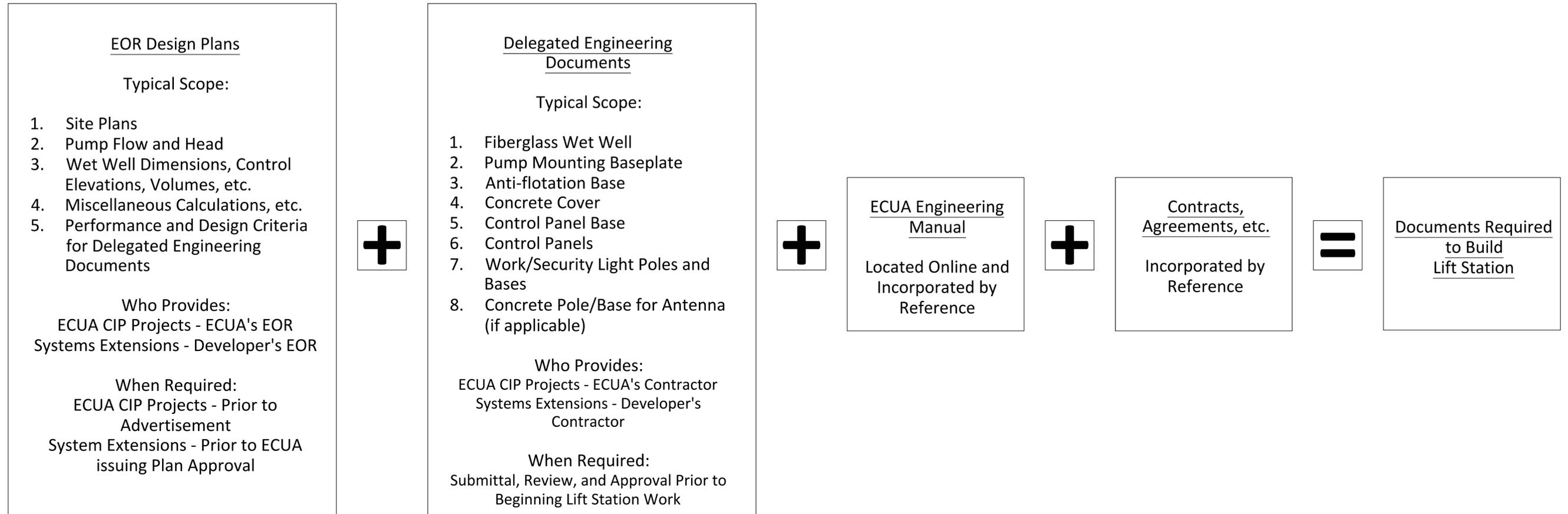




LIFT STATION DESIGN STANDARD DRAWINGS

Purpose: ECUA maintains these Design Standard Drawings in order to standardize, as much as practical, the engineered designs for lift stations that are to be owned by ECUA.

Documents Required to Build Lift Stations: Per below ... EOR Design Plans, Delegated Engineering Documents, ECUA Engineering Manual, Contract/Agreements, etc.



Overall Instructions and Notes for Using Design Standard Drawings:

1. The EOR shall use these drawings in the preparation of the required Design Plans and the Delegated Engineer(s) shall use these drawings in the preparation of the required Delegated Engineering Documents.
2. Designs that require major deviations from these drawings shall be requested prior to initiating design, at which time ECUA will render approval or rejection of requested deviations.
3. These drawings shall not be used for construction purposes, but only for design.
4. The EOR and Delegated Engineer(s) shall assume responsibility for the content and use of these standards as a basis of their designs.
5. EOR shall consult with ECUA Project Engineer and IE Department on selecting panel layout, starter type, and electrical service voltage.
6. The EOR and Delegated Engineer(s) shall select the appropriate Design Standard Drawing from Sheet DS-0.2 and create corresponding designs.
7. The EOR and Delegated Engineer(s) shall select various options in these drawings, provide numeric values and equipment selection, and make minor deviations as necessary; all based on the project specifics. Refer to Note #2 for major deviations.
8. Each Design Standard Drawing contains some or all of the following:
 - Instructions in Red Cloud
 - Selectable Options in Red Box
 - Required Values shown as Red **XX**
9. Sheets DS-0.1 and DS-0.2 are only provided for informational purposes and are not intended for use in the EOR Design Plans or the Delegated Engineering Documents.
10. In order to confirm which appropriate Design Standard Drawing was used to create the corresponding design, the following note shall be included in the bottom right corner of each design sheet: "This Sheet created based on Design Standard Drawing **XX-XX**."



Required EOR Design Plans Contents

Design Standard #	Name of Design Standard Drawing	Sheet #	Name of Sheet
DS-1	Title Sheet.dwg	LS-1	Title Sheet
Site - Civil / Mechanical			
DS-2	Site Plans.dwg	LS-2	Site Plans – Existing Conditions
		LS-3	Site Plans – Demo and Erosion Control Plan
		LS-4	Site Plans – Layout and Grading Plan
		LS-5	Site Plans – Proposed Utility Plan
DS-3.1	Wet Well, Pumps, Piping.dwg	LS-6	Wet Well, Pumps, and Piping
DS-3.2	Wet Well, Pumps, Piping with Flow Meter.dwg		
DS-4	Site-Civil-Mechanical Details1.dwg	LS-7	Site-Civil-Mechanical Details1
DS-5	Site-Civil-Mechanical Details2.dwg	LS-8	Site-Civil-Mechanical Details2
DS-6	Site-Civil-Mechanical Details3.dwg	LS-9	Site-Civil-Mechanical Details3
DS-7	Site-Civil-Mechanical Details4.dwg	LS-10	Site-Civil-Mechanical Details4
DS-8	D.E.D. Performance Design Criteria.dwg	LS-11	D.E.D. Performance and Design Criteria

Required Delegated Engineering Documents Contents

Design Standard #	Name of Design Standard Drawing	Sheet #	Name of Sheet
DS-9	D.E.D. Title Sheet.dwg	CP-1	D.E.D. Title Sheet
Single Line Diagram			
DS-10	Electrical Symbols and Abbreviations.dwg	CP-2	Electrical Symbols and Abbreviations
DS-11	Single Line Diagram Options 1-5.dwg	CP-3	Single Line Diagram
Power Panel			
<i>Power Distribution Schematic</i>			
DS-12.1	PDS – Sheet 1 (incl. Power Feeder Circuit Option 1).dwg	CP-4	Power Distribution Schematic – Sheet 1
DS-12.2	Power Feeder Circuit Options 2 - 5.dwg		
DS-13	PDS – Sheet 2.dwg	CP-5	Power Distribution Schematic – Sheet 2
<i>Power Panel - Equipment Lists and Notes</i>			
DS-14.1	Power Panel - Equipment Lists and Notes.dwg	CP-6	Power Panel Equipment Lists and Notes
DS-14.2	Power Panel - HP Related Components Equipment Lists.dwg		
DS-15	Power Panel – Terminal Block Layout.dwg	CP-7	Power Panel Terminal Block Layout
DS-16	Power Panel – Interior Layout.dwg	CP-8	Power Panel – Interior Layout
DS-17	Power Panel – Misc. Bracket Details.dwg	CP-9	Power Panel – Misc. Bracket Details
Pump Panel			
<i>Motor Starter Schematics</i>			
DS-18.1.1	Pump 1 Panel - MSS – FVNR.dwg	CP-10	Motor Starter Schematic - Pump 1
DS-18.1.2	Pump 1 Panel - MSS – RVSS.dwg		
DS-18.1.3	Pump 1 Panel - MSS – VFD.dwg		
DS-18.2.1	Pump 2 Panel - MSS – FVNR.dwg	CP-11	Motor Starter Schematic - Pump 2
DS-18.2.2	Pump 2 Panel - MSS – RVSS.dwg		
DS-18.2.3	Pump 2 Panel - MSS – VFD.dwg		
<i>Interior Layouts</i>			
DS-19.1.1	Pump 1 Panel - Interior Layout – FVNR.dwg	CP-12	Interior Layout - Pump 1
DS-19.1.2	Pump 1 Panel - Interior Layout – RVSS.dwg		
DS-19.1.3	Pump 1 Panel - Interior Layout – VFD.dwg		
DS-19.2.1	Pump 2 Panel - Interior Layout – FVNR.dwg	CP-13	Interior Layout - Pump 2
DS-19.2.2	Pump 2 Panel - Interior Layout – RVSS.dwg		
DS-19.2.3	Pump 2 Panel - Interior Layout – VFD.dwg		

Required Delegated Engineering Documents Contents (cont.)

Design Standard #	Name of Design Standard Drawing	Sheet #	Name of Sheet
<i>Equipment Lists, Notes</i>			
DS-20.1	Pump Panels – Equipment List, Notes - FVNR.dwg	CP-14	Pump Panels – Equipment List, Notes
DS-20.2	Pump Panels – Equipment List, Notes - RVSS.dwg		
DS-20.3	Pump Panels – Equipment List, Notes - VFD.dwg		
<i>Pump Protection Circuits</i>			
DS-21	Pump Panels – Pump Protection Circuits.dwg	CP-15	Pump Panel – Pump Protection Circuits
Control Panel			
DS-22	Control Panel - Schematic.dwg	CP-16	Control Panel - Schematic
DS-23	Control Panel – Digital Inputs Schematic.dwg	CP-17	Control Panel – Digital Inputs Schematic
DS-24	Control Panel – Digital Inputs and Outputs Schematic.dwg	CP-18	Control Panel – Digital Inputs and Outputs Schematic
DS-25	Control Panel – Analog Inputs and Outputs Schematic.dwg	CP-19	Control Panel – Analog Inputs and Outputs Schematic
<i>Motor Control</i>			
DS-26.1	Control Panel – Motor Control – FVNR-RVSS.dwg	CP-20	Control Panel – Motor Control
DS-26.2	Control Panel – Motor Control – VFD.dwg		
DS-27	Control Panel – Interior Layout and Terminal Block.dwg	CP-21	Control Panel – Interior Layout and Terminal Block
DS-28	Control Panel – Exterior Layout.dwg	CP-22	Control Panel – Exterior Layout
DS-29	Control Panel – Equipment List and Schedules.dwg	CP-23	Control Panel – Equipment List and Schedules
DS-30	Control Panel – Intrinsic Safe Relay Instructions.dwg	CP-24	Control Panel – Intrinsic Safe Relay Instructions
DS-31	Control Panel – Panel to Panel Wiring.dwg	CP-25	Control Panel – Panel to Panel Wiring
DS-31.1	Control Panel – Panel to Panel Wiring Distribution.dwg	CP-26	Control Panel – Panel to Panel Wiring Distribution
Panel Enclosures			
DS-32.1	Panel Enclosures – Layout, Frame – Linear,FVNR,RVSS.dwg	CP-27	Panel Enclosures – Layout, Frame
DS-32.2	Panel Enclosures – Layout, Frame – Linear,VFD with AC.dwg		
DS-32.3	Panel Enclosures – Layout, Frame – Abutting,FVNR,RVSS.dwg		
DS-32.4	Panel Enclosures – Layout, Frame – Abutting,VFD with AC.dwg		
DS-33.1	HP Related Equipment and Conductors – 208V – 240V.dwg	CP-28	HP Related Equipment and Conductors
DS-33.2	HP Related Equipment and Conductors – 480V.dwg		
DS-34	Legends and Tags.dwg	CP-29	Legends and Tags
DS-35	Control Panel General Notes.dwg	CP-30	Control Panel General Notes
		MISC1	Pump Mounting Baseplate Design
		MISC2	Anti-flotation Base
		MISC3	Concrete Cover
		MISC4	Control Panel Base
		MISC5	Concrete Pole/Base for SCADA Antenna