



Pump Station Startup Checklist

January 19, 2012

The following checklist is to assist the Contractor and the Sacramento Area Sewer District (District) in the start up process. The District has divided the process into four phases, based upon the activities and personnel involved:

- **Phase 1** consists of the pre-demonstration items: to ensure that the contractor has installed the equipment correctly and that each manufacturer has field-verified that their specific devices meet the criteria for warranty. This phase is completed by the contractor, observed by the inspector, and (except for the specific FAT items) confirmed by the design engineer. The District has limited involvement.
- **Phase 2** demonstrates that the equipment is installed and operates correctly and prepares for the 10-day test run. This phase is primarily the responsibility of the contractor (and subs).
- **Phase 3** provides a test run, minimal break-in time for the equipment, and specified training to the District staff. This phase is performed and monitored by the contractor (and maybe the design engineer) and ends with the verification that the equipment has completed the break-in period and is in working order (pulling pumps, etc).
- **Phase 4** is mostly the internal and paperwork close-out for the District.

Note that each phase must be completed and signed off prior to the start of the next phase. The District will not schedule any personnel until every checklist item is signed off on the previous phase. If the District staff arrive and find that the items on the checklist are not complete, they will leave the site and reschedule the event a minimum of one week later.

Also note that the checklist includes general items such as “all grounding systems installed,” meaning the District expects ALL associated items and equipment to be installed correctly (in working order) and per the plans. Please write any comments or additional items on the blank lines in the form.

Keep a binder on the project site, and include in it the following:

- 1. The original checklist.**
- 2. Original copies of all certifications, test results, etc.**

The Contractor, Design Engineer (or field representative), and CMID inspector need to initial as each item is completed. The appropriate representative from the M&O or Development Services sections will initial in the District block when confirmed. The District’s Project Manager will sign on the bottom line once the entire checklist has been completed for that phase, and the project will then move to the next phase.

Please complete each phase of the checklist, with appropriate signoff initials, and send to the District Project Manager.

Facilities Startup: Phase 1 (Pre-Demonstration) Checklist (To be completed prior to start of Phase 2)	Contractor	Design Engineer	Inspector	District
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Facility: _____
 Design Engineer: _____ Inspector: _____

Permits	Building Permit				
	Authority to construct				
	Permit to Operate				
	Easements submitted to the District				
Field Installed	All wiring installed, terminated, tagged				
	Protective devices coordinated per study				
	Permanent utility power				
	Permanent water service installed and pressure tested				
	All grounding systems installed				
	All conduits installed and tagged				
	All pneumatic lines installed				
	All equipment installed per approved seismic calculations				
	Generator and load bank				
	Site Lighting				
	Switchboard, MCC, ATS, PLC				
	Building or canopy				
	All equipment labeled				
	Factory acceptance test (FAT): witnessed *	Components to be tested together as a unit	Switchboard		
			Automatic or manual transfer switch		
			Motor control center		
			PLC cabinet		
	Factory acceptance test: non - witnessed:		Pumps		
			Standby generator and load bank		
		Site pump test by manufacturer			
		Site hoist system test by manufacturer			
		Captive air bell leak test			
		Manufacturer's & NETA quality control on switchboard/MCC			
		Grounding system			
		Cable insulation			
		Site generator and load bank test by manufacturer			
	Building systems		HVAC		
			Plumbing		
			Electrical		
			Lighting		
		Storm drain			

Facilities Startup: Phase 1 (Pre-Demonstration) Checklist (To be completed prior to start of Phase 2)	Contractor	Design Engineer	Inspector	District
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Facility: _____
 Design Engineer: _____ Inspector: _____

		<u>Plan</u>	<u>Actual</u>			
	Elevation Verification	Elevation:				
Wet well floor						
Inflow inlet invert						
Captive air bell						
Pressure transducer						
Pump inlet						
Approved Submittals	Manufacturers statement of installation					
	Current as-builds (matching existing conditions):	Loop drawings				
		Interconnect drawings				
	Instrument calibration certifications					
	Protective devices coordination study by professional electrical engineer					
	Wire pull sheets and conduit schedule					
	Certified cable insulation resistance test results by a NETA testing firm					
	Certified grounding system test results by a NETA testing firm					
	Switchboard and MCC testing results by a NETA testing firm					
	Witnessed factory acceptance test on all control & electrical equipment					
	Factory acceptance test results on pump					
	Factory acceptance test results on generator					
	Certified on-site generator test, including noise level: _____ dB					
	O & M manuals					
	Test procedures for Phase 2					

District Project Manager Phase 1 Checklist Approval: _____

Facilities Startup: Phase 2 (Demonstration) Checklist (To be completed prior to start of Phase 3) All Phase 2 tests require two week notice to SASD			Contractor	District
Facility: _____ Design Engineer: _____ Inspector: _____				
Approved Submittals	Test Plans for Phase 3 (mimicking operational conditions)			
	Final O&M manuals (with one copy at station)	Service Request (SR) submitted.		
	Final as-builts. Service Request (SR) submitted.			
Remote Telemetry Unit	Verify Installation and Hookup			
	Antenna Alignment (Contractor provides bucket truck)			
	Communications Test			
	I/O Test			
System Demo	Pumping Systems	Pull pumps and inspect (performed by contractor)		
		Inspect guide rails (work performed by District)		
		Inspect wet well (work performed by District)		
		Inspect crane		
		Clean water recirculated		
	Generator, load bank & fuel tank			
	Switchboard/MCC			
	Instrumentation			
	Crane			
	Security System/Fire Alarm			
Service Request (SR) submitted.				
Assets Input	Service Request (SR) submitted for pumps, CARV, force main at station.			
	Service Request (SR) submitted for station - new asset.			
General Walkthrough	CMID Punch list Completed	Inspector's Initials		
		District Project Manager's Initials		

District Project Manager Phase 2 Checklist Approval: _____

Facilities Startup: Phase 3 (Operational Testing & Startup) Checklist (To be completed prior to start of Phase 4)

Contractor	Inspector	District
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Facility: _____
 Design Engineer: _____ Inspector: _____

1. 10 day fresh water test	Level change			
	Pump cycling			
	Daily checks			
	Holding tank			
	Pull pumps and check oil (at start and completion of test)			
	Run pumps off of generator power			
	Site specific:			
		District Phase III Punchlist Generated		
	District Phase III Punchlist Completed			
2. Contractor Provided Training (Scheduled after successful 10 day test)	Pumping Systems			
	Generator, load bank & fuel tank			
	Switchboard/MCC			
	Instrumentation			
	Crane			
	Security System			
	Fire Alarm			
3. Station Cleanup	Remove re-circulation system after fresh water test			
	Remove all contractor equipment			
	District Operations and Maintenance Letter Issued (cc: M&O)			
	Final Station cleanup			
4. Connect to sewer	Verify downstream systems operational and connected	Force main operational, tested, signed off		
		Valves open		
		Plugs removed & allow sewage into facility		
		* Verify plugs removed from force main.		
5. Make facility operational	Replace contractor lock with District locks			
	SCADA turned on			
	District M&O ready to accept maintenance & operations of station. Service request (SR) submitted for status & GL account changes.			
	Notify District M&O			
	Notify USA			

District Project Manager Phase 3 Checklist Approval: _____

Facilities Startup: Phase 4 (Acceptance) Checklist (To be completed prior to final District acceptance of facility)			Contractor	Inspector	District	
Facility: _____ Design Engineer: _____ Inspector: _____						
Final Signoff	All completed punch lists recorded		[X]	[X]	[X]	
	Phase 1,2 & 3 checklists recorded					
	CMID Acceptance Letter	Force Main				
		Pump Station				
Service Request (SR) submitted for acceptance letter.						
Paperwork	Transfer power bill to the District		[X]	[X]	[X]	
	Transfer water bill to the District					
	Grant Deed / Easements recorded					
	Copies of all Permits to the District	Building Permit				
		Authority to construct				
		Permit to Operate				
		HMP (if applicable)				
Warranty Paperwork Submitted by Contractor						
Final Acceptance	Acceptance letter by the District filed		[X]	[X]	[X]	
	Copy to Sacramento Area Sewer District:	Accounting				
		M&O				
		Modeling				
		Regulatory Compliance				
		USA				

District Project Manager Phase 4 Checklist Approval: _____