

MEMORANDUM

To: Denver Water Capital Projects Construction Standards Users

From: Katie Ross, P.E.

CC: Bob Mahoney, P.E. – Chief Engineering Officer
Steve Reum, P.E. – Director of Engineering - Projects

Date: February 13, 2017

RE: Capital Projects Construction Standards – 3rd Edition
Significant Changes Summary

Significant additions to and deletions from the Capital Project Construction Standards specifications and details are noted as follows:

General changes to the Capital Projects Construction Standards, 3rd Edition:

- The use of abbreviations and acronyms were standardized across the specifications and details.
- The 01 90 00 Commissioning specification was revised in its entirety.
- The Corrosion Protection specifications and details were moved from Division 26 – Electrical to Division 13 – Special Construction.

New Specifications in the 3rd Edition:

01 32 20	Electronic Document Management System
01 43 00	Quality Assurance
01 45 00	Quality Control
01 64 00	Owner-Furnished Products
03 45 00	Precast Concrete Building
03 52 16	Lightweight Insulating Concrete
03 60 00	Grout Floor Topping
03 93 00	Concrete Rehabilitation – Repair Concrete and Mortar
08 31 01	Access Hatches and Doors for Roof Access
13 47 17	Commissioning and Testing of Corrosion Protection Systems
26 05 10	Basic Electrical Materials and Methods
26 05 33	Raceways
26 05 70	Electrical Systems Analysis
26 08 00	Commissioning of Electrical Systems
26 09 00	Control and Protection Equipment
26 12 13	Pad-Mounted Transformers
26 12 15	Secondary Substation Transformers
26 13 23	Medium-Voltage Metal-Enclosed Switchgear
26 13 26	Medium-Voltage Metal-Clad Switchgear
26 18 39	Medium-Voltage Motor Control
26 23 00	Low-Voltage Metal-Enclosed Switchgear
26 24 19	Low-Voltage Motor Control
26 29 23	Variable Frequency Drives
26 29 24	Variable Frequency Drives Less than 50 hp
26 32 13	Engine Driven Generator
26 32 20	Generator Excitation Equipment
26 33 00	DC Power System
26 33 53	Three-Phase Uninterruptible Power Supply System

26 41 00	Lightning Protection System
26 70 00	Motors
28 00 00	Security System
28 46 00	Fire Alarm System
31 05 19	Geotextiles
31 23 22	Zoned Fill
32 31 26	Wire Fences and Gates
33 05 31.13	PVC Pipe for Water Transmission and Distribution
33 41 17	Subdrainage Pipes
40 05 07	Hangers and Supports for Process Piping
40 05 57.23	Electric Motor Actuators for Process Valves and Gates
40 41 00	Heat Tape Systems
40 50 00	Instrumentation and Control Systems
40 72 73	Reservoir Level Gauge
46 33 44	Peristaltic Metering Pumps
46 33 73	Liquid Chemical Diffusers
48 70 00	Generator Startup and Commissioning

Removed Specifications:

07 72 33	Roof Hatches
08 31 50	Floor Access Hatches
22 11 16.01	Lead and Copper Service Line Replacement
32 16 13	Curb and Gutter
32 16 23	Sidewalks
33 11 15	Polyvinyl Chloride Pipe for Horizontal Directional Drilling
33 11 55	Excavation and Fill of Access Openings

Specifications that changed Divisions (from the 2nd Edition to the 3rd Edition):

OLD:	03 15 13.04	Sealing Strip Waterproofing Membrane
NEW:	07 13 00	Sealing Sheet Waterproofing
OLD:	03 15 13.05	Flexible Cementitious Waterproofing Membrane
NEW:	07 16 00	Flexible Cementitious Waterproofing Membrane
OLD:	10 14 53	Temporary Construction Site Sign
NEW:	01 58 13	Temporary Project Signage
OLD:	26 42 00	Common Work Results for Cathodic Protection
NEW:	13 47 13	Common Work Results for Cathodic Protection
OLD:	26 42 13.01	Impressed Current Cathodic Protection for Buried and Submerged Piping, Structures, and Appurtenances (Merged with 26 42 13.02 - Abandonment of Impressed Current Cathodic Protection for Buried and Submerged Piping, Structures, and Appurtenances)
NEW:	13 47 14	Impressed Current Cathodic Protection
OLD:	26 42 16	Flange Electrical Isolation and Joint Continuity Bonding for Cathodically Protected Metallic Piping Systems and Bolted Sleeve Type Couplings
NEW:	13 47 16	Isolation and Bonding for Cathodic Protection
OLD:	26 42 19	Passive Cathodic Protection for Buried and Submerged Piping, Structures, and Appurtenances
NEW:	13 47 15	Galvanic Cathodic Protection

New Details in the 3rd Edition:

01006	ABBREVIATIONS
03002	THRUST WALL
03003	THRUST WALL ELEVATION AND TYPICAL SECTION
03015	ACCESS HATCH MOUNTING
03031	PVC CENTER BULB WATERSTOP
05021	REMOVABLE TRAFFIC IMPEDIMENT BOLLARD
05042	ANCHOR PLATE FOR REMOVABLE HANDRAIL
05061	SUMP GRATE SUPPORT
13001	SINGLE-LEVEL PIEZOMETER FLUSH MOUNT
13002	SINGLE-LEVEL PIEZOMETER STICK UP MOUNT
13003	DUAL-LEVEL PIEZOMETER FLUSH MOUNT
13004	DUAL-LEVEL PIEZOMETER STICK UP MOUNT
13005	MONITORING POINT/STATION MARKER
13025	ANODE INSTALLATION
13030	INTERFERENCE PROTECTION
13060	TEST STATION ABOVE GRADE
13060	TEST STATION ABOVE GRADE
13061	TEST STATION ABOVE GRADE WITH CONDUIT
13062	TEST STATION AT GRADE WITH CONDUIT
13063	TYPICAL CATHODIC PROTECTION TEST STATION
13064	TYPICAL CATHODIC PROTECTION TEST STATION WITHOUT ANODE
13070	REMOTE MONITOR TEST STATION
13080	DUCTILE IRON PIPE JOINT BONDING
13081	TERMINAL BOARD CARD
22001	SUMP ASSEMBLY AND PIPING
22002	4" IN-LINE CLEANOUT
22003	OUTSIDE DROP MANHOLE CONNECTION
22004	SUMP DRAIN INTO EXISTING SANITARY SEWER MANHOLE
22005	TRACER WIRE INSTALLATION FOR PVC SUMP PUMP DRAIN
22006	SUMP PUMP DISCHARGE TO GRAVEL BED
22007	SUMP PUMP DISCHARGE TO EXISTING SANITARY SEWER
23019	WALL MOUNTED HOSE RACK FOR 3/4" AND 1" HOSE
23060	TYPE J PENETRATION AND TYPE K PENETRATION
26038	RESERVOIR LID-DUCTBANK EXPOSED CONDUIT INTERFACE
26044	ELECTRICAL CONDUIT IN SLAB PLACEMENT
26045	ELECTRICAL CONDUIT UNDER SLAB PLACEMENT
26049	DUCTBANK INTERFACE AT WALL BLOCKOUT
26059	CONDUIT RISER FROM UNDERGROUND DUCTBANK
26144	ELECTRICAL SERVICE EQUIPMENT FREE STANDING METER PEDESTAL, 1-PHASE
26261	GROUND CABLE CONNECTION TO REINFORCING STEEL
26264	GROUNDING CABLE TEE REDUCER #1 AWG
26265	GROUNDING CABLE TEE REDUCER #6 AWG
26266	GROUNDING CABLE TEE
26267	FENCE POST AND FABRIC GROUNDING
26268	RAILING AND POST GROUNDING
32010	CHAIN LINK FENCE POST AND FRAME SIZES
32013	DOUBLE SWING GATE
32014	DOUBLE SWING GATE WITH BARBED WIRE
32015	SINGLE SWING GATE
32016	SINGLE SWING GATE WITH BARBED WIRE

32017	8' CHAINLINK FENCE CORNER POST WITH BARBED WIRE
32023	TREE PROTECTION FENCE
32025	LANDSCAPE EDGING
32044	IRRIGATION WIRE SPLICE BOX
32055	IRRIGATION SLEEVE
33033	FIELD ATTACHED FLANGED OUTLET
33130	POLYURETHANE TO CEMENT-MORTAR TRANSITION UPSTREAM AND DOWNSTREAM
40972	ULTRASONIC LEVEL ELEMENT INSTALLATION (RESERVOIR ROOF)

Removed Details:

07001	ROOF CONE JACK VENT PIPE FLASHING
13001	SINGLE-LEVEL PIEZOMETERS WITH FLUSH MOUNT AND STICK UP MOUNT
13002	DUAL-LEVEL PIEZOMETERS WITH FLUSH MOUNT AND STICK UP MOUNT
26426	TEST SITE WITH REFERENCE ELECTRODE INSTALLATION
26427	TEST SITE WITH REFERENCE ELECTRODE AND MAGNESIUM ANODE INSTALLATION
26428	BOND SITE INSTALLATION
26429	BOND SITE INSTALLATION WITH ANODE
26430	BOND SITE INSTALLATION WITH ANODE BANK
26431	INTERFERENCE PROTECTION
26437	TEST SITE STYLE A
26438	TEST SITE STYLE B
26439	TEST SITE STYLE C
26440	TEST SITE STYLE D
26444	UNRESTRAINED BOLTED SLEEVE TYPE COUPLING STEEL SECTION IN CMC
26447	REMOTE MONITOR TEST STATION WIRING DIAGRAM
26448	REMOTE MONITOR RECTIFIER TEST STATION WIRING DIAGRAM
26449	REMOTE MONITORING SYSTEM WIRING DIAGRAM
26015	MANHOLE EQUIPMENT RACK
26035	RESERVOIR-DUCTBANK CONDUIT INTERFACE
26045	UNDER SLAB CONDUIT PLACEMENT
26057	UNDERGROUND DUCTBANK BRIDGE INTERFACE
26062	TRANSFORMER ON EHH
26063	LCP ON EHH
26089	EHH CABLING SUPPORT
26094	STRUT CHANNEL WALL BRACKET CONDUIT EXTENSION MOUNTING
26110	CAST-IN-PLACE WALL BOX TO EQUIPMENT
26121	PADMOUNTED TRANSFORMER CONCRETE PAD
26123	LCP/DUCTBANK INTERFACE
26124	TRANSFORMER CONTAINMENT CURB BY EHH
26130	VALVE ACTUATOR UG CONDUIT FEED
26140	ELECTRICAL SERVICE EQUIPMENT FREE STANDING METER PEDESTAL 1-PHASE
26200	ROTORK VAC 3-PHASE VALVE ACTUATOR SCHEMATIC
26201	LIMITORQUE VAC 3-PHASE MXA VALVE ACTUATOR SCHEMATIC, 1 OF 2
26201	LIMITORQUE VAC 3-PHASE MXA VALVE ACTUATOR SCHEMATIC, 2 OF 2
26202	LIMITORQUE VAC 3-PHASE VALVE ACTUATOR SCHEMATIC, 1 OF 2
26202	LIMITORQUE VAC 3-PHASE VALVE ACTUATOR SCHEMATIC, 2 OF 2
26203	ROTORK VDC VALVE ACTUATOR SCHEMATIC
26204	AUMA VAC 3-PHASE VALVE ACTUATOR SCHEMATIC, 1 OF 2
26204	AUMA VAC 3-PHASE VALVE ACTUATOR SCHEMATIC, 2 OF 2
26205	ROTORK VAC 1-PHASE VALVE OPERATOR SCHEMATIC 1 OF 2

26205	ROTORK VAC 1-PHASE VALVE OPERATOR SCHEMATIC 2 OF 2
26234	EUH MOUNTING DETAIL
26239	EHH DUCTBANK HEAT TAPE SYSTEM
26241	WALL MOUNTED ELECTRIC RADIANT HEATER (RH)
26243	EUH CONTROL SCHEMATIC 3-PHASE
26262	GROUND CABLE TEE
26266	COLUMN GROUNDING
26267	FENCE GATE GROUNDING
26269	GROUND WIRE TO REBAR CONNECTION IN PRECAST CONCRETE
26270	STEEL DOOR FRAME GROUNDING
26302	CROSS SECTION OF SWGR PLATFORM
26303	CROSS SECTION OF SWGR STAIRS
26399	SEWAGE LIFT STATION
26409	RDO/RTE RIVER SENSOR INSTALLATION
26414	TVSS WIRING DIAGRAM
26503	WALL PACK LIGHT (SURFACE)
26505	WALL MOUNTED FULL CUTOFF FIXTURE
26506	LIGHT POLE-STREET LIGHT
26507	SHORT LIGHT POLE/STREET LIGHT
26508	LOW HEIGHT LIGHT POLE
26510	PENDANT MOUNT LUMINAIRE
26707	TEST STATION ID TAG
26801	BREAKER CONTROL SWITCH
26920	CONDENSER ANODE INSTALLATION
27010	RS-485 PIN LAYOUT
27020	CONTROLWAVE FULL DUPLEX TO 33XX SERIAL COMMUNICATIONS CABLE
27021	BRISTOL 33XX FULL DUPLEX NULL MODEM PC TO RTU SERIAL COMMUNICATIONS CABLE
27022	CONTROLWAVE & CW MICRO FULL DUPLEX NULL MODEM PC TO RTU SERIAL COM CABLE
27023	BRISTOL 33XX FULL DUPLEX NULL MODEM PC TO RTU SERIAL COMMUNICATIONS CABLE
27024	CONTROLWAVE MICRO TO BRISTOL 1200 BAUD MODEM COMMUNICATIONS CABLE
27025	RS-485 COMMUNICATIONS PORT DIP SWITCH SETTINGS FOR THE 33XX COMMUNICATIONS CARD
28101	LCP-SG
28106	SECURITY-SCP DOOR CONNECTION TYPICAL
28111	SECURITY DOOR WITH ELECTRIC STRIKE ONE-LINE DIAGRAM
28312	HORN-STROBE
28313	STROBE
28314	PULL STATION
28315	SMOKE DETECTOR
28316	HEAT DETECTOR
28317	SIGNALING DEVICE MONITOR MODULE
28318	SIGNALING DEVICE CONTROL MODULE
28319	INTERFACE RELAY
33110	20" DIAMETER AND SMALLER CLOSURE (STEEL PIPE)
33121	20" AND SMALLER ONE PIECE BUTTSTRAP
40902	ANALOG SIGNAL SHIELD TERMINATIONS
40903	CONTROL PANEL TERMINAL BLOCK LAYOUT

40914	INSTRUMENT RAIN HOOD INSTALLATION
40930	CHLORINE ANALYZER INSTALLATION
40931	IN-LINE ANALYZER ELEMENT INSTALLATION
40933	WQMS PANEL POWER/PLC INTERFACE
40940	PRV VALVE STEM POSITION FEEDBACK ASSEMBLY
40941	TEMPERATURE INSTRUMENT PIPE INSTALLATION
40942	TOXIC GAS MONITOR INSTALLATION
40943	PROCESS PIPE HEAT TRACE KIT WITH PILOT
40958	ULTRASONIC LEVEL ELEMENT INSTALLATION (DOUBLE WALL STILLING WELL)
40960	PRESSURE MEASUREMENT INSTALLATION (PIPING)
40968	CHLORINE INJECTOR PRESSURE INDICATOR INSTALLATION
40980	MAGNETIC FLOWMETER INSTALLATION WITH REDUCER
40982	CORIOLIS MASS FLOWMETER
40984	MULTI-PATH ULTRASONIC FLOWMETER INSTALLATION
40995	LCP RADIO PANEL

End of Memorandum.