21 13	Product Data: Include data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalogue information. Indicate valve data and ratings.						
	Welders Certificate: Include welders certification of compliance with ASME (BPV IX).						
	Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.						
	Project Record Documents: Record actual locations of valves.						
	Maintenance Data: Include installation instructions, spare parts lists, exploded assembly views.						

	Maintenance Materials; Provide two repacking kits for each valve type and size.						
23 21 14	Product Data: Provide product data for manufactured products and assemblies required for this project. Include component sizes, rough-in requirements, service sizes, and finishes. Include product description, model and dimensions.						
	Certificates: Inspection certificates for pressure vessels from authority having jurisdiction.						
	Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.						
	Maintenance Contract						
	Project Record Documents: Record actual locations of flow controls.						
	Maintenance Data: Include installation instructions, assembly views, lubrication instructions, and replacement parts list						
23 21 23	Product Data Provide certified pump curves showing performance characteristics with pump and system operating point plotted. Include NPSH curve when applicable. Include electrical characteristics and connection requirements						
	Manufacturer's Installation Instructions: Indicate hanging and support requirements and recommendations						
	Millwright's Certificate: Certify that base mounted pumps have been aligned.						
	Operation and Maintenance Data: Include installation instructions, assembly views, lubrication instructions, and replacement parts list.						

23 25 00	Product Data: 1) Include rated capacities; water-pressure drops; shipping, installed, and operating weights; and furnished products listed below: a) Pumps b) Chemical solution tanks c) Test equipment d) Chemicals e) Filters f) Chemical feeders g) Bypass Chemical pot feeders						
	Shop Drawings: Detail equipment assemblies indicating dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection. Wiring Diagrams: Detail power and control wiring and differentiate between manufacturer-installed and field-installed wiring.						
	Water Analysis: Submit a copy of the water analysis to illustrate water quality available at Project Site.						
	Field Test Reports: Indicate and interpret test results for compliance with performance requirements.						
	Operation and Maintenance Data: 1) For pumps, filters, system controls, and accessories to include in Operating and Maintenance Manuals. 20 Furnish manufacturer's written instructions						
23 31 00	Product Data: Provide data for duct materials						
	Test Reports: Indicate pressure tests performed. Include date, section tested, test pressure, and leakage rate, following SMACNA (LEAK) - HVAC Air Duct Leakage Test Manual						
	Project Record Documents: Record actual locations of ducts and duct fittings. Record changes in fitting location and type. Show additional fittings used.						
23 33 00	Product Data: Provide for shop-fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements						
	Shop Drawings: Indicate for shop fabricated assemblies including volume control dampers						

23 34 13	Product data for approval for all fans of every description furnished under this Section of these Specifications. 1) Provide literature that indicates dimensions, weights, capacities, ratings, fan performance, gages and finishes of materials, electrical characteristics and connection requirements. 2) Fan curves with specified operating point clearly plotted. The recommended range of operation shall be stable. 3) Fans shall be capable of operating stably at reduced loads imposed by means of variable speed drives, inlet guide vanes or controlling pitch of fan blades. 4) Data on sound power levels for both fan inlet and outlet at rated capacity. 5) Data on special coatings and construction where applicable. 6) Electrical characteristics and connection requirements. 7) All data on fan accessories.						
	Operation and Maintenance Data: 1. Manufacturer's installation instructions and operating and maintenance data. 1) Submit under provisions of Division 01. 2) Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams						
23 34 23	Product Data: Submittal data for approval for all fans of every description furnished under this section of these Specifications. 1) Provide literature that indicates dimensions, weights, capacities, ratings, fan performance, gages and finishes of materials, special coatings and construction, electrical characteristics and connection requirements. 2) Fan curves with specified operating point clearly plotted. The recommended range of operation shall be stable. 3) Data on sound power levels for both fan inlet and outlet at rated capacity. 4) All data on fan accessories.						
	Operation and Maintenance Data: 1) Manufacturer's installation instructions and operating and maintenance data. 2) Submit under provisions of Division 01. 3) Include instructions for lubrication, motor and drive replacement, spare parts list, and wiring diagrams.						
23 37 00	Product Data: Provide data for equipment required for this project. Review outlets and inlets as to size, finish, and type of mounting prior to submission. Submit schedule of outlets and inlets showing type, size, location, application, and noise level.						
	Project Record Documents: Record actual locations of air outlets and inlets.						

23 52 33	Shop Drawings: Indicate general assembly, components, controls, safety controls, and wiring diagrams with electrical characteristics and connection requirements, and service connections.						
	Product Data: Provide data indicating general assembly, components, controls, safety controls, and wiring diagrams with electrical characteristics and connection requirements, and service connections.						
	Test Reports: Indicate specified performance and efficiency is met or exceeded. Provide combustion test that includes boiler firing rate, overfire draft, gas flow rate, heat input, burner manifold gas pressure, percent carbon monoxide (CO), percent oxygen (O), percent excess air, flue gas temperature at outlet, ambient temperature, net stack temperature, percent stack loss, percent combustion efficiency, and heat output.						
	Manufacturer's Installation Instructions: Submit assembly, support details, connection requirements, and include start-up instructions. Instructions must be available at the job site when equipment is being inspected.						
	Manufacturer's Certificate: Certify that units meet or exceed specified requirements.						
	Manufacturer's Field Reports: Indicate condition of equipment after start-up including control settings and performance chart of control system						
	Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, cleaning procedures, replacement parts list, and maintenance and repair data.						
23 74 13	Product Data: Provide literature that indicates dimensions, weight, loading, clearances, capacities, gauges, thickness, and finishes of materials, electrical characteristics and connections. 1) Rigging, installation, testing, Start-up and operating instructions, maintenance data including type and quantity of oil and refrigerant change (pounds), parts lists, and troubleshooting guide. 2) Data on energy input versus cooling load output from 100 percent to 20 percent of full load with constant entering condenser air temperature. 3) Information about control and wiring diagrams. 4) Product test data on sound power levels for both fan inlet and outlet at the rated design capacity. 5) Operating data such as fans speeds, compressor LRA and RA, sound levels 6) Product data on special condenser coating. 7) Product data on all condenser fan accessories such as controls.						

	Warranty: Units shall be furnished with full coverage warranty against defects in materials. Warranty on the complete unit shall be for one year from the Substantial Completion date. On the compressors, warranty shall be for five (5) years from the Substantial Completion date						
23 81 23	Product Data: 1) Cooling capacities. 2) Dimensions. 3) Weights. 4) Rough-in connections and connection requirements. 5) Electrical requirements with electrical characteristics and connection requirements. 6) Controls. 7) Accessories.						
	Manufacturer's Installation Instructions: Submit assembly, support details, connection requirements, and include start-up instructions.						
	Manufacturer's Certificate: Certify products meet or exceed specified requirements.						
	Manufacturer's Field Reports: Submit start-up report for each unit.						
23 82 39	Product Data: 1) Submit product data indicating typical catalog of information including dimensions, weights, capacities, ratings, fan performance, gages and finishes of materials, electrical characteristics and connection requirements. 2) Submit fan curves with specified operating point clearly plotted. The fan curves shall clearly demonstrate that the fan coil unit will operate stably within the range of performance scheduled. 3) Submit coil performance data as tested and certified per ARI standards. 4) Submit electrical requirements for power supply wiring, clearly indicating factory- installed and field-installed wiring. 5) The submittal shall indicate that all materials meet NFPA 90 flame/smoke spread levels of 25/50 or better.						
	Manufacturer's installation instructions.						
	Shop Drawings: Indicate materials and methods of assembly, unit dimensions, weight loading, required clearances, field connection details, electrical characteristics and dimensional views as required to adequately describe the unit						

26 05 19	Product Data: Provide for each cable assembly type						
	Test Reports: Indicate procedures and values obtained						
	D. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors						
	E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency.						
	Project Record Documents: Record actual locations of components and circuits.						
26 05 26	Product Data: Provide for grounding electrodes and connections						
	Test Reports: Indicate overall resistance to ground and resistance of each electrode.						
	Project Record Documents: Record actual locations of components and grounding electrodes.						
26 05 34	Product Data: Provide for metallic conduit, flexible metal conduit, liquidtight flexible metal conduit, metallic tubing, nonmetallic conduit, flexible nonmetallic conduit, nonmetallic tubing, fittings, and conduit bodies.						
	Project Record Documents: Accurately record actual routing of conduits larger than 2 inches.						
26 05 37	Project Record Documents: Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.						
26 09 23	Manufacturer shall substantiate conformance to this specification by supplying the necessary documents, performance data and wiring diagrams. Any deviations to this specification must be clearly stated by letter and submitted						
	Submit a lighting plan clearly marked by manufacturer showing proper product, location and orientation of each sensor.						
	Submit any interconnection diagrams per major subsystem showing proper wiring.						
	Submit standard catalog literature which includes performance specifications indicating compliance to the specification.						

	Catalog sheets must clearly state any load restrictions when used with electronic ballasts.						
26 24 16	Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement and sizes.						
	Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product						
	Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.						
	Maintenance Data: Include spare parts listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.						
26 27 01	Product Data: Provide ratings and dimensions of transformer cabinets and meter bases.						
	Submit utility company-prepared drawings.						
26 27 17	Product Data: Provide wiring device manufacturer's catalog information showing dimensions, configurations, and construction.						
	Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.						
26 27 26	Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations						
	Manufacturer's Installation Instructions						
26 28 13	Product Data: Provide data sheets showing electrical characteristics, including time-current curves.						
26 28 18	Product Data: Provide switch ratings and enclosure dimensions						
	Project Record Documents: Record actual locations of enclosed switches.						

26 32 13	Shop Drawings: 1) Layouts showing system layout, dimensions, conduit entrance, fuel supply connections, ventilation duct connection, and exhaust connections. 2) Generator rating. M 3) Control panel and circuit breaker enclosure dimensions, control arrangements, and one-line diagrams in accordance with IEEE Standard No. 315 indicating connections and controls. 4) Bill of materials. 5) Manufacturer's written recommendations for storage and protection, installation instructions, and field test requirements. 6) Equipment accessory						
	Test Reports: 1. Certified test reports of prototype, production, and field tests. 2. Factory certified load test of 3/4 hours after assembly; 1/2 hour at 100% rated load.						
	Operation and Maintenance Data: Manufacturer's instructions for startup, performing cleaning, operating, and maintaining standby power systems.						
26 36 00	Product Data: Provide catalog sheets showing voltage, switch size, ratings and size of switching and overcurrent protective devices, operating logic, short circuit ratings, dimensions, and enclosure details.						
	Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.						
	Operation Data: Instructions for operating equipment under emergency conditions when engine generator is running.						
	Maintenance Data: Routine preventative maintenance and lubrication schedule. List special tools, maintenance materials, and replacement parts.						
26 43 13	Shop Drawings: Electrical and mechanical drawings shall be provided by the manufacturer which show unit dimensions, weights, mounting provisions, connection notes, wire size and wiring diagram.						
	Equipment Manual: The manufacturer shall furnish an installation manual with installation notes, start-up and operating instructions for the specified system. Installation instructions shall clearly state whether the system requires an external overcurrent device to maintain the system's UL 1449 listing						
	Independent Testing: 1) High exposure with the 10 x 1,000µs tests per IEEE C62.41.2 Section 7.2. 2) Life Cycle/Repetitive Testing per C62.45-2002 section B.38 minimum of 1,000 to 2,000 times						

	National Electrical Code (NEC) 285 - Installation requirements for TVSS.						
	UL 1449 stipulation for fused TVSS - The manufacturer's authorized representative is required to submit the following: 1) Certify that the TVSS system is UL 1449 listed (UL Card) with UL Card. 2) Indicate the type of internal or external fusing that is incorporated in the TVSS system and what impact the fusing has on the performance of the device with respect to surge capacity and clamping levels.						
	CBEMA (ITIC) & IEC - SVRs must meet voltage tolerance guidelines. 1) VR clamp levels for wye and single phase (L-N, L-G and N-G): 400-600V for 120V systems, 800-1200V for 277V systems and 1200- 1500V for 347V systems 2) SVR clamp levels for delta circuits (L-L and L-G): 1000-1200V for 240V systems, 1500-1800V for 480V systems and 1800-2000V for 600V systems.						
26 51 00	Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.						
	Product Data: Provide dimensions, ratings, and performance data.						
	Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation, and installation of product.						
	Operation and Maintenance Data: Instructions for each product						
26 56 00	Shop Drawings: Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.						
	Product Data: Provide dimensions, ratings, and performance data.						
	Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency specified under Quality Assurance. Include instructions for storage, handling, protection, examination, preparation, and installation of product.						
	Operation and Maintenance Data: Instructions for each product						

	Test Reports: Indicate measured illumination levels.						
26 60 00	Product Data 1) Heating cable data sheet 2) UL, CSA, FM approval certificates for roof and gutter de-icing 3) Roof and gutter de-icing design guide 4) System installation and operation manual 5) System installation details 6) Connection kits and accessories data sheet 7) Controller/Power Panel data sheet 8) Controller/Power Panel wiring diagram						
27 51 16	Submit detail drawings consisting of a complete list of equipment and material, including manufacturer's descriptive and technical literature, performance charts and curves, catalog cuts, and installation instructions.						
	Check the layout based on the actual speakers to be installed and make necessary revisions in the detail drawings. Detail drawings shall also contain complete point to point wiring, schematic diagrams and other details required to demonstrate that the system has been coordinated and will properly function as a unit.						
	Drawings shall show proposed layout of equipment and appurtenances, and equipment relationship to other parts of the work including clearances for maintenance and operation.						
28 13 00	Product Data: Provide electrical characteristics and connection requirements	✓					
	Shop Drawings: Provide system wiring diagram showing each device and wiring connection required						
	Test Reports: Indicate satisfactory completion of required tests and inspections						
	Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.						
	Project Record Documents: Record actual locations of access authorization equipment						
	Operation Data: Operating instructions						
	Maintenance Data: Maintenance and repair procedures						
	Maintenance Materials: Furnish the following for Owner's use in maintenance of project						

28 23 00	Product Data: Provide showing electrical characteristics and connection requirements for each component.	✓					
	Shop Drawings: Indicate electrical characteristics and connection requirements, including system wiring diagram						
	Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.						
	Project Record Documents: Record actual locations of cameras and routing of television cable						
	Operation Data: Instructions for starting and operating system.						
	Maintenance Data: Routine trouble shooting procedures						
28 31 00	Shop Drawings: Data sheets and equipment description. 2. Bill of materials listing components. 3. Component wiring diagrams. 4. System wiring and interconnection diagrams showing all devices – not a typical diagram.						
	Operation and Maintenance Data: Submit in accordance with Division 1. Provide electronic record drawings in Autocad Version 2002 or newer on CD.						
	Field quality control test results.						
31 23 23	Compaction Density Test Reports.						
32 12 16	Product Data: Mix designs and material certificates						
32 13 13	Product Data: for each product listed and mix designs						
	Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments						

32 13 73	Product Data: For each joint-sealant product indicated.						
	Samples: For each kind and color of joint sealant required.						
	Pavement-Joint-Sealant Schedule: Include the following information: 1) Joint-sealant application, joint location, and designation. 2) Joint-sealant manufacturer and product name. 3) Joint-sealant formulation. 4) Joint-sealant color.						
	Product certificates.						
	Product test reports.						
	Preconstruction compatibility and adhesion test reports						
32 14 13	Product Data: Provide characteristics of paver unit, detectable warning pavers, dimensions, and special shapes						
32 31 13	Product Data: Provide data on fabric, posts, accessories, fittings and hardware.						
	F. Shop Drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.						
	G.Maintenance and Operation Data: Provide data on replacement parts, lubrication and service of gates and operator						

32 31 19	Product Data: Submit manufacturer's data sheets on each product to be used, including:	✓						
	Preparation instructions and recommendations.							
	Storage and handling requirements and recommendations.							
	Installation methods.							
	Shop Drawings:							
	Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.							
	Foundation details, concrete design mix and reinforcing schedule for anti-ram barrier system.							
	Installer's Qualification Statement.							
	Provide data on replacement parts, lubrication and service of gates and operator.							
	Manufacturer's Warranty.							
32 92 31	Topsoil Analysis and test reports							
	Product Data: On fertilizers, and grass seed							
33 05 00	Product Data: 1) Dielectric fittings. 2) Identification devices							
33 11 00	Product Data: water-main materials including Pipe, fittings, valves, hydrants, joint restraint materials							
	Operation and Maintenance Data: water-main materials including Pipe, fittings, valves, hydrants, joint restraint materials							
	Provide reports that document pressure and continuity testing procedures and results							
	Provide reports that document safe sample collection procedures and results.							
	Provide copies of record drawings.							

33 41 00	Product Data: For each type of product indicated.						
	Shop Drawings: Provide manufacturers product information (cut sheets), shop drawings for storm sewer materials including pipes, fittings, structures, outfalls, castings.						
	Operation and Maintenance Data: Storm sewer materials						
	Manholes: Include plans, elevations, sections, details, frames, and covers.						
	Catch basins and storm water inlets. Include plans, elevations, sections, details, frames, covers, and grates.						
	Coordination Drawings: Show pipe sizes, locations, and elevations. Show other piping in same trench and clearances from storm drainage system piping. Indicate interface and spatial relationship between manholes, piping, and proximate structures.						
	Profile Drawings: Show system piping in elevation. Draw profiles at horizontal scale of not less than 1 inch equals 50 feet (1:500) and vertical scale of not less than 1 inch equals 5 feet (1:50). Indicate manholes and piping. Show types, sizes, materials, and elevations of other utilities crossing system piping.						
	Product Certificates: For each type of cast-iron soil pipe and fitting, from manufacturer.						
	Field quality-control reports.						
41 63 23	Product Data: Provide manufacturer's literature on equipment and accessories.	✓					
	Shop Drawings: Indicate charging station installation parameters.						
	Operation Data: Provide manufacturer's operation guide to vehicles and charging station.						
	Maintenance Data: Provide manufacturer's maintenance information on utility vehicles and accessories including list of replacement parts, local dealer and service contact information.						

END OF SECTION