

100705 – Diesel Oxidation Catalyst Installation

Corrected Final Design Technical Specifications

Prepared by:
South Florida Water Management District
Engineering and Construction Bureau
Operations, Maintenance and Construction Division



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**ENGINEERING DESIGN STANDARDS FOR
WATER RESOURCE FACILITIES**

RFB 600000502

**DIESEL OXIDATION CATALYST INSTALLATION
BROWARD, HENDRY, MARTIN, MIAMI-DADE, AND
PALM BEACH COUNTIES, FLORIDA**

PROJECT ID#: 100705

TECHNICAL SPECIFICATIONS

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END OF DIRECTORY

SECTION 01010 SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY: This SECTION summarizes the Work of the Project as covered in detail in the complete Contract Documents. This is a general summary and is not intended to be complete and all inclusive of the required Work items.

1.02 PROJECT DESCRIPTION:

A. Description of Total Project: The CONTRACTOR shall provide all labor, material and equipment necessary to install 33 Diesel Oxidation Catalyst (DOC) units in the exhaust systems of the main pump engines at 11 pump stations with non-Fairbanks Morse engines. The stations are located in Broward, Hendry, Martin, Miami-Dade and Palm Beach counties. The work shall include but not be limited to the following:

1. Install DOC unit with custom-fitted insulation blanket in the exhaust system of each main pump engine.
2. Modify the exhaust piping and supports as necessary to accommodate the DOC units, adding new supports where necessary.
3. Fabricate and install maintenance access platforms for the DOC units as indicated in the plans.
4. Replace existing or install new insulation as necessary to fully insulate all indoor exhaust piping, from engine exhaust port to wall thimble.
5. Furnish and install data logger catalyst monitor kit, wiring, conduits, boxes and supports as specified in the plans.

1.03 RELATED CONTRACT ACTIVITIES:

A. (Not applicable.)

1.04 WORK PERFORMED BY OTHERS:

A. (Not applicable.)

1.05 CONTRACTOR'S USE OF PREMISES: See General Terms & Conditions Article 6.11.

- A. During construction activities, the CONTRACTOR shall be responsible for maintaining all access roads in good condition, including grading and drainage. See General Terms & Conditions Article 6.13.
- B. The CONTRACTOR shall verify the load ratings for any District bridge or service bridge before crossing with equipment.

1.06 DISTRICT'S USE OF PREMISES:

A. Partial District Occupancy: The DISTRICT reserves the right to occupy and to place and install equipment in areas of the Project, prior to Substantial Completion provided that such occupancy does not interfere with completion of the Work. Such placing of equipment and partial occupancy shall not constitute acceptance of the Work.

1.07 WORK SEQUENCE, COORDINATION ACTIVITIES AND SCHEDULED DATES:

A. General: The CONTRACTOR will coordinate its work with other adjacent contractors, landowners and DISTRICT activities, with specific attention to access and staging areas. Construction sequence shall be determined by CONTRACTOR subject to the following needs for continuous access and operation by others.

1. Pump Station operations shall continue during construction. The DISTRICT recognizes that disruptions to Pump Station operations may be necessary to allow work to proceed. However, the CONTRACTOR shall plan the work to minimize these disruptions. In all cases, Pump Station operations shall take precedence over the CONTRACTOR's work. The

CONTRACTOR shall schedule 48 hours in advance with the DISTRICT any work that may disrupt Pump Station operations. This includes use of the existing overhead cranes, movement of large pieces of equipment through work areas, temporary shutdown of pump engines, etc.

2. The CONTRACTOR is limited to taking one pump engine off line at any individual pump station and shall limit down time to 48 hours.

1.08 COPIES OF DOCUMENTS: See General Terms & Conditions Article 2.02

1.09 LIST OF DRAWINGS:

- A. Contract Drawings:
 1. Diesel Oxidation Catalyst Installation (60 Sheets).

END OF SECTION

SECTION 01015 DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.01 SCOPE:

- A. Definitions:
1. A substantial amount of specification language constitutes definitions for terms found in other areas of Contract Documents including drawings which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated.
 2. Certain terms used in the Contract Documents are defined in the General Terms & Conditions. Definitions and explanations are not necessarily either complete or exclusive but are general for the work.
 3. The term "DISTRICT", as defined in the General Terms & Conditions and used in these specifications, is further defined as the District or District's authorized representative, which may include, but is not limited to, the Design Engineer or Construction Manager.
- B. General Requirements: General requirements are the provisions or requirements of Division 1 sections which apply to the entire work of the Contract.

1.02 FORMAT AND SPECIFICATION EXPLANATIONS:

- A. Format Explanation: The format of principal portions of these specifications can be described as follows, although other portions may not fully comply and no particular significance will be attached to such compliance or noncompliance.
1. Sections and Divisions: For convenience, basic unit of specification text is a "section", each unit of which is named and numbered. These are organized into related families of sections, and various families of sections are organized into "divisions", which are recognized as the present industry consensus on uniform organization and sequencing of specifications. The section title is not intended to limit meaning or content of section, nor to be fully descriptive of requirements specified therein, nor to be an integral part of text.
 2. Section Numbering: Used for identification and to facilitate cross-references in contract documents. Sections are placed in numeric sequence; however, numbering sequence is not complete, and listing of sections in Table of Contents at beginning of Contract Documents must be consulted to determine numbers and names of specification sections in these Contract Documents.
 3. Page Numbering: Numbered independently for each section. Section number is shown with page number at bottom of each page to facilitate location of text.
 4. Parts: Each section of these specifications generally has been subdivided into three (3) basic parts for uniformity and convenience (Part 1 "General", Part 2 "Products", and Part 3 "Execution"). These parts do not limit the meaning of text within. Some sections may not contain all three parts when not applicable, or may contain more than three parts to add clarity to organization of section.
 5. Imperative Language: Used generally in specifications. Except as otherwise indicated, requirements expressed imperatively are to be performed by the CONTRACTOR. For clarity of reading, at certain locations contrasting subjective language is used to describe responsibilities which must be fulfilled indirectly by the CONTRACTOR or, when so noted, by others.
 6. Specialists, Assignments: In certain instances, specification text requires that specific work be assigned to specialists or expert entities who must be engaged for performance of those units of work. These must be recognized as special requirements over which the CONTRACTOR has

no choice or option. These assignments must not be confused with, and are not intended to interfere with, normal application of regulations, union jurisdictions and similar conventions. Nevertheless final responsibility for fulfillment of the entire set of requirements remains with the CONTRACTOR.

7. Trades: Except as otherwise specified or indicated, the use of titles such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradesperson of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespersons of that corresponding generic name.
- B. Specification Content: Because of methods by which this project specification has been produced, certain general characteristics of contents and conventions in use of language are explained as follows:
1. Specifying Methods: The techniques or methods of specifying requirements varies throughout text, and may include "prescriptive", "compliance with standards", "performance", "proprietary", or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.
 2. Overlapping and Conflicting Requirements: Where compliance with two (2) or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, notify the DISTRICT for a decision as specified in the General Terms & Conditions.
 3. Abbreviations: Throughout the Contract Documents are abbreviations implying words and meanings which will be appropriately interpreted. Specific abbreviations have been established, principally for lengthy technical terminology, and in conjunction with coordination of specification requirements, with notations on drawings and in schedules. These are normally defined at first instance of use. Organizational and association names and titles of general standards are also abbreviated.
- 1.03 DRAWING SYMBOLS: Except as otherwise indicated, graphic symbols used on Drawings are those symbols recognized in the construction industry for purposes indicated. Refer instances of uncertainty to the DISTRICT for clarification.
- 1.04 INDUSTRY STANDARDS - APPLICABILITY: Applicable standards of construction industry have the same force and effect, and are made a part of Contract Documents by reference, as if copied directly into the Contract Documents, or as if published copies were bound herewith. Referenced standards referenced directly in the Contract Documents or by governing regulations have precedence over non-referenced standards which are recognized in industry for applicability to work.

END OF SECTION

SECTION 01020 MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 LUMP SUM CONTRACT: Unless indicated on the Contract Documents, all work indicated on the Contract Drawings and specified in the Bid Documents and Contract shall be included in the Contract Sum indicated on the Bid Form. The following is a description of the WORK listed in the Bid Form and is not intended to be complete and all-inclusive of the required work items. The WORK shall include all miscellaneous and ancillary items necessary to construct a complete and functional Project.

A. Bid Item A. Diesel Oxidation Catalyst Installation, Total Project, Lump Sum.

1.02 BASIS FOR PAYMENTS: The above descriptions generally outline the scope of work required for those elements of the WORK to be paid for under each lump sum item listed in the Bid Form. Those lump sum amounts shall be further distributed in accordance with subvalues identified in the approved Schedule of Values specified in GENERAL TERMS & CONDITIONS, Article 2.07.

A. The CONTRACTOR shall submit the initial Schedule of Values in electronic spreadsheet (Microsoft Excel) format prior to commencing work. The Schedule of Values activities shall match the Contract Schedule activities. Each activity in the Schedule of Values shall also indicate the material quantity, unit price, and total price as described in SECTION 01310.

B. The CONTRACTOR shall have 90 business days after CONTRACT execution, to produce the required Insurance Declaration Page of Policy for the insurance requirements set forth in the General Terms & Conditions, and the Insurance Requirements Checklist. The DISTRICT may refuse to make whole or part of any payment if the CONTRACTOR fails to submit the required Insurance Policy Declaration Page as stated in the CONTRACT.

The CONTRACTOR shall provide a breakdown of the Major Items of Work based on the below list of assets. The Schedule of Values shall be categorized and roll up into these major assets.

1. Pump Stations:
 - a. Diesel Oxidation Catalyst Units, EA
 - b. Straight Pipe, LF
 - c. Pipe Fittings, EA
 - d. Custom-Fitted Insulation Blankets, SF
 - e. Pipe Insulation, SF
 - f. Structural Steel, TN
 - g. Instrumentation, LS
 - h. Electrical, LS

1.03 PAYMENTS: Payments shall be in accordance with the provisions of the GENERAL TERMS & CONDITIONS, Article 14.

END OF SECTION

SECTION 01045 CUTTING AND PATCHING

PART 1 - GENERAL

1.01 WORK INCLUDED:

- A. Definition: "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.
 - 1. Cutting and patching is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.
 - 2. Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching."
- B. Refer to other sections of these specifications and the Drawings for specific cutting and patching requirements and limitations applicable to individual units of work.
 - 1. Unless otherwise specified, requirements of this section apply to mechanical and electrical work.
 - 2. Refer to Division 15 and Division 16 sections for additional requirements and limitations on cutting and patching of mechanical and electrical work.

1.02 SUBMITTALS:

- A. Procedural Proposal for Cutting and Patching: Where prior approval of cutting and patching is required, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable, in the submittal:
 - 1. Describe nature of the work and how it is to be performed, indicating why cutting and patching cannot be avoided.
 - 2. Describe anticipated results of the work in terms of changes to existing work, including structural, operational and visual changes as well as other significant elements.
 - 3. List products to be used and firms that will perform work.
 - 4. Give dates when work is expected to be performed.
 - 5. List utilities that will be disturbed or otherwise be affected by work, including those that will be relocated and those that will be out-of-service temporarily.
 - a. Indicate how long utility service will be disrupted.
 - 6. Where cutting and patching of structural work involves the addition of reinforcement, submit details and engineering calculations to show how that reinforcement is integrated with original structure to satisfy requirements.
- B. Approval by the DISTRICT to proceed with cutting and patching work does not waive the DISTRICT'S right to later require complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.

1.03 QUALITY ASSURANCE:

- A. Requirements for Structural Work: Do not cut and patch structural work in a manner that would result in a reduction of load-carrying capacity or of load-deflection ratio.

- B. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy performance, or that would result in increased maintenance, or decreased operational life or decreased safety.
- C. Visual Requirements: Do not cut and patch work exposed on the building's exterior or in its occupied spaces, in a manner that would, in the DISTRICT'S opinion, result in lessening the building's aesthetic qualities.
 - 1. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work.
 - 2. Remove and replace work judged by the DISTRICT to be cut and patched in a visually unsatisfactory manner.
 - 3. Retain the original installer or fabricator if possible, or another recognized experienced and specialized firm for cutting and patching.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. General: Except as otherwise indicated, or as directed by the DISTRICT, use materials for cutting and patching that are identical to existing materials.
- B. If identical materials are not available or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect.
- C. Use materials for cutting and patching that will result in equal-or-better performance characteristics.

PART 3 - EXECUTION

3.01 INSPECTION:

- A. Before cutting, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.
- B. Coordinate layout of the work and resolve potential conflicts before proceeding with the work.

3.02 PREPARATION:

- A. Temporary Support: To prevent failure, provide temporary support of work to be cut.
- B. Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.
 - 1. Avoid interference with use of adjacent facilities or interruption of free passage to adjacent facilities.
 - 2. Take precautions not to cut existing pipes, conduits or ducts serving the building but scheduled to be relocated until provisions have been made to by-pass them. Coordinate with the DISTRICT.

3.03 PERFORMANCE:

- A. General: Employ skilled workmen to perform cutting and patching work. Except as otherwise indicated or as approved by the DISTRICT, proceed with cutting and patching at the earliest feasible time and complete work without delay.
- B. Cutting: Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible, review proposed procedures with the original installer; comply with original installer's recommendations.
 - 1. General: Use hand or small power tools designed for sawing or grinding, not hammering and chopping, where cutting is required. Use of gasoline-powered tools will not be permitted in enclosed spaces.
 - 2. Cut through concrete and masonry using a cutting machine such as a carborundum saw or core drill to insure a neat hole.
 - 3. Cut holes and slots neatly to size required with minimum disturbance of adjacent work.
 - 4. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 5. Temporarily cover openings when not in use.
- C. By-pass utility services such as pipe and conduit, before cutting, where such utility services are shown or required to be removed, relocated or abandoned.
- D. Cut off conduit and pipe in walls or partitions to be removed. After by-pass and cutting, cap, valve or plug and seal tight remaining portion of pipe and conduit to prevent entrance of moisture or other foreign matter.
- E. Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
 - 1. Inspect and test patched areas to demonstrate integrity of work where feasible.
 - 2. Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.
 - 3. Patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance where removal of walls or partitions extends one finished area into another finished area.
 - 4. If necessary to achieve uniform color and appearance, remove existing floor and wall coverings and replace with new materials.
 - 5. Extend final paint coat over entire unbroken surface containing patch, after patched area has received prime and base coat where patch occurs in a smooth painted surface.
 - 6. Patch, repair or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.04 CLEANING:

- A. Thoroughly clean areas and spaces where work is performed or used as access to work. Remove completely paint, mortar, oils, putty and items of similar nature.
- B. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied.
- C. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01071 STANDARD REFERENCES

Wherever used in the project manual, the following abbreviations will have the meanings listed:

AA	Aluminum Association Incorporated 818 Connecticut Avenue, N.W. Washington, D.C. 20006
AABC	Associated Air Balance Council 1518 K Street N.W. Washington, D.C. 20005
AAMA	American Architectural Manufacturers Association 2700 River Road, Suite 118 Des Plaines, IL 60018
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol Street, N.W., Suite 225 Washington, D.C. 20001
ABMA	American Bearing Manufacturers Association 2025 M Street, NW Suite 800 Washington, D.C. 20036
ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI, 48331
AEIC	Association of Edison Illuminating Companies 600 18 th Street N Birmingham, Al 35203
AFBMA	Anti-Friction Bearing Manufacturers Association
AGA	American Gas Association 400 N. Capital Street, NW Suite 450 Washington, D.C. 20001
AGMA	American Gear Manufacturer's Association 500 Montgomery Street, Suite 350 Alexandria, VA 22314
AHA	American Hardboard Association 1210 West Northwest Hwy Palatine, IL 60067
AISC	American Institute of Steel Construction One East Wacker Drive, suite 700 Chicago, IL 60601
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, D.C. 20036

AITC	American Institute of Timber Construction 333 West Hampden Avenue Englewood, CO 80110
ALSC	American Lumber Standards Committee P. O. Box 210 Germantown, MD 20874
AMCA	Air Movement and Control Association, Inc. 30 West University Drive Arlington Heights, IL 60004
ANSI	American National Standards Institute, Inc. 25 West 43 rd Street New York NY 10036
APA	American Plywood Association P.O. Box 11700 Tacoma, WA 98411
API	American Petroleum Institute 1220 L Street, NW Washington, D.C. 20005
AHRI	Air-Conditioning Heating and Refrigeration Institute 1814 North Fort Myer Drive Arlington, VA 22209
ASCE	American Society of Civil Engineers 345 East 47th Street New York, NY 10017
ASCII	American Standard Code for Information Interchange United States of America Standards Institute 10 East 40th Street New York, NY 10016
ASE	American Standard Safety Code for Elevators, Dumbwaiter and Escalators American National Standards Institute/ASME A17.1/CSA B44 1430 Broadway New York, NY 10018
ASHRAE	American Society of Heating, Refrigeration and Air Conditioning Engineers United Engineering Center 1791 Tullie Circle, N.E. Atlanta, GA 30329
ASME	American Society of Mechanical Engineers Three Park Avenue New York, NY 10016
ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103

AWPA	American Wood Preservers Association P.O. Box 361784 Birmingham, AL 35236
AWPB	American Wood Preservers Bureau 7962 Conell Court P. O. Box 5283 Lorton, VA 22079
AWPI	American Wood Preservers Institute 1945 Old Gallows Rd, Suite 150 Vienna, VA 22182
AWI	Architectural Woodwork Institute 46179 Westlake Drive, Suite 120 Potomac Falls, VA 20165
AWS	American Welding Society 550 NW Lejune Rd Miami, FL 33126
AWWA	American Water Works Association 6666 West Quincy Avenue Denver, CO 80235
BHMA	Builders Hardware Manufacturers Association 355 Lexington Avenue, 17 th Floor New York, NY 10017
BOCA	Building Officials and Code Administrators 17926 Halstead Homewood, IL 60430
CBMA	Certified Ballast Manufacturers Association 2120 Keith Building Cleveland, OH 44115
CMAA	Crane Manufacturers Association of America (Formerly called: Overhead Electrical Crane Institute) (OECI) 8720 Reds Oak blvd, Suite 201 Charlotte, NC 28217
CRSI	Concrete Reinforcing Steel Institute 933 North Plum Grove Rd Schaumburg, IL 60173
CSA	Canadian Standards Association 155 Queen Street, Suite 1300 Ottawa, Ontario, K1P6L1, Canada
DEMA	Diesel Engine Manufacturer's Association 122 East 42nd Street New York, NY 10017

DHI	Door Hardware Institute 14150 Newbrook Drive, Suite 200 Chantilly, VA 20151
DIS	Division of Industrial Safety California Department of Industrial Relations 2422 Arden Way Sacramento, CA 95825
EI	Edison Electric Institute 701 Pennsylvania Avenue, NW Washington, D.C. 20004
EIA	Electronic Industries Alliance 2001 Eye Street, N.W. Washington, D.C. 20006
EJMA	Expansion Joint Manufacturer's Association 25 North Broadway Tarrytown, NY 10591
EPA	Environmental Protection Agency Region 4 Sam Nunn Atlanta Federal Center 61 Forsyth Street, SW Atlanta, GA 30303-3104
ESO	Electrical Safety Order, California Administrative Code, Title 8, Chap. 4, Subarticle 5 Office of Procurement, Publications Section P. O. Box 20191 8141 Elder Creek Road Sacramento, CA 95820
FAC	Florida Administrative Code
FEDSPEC	Federal Specifications General Services Administration Specification and Consumer Information Distribution Branch Washington Navy Yard, Bldg. 197 Washington, D.C. 20407
FEDSTDS	Federal Standards (see FEDSPECs)
FM	Factory Mutual Research 1151 Boston-Providence Turnpike Norwood, MA 02062
GANNA	Glass Association of North America 800 SW Jackson Street, Suite 1500 Topeka, Kansas 66612
HEI	Heat Exchange Institute 1300 Summer Avenue Cleveland, OH 44115

HI	Hydraulic Institute 1230 Keith Building Cleveland, OH 44115
HPVA	Hardwood Plywood and Veneer Association 1825 Michael Faraday Drive Reston, VA 20190
IAPMO	International Association of Plumbing and Mechanical Officials 5001 E. Philadelphia Street Ontario CA, 91761
ICBO	International Conference of Building Officials 5360 South Workman Mill Road Whittier, CA 90601
ICEA	Insulated Cable Engineers Association P. O. Box P South Yarmouth, MA 02664
ICRI	International Concrete Repair Institute 10600 West Higgins Road, Suite 607 Rosemont, IL 60018
IEEE	Institute of Electrical and Electronics Engineers, Inc. 3 Park Avenue, 17 th Floor New York, NY 10016-5997
IES	Illuminating Engineering Society c/o United Engineering Center 120 Wall Street Floor 17 New York, NY 10005
ISA	Instrument Society of America 67 Alexander Drive Research triangle Park, NC 27709
ISO	International Organization for Standardization 1, ru de Varembe, Case postale 56 CH-1211 Genna 20, Switzerland
JIC	Joint Industrial Council 7901 Westpark Drive McLean, VA 22101
MFMA	Metal Framing Manufacturers Association 401 Michigan Avenue Chicago, IL 60611
MILSPEC	Military Specifications Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120

MSS	Manufacturers Standardization Society of the Valve and Fittings Industry, Inc. 127 Park Avenue, N.E. Vienna, VA 22180
NAAMM	National Association of Architectural Metal Manufacturers 800 Roosevelt rd bldg C, Suite 312 Glen Ellyn, IL 60137
NACE	National Association of Corrosion Engineers P. O. Box 986 Katy, TX 77450
NEC	National Electrical Code National Fire Protection Association 470 Atlantic Avenue Boston, MA 02210
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814
NELMA	Northeastern Lumber Manufacturers Association, Inc. 272 Turtle Road P. O. Box 87A Cumberland Center, ME 04021
NEMA	National Electrical Manufacturer's Association 1300 N. 17 th Street, Suite 1752 Rosslyn, VA 22209
NESC	National Electric Safety Code American National Standards Institute 1430 Broadway New York, NY 10018
NETA	InterNational Electrical Testing Association 3050 Old Centre Avenue, Suite 102 Portage, MI 49024
NFP	National Forest Products Association (Formerly National Lumber Manufacturer's Association) 1619 Massachusetts Avenue Washington, DC 20036
NFPA	National Fire Protection Association Batterymarch Park Quincy, MA 02269
NHLA	National Hardwood Lumber Association P. O. Box 34518 Memphis, TN 38184-0518
NIST	National Institute of Standards and Technology 100 Bureau Drive, Suite 1070 Gaithersburg, MD 20899-1070

NSF	National Sanitation Foundation P.O. Box 130140 789 N. Dixoboro rd. Ann Arbor, MI 48113
OSHA	Occupational Safety and Health Act U.S. Department of Labor Occupational and Health Administration San Francisco Regional Office 200 Constitution Avenue Washington, D.C. 20210
PCI	Prestressed Concrete Institute 200 W. Adams Street, Suite 2100 Chicago, IL 60606
PPIC	The Plumbing & Piping Industry Council, Inc. 135 Calle Catalina Place Houston, TX 77007
RIS	Redwood Inspection Service California Redwood Association 818 Grayson Road, Suite 201 Pleasant Hill, CA 94523
RLM	Reflector and Lamp Manufacturers Standard Institute
RMA	Rubber Manufacturers Association 1400 K Street Washington, D.C. 20005
SAE	Society of Automotive Engineers 400 Commonwealth Drive Warrendale, PA 15096
SBC	Standard Building Code Published by SBCCI
SMC	Standard Mechanical Code Published by SBCCI
SBCCI	Southern Building Code Congress International 1116 Brown-Marx Building Birmingham, AL 35203
SCMA	Southern Cypress Manufacturers Association 805 Sterick Bldg. Memphis, TN 38103

SDI	Steel Door Institute 30200 Detroit road Westlake, OH 44145
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc. 4201 Lafayette Center Drive Chantilly, VA 20151
SPC	Society for Protective Coatings 40 24 th Street, 6 th Floor Pittsburgh, PA 15222
SPI	Society of the Plastics Industry, Inc. 1667 K street, NW Suite 1000 Washington, D.C. 20006
SPIB	Southern Pine Inspection Bureau P.O. Box 10915 Pensacola, FL 32524
SSPC	The Society for Protective Coatings (formerly called: Steel Structures Painting Council) 40 24 th Street, 6 th Floor Pittsburgh, PA 15222-4656
SSPWC	Standard Specifications for Public Works Construction Building News, Inc. 3055 Overland Avenue Los Angeles, CA 90034
TEMA	Tubular Exchanger Manufacturer's Association 3251 Corte Malpaso, Suite 507 Camarillo, CA 93012
UL	Underwriters Laboratories Inc. 2600 N.W. Lake Road Camas, WA 98607
USBR	Bureau of Reclamation U.S. Department of Interior Engineering and Research Center Denver Federal Center, Building 67 Denver, CO 80225
USACE	United States Army Corps of Engineers Jacksonville District P. O. Box 4970 Jacksonville, FL 32232-0019
WCLIB	West Coast Lumber Inspection Bureau 6980 SW Varns Street P. O. Box 23145 Tigard, OR 97223

WWPA

Western Wood Products Association
(Formerly called: West Coast Lumbermen's Association (WCLA))
522 SW 5th Avenue, Suite 500
Portland, OR 97204

END OF SECTION

SECTION 01200 PROJECT MEETINGS AND REPORTS

PART 1 - GENERAL

1.01 SUMMARY: This Section includes the following administrative and procedural requirements:

- A. Project Meetings:
 - 1. Preconstruction conference
 - 2. Progress meetings
- B. Schedules and Reports:
 - 1. Initial coordination submittals
 - 2. Construction progress schedule (See SECTION 01310 Construction Schedules)
 - 3. Special reports

1.02 PROJECT MEETINGS:

- A. Pre-construction Conference
 - 1. The DISTRICT will administer a meeting within 10 days after the Effective Date of the Agreement, to review items stated in the following agenda and to establish a working understanding between the parties as to their relationships during conduct of the Work.
 - 2. Preconstruction conference shall be attended by:
 - a. CONTRACTOR and his superintendent
 - b. Representatives of principal Subcontractors and Suppliers
 - c. Engineer and his Resident Project Representative if any
 - d. DISTRICT or his representative
 - e. Other affected parties determined by the DISTRICT
 - 3. Agenda:
 - a. Projected construction schedules
 - b. Critical Work sequencing
 - c. Designation of responsible personnel
 - d. Project coordination
 - e. Procedures and Processing of:
 - i. Field decisions
 - ii. Substitutions
 - iii. Submittals
 - iv. Change Orders
 - v. Applications for payment
 - f. Procedures for testing
 - g. Procedures for maintaining record documents
 - h. Use of Premises:
 - i. Office, work and storage areas

- ii. DISTRICT'S requirements
 - i. Construction facilities, controls, and construction aids
 - j. Temporary utilities
 - k. Safety and first aid
 - l. Security
 - m. Requirements of any permits obtained by the DISTRICT
 - 4. Location of Meeting: West Palm Beach Field Station.
- B. Progress Meetings:
1. The DISTRICT will administer a meeting a minimum of twice each month (every two weeks) and at other times requested by the DISTRICT. CONTRACTOR, Engineer and all Subcontractors active on the site shall be represented at each meeting. CONTRACTOR may request attendance by representatives of his Suppliers and other Subcontractors, or other entities concerned with current program or involved with planning, coordination or performance of future activities. All participants in the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.
 2. CONTRACTOR and each Subcontractor shall be prepared to discuss the current construction progress report, any anticipated future changes to the schedule, and advise if their current progress or future anticipated schedules are compatible with the Work.
 3. If one Subcontractor is delaying another, CONTRACTOR shall direct such changes as are necessary for those involved to mutually agree on schedule changes in the best interest of construction progress.
 4. Agenda
 - a. Review of construction progress since previous meeting
 - b. Field observations, interface requirements, conflicts
 - c. Problems which impede construction schedule
 - d. Off-site fabrication
 - e. Delivery schedules
 - f. Submittal schedules and status
 - g. Site utilization
 - h. Temporary facilities and services
 - i. Hours of Work
 - j. Hazards and risks
 - k. Housekeeping
 - l. Quality and Work standards
 - m. Change orders
 - n. Documentation of information for payment request
 - o. Corrective measures and procedures to regain projected schedule if necessary
 - p. Revisions to construction schedule
 - q. Progress and schedule during succeeding Work period
 - r. Review proposed changes for:

- i. Effect on construction schedule and on completion date
 - ii. Effect on other contracts of the Project
 - s. Other business
 - 5. Location of Meetings: To be determined.
 - 6. Reporting: After each meeting, minutes of the meeting will be distributed to each party present and to parties who should have been present.
- C. Special Reports:
- 1. When an event of an unusual and significant nature occurs at the site, a special report shall be prepared and submitted. List the chain of events, persons participating, response by CONTRACTOR'S personnel, an evaluation of the results or effects, and similar pertinent information. Advise the DISTRICT in advance when such events are known or predictable.

END OF SECTION

SECTION 01300 SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section includes definitions, descriptions, transmittal, and review of "Compliance" and "Miscellaneous" Submittals.

1.02 GENERAL INFORMATION:

A. Definitions:

1. Compliance Submittals include shop drawings, product data, and samples which are prepared by the CONTRACTOR, Subcontractor, manufacturer, or Supplier and submitted by the CONTRACTOR to the DISTRICT as a basis for approval of the use of Equipment and Materials proposed for incorporation in the Work or needed to describe installation, operation, maintenance, or technical properties.
 - a. Shop drawings include custom-prepared data of all types including drawings, diagrams, performance curves, material schedules, templates, instructions, and similar information not in standard printed form applicable to other projects.
 - b. Product data includes standard printed information on materials, products and systems not custom-prepared for this Project, other than the designation of selections from available choices.
 - c. Samples include both fabricated and unfabricated physical examples of materials, products, and Work; both as complete units and as smaller portions of units of Work; either for limited visual inspection or (where indicated) for more detailed testing and analysis. Mock-ups are a special form of samples which are too large to be handled in the specified manner for transmittal of sample Submittals.
2. Miscellaneous Submittals are those technical reports, administrative Submittals, certificates, and guarantees not defined as shop drawings, product data, or samples.
 - a. Technical reports include laboratory reports, tests, technical procedures, technical records, CONTRACTOR'S design analysis and CONTRACTOR'S survey field notes for construction staking, before cross-sections and after cross-sections.
 - b. Administrative Submittals are those nontechnical Submittals required by the Contract Documents or deemed necessary for administrative records. These Submittals include maintenance agreements, workmanship bonds, Project photographs, physical work records, statements of applicability, copies of industry standards, as-constructed data, security/protection/safety data, and similar type Submittals.
 - c. Certificates and guarantees are those Submittals on Equipment and Materials where a written certificate or guarantee from the manufacturer or Supplier is called for in the Specifications.
 - d. Reports as required by Contract describing CONTRACTOR'S means and methods for items such as dewatering, earth and water retaining, erosion/turbidity control, and safety plans.
3. Refer to ARTICLE 1.03 of this Part for detailed lists of documents and specific requirements.

B. Quality Requirements:

1. Submittals such as shop drawings and product data shall be of the quality for legibility and reproduction purposes. Every line, character, and letter shall be clearly legible. Drawings such as reproducibles shall be useable for further reproduction to yield legible hard copy.

2. Documents submitted to the DISTRICT that do not conform to these requirements shall be subject to rejection by the DISTRICT, and upon request by DISTRICT, CONTRACTOR shall resubmit conforming documents. If conforming Submittals cannot be obtained, such documents shall be retraced, redrawn, or photographically restored as may be necessary to meet such requirements. CONTRACTOR'S (or his Subcontractor's) failure to initially satisfy the legibility quality requirements will not relieve CONTRACTOR (or his Subcontractors) from meeting the required schedule for Submittal of shop drawings and product data.
- C. Language and Dimensions:
1. All words and dimensional units shall be in the English language.
 2. Metric dimensional unit equivalents may be stated in addition to the English units.
- D. Submittal Completeness:
1. Submittals shall be complete with respect to dimensions, design criteria, materials of construction, and other information specified to enable the DISTRICT to review the information effectively.
 2. Where standard drawings are furnished which cover a number of variations of the general class of equipment, each such drawing shall be individually annotated to describe exactly which parts of the drawing apply to the equipment being furnished. Use hatch marks to indicate variations that do not apply to the Submittal. The use of "highlighting markers" is not an acceptable means of annotating Submittals. Such annotation shall also include proper identification of the Submittal permanently attached to the drawing.
 3. Reproduction or copies of Contract Drawings or portions thereof will not be accepted as complete fabrication or erection drawings. The Contractor may use a reproduction of the DISTRICT-prepared Contract Drawings for erection drawings such as to indicate information on erection or to identify detail drawing references. Where the drawings are revised to show this additional CONTRACTOR information, the DISTRICT'S title block shall be replaced with a CONTRACTOR'S title block and the DISTRICT'S professional seal shall be removed from the drawing. The CONTRACTOR shall revise these erection drawings for subsequent DISTRICT revisions to the Contract Drawings.

1.03 COMPLIANCE SUBMITTALS:

- A. Items shall include, but not be limited to, the following:
1. Manufacturer's specifications
 2. Catalogs, or parts thereof, of manufactured equipment
 3. Shop fabrication and erection drawings
 4. General outline drawings of equipment showing overall dimensions, location of major components, weights, and location of required building openings and floor plates
 5. Detailed equipment installation drawings, showing foundation details, anchor bolt sizes and locations, baseplate sizes, location of DISTRICT'S connections, and all clearances required for erection, operation, and disassembly for maintenance.
 6. Schematic diagrams for electrical items, showing external connections, terminal block numbers, internal wiring diagrams, and one-line diagrams
 7. Bills of material and spare parts list
 8. Instruction books and operating manuals
 9. Material lists or schedules
 10. Performance tests on equipment by manufacturers

11. Samples and color charts
 12. All drawings, catalogs or parts thereof, manufacturer's specifications and data, samples, instructions, and other information specified or necessary:
 - a. For DISTRICT to determine that the Equipment and Materials conform with the design concept and comply with the intent of the Contract Documents.
 - b. For the proper erection, installation, operation and maintenance of the Equipment and Materials which the DISTRICT will review for general content but not for substance.
 - c. For the DISTRICT to determine what supports, anchorages, structural details, connections, and services are required for the Equipment and Materials, and the effects on contiguous or related structures and Equipment and Materials.
- B. Schedule and Log of Compliance Submittals:
1. Prepare for the DISTRICT, a schedule and log for submission of all Compliance Submittals specified or necessary for DISTRICT'S review of the use of Equipment and Materials proposed for incorporation in the Work or needed for proper installation, operation or maintenance. Submit the schedule and log with the procurement schedule and Work progress schedule. Schedule submission of all Compliance Submittals to permit review, fabrication, and delivery in time so as to not cause a delay in the Work of CONTRACTOR or his Subcontractors or any other contractors as described herein.
 2. In establishing schedule for Compliance Submittals, allow 15 working days in DISTRICT'S office for reviewing original Submittals and 10 working days for reviewing resubmittals.
 3. The schedule shall indicate the anticipated dates of original submission, and shall be based upon at least one resubmission of each item.
 4. Schedule all Compliance Submittals required prior to fabrication or manufacture for submission within 90 days of the Notice to Proceed. Schedule Compliance Submittals pertaining to storage, installation and operation at the site for DISTRICT'S acceptance prior to delivery of the Equipment and Materials.
 5. Resubmit Compliance Submittals the number of times required for DISTRICT'S "Submittal Accepted." However, any need for resubmittals in excess of the number set forth in the accepted schedule, or any other delay in obtaining acceptance of Submittals, will not be grounds for extension of the Contract Time, provided the DISTRICT completes its reviews within the times stated above.
- C. Transmittal of Compliance Submittals:
1. All Compliance Submittals of Equipment and Materials furnished by Subcontractors, Manufacturers, and Suppliers shall be submitted to the DISTRICT by CONTRACTOR.
 2. After checking and verifying all field measurements, transmit all Compliance Submittals to the DISTRICT for acceptance as follows:
 - a. Identify each Compliance Submittal by Submittal Number, Project name and number, Contract title and number, and the Specification Section and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
 - b. Check and stamp Compliance Submittals of Subcontractors, Suppliers, and Manufacturers with CONTRACTOR'S approval prior to transmitting them to the DISTRICT. CONTRACTOR'S stamp of approval shall constitute a representation to the DISTRICT that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or he assumes full responsibility for doing so, and that he has coordinated each Compliance Submittal with the requirements of the Work and the Contract Documents.

- c. At the time of each submission, call to the attention of DISTRICT in the letter of transmittal any deviations from the requirements of the Contract Documents.
 - d. Make all modifications noted or indicated by DISTRICT and return revised prints, copies, or samples until accepted. Direct specific attention in writing, or on revised Submittals, to changes other than the modifications called for by the DISTRICT on previous Submittals. After Submittals have been accepted, submit copies thereof for final distribution. Prints of accepted drawings transmitted for final distribution will not be further reviewed and are not to be revised. If errors are discovered during manufacture or fabrication, correct the Submittal and resubmit for review.
 - e. Following completion of the Work and prior to final payment, furnish those Drawings necessary to indicate "as constructed" conditions, including field modifications, in the number of copies specified. Furnish additional copies for insertion in equipment instruction books as required. All such copies shall be clearly marked "AS CONSTRUCTED."
 - f. Work requiring a Compliance Submittal shall not be commenced or shipped until the Submittal has been stamped "Submittal Accepted" or "Submittal Accepted as Noted" by the DISTRICT.
 - g. Keep a copy or sample of each Compliance Submittal in good order at the site.
3. Quantity Requirements:
- a. Except as otherwise specified, transmit all manufacturer's or fabricator's Shop Drawings in the quantity as follows:
 - i. Initial Submittal: Seven copies including one reproducible to DISTRICT. Two copies will be returned to CONTRACTOR.
 - ii. Resubmittals: Seven copies including one reproducible to DISTRICT. Two copies will be returned to CONTRACTOR.
 - iii. Submittal for Final Distribution: Four copies to DISTRICT.
 - iv. As-Constructed Prints: Three copies including one reproducible to DISTRICT.
 - b. Transmit Submittals of product data as follows:
 - i. Initial Submittal: Seven copies to DISTRICT. Two copies will be returned to CONTRACTOR.
 - ii. Resubmittals: Seven copies to DISTRICT. Two copies will be returned to CONTRACTOR.
 - iii. Submittal for Final Distribution: Four copies to DISTRICT.
 - c. Transmit Submittals of material Samples, color charts, and similar items as follows:
 - i. Initial Submittal: Six to DISTRICT.
 - ii. Resubmittal: Six to DISTRICT.
 - iii. Upon approval, one Sample will be returned to CONTRACTOR.
 - d. Transmit Submittals of equipment instruction books as follows:
 - i. Initial Submittal: Three copies to DISTRICT. One copy will be returned to CONTRACTOR.
 - ii. Resubmittals: Three copies to DISTRICT. One copy will be returned to CONTRACTOR.
 - iii. Submittal for Final Distribution: Three copies to DISTRICT.
 - e. Transmit Submittals for Reference Only: Three copies to DISTRICT.

4. Copies of the equipment contractor's erection drawings and other Compliance Submittals required for the installation of equipment furnished by others under separate contract for installation under this Contract will be transmitted to CONTRACTOR by the DISTRICT in the final distribution of such Submittals.
 5. Information to Manufacturer's District Office: Manufacturers and Suppliers of Equipment and Materials shall furnish copies of all agreements, drawings, specifications, operating instructions, correspondence, and other matters associated with this Contract to the manufacturer's district office servicing the DISTRICT. Insofar as practicable, all business matters relative to Equipment and Materials included in this Contract shall be conducted through such local district offices.
- D. DISTRICT'S Review:
1. The DISTRICT will review and return Compliance Submittals to CONTRACTOR with appropriate notations via DISTRICT. Instruction books and similar Submittals will be reviewed by the DISTRICT for general content but not for substance.
 2. The DISTRICT'S acceptance of Compliance Submittals will not relieve CONTRACTOR from his responsibility as stated in the GENERAL TERMS & CONDITIONS.
- E. Compliance Submittal Action Stamp:
1. The DISTRICT'S review action stamp, appropriately completed, will appear on all Compliance Submittals of CONTRACTOR when returned by the DISTRICT. Review status designations listed on DISTRICT'S action stamp are defined as follows:
 - a. "ACCEPTED AS SUBMITTED": Signifies Equipment or Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the Work. CONTRACTOR is to proceed with fabrication or procurement of the items and with related Work. Copies of the Submittal are to be transmitted to the DISTRICT for final distribution.
 - b. "ACCEPTED AS NOTED": Signifies Equipment and Material represented by the Submittal conforms with the design concept and complies with the intent of the Contract Documents and is acceptable for incorporation in the Work subject to the condition that as constructed it shall be in accordance with all notations and/or corrections indicated. CONTRACTOR is to proceed with fabrication or procurement of the items and with related Work in accordance with DISTRICT'S notations.
 - c. "RETURNED FOR REVISION": Means that deviations from the requirements of the Contract Documents exist in the submittal. CONTRACTOR is to resubmit revised information responsive to DISTRICT'S annotations on the returned Submittal or written in the letter of transmittal. Fabrication or procurement of items represented by the Submittal and related Work is not to proceed until the Submittal is approved.
 - d. "NOT ACCEPTABLE (SUBMIT ANEW)": Signifies Equipment and Material represented by the Submittal does not conform with the design concept or comply with the intent of the Contract Documents and is disapproved for use in the Work. CONTRACTOR is to submit Compliance Submittals responsive to the Contract Documents.
 - e. "PRELIMINARY SUBMITTAL": Signifies Submittals of such preliminary nature that a determination of conformance with the design concept or compliance with the intent of the Contract Documents must be deferred until additional information is furnished. CONTRACTOR is to submit such additional information to permit layout and related activities to proceed.
 - f. "FOR REFERENCE ONLY": Signifies Submittals which are for supplementary information only; pamphlets, general information sheets, catalog cuts, standard sheets, bulletins and similar data, all of which are useful to the DISTRICT in design, operation,

or maintenance, but which by their nature do not constitute a basis for determining that items represented thereby conform with the design concept or comply with the intent of the Contract Documents. The DISTRICT reviews such Submittals for general content but not for substance.

- g. "DISTRIBUTION COPY (PREVIOUSLY ACCEPTED)": Signifies Submittals which have been previously accepted and are being distributed to CONTRACTOR, DISTRICT, Resident Project Representative, and others for coordination and construction purposes.

F. Instruction Books / Operation & Maintenance Manuals:

1. Equipment instruction books and manuals shall be prepared by the manufacturer and shall include the following:
 - a. Index and tabs
 - b. Instructions for installation, start-up, operation, inspection, maintenance, parts lists and recommended spare parts, and data sheets showing model numbers
 - c. Applicable drawings
 - d. Name of contact person, phone number, and address of the nearest authorized service facility
 - e. Attached to the above shall be a notice of the exact warranty effective dates, beginning and ending.
 - f. All additional data specified
2. Information listed above shall be bound into hard-back binders of three-ring type. Sheet size shall be 8-1/2 x 11. Binder color shall be yellow for Electrical and Electronics and brown for Miscellaneous Equipment. Capacity shall be a minimum of 1-1/2-inch, but sufficient to contain and utilize sheets with ease.
 - a. The following information shall be imprinted, inserted, or affixed by label on the binder front cover:
 - i. Equipment name
 - ii. Manufacturer's name
 - iii. Project name
 - iv. Contract number
 - v. Reference to applicable Drawing No. & Technical Specifications Section
 - b. The following information shall be imprinted, inserted, or affixed by label on the binder spine:
 - i. Equipment name
 - ii. Manufacturer's name
 - iii. Project Name
 - iv. Contract number
 - v. Reference to applicable Drawing No. & Technical Specifications Section
 - c. Format: The overall manual should be constructed around certain types of structures or equipment in the project, and not merely assembled by technical specification section, so that all pertinent data needed by personnel to operate or maintain the equipment or structure is in one binder (as far as is practical). The CONTRACTOR shall coordinate with the DISTRICT as to how the manuals are to be assembled.

G. Samples:

1. Office samples shall be of sufficient size and quantity to clearly illustrate the following:
 - a. Functional characteristics of the product, with integrally related parts and attachment devices
 - b. Full range of color, texture, and pattern

1.04 MISCELLANEOUS SUBMITTALS:

A. Miscellaneous Submittals are comprised of technical reports, administrative Submittals, and guarantees which relate to the Work, but do not require DISTRICT'S approval prior to proceeding with the Work. Miscellaneous Submittals may include but are not limited to (at DISTRICT'S discretion):

1. Welder qualification tests
2. Welding procedure qualification tests
3. X-ray and radiographic reports
4. Field test reports
5. Certification on Materials:
 - a. Steel mill tests
 - b. Paint lab tests
6. Temperature records
7. Shipping or packing lists
8. Job progress schedules
9. Equipment and Material delivery schedules
10. Progress photographs
11. Warranties and guarantees

B. Transmittal of Miscellaneous Submittals:

1. All Miscellaneous Submittals furnished by Subcontractors, manufacturers, and Suppliers shall be submitted to DISTRICT by CONTRACTOR unless otherwise specified.
 - a. Identify each miscellaneous Submittal by Project name and number, Contract title and number, and the specification section and article number marked thereon or in the letter of transmittal. Unidentifiable Submittals will be returned for proper identification.
 - b. At the time of each submission, call to the attention of the DISTRICT in the letter of transmittal any deviations from the requirements of the Contract Documents.
2. Quantity Requirements:
 - a. Technical reports and administrative Submittals except as otherwise specified: Four copies to DISTRICT
 - b. Written Certificates and Guarantees: Two copies to DISTRICT
3. Test Reports:
 - a. Responsibilities of CONTRACTOR and DISTRICT regarding tests and inspections of Equipment and Materials and completed Work are set forth elsewhere in these Contract Documents.
 - b. The party specified responsible for testing or inspection shall in each case, unless otherwise specified, arrange for the testing laboratory or reporting agency to distribute test reports as follows:

- i. DISTRICT: Two copies
- ii. Resident Project Representative: One copy
- iii. CONTRACTOR: Two copies
- iv. Manufacturer or supplier: One copy

C. DISTRICT'S Review:

1. DISTRICT will review Miscellaneous Submittals for indications of Work or material deficiencies.
2. DISTRICT will respond to CONTRACTOR on those Miscellaneous Submittals which indicate Work or material deficiency.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

- 3.01 SUBMITTAL LOG: CONTRACTOR shall maintain an accurate Submittal Log and a Distribution List for the duration of the Work, showing current status of all Submittals and Distributees at all times in a form acceptable to the DISTRICT. CONTRACTOR shall make the Submittal Log available to the DISTRICT for its review on request, and shall bring a copy of the Submittal Log to all Progress Meetings.

END OF SECTION

SECTION 01310 CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 SCOPE:

- A. CONSTRUCTION SCHEDULE: The WORK under this contract shall be planned, scheduled, executed, and reported by the CONTRACTOR. The CONTRACTOR shall adhere to established technical standards for CPM (Critical Path Method) scheduling using the computerized PDM (Precedence Diagram Method), unless otherwise directed by the DISTRICT. The CONTRACTOR is required to provide baseline and status data in hard copy and electronic (CD) format.
- B. The CONTRACTOR shall submit a detailed construction baseline schedule showing all work required in their contract and scheduled within the time constraints set forth in their contract. The DISTRICT will review and comment on the construction baseline schedule submittal. Upon acceptance, the CONTRACTOR shall furnish the DISTRICT hard copies and electronic (CD) containing PDF files of the accepted construction baseline schedule as required in this specification. The CONTRACTOR shall not change the accepted construction baseline schedule without prior concurrence of the DISTRICT. Once accepted, the Construction baseline schedule shall be updated to show actual progress. Any proposed changes in the schedule activities, logic, activity constraints, other than progress, shall be incorporated into a request for a revision to the accepted construction baseline schedule and submitted for review and acceptance.
- C. The CONTRACTOR shall be responsible for coordinating its own schedules (including subcontractors) as well as the construction activities of others as required to fully execute the Work. The DISTRICT's goal is to maintain the overall Construction Program Schedule, of which the CONTRACTOR's Construction Schedule will be a part.

1.02 SOFTWARE/INTERFACE REQUIREMENTS:

- A. The CONTRACTOR shall use CPM scheduling software to produce the contract schedules and reports.
- B. The CONTRACTOR shall use Oracle/Primavera Project Manager latest version or Oracle/Primavera Contractor latest version for creating and updating all construction schedules. For projects of relatively short duration and few activities, the use of scheduling software other than Primavera, such as Microsoft Project, may be allowed by the DISTRICT on a case by case basis. However, the complexity and duration of the project shall be a major factor in that decision. The DISTRICT shall notify potential bidders at the Pre-Bid conference as to what software is acceptable to use.
- C. Within ten (10) calendar days after contract execution, the CONTRACTOR shall submit, for review and approval by the DISTRICT, descriptive information on the proposed CPM software used and qualifications of the firm or person who will perform all construction scheduling responsibilities.
- D. To ensure compatibility for DISTRICT asset accounting, the DISTRICT will provide an electronic file containing an asset accounting breakdown in Work Breakdown Structure (WBS) format to be entered into the WBS structure of the scheduling software. This file will be provided to the CONTRACTOR at the Preconstruction Conference. The Schedule of Values used for payment shall be formatted in the construction schedule using the Asset/WBS asset breakdown structure.
- E. The DISTRICT will schedule a meeting with the CONTRACTOR'S Project Manager and Scheduler to review the scheduling requirements within 2 weeks after the Pre-Construction Conference.

1.03 QUALITY ASSURANCE:

- A. The CONTRACTOR shall perform the work covered by this Section with personnel having substantial experience in the use of computer based scheduling programs on construction projects for the development and maintenance of the schedule throughout the project duration.
- B. It is the responsibility of the CONTRACTOR to work with each subcontractor and supplier to obtain information pertinent to the planning and updating of their respective activities in the schedules.

1.04 DEALING WITH SUBSTITUTES:

- A. All versions of the CONTRACTOR's Construction Schedule (including Construction Schedule Revisions) shall be based solely on the WORK as awarded, and shall exclude any substitute proposals, even if the CONTRACTOR pursues a substitution in accordance with the provisions of the Contract.
- B. The DISTRICT's final determination on any proposed substitutions may not be made until after the CONTRACTOR's Construction Schedule is prepared and accepted. Accepted proposed substitutions shall be handled in the schedule as change orders.

1.05 USE OF FLOAT:

- A. Total Float is the amount of time a scheduled activity can be delayed without delaying the completion of the Work beyond the contractually required end date. Contract Float is the number of days between the CONTRACTOR's anticipated date for early completion of the WORK, or specified part, and the corresponding Contract Time. Total Float and Contract Float belong to the project and are not for the exclusive benefit of any party. They shall be available to the DISTRICT, their consultants, or the CONTRACTOR to accommodate changes in the WORK or to mitigate the effect of events which may delay performance or completion. The DISTRICT will monitor and optimize the use of float for the benefit of the Project.
- B. The CONTRACTOR shall adjust or remove any float suppression techniques (e.g., preferential sequencing, out-of-sequence activity relationships, crew movements, equipment use, form reuse, etc.), extended durations, imposed dates and others, as a prerequisite to a request for an increase in Contract Price or Contract Time. Use of constraints should be minimized and require approval by the DISTRICT.

1.06 EARLY COMPLETION:

- A. An early completion schedule is one which anticipates completion of all or a specified part of the work ahead of the corresponding Contract Time. Since Contract Total float belongs to the project, the CONTRACTOR shall not be entitled to any extension in Contract Time or recovery for any delay incurred because of extensions in an early completion date until all Contract Total float is used or consumed and performance or completion of the WORK extends beyond the Contract Time. The accepted baseline schedule must have a single longest path with zero total float. Multiple longest paths are not acceptable.

1.07 NON-COMPLIANCE:

- A. The DISTRICT shall refuse to recommend/authorize progress payment if, in the DISTRICT's opinion, the CONTRACTOR's failure, refusal or neglect to provide the required schedule information precludes the proper evaluation of the CONTRACTOR's progress. Remedies for the CONTRACTOR's failure, neglect or refusal to comply with the requirements of this Section are in addition to, and not in limitation of, those provided under other sections of the Contract.

PART 2 - PRODUCTS

2.01 GENERAL CRITERIA:

- A. All Construction Schedules shall be prepared by the CONTRACTOR and reflect the CONTRACTOR's plans, means and methods, techniques and sequences for performing of the work.
- B. The Contract Schedules shall break down the work into distinct activities with interdependencies to the extent required to clearly depict the planned approach for completion of the WORK and to effectively manage the execution of the Work.
 - 1. The Contract Schedules shall divide the WORK into manageable and logical segments and specify the progression from the Notice to Proceed to Final Acceptance within Contract Time.
 - 2. The Construction Schedule is to include appropriate time allowances for submittals, procurement, coordination with others, construction, start-up and performance testing.
 - 3. Site-related activities shall not reflect a combination of work located in separate structures, work corresponding to different divisions of the specifications, work performed by first and second tier subcontractors or rough in and finish work of the same trade.
 - 4. The Notice to Proceed activity shall be the first activity in the schedule and shall be a Start Milestone with an assigned 7-day, no holiday calendar. The Substantial and Final Completion activities shall be Finish Milestones with assigned Finish on or Before constraints with the Contract Substantial and Final Completion dates assigned to the constraints.
 - 5. Primavera Settings:
 - a. Constraints – Mandatory Starts or Finishes, Start on or Finish on and late as possible constraints cannot be used in the project schedules.
 - b. Calculation Settings – Default settings must be used, except that Critical activities must be defined as Longest Path activities.
 - c. Activity Types – Resource Dependent & WBS Summary activity types cannot be used except as directed by the DISTRICT.
 - d. % Complete Type cannot be set to units.
 - e. Duration Type must be set to Fixed Duration & Units.
 - 6. The CONTRACTOR'S Construction Schedule shall reflect the timely delivery of all permanent materials. Procurement activities should include preparation, review and acceptance of shop drawings, material fabrication and material deliveries. The 1st submittal review and acceptance activity durations shall be 15 working days. Subsequent submittal review and acceptance cycles shall have activity durations of 10 working days. The CONTRACTOR shall include only one submittal review and acceptance cycle for each submittal in the Construction schedule. If more than one cycle for a submittal occurs, the CONTRACTOR shall add that cycle to the schedule at the time it occurs. Additional submittal, review and acceptance cycles will require a revision to the construction baseline schedule.
- C. The CONTRACTOR shall schedule any requirements (such as submittal reviews) of the DISTRICT, the DESIGN CONSULTANT and others (performing work for the DISTRICT) indicated in, or required by the Contract Documents. The Construction Schedule shall incorporate appropriate activities and work sequences based on the Contract Documents.

2.02 RESOURCE AND COST LOADING:

- A. Each activity in the Contract Schedule shall be assigned a dollar value in accordance with the physical value of that work in relationship to the Schedule of Values. The total budget value of all activities shall equal the Contract Price as broken down by the Schedule of Values. The CONTRACTOR shall

also indicate the estimated duration for each construction activity and material quantities for all appropriate activities, including the following classifications of work:

EA	Mechanical Equipment, Pipe Fittings
LF	Straight Pipe
SF	Pipe Insulation, Custom-Fitted Blanket Insulation
TN	Structural Steel
LS	Instrumentation, Electrical

Schedules not containing such breakdown will not be accepted.

- B. Cost Resource loading - The Cost Resource loading of each activity shall not be generated by linking units to unit/price. Cost loading of activities shall be lump sum loading of the Budgeted Cost field and updated using the Actual Cost field. A unique resource for costs loading shall be created in the resource dictionary and the "Calculate Costs from Units" settings shall be turned off at the resource and activity resource assignment level. The resource type for costs shall be "Nonlabor".
- C. Equipment/Material Resource loading – The Equipment/Material Resource loading of each activity shall be created to track quantities of the equipment or material, not cost. Therefore, the resource shall not link units to unit/price. Equipment/Material Resource loading of activities shall be lump sum loading of the Budgeted Units field and updated using the Actual Units field. A unique resource for each type of Equipment or Material shall be created in the resource dictionary and the "Calculate Costs from Units" settings shall be turned off at the resource and activity resource assignment level. The resource type for Equipment or Material shall be "Material".
- D. Stored Material - For those construction schedule activities of work that will use Stored Materials, the material or equipment delivery activities related to the work will be cost loaded with enough money to cover the stored material. The cost loading of activities related to the work-in-place will be reduced by the amount of the stored material costs loaded into the delivery activities. The CONTRACTOR must provide a list of materials and/or equipment that will be paid for under Stored Materials prior to acceptance of the baseline schedule so that the DISTRICT can check for proper cost loading.
- E. If the WORK includes items covered by allowances, the CONTRACTOR shall ensure that work is completed within the limits of the Contract Time. The Construction Schedule shall incorporate the CONTRACTOR'S best estimate of the activities and logic associated with the allowances.

2.03 CONSTRUCTION SCHEDULE SUBMITTAL:

- A. The Construction Schedule submittal is to consist of the following items:
 - 1. A CD containing PDF files of all required reports and graphics, including written narrative, an electronic backup of the construction schedule in Primavera XER format, or other software as approved by the DISTRICT, a copy of the payment application for the same period the schedule update represents.
 - 2. Six hard copies of the written narrative and all required reports and graphics for all Schedule Submittals. The DISTRICT will advise the CONTRACTOR if fewer copies are needed.
- B. The Schedule Narrative Report shall consist of a written description of how the work will be accomplished in accordance with the planned Construction Schedule. The Schedule Narrative accompanying each Schedule Update shall, at a minimum, compare current progress and cost performance to the accepted baseline schedule for all milestones and activities, including longest path activities. If there are potential or actual delays, the narrative shall state the cause of the delay and impact to the construction schedule and define steps that have been taken or intend to be taken to mitigate delay impacts. The CONTRACTOR shall list any proposed changes in network activities and logic that will need to be incorporated into a revision to the baseline construction schedule. The

narrative shall provide sufficient detail to allow the DISTRICT to verify the progress of the WORK, compare actual versus planned activities, and identify assumptions made in scheduling work, including change order work. The CONTRACTOR shall direct specific attention, in writing, to adjustments or corrections made, either in response to the DISTRICT's comments on the previous submittal or otherwise.

1. Schedule Narrative
 - a. The Schedule Narrative shall show the following sub-headings with detailed comments:
 - i. Progress, issues, delays, and claims
 - ii. Schedule changes, including out-of-sequence work
 - iii. Milestones
 - iv. Critical submittals and Procurement items
 - v. Previous submittal DISTRICT comments.
 - b. It shall be saved and printed in color PDF – 8 ½ x 11 portrait format.
- C. Required Schedule Reports and Graphics. All report and bar chart layouts will be provided by the DISTRICT and imported by the CONTRACTOR.
 1. Schedule/Leveling Report (Schedlog)
 - a. The report shall indicate software settings and calculations generated by Primavera software.
 - b. It shall be saved and printed in PDF - 8 ½ x 11 portrait format.
 2. SFWMD Asset/WBS Structure Graphic
 - a. The SFWMD Asset/WBS Structure shall be shown in graphic Organization Chart format.
 - b. The SFWMD Asset/WBS coding structure shall be provided by the DISTRICT.
 - c. SFWMD Asset/WBS Structure Graphic shall be saved and printed in PDF - 11 x 17 landscape format.
 3. SFWMD Longest Path Barchart
 - a. Barchart shall indicate all longest path activities without grouping and sorted by Early Start, Early Finish and Total Float.
 - b. Barchart shall be Saved and printed in color PDF - 11 x 17 landscape format.
 4. SFWMD WBS with Cash Flow Diagram
 - a. Barchart shall indicate all activities grouped by WBS structure and sorted by Early Start, Early Finish and Total Float.
 - b. Cash Flow Diagram shall be shown at the end of the barchart, which shows the early and late curves, budget and actual cumulative curves.
 - c. Barchart and Cash Flow Diagram shall be saved and printed in color PDF - 11 x 17 landscape format.
 5. Earned Value Report
 - a. The report shall show Earned Value information comparison between the accepted baseline and the Current Schedule Update.
 - b. The report shall be saved and printed in color PDF - 11 x 17 landscape format.
 6. Activity Resource Assignments Report
 - a. The report shall indicate all Cost and Resource loading and status.

- b. The report shall be saved and printed in PDF - 11 x 17 landscape format.
- 7. Cash Flow Summary Report
 - a. The report shall be shown in cumulative and monthly cash flows
 - b. The report shall be saved and printed in PDF - 11 x 17 landscape format.
- 8. Project Difference (comparison) Report (Claim Digger)
 - a. The report shall indicate and explain schedule changes since last update
 - b. The report shall be produced as requested by the DISTRICT.
 - c. The report shall be saved and printed in PDF - 8 ½ x 11 portrait format.
 - d. The DISTRICT will provide the proper software settings
- 9. Stored Material Report
 - a. There shall be an additional report required to account for stored materials utilizing the SFWMD specified Stored Materials Report form.
- D. Prior to each schedule update submittal the DISTRICT and the CONTRACTOR will agree upon the physical progress of the WORK (Percent Complete of each activity) and the value of the scheduled work in place.
- E. All documents shall show the project Id. The CONTRACTOR's Construction Schedule shall bear the CONTRACTOR's stamp of approval signed by the CONTRACTOR. The CONTRACTOR's stamp of approval shall constitute a representation to the DISTRICT that the CONTRACTOR has determined or verified all data on that CONTRACTOR'S Construction Schedule and assumes full responsibility for having done so. The DISTRICT will review and return to the CONTRACTOR two copies of the CONTRACTOR's Construction Schedule stamped as either "Returned For Revision", "Accepted As Noted", or "Accepted As Submitted". The DISTRICT's review shall not extend to the CONTRACTOR's means, methods, or techniques, the correctness of which shall remain the sole responsibility of the CONTRACTOR.
- F. All schedules shall be in accordance with the Contract Time requirements of the contract. Neither the DISTRICT's review of a schedule, nor the DISTRICT's statement of "Accepted As Submitted", will relieve the CONTRACTOR from responsibility for complying with Contract Time requirements, adhering to those sequences of work indicated in or required by the contract documents, or from completing any omitted work within the Contract Time.
- G. Acceptance by the DISTRICT of the Construction Contract Schedule and Construction Baseline Schedule Updates shall be a CONDITION PRECEDENT to the processing of Applications for Payment from 30 days after Notice to Proceed.

2.04 INITIAL AND REVISED CONSTRUCTION CONTRACT SCHEDULE:

- A. For construction contracts of less than \$1 million, the CONTRACTOR shall submit their Initial Construction Baseline Schedule to the DISTRICT for review and acceptance within 30 calendar days after Notice to Proceed. For construction contracts of \$1 million or more, the CONTRACTOR shall submit their Initial Construction Schedule Submittal to the DISTRICT for review and acceptance within 45 calendar days after Notice to Proceed. It will be reviewed for conformance to the requirements of the Contract Documents. If the schedule is not accepted and requires revisions, the CONTRACTOR will revise this Initial Construction Baseline Schedule and resubmit it for review and acceptance in accordance with the following timeframes:
 - 1. For construction contracts of under \$1 million, the CONTRACTOR shall have 7 calendar days to revise their Initial Construction Baseline Schedule and resubmit it for review and acceptance.

2. For construction contracts of \$1 million and over, the CONTRACTOR shall have 14 calendar days to revise their Initial Construction Baseline Schedule and resubmit it for review and acceptance.

B. Schedule Naming Structure: Once the Baseline Schedule accepted, it becomes the CONTRACTOR'S Baseline Revision 0 Schedule and is the basis for monitoring the CONTRACTOR'S progress against milestones, Contract Time, and the evaluation and reconciliation of extensions in Contract Time. From then on, all activities and their relationships may not be changed, added, or deleted without the prior approval of the DISTRICT. The CONTRACTOR'S Construction Baseline Revision 0 schedule must be revised when it is no longer useful as a status and control mechanism as determined by the DISTRICT. All changes must be coordinated with and approved by the DISTRICT. Contract Time (including all contracted milestones) cannot be changed without a formal Change Order approved by the DISTRICT. When a revision to the Construction Baseline Schedule is required, a new revised Construction Baseline Schedule shall be submitted in accordance with change procedures, for review and acceptance by the DISTRICT. Revisions to the Construction Baseline Schedule shall follow the naming sequence listed below: (commas (“,”) or ampersands (“&”) cannot be used in the naming structure because they are recognized as commands by Primavera).

Project Name – R0A-U0	1 st Submission of Baseline Schedule.
Project Name – R0B-U0	2 nd Submission of Baseline Schedule, which is accepted.
Project Name – R1A-U0	1st Submission of Revision to the Accepted Baseline Schedule R0B-U0, which is accepted.
Project Name – R2A-U0	1 st Submission of revised baseline schedule R1A-U0, which is accepted.
Project Name – R3A-U0	1 st Submission of revised baseline schedule R2A-U0, which is accepted.

C. Construction Baseline Schedule revisions shall accurately reflect all approved Change Orders including the exact duration and cost. They will be reviewed for conformance to the requirements of the Contract Documents as amended by Change Orders.

2.05 CONSTRUCTION BASELINE SCHEDULE UPDATES:

- A. A Construction Baseline Schedule Update is a copy of the accepted Construction Baseline Schedule with progress added. Progress is Actual Cost earned, Actual Cost %, Actual Duration %, Actual Start Date and/or Actual Finish date and Actual Units Completed (for resource loading).
- B. The Construction Baseline Schedule Update is submitted by the CONTRACTOR each month or each week as the DISTRICT directs the CONTRACTOR based upon the duration of the Contract. The Construction Baseline Schedule Update will indicate actual performed work and work forecast through project completion. The actual schedule data shall record when work was performed. Forecast data will be calculated by the schedule.
- C. All out of sequence activities that originally had a finish to start relationship, but became a start to start or finish to finish relationship must be corrected in the Construction Baseline Schedule Update. For other out of sequence relationships, a revision to the baseline is required.
- D. All stored material or stored equipment costs must be loaded into the appropriate Fabricate and Delivery activity for that stored material or equipment and actualized to match the payment period on the payment application stored material form. The Work-in-Place activities for activities with stored material or stored equipment shall be cost loaded with installation costs only.
- E. Each Construction Baseline Schedule Update shall be named beginning with the Accepted Baseline Number followed by the Update number beginning with “1A” as follows:

Project Name – R0B-U1A	1 st submitted update of the accepted baseline R0B, which was rejected.
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Project Name – R0B-U1B	Resubmittal of 1 st update, which was accepted.
Project Name – R0B-U2A	2nd submitted update of the accepted baseline R0B, which was rejected.
Project Name – R0B-U2B	Resubmittal of 2nd update, which was accepted.

PART 3 - EXECUTION

3.01 MONTHLY UPDATE CYCLE:

- A. Schedule Update Submittals are due monthly on the 28th day of the month with a data date of the 27th and are to be attached to each Application for Payment. The Schedule Update Total Actual Cost to date must match the Application for Payment Work Completed and Stored to Date amount. The DISTRICT will advise the CONTRACTOR of any change to the due dates.

3.02 CHANGES:

- A. Within ten (10) days after a schedule problem is identified by either CONTRACTOR or DISTRICT, or at any time the percentage of the dollar value for completed work is 10 percent less than the value of the scheduled work, the CONTRACTOR shall submit a Construction Recovery Schedule that identifies the cause of the Change and any actions required by the CONTRACTOR to recover the schedule and complete the Work within Contract Time. The CONTRACTOR shall promptly undertake appropriate action, at no additional cost to the DISTRICT, to recover the schedule whenever the current schedule shows that the CONTRACTOR did not or can not achieve a milestone established in the Contract.
- B. Appropriate recovery actions include, but are not limited to, assignment of additional labor, subcontractors, equipment, shift or overtime work, expediting of submittal or deliveries, or any combination of thereof. Overlapping of activities or sequencing changes shall be deemed appropriate only if properly substantiated in the submittal. Recovery plans that are accepted by the DISTRICT that add, delete, or change activities, activity relationships, durations or constraints and cost or resource loading must be submitted as a Revision to the Construction Baseline Schedule with zero total float in accordance with this specification. Once the revised baseline is accepted by the DISTRICT, the CONTRACTOR must prepare an update of the Baseline Schedule with all actuals to date and submit it for acceptance.
- C. The CONTRACTOR's refusal, failure or neglect to take appropriate recovery action or to submit a written recovery statement shall constitute reasonable evidence that the CONTRACTOR is not prosecuting the WORK, or separable part, with the diligence that will ensure its completion within the Contract Time. Such lack of action shall constitute sufficient basis for the DISTRICT to recommend the withholding of some or all of any payment due and/or shall be considered grounds for termination of the contract by the DISTRICT in accordance with Article 15 of the General Terms & Conditions.

END OF SECTION

SECTION 01320 CONSTRUCTION VIDEO AND PHOTOGRAPHS

PART 1 - GENERAL

1.01 SUMMARY:

- A. This Section specifies administrative and procedural requirements for construction photographs.

1.02 SUBMITTALS:

- A. Submit prints as specified in SECTION 01300 Submittals and in PART 3, this Section.

1.03 QUALITY ASSURANCE:

- A. Photographs and video shall be clear and sufficient to show significant detail, not blurred, or taken in shadow, nor too distant. The DISTRICT may require that the photographs or video be retaken should the quality be insufficient. Costs for such re-takes are the contractor's responsibility at no extra cost to the DISTRICT.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC REQUIREMENTS: Specified in PART 3, this Section.

PART 3 - EXECUTION

3.01 COLOR AUDIO VIDEO TAPING OF CONSTRUCTION AREA:

- A. Prior to beginning any construction, the CONTRACTOR shall prepare a color audio digital video recording of all the areas to be affected by construction.
- B. The audio video recording shall be done within the two-week period prior to placement of materials or equipment on the construction area and furnished one week prior to the start of construction. The audio video recording shall be done with a DISTRICT Representative present.
- C. To preclude the possibility of tampering or editing in any manner, all video recordings shall, by electronic means, generate and display continuously and simultaneously on the screen digital information to include the date and time of recording. The time information shall consist of hours, minutes and seconds, separated by colons (i.e., 10:35:18).
- D. The audio video recording shall consist of one video and one audio track which shall be recorded simultaneously. All tracks shall consist of original live recordings and thus shall not be copies of other audio and video recordings. The audio track shall contain the narrative commentary.
- E. The rate of speed in the general direction of travel of the conveyance used during recording shall be controlled to provide a usable image. Panning rates and zoom-in, zoom-out rates shall be controlled sufficiently such that playback will produce clarity of the object viewed.
- F. All recording shall be done during times of good visibility. No recording shall be done during periods of visible precipitation, unless otherwise authorized by the DISTRICT.
- G. The DISTRICT shall have the authority to designate what areas may be omitted or added for audio video coverage.
- H. When conventional wheeled vehicles are used, the distance from the camera lens to the ground shall not be less than eight feet to insure perspective.

- I. In some instances, audio video coverage will be required in areas not accessible by conventional wheeled vehicles. Such coverage shall be obtained by walking or special conveyance by the DISTRICT.
- J. Areas covered shall include offsite roadways that will be subjected to heavy usage such as for haul routes or delivery of heavy components or equipment.

3.02 PROGRESS SITE PHOTOGRAPHS:

- A. The CONTRACTOR shall be responsible for photographs of the site to show the existing and general progress of the Work. The DISTRICT will advise as to which views are of interest. Photographs shall be taken of the following areas and at the following times.
 - 1. Existing site conditions before site work is started. Number of views shall be adequate to cover the site.
 - 2. Progress of the Work from beginning and throughout construction. Progress photos must be provided with each pay request. Pay requests will not be considered acceptable until photographs are provided. Number of views shall be adequate to cover the site.
 - 3. Finished Project after completion of Work. Number of views shall be adequate to show the finished Work.
 - 4. If Project is not completed during the Contract Time, or authorized extensions, photographs shall continue to be taken at no increase in Contract Price.
- B. Photographs shall be taken with digital media (15 megapixel minimum resolution).
- C. Prints shall be color, smooth glossy finish, 8" x 10" inserted into archival quality polypropylene photographic binder pages punched for insertion into 3-ring binder. Provide three prints of each view.
- D. Identify all prints on back of each view with a label as to the name and Contract number of Project, name of CONTRACTOR, description of view, and date photograph was taken. Prints shall also bear the photographer's name or trademark.
- E. Provide a CD containing all photographic images in JPG format. Label CD as in Item 3.02.D.
- F. Deliver prints and CD to District with pay applications.

3.03 ADDITIONAL PHOTOGRAPHS:

- A. From time to time the DISTRICT may issue requests for additional photographs, in addition to periodic photographs specified. Additional photographs will be paid for by Change Order, and are not included in the Contract Price or an Allowance.
 - 1. The DISTRICT will give the photographer 3 days' notice, where feasible.
 - 2. In emergency situations, the photographer shall take additional photographs within 24 hours of the DISTRICT'S request.
 - 3. Circumstances that could require additional photographs include, but are not limited to:
 - a. Substantial Completion of a major phase or component of Work.
 - b. DISTRICT'S request for special publicity photographs.
 - c. Special events planned at Project site.
 - d. Immediate follow-up when on-site events result in construction damage or losses.
 - e. Photographs to be taken at fabrication locations away from Project site.
 - f. Extra record photographs at time of final acceptance.

END OF SECTION

SECTION 01600 EQUIPMENT AND MATERIALS

PART 1 - GENERAL

1.01 SUMMARY: This section includes general requirements for Equipment and Material transportation and handling, delivery, storage, and protection of CONTRACTOR and DISTRICT - furnished Equipment and Materials.

A. Related Work:

1. SECTION 01300 Submittals

1.02 DEFINITIONS: Definitions used in this paragraph are not intended to negate the meaning of other terms used in the Contract Documents, including such terms as "systems," "structure," "finishes," "accessories," "furnishings," "special construction," and similar terms. Such terms are self-explanatory and have recognized meanings in the construction industry.

A. Products: Items purchased for incorporation in the Work, regardless of whether they were specifically purchased for the Project or taken from the previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and other terms of similar intent.

B. Equipment: A product with operational or non-operational parts, regardless of whether motorized, manually operated, or fixed. Equipment may require service connections such as wiring or piping.

C. Materials: Products that must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form parts of Work.

1.03 QUALITY ASSURANCE:

A. Equipment and Material Incorporated into the Work: Provide products that comply with the requirements of the Contract Documents, are undamaged, and unless otherwise indicated, are unused at the time of installation. Provide products that are complete with all accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and for the intended use and effect.

B. Standard Products: Where they are available and comply with Specifications, provide standard products of types that have been produced and used successfully in similar situations on other projects.

C. Continued Availability: Where, because of the nature of its application, the DISTRICT is likely to need replacement parts or additional amounts of a product at a later date, either for maintenance and repair or replacement, provide standard products for which the manufacturer has published assurances that the products and its parts are likely to be available to the DISTRICT at a later date.

1. Conform to applicable Specifications, codes, standards, and regulatory agencies.

2. Comply with size, make, type, and quality specified, or as specifically approved in writing by the DISTRICT.

3. Manufactured and Fabricated Products:

a. Design, fabricate, and assemble in accordance with the best engineering and shop practices.

b. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.

c. Equipment and Materials shall be suitable for service conditions intended.

d. Equipment capacities, sizes, and dimensions indicated or specified shall be adhered to unless variations are specifically approved in writing.

- e. Provide labels and nameplates where required by regulatory agencies or to state identification and essential operating data.
 - f. Two or more items of the same kind shall be identical, supplied by the same manufacturer.
4. Do not use equipment and material for any purpose other than that for which it is designed or is specified.
- D. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
- E. Identification: Each item of equipment shall have permanently affixed to it a label or tag with its equipment number designated in this contract. Marker shall be stainless steel and shall be located so as to be easily visible.

1.04 TRANSPORTATION AND SHIPMENT:

- A. Shipment Preparation: CONTRACTOR shall require manufacturers and suppliers to prepare Equipment and Materials for shipment in a manner to facilitate unloading and handling, and to protect against damage or unnecessary exposure in transit and storage, for CONTRACTOR supplied equipment. Provisions for protection shall include the following:
- 1. Crates or other suitable packaging materials
 - 2. Covers and other means to prevent corrosion, moisture damage, mechanical injury, and accumulation of dirt in motors, electrical equipment, and machinery
 - 3. Suitable rust-preventive compound on exposed machined surfaces and unpainted iron and steel
 - 4. Grease packing or oil lubrication in all bearings and similar items
 - 5. Precast concrete components shall be transported, lifted and stored as specified by the precast supplier. Precast supplier shall provide written instructions to the CONTRACTOR as to the above. CONTRACTOR shall provide a copy to DISTRICT.
- B. Marking: Each item of Equipment and Material shall be tagged or marked as identified in the delivery schedule or on Submittals. Complete packing lists and bills of material shall be included with each shipment. Each piece of every item need not be marked separately, provided that all pieces of each item are packed or bundled together and the packages or bundles are properly tagged or marked.

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Delivery:
- 1. Arrange deliveries of Equipment and Materials in accordance with construction schedules, in ample time to facilitate inspection prior to installation, and to avoid delay of the Work.
 - 2. Deliver, store and handle Equipment and Materials in accordance with manufacturer's recommendations using means and methods that will prevent damage, deterioration, and loss, including theft.
 - 3. Control delivery schedules to minimize long term storage at the site and to prevent overcrowding of construction spaces. In particular, coordinate delivery and installation to ensure minimum holding or storage times for items known or recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.
 - 4. Avoid conflict with Work of DISTRICT or other contractors.
 - 5. Deliver Equipment and Materials to the site in manufacturer's sealed containers or other packaging system with identifying labels and instructions for handling, storing, unpacking, protecting, and installing.

6. Mark deliveries of component parts of equipment to identify the equipment, to permit easy accumulation of parts, and to facilitate inspection and measurement of quantity or counting of units.
 7. Immediately on delivery, inspect shipment to assure:
 - a. Product complies with requirements of Contract Documents and reviewed Submittals.
 - b. Quantities are correct.
 - c. Containers and packages are intact, labels are legible.
 - d. Equipment and Materials are properly protected and undamaged.
- B. Storage:
1. Store Equipment and Materials immediately on delivery, and protect until completion of the Work. Store in accordance with manufacturer's instructions with seals and labels intact and legible.
 2. Store Equipment and Materials in a manner that will not endanger the supporting construction.
 3. Store Equipment and Materials that are subject to damage by elements in weathertight enclosures.
 4. Maintain temperature and humidity within ranges required by manufacturer.
 5. Protect motors, electrical equipment, plumbing fixtures, and machinery of all kinds against corrosion, moisture deteriorations, mechanical injury, and accumulation of dirt or other foreign matter.
 6. Protect exposed-machined surfaces and unpainted iron and steel as necessary with suitable rust-preventive compounds.
 7. Protect bearings and similar items with grease packing or oil lubrication.
 8. Handle and store steel plate, sheet metal, and similar items in a manner to prevent deformation.
 9. Exterior Storage:
 - a. Provide substantial platforms, blocking, or skids to support fabricated products aboveground; and to prevent soiling or staining. Cover products subject to discoloration or deterioration from exposure to the elements, with impervious sheet coverings. Provide adequate ventilation to avoid condensation.
 - b. Store loose granular materials on solid surface areas to prevent mixing with foreign matter.
 - c. Provide surface drainage to prevent flow or ponding of rainwater.
 10. Equipment and Materials shall not show any pitting, rust, decay, or other deleterious effects of storage prior to final acceptance of Work.
 11. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- C. Handling:
1. Provide equipment and personnel necessary, to unload and handle Equipment and Materials, by methods to prevent damage or soiling to Equipment and Materials, or packaging.
 2. Handle by methods to prevent bending or overstressing. Where lifting points are designated, lift components only at those points.
 3. Provide additional protection to surrounding surfaces as necessary to prevent damage.

- D. Maintenance of Storage:
 - 1. Inspect stored Equipment and Materials on a scheduled basis.
 - 2. Verify that storage facilities comply with manufacturer's product storage requirements, including environmental conditions continually maintained.
 - 3. Verify that surfaces of products exposed to elements are not adversely affected; that any weathering of finishes is acceptable under requirements of Contract Documents.
 - 4. For mechanical and electrical equipment in long-term storage, provide manufacturer's service instructions to accompany each item, with notice of enclosed instructions on exterior of package. Service Equipment on a regularly scheduled basis.
- E. Protection after installation: Provide substantial coverings as necessary to protect installed Equipment and Materials from damage from subsequent construction operations. Remove when no longer needed or as specified.

1.06 EXISTING EQUIPMENT AND MATERIALS:

- A. Equipment and Materials to be reused: For Equipment and Materials specifically indicated or specified to be reused in the Work, use special care in removal, handling, storage, and reinstallation to assure proper function in the completed Work. Arrange for transportation, storage and handling of products which require off-site storage, restoration, or renovation and pay all costs for such Work. CONTRACTOR may at his option, furnish and install new items in lieu of those specified to be reused. Remove, relocate and reinstall the following Equipment and Materials:
 - 1. None.
- B. Equipment and Materials not to be reused: The following Equipment and Materials to be removed shall remain DISTRICT's property and are not to be reused in the Work. Remove from its location, prepare for handling and storage, and deliver to DISTRICT.
 - 1. None.
- C. Equipment and Materials designated to be removed but not reused or delivered to DISTRICT, shall become the property of the CONTRACTOR and shall be removed from the site.

PART 2 - PRODUCTS

2.01 PRODUCTS AND MANUFACTURERS:

- A. Specified in each applicable Section of Specifications

2.02 PRODUCT SELECTION AND SUBSTITUTIONS:

- A. Specified in Instructions to Bidders and General Terms & Conditions

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS:

- A. Installation:
 - 1. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions if not a part of Submittals, containers, or packaging to parties involved in the installation, including a copy to the DISTRICT.

2. Maintain one complete set of instructions at the job site during installation and until completion.
3. Handle, install, connect, clean, condition, and adjust products in accordance with such instructions and in conformance with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with DISTRICT for further instructions.
4. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents, or approved in writing by manufacturer and the DISTRICT.
5. Accurately locate and align with other Work, and anchor Equipment and Materials securely in place except as required for proper movement and performance.
6. Clean and protect exposed surfaces as necessary to ensure freedom from damage and deterioration at time of acceptance.

END OF SECTION

SECTION 01700 CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SUMMARY:

- A. This SECTION includes administrative and procedural requirements for Contract Closeout including, but not limited to, the following:
 - 1. Inspection procedures
 - 2. Project record document submittal
 - 3. Operation and maintenance manual submittal
 - 4. Submittal of warranties
 - 5. Final cleaning
 - 6. CONTRACTOR's Certification
- B. Closeout requirements for specific construction activities are included in the appropriate Sections in DIVISIONS 2 through 16.
- C. Related Work Specified Elsewhere:
 - 1. Prerequisites to Substantial Completion and Final Acceptance: GENERAL TERMS & CONDITIONS.
 - 2. SECTION 01300 – Submittals

1.02 SUBSTANTIAL COMPLETION:

- A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, the CONTRACTOR shall satisfy the following:
 - 1. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents. Submit on CD in PDF format, and in hardcopy form.
 - 2. Obtain and submit releases enabling the DISTRICT unrestricted use of the Work and access to services and utilities. Include Certificates of Occupancy (C.O.), operating certificates, and similar releases, as required.
 - 3. Submit record drawings, maintenance manuals, project photographs, damage or settlement surveys, property surveys, and similar record information as specified in Paragraph 1.04. All drawings shall be scanned and submitted on CD in PDF format, and in hard copy form, 24 inch by 36 inch plan size. Other documents shall be scanned and submitted on CD in PDF format along with the originals.
 - 4. Complete final cleanup requirements, including touch up painting.
 - 5. Touch up and otherwise repair and restore marred, exposed finishes.
- B. Inspection Procedures: On receipt of a request for inspection, the DISTRICT will either proceed with inspection or advise the CONTRACTOR of unfilled requirements. The DISTRICT will prepare the Certificate of Substantial Completion following inspection or advise the CONTRACTOR of work that must be completed or corrected before the certificate will be issued.
 - 1. The DISTRICT will reschedule the inspection when in its opinion, the Work is substantially complete.

1.03 FINAL ACCEPTANCE:

- A. Preliminary Procedures: Submit certification by CONTRACTOR that Work has been completed in accordance with the Contract Documents to the knowledge of the CONTRACTOR. Before requesting final inspection, complete the following.
 - 1. Submit the final payment request with releases and supporting documentation. Include insurance certificates for products and completed operations where required.

2. Submit a certified copy of the DISTRICT's final inspection list of items to be completed or corrected. The certified copy of the list shall state that each item has been completed.
 3. Submit consent of surety to final payment.
 4. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 5. Submit Release of Liens (from the Prime, and all Subcontractors, Vendors and Suppliers).
 6. Submit Maintenance Bond.
- B. Reinspection Procedure: The DISTRICT will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed.
1. Upon completion of reinspection, the DISTRICT will advise the CONTRACTOR of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
 2. If necessary, reinspection will be repeated.
- C. Return all keys furnished by the DISTRICT. The CONTRACTOR shall forfeit his key deposit for keys that are not returned.

1.04 RECORD DOCUMENT SUBMITTALS:

- A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the DISTRICT's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which drawing is most capable of showing conditions fully and accurately. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date. Call attention to each entry by drawing a "cloud" around the areas affected.
- C. The DISTRICT will make electronic copies of whatever electronic versions of the bid plans exist, available to the CONTRACTOR for Record Drawing purposes. CONTRACTOR must obtain the concurrence of the DISTRICT as to form and content of record information provided in electronic format prior to proceeding, but in general, information similar to that shown below needs to be similarly provided.
1. Record information concurrently with construction progress.
 2. Mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the Work. Mark each document "PROJECT RECORD" in neat, large, printed letters.
 3. Mark new information that is important to the DISTRICT that is not shown on Contract Drawings or Shop Drawings.
 4. Note related change-order numbers where applicable.
 5. Organize record drawing sheets into manageable sets. Bind sets with durable-paper cover sheets; print suitable titles, dates, and other identification on the cover of each set.
 6. Include the following:
 - a. Where Submittals (like Shop Drawings) are used for mark-up, record a cross-reference at corresponding location on Drawings.
 - b. Field changes of dimension and detail.
 - c. Changes made by Change Order or other Modifications.
 - d. Details not on original Contract Drawings.
 7. Record Specifications: Maintain one complete copy of the Contract Documents including addenda. Include with the Contract Documents one copy of other written construction

- documents, such as Change Orders and modifications issued in printed form during construction.
8. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
 9. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
 10. Note related record drawing information and Product Data.
 11. Upon completion of the Work, submit record Specifications to the DISTRICT for the DISTRICT's records on CD in MS Word format.
 12. Include the following:
 - a. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually installed, including optional and substitute items
 - b. Changes made by Addendum, Change Order, or other Modifications
 - c. Related Submittals
 13. Affix the CONTRACTOR's corporate seal on the cover sheet indicating the documents within are representative of the as-built condition of the project. The seal shall be signed by an officer of the company.
- D. Record Product Data: Provide one copy of each Product Data submittal. Note related Change Orders and markup of record drawings and Specifications.
1. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site and from the manufacturer's installation instructions and recommendations.
 2. Give particular attention to concealed products and portions of the Work that cannot otherwise be readily discerned later by direct observation.
- E. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion (unless otherwise specified), complete miscellaneous records and place in good order. Identify miscellaneous records properly, bind or file, and submit to the DISTRICT for the DISTRICT's records.
- F. Warranties and Bonds: Submit original documents as specified in GENERAL TERMS & CONDITIONS, SUPPLEMENTAL CONDITIONS, SECTION 01300, and technical specifications.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 FINAL CLEANING:

- A. General: The GENERAL TERMS & CONDITIONS require general cleaning during construction. Regular site cleaning is included in SECTION 01530.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.
 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
 - a. Clean the site of rubbish, litter, and other foreign substances. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.
 - b. Remove temporary structures, tools, equipment, supplies, and surplus materials.
 - c. Remove temporary protection devices and facilities which were installed to protect previously completed Work.

- C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.
- D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the DISTRICT's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.
 - 1. Where extra materials of value remain after completion of associated Work, they become the DISTRICT's property. Dispose of these materials of no value to the DISTRICT as directed by the DISTRICT.
- E. Repairs:
 - 1. Repair damaged protective coated surfaces.
 - 2. Repair roads and other items damaged or deteriorated because of construction operations, including those which have been damaged, but are not located within the project limits.
 - 3. Restore all ground areas affected by construction operations.

END OF SECTION

PART 1 - GENERAL

1.01 SCOPE: Operation and Maintenance (O&M) instructions shall be provided in accordance with this section and as required in the technical sections of this project manual. O&M information shall be provided for each maintainable piece of equipment, equipment assembly or subassembly, and material provided or modified under this contract.

A. O&M instructions must be submitted and accepted before on-site training may start.

1.02 TYPES OF INFORMATION REQUIRED:

A. General: O&M information shall contain the names, addresses, and telephone numbers of the manufacturer, the nearest representative of the manufacturer, and the nearest supplier of the manufacturer's equipment and parts. See SECTION 01300 for details on how to prepare and submit this data. In addition, one or more of the following items of information shall be provided as applicable.

B. Operating Instructions: Specific instructions, procedures, and illustrations shall be provided for the following phases of operations:

1. Safety Precautions: List personnel hazards for equipment and list safety precautions for all operating conditions.
2. Operator Prestart: Provide requirements to set up and prepare each system for use.
3. Start-Up, Shutdown, and Post Shutdown Procedures: Provide a control sequence for each of these operations.
4. Normal Operations: Provide control diagrams with data to explain operation and control of systems and specific equipment.
5. Emergency Operations: Provide emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.
6. Operator Service Requirements: Provide instructions for services to be performed by the operator such as lubrication, adjustments and inspection.
7. Environmental Conditions: Provide a list of environmental conditions (temperature, humidity, and other relevant data) which are best suited for each product or each piece of equipment and describe conditions under which equipment should not be allowed to run.

C. Preventive Maintenance: The following information shall be provided for preventive and scheduled maintenance and repair:

1. Preventive Maintenance Plan and Schedule: Provide manufacturer's schedule for routine preventive maintenance, inspections, tests, and adjustments required to ensure proper and economical operation and to minimize corrective maintenance and repair. Provide manufacturer's projection of preventive maintenance man-hours on a daily, weekly, monthly, and annual basis including craft requirements by type of craft.

D. Corrective Maintenance: Manufacturer's recommendations shall be provided on procedures and instructions for correcting problems and making repairs.

1. Troubleshooting Guides and Diagnostic Techniques: Provide step-by-step procedures to promptly isolate the cause of typical malfunctions. Describe clearly why the checkout is

performed and what conditions are to be sought. Identify tests or inspections and test equipment required to determine whether parts and equipment may be reused or require replacement.

2. Wiring Diagrams and Control Diagrams: Wiring diagrams and control diagrams shall be point-to-point drawings of wiring and control circuits, including factory-field interfaces. Provide a complete and accurate depiction of the actual job-specific wiring and control work. On diagrams, number electrical and electronic wiring and pneumatic control tubing and the terminals for each type identically to actual installation numbering.
 3. Maintenance and Repair Procedures: Provide instructions and list tools required to restore product or equipment to proper condition or operating standards.
 4. Removal and Replacement Instructions: Provide step-by-step procedures and list required tools and supplies for removal, replacement, disassembly, and assembly of components, assemblies, subassemblies, accessories, and attachments. Provide tolerances, dimensions, settings, and adjustments required. Instructions shall include a combination of test illustrations.
 5. Spare Parts and Supply Lists: Provide lists of spare parts and supplies required for maintenance and repair to ensure continued service or operation without unreasonable delays. Special consideration is required for facilities at remote locations. List spare parts and supplies that have a long lead time to obtain.
 6. Corrective Maintenance Man-Hours: Provide manufacturer's projection of corrective maintenance man-hours including craft requirements by type of craft. Corrective maintenance that requires participation of the equipment manufacturer shall be identified and tabulated separately.
- E. Appendices: The following information shall be provided; include information not specified in the preceding paragraphs but pertinent to the maintenance of the product or equipment.
1. Parts Identification: Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number which will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies.
 2. Warranty Information: List and explain the various warranties and include the servicing and technical precautions prescribed by the manufacturers or contract documents to keep warranties in force.
 3. Personnel Training Requirements: Provide information available from the manufacturers to use in training designated personnel to operate and maintain the equipment and systems properly.
 4. Testing Equipment and Special Tool Information: Provide information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

1.03 TRANSMITTAL PROCEDURE:

- A. Unless otherwise specified, O&M manuals, information, and data shall be transmitted in accordance with SECTION 01300. Only complete sets of O&M instructions will be reviewed for acceptance.
- B. Three (3) copies of the specified O&M information shall be provided. For ease of identification, each manufacturer's brochure and manual shall be appropriately labeled with the equipment name and equipment numbers it appears in the project manual. The information shall be organized in the binders in numerical order by the equipment numbers assigned in the project manual. The binders shall be

provided with a table of contents and tab sheets to permit easy location of desired information. Binders shall be 3-inch, D-ring, presentation type with locking mechanism and clear view vinyl cover for insertion of graphic identifying contents of binder.

- C. If manufacturers' standard brochures and manuals are used to describe O&M procedures, such brochures and manuals shall be modified to reflect only the model or series of equipment used on this project. Extraneous material shall be crossed out neatly or otherwise annotated or eliminated.

1.04 PAYMENT:

- A. Acceptable O&M information for the project must be delivered to the DISTRICT prior to the project being 85 percent complete. Progress payments for work in excess of 85 percent completion may be reduced until the specified acceptable O&M information has been delivered to the DISTRICT.

1.05 FIELD CHANGES:

- A. Following the acceptable installation and operation of an equipment item, the item's instructions and procedures shall be modified and supplemented by the CONTRACTOR to reflect any field changes or information requiring field date.

END OF SECTION