

**MASTER SPECIFICATION USER GUIDE****PART 1 - ORGANIZATION AND INTENDED USE**

1.1 SCOPE. The Master Specifications were developed by DWSD as a basis to support construction programs by facilitating design, increasing standardization and creating uniformity of plans and specifications. DWSD has established this set of master specifications to serve as a foundation for future design and construction of facilities, systems, pump stations and treatment projects. The Master Specifications may require the addition of some special provisional specifications by DWSD and design engineers on a project by project basis. This User Guide explains the process of how to use the Master Specifications and develop provisional specifications for various DWSD projects.

A complete project design will include the following documents:

- Contract
- FORMSPEC
- Master Specifications and Supplemental Specifications
- Provisional Specifications (Note: Issue as separate document with  
Master Specifications)
- Design Drawings (Plans, Details and Schedules)

1.2 MASTER SPECIFICATIONS AND PROVISIONAL SPECIFICATIONS. The DWSD Master Specifications are organized into 17 divisions following Construction Specification Institute (CSI) nomenclature and are structured across five volumes along with an additional volume containing the User Guide and Standard Details/Schedules.

The Master Specifications are to be used as written without modification and augmented as necessary by provisional specifications for each specific project. The Master Specifications are to be referenced in the project documents and should not be printed for every project. As part of the design effort, the design engineer will need to conduct macro and micro reviews of the Master Specifications to document for DWSD's approval general and specific areas where provisional information is required. This will allow the same Master Specifications to be issued for each project and will maximize consistency across all construction projects in the future. Provisional specifications shall be written by the design engineer to clarify, substitute or limit requirements of the Master Specifications.

1.3 DETAILS AND SCHEDULES. Both the details and schedules are issued separate from the five volumes of Master Specifications in an additional volume of

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8.5" x 11" documents. These details and schedules are available in electronic format for the design of DWSD projects.

The details focus on typical design aspects that reoccur regularly in DWSD projects and are intended to set a standard for how these aspects of the projects should be constructed. The details are scaled to fit on 8.5" x 11" sheets of paper for utilization into full size project design drawings as needed.

Schedules are to be used as applicable by the design engineer to define and place project specific performance and design parameters in project drawings. Some schedules are included in the design drawings as 8.5" x 11" format and should be cut, pasted and modified as necessary into the applicable section of project drawings. The designer shall create additional schedules when necessary to provide specialized design parameters for applications where standard schedules do not exist.

1.4 APPLICATION GUIDES. The final tool available to design engineers is a set of application guides that are designed to identify DWSD preferred solutions in water and wastewater applications. The application guides are included in some Master Specifications. These application guides do not relieve the engineer of any responsibility for safe, code-compliant, efficient designs but the application guides help to keep design approaches consistent.

1.5 MASTER SPECIFICATION UPDATES. The Master Specifications will be updated periodically as conditions change during design and construction activities. Technical questions can be addressed to:

Parvez S. Jafri  
9300 West Jefferson  
4th Floor Adm. Bldg.  
Detroit, MI 48209  
Phone: (313) 297-0200  
[jafri@dwsd.org](mailto:jafri@dwsd.org)

**PART 2 – THE DESIGN PROCESS**

2.1 OVERVIEW. The Master Specifications provide a solid foundation and greatly simplify the process but they may need to be supplemented by Provisional Specifications that are tailored to the specific projects.

The potential to overlook critical details creates the need for an organized approach to preparing the specifications. A macro evaluation should first be conducted to determine which specifications apply. Then, review each applicable Master Specification section at the micro level and prepare supporting Provisional Specifications to make sure each section meets the requirements of the project.

It is suggested that the Design Engineer creates a design notebook or file of notes where any details or reminders of specific issues that need to be addressed in the design and specifications are collected during planning, research, and development of the design concept. These notes will be important in both the macro and micro reviews.

The Master Specifications are to be used by reference and all Master Specifications apply unless otherwise noted. A quick review of the scope at the beginning of each Master Specification section will indicate whether the section covers the necessary information for the project considered. The Master Specification Worksheet in Attachment 1 of this User Guide shall be used by the Design Engineer to evaluate which Master Specifications will be utilized and determine if new Provisional Specifications are needed. The Worksheet shall be completed and submitted by the Design Engineer for DWSD approval prior to preparing provisional specifications.

2.2. MACRO REVIEW. As part of the design effort, the design engineer will need to conduct a macro overview of the Master Specifications as compared to the specific project considered. The design engineer will then document how these specifications can be used "as is", "modified" or "not applicable" (N/A) with comments why for the specific project. Additional specification sections to be created new are also to be identified on blank lines in each Division of the Specifications. This process will be documented on Master Specification worksheet, Attachment 1, of this User Guide to prove to the Owner that the Master Specifications have been applied to project. The Owner will then review the worksheet with comments to provide approval of the approach.

2.3 MICRO REVIEW. The design engineer shall then conduct a micro level review to prepare provisional specifications that address specific changes and additions that the Owner will approve to be used with the Master Specifications. Provisional specifications shall follow the same DWSD Master Specification format as shown in Attachment 2 and discussed in Part 3 – Format and Document Conventions.

The diagram on the next page shows the macro and micro review process.

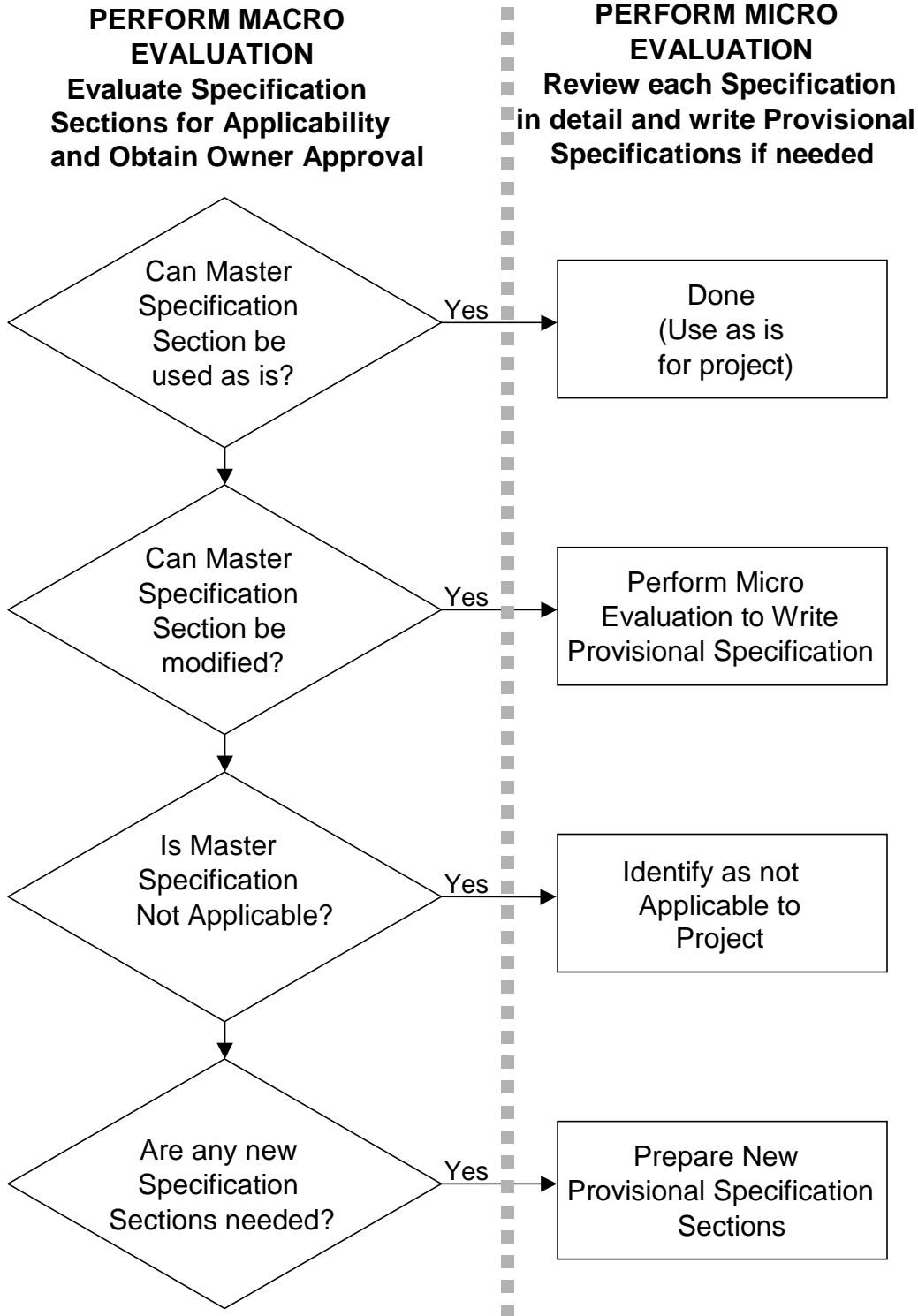


Diagram of Macro/Micro Level Evaluation

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In most situations, a Master Specification section will generally define the construction process and tolerances, but the Design Engineer will desire minor alterations. In these cases, a Provisional Specification shall be developed by the Design Engineer that supplements the Master Specification section. Page Guide-7 of this User Guide shows an example of a typical Provisional Specification. Where Provisional Specification sections are required, they will take precedence over the Master Specification sections being supplemented.

In preparing the Provisional Specification, the Design Engineer will need to screen the Master Specification section closely and determine which paragraphs need to be revised to suit the specific project design. The items listed below are given as an example. The paragraphs below address typical examples, however, the Design Engineer may have others specification sections that need to be revised.

**2.3.01 Manufacturer's Field Services.** Manufacturers provide different levels of support for different products. Manufactured equipment will receive various levels of assistance and support from the manufacturer in terms of initial testing, oversight of installation, field testing after installation, and employee training. The Design Engineer should specify the level of Manufacturer Field Services required for different equipment and building systems.

**2.3.02 Testing.** Under Quality Assurance, the paragraph on Testing should be evaluated as well as the paragraph on Field Testing in Part 3. The actual equipment specified may change in size or type and that may drive the level of testing required. For example, with large specially manufactured pumps, it is common practice for the Design Engineer to visit the manufacturing plant and observe the pump being tested to ensure it meets specifications. For smaller, mass produced pumps, a standard certificate and pump curve for that model will be provided with the pump. The Design Engineer will need to make a conscious decision concerning the appropriate level of testing for different types of equipment.

**2.3.03 Tolerances.** Finish tolerances may be of varying importance depending on the structure or facility being constructed and should be evaluated. Tolerances for equipment or equipment pads may impact equipment alignment or have a direct effect on operational efficiencies and life expectancies.

One key issue will also be at what point the Engineer should be alerted that construction is exceeding desired tolerances. Identifying problems early before they become major issues will save the Owner time and money. In many cases, the Design Engineer may want to specify when the Engineer needs to be notified of a problem and what tolerances are needed to ensure the design can be successfully implemented in the field.

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2.3.04 Submittals. Specifying different building systems or equipment will create different requirements for submittals. Discussions with the manufacturer and the Contractor can help identify what submittals are appropriate.

2.3.05 Warranties. While the typical warranty period runs 1 year from final acceptance by the Owner, warranties on equipment and building systems can run from 2 to 10 years or longer. The Design Engineer should specify all warranties that cover longer periods than the standard 1<sup>st</sup> year.

2.3.06 Acceptable Manufacturers. The single greatest source of changes to the Master Specification will be the specifying of different type or size equipment necessary for the specific project design. Changes to this paragraph may also drive changes to other portions of Part 2 - Products.

2.3.07 Installation. The type of equipment or building systems may require different installation techniques. Much of this information may vary depending upon the manufacturers and suppliers or intended utilization.

2.3.08 No Decision. The Design Engineer may decide not to make a decision concerning specific details of a project and let the Contractor identify a solution from a group of alternatives identified in the specification. This usually occurs when the Contractor is specialized and recognized to have specific expertise concerning a building or equipment system. The Design Engineer can review the proposed solution through the Shop Drawing review process.

2.4 PROVISIONAL SPECIFICATION FORMAT. The Provisional Specification sections shall follow the same format as the Master Specification section but will only include the changes. The Design Engineer will need to be very clear in the Provisional Specifications to identify which portions of Master Specification paragraphs apply and do not apply.

Modifications consist of one of four actions (*Replace*, *Update*, *Add*, or *Delete*) and should be indicated in a Provisional Specification Summary. The summary should appear at the beginning of the Provisional Specification in a box and using 11 point Arial font. "*Replace*" indicates that a subsection of the specification is to read, in its entirety, as shown in the Provisional specification. "*Update*" indicates that specific items in the text should be changed, but the remainder of the subsection should stay the same. "*Add*" and "*Delete*" denote that sections of text should be either inserted or completely removed from the specification. In order to minimize confusion and misunderstandings, it is recommended that the entire subsection (i.e., 1.3 or 2.2.03) should be written and indicated as "Replace".

The following text section should be included in the footer of all Provisional Specifications in 9-point Arial font, separated from the main text by a line:  
"Provisional Specifications—which are issued separately from the Master

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Specifications on a per contract basis—shall supersede and govern over all other specifications or contract documents. All other wording in the Master Specifications that is not specifically stated to be modified in the Provisional Specifications shall remain in effect as is. The Provisional Specification Summary is included to clarify and/or highlight changes.”

An example from Master Specification Section 11220, Axial Horizontal Split Pumps is shown on the next page of the User Guide.

DIVISION 11  
AXIAL HORIZONTAL SPLIT PUMPS - PROVISIONAL

MASTER SPECIFICATIONS (01/01/06)  
Version 2.0

**SECTION 11220 – PROVISIONAL**

**AXIAL HORIZONTAL SPLIT PUMPS**

***Provisional Specification Summary:***

- 2.2 – Replace with text as shown below. Manufacturer and pump type are now specified.
- 2.3.06 – Replace with text as shown below. Mechanical seals are to be used in place of packing.
- 3.3.01 – Update text as indicated below. List items not shown are to remain part of Specification.

***(Update text as shown.)***

2.2 ACCEPTABLE MANUFACTURERS. The pumps shall be Worthington type LN, or approved equal.

2.3.06 Stuffing Box. Mechanical seals shall be provided in place of packing.

Cartridge mechanical seals requiring no external flushing shall be furnished in the pump. The seal shall utilize a rotational sealing ring mounted in an elastomer cup with an o-ring mounted stationary ring loaded by a non-fouling, conical spring encapsulated in Viton. Installation of the seal shall require no measurements or scribe marks on the shaft.

3.3.01 Spare Parts. The contractor shall furnish the following spare parts.

- 1 Set of Mechanical Seals for each Pump – **Add to list**
- 2 Sets, Complete replacement all packing – **Delete from list**
- 1 Each, Stuffing Box Gland split with Bronze Bolts and Nuts – **Delete from list**

End of Provisional Section

*Provisional Specifications—which are issued separately from the Master Specifications on a per contract basis—shall supersede and govern over all other specifications or contract documents. All other wording in the Master Specifications that is not specifically stated to be modified in the Provisional Specifications shall remain in effect as is. The Provisional Specification Summary is included to clarify and/or highlight changes.*

Water and Sewerage Department

11220 - 1 - Provisional

City of Detroit



**PART 3 - FORMAT AND DOCUMENT CONVENTIONS**

3.1 GENERAL. Consistency is very important for effective specification development. It helps a design engineer to know what to expect in each section because the information is always presented in the same place in each specification. The DWSD Master Specifications are based on a standard outline, consistent use of paragraph levels, and page format as well as a number of other conventions designed to standardize and simplify specifications.

Every project may need provisional specifications to some degree. These provisional specifications should follow the same format and convention as the Master Specifications.

3.2 GENERIC OUTLINE. Specifications are organized into 3 sections, General, Products, and Execution. A copy of the generic outline is shown in Attachment 2.

The main paragraph titles should be adhered to wherever possible. The subparagraph headings indicate possible subjects to be covered under that title and are intended to be more flexible. If a title is not needed for a paragraph, then move to the next title that is needed in the section, using the next available paragraph number.

Beneath the subparagraphs with titles, there may be several paragraphs of discussion before another subparagraph with a title occurs. Not all paragraphs should have a title.

3.3 USE OF PARAGRAPH LEVELS. The specifications have been designed to not go above 3 levels. This will require some forethought and planning on the part of the specification writer. Only use titles where needed for major topic changes. The typical format is as follows:

<b>PART 1 – GENERAL</b>	1 <sup>st</sup> level – required
1.3 <u>QUALITY ASSURANCE</u> .	2 <sup>nd</sup> level – required
1.3.05 <u>Testing</u> .	3 <sup>rd</sup> level – titles can vary as needed

3.4 PAGE FORMAT. The format has been standardized to allow for easier transition to HTML format. The font throughout the main text is Arial 12 point. Do not use Microsoft Word's paragraph spacing before or after paragraphs. If additional spacing is required, use the <Enter> key. Refer to the generic outline shown at attachment 2 for the correct format. Text should be left justified.

3.4.01 Headers and Footers. Header and footer margins are both 0.7 from top and bottom of page. The font is Arial 12 point.

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3.4.02 Margins. Margins for the body of the text are to be 1 inch (2.54 cm) from the edge of the top, bottom, and outer edge of the page. The right margin should be 1.25 inches (3.18 cm) from the edge of the page. Select mirror image on the Page Setup menu in Word to print Master Specification Sections.

3.5 ABBREVIATIONS. Abbreviations for all frequently used acronyms are listed in Master Specification Section 01010, Administrative Provisions. If an abbreviation is not listed there but will be used more than 2 times in a specification section, it should be spelled out the first time with the abbreviation enclosed in brackets ( ) at the end of the word or title.

3.6 CAPITALIZATION OF SPECIFIC TERMS. The following terms will always be capitalized:

- Contractor
- Drawings
- Engineer
- Owner
- Work

3.7 REFERENCING OTHER SPECIFICATION SECTIONS. If other specification sections need to be referenced in a section, they should be referred to by their full title as “Master Specification Section XXXXX, Section Title” wherever mentioned.

3.8 TABLES. Anytime a list or table is needed, use the MS Word table function to create a table. Simple lists with two columns of information or less should be created with a blank 0.5 inch wide column on the left side of the sheet to create an indent. The sum of all the table’s column widths should total to 5.75 inches. The gridlines should not be visible. Do not use the Tab function for indentions.

More complex tables comprised of multiple columns of information should be set up as more traditional tables complete with headings. These tables should be centered on the page and the gridlines should be visible with a weight of ½ point used throughout the table.

3.9 NUMBERING OF SPECIFICATIONS. Master Specifications Sections will be numbered based on the CSI Divisions.

3.10 SIGNS, SYMBOLS, AND MEASUREMENTS. Symbols and signs are to be spelled out. For example, (°) should be degrees and (“) should be inches, etc. There is no hyphenation used in numbers. For example, 1-1/2 should be 1 1/2.

DWSD Project Number \_\_\_\_\_; Date \_\_\_\_\_; Designer \_\_\_\_\_; DWSD Project Manager Approval: \_\_\_\_\_

**MASTER SPECIFICATIONS WORKSHEET**

		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME I</b>				
	<b>DIVISION 1 – GENERAL REQUIREMENTS</b>				
01010	Administrative Provisions				
01020	Documentation Standards				
01030	Summary of Work				
01040	Control of Work				
01050	Progress Schedules and Pay Applications				
01060	Quality Control				
01070	Project Coordination and Meetings				
01080	Project Submittals				
01100	Traffic Control				
01110	Construction Facilities and Identification				
01120	Security				
01140	Soil Erosion and Sedimentation Control				
01150	Project Record Documents and Photographs				
01160	Training and Operations & Maintenance Manuals				
01170	Warranties and Bonds				
01180	Equipment, Materials, Parts, and Tools				
01190	Contract Closeout and Cleaning				

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		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME I (Continued)</b>				
	<b>DIVISION 2 - SITE CONSTRUCTION</b>				
02012	Soil Boring and Testing				
02050	Demolition				
02080	Asbestos Removal				
02084	Modifications to Existing Structures, Piping and Equipment				
02100	Site Clearing				
02140	Dewatering				
02211	Excavating, Filling and Grading				
02221	Trenching, Backfilling and Compacting				
02231	Removing/Abandoning Utilities and Struct.				
02233	Adjusting and Reconstructing Struct.				
02236	Pipe Boring and Jacking				
02316	Rock Removal				
02321	Flowable Fill				
02342	Soil Stabilization				
02462	Steel H Piles				
02530	Sanitary Sewers				
02600	Manholes				
02620	Water Main Services				
02626	Steel Transmission Pipe				
02628	Pre-Stressed Concrete Pressure Pipe				
02630	Storm Drainage and Pipe Culverts				
02675	Disinfection of Water Distribution Sys.				
02730	Aggregate Base and Surface Course				
02740	Bituminous Paving				
02750	Concrete Pavement				
02755	Removal and Replacement of Curbs and Sidewalks				
02760	Sidewalks, Sidewalk Ramps & Driveways				

Attachment 1

DWSD Project Number \_\_\_\_\_; Date \_\_\_\_\_; Designer \_\_\_\_\_; DWSD Project Manager Approval: \_\_\_\_\_

		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME I (Continued)</b>				
02820	Chain Link Fences and Gates				
02900	Landscaping				

<b>DIVISION 3 - CONCRETE</b>					
03100	Concrete Formwork				
03200	Concrete Reinforcement				
03250	Concrete Accessories				
03251	Construction and Expansion Joints				
03300	Cast in Place Concrete				
03345	Concrete Curing and Finishing				
03371	Shotcrete				
03410	Plant-Precast Structural Concrete				
03600	Grout				
03650	Cement Stabilized Fly Ash				
03700	Concrete Restoration				
03800	Concrete Repair				

<b>DIVISION 4 - MASONRY</b>					
04065	Masonry Mortar and Grout				
04300	Unit Masonry Assemblies				
04811	Cavity Walls				
04813	Masonry Veneer				
04820	Reinforced Unit Masonry Assemblies				
04900	Masonry Restoration and Cleaning				

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		USE			
		AS IS	MODIFY	N/A	COMMENTS WHY TO MODIFY OR CREATE NEW
	<b>VOLUME II</b>				
	<b>DIVISION 5 – METALS</b>				
05120	Structural Steel				
05210	Steel Joists				
05310	Metal Floor Deck				
05311	Steel Roof Deck				
05400	Cold-Formed Framing				
05500	Metal Fabrications				
05510	Metal Stairs				
05520	Handrails and Railings				
05530	Gratings				
05550	Anchor Bolts and Expansion Anchors				
05630	Access Hatches				

	<b>DIVISION 6 – WOOD AND PLASTICS</b>				
06100	Framing and Sheathing Carpentry				
06114	Wood Blocking and Curbing				
06170	Trusses, Joists, and Roofing Systems				
06200	Finish Carpentry				
06410	Custom Cabinets				
06500	Plastic Fabrications				
06550	FRP Ladders, Handrails, and Grating				

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		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME II (Continued)</b>				
	<b>DIVISION 7 - THERMAL &amp; MOISTURE PROTECTION</b>				
07100	Waterproofing and Waterstops				
07110	Crystalline Waterproofing				
07120	Polymer Monolithic Lining				
07200	Roofing and Accessories				
07210	Thermal Protection and Building Insulation				
07410	Siding / Wall Panel System				
07500	Flashing and Trim				
07600	Caulking and Sealers				
07950	Firestopping and Smokestopping				

	<b>DIVISION 8 – DOORS AND WINDOWS</b>				
08110	Steel Doors and Frames				
08120	Aluminum Doors and Frames				
08300	Overhead Doors				
08410	Aluminum Entrances and Storefronts				
08520	Aluminum Windows				
08710	Finish Hardware				
08800	Glazing				

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		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
<b>VOLUME II (Continued)</b>					
<b>DIVISION 9 – FINISHES</b>					
09100	Framing Systems				
09260	Gypsum Board Assemblies				
09300	Floor Coverings				
09510	Acoustical Ceilings				
09720	Wall Coverings				
09900	Painting				
09960	High Performance Coatings				

<b>DIVISION 10 – SPECIALTIES</b>					
10100	Miscellaneous Specialties				
10150	Toilet Compartments and Accessories				
10200	Louvers and Grilles				
10300	Visual Display Boards				
10400	Marker Posts and Signage				
10522	Fire Extinguishers, Cabinets, and Accessories				
10700	Storage Shelving, Partitions, and Accessories				
10800	Lockers				



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		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME III</b>				
	<b>DIVISION 11 – EQUIPMENT</b>				
11050	Equipment General Provisions				
	<b>Pump Applications</b>				
11100	Pump Application General Requirements				
11200	Vertical Turbine Pumps				
11210	Submersible Pumps				
11220	Axial Horizontal Split Pumps				
11300	Dry Pit Submersible Solids Handling Pumps				
11310	Self Priming Pumps				
11320	Recessed Impeller Pumps				
11330	Plunger Pumps (Sludge)				
11340	Dry Pit Horizontal Chopper Pumps				
11650	Sump Pumps				
11700	Sampling Pumps				
11730	Mixers				
11740	Chemical Pumps				
11745	Chemical Feed Systems				
	<b>General Equipment Applications</b>				
11800	Centrifuges				
11820	Comminutors				
11975	Blowers				

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		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
<b>VOLUME III (Continued)</b>					
<b>DIVISION 12 – FURNISHINGS</b>					
12100	Office Furnishings and Fixtures				
12200	Laboratory Furnishings and Fixtures				
12800	Utility Room Furnishings				

<b>DIVISION 13 – SPECIAL CONSTRUCTION</b>					
13110	Cathodic Protection				
13200	Pre-Engineered Metal Units				
13300	Pre-Engineered Precast Concrete Buildings				
13400	Precast Concrete Vaults, Meter Pits, and Other Units				
13500	Information Data Centers				
13700	Polyethylene Chemical Storage Tanks				
13750	Steel Chemical Storage Tanks				

<b>DIVISION 14 – CONVEYING SYSTEMS</b>					
14240	Hydraulic Freight Elevator				
14552	Screw Conveyors				
14553	Belt Conveyors				
14621	Chain Hoists				
14622	Electric Wire Rope Hoists				
14630	Traveling Bridge Cranes				
14641	Portable Gantry Cranes				

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		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME IV</b>				
	<b>DIVISION 15 – MECHANICAL</b>				
15010	Valve Installation				
15020	Miscellaneous Piping and Accessories - Construction				
15060	Miscellaneous Piping and Pipe Assembly				
15061	Ductile Iron Pipe				
15062	Steel Pipe				
15063	Light Wall Steel Pipe				
15064	Stainless Steel Pipe, Tubing and Accessories				
15065	Miscellaneous Steel Pipe, Tubing and Accessories - Procurement				
15066	Fiberglass Reinf. Plastic Pipe - (Exhaust Air Service)				
15067	Miscellaneous Plastic Pipe, Tubing and Accessories - Procurement				
15069	Cast Iron Soil Pipe and Accessories - Procurement				
15070	Copper Tubing and Accessories - Procurement				
15080	Roller Gates				
15082	Cast-Iron Slide Gates				
15084	Stop Logs				
15090	Angle Valves - Procurement				
15091	Miscellaneous Ball Valves - Procurement				
15092	Industrial Butterfly Valves - Procurement				
15093	Check Valves - Procurement				
15094	Backflow Preventer - Procurement				
15095	Solenoid Valves - Procurement				
15096	Globe Valves				

Attachment 1

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		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME IV (Continued)</b>				
15097	Pinch Valve - Procurement				
15098	Plug Valves - Procurement				
15099	Pressure Reducing Valves - Procurement				
15100	Miscellaneous Valves - Procurement				
15101	AWWA Butterfly Valves - Procurement				
15102	Eccentric Plug Valves - Procurement				
15103	AWWA Ball Valves - Procurement				
15104	Resilient-Seated Gate Valves - Procurement				
15105	Double Disc Gate Valves - Procurement				
15108	Air Release and Combination Air Valves - Procurement				
15180	Valve and Gate Actuators - Procurement				
15130	Indicating Devices				
15140	Pipe Supports (With Figures)				
15150	Water Meters				
15250	Mechanical Insulation				
15300	Fire Sprinkler System				
15310	Clean Agent Fire Suppression System				
15400	Plumbing				
15482	Laboratory Compressed Air systems				
15484	Laboratory Vacuum System				
15486	Distilled Water System				
15487	Fuel Dispensing System				

(Division 15 continued in VOLUME V)

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		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME V</b>				
	<b>DIVISION 15 – MECHANICAL (CONT.)</b>				
15500	Heating, Ventilating, and Air Conditioning				
15510	Heating Boilers and Accessories				
15515	Hydronic Specialties				
15525	Digester Heating Boilers				
15550	Heating Systems Equipment				
15650	Refrigeration Systems				
15755	Heat Exchangers				
15820	Dehumidification Systems				
15880	Air Distribution Systems				
15890	Odor Control Systems				
15955	Building System Controls				
15990	Testing, Adjusting, and Balancing				

	<b>DIVISION 16 - ELECTRICAL</b>				
16050	Electrical General Requirements				
16150	Variable Frequency Drives				
16220	General Purpose Induction Motors				
16310	Secondary Integral Unit Substations				
16320	Medium-Voltage Three Phase Pad-Mounted Transformers				
16345	Medium-Voltage Metal-Clad Switchgear				
16360	Metal-Enclosed Load Interrupter Switchgear				
16395	Medium-Voltage Motor Control Equipment				
16425	Switchboards				
16480	600 Volt Class Motor Control Centers				

DWSD Project Number \_\_\_\_\_; Date \_\_\_\_\_; Designer \_\_\_\_\_; DWSD Project Manager Approval: \_\_\_\_\_

		USE			COMMENTS WHY TO MODIFY OR CREATE NEW
		AS IS	MODIFY	N/A	
	<b>VOLUME V (Continued)</b>				
16500	Lighting				
16722	Closed Circuit Television Systems				
16740	Telephone (Pax) System				

<b>DIVISION 17 – INSTRUMENTATION AND CONTROLS</b>					
17100	Computer Control System				
17200	Computer System Hardware				
17250	Computer System Software				
17300	Programmable Logic Controllers				
17350	Multiple Address Radio Equipment				
17400	Software Control Block Descriptions				
17500	Instrumentation General Requirements				
17510	Panel Mounted Instruments				
17520	Flow Instruments				
17530	Pressure and Level Instruments				
17540	Analytical Instruments				
17550	Miscellaneous Instruments				
17600	Panels, Consoles, and Appurtenances				
17700	Uninterruptible Power Supply				

**SECTION XXXXX**

**SECTION NAME**

**PART 1 - GENERAL**

1.1 SCOPE.

1.2 GENERAL.

1.2.01 Coordination.

1.2.02 General Equipment Stipulations.

1.2.03 Governing Standards.

1.2.04 Etc.

1.3 QUALITY ASSURANCE.

1.3.01 Welding Qualifications.

1.3.02 Contractors Qualification.

1.3.03 Manufacturers Field Services.

1.3.04 Applicator Qualifications.

1.3.05 Testing.

1.3.06 Tolerances.

1.4 SUBMITTALS.

1.4.01 Drawings and Data.

1.4.02 Certifications.

1.4.03 Samples.

1.4.04 Test Reports.

1.4.05 Mock-Up.

1.4.06 Record Drawings.

1.5 DELIVERY, STORAGE, AND HANDLING.

1.6 WARRANTY.

## **PART 2 - PRODUCTS**

### 2.1 SERVICE CONDITIONS.

### 2.2 PERFORMANCE AND BASIS OF DESIGN REQUIREMENTS.

#### 2.2.01 Dimensions.

#### 2.2.02 Structural Design.

### 2.3 LIMITING REQUIREMENTS.

### 2.4 ACCEPTABLE MANUFACTURERS.

### 2.5 MATERIALS.

### 2.6 CONSTRUCTION.

### 2.7 ELECTRICAL.

### 2.8 DRIVE UNITS.

### 2.9 CONTROLS.

### 2.10 MANUFACTURE AND FABRICATION.

#### 2.10.01 Welding.

#### 2.10.02 Edge Grinding.

#### 2.10.03 Surface Preparation.

#### 2.10.04 Shop Painting.

#### 2.10.05 Tolerances.

### 2.11 PROPORTIONING.

#### 2.11.01 Design Mixture.

#### 2.11.02 Preliminary Review.

### 2.12 BALANCE.

### 2.13 SHOP TESTING.

### 2.14 ACCESSORIES.



**PART 3 - EXECUTION**

3.1 INSPECTION.

3.2 PREPARATION.

3.3 INSTALLATION.

3.3.01 Application.

3.3.02 Erection.

3.3.03 Placement.

3.3.04 Protection.

3.3.05 Cleaning.

3.3.06 Schedules.

3.4 FIELD QUALITY CONTROL.

3.4.01 Field Testing.

3.4.02 Inspection

3.5 TRAINING.

3.6 SPARE PARTS.

3.7 MAINTENANCE.

3.7.01 Protection.

3.7.02 Cleaning

3.7.03 Schedules.

End of Section