WATER INFRASTRUCTURE AND SUPPLY EFFICIENCY (WISE)
DESIGN/BUILD PROJECT (DB PROJECT)
REQUEST FOR PROPOSALS (RFP)
Volume 3

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Preliminary Drawings for Basis of Design Memos

DRAWINGS FOR

SOUTH METRO WISE AUTHORITY

DESIGN/BUILD PACKAGE CHLORAMINE DISINFECTION AND IRON AND MANGANESE REMOVAL SYSTEM FOR WILLOWS WELLS

BLACK & VEATCH
PROJECT NO.182463

BLACK & VEATCH
building a world of difference™

Black & Veatch Corporation
Centennial, Colorado

OCTOBER 2014

SHEET LIST

D50012

GENERAL NOTES

1. HORIZONTAL AND VERTICAL CONTROL:
   NAD 83/92 (BASIS OF AURORA GRID) NGVD 29

2. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES AND FACILITIES MAY BE INDICATED. OVERHEAD UTILITIES ARE NOT INDICATED IN ARCHITECTURAL ELEVATIONS, PROFILE OR SECTION DRAWINGS. THE ENGINEERING INVESTIGATIONS,LOCATION, AND DESIGNATION OF SUBSURFACE UTILITIES INDICATED IN THESE CONTRACT DOCUMENTS HAS BEEN PERFORMED TO QUALITY LEVEL D IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES AS OUTLINED IN ASCE STANDARD AND GUIDELINE BULLETIN CI/ASCE 38-02 UNLESS OTHERWISE DESIGNATED.

3. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIAL AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.

4. CONTRACTOR SHALL SUBMIT A STAGING, PARKING AND MATERIAL STORAGE PLAN AS PART OF RESPONSE TO RFP.

5. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY PRECISE LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STRUCTURES, WHETHER INDICATED ON THE DRAWINGS OR NOT, IN THE FIELD IN ADVANCE OF EXCAVATING, BY CONTACTING ALL UTILITIES AND OTHER AGENCIES, AND BY PROSPECTING. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, DEMOLITION, RECONSTRUCTION, AND RECONNECTION OF EXISTING FACILITIES AS REQUIRED TO COMPLETE THE WORK. IF REQUIRED AFTER FIELD VERIFICATION, CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE ANY NECESSARY MODIFICATIONS TO PROPOSED NEW WORK.

6. BEFORE CONSTRUCTION IS STARTED, CONTRACTOR SHALL COORDINATE WITH THE OWNER OF EACH UTILITY AND DEFINE THE REQUIREMENTS AND METHODS TO ACCOMMODATE THE PROTECTION, TEMPORARY SUPPORT, ADJUSTMENT, OR RELOCATION OF ANY UTILITIES AFFECTED BY THE PROPOSED NEW WORK.

7. CONTRACTOR SHALL COMPLY WITH THE GOVERNING AGENCY NPDES CONSTRUCTION REQUIREMENTS, AND SHALL PROVIDE APPROPRIATE MITIGATION MEASURES OR PROTECTION AND RESTORATION AT ALL LOCATIONS AS REQUIRED BY THEIR OPERATIONS, AND AS DIRECTED BY ENGINEER. SPECIAL CONSTRUCTION REQUIREMENTS, TEMPORARY PROTECTIVE FENCING OR BARRICADES, SHEETING, SHORING, EROSION PROTECTION, AND SURFACE RESTORATION AT CERTAIN LOCATIONS ARE INDICATED ON THE DRAWINGS TO BRING CONTRACTOR'S ATTENTION TO SENSITIVE AREAS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL PROPERTY CORNER MARKERS. PROPERTY CORNER MARKERS DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REESTABLISHED BY A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF COLORADO.

9. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING TREES, SHRUBS, AND PLANTS UNLESS OTHERWISE NOTED.

10. CONTRACTOR SHALL INSTALL ALL PIPELINES, PAVING, WALKWAYS, AND CURB AND GUTTER AT A UNIFORM GRADE BETWEEN ELEVATIONS DEPICTED ON THE DRAWINGS.

11. FOR ALL SITE GRADING, SMOOTH PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE. PARABOLIC ROUNDING SHALL APPLY TO ALL CUT AND FILL SECTIONS.

12. FINISH GRADE NEAR ACCESS HATCHES WILL SLOPE GENERALLY AWAY FROM STRUCTURE.

13. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.

14. RESTRAINED JOINTS SHALL BE PROVIDED FOR ALL BURIED PRESSURE PIPING.

15. THE PUMP STATION AND SUPPLY AND DISCHARGE PIPELINES CAN BE TAKEN OUT OF SERVICE FOR LIMITED PERIODS OF TIME TO FACILITATE CONSTRUCTION BETWEEN THE MONTHS OF NOVEMBER AND MARCH. SHORT DURATION SHUTDOWNS DURING OTHER MONTHS MAY BE POSSIBLE IF APPROVED BY THE OWNER.

16. CONTRACTOR SHALL REPLACE EXISTING PIPE CULVERTS THAT ARE REMOVED TO INSTALL THE NEW PIPELINE WITH NEW PIPE CULVERTS OF THE SAME SIZE, MATERIAL AND CONSTRUCTION AT THE SAME LOCATION AND INVERT ELEVATION AS THOSE THAT WERE REMOVED, AND SHAPE THE DITCH TO DRAIN WITH THE REPLACED CULVERT. CONTRACTOR SHALL PROVIDE ANY TEMPORARY CULVERTS THAT MAY BE REQUIRED FOR CONTRACTOR'S OPERATIONS. CONTRACTOR SHALL COORDINATE REMOVAL AND REPLACEMENT OF ANY CULVERTS WITHIN PUBLIC RIGHT-OF-WAY WITH THE REGULATING AGENCY.

17. UNLESS OTHERWISE SPECIFIED, INDICATED ON THE DRAWINGS, OR UNLESS APPROVED IN ADVANCE BY THE OWNER, INSTALL PIPELINES SLOPING DOWNWARD FROM AN AIR VALVE. MINIMUM 5'-0" COVER AT MANHOLE OR AT MANUAL ARV TO A BLOWOFF, AND PROVIDE THE SPECIFIED MINIMUM PIPE COVER. MINIMUM PIPE COVER SHALL BE FROM THE EXISTING, PROPOSED, OR FUTURE GROUND SURFACE OR ROAD PROFILE, WHICHEVER GROUND SURFACE OR ROAD PROFILE IS APPLICABLE AS INDICATED ON THE DRAWINGS. IF THE PROPOSED GROUND SURFACE IS ABOVE THE EXISTING GROUND SURFACE INDICATED ON THE DRAWINGS AND IS NOT THE ACTUAL GROUND SURFACE AT THE TIME OF PIPELINE INSTALLATION, INSTALL THE PIPELINE TO PROVIDE MINIMUM PIPE COVER FROM THE ACTUAL GROUND SURFACE IF ACCEPTABLE TO THE ENGINEER. HIGH POINTS IN THE PIPELINE WILL NOT BE PERMITTED EXCEPT AT LOCATIONS OF AIR VALVES AS INDICATED ON THE DRAWINGS. REVIEW THE PIPELINE PROFILE REQUIREMENTS WITH THE ENGINEER PRIOR TO PREPARING LAYING SCHEDULES AND PERFORMING FIELD STAKING.

18. CONTRACTOR SHALL FIELD VERIFY PRECISE LOCATION, ELEVATION, AND ARRANGEMENT OF CONNECTIONS OF NEW PIPELINES WITH EXISTING PIPELINES BASED ON FIELD CONDITIONS, INCLUDING EXPOSING EXISTING PIPING PRIOR TO FABRICATING NEW PIPING. CONTRACTOR SHALL PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVE CLOSURES, AND HARNESSED MECHANICAL COUPLING; ROTATE FITTINGS; DEFLECT JOINTS; AND MODIFY EXISTING PIPING AS APPLICABLE AND AS REQUIRED TO MAKE CONNECTIONS, INCLUDING ADJUSTMENTS FOR ANY OFFSETS IN CENTERLINE ELEVATIONS BETWEEN PIPELINES. CONTRACTOR SHALL PROVIDE TEMPORARY PLUG WITH FACTORY OUTLET SIZED AS REQUIRED FOR CONTRACTOR'S TESTING AND DISINFECTION WORK BEFORE MAKING CONNECTION, WHEN APPLICABLE. CONTRACTOR SHALL COORDINATE MAKING EACH CONNECTION WITH THE OWNER.

19. ALL DIP SHALL BE PROTECTED WITH A MINIMUM OF ONE WRAP OF POLYETHYLENE ENCASEMENT.

20. ALL OWNERSHIP, RIGHT-OF-WAY, AND EASEMENT INFORMATION WAS OBTAINED FROM THE DOUGLAS/ARAPAHOE COUNTY CLERK AND RECORDERS OFFICE AND DOUGLAS/ARAPAHOE COUNTY ASSESSORS OFFICE. NO TITLE COMMITMENT WAS PROVIDED TO FARNSWORTH GROUP, THEREFORE, THE SURVEYOR DOES NOT GUARANTEE ALL RECORDED INFORMATION IS SHOWN HEREIN.

21. CONTRACTOR SHALL INSTALL 3 INCH WIDE BLUE, NON-DETECTABLE, MARKER TAPE LABELED "CAUTION, WATER LINE BURIED BELOW" IN TRENCH APPROXIMATELY 2' – 6" ABOVE TOP OF PIPE ELEVATION ALONG ENTIRE LENGTH OF PIPELINE.

22. CONTRACTOR SHALL INSTALL TRACER WIRE ABOVE METALLIC PIPELINE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

23. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING FENCING DISTURBED BY CONSTRUCTION ACTIVITIES ALONG THE ENTIRE PIPELINE ROUTE, WHETHER OR NOT IT IS IDENTIFIED ON THE DRAWINGS. REPLACEMENT FENCING SHALL IDENTICALLY MATCH ORIGINAL FENCING AND SHALL BE CONSTRUCTED OF ENTIRELY NEW MATERIALS UNLESS APPROVED IN ADVANCE BY OWNER.

24. CONTRACTOR SHALL OPEN CUT EXISTING GRAVEL AND ASPHALT SURFACED ROADS WHERE INDICATED ON THE DRAWINGS. THICKNESS AND TYPE OF REPLACEMENT ASPHALT, BASE COURSE, AND AGGREGATE ROAD BASE SHALL BE AS SPECIFIED AND SHALL, AS A MINIMUM, MATCH EXISTING SURFACING.

25. PIPE JOINTS MAY BE DEFLECTED AS NECESSARY TO INSTALL PIPELINE ALONG THE LINES AND GRADES SHOWN. THE PIPE VERTICAL ALIGNMENT MAY BE SLIGHTLY ADJUSTED TO ACHIEVE 5 FOOT OF COVER, HOWEVER NO NEW HIGH POINTS OR LOW POINTS SHALL BE CREATED. MAXIMUM JOINT PULL OUT FOR HORIZONTAL CURVES AND VERTICAL SLOPE CHANGES WITH DEFLECTED JOINTS SHALL BE 75 PERCENT OF THE MANUFACTURERS MAXIMUM ALLOWABLE PULL OUT FOR THE PARTICULAR TYPE OF JOINT BEING DEFLECTED. VERTICAL SLOPE CHANGES SHOWN ON THE DRAWINGS TO BE POINT DEFLECTIONS SHALL BE DISTRIBUTED OVER MULTIPLE PIPE JOINTS TO THE LIMIT THE PULL OUR PER JOINT TO THE ABOVE LIMIT.

26. CONTRACTOR TO CONFINE ITS CONSTRUCTION DISTURBANCE TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS.

27. ALL OPEN CUT ROADS AND STREETS SHALL HAVE A MINIMUM OF ONE LANE OPEN AT ALL TIMES FOR EMERGENCY ACCESS. CONTRACTOR SHALL ALSO PROVIDE TRAFFIC CONTROL AT ALL OPEN CUT ROAD AND STREET CROSSINGS.

28. REFERENCES TO EXISTING PIPE MATERIAL TYPES ARE NOT CONFIRMED. CONTRACTOR TO FIELD VERIFY AS REQUIRED.

ABBREVIATIONS

&	AND
@	AT
Ø	DIAMETER
#	NUMBER
%	PERCENT
AB	ANCHOR BOLT
ALUM	ALUMINUM
AW	AIR WASH
APPROX	APPROXIMATE
A/V	AIR VAC
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BOL	BEGINNING OF LINE
BV	BALL VALVE
BWW	BACKWASH WATER
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
CLR	CLEAR
CLSM	CONCRETE LOW STRENGTH MATERIAL
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
COR	CORNER
CP	CONTROL POINT
CPLG	COUPLING
CRB	CONCRETE REACTION BLOCK
CISP	CAST IRON SOIL PIPE
CTRS	CENTERS
CU	CUBIC
CWSD	CENTENNIAL WATER AND SANITATION DISTRICT
C/L	CENTER LINE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DMJ	DISMANTLING JOINT
DN	DOWN
DWG	DRAWING
DWLS	DOWELS
E	EAST
EA	EACH
ECC	ECCENTRIC
ELEC	ELECTRICITY
EL	ELEVATION
EMBED	EMBEDDED
ENCSMT	ENCASEMENT
EOL	END OF LINE
EQUIP	EQUIPMENT
EQ	EQUAL
ESMT	EASEMENT
EXIST,EX	EXISTING
EXP	EXPANSION
FCV	FLOW CONTROL VALVE
FE	FILTER EFFLUENT
FH	FIRE HYDRANT
FIN	FINISHED
FL	FLOOR
FLG	FLANGE
FM	FLOWMETER
FS	FAR SIDE, FILTER SLUDGE
FT	FEET
GAL	GALLON(S)
GALV	GALVANIZED
GR	GRADE
G-R	GORMAN-RUPP PUMPS
GV	GATE VALVE
HDPE	HIGH DENSITY POLYURETHANE
HORIZ	HORIZONTAL
HMC	HARNESSED MECHANICAL COUPLING
HWY	HIGHWAY
ID	INSIDE DIAMETER
INV,IE	INVERT ELEVATION
IRR	IRRIGATION
JT	JOINT
LAS	LIQUID AMMONIUM SULFATE
MAX	MAXIMUM
MC	MECHANICAL COUPLING
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
N	NORTH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NO.	NUMBER
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
PC	POINT OF CURVE
PE	PLAIN END
PI	POINT OF INTERSECTION
PL	PLATE
PRV	PRESSURE REDUCING VALVE
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSV	PRESSURE SUSTAINING VALVE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
REINF	REINFORCING
REQD	REQUIRED
RESTRD	RESTRAINED
ROW	RIGHT OF WAY
RW	RAW WATER
S	SOUTH, SLOPE
SAN	SANITARY SEWER
SEC	SECTION
SH(SHT)	SHEET
SHC	SODIUM HYPOCHLORITE
SIM	SIMILAR
SMW	SOUTH METRO WATER SUPPLY AUTHORITY
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
ST	STEEL, STORM
STA	STATION
STD	STANDARD
TEMP	TEMPORARY
T.O.P.	TOP OF PIPE
TYP	TYPICAL
USGS	UNITED STATES GEOLOGICAL SURVEY
UTIL	UTILITY
VERT	VERTICAL
VPI	VERTICAL POINT OF INTERSECTION
W	WEST
W/	WITH
WWF	WELDED WIRE FABRIC

PRELIMINARY - NOT FOR CONSTRUCTION

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

TREATMENT
GENERAL NOTES AND ABBREVIATIONS

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-TRT-2
SHEET
OF

FD7000_PW
D7000

GENERAL LEGEND

- SURFACED STREET, ROAD OR DRIVE
- SURFACED STREET, ROAD OR DRIVE WITH CURBS
- NON-SURFACED STREET, ROAD OR DRIVE
- CONCRETE WALK
- CB — CATCH BASIN
- MANHOLE
- DRAINAGE COURSE OR FLOW LINE
- 326 — EXISTING GROUND CONTOUR
- 326 — FINISH GRADE CONTOUR
- BANK OR SLOPE LINES
- •#3 OR ⊕ T.H.#3 / ⊕ B3 — TEST HOLE AND NUMBER
- SURVEY LINE WITH PI, PT, OR POT
- CONCRETE ENCASEMENT - PLAN
- CONCRETE REACTION BLOCKING AT BEND, PLUG OR TEE
- CULVERTS
- TUNNEL CASING - PLAN
- SMALLER THAN 24" / 24" AND LARGER — EXISTING
- SMALLER THAN 24" / 24" AND LARGER — NEW
- GENERAL LAYOUT YARD PIPING
- NEW WATER LINE OR SEWER IN PROFILE
- TUNNEL CASING - PROFILE
- LOC — LIMITS OF CONSTRUCTION
- PE/L — PERMANENT EASEMENT LINE
- TE/L — TEMPORARY EASEMENT LINE
- UE/L — UTILITY EASEMENT LINE
- R/W — RIGHT-OF-WAY LINE
- S/L — SURVEY LINE / SECTION LINE
- P/L — PROPERTY LINE
- W — WATER LINE (UNDERGROUND)
- G — GAS LINE (UNDERGROUND)
- T — TELEPHONE (UNDERGROUND)
- E — ELECTRICAL (UNDERGROUND)
- OHE — POWER OR TELEPHONE LINES (OVERHEAD)
- FO — FIBER OPTIC (UNDERGROUND)
- SAN — SANITARY SEWER (UNDERGROUND)
- SS — STORM SEWER (UNDERGROUND)
- X — FENCE
- X X — SILT FENCE
- CENTERLINE
- (G) / (W) — WATER OR GAS VALVE
- (WM) / (GM) — WATER OR GAS METER
- TELEPHONE OR POWER POLE WITH GUY ANCHOR
- FH — FIRE HYDRANT
- Y — YARD HYDRANT
- UTILITY POLE
- TRAFFIC SIGNAL
- TRAFFIC SIGN
- S — SIGN

- BUILDINGS, STRUCTURES
- STRUCTURES UNDERGROUND
- FUTURE BUILDINGS, STRUCTURES
- RAILROAD, EACH TRACK
- 1 / AC45 — SECTION NUMBER OR DETAIL LETTER; DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS; OR WHERE SECTION IS CUT OR DETAIL IS NOTED
- 1 / A045 — DOOR, WINDOW AND LOUVER SCHEDULE REFERENCE; WALL ELEVATION
- D / 4 — ABBREVIATION; SCHEDULE NUMBER
- F102 — ROOM NUMBER; AREA DESIGNATION
- PV / 10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- PV-10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- EQUIP CALLOUT — EQUIPMENT REPRESENTATION WITH CALLOUT
- EXISTING FACILITY TO BE DEMOLISHED OR REMOVED
- 123 — CONTROL POINT, BENCH MARK, AND STATION NUMBER
- SOIL TEST HOLE
- SS — SANITARY SEWER MANHOLE
- ST — STORM SEWER MANHOLE
- HEDGE, BRUSH, SHRUBS, WOODS
- 10" — DECIDUOUS TREE AND TRUNK DIAMETER
- DO NOT DISTURB EXISTING VEGETATION. EXISTING VEGETATION TO REMAIN AND BE PROTECTED
- CP — INDICATES CATHODIC PROTECTION TEST STATION
- F — INDICATES FIBER PULL BOX
- INDICATES SPOT SHOT ON TOP OF 12" OR 24" WATER LINE

MATERIALS LEGEND

- EARTH OR GRADE
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- ROCK
- NEW CONCRETE
- EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE
- BRICK, FACE
- BRICK, COMMON
- CONCRETE MASONRY UNITS (CMU)
- CUT STONE OR SAND FILL, GROUT, MORTAR, CLSM, AND PLASTER
- RIPRAP
- CHECKERED PLATE
- STEEL (FOR 1"SCALE & LARGER)
- STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER)
- BAR GRATING (LINES IN DIRECTION OF SPAN)
- ALUMINUM
- INSULATION (BATT)
- INSULATION (RIGID)

PIPING SYSTEMS

NEW PIPING	CDWR	CONDENSER WATER RETURN	HWR — HEATING SYSTEM WATER RETURN
UNDERGROUND PIPING	CDWS	CONDENSER WATER SUPPLY	HWS — HEATING SYSTEM WATER SUPPLY
EXISTING PIPING	Co2(G)	CARBON DIOXIDE GAS	HW — WATER, POTABLE HOT
FUTURE PIPING	Co2(S)	CARBON DIOXIDE SOLUTION	HWC — HOT WATER CIRCULATING
A — AIR (COMPRESSED)	CW	WATER, COLD	IA — INSTRUMENT AIR
ALUM — ALUMINUM SULFATE (ALUM)	DW	DISTILLED WATER	PERM — POTASSIUM PERMANGANATE
AR — ARGON	FeCl	FERRIC CHLORIDE	LIME — LIME
CRW — CHEMICAL RESISTANT ACID WASTE	FeS	FERRIC SULFATE	PG — LP GAS (PROPANE)
CRV — CHEMICAL RESISTANT ACID WASTE VENT	F	FIRE PROTECTION WATER SYSTEM	N — NITROGEN
TW — TEMPERED OR BLENDED WATER	FL	FLUORIDE	SA — SODA ASH
C — CARBON SLURRY	FOR	FUEL OIL RETURN	NaOH — SODIUM HYDROXIDE
ACET — ACETYLENE	FOS	FUEL OIL SUPPLY	SP — SODIUM HEXAMETAPHOSPHATE (PHOSPHATE)
CWR — CHILLED WATER RETURN	FOV	FUEL OIL VENT	NaOCL — SODIUM HYPOCHLORITE
CWS — CHILLED WATER SUPPLY	G	GAS, NATURAL	AMM(G) — AMMONIA GAS
CL(G) — CHLORINE GAS	H	HYDROGEN	AMM(S) — AMMONIA SOLUTION
CL(L) — CHLORINE LIQUID	HE	HELIUM	NO — NITROUS OXIDE
CL(S) — CHLORINE SOLUTION	HP	HYDROGEN PEROXIDE	
	PA	PHOSPHORIC ACID	

NPW	WATER, NON-POTABLE
NPHW	WATER, NON-POTABLE HOT
OX	OXYGEN
OZ	OZONE
OF	OVERFLOW
POLY	POLYMER SOLUTION
RF	REFRIGERANT
SS	STORM DRAIN
SG	SLUDGE GAS
SI	SILICA
PD	SUMP PUMP DISCHARGE
SAN	SANITARY SEWER
V	VENT
VAC	VACUUM
W	WATER

PIPING ACCESSORIES LEGEND

- BLIND FLANGE
- CAP OR PLUG
- CO — CLEANOUT
- CROSS
- DIAPHRAGM SEAL
- ELBOW
- ELBOW DOWN
- ELBOW TURNING UP
- SIZE — HOSE CONNECTION
- Q — QUICK COUPLING
- REDUCER
- RUPTURE DISK
- TEE
- TEE LINE DOWN
- TEE LINE UP
- WYE
- WYE STRAINER
- WYE STRAINER WITH BLOWOFF
- DRAIN OR BELL-UP

- CALIBRATING COLUMN
- TRAP
- UNION
- WALL SLEEVE
- AT — AUTOMATIC DRAIN TRAP
- DT — DRIP TRAP
- DUPLEX STRAINER
- EXPANSION COMPENSATOR
- F — INLINE FILTER
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE CONNECTOR
- HOSE REEL
- INJECTOR, EDUCTOR, BLENDER
- ORIFICE PLATE
- PIPE GUIDE
- S — SEDIMENT TRAP
- S — STRAINER
- SUCTION DIFFUSER

- SURGE CHAMBER
- VENT - SCREENED
- VENT
- P — PRESSURE GAUGE W/SNUBBER
- SIGHT FLOW INDICATOR
- T — TEMPERATURE INDICATOR
- THERMOMETER
- ELECTROMAGNETIC/ULTRASONIC FLOWMETER
- PITOT TUBE
- ROTAMETER
- TURBINE OR PROPELLOR FLOWMETER
- M — SET STOP METER
- VENTURI
- FM — FLOW METER
- PIPE DIFFUSER

MISCELLANEOUS EQUIPMENT

- STATIC MIXER
- VERTICAL MIXER
- SIGHT GLASS
- CENTRIFUGE
- CHANNEL DIFFUSER
- COMPRESSOR OR BLOWER
- PIPE ANCHOR
- PUMP
- SLUICE GATE
- SLIDE GATE
- STOP PLATE
- BAR SCREEN
- EXPANSION TANK
- SCREW (LIFT) PUMP
- FLUME
- WEIR

VALVE LEGEND

- PINCH VALVE
- PLUG VALVE, ECCENTRIC
- PLUG VALVE, NON-ECCENTRIC
- BUTTERFLY VALVE
- GATE VALVE
- BALL VALVE
- GLOBE VALVE
- CHECK VALVE
- 3 WAY VALVE
- 4 WAY VALVE

- ANGLE VALVE
- CHLORINE INSTITUTE VALVE
- DIAPHRAGM VALVE
- THROTTLING VALVE
- FLAME ARRESTER OR CHECK
- BACKWATER VALVE
- INLINE PRESSURE RELIEF VALVE
- PRESSURE REGULATING VALVE
- PRESSURE SUSTAINING OR MAINTAINING VALVE
- VACUUM BREAKER

- THERMAL SHUTOFF VALVE
- EXPLOSION RELIEF VALVE
- HOSE FAUCET
- HOSE FAUCET W/VACUUM BREAKER
- HOSE VALVE W/HOSE NIPPLE
- BACKFLOW PREVENTER
- SAFETY RELIEF VALVE
- V — VACUUM RELIEF CHECK VALVE
- PRESSURE VACUUM RELIEF VALVE

ACTUATOR LEGEND

- E — ELECTRIC
- FLOAT
- DIAPHRAGM
- P/O — AIR/OIL TANDEM
- S — SOLENOID
- A — AIR

NOTE:

SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED ———— .
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY) ———— .
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW ON OTHER PACKAGES SHALL BE DELINEATED AS DASHED – – – – – .

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3180 - Treatment G-TRT-3.dwg	

XREF1:BORDER.dwg
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XREF3:
XREF4:
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USER:PHAMIN
DWG VER:1000

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

TREATMENT
GENERAL LEGEND AND SYMBOLS

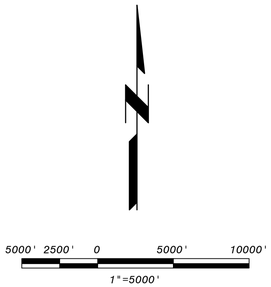
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-TRT-3
SHEET
OF

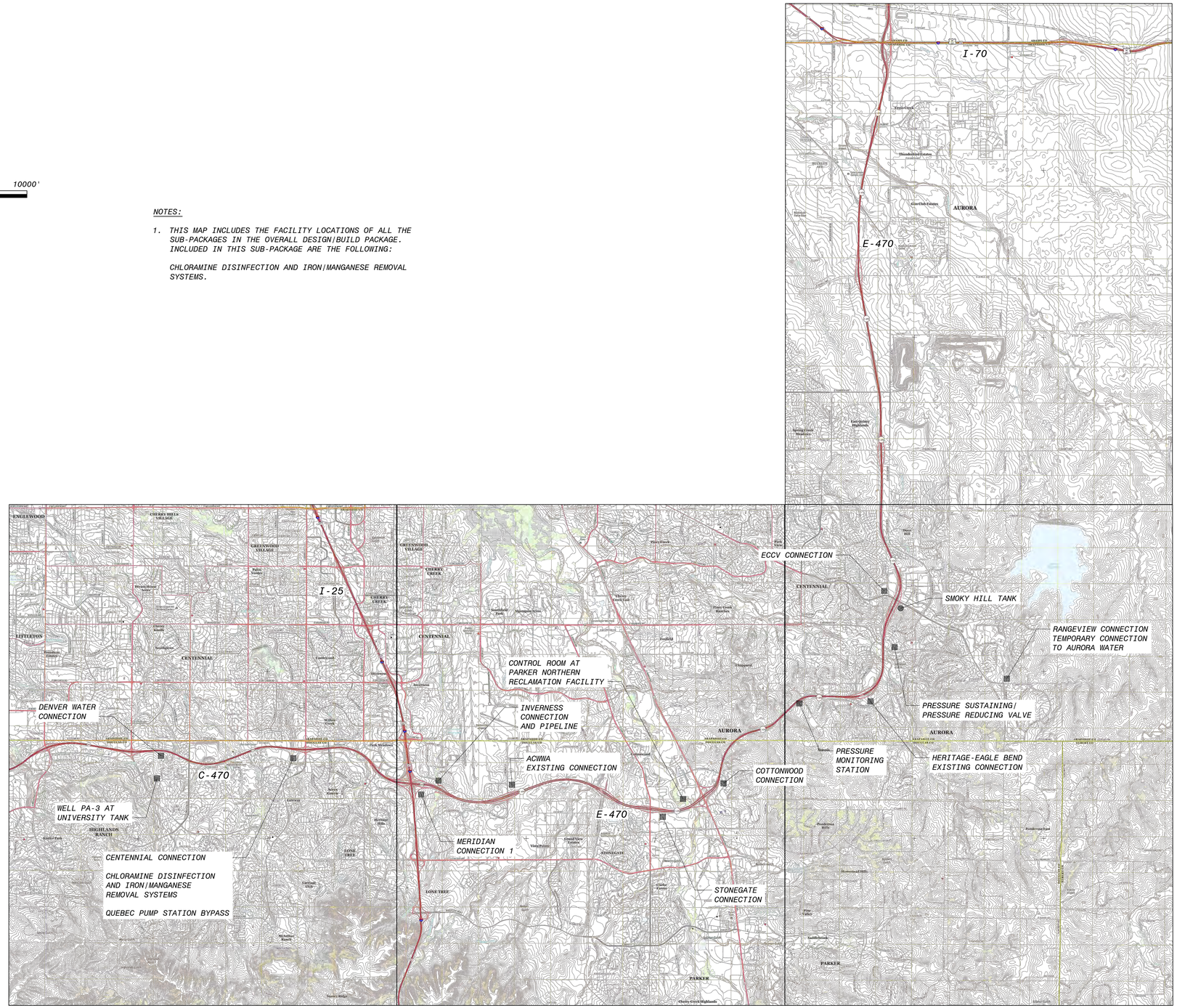
FD7000_PW
D7000



NOTES:

1. THIS MAP INCLUDES THE FACILITY LOCATIONS OF ALL THE SUB-PACKAGES IN THE OVERALL DESIGN/BUILD PACKAGE. INCLUDED IN THIS SUB-PACKAGE ARE THE FOLLOWING:

   CHLORAMINE DISINFECTION AND IRON/MANGANESE REMOVAL SYSTEMS.



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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

TREATMENT
VICINITY MAP

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-TRT-4
SHEET
OF

FD7000_PH_0000

WELL FIELD PUMPED RAW WATER

(QUEBEC TANK, NORTH WILLOWS WELLS, AND SOUTH WILLOWS WELLS)

RW

M

IN-LINE STATIC MIXER

CHLORINE ANALYZER

F1

BOOSTER PUMP (1 PER FILTER)

M

PRESSURE FILTRATION SYSTEM

BWW

FE

FILTER TO WASTE

M

IN-LINE METER (TYPICAL)

M

0-4 MGD

FILTER BYPASS (1 FOR ALL FILTERS)

FLOW CONTROL VALVE

LIQUID AMMONIUM SULFATE STORAGE AND FEED SYSTEM

LAS

M

BACK WASH SUPPLY

IN-LINE STATIC MIXER

FREE CHLORINE ANALYZER
MONO CHLORINE ANALYZER
AMMONIA ANALYZER
PH ANALYZER

FILTER EFFLUENT TO QUEBEC PUMP STATION SUCTION UNIVERSITY TANK

SHC

SODIUM HYPOCHLORITE STORAGE AND FEED SYSTEM

(USE EXISTING STORAGE IN QUEBEC PUMP STATION)

M

BACKWASH RECYCLE TO FILTER INFLUENT

AW

BACKWASH AIR

AS NEEDED

BACKWASH WASTEWATER RECYCLE PACKAGED PLANT SETTLING UNIT

M

FS

MANHOLE (SEE NOTE 1)

FILTER RESIDUALS TO CENTENNIAL WATER & SANITARY SEWER

BACKWASH EQUALIZATION TANK

NOTES:

1. MANHOLE WITH VACTOR TRUCK TRUCK ACCESS AND SLUICE GATES CAPABLE OF ISOLATING FLOW TO SEWER.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.3180 - Treatment
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XREF4:
DWG VER: 1002

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

TREATMENT
PROCESS FLOW DIAGRAM

DESIGNED: DRK
DETAILED: TSH
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APPROVED:
DATE:

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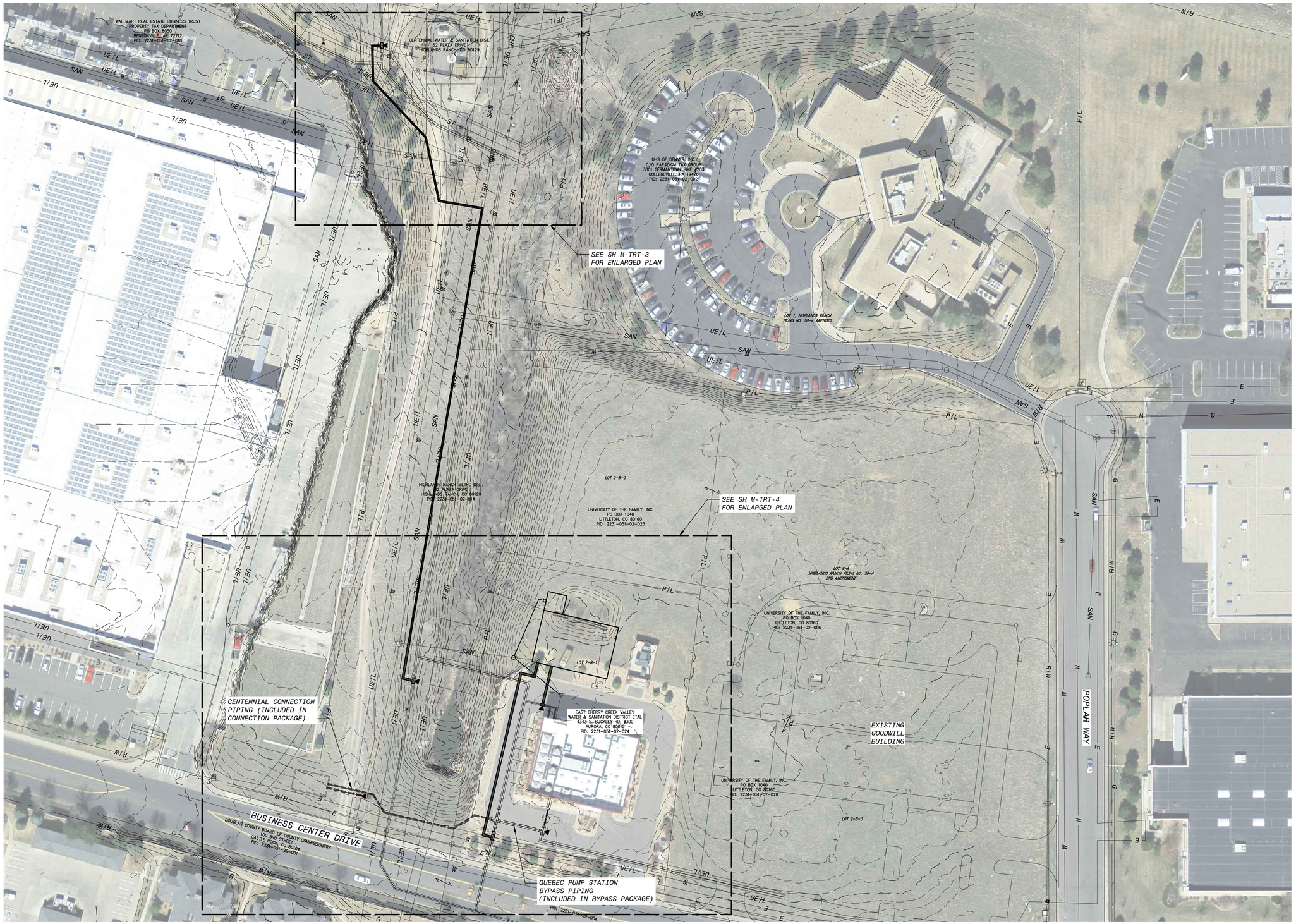
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-TRT-1
SHEET
OF

FD7000_PW
D7000



PLAN
1" = 50'-0"

50' 25' 0 50' 100'
1"=50'

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NO.	BY	CK.	APP
REVISIONS AND RECORD OF ISSUE			

DATE
50.3180 - Treatment
M-TRT-2.dwg
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XREF2:
XREF3:
XREF4:
DWG VER: 1001

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

TREATMENT
SITE PLAN AND GENERAL LAYOUT

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-TRT-2
SHEET
OF

FD7000
D7000

PLAN
1" = 30'-0"

30' 20' 10' 0 30' 60'
1"=30'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3180 - Treatment	

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XREF4:
DWG VER: 1001

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

TREATMENT
ENLARGED SITE PLAN 1

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-TRT-3
SHEET
OF

FD7000
D7000

PLAN
1" = 30'-0"

30' 20' 10' 0 30' 60'
1"=30'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3180 - Treatment	

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XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

TREATMENT
ENLARGED SITE PLAN 2

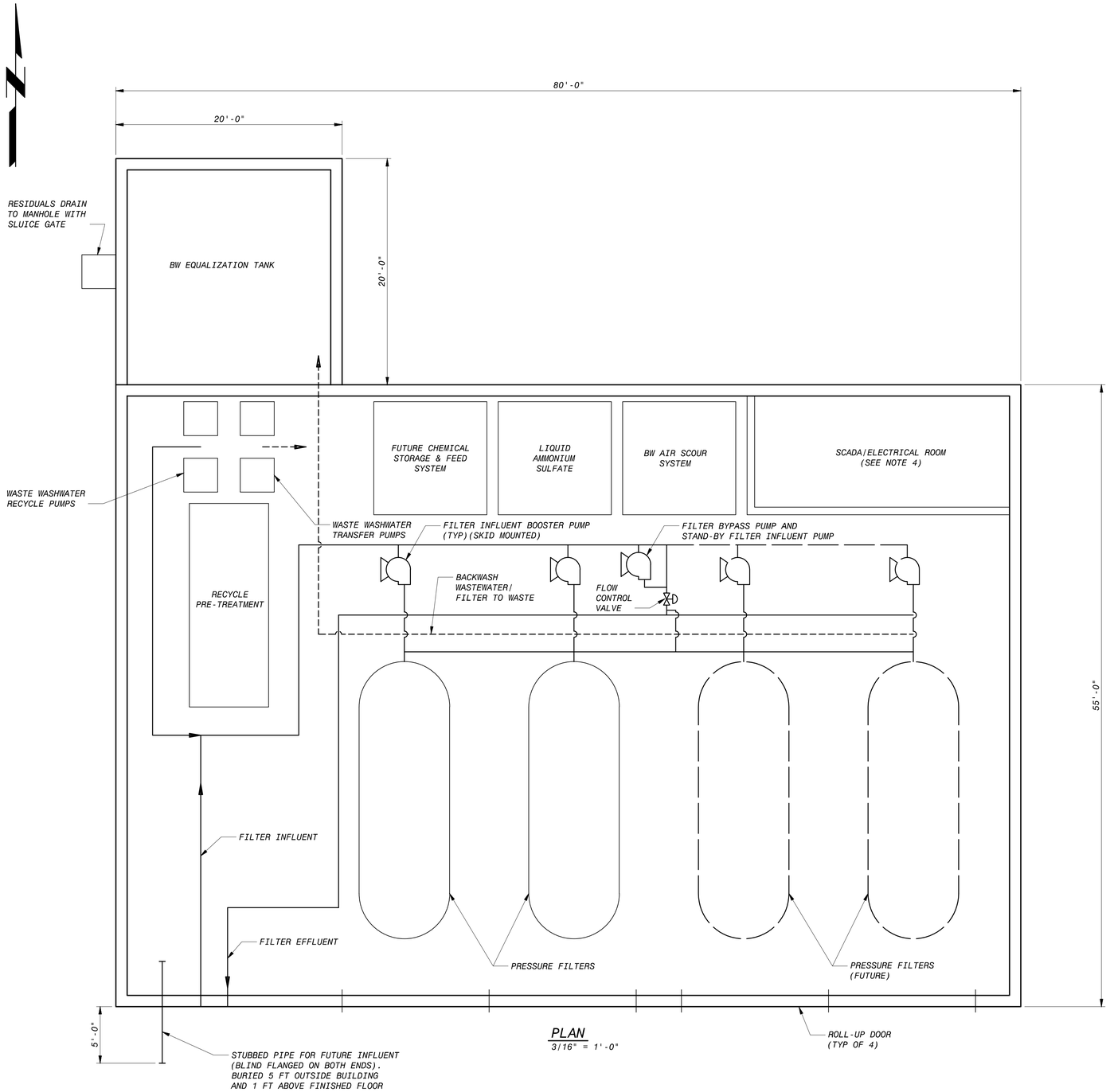
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-TRT-4
SHEET
OF

FD7000
D7000



PLAN
3/16" = 1'-0"

NOTES:

DESIGN BUILDER TO PROVIDE:

1. POLYMER STORAGE AND FEED SYSTEM FOR WASTE WASHWATER RECYCLE.
2. CONTAINMENT AREA FOR FUTURE FINISHED WATER PH ADJUSTMENT.
3. ONE MINUTE CONTACT TIME AFTER LIQUID AMMONIUM SULFATE (LAS) ADDITION BEFORE TREATED WATER BLENDING WITH BY-PASS WATER.
4. SCADA/ELECTRICAL ROOM SHALL HAVE A SEPARATE HVAC SYSTEM. ACCESS DOORS ARE NOT SHOWN.
5. LINE VALVES ARE NOT SHOWN, BUT ARE REQUIRED.
6. PROVIDE A CRANE RAIL AND TROLLEY (OR SOME OTHER MEANS) TO PICK UP BOOSTER PUMPS AND FILTER BYPASS PUMP AND TRANSPORT TO THE END OF THE PIPE RUN.

PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK.	APP

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

TREATMENT
TREATMENT PLANT EXAMPLE LAYOUT PLAN

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

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IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-TRT-5
SHEET
OF

FD7200.PM
D7000

DRAWINGS FOR

SOUTH METRO WISE AUTHORITY

DESIGN/BUILD PACKAGE CONNECTIONS

SHEET LIST

SHEET NO.	DRAWING NO.	TITLE
		CONNECTIONS
1	G-CONN-1	COVER & SHEET LIST
2	G-CONN-2	CONNECTIONS - GENERAL NOTES AND ABBREVIATIONS
3	G-CONN-3	CONNECTIONS - GENERAL LEGEND AND SYMBOLS
4	G-CONN-4	CONNECTIONS - VICINITY MAP
5	M-CONN-1	CONNECTIONS - RANGEVIEW - SITE PLAN
6	M-CONN-2	CONNECTIONS - RANGEVIEW - PLAN VIEW AND SECTION VIEW
7	M-CONN-3	CONNECTIONS - COTTONWOOD - SITE PLAN
8	M-CONN-4	CONNECTIONS - COTTONWOOD - PLAN VIEW AND SECTION VIEW
9	M-CONN-5	CONNECTIONS - MERIDIAN I-25 SITE - SITE PLAN
10	M-CONN-6	CONNECTIONS - MERIDIAN I-25 SITE - PLAN VIEW AND SECTION VIEW
11	M-CONN-7	CONNECTIONS - INVERNESS - SITE PLAN
12	M-CONN-8	CONNECTIONS - INVERNESS - PLAN VIEW AND SECTION VIEW
13	M-CONN-9	CONNECTIONS - CENTENNIAL - SITE PLAN
14	M-CONN-10	CONNECTIONS - CENTENNIAL - PLAN VIEW
15	M-CONN-11	CONNECTIONS - STATE LAND BOARD LINE PSV - SITE PLAN
16	M-CONN-12	CONNECTIONS - STATE LAND BOARD LINE PSV - PLAN VIEW AND SECTION VIEW
17	M-CONN-13	CONNECTIONS - STONEGATE - SITE PLAN
18	M-CONN-14	CONNECTIONS - STONEGATE - PLAN VIEW AND SECTION VIEW
19	M-CONN-15	CONNECTIONS - PRESSURE MONITORING LOCATION - SITE PLAN
20	M-CONN-16	CONNECTIONS - PRESSURE MONITORING LOCATION - PLAN VIEW AND SECTION VIEW
21	M-CONN-17	CONNECTIONS - MISCELLANEOUS DETAILS
22	C-CONN-1	CONNECTIONS - INVERNESS - PLAN & PROFILE 1
23	C-CONN-2	CONNECTIONS - INVERNESS - PLAN & PROFILE 2

BLACK & VEATCH
PROJECT NO.182463

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Black & Veatch Corporation
Centennial, Colorado

OCTOBER 2014

D50012

GENERAL NOTES

1. HORIZONTAL AND VERTICAL CONTROL:
AS STATED IN THE DESIGN MEMORANDUM.

2. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES AND FACILITIES MAY BE INDICATED. OVERHEAD UTILITIES ARE NOT INDICATED IN ARCHITECTURAL ELEVATIONS, PROFILE OR SECTION DRAWINGS. THE ENGINEERING INVESTIGATIONS,LOCATION, AND DESIGNATION OF SUBSURFACE UTILITIES INDICATED IN THESE CONTRACT DOCUMENTS HAS BEEN PERFORMED TO QUALITY LEVEL D IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES AS OUTLINED IN ASCE STANDARD AND GUIDELINE BULLETIN CI/ASCE 38-02 UNLESS OTHERWISE DESIGNATED.

3. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIAL AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.

4. CONTRACTOR SHALL SUBMIT A STAGING, PARKING AND MATERIAL STORAGE PLAN AS PART OF RESPONSE TO RFP.

5. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY PRECISE LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STRUCTURES, WHETHER INDICATED ON THE DRAWINGS OR NOT, IN THE FIELD IN ADVANCE OF EXCAVATING, BY CONTACTING ALL UTILITIES AND OTHER AGENCIES, AND BY PROSPECTING. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, DEMOLITION, RECONSTRUCTION, AND RECONNECTION OF EXISTING FACILITIES AS REQUIRED TO COMPLETE THE WORK. IF REQUIRED AFTER FIELD VERIFICATION, CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE ANY NECESSARY MODIFICATIONS TO PROPOSED NEW WORK.

6. BEFORE CONSTRUCTION IS STARTED, CONTRACTOR SHALL COORDINATE WITH THE OWNER OF EACH UTILITY AND DEFINE THE REQUIREMENTS AND METHODS TO ACCOMMODATE THE PROTECTION, TEMPORARY SUPPORT, ADJUSTMENT, OR RELOCATION OF ANY UTILITIES AFFECTED BY THE PROPOSED NEW WORK.

7. CONTRACTOR SHALL COMPLY WITH THE GOVERNING AGENCY NPDES CONSTRUCTION REQUIREMENTS, AND SHALL PROVIDE APPROPRIATE MITIGATION MEASURES OR PROTECTION AND RESTORATION AT ALL LOCATIONS AS REQUIRED BY THEIR OPERATIONS, AND AS DIRECTED BY ENGINEER. SPECIAL CONSTRUCTION REQUIREMENTS, TEMPORARY PROTECTIVE FENCING OR BARRICADES, SHEETING, SHORING, EROSION PROTECTION, AND SURFACE RESTORATION AT CERTAIN LOCATIONS ARE INDICATED ON THE DRAWINGS TO BRING CONTRACTOR'S ATTENTION TO SENSITIVE AREAS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL PROPERTY CORNER MARKERS. PROPERTY CORNER MARKERS DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REESTABLISHED BY A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF COLORADO.

9. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING TREES, SHRUBS, AND PLANTS UNLESS OTHERWISE NOTED.

10. CONTRACTOR SHALL INSTALL ALL PIPELINES, PAVING, WALKWAYS, AND CURB AND GUTTER AT A UNIFORM GRADE BETWEEN ELEVATIONS DEPICTED ON THE DRAWINGS.

11. FOR ALL SITE GRADING, SMOOTH PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE. PARABOLIC ROUNDING SHALL APPLY TO ALL CUT AND FILL SECTIONS.

12. FINISH GRADE NEAR ACCESS HATCHES WILL SLOPE GENERALLY AWAY FROM STRUCTURE.

13. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.

14. RESTRAINED JOINTS SHALL BE PROVIDED FOR ALL BURIED PRESSURE PIPING.

15. THE PUMP STATION AND SUPPLY AND DISCHARGE PIPELINES CAN BE TAKEN OUT OF SERVICE FOR LIMITED PERIODS OF TIME TO FACILITATE CONSTRUCTION BETWEEN THE MONTHS OF NOVEMBER AND MARCH. SHORT DURATION SHUTDOWNS DURING OTHER MONTHS MAY BE POSSIBLE IF APPROVED BY THE OWNER.

16. CONTRACTOR SHALL REPLACE EXISTING PIPE CULVERTS THAT ARE REMOVED TO INSTALL THE NEW PIPELINE WITH NEW PIPE CULVERTS OF THE SAME SIZE, MATERIAL AND CONSTRUCTION AT THE SAME LOCATION AND INVERT ELEVATION AS THOSE THAT WERE REMOVED, AND SHAPE THE DITCH TO DRAIN WITH THE REPLACED CULVERT. CONTRACTOR SHALL PROVIDE ANY TEMPORARY CULVERTS THAT MAY BE REQUIRED FOR CONTRACTOR'S OPERATIONS. CONTRACTOR SHALL COORDINATE REMOVAL AND REPLACEMENT OF ANY CULVERTS WITHIN PUBLIC RIGHT-OF-WAY WITH THE REGULATING AGENCY.

17. UNLESS OTHERWISE SPECIFIED, INDICATED ON THE DRAWINGS, OR UNLESS APPROVED IN ADVANCE BY THE OWNER, INSTALL PIPELINES SLOPING DOWNWARD FROM AN AIR VALVE. MINIMUM 5'-0" COVER AT MANHOLE OR AT MANUAL ARV TO A BLOWOFF, AND PROVIDE THE SPECIFIED MINIMUM PIPE COVER. MINIMUM PIPE COVER SHALL BE FROM THE EXISTING, PROPOSED, OR FUTURE GROUND SURFACE OR ROAD PROFILE, WHICHEVER GROUND SURFACE OR ROAD PROFILE IS APPLICABLE AS INDICATED ON THE DRAWINGS. IF THE PROPOSED GROUND SURFACE IS ABOVE THE EXISTING GROUND SURFACE INDICATED ON THE DRAWINGS AND IS NOT THE ACTUAL GROUND SURFACE AT THE TIME OF PIPELINE INSTALLATION, INSTALL THE PIPELINE TO PROVIDE MINIMUM PIPE COVER FROM THE ACTUAL GROUND SURFACE IF ACCEPTABLE TO THE ENGINEER. HIGH POINTS IN THE PIPELINE WILL NOT BE PERMITTED EXCEPT AT LOCATIONS OF AIR VALVES AS INDICATED ON THE DRAWINGS. REVIEW THE PIPELINE PROFILE REQUIREMENTS WITH THE ENGINEER PRIOR TO PREPARING LAYING SCHEDULES AND PERFORMING FIELD STAKING.

18. CONTRACTOR SHALL FIELD VERIFY PRECISE LOCATION, ELEVATION, AND ARRANGEMENT OF CONNECTIONS OF NEW PIPELINES WITH EXISTING PIPELINES BASED ON FIELD CONDITIONS, INCLUDING EXPOSING EXISTING PIPING PRIOR TO FABRICATING NEW PIPING. CONTRACTOR SHALL PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVE CLOSURES, AND HARNESSED MECHANICAL COUPLING; ROTATE FITTINGS; DEFLECT JOINTS; AND MODIFY EXISTING PIPING AS APPLICABLE AND AS REQUIRED TO MAKE CONNECTIONS, INCLUDING ADJUSTMENTS FOR ANY OFFSETS IN CENTERLINE ELEVATIONS BETWEEN PIPELINES. CONTRACTOR SHALL PROVIDE TEMPORARY PLUG WITH FACTORY OUTLET SIZED AS REQUIRED FOR CONTRACTOR'S TESTING AND DISINFECTION WORK BEFORE MAKING CONNECTION, WHEN APPLICABLE. CONTRACTOR SHALL COORDINATE MAKING EACH CONNECTION WITH THE OWNER.

19. ALL DIP SHALL BE PROTECTED WITH A MINIMUM OF ONE WRAP OF POLYETHYLENE ENCASEMENT.

20. ALL OWNERSHIP, RIGHT-OF-WAY, AND EASEMENT INFORMATION WAS OBTAINED FROM THE DOUGLAS/ARAPAHOE COUNTY CLERK AND RECORDERS OFFICE AND DOUGLAS/ARAPAHOE COUNTY ASSESSORS OFFICE. NO TITLE COMMITMENT WAS PROVIDED TO FARNSWORTH GROUP, THEREFORE, THE SURVEYOR DOES NOT GUARANTEE ALL RECORDED INFORMATION IS SHOWN HEREIN.

21. CONTRACTOR SHALL INSTALL 3 INCH WIDE BLUE, NON-DETECTABLE, MARKER TAPE LABELED "CAUTION, WATER LINE BURIED BELOW" IN TRENCH APPROXIMATELY 2' – 6" ABOVE TOP OF PIPE ELEVATION ALONG ENTIRE LENGTH OF PIPELINE.

22. CONTRACTOR SHALL INSTALL TRACER WIRE ABOVE METALLIC PIPELINE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

23. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING FENCING DISTURBED BY CONSTRUCTION ACTIVITIES ALONG THE ENTIRE PIPELINE ROUTE, WHETHER OR NOT IT IS IDENTIFIED ON THE DRAWINGS. REPLACEMENT FENCING SHALL IDENTICALLY MATCH ORIGINAL FENCING AND SHALL BE CONSTRUCTED OF ENTIRELY NEW MATERIALS UNLESS APPROVED IN ADVANCE BY OWNER.

24. CONTRACTOR SHALL OPEN CUT EXISTING GRAVEL AND ASPHALT SURFACED ROADS WHERE INDICATED ON THE DRAWINGS. THICKNESS AND TYPE OF REPLACEMENT ASPHALT, BASE COURSE, AND AGGREGATE ROAD BASE SHALL BE AS SPECIFIED AND SHALL, AS A MINIMUM, MATCH EXISTING SURFACING.

25. PIPE JOINTS MAY BE DEFLECTED AS NECESSARY TO INSTALL PIPELINE ALONG THE LINES AND GRADES SHOWN. THE PIPE VERTICAL ALIGNMENT MAY BE SLIGHTLY ADJUSTED TO ACHIEVE 5 FOOT OF COVER, HOWEVER NO NEW HIGH POINTS OR LOW POINTS SHALL BE CREATED. MAXIMUM JOINT PULL OUT FOR HORIZONTAL CURVES AND VERTICAL SLOPE CHANGES WITH DEFLECTED JOINTS SHALL BE 75 PERCENT OF THE MANUFACTURERS MAXIMUM ALLOWABLE PULL OUT FOR THE PARTICULAR TYPE OF JOINT BEING DEFLECTED. VERTICAL SLOPE CHANGES SHOWN ON THE DRAWINGS TO BE POINT DEFLECTIONS SHALL BE DISTRIBUTED OVER MULTIPLE PIPE JOINTS TO THE LIMIT THE PULL OUR PER JOINT TO THE ABOVE LIMIT.

26. CONTRACTOR TO CONFINE ITS CONSTRUCTION DISTURBANCE TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS.

27. ALL OPEN CUT ROADS AND STREETS SHALL HAVE A MINIMUM OF ONE LANE OPEN AT ALL TIMES FOR EMERGENCY ACCESS. CONTRACTOR SHALL ALSO PROVIDE TRAFFIC CONTROL AT ALL OPEN CUT ROAD AND STREET CROSSINGS.

28. REFERENCES TO EXISTING PIPE MATERIAL TYPES ARE NOT CONFIRMED. CONTRACTOR TO FIELD VERIFY AS REQUIRED.

ABBREVIATIONS

&	AND	E	EAST	N	NORTH
@	AT	EA	EACH	NC	NORMALLY CLOSED
Ø	DIAMETER	ECC	ECCENTRIC	NO	NORMALLY OPEN
#	NUMBER	ELEC	ELECTRICITY	NO.	NUMBER
%	PERCENT	EL	ELEVATION	NPT	NATIONAL PIPE THREAD
		EMBED	EMBEDDED	NS	NEAR SIDE
AB	ANCHOR BOLT	ENCSMT	ENCASEMENT		
ALUM	ALUMINUM	EOL	END OF LINE	OC	ON CENTER
AW	AIR WASH	EQUIP	EQUIPMENT	OD	OUTSIDE DIAMETER
APPROX	APPROXIMATE	EQ	EQUAL	OPNG	OPENING
A/V	AIR VAC	ESMT	EASEMENT		
		EXIST,EX	EXISTING	PC	POINT OF CURVE
BF	BLIND FLANGE	EXP	EXPANSION	PE	PLAIN END
BFV	BUTTERFLY VALVE			PI	POINT OF INTERSECTION
BLDG	BUILDING	FCV	FLOW CONTROL VALVE	PL	PLATE
BOL	BEGINNING OF LINE	FE	FILTER EFFLUENT	PRV	PRESSURE REDUCING VALVE
BV	BALL VALVE	FH	FIRE HYDRANT	PS	PIPE SUPPORT
BWW	BACKWASH WATER	FIN	FINISHED	PSF	POUNDS PER SQUARE FOOT
		FL	FLOOR	PSI	POUNDS PER SQUARE INCH
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION	FLG	FLANGE	PSV	PRESSURE SUSTAINING VALVE
		FM	FLOWMETER	PT	POINT OF TANGENCY
CLR	CLEAR	FS	FAR SIDE, FILTER SLUDGE	PVC	POLYVINYL CHLORIDE
CLSM	CONCRETE LOW STRENGTH MATERIAL	FT	FEET	R	RADIUS
CMP	CORRUGATED METAL PIPE	GAL	GALLON(S)	RCP	REINFORCED CONCRETE PIPE
CONC	CONCRETE	GALV	GALVANIZED	RED	REDUCER
CONST	CONSTRUCTION	GR	GRADE	REINF	REINFORCING
CONT	CONTINUOUS, CONTINUATION	G-R	GORMAN-RUPP PUMPS	REQD	REQUIRED
COR	CORNER	GV	GATE VALVE	RESTRD	RESTRAINED
CP	CONTROL POINT			ROW	RIGHT OF WAY
CPLG	COUPLING	HDPE	HIGH DENSITY POLYURETHANE	RW	RAW WATER
CRB	CONCRETE REACTION BLOCK	HORIZ	HORIZONTAL	S	SOUTH, SLOPE
CISP	CAST IRON SOIL PIPE	HMC	HARNESSED MECHANICAL COUPLING	SAN	SANITARY SEWER
CTRS	CENTERS	HWY	HIGHWAY	SEC	SECTION
CU	CUBIC			SH(SHT)	SHEET
CWSD	CENTENNIAL WATER AND SANITATION DISTRICT	ID	INSIDE DIAMETER	SHC	SODIUM HYPOCHLORITE
		INV,IE	INVERT ELEVATION	SIM	SIMILAR
C/L	CENTER LINE	IRR	IRRIGATION	SMW	SOUTH METRO WATER SUPPLY AUTHORITY
DET	DETAIL			SPEC	SPECIFICATION
DIA	DIAMETER	JT	JOINT	SQ	SQUARE
DIM	DIMENSION			SS	STAINLESS STEEL
DIP	DUCTILE IRON PIPE	LAS	LIQUID AMMONIUM SULFATE	ST	STEEL, STORM
DMJ	DISMANTLING JOINT			STA	STATION
DN	DOWN	MAX	MAXIMUM	STD	STANDARD
DWG	DRAWING	MC	MECHANICAL COUPLING		
DWLS	DOWELS	MECH	MECHANICAL	TEMP	TEMPORARY
		MFR	MANUFACTURER	T.O.P.	TOP OF PIPE
		MH	MANHOLE	TYP	TYPICAL
		MIN	MINIMUM		
		MISC	MISCELLANEOUS	USGS	UNITED STATES GEOLOGICAL SURVEY
		MJ	MECHANICAL JOINT	UTIL	UTILITY
				VERT	VERTICAL
				VPI	VERTICAL POINT OF INTERSECTION
				W	WEST
				W/	WITH
				WWF	WELDED WIRE FABRIC

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE

50_3140 - Connections
G-CONN-2.dwg
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XREF1:BORDER.dwg
XREF2:G-GNRL1-XREF.dwg
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DWG VER:7000

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
GENERAL NOTES AND ABBREVIATIONS

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-CONN-2
SHEET
OF

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D7000

GENERAL LEGEND

- SURFACED STREET, ROAD OR DRIVE
- SURFACED STREET, ROAD OR DRIVE WITH CURBS
- NON-SURFACED STREET, ROAD OR DRIVE
- CONCRETE WALK
- CB — CATCH BASIN
- MANHOLE
- DRAINAGE COURSE OR FLOW LINE
- 326 — EXISTING GROUND CONTOUR
- 326 — FINISH GRADE CONTOUR
- BANK OR SLOPE LINES
- •#3 OR B3 — T.H.#3 — TEST HOLE AND NUMBER
- SURVEY LINE WITH PI, PT, OR POT
- CONCRETE ENCASEMENT - PLAN
- CONCRETE REACTION BLOCKING AT BEND, PLUG OR TEE
- CULVERTS
- TUNNEL CASING - PLAN
- SMALLER THAN 24" / 24" AND LARGER — EXISTING
- SMALLER THAN 24" / 24" AND LARGER — NEW — GENERAL LAYOUT YARD PIPING
- NEW WATER LINE OR SEWER IN PROFILE
- TUNNEL CASING - PROFILE
- LOC — LIMITS OF CONSTRUCTION
- PE/L — PERMANENT EASEMENT LINE
- TE/L — TEMPORARY EASEMENT LINE
- UE/L — UTILITY EASEMENT LINE
- R/W — RIGHT-OF-WAY LINE
- S/L — SURVEY LINE / SECTION LINE
- P/L — PROPERTY LINE
- W — WATER LINE (UNDERGROUND)
- G — GAS LINE (UNDERGROUND)
- T — TELEPHONE (UNDERGROUND)
- E — ELECTRICAL (UNDERGROUND)
- OHE — POWER OR TELEPHONE LINES (OVERHEAD)
- FO — FIBER OPTIC (UNDERGROUND)
- SAN — SANITARY SEWER (UNDERGROUND)
- SS — STORM SEWER (UNDERGROUND)
- X — FENCE
- X — X — SILT FENCE
- CENTERLINE
- (G) / (W) — WATER OR GAS VALVE
- (WM) / (GM) — WATER OR GAS METER
- TELEPHONE OR POWER POLE WITH GUY ANCHOR
- FH — FIRE HYDRANT
- Y — YARD HYDRANT
- UTILITY POLE
- TRAFFIC SIGNAL
- TRAFFIC SIGN
- S — SIGN

- BUILDINGS, STRUCTURES
- STRUCTURES UNDERGROUND
- FUTURE BUILDINGS, STRUCTURES
- RAILROAD, EACH TRACK
- 1 / AC45 — SECTION NUMBER OR DETAIL LETTER; DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS; OR WHERE SECTION IS CUT OR DETAIL IS NOTED
- 1 / A045 — DOOR, WINDOW AND LOUVER SCHEDULE REFERENCE; WALL ELEVATION
- D / 4 — ABBREVIATION; SCHEDULE NUMBER
- F102 — ROOM NUMBER; AREA DESIGNATION
- PV / 10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- PV-10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- EQUIP / CALLOUT — EQUIPMENT REPRESENTATION WITH CALLOUT
- EXISTING FACILITY TO BE DEMOLISHED OR REMOVED
- 123 — CONTROL POINT, BENCH MARK, AND STATION NUMBER
- SOIL TEST HOLE
- SS — SANITARY SEWER MANHOLE
- ST — STORM SEWER MANHOLE
- HEDGE, BRUSH, SHRUBS, WOODS
- 10" — DECIDUOUS TREE AND TRUNK DIAMETER
- DO NOT DISTURB EXISTING VEGETATION. EXISTING VEGETATION TO REMAIN AND BE PROTECTED
- CP — INDICATES CATHODIC PROTECTION TEST STATION
- F — INDICATES FIBER PULL BOX
- INDICATES SPOT SHOT ON TOP OF 12" OR 24" WATER LINE

MATERIALS LEGEND

- EARTH OR GRADE
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- ROCK
- NEW CONCRETE
- EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE
- BRICK, FACE
- BRICK, COMMON
- CONCRETE MASONRY UNITS (CMU)
- CUT STONE OR SAND FILL, GROUT, MORTAR, CLSM, AND PLASTER
- RIPRAP
- CHECKERED PLATE
- STEEL (FOR 1"SCALE & LARGER)
- STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER)
- BAR GRATING (LINES IN DIRECTION OF SPAN)
- ALUMINUM
- INSULATION (BATT)
- INSULATION (RIGID)

PIPING SYSTEMS

NEW PIPING	CDWR	CONDENSER WATER RETURN	HWR	HEATING SYSTEM WATER RETURN	NPW	WATER, NON-POTABLE
UNDERGROUND PIPING	CDWS	CONDENSER WATER SUPPLY	HWS	HEATING SYSTEM WATER SUPPLY	NPHW	WATER, NON-POTABLE HOT
EXISTING PIPING	Co2(G)	CARBON DIOXIDE GAS	HW	WATER, POTABLE HOT	OX	OXYGEN
FUTURE PIPING	Co2(S)	CARBON DIOXIDE SOLUTION	HWC	HOT WATER CIRCULATING	OZ	OZONE
A — AIR (COMPRESSED)	CW	WATER, COLD	IA	INSTRUMENT AIR	OF	OVERFLOW
ALUM — ALUMINUM SULFATE (ALUM)	DW	DISTILLED WATER	PERM	POTASSIUM PERMANGANATE	POLY	POLYMER SOLUTION
AR — ARGON	FeCl	FERRIC CHLORIDE	LIME	LIME	RF	REFRIGERANT
CRW — CHEMICAL RESISTANT ACID WASTE	FeS	FERRIC SULFATE	PG	LP GAS (PROPANE)	SS	STORM DRAIN
CRV — CHEMICAL RESISTANT ACID WASTE VENT	F	FIRE PROTECTION WATER SYSTEM	N	NITROGEN	SG	SLUDGE GAS
TW — TEMPERED OR BLENDED WATER	FL	FLUORIDE	SA	SODA ASH	SI	SILICA
C — CARBON SLURRY	FOR	FUEL OIL RETURN	NaOH	SODIUM HYDROXIDE	PD	SUMP PUMP DISCHARGE
ACET — ACETYLENE	FOS	FUEL OIL SUPPLY	SP	SODIUM HEXAMETAPHOSPHATE (PHOSPHATE)	SAN	SANITARY SEWER
CWR — CHILLED WATER RETURN	FOV	FUEL OIL VENT	NaOCL	SODIUM HYPOCHLORITE	V	VENT
CWS — CHILLED WATER SUPPLY	G	GAS, NATURAL	AMM(G)	AMMONIA GAS	VAC	VACUUM
CL(G) — CHLORINE GAS	H	HYDROGEN	AMM(S)	AMMONIA SOLUTION	W	WATER
CL(L) — CHLORINE LIQUID	HE	HELIUM	NO	NITROUS OXIDE		
CL(S) — CHLORINE SOLUTION	HP	HYDROGEN PEROXIDE				
	PA	PHOSPHORIC ACID				

PIPING ACCESSORIES LEGEND

- BLIND FLANGE
- CAP OR PLUG
- CO — CLEANOUT
- CROSS
- DIAPHRAGM SEAL
- ELBOW
- ELBOW DOWN
- ELBOW TURNING UP
- SIZE — HOSE CONNECTION
- Q — QUICK COUPLING
- REDUCER
- RUPTURE DISK
- TEE
- TEE LINE DOWN
- TEE LINE UP
- WYE
- WYE STRAINER
- WYE STRAINER WITH BLOWOFF
- DRAIN OR BELL-UP
- CALIBRATING COLUMN
- TRAP
- UNION
- WALL SLEEVE
- AT — AUTOMATIC DRAIN TRAP
- DT — DRIP TRAP
- DUPLEX STRAINER
- EXPANSION COMPENSATOR
- F — INLINE FILTER
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE CONNECTOR
- HOSE REEL
- INJECTOR, EDUCTOR, BLENDER
- ORIFICE PLATE
- PIPE GUIDE
- S — SEDIMENT TRAP
- S — STRAINER
- SUCTION DIFFUSER
- SURGE CHAMBER
- VENT - SCREENED
- VENT
- P — PRESSURE GAUGE W/SNUBBER
- SIGHT FLOW INDICATOR
- T — TEMPERATURE INDICATOR
- THERMOMETER
- ELECTROMAGNETIC/ULTRASONIC FLOWMETER
- PITOT TUBE
- ROTAMETER
- TURBINE OR PROPELLOR FLOWMETER
- M — SET STOP METER
- VENTURI
- FM — FLOW METER
- PIPE DIFFUSER

MISCELLANEOUS EQUIPMENT

- STATIC MIXER
- VERTICAL MIXER
- SIGHT GLASS
- CENTRIFUGE
- CHANNEL DIFFUSER
- COMPRESSOR OR BLOWER
- PIPE ANCHOR
- PUMP
- SLUICE GATE
- SLIDE GATE
- STOP PLATE
- BAR SCREEN
- EXPANSION TANK
- SCREW (LIFT) PUMP
- FLUME
- WEIR

VALVE LEGEND

- PINCH VALVE
- PLUG VALVE, ECCENTRIC
- PLUG VALVE, NON-ECCENTRIC
- BUTTERFLY VALVE
- GATE VALVE
- BALL VALVE
- GLOBE VALVE
- CHECK VALVE
- 3 WAY VALVE
- 4 WAY VALVE
- ANGLE VALVE
- CHLORINE INSTITUTE VALVE
- DIAPHRAGM VALVE
- THROTTLING VALVE
- FLAME ARRESTER OR CHECK
- BACKWATER VALVE
- INLINE PRESSURE RELIEF VALVE
- PRESSURE REGULATING VALVE
- PRESSURE SUSTAINING OR MAINTAINING VALVE
- VACUUM BREAKER
- THERMAL SHUTOFF VALVE
- EXPLOSION RELIEF VALVE
- HOSE FAUCET
- HOSE FAUCET W/VACUUM BREAKER
- HOSE VALVE W/HOSE NIPPLE
- BACKFLOW PREVENTER
- SAFETY RELIEF VALVE
- V — VACUUM RELIEF CHECK VALVE
- PRESSURE VACUUM RELIEF VALVE

ACTUATOR LEGEND

- E — ELECTRIC
- FLOAT
- DIAPHRAGM
- P/O — AIR/OIL TANDEM
- S — SOLENOID
- A — AIR

NOTE:

SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED ———— .
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY) ———— .
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW ON OTHER PACKAGES SHALL BE DELINEATED AS DASHED – – – – – .

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3140 - Connections	
				G-CONN-3.dwg	

XREF1:BORDER.dwg
XREF2:G-GNRL2.XREF.dwg
XREF3:
XREF4:

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USER: PHAMIN
DWG VER: 1000

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
GENERAL LEGEND AND SYMBOLS

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-CONN-3
SHEET
OF

FD7000_PW
D7000

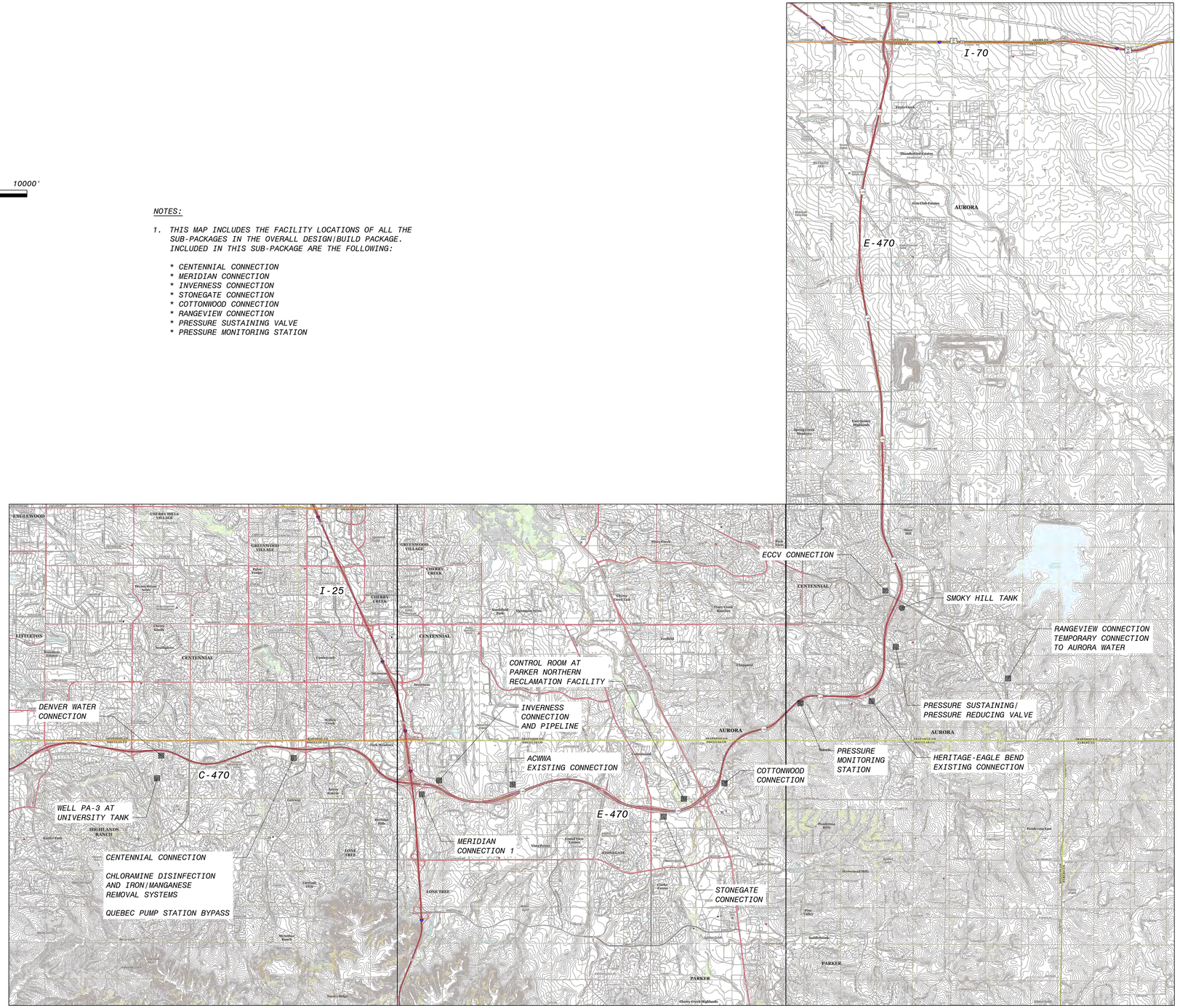
5000' 2500' 0 5000' 10000'

1"=5000'

NOTES:

1. THIS MAP INCLUDES THE FACILITY LOCATIONS OF ALL THE SUB-PACKAGES IN THE OVERALL DESIGN/BUILD PACKAGE. INCLUDED IN THIS SUB-PACKAGE ARE THE FOLLOWING:

   * CENTENNIAL CONNECTION
   * MERIDIAN CONNECTION
   * INVERNESS CONNECTION
   * STONEGATE CONNECTION
   * COTTONWOOD CONNECTION
   * RANGEVIEW CONNECTION
   * PRESSURE SUSTAINING VALVE
   * PRESSURE MONITORING STATION



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	DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK.	APP

50.3140 - Connections
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DWG VER: 1000

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
VICINITY MAP

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-CONN-4
SHEET
OF

FD7000_PH
07000

PROPOSED POWHATON ROAD ROW LINE
EXIST PROPERTY LINE
PROPOSED EDGE OF POWHATON ROAD
PROPOSED SIDEWALK (BY OTHERS) (ANTICIPATED TO BE COMPLETED BY JANUARY 2015)
SOUTHSHORE RECOVERY ACQUISITION, LLC
1251 AVENUE OF THE AMERICAS, SUITE F150
NEW YORK, NY 10020
PID: 2071-00-0-00-280
EXIST 24" PVC AURORA WATER ZONE 8 PIPELINE
EXIST 36" STEEL AURORA WATER ZONE 7 PIPELINE
FUTURE EXPANSION OF POWHATON ROAD (BY OTHERS) (CONCRETE PAVEMENT) (ANTICIPATED TO BE COMPLETED BY JANUARY 2015)
CONCRETE THRUST BLOCK
36"x24" WELDED OUTLET
N=1637425.25
E=3231257.72
A M-AW-3
24" GATE VALVE
WATER LINE CROSSING
ENTRANCE SIGN (BY OTHERS)
24" BFV (TYP OF 3)
PROPOSED SMOKY HILL EDGE OF ROAD
ANTICIPATED TO BE COMPLETED BY JANUARY 2015
ANTICIPATED TO BE COMPLETED IN SUMMER OR FALL OF 2015
FUTURE EXPANSION OF POWHATON ROAD (BY OTHERS) (CONCRETE PAVEMENT) (ANTICIPATED TO BE COMPLETED BY JANUARY 2015)
NORTH/SOUTH ALIGNMENT TO BE ADJUSTED TO BE LOCATED IN THE CENTER OF STREET CONCRETE PANELS. ONLY FULL CONCRETE PANELS IN THE STREET CAN BE REMOVED AND REPLACED (NO PARTIAL PANEL REMOVAL/REPLACEMENT)
PROPOSED PERMANENT EASEMENT FOR AURORA WATER AND RANGEVIEW (AREA = 5,597 SQ FT)
PROPOSED LOT LINES
TEMPORARY CONNECTION TO AURORA WATER (NOT INCLUDED IN CONNECTIONS PACKAGE)
RANGEVIEW CONNECTION (LOCAL)
ABOVE GRADE SCADA PANELS, COMMUNICATIONS ANTENNA, AND ELECTRICAL PANELS SHALL BE LOCATED WITHIN THE PERMANENT EASEMENT
SOUTHSHORE RECOVERY ACQUISITION, LLC
1251 AVENUE OF THE AMERICAS, SUITE F150
NEW YORK, NY 10020
PID: 2071-28-2-00-006
EXIST PROPERTY LINE
10" GATE VALVE (TYP OF 2)
BLOWOFF LOCATED WITHIN PERMANENT EASEMENT. TYPE OF BLOWOFF TO BE DETERMINED
PROPOSED SMOKY HILL ROAD ROW LINE
PROPOSED SIDEWALK (BY OTHERS) (ANTICIPATED TO BE COMPLETED IN SUMMER OR FALL OF 2015)
PROPOSED LANDSCAPE AREA (BY OTHERS) (ANTICIPATED TO BE COMPLETED IN SUMMER OR FALL OF 2015)
RANGEVIEW CONNECTION
A M-CONN-2
24" CROSS W/ 24"x10" REDUCER TO RANGEVIEW
FUTURE CONCRETE PAVEMENT
FUTURE ASPHALT PAVEMENT
PROPOSED EXPANSION OF SMOKY HILL ROAD (BY OTHERS) (ANTICIPATED TO BE COMPLETED IN SUMMER OR FALL OF 2015)
EXIST PROPERTY LINE
EXIST 36" STATE LAND BOARD LINE
10" GATE VALVE
36"x10" TEE
N=1637316.22
E=3231580.43
36"x24" TEE
N=1637315.72
E=3231476.19
24" BFV
NEW ACCESS MANWAY
STA 187+90
EXIST ACCESS MANHOLE
STA 188+00
EXIST 30" BFV VAULT
CONCRETE THRUST BLOCK BEHIND TEE
CONCRETE THRUST BLOCK BEHIND TEE
NEXT BLOW OFF
STA 175+00
NEXT LINE VALVE
STA 168+50
E SMOKY HILL PKWY
S POWHATON RD
EXIST 6" BUBBLE-UP BO MANHOLE STA 191+50
NEXT LINE VALVE STA 206+25
HIGH PLAINS METRO DISTRICT
450 E. 17TH AVE. #400
DENVER, CO 80203
RID: 2071-33-2-08-017

PLAN
1" = 20'-0"

20' 10' 0 20' 40'
1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3140 - Connections M-CONN-1.dwg	

XREF1:
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XREF3:
XREF4:
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USER: PWAMIN
DWG VER: 1004

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
RANGEVIEW
SITE PLAN

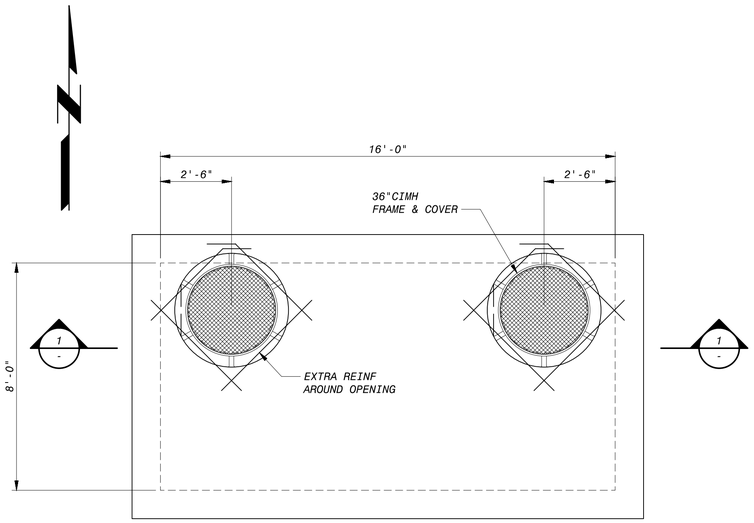
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

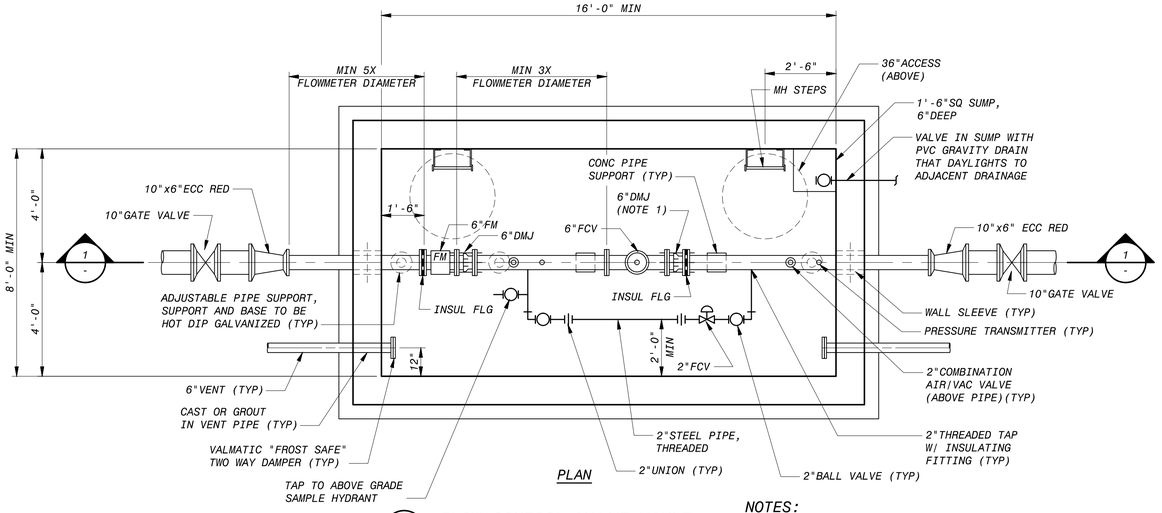
PROJECT NO.
182463

M-CONN-1
SHEET
OF

FD7000
D7000



TOP PLAN
3/8" = 1'-0"

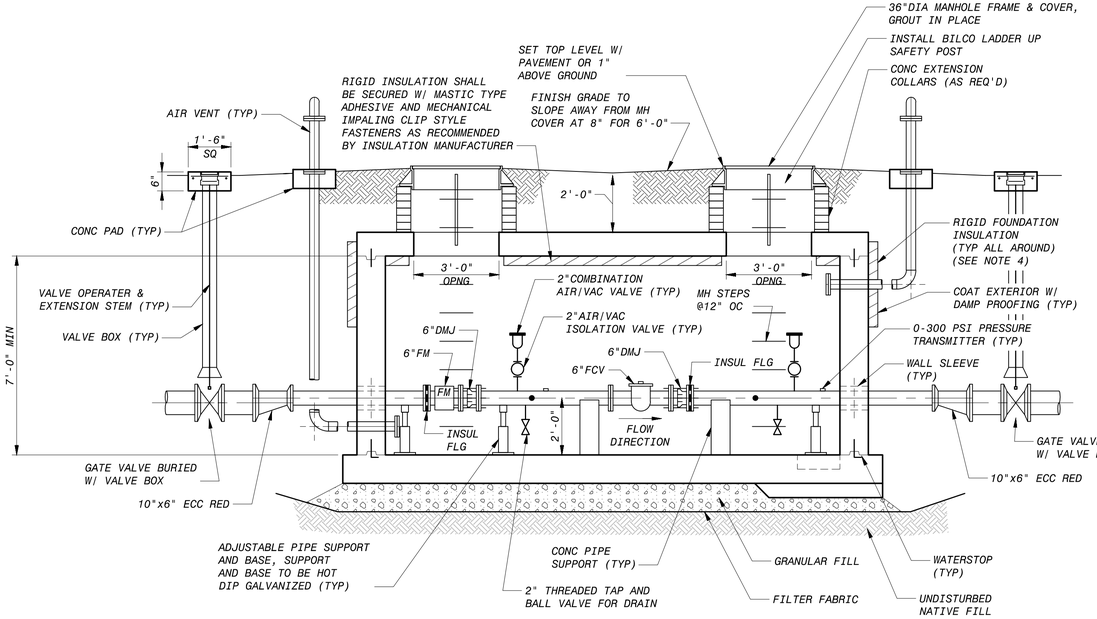


PLAN

A FLOW CONTROL VALVE VAULT
M-CONN-1 3/8" = 1'-0"

NOTES:

1. DESIGN-BUILDER TO ENSURE THAT THE FLANGE PATTERNS FOR THE PIPE, VALVES, FLOWMETER, AND DISMANTLING JOINTS ARE COMPATIBLE.
2. THE 2 INCH BYPASS LINE SHALL HAVE AT LEAST ONE ADJUSTABLE PIPE SUPPORT.
3. THE 2 INCH BYPASS PIPE, VALVES, AND FITTINGS ARE TO HAVE A MINIMUM WORKING PRESSURE RATING OF 250 PSI (WITH A TEST GRADIENT OF 1.5 TIMES WORKING PRESSURE).
4. ALL JOINTS SHALL BE RESTRAINED.
5. PSV PILOT LINES SHALL BE INSULATED.
6. PRESSURE TRANSMITTER TAPS TO BE 1/2" WITH BALL VALVE WITH MINIMUM WORKING PRESSURE RATING OF 250 PSI.
7. FINAL PIPE AND VALVE SIZES DETERMINED BY DESIGN-BUILDER.



1 SECTION
- 3/8" = 1'-0"

NOTES:

1. SHEETING OR SHORING MAY BE REQUIRED FOR VAULT EXCAVATIONS.
2. ALL PIPING IN VAULT IS TO BE DUCTILE IRON, UNLESS NOTED OTHERWISE.
3. ENTIRE VAULT IS TO BE WATERTIGHT.
4. PROVIDE 2" OF RIGID INSULATION ALL AROUND STRUCTURE. TERMINATE INSULATION 6" BELOW GRADE AND EXTEND DOWN 4'-6". RIGID FOUNDATION INSULATION SHALL BE ASTM C578, TYPE 4, EXTRUDED CELLULAR POLYSTYRENE FOAM BOARD W/ WATER VAPOR TRANSMISSION FACTOR OF 1.1 PERM-IN MAX, MIN R VALUE OF 5 PER INCH, AS MANUFACTURED BY DOW STYROFOAM OR FOAMULAR. MASTIC ADHESIVE AS RECOMMENDED BY MANUFACTURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

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USER: PHAMIN
DWG VER: 1000
XREF1: BORDER.dwg
XREF2: C-2D-RANGEVIEW-VAULT.dwg
XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
RANGEVIEW
PLAN VIEW AND SECTION VIEW

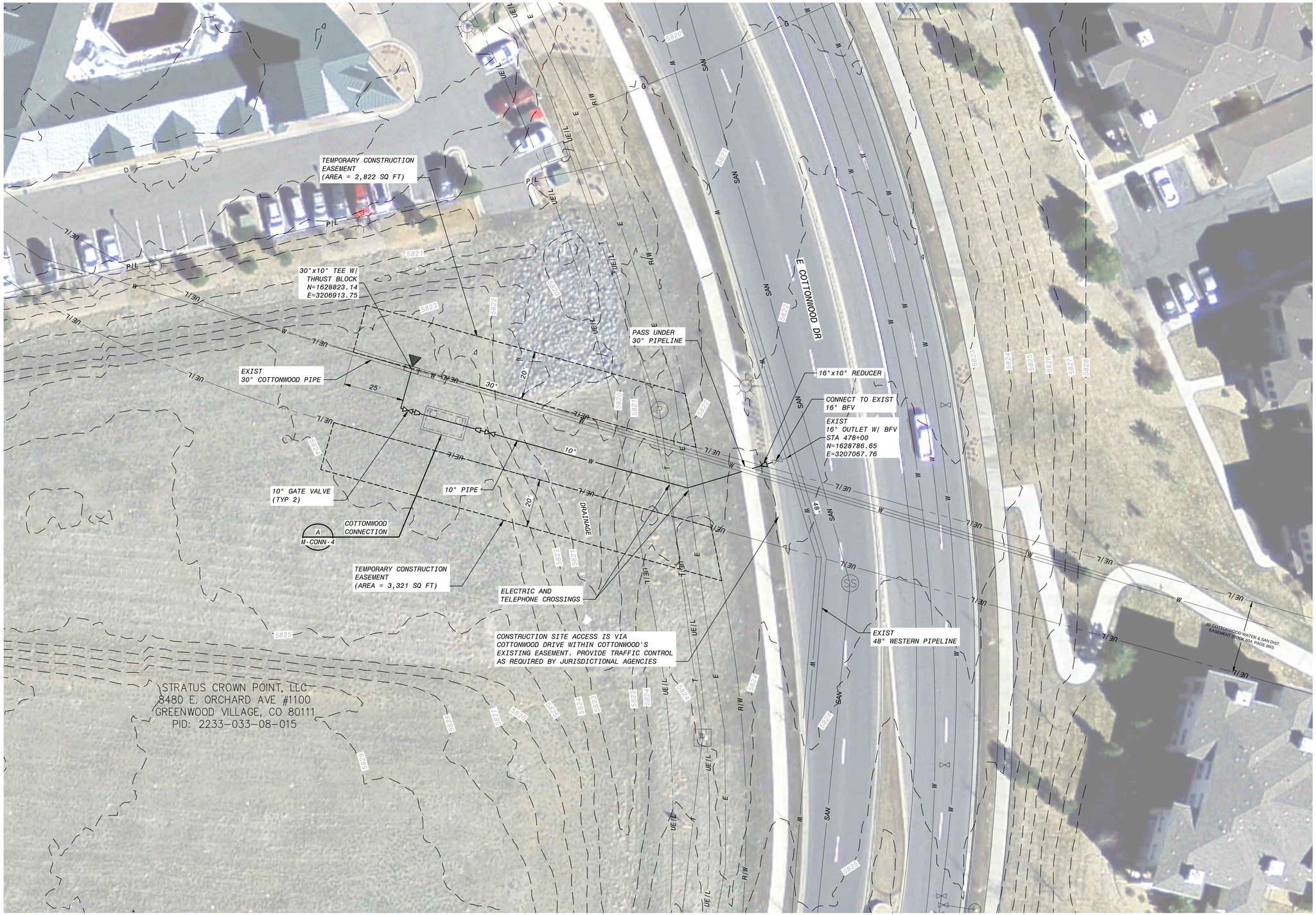
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-2
SHEET
OF

FD7000_PW
D7000



PLAN
1" = 20'-0"

20' 10' 0 20' 40'
1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3140	- Connections M-CONN-3.dwg

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USER: PHAMIN
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XREF2:
XREF3:
XREF4:
DWG VER: 1001

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
COTTONWOOD
SITE PLAN

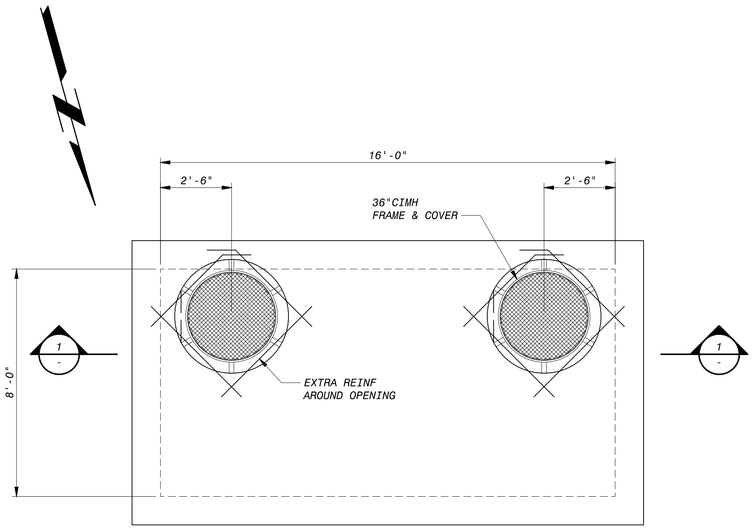
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

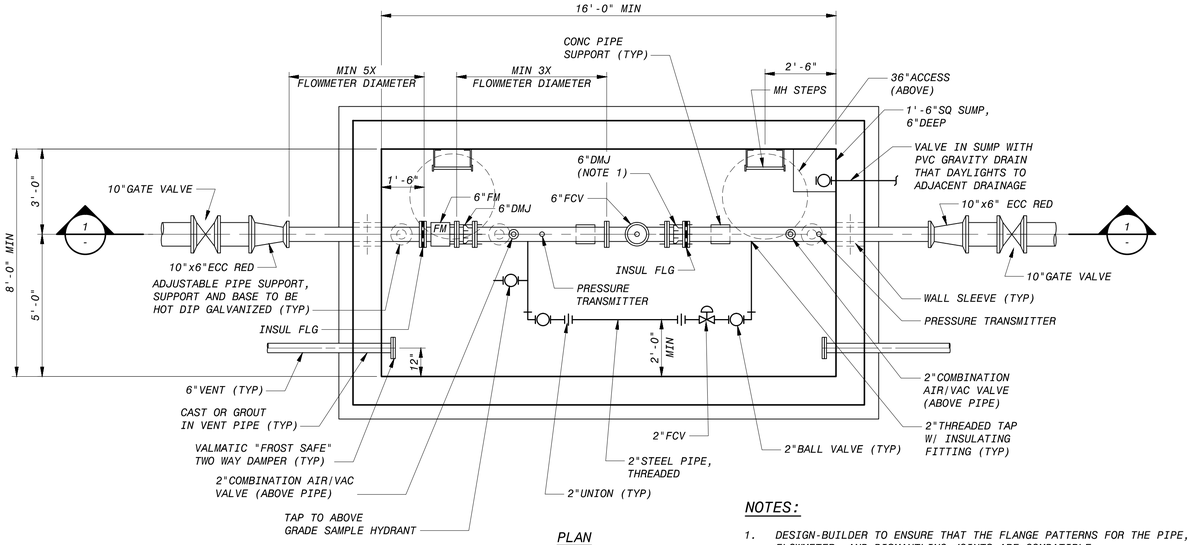
PROJECT NO.
182463

M-CONN-3
SHEET
OF

FD7000
D7000



TOP PLAN
3/8" = 1'-0"

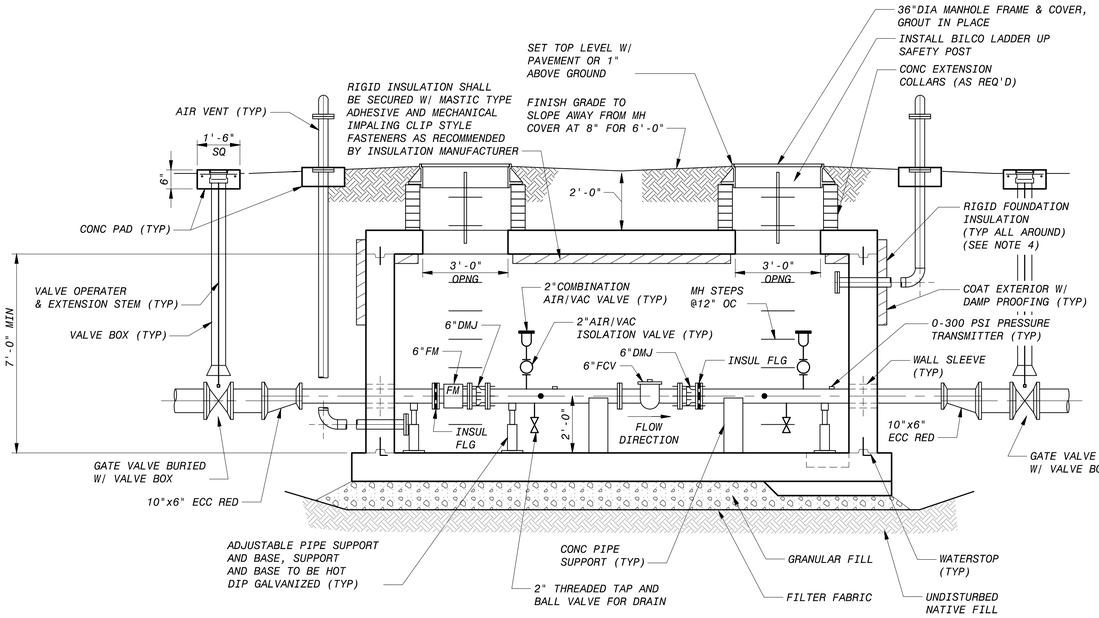


PLAN

A FLOW CONTROL VALVE VAULT
M-CONN-3 3/8" = 1'-0"

NOTES:

1. DESIGN-BUILDER TO ENSURE THAT THE FLANGE PATTERNS FOR THE PIPE, VALVES, FLOWMETER, AND DISMANTLING JOINTS ARE COMPATIBLE.
2. THE 2 INCH BYPASS LINE SHALL HAVE AT LEAST ONE ADJUSTABLE PIPE SUPPORT.
3. THE 2 INCH BYPASS PIPE, VALVES, AND FITTINGS ARE TO HAVE A MINIMUM WORKING PRESSURE RATING OF 250 PSI (WITH A TEST GRADIENT OF 1.5 TIMES WORKING PRESSURE).
4. ALL JOINTS SHALL BE RESTRAINED.
5. PSV PILOT LINES SHALL BE INSULATED.
6. PRESSURE TRANSMITTER TAPS TO BE 1/2" WITH BALL VALVE WITH MINIMUM WORKING PRESSURE RATING OF 250 PSI.
7. FINAL PIPE AND VALVE SIZES DETERMINED BY DESIGN-BUILDER.



1 SECTION
- 3/8" = 1'-0"

NOTES:

1. SHEETING OR SHORING MAY BE REQUIRED FOR VAULT EXCAVATIONS.
2. ALL PIPING IN VAULT IS TO BE DUCTILE IRON, UNLESS NOTED OTHERWISE.
3. ENTIRE VAULT IS TO BE WATERTIGHT.
4. PROVIDE 2" OF RIGID INSULATION ALL AROUND STRUCTURE. TERMINATE INSULATION 6" BELOW GRADE AND EXTEND DOWN 4'-6". RIGID FOUNDATION INSULATION SHALL BE ASTM C578, TYPE 4, EXTRUDED CELLULAR POLYSTYRENE FOAM BOARD W/ WATER VAPOR TRANSMISSION FACTOR OF 1.1 PERM-IN MAX, MIN R VALUE OF 5 PER INCH, AS MANUFACTURED BY DOW STYROFOAM OR FOAMULAR. MASTIC ADHESIVE AS RECOMMENDED BY MANUFACTURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

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PLOTTED:
USER: PHAMIN

XREF1: BORDER.dwg
XREF2: C-2D-COTTONWOOD-VAULT.dwg
XREF3:
XREF4:
DWG VER: 1000

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
COTTONWOOD
PLAN VIEW AND SECTION VIEW

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-4
SHEET
OF

FD7000_PW
D7000

NEXT LINE VALVE
STA 181+73
NEXT ACCESS MANWAY
STA 151+32

MERIDIAN-MB INVESTMENTS, LLC
6380 S. FIDDLERS GREEN CIR #400
GREENWOOD VILLAGE, CO 80111
PID: 2231-023-09-004

CONSTRUCTION SITE ACCESS FROM INTERSECTION OF JAMICIA STREET AND CENTENNIAL TRAIL AND THEN ALONG WESTERN PIPELINE FOLLOWING EXISTING TWO-TRACK

MERIDIAN-MB INVESTMENTS, LLC
6380 S. FIDDLERS GREEN CIR #400
GREENWOOD VILLAGE, CO 80111
PID: 2231-023-09-007

25' UTILITY EASEMENT

EXIST
RIGHT OF WAY

EXIST
54" WESTERN PIPELINE

EXIST ARV
STA 141+78

10" GATE VALVE
(TYP OF 2)

MERIDIAN 1-25
CONNECTION

M-CONN-6

MERIDIAN-MB INVESTMENTS, LLC
6380 S. FIDDLERS GREEN CIR #400
GREENWOOD VILLAGE, CO 80111
PID: 2231-023-09-009

TANK AND/OR BOOSTER
PUMPING VAULT
(BY OTHERS)

10" OUTLET
N=1626819.43
E=3178979.66

EXIST
PROPERTY LINE

EXIST
STA 141+11

MERIDIAN
CONNECTION
(LOCAL)

BY OTHERS

NEXT LINE VALVE
STA 129+88

EXIST ACCESS MANWAY
(39.551299, -104.868763)
INSTALL 24"x10" TEE AT EXIST
24" ACCESS MANWAY. CORE 10"
PIPE THROUGH EXIST MANHOLE

WELLS REIT II SOUTH JAMAICA STREET, LLC
229 PEACHTREE ST. NE
ATLANTA, GA 30303
PID: 2231-101-02-004

MERIDIAN
GROUNDWATER
WELL

WELLS REIT II SOUTH JAMAICA STREET, LLC
229 PEACHTREE ST. NE
ATLANTA, GA 30303
PID: 2231-112-19-003

I-25 OFF RAMP

I-25

PLAN
1" = 40'-0"

40' 20' 0 40' 80'
1"=40'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3140 - Connections M-CONN-5.dwg	

SAVED: SWA29119, 9/16/2013 8:55:52 AM
PLOTTED:
USER: PWAGMIN
DWG VER: 1002

XREF1:
XREF2:
XREF3:
XREF4:

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
MERIDIAN I-25 SITE
SITE PLAN

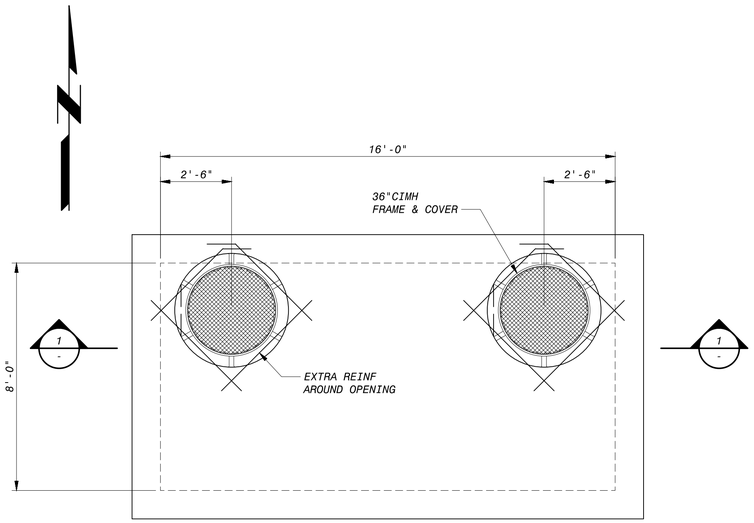
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

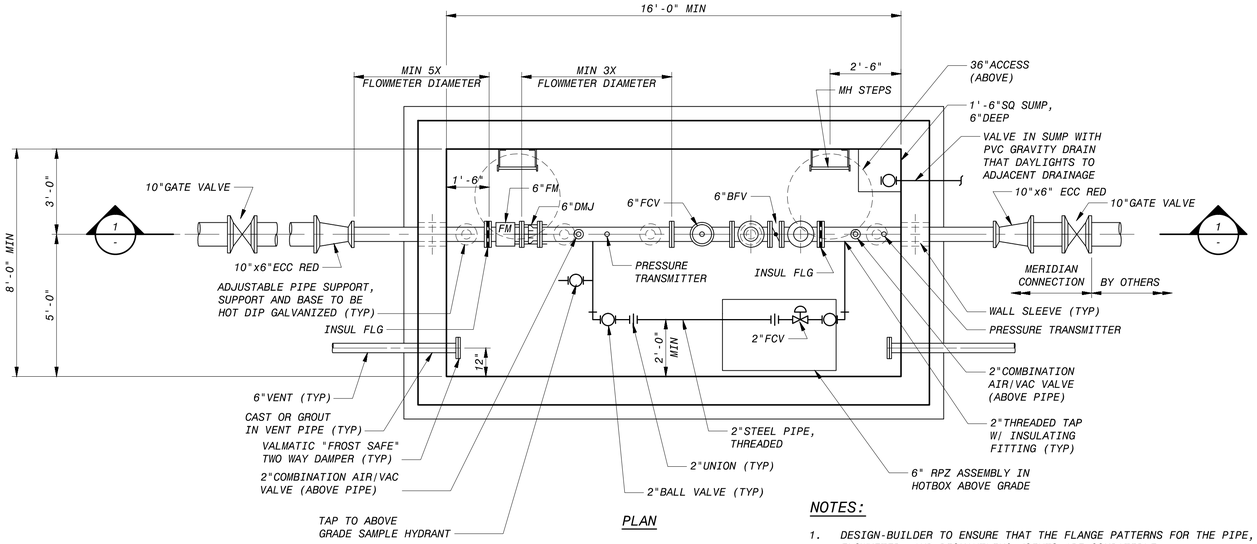
PROJECT NO.
182463

M-CONN-5
SHEET
OF

FD7000
D7000



TOP PLAN
3/8" = 1'-0"

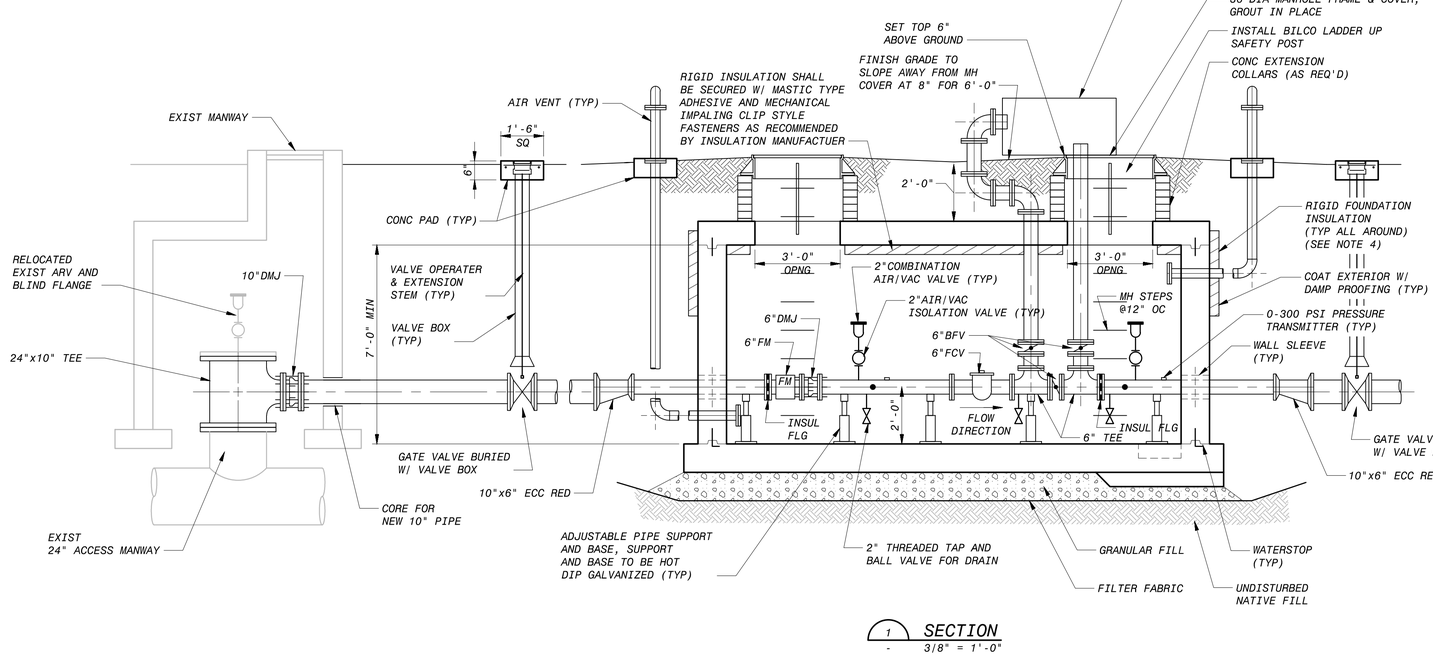


PLAN

A FLOW CONTROL VALVE VAULT
M-CONN-5 3/8" = 1'-0"

NOTES:

1. DESIGN-BUILDER TO ENSURE THAT THE FLANGE PATTERNS FOR THE PIPE, VALVES, FLOWMETER, AND DISMANTLING JOINTS ARE COMPATIBLE.
2. THE 2 INCH BYPASS LINE SHALL HAVE AT LEAST ONE ADJUSTABLE PIPE SUPPORT.
3. THE 2 INCH BYPASS PIPE, VALVES, AND FITTINGS ARE TO HAVE A MINIMUM WORKING PRESSURE RATING OF 250 PSI (WITH A TEST GRADIENT OF 1.5 TIMES WORKING PRESSURE).
4. ALL JOINTS SHALL BE RESTRAINED.
5. PSV PILOT LINES SHALL BE INSULATED.
6. PRESSURE TRANSMITTER TAPS TO BE 1/2" WITH BALL VALVE WITH MINIMUM WORKING PRESSURE RATING OF 250 PSI.
7. FINAL PIPE AND VALVE SIZES DETERMINED BY DESIGN-BUILDER.



1 SECTION
- 3/8" = 1'-0"

NOTES:

1. SHEETING OR SHORING MAY BE REQUIRED FOR VAULT EXCAVATIONS.
2. ALL PIPING IN VAULT IS TO BE DUCTILE IRON, UNLESS NOTED OTHERWISE.
3. ENTIRE VAULT IS TO BE WATERTIGHT.
4. PROVIDE 2" OF RIGID INSULATION ALL AROUND STRUCTURE. TERMINATE INSULATION 6" BELOW GRADE AND EXTEND DOWN 4'-6". RIGID FOUNDATION INSULATION SHALL BE ASTM C578, TYPE 4, EXTRUDED CELLULAR POLYSTYRENE FOAM BOARD W/ WATER VAPOR TRANSMISSION FACTOR OF 1.1 PERM-IN MAX, MIN R VALUE OF 5 PER INCH, AS MANUFACTURED BY DOW STYROFOAM OR FOAMULAR. MASTIC ADHESIVE AS RECOMMENDED BY MANUFACTURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3140 - Connections	

M-CONN-6.dwg
XREF1:C:2D-MERIDIAN-VAULT.dwg
XREF2:BORDER.dwg
SAVED: FRE08341, 7/19/2013 3:17:13 PM
XREF3:
PLOTTED:
XREF4:
USER: PHAMIN
DWG VER: 1000

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
MERIDIAN I-25 SITE
PLAN VIEW AND SECTION VIEW

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-6
SHEET
OF

FD7000_PW
D7000

FOR CONTINUATION, SEE SH C-CONN-1

10" GATE VALVE (TYP OF 2)

EXIST PROPERTY LINE

INVERNESS CONNECTION A
M-CONN-8

N=1628443.86
E=3180878.12

N=1628412.98
E=3180874.25

20"x10" TEE

JAMAICA STREET

LOCATE BLOWOFF AT LOWEST POINT BETWEEN WESTERN PIPELINE AND FCV VAULT. BLOWOFF TO DAYLIGHT TO DRAINAGE CHANNEL

EXIST RIGHT OF WAY

EXIST IRRIGATION

EXIST EASEMENT

NOTES:

PROVIDE COST TO UPSIZE OUTLET, VALVE, AND PIPE TO 20" FROM WESTERN PIPELINE TO NEAR VALVE AT INVERNESS CONNECTION.

NORTH MERIDIAN METROPOLITAN DIST.
1700 LINCOLN ST. #3800
DENVER, CO 80203
PID: 2231-023-16-004

TRACT A-1
MERIDIAN INTERNATIONAL
BUSINESS CENTER
FIL. NO. 1, 1ST AMENDMENT

MERIDIAN-MB INVESTMENTS, LLC
6380 S. FIDDLERS GREEN CIR #400
GREENWOOD VILLAGE, CO 80111
PID: 2231-020-17-001

ALTERNATE ALIGNMENT (MEDIAN TO BE REPLACED WITH XERISCAPE)

EXIST RIGHT OF WAY

10" GATE VALVE
N=1628195.80
E=3180957.57

54"

EXIST ACCESS MANWAY
STA 172+07

NEXT LINE VALVE
STA 129+88

WESTERN PIPELINE BLOWOFF
STA 173+32

10" OUTLET W/ THRUST BLOCK
N=1628185.43
E=3180957.88

EXIST 54" WESTERN PIPELINE

EXIST EASEMENT

NEXT LINE VALVE
STA 181+73

25' UTILITY EASEMENT

PLAN
1" = 20'-0"

20' 10' 0 20' 40'
1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.3140 - Connections
M-CONN-7.dwg

SAVED: SWA29119, 9/16/2013 8:55:52 AM
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USER: PWAGMIN

XREF1:
XREF2:
XREF3:
XREF4:
DWG VER: 1002

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
INVERNESS
SITE PLAN

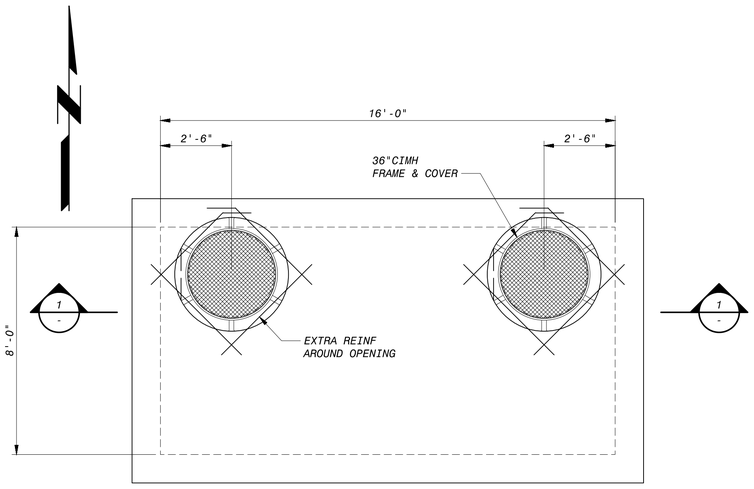
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

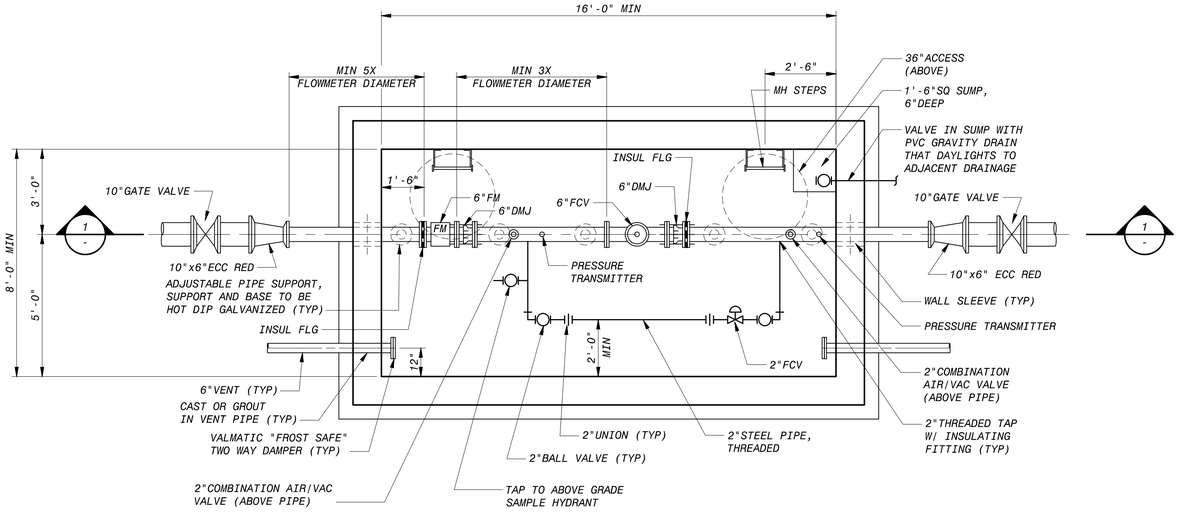
PROJECT NO.
182463

M-CONN-7
SHEET
OF

FD7000
D7000



TOP PLAN
3/8" = 1'-0"

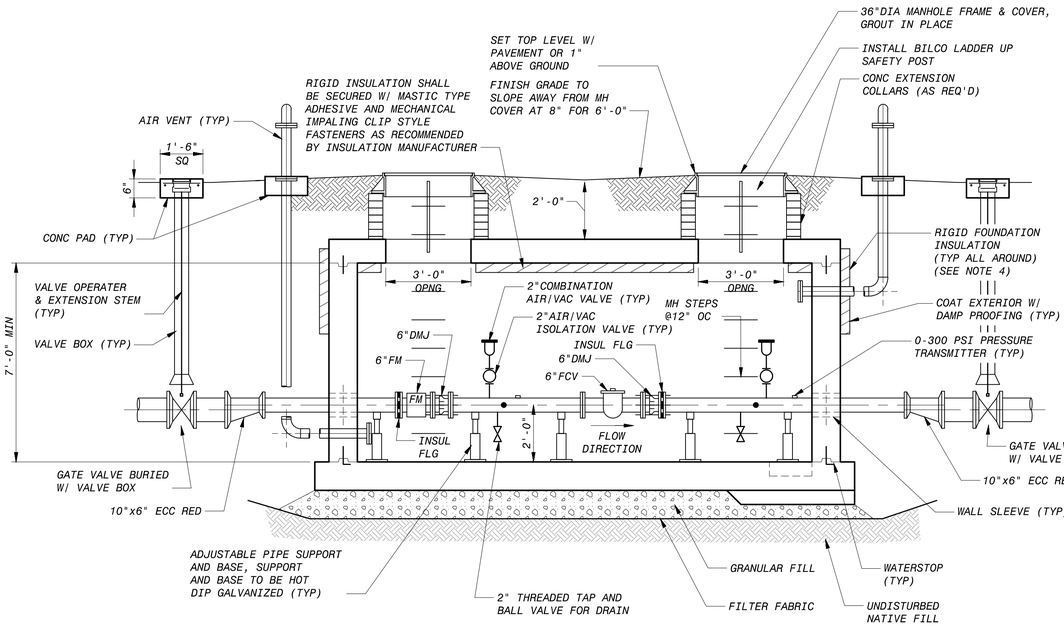


PLAN

A FLOW CONTROL VALVE VAULT
M-CONN-7 3/8" = 1'-0"

NOTES:

1. DESIGN-BUILDER TO ENSURE THAT THE FLANGE PATTERNS FOR THE PIPE, VALVES, FLOWMETER, AND DISMANTLING JOINTS ARE COMPATIBLE.
2. THE 2 INCH BYPASS LINE SHALL HAVE AT LEAST ONE ADJUSTABLE PIPE SUPPORT.
3. THE 2 INCH BYPASS PIPE, VALVES, AND FITTINGS ARE TO HAVE A MINIMUM WORKING PRESSURE RATING OF 250 PSI (WITH A TEST GRADIENT OF 1.5 TIMES WORKING PRESSURE).
4. ALL JOINTS SHALL BE RESTRAINED.
5. PSV PILOT LINES SHALL BE INSULATED.
6. PRESSURE TRANSMITTER TAPS TO BE 1/2" WITH BALL VALVE WITH MINIMUM WORKING PRESSURE RATING OF 250 PSI.
7. FINAL PIPE AND VALVE SIZES DETERMINED BY DESIGN-BUILDER.



1 SECTION
- 3/8" = 1'-0"

NOTES:

1. SHEETING OR SHORING MAY BE REQUIRED FOR VAULT EXCAVATIONS.
2. ALL PIPING IN VAULT IS TO BE DUCTILE IRON, UNLESS NOTED OTHERWISE.
3. ENTIRE VAULT IS TO BE WATERTIGHT.
4. PROVIDE 2" OF RIGID INSULATION ALL AROUND STRUCTURE. TERMINATE INSULATION 6" BELOW GRADE AND EXTEND DOWN 4'-6". RIGID FOUNDATION INSULATION SHALL BE ASTM C578, TYPE 4, EXTRUDED CELLULAR POLYSTYRENE FOAM BOARD W/ WATER VAPOR TRANSMISSION FACTOR OF 1.1 PERM-IN MAX, MIN R VALUE OF 5 PER INCH, AS MANUFACTURED BY DOW STYROFOAM OR FOAMULAR. MASTIC ADHESIVE AS RECOMMENDED BY MANUFACTURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.3140 - Connections
M-CONN-8.dwg
SAVED: FRE08341, 7/19/2013 3:17:13 PM
PLOTTED:
USER: PHAMIN

XREF1: C:2D-INVERNESS-VAULT.dwg
XREF2: BORDER.dwg
XREF3:
XREF4:
DWG VER: 1000

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
INVERNESS
PLAN VIEW AND SECTION VIEW

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-8
SHEET
OF

FD7000_PH_0000_D7000

PLAN
1" = 30'-0"

30' 20' 10' 0 30' 60'
1"=30'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3140 - Connections M-CONN-9.dwg	

SAVED: SWA29119, 9/16/2013 8:55:52 AM
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USER: PWAGMIN
DWG VER: 1002
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XREF4:

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
CENTENNIAL
SITE PLAN

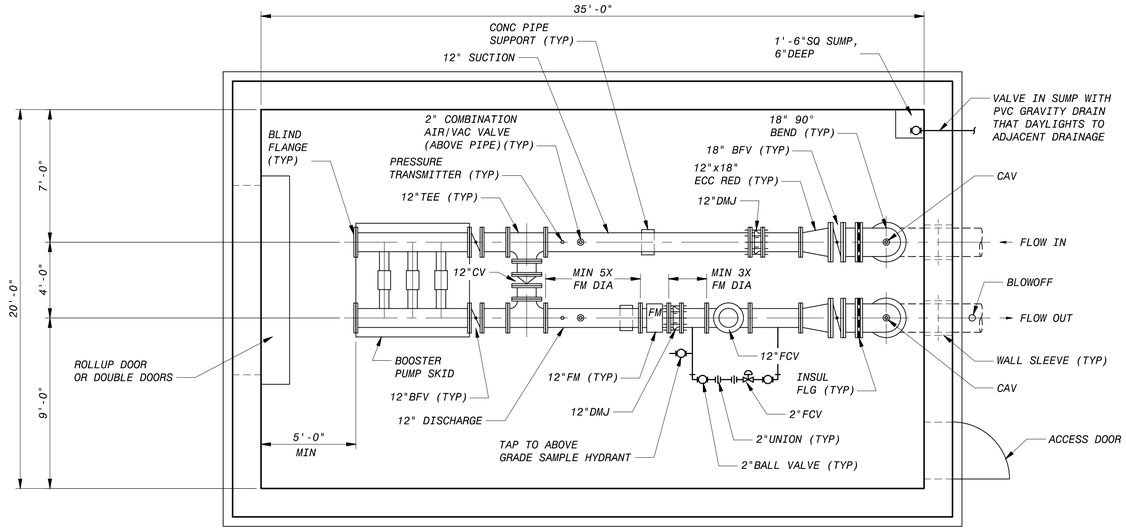
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-9
SHEET
OF

FD7000
D7000



PLAN

A BUILDING PLAN
M-CONN-9 1/4" = 1'-0"

NOTES:

1. DESIGN-BUILDER TO ENSURE THAT THE FLANGE PATTERNS FOR THE PIPE, VALVES, FLOWMETER, AND DISMANTLING JOINTS ARE COMPATIBLE.
2. THE 2 INCH BYPASS LINE SHALL HAVE AT LEAST ONE ADJUSTABLE PIPE SUPPORT.
3. THE 2 INCH BYPASS PIPE, VALVES, AND FITTINGS ARE TO HAVE A MINIMUM WORKING PRESSURE RATING OF 250 PSI (WITH A TEST GRADIENT OF 1.5 TIMES WORKING PRESSURE).
4. ALL JOINTS SHALL BE RESTRAINED.
5. PSV PILOT LINES SHALL BE INSULATED.
6. PRESSURE TRANSMITTER TAPS TO BE 1/2" WITH BALL VALVE WITH MINIMUM WORKING PRESSURE RATING OF 250 PSI.
7. INSTRUMENTATION, ELECTRICAL, LIGHTS, HVAC, PLUMBING ARE NOT SHOWN.
8. ARCHITECTURAL IS NOT SHOWN.
9. BUILDING SECTION VIEW IS NOT SHOWN.
10. FINAL PIPE AND VALVE SIZES DETERMINED BY DESIGN-BUILDER.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.3140 - Connections
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SAVED: FRE08341, 7/19/2013 3:17:13 PM
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USER: PHAMIN

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XREF3:
XREF4:
DWG VER: 1000

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
CENTENNIAL
PLAN VIEW

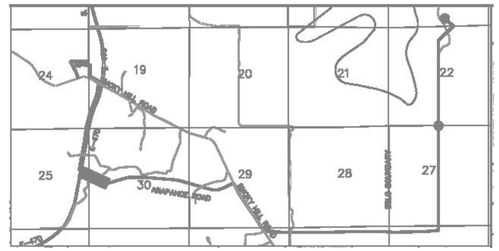
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

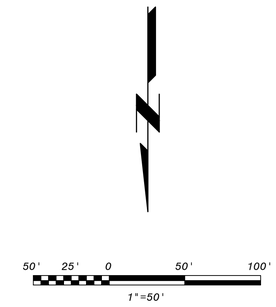
PROJECT NO.
182463

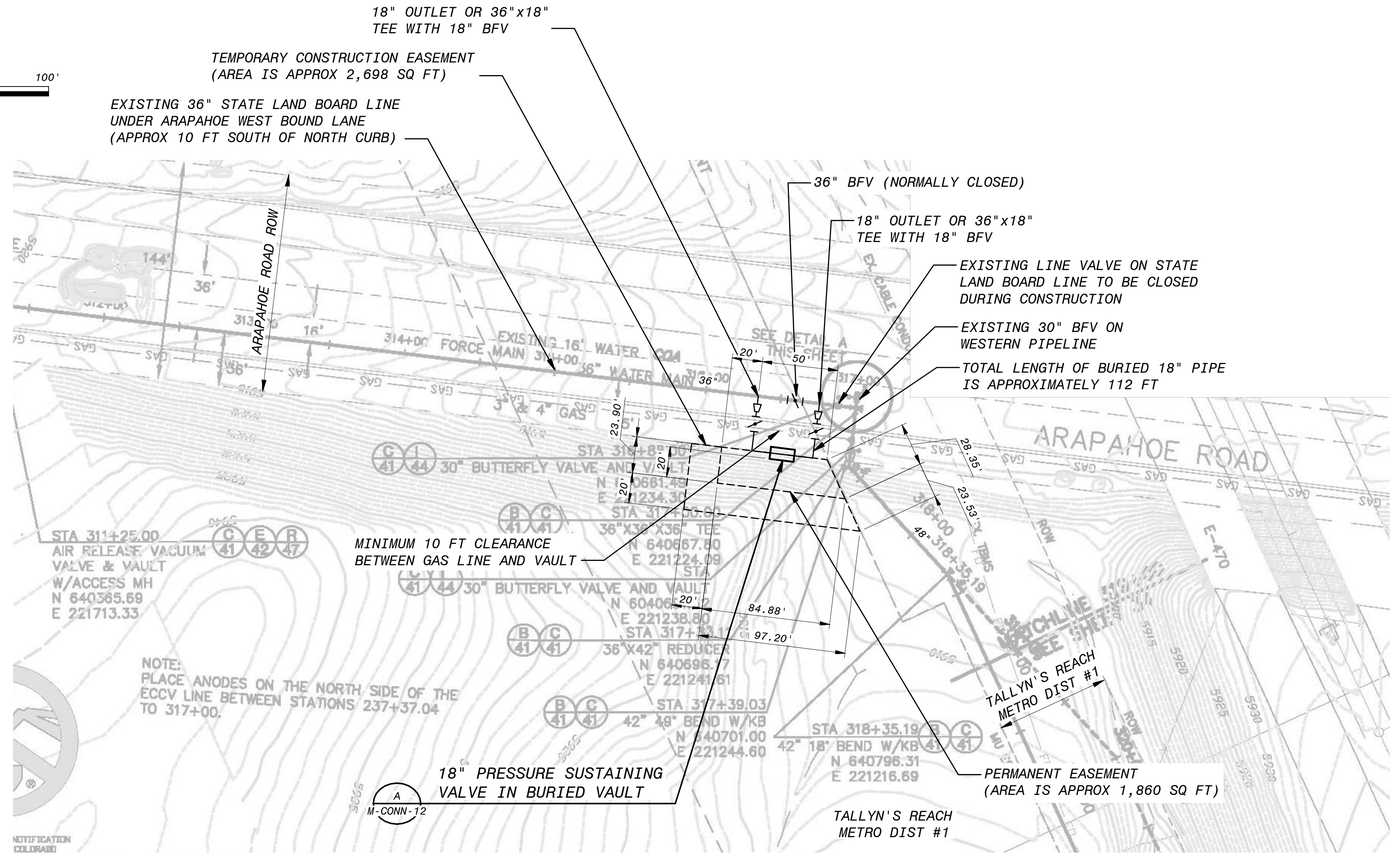
M-CONN-10
SHEET
OF

FD7000_PW
D7000



VICINITY MAP
NO SCALE





PLAN
1" = 50'-0"

NOTES:

1. NORTH DIRECTION FOR THE INSET MAP IS TO THE TOP OF THE PAGE (THIS IS OPPOSITE OF THE ENLARGED PLAN VIEW).

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

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XREF3:
XREF4:
DWG VER: 1003

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
STATE LAND BOARD LINE PSV
SITE PLAN

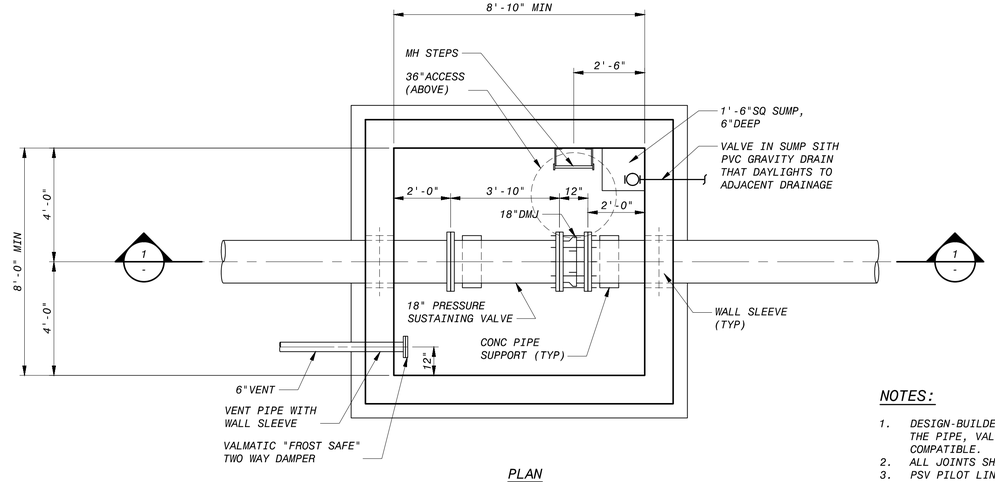
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-11
SHEET
OF

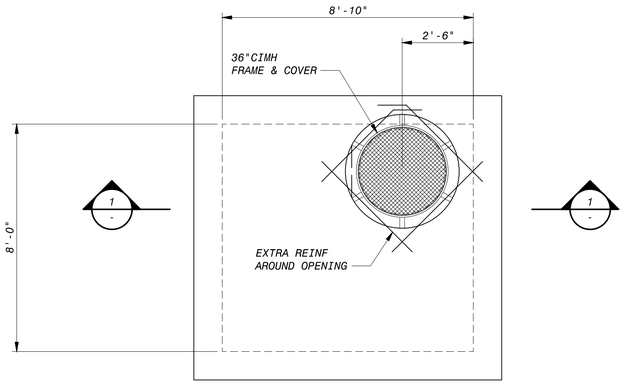
FD7000
D7000



PLAN

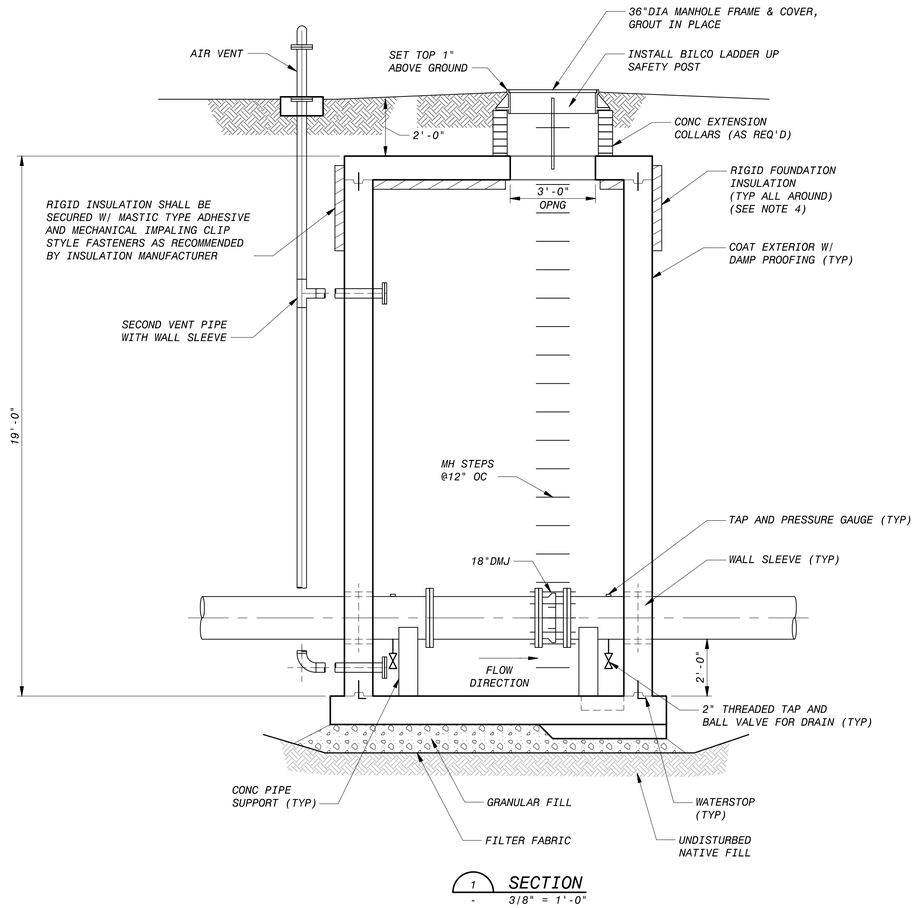
A PRESSURE SUSTAINING VALVE VAULT

M-CONN-11 3/8" = 1'-0"



PSV TOP PLAN

3/8" = 1'-0"



1 - SECTION

3/8" = 1'-0"

NOTES:

1. DESIGN-BUILDER TO ENSURE THAT THE FLANGE PATTERNS FOR THE PIPE, VALVES, AND DISMANTLING JOINTS ARE COMPATIBLE.
2. ALL JOINTS SHALL BE RESTRAINED.
3. PSV PILOT LINES SHALL BE INSULATED.

NOTES:

1. SHEETING OR SHORING MAY BE REQUIRED FOR VAULT EXCAVATIONS.
2. ALL PIPING IN VAULT IS TO BE DUCTILE IRON, UNLESS NOTED OTHERWISE.
3. ENTIRE VAULT IS TO BE WATERTIGHT.
4. PROVIDE 2" OF RIGID INSULATION ALL AROUND STRUCTURE. TERMINATE INSULATION 6" BELOW GRADE AND EXTEND DOWN 4'-6". RIGID FOUNDATION INSULATION SHALL BE ASTM C578, TYPE 4, EXTRUDED CELLULAR POLYSTYRENE FOAM BOARD W/ WATER VAPOR TRANSMISSION FACTOR OF 1.1 PERM-IN MAX, MIN R VALUE OF 5 PER INCH, AS MANUFACTURED BY DOW STYROFOAM OR FOAMULAR. MASTIC ADHESIVE AS RECOMMENDED BY MANUFACTURE.
5. ROOF SLAB SHALL BE REMOVABLE FOR FUTURE REMOVAL/REPLACEMENT OF PRESSURE SUSTAINING VALVE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.3140 - Connections
M-CONN-12.dwg
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USER: PHAMIN

XREF1: BORDER.dwg
XREF2: C-2D-ST LAND BOARD PSV-VAULT.dwg
XREF3:
XREF4:
DWG VER: 1000

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
STATE LAND BOARD LINE PSV
PLAN VIEW AND SECTION VIEW

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-12
SHEET
OF

FD7000_PW
D7000

PLAN
1" = 20'-0"

20' 10' 0 20' 40'
1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.3140 - Connections
M-CONN-13.dwg
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USER:PWAOMIN
XREF1:
XREF2:
XREF3:
XREF4:
DWG VER:1000

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
STONEGATE
SITE PLAN

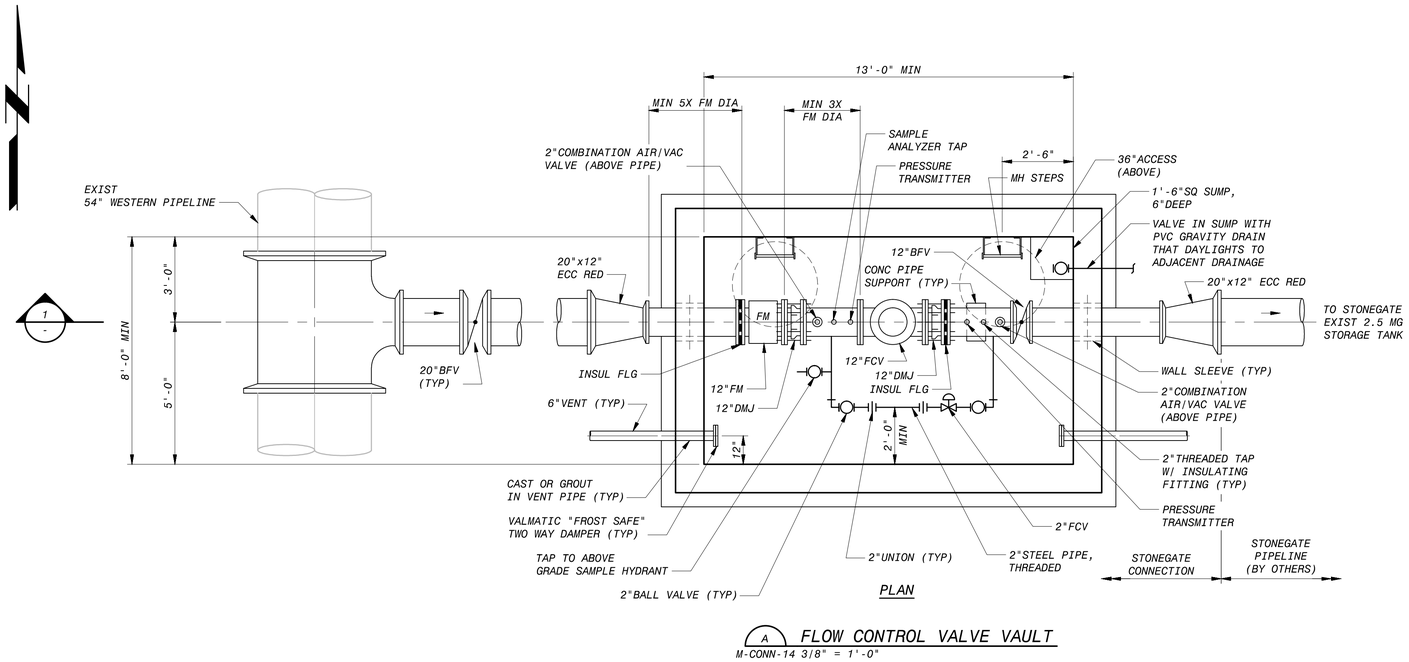
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-13
SHEET
OF

FD7000
D7000



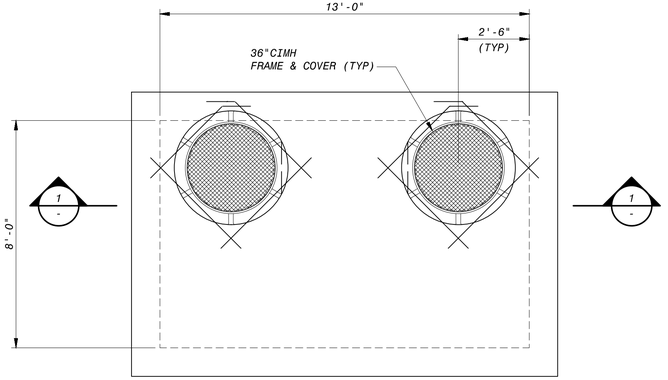
PLAN

A FLOW CONTROL VALVE VAULT

M-CONN-14 3/8" = 1'-0"

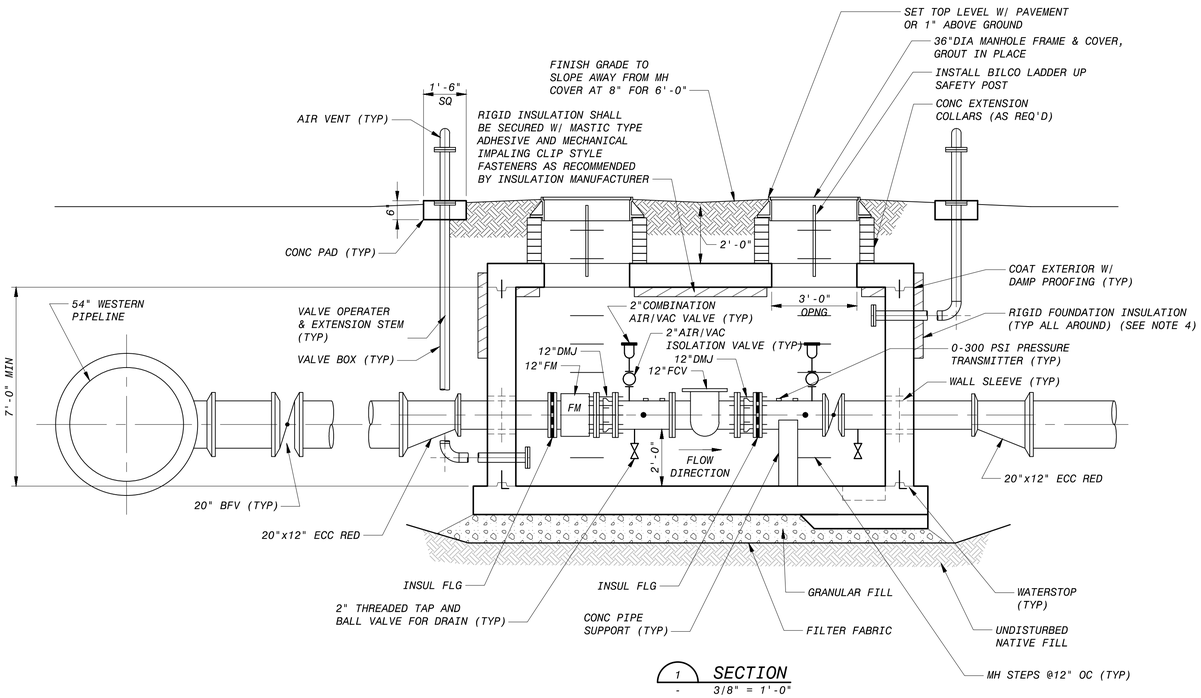
NOTES:

1. DESIGN-BUILDER TO ENSURE THAT THE FLANGE PATTERNS FOR THE PIPE, VALVES, FLOWMETER, AND DISMANTLING JOINTS ARE COMPATIBLE.
2. THE 2 INCH BYPASS LINE SHALL HAVE AT LEAST ONE ADJUSTABLE PIPE SUPPORT.
3. THE 2 INCH BYPASS PIPE, VALVES, AND FITTINGS ARE TO HAVE A MINIMUM WORKING PRESSURE RATING OF 250 PSI (WITH A TEST GRADIENT OF 1.5 TIMES WORKING PRESSURE).
4. ALL JOINTS SHALL BE RESTRAINED.
5. PSV PILOT LINES SHALL BE INSULATED.
6. PRESSURE TRANSMITTER TAPS TO BE 1/2" WITH BALL VALVE WITH MINIMUM WORKING PRESSURE RATING OF 250 PSI.



TOP PLAN

3/8" = 1'-0"



1 SECTION

3/8" = 1'-0"

NOTES:

1. SHEETING OR SHORING MAY BE REQUIRED FOR VAULT EXCAVATIONS.
2. ALL PIPING IN VAULT IS TO BE DUCTILE IRON, UNLESS NOTED OTHERWISE.
3. ENTIRE VAULT IS TO BE WATERTIGHT.
4. PROVIDE 2" OF RIGID INSULATION ALL AROUND STRUCTURE. TERMINATE INSULATION 6" BELOW GRADE AND EXTEND DOWN 4'-6". RIGID FOUNDATION INSULATION SHALL BE ASTM C578, TYPE 4, EXTRUDED CELLULAR POLYSTYRENE FOAM BOARD W/ WATER VAPOR TRANSMISSION FACTOR OF 1.1 PERM-IN MAX, MIN R VALUE OF 5 PER INCH, AS MANUFACTURED BY DOW STYROFOAM OR FOAMULAR. MASTIC ADHESIVE AS RECOMMENDED BY MANUFACTURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.3140 - Connections
M-CONN-14.dwg
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USER: PHAMIN
DWG VER: 1002

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XREF2: C-2D-STONEGATE-VAULT.dwg
XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
STONEGATE
PLAN VIEW AND SECTION VIEW

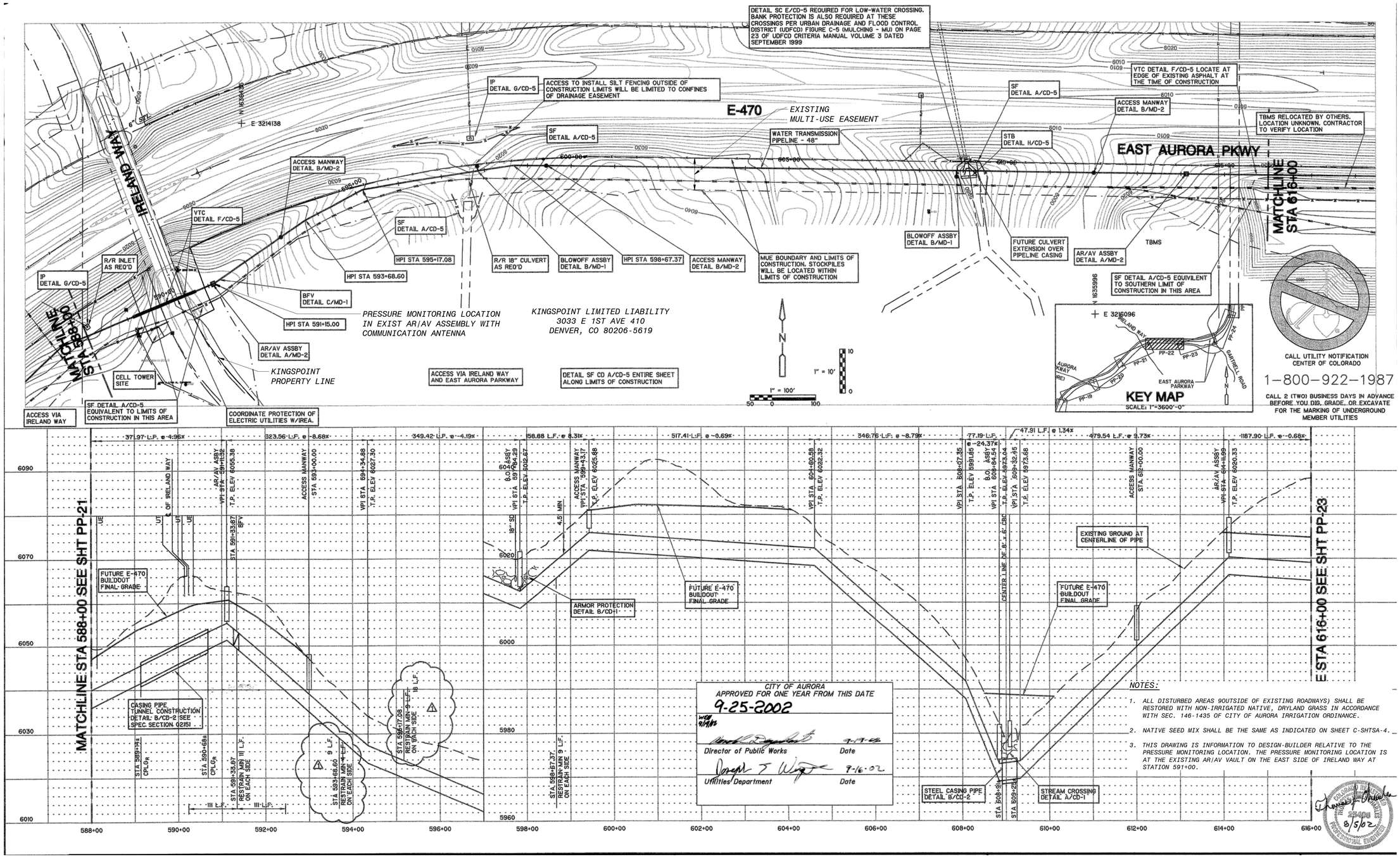
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-CONN-14
SHEET
OF

FD7000_PW
D7000



CITY OF AURORA
APPROVED FOR ONE YEAR FROM THIS DATE
9-25-2002
WED 9/AM

Director of Public Works — Date 9-19-02

Utilities Department — Date 9-16-02

NOTES:

1. ALL DISTURBED AREAS 9OUTSIDE OF EXISTING ROADWAYS) SHALL BE RESTORED WITH NON-IRRIGATED NATIVE, DRYLAND GRASS IN ACCORDANCE WITH SEC. 146-1435 OF CITY OF AURORA IRRIGATION ORDINANCE.
2. NATIVE SEED MIX SHALL BE THE SAME AS INDICATED ON SHEET C-SHTSA-4.
3. THIS DRAWING IS INFORMATION TO DESIGN-BUILDER RELATIVE TO THE PRESSURE MONITORING LOCATION. THE PRESSURE MONITORING LOCATION IS AT THE EXISTING AR/AV VAULT ON THE EAST SIDE OF IRELAND WAY AT STATION 591+00.

COLORADO REGISTERED THOMAS S. HAWKINS 24015 8/5/02 PROFESSIONAL ENGINEER

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3140 - Connections M-CONN-15.dwg	

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
PRESSURE MONITORING LOCATION
SITE PLAN

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
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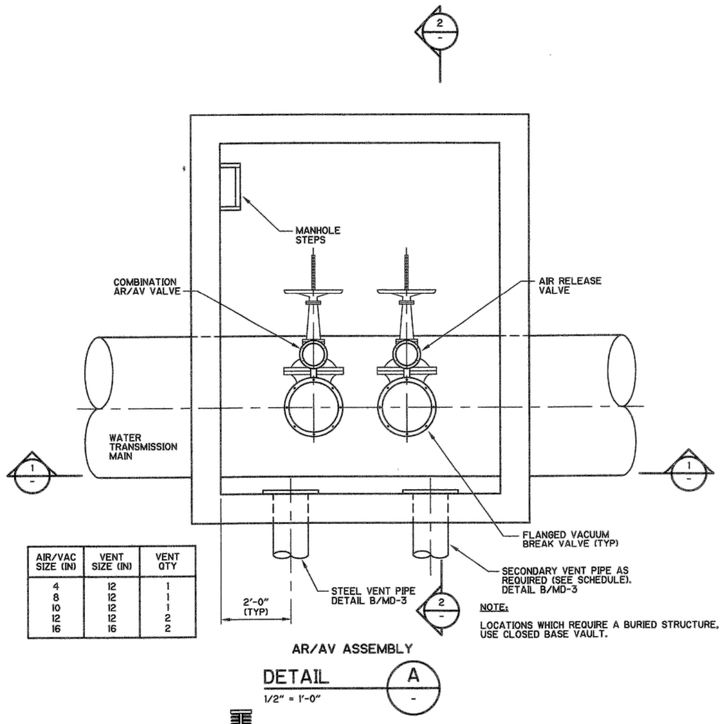
PROJECT NO.
182463

M-CONN-15
SHEET
OF

FD7000
D7000



AIR/VAC SIZE (IN)	VENT SIZE (IN)	VENT QTY
4	12	1
8	12	1
10	12	1
12	12	2
16	16	2

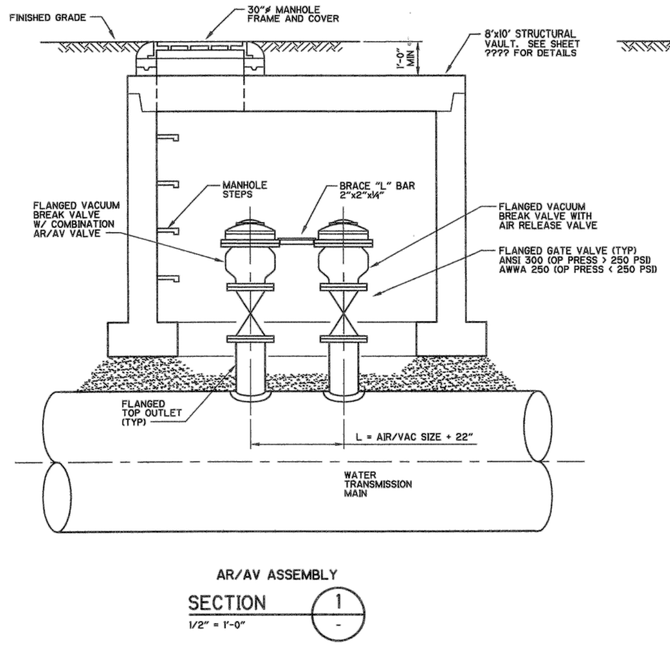
NOTE:

LOCATIONS WHICH REQUIRE A BURIED STRUCTURE, USE CLOSED BASE VAULT.

AR/AV ASSEMBLY

DETAIL A

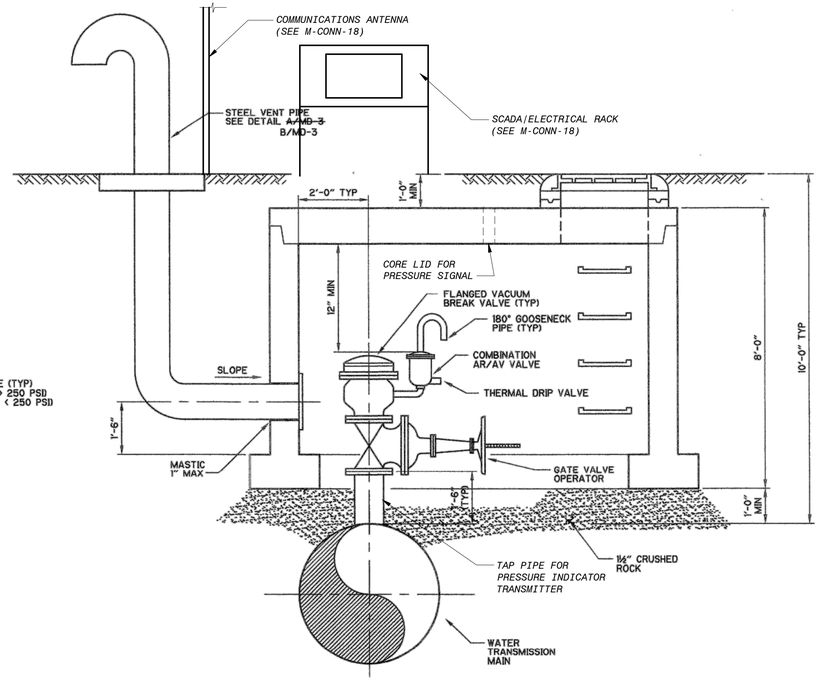
1/2" = 1'-0"



AR/AV ASSEMBLY

SECTION 1

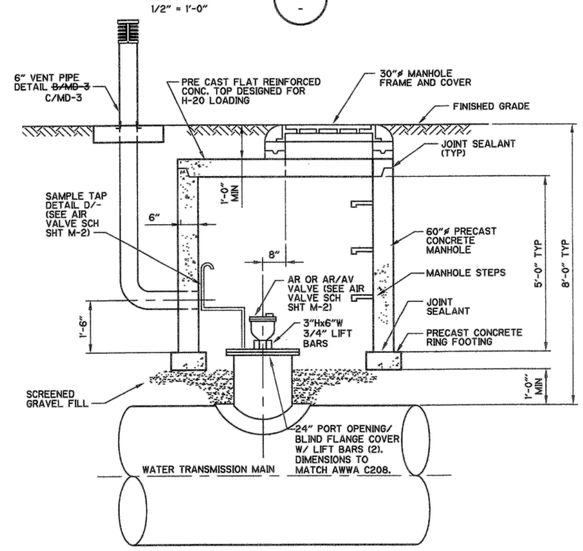
1/2" = 1'-0"



AR/AV ASSEMBLY

SECTION 2

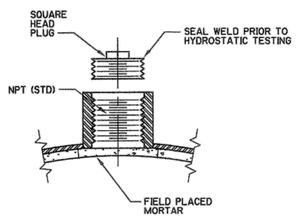
1/2" = 1'-0"



ACCESS MANWAY

DETAIL B

1/2" = 1'-0"



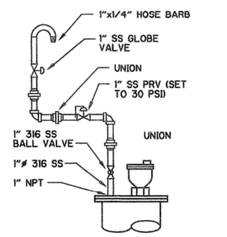
NOTE:

1. INSTALL PASS HOLE EVERY 300-FEET UNLESS ACCESS THROUGH MANWAY IS AVAILABLE.

PASS HOLE DETAIL

DETAIL C

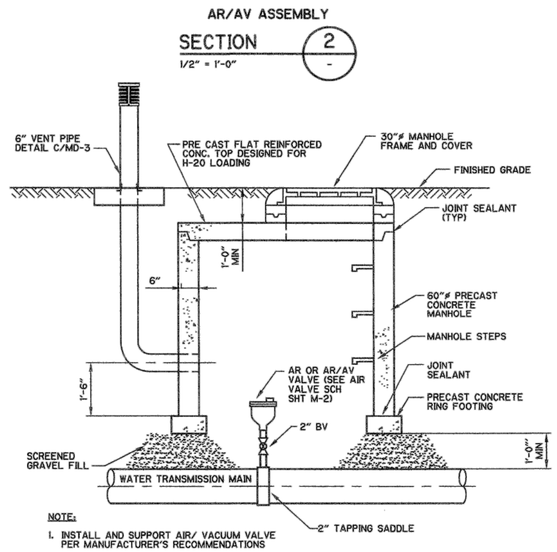
NTS



SAMPLE TAP

DETAIL D

NTS



NOTE:

1. INSTALL AND SUPPORT AIR/ VACUUM VALVE PER MANUFACTURER'S RECOMMENDATIONS

AIR/ VACUUM VALVE VAULT

DETAIL E

1/2" = 1'-0"

NOTE:

1. THIS DRAWING IS INFORMATION TO DESIGN-BUILDER RELATIVE TO THE PRESSURE MONITORING LOCATION. THE PRESSURE MONITORING LOCATION IS AT THE EXISTING AR/AV VAULT ON THE EAST SIDE OF IRELAND WAY AT STATION 591+00.

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50.3140 - Connections
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XREF3:
XREF4:
DWG VER: 1000

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
PRESSURE MONITORING LOCATION
PLAN VIEW AND SECTION VIEW

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
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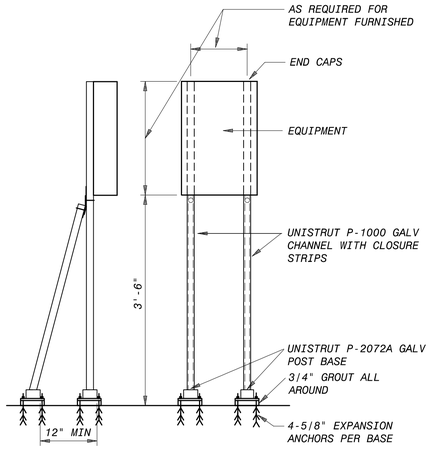
PROJECT NO.
182463

M-CONN-16
SHEET
OF

FD7000_PW
D7000

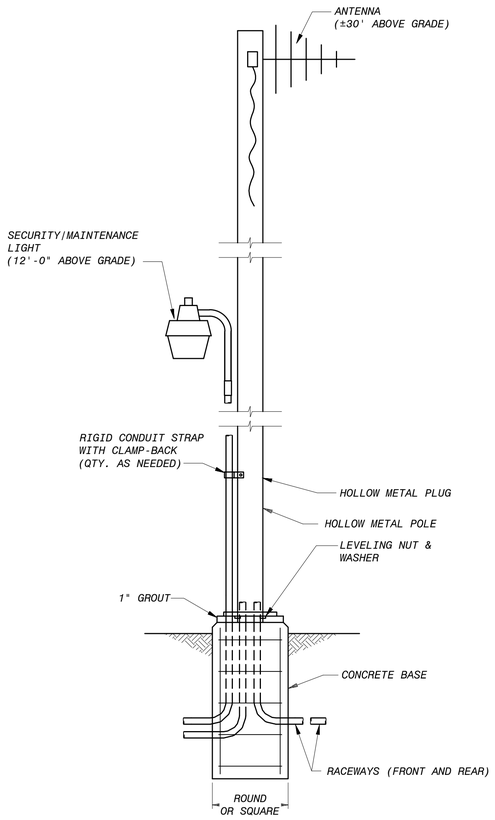


TYPICAL EQUIPMENT MOUNTING DETAIL

NO SCALE

NOTES:

1. IN OUTDOOR LOCATIONS, USE STAINLESS STEEL BOLTS, NUTS, WASHERS, AND ANCHOR BOLTS.
2. LIGHT POLE/ANTENNA AND EQUIPMENT MOUNTING DETAIL ARE REQUIRED AT ALL LOCATIONS EXCEPT FOR THE PRESSURE SUSTAINING VALVE.



TYPICAL LIGHT POLE/ANTENNA

NO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS AND RECORD OF ISSUE	BY	CK.	APP

50.3140 - Connections
M-CONN-17.dwg
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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

CONNECTIONS
MISCELLANEOUS DETAILS

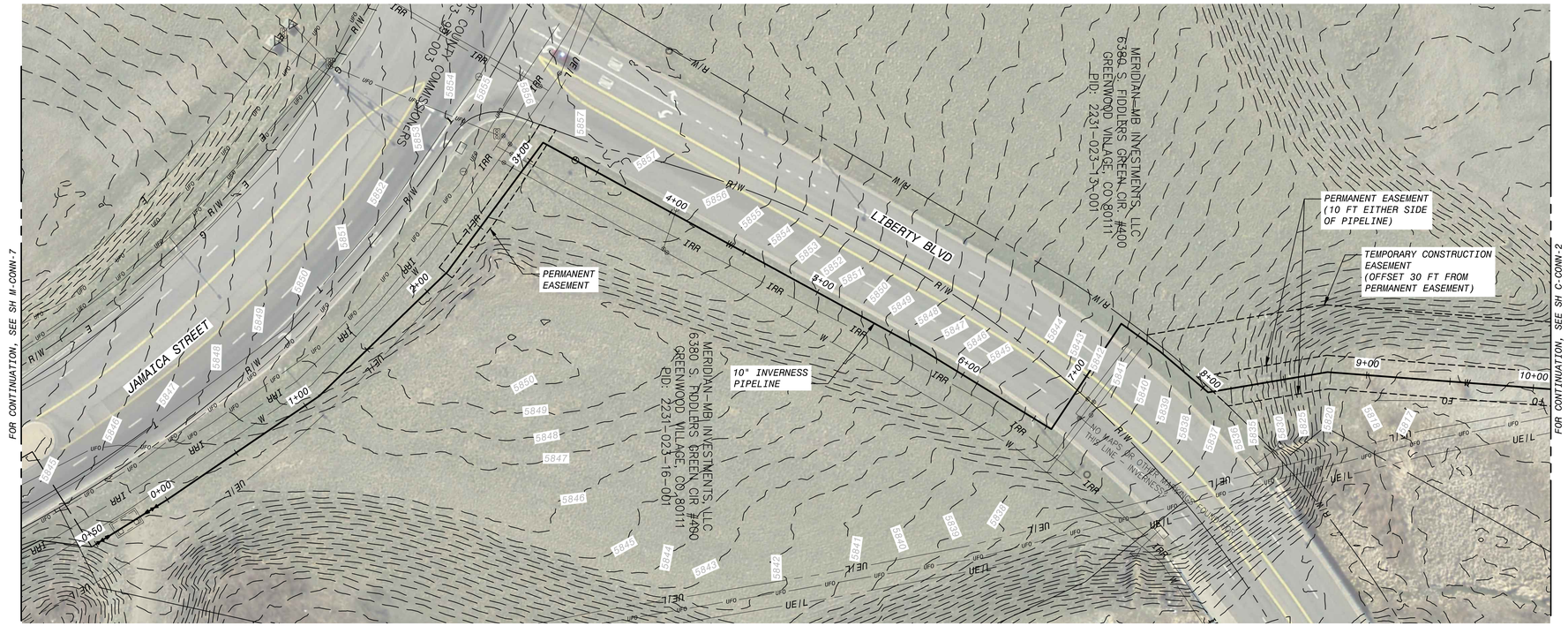
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

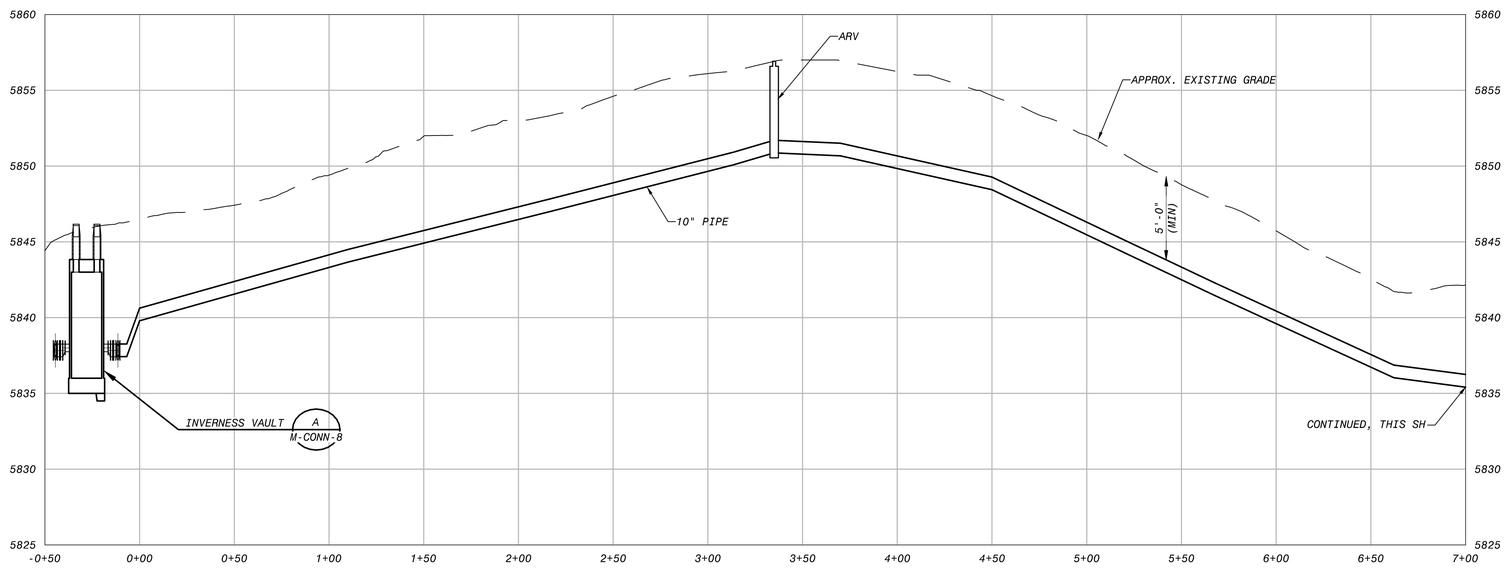
PROJECT NO.
182463

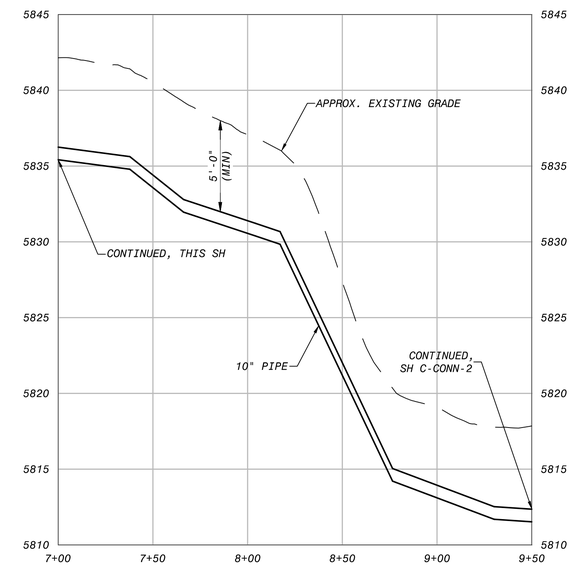
M-CONN-17
SHEET
OF

F07000_PW
D7000



PLAN
1" = 40'-0"





NOTE:

1. UTILITY CROSSINGS/CONFLICTS NOT SHOWN OR IDENTIFIED.

PROFILE
1" = 40'-0"

40' 20' 0 40' 80'
HORIZONTAL SCALE = 1"=40'
5' 0 5' 10'
VERTICAL SCALE = 1"=5'

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50_3140 - Connections
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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

PIPELINES
INVERNESS
PLAN & PROFILE 1

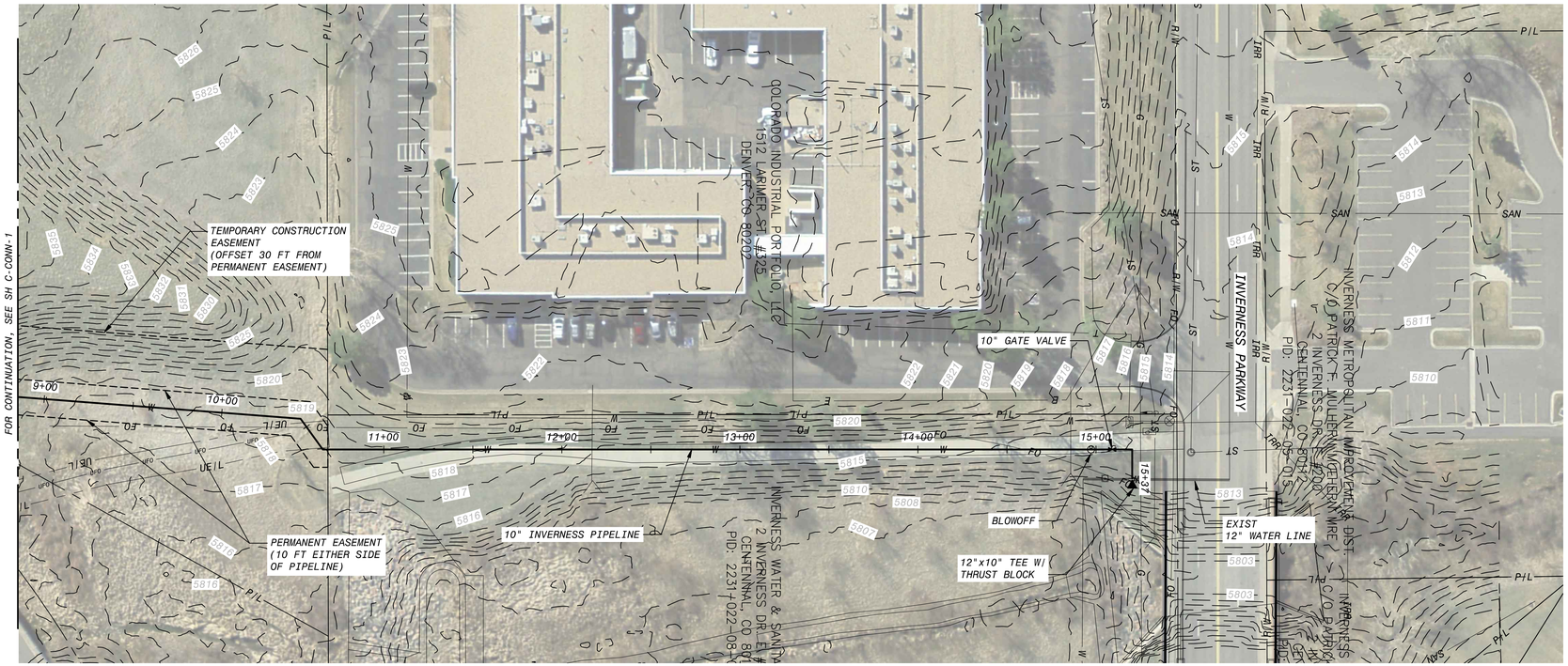
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

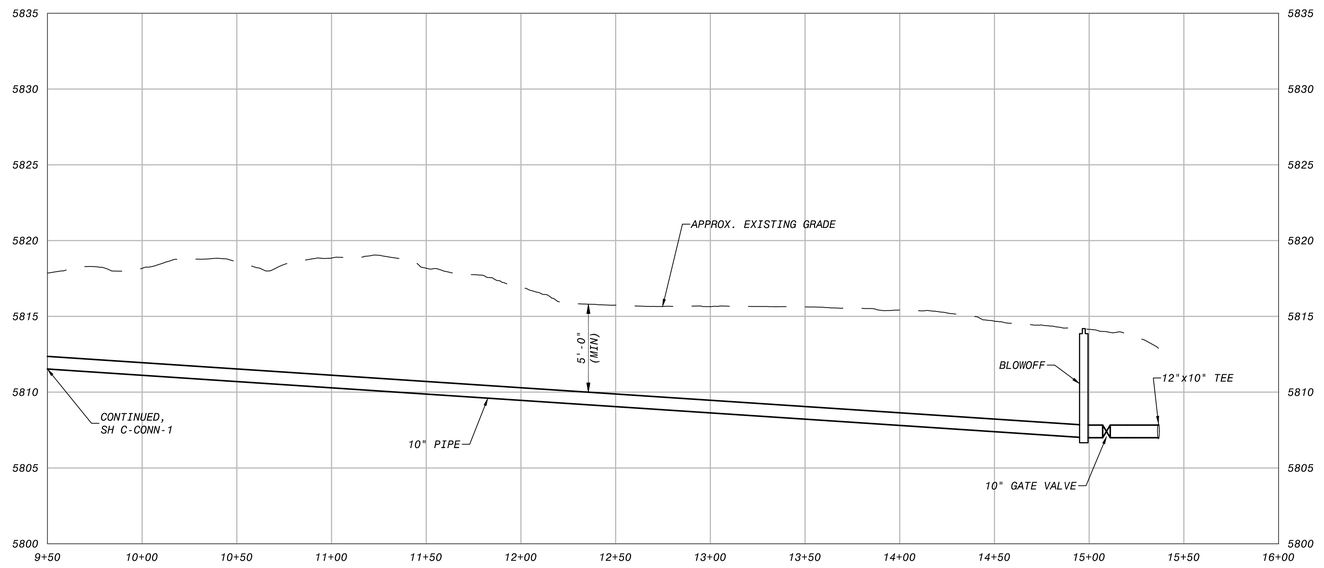
PROJECT NO.
182463

C-CONN-1
SHEET
OF

FD7000
D7000



PLAN
1" = 40'-0"



PROFILE
1" = 40'-0"

HORIZONTAL SCALE = 1"=40'
VERTICAL SCALE = 1"=5'

NOTE:

1. UTILITY CROSSINGS/CONFLICTS NOT SHOWN OR IDENTIFIED.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

PIPELINES
INVERNESS
PLAN & PROFILE 2

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

C-CONN-2
SHEET
OF

FD7000
D7000

DRAWINGS FOR

SOUTH METRO WISE AUTHORITY

DESIGN/BUILD PACKAGE CONTROLS/SCADA

SHEET LIST

SHEET NO.	DRAWING NO.	TITLE
		CONTROLS/SCADA
1	G-SCA-1	COVER & SHEET LIST
2	G-SCA-2	SCADA - LEGEND AND ABBREVIATIONS
3	G-SCA-3	SCADA - LEGEND AND ABBREVIATIONS
4	G-SCA-4	SCADA - VICINITY MAP
5	I-SCA-1	SCADA - PROJECT COMPONENTS AND FACILITIES MAP/SCHEMATIC
6	I-SCA-2	SCADA - CONTROL SYSTEM ARCHITECTURE DIAGRAM
7	I-SCA-3	SCADA - PROCESS & INSTRUMENTATION DRAWING - RANGEVIEW CONNECTION
8	I-SCA-4	SCADA - PROCESS & INSTRUMENTATION DRAWING - ECCV CONNECTION
9	I-SCA-5	SCADA - PROCESS & INSTRUMENTATION DRAWING - COTTONWOOD CONNECTION
10	I-SCA-6	SCADA - PROCESS & INSTRUMENTATION DRAWING - STONEGATE CONNECTION
11	I-SCA-7	SCADA - PROCESS & INSTRUMENTATION DRAWING - INVERNESS CONNECTION
12	I-SCA-8	SCADA - PROCESS & INSTRUMENTATION DRAWING - RIDGEGATE CONNECTION
13	I-SCA-9	SCADA - PROCESS & INSTRUMENTATION DRAWING - MERIDIAN 1 CONNECTION
14	I-SCA-10	SCADA - PROCESS & INSTRUMENTATION DRAWING - CENTENNIAL CONNECTION
15	I-SCA-11	SCADA - PROCESS & INSTRUMENTATION DRAWING - DENVER WATER TURNOUT
16	I-SCA-12	SCADA - PROCESS & INSTRUMENTATION DRAWING - SMOKY HILL TANK
17	I-SCA-13	SCADA - PROCESS & INSTRUMENTATION DRAWING - QEUBEC PUMPING STATION
18	I-SCA-14	SCADA - PROCESS & INSTRUMENTATION DRAWING - PRESSURE MONITORING STATION
19	I-SCA-15	SCADA - PROCESS & INSTRUMENTATION DRAWING - AURORA TEMPORARY CONNECTION
20	I-SCA-16	SCADA - PROCESS & INSTRUMENTATION DRAWING - ACWWA WATER TREATMENT
21	I-SCA-17	SCADA - PROCESS & INSTRUMENTATION DRAWING - HERITAGE EAGLE-BEND

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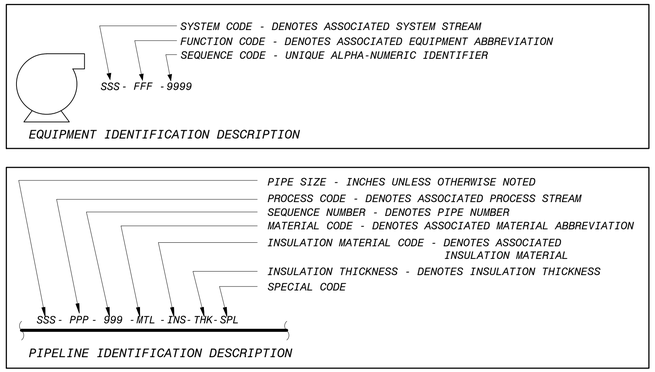
OCTOBER 2014

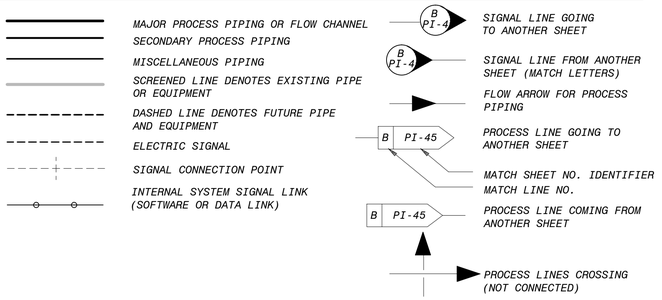
D50012



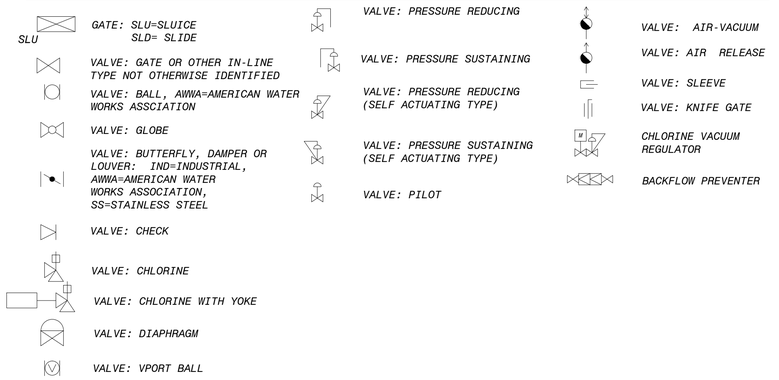
SYSTEM NAME	SYSTEM CODE	SEQUENCE CODE
RANGEVIEW	RGV	01XX
ECCV	ECCV	02XX
COTTONWOOD	CTW	03XX
STONEGATE	STG	04XX
INVERNESS	INV	05XX
RIDGEGATE	RDG	06XX
MERIDIAN 1	MR1	07XX
MERIDIAN 2 (NOT USED)	(NOT USED)	08XX (NOT USED)
CENTENNIAL	CEN	09XX
DENVER WATER	DVW	10XX
SMOKY HILL	SMH	11XX
PRESS MONITOR	PM1	12XX
ACWWA	ACW	13XX
AURORA	AW1	14XX
HERITAGE EAGLE-BEND	HEB	15XX

PUMP & BLOWER SYMBOLS

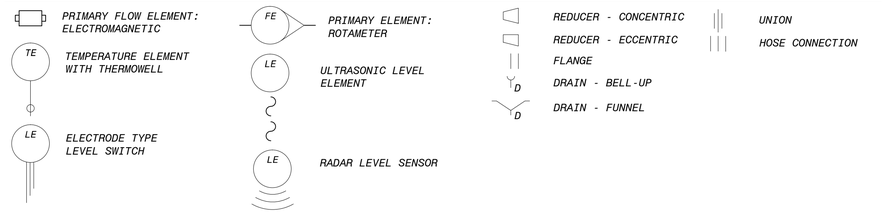
LINE SYMBOLS



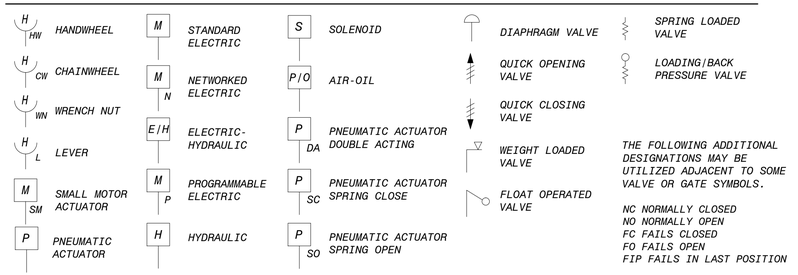
VALVE & GATE SYMBOLS



PRIMARY ELEMENT & FITTING SYMBOLS



VALVE & GATE ACTUATOR SYMBOLS



GENERAL NOTES

1. IN GENERAL, THE P&ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARD PRACTICE ISA-S5.1 (1988). SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
2. SOME CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM THE P&ID DRAWINGS.
3. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
4. PIPING AND EQUIPMENT LEGEND APPLIES TO P&ID SHEETS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.

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NO.	BY	CK	APP	REVISIONS AND RECORD OF ISSUE	DATE
				SO_2080 - PID Drawings	
				G-SCA-2.dwg	

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USER: PHAMIN
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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
LEGENDS AND ABBREVIATIONS

DESIGNED: DRK
DETAILED: TSH
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0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-SCA-2
SHEET
OF

FD7000_PW
D7000

INSTRUMENT TAG NUMBERS
MEANINGS OF IDENTIFICATION LETTERS

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)			CONTROL	CLOSED
D	ENERGY (MASS) OR SPECIFIC GRAVITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME OR TIME–SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOISTURE OR HUMIDITY	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE	INTEGRATE OR TOTALIZE		
R	RADIATION		RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE			RELAY OR COMPUTE	
Z	POSITION, DIMENSION			DRIVE, ACTUATOR OR FINAL CTRL ELEMENT	

GENERAL INSTRUMENT SYMBOLS

FIELD MOUNTED INSTRUMENT

INSTRUMENT MOUNTED ON FACE OF PANEL

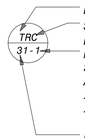
INSTRUMENT MOUNTED BEHIND OR INSIDE OF PANEL

INSTRUMENT MOUNTED ON FACE OF LOCAL PANEL

INSTRUMENT MOUNTED BEHIND OR INSIDE OF LOCAL PANEL

SINGLE INSTRUMENT HOUSING CONTAINING TWO (OR MORE) INSTRUMENTATION FUNCTIONS

TAG NUMBERS AND ADDITIONAL DESIGNATIONS



FIRST LETTER
SUCCEEDING LETTERS
NUMBER AFTER DASH (-1, -2, ETC) DENOTES MULTIPLE DEVICES USED IN IDENTICAL DUPLICATE SYSTEMS.
A LETTER AFTER THE LOOP NUMBER (31A, 31B, ETC) IS USED TO DISTINQUISH MULTIPLE SIMILAR DEVICES IN THE SAME INSTRUMENT LOOP.
LOOP DESIGNATION NUMBER

SEE INSTRUMENT FUNCTIONAL DESIGNATIONS AND ABBREVIATIONS.

DIGITAL SYSTEMS INTERFACE SYMBOLS

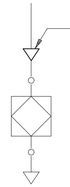
NOTE: REFER TO DETAILED SYSTEM SPECIFICATIONS FOR FUNCTIONAL DESCRIPTION. ALSO SEE I/O SCHEDULES FOR COMPLETE INPUT AND OUTPUT LISTINGS.

COMPUTER, DISTRIBUTED CONTROL SYSTEM, OR DISPLAY FUNCTION BLOCK

LETTERS, TAG NUMBERS, ABBREVIATIONS AND OTHER ANNOTATIONS ARE SIMILAR TO THE GENERAL INSTRUMENT LEGEND

PROGRAMMABLE LOGIC CONTROLLER SYSTEM FUNCTION BLOCK

"CB" NUMBER REFERS TO SOFTWARE CONTROL BLOCK DESCRIPTION IN THE SPECIFICATIONS.



DIGITAL SYSTEM I/O INTERFACE
DIRECTION OF ARROW DENOTES WHETHER INPUT OR OUTPUT

▽ DISCRETE I/O

▲ ANALOG I/O

4-20mA SIGNAL SPLITTER (PHOENIX CONTACT MINI MCR-SL-UI-21-2864794 OR SIMILAR)

GENERAL NOTES

1. IN GENERAL, THE P&ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARD PRACTICE ANSI/ISA-5.1 (2009). SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.

2. SOME CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM P&ID DRAWINGS.

3. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT. PIPING AND EQUIPMENT LEGEND APPLIES TO P&ID SHEETS.

4. PIPING AND EQUIPMENT LEGEND APPLIES TO P&ID SHEETS ONLY AND MAY DIFFER FROM LEGENDS FOR OTHER SHEETS.

PIPELINE MATERIAL CODE ABBREVIATIONS

PCCP	SECTION 02612, PRESTRESSED CONCRETE CYLINDER PIPE
CBWS	SECTION 02614, CONCRETE BAR-WRAPPED, STEEL CYLINDER PIPE
LHCPP	SECTION 02616, LOW HEAD CONCRETE PRESSURE PIPE
RCP	SECTION 02618, CONCRETE PIPE
PVC	SECTION 15061, POLYVINYL CHLORIDE PIPE
DIP	SECTION 15061, DUCTILE IRON PIPE
SP	SECTION 15062, STEEL PIPE
LWS-XX	SECTION 15063, LIGHT WALL STEEL PIPE
SS-XX1	SECTION 15064, STAINLESS STEEL PIPE, TUBING, AND ACCESSORIES
CSG-XX	SECTION 15065, MISCELLANEOUS STEEL PIPE, TUBING, AND ACCESSORIES
CS-XX	SECTION 15065, MISCELLANEOUS STEEL PIPE, TUBING, AND ACCESSORIES
FRPE-XX	SECTION 15066, FIBERGLASS REINFORCED PLASTIC PIPE (EXHAUST AIR SERVICE)
FRP-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
PVC-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
CPVC-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
PE-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
PP-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
PVDF-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
RPT-XX	SECTION 15067, MISCELLANEOUS PLASTIC PIPE, TUBING, AND ACCESSORIES
SS	SECTION 15068, AWWA STAINLESS STEEL PIPE
CI-XX	SECTION 15069, CAST IRON SOIL PIPE AND ACCESSORIES
CU-XX	SECTION 15070, COPPER TUBING AND ACCESSORIES
BR-XX	SECTION 15060, MISCELLANEOUS PIPING AND PIPE ASSEMBLY
HS-XX	SECTION 15060, MISCELLANEOUS PIPING AND PIPE ASSEMBLY
TG-XX	SECTION 15060, MISCELLANEOUS PIPING AND PIPE ASSEMBLY
CRP-XX	SECTION 15060, MISCELLANEOUS PIPING AND PIPE ASSEMBLY

1. XX= numbers 01-20

FUNCTION DESIGNATIONS AND ABBREVIATIONS

INSTRUMENT DESIGNATIONS

K	GAIN OR ATTENUATE (INPUT:OUTPUT)
-K	GAIN AND REVERSE
Σ	ADD OR SUM (ADD AND SUBTRACT)
Δ	SUBTRACT (DIFFERENCE)
√‾	EXTRACT SQUARE ROOT
÷	DIVIDE
F(X)	CHARACTERIZE SIGNAL
>	HIGH-SELECT
<	LOW-SELECT
×	MULTIPLY
∫	INTEGRATE (TIME INTEGRAL)
CH_4	METHANE
CL_2	CHLORINE RESIDUAL
CO_2	CARBON DIOXIDE
DO	DISSOLVED OXYGEN
LEL	LOWER EXPLOSIVE LIMIT
MCC	MOTOR CONTROL CENTER
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
O_2	OXYGEN (PURITY)
pH	pH CELL
TURB	TURBIDITY
Mn	MANGANESE
Fe	IRON

HAND SWITCH DESIGNATIONS

HOA	HAND-OFF-AUTO
LR	LOCAL REMOTE
OC	OPEN-CLOSE
OO	ON-OFF
LOR	LOCAL-OFF-REMOTE
OOA	ON-OFF-AUTO
OCR	OPEN-CLOSE-REMOTE
OOR	ON-OFF-REMOTE
FR	FORWARD-REVERSE

TRANSDUCER & CONVERTER DESIGNATION

E	VOLTAGE
FSK	FREQUENCY SHIFT KEYING
H	HYDRAULIC
I	CURRENT
P	PNEUMATIC PULSE
PD	PULSE DURATION
PF	PULSE FREQUENCY
R	RESISTANCE (ELECTRICAL)

EXAMPLE: I/I = CURRENT TO CURRENT TRANSDUCER

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.2080 - PID Drawings	
				G-SCA-3.dwg	

XREF1:BORDER.dwg
XREF2:G-GNRL2.XREF.dwg
XREF3:
XREF4:
SAVED: KUEO7266, 7/8/2014 11:42:45 AM
PLOTTED: KUEO7266, 10/16/2014 1:04
USER: PHAOMIN
DWG VER: 1000

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
LEGEND AND ABBREVIATIONS

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-SCA-3
SHEET
OF

FD7000_PH
0000

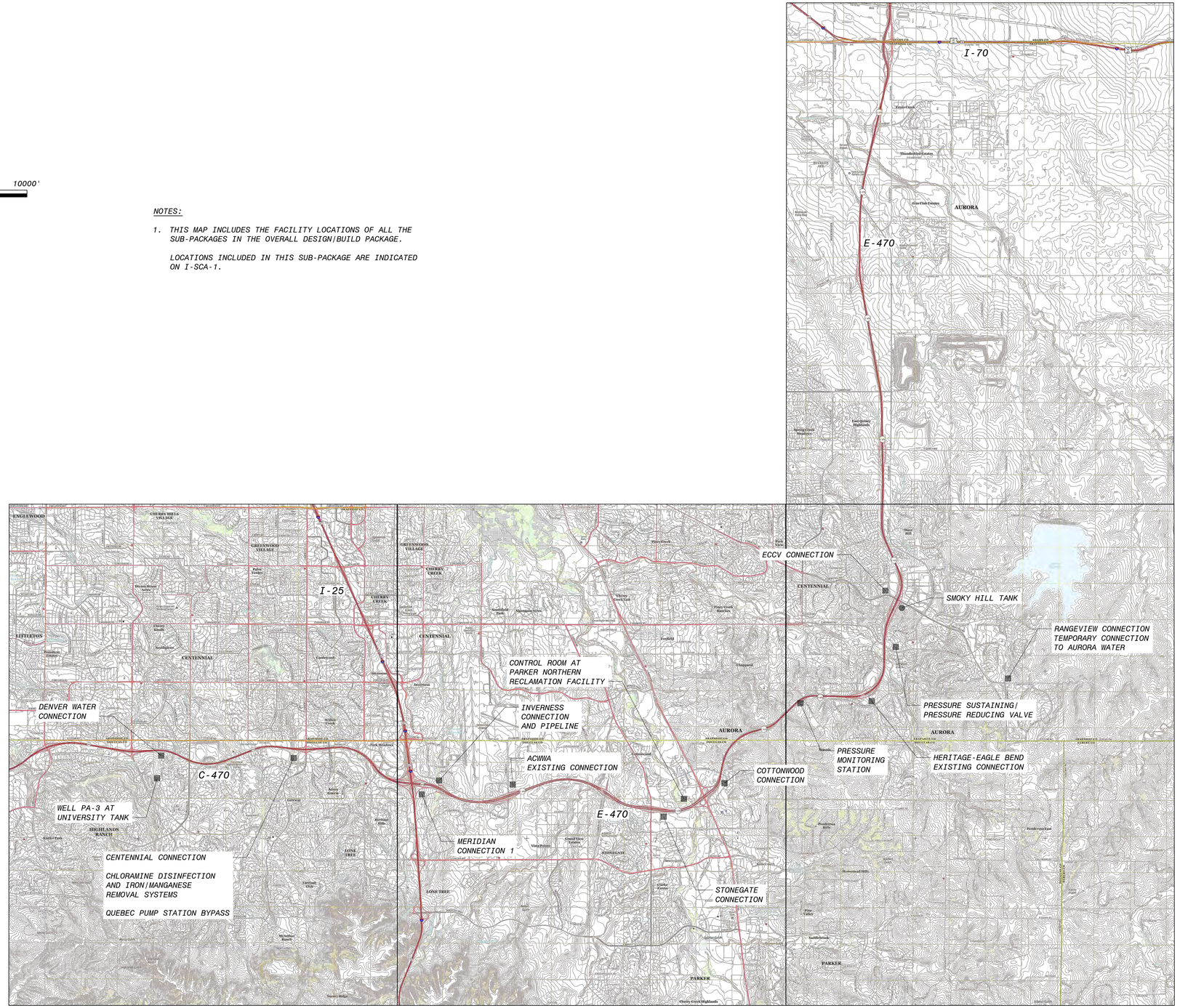
5000' 2500' 0 5000' 10000'

1"=5000'

NOTES:

1. THIS MAP INCLUDES THE FACILITY LOCATIONS OF ALL THE SUB-PACKAGES IN THE OVERALL DESIGN/BUILD PACKAGE.

   LOCATIONS INCLUDED IN THIS SUB-PACKAGE ARE INDICATED ON I-SCA-1.



PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE
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				PLOTTED:	XREF3:G-CVR-HIGHLAND_RANCH.dwg
				USER: PHAMIN	DWG VER: 1002	XREF4:G-CVR-PINEY_CREEK.dwg

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
VICINITY MAP

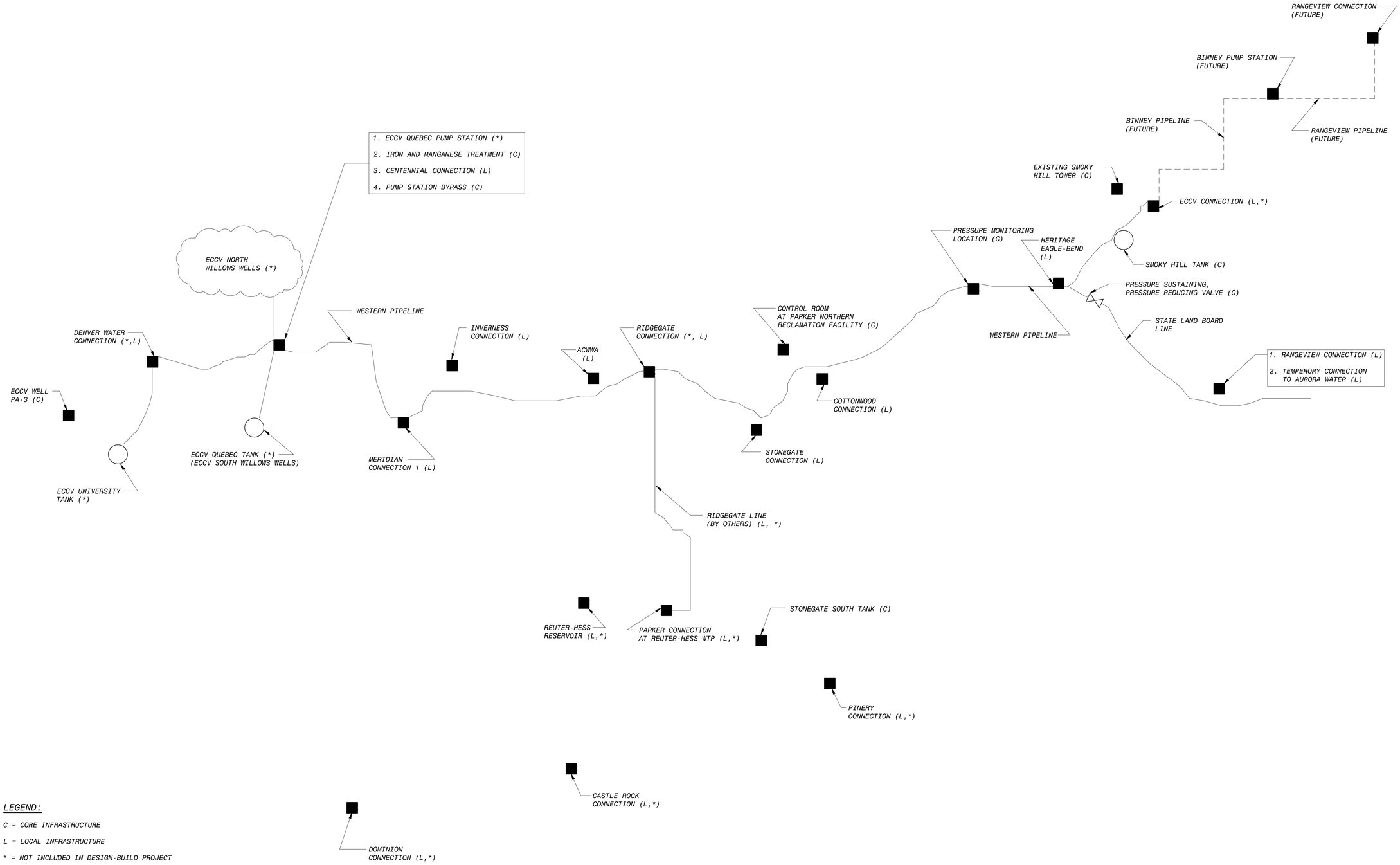
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-SCA-4
SHEET
OF

FD7000_PH
D7000



LEGEND:

C = CORE INFRASTRUCTURE

L = LOCAL INFRASTRUCTURE

* = NOT INCLUDED IN DESIGN-BUILD PROJECT

NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE

50_2080 - PID Drawings
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PLOTTED: KUEO7266, 10/16/2014 1:17
USER: PHAMIN
DWG VER: 1000

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

PROJECT COMPONENTS AND FACILITIES MAP/SCHEMATIC

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

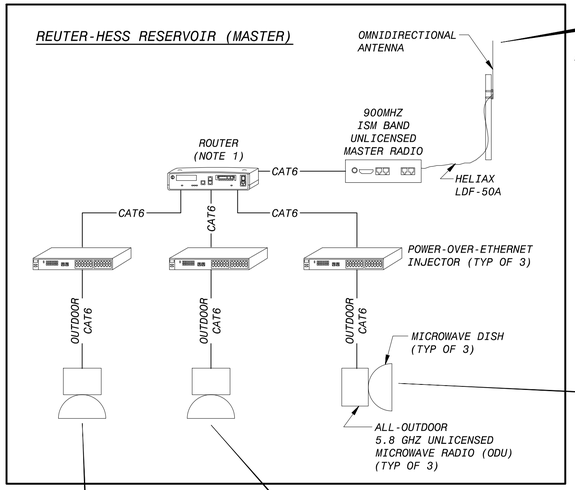
0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

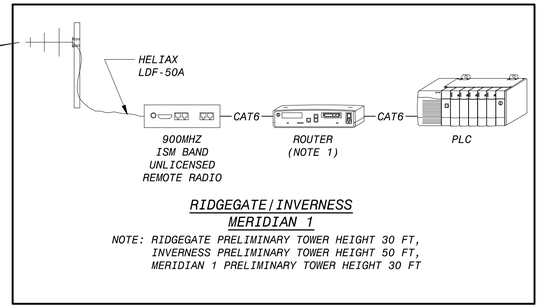
I-SCA-1
SHEET
OF

PRELIMINARY - NOT FOR CONSTRUCTION

FD7000_PW
D7000



RF



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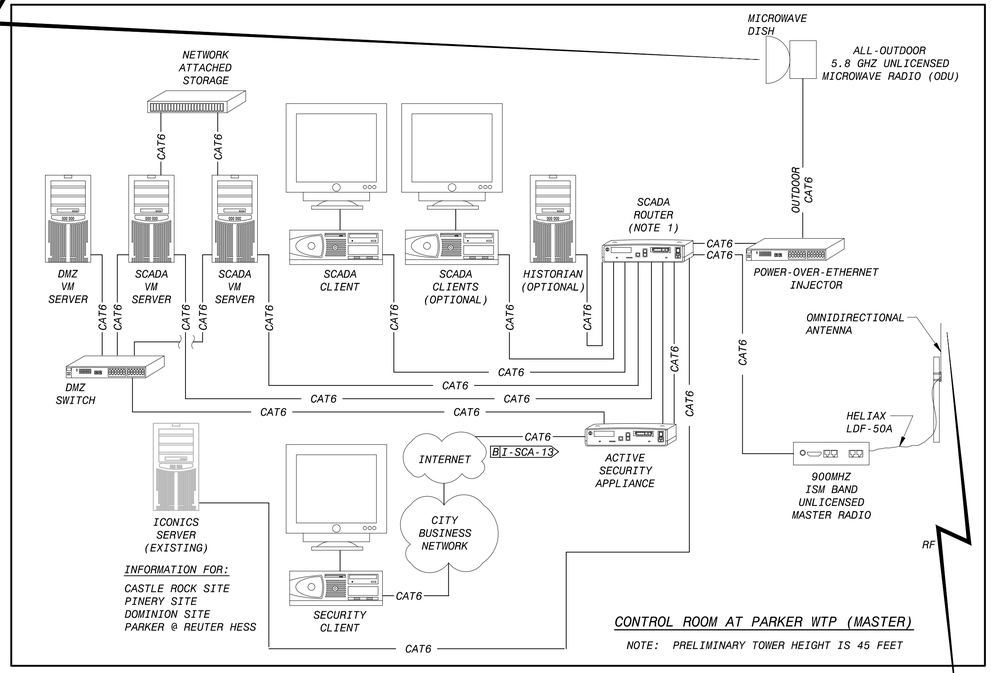
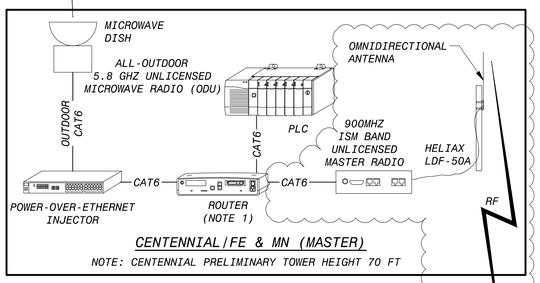
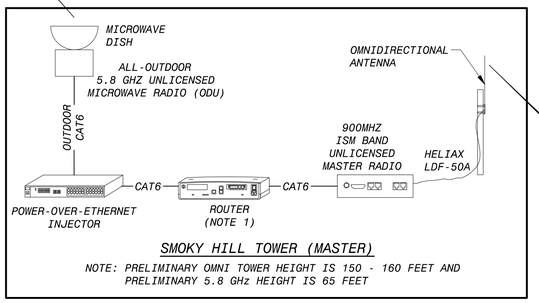


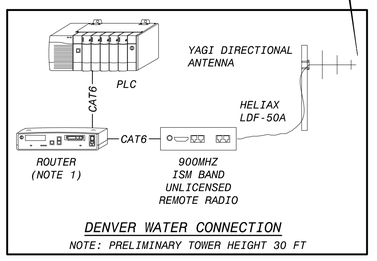
RF

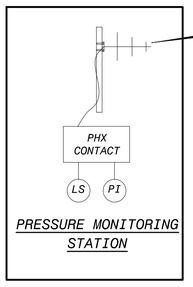
RF

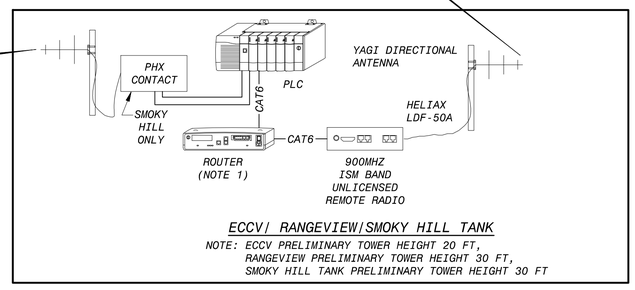
RF

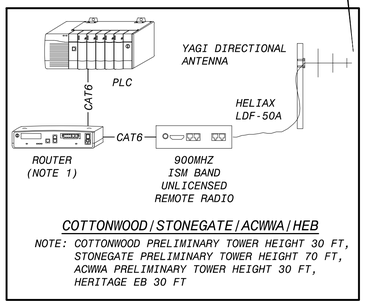












NOTES:

1. USE ETHERNET SWITCH IF LAYER 3 NETWORK IS NOT REQUIRED.
2. GROUNDING AND POWER NOT SHOWN.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE

50_2080 - PID Drawings
I-SCA-2.dwg
SAVED: KUEO7266, 10/16/2014 1:22:17 PM
PLOTTED: KUEO7266, 10/16/2014 1:21
USER: PHAOMIN
DWG VER: 1000

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
CONTROL SYSTEM ARCHITECTURE DIAGRAM

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-2
SHEET
OF

FD7000_PW
D7000

PLC-RANGEVIEW (NOTES 4)

OTHER PLC

SMOKEY HILL TANK LEVEL

RANGEVIEW FLOW DIRECTION

RANGEVIEW FLOW PULSE

RANGEVIEW LARGE FCV OPEN COMMAND

RANGEVIEW LARGE FCV POSITION

RANGEVIEW LARGE FCV CLOSE COMMAND

RANGEVIEW SMALL FCV OPEN COMMAND

RANGEVIEW SMALL FCV POSITION

RANGEVIEW SMALL FCV CLOSE COMMAND

RANGEVIEW RTU CABINET INTRUSION

RANGEVIEW VAULT INTRUSION

RANGEVIEW VAULT HIGH WATER ALARM

RANGEVIEW VAULT AMBIENT TEMP

RANGEVIEW SITE POWER / ON UPS

RANGEVIEW FLOW RATE

RANGEVIEW UPSTREAM PRESSURE

RANGEVIEW DOWNSTREAM PRESSURE

OPTIONAL: NETWORK CONNECTION BETWEEN TWO PLCs TO SHARE DATA

ZS 0106

ZS 0107

LSH 0108

TIT 0109

EA 0110

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

CONTINUED FROM DRAWING I-SCA-15

GRAB SAMPLE LINE (ABOVE GRADE)

I/I (NOTE 4)

I/I (NOTE 4)

I/I (NOTE 4)

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

ARV-0101

FE 0101

FIT 0101

NOTE 4

PIT 0102

ZT 0103

ZT 0104

PIT 0105

ARV-0102

CONNECTION FOR FUTURE SAMPLE EQUIPMENT

FROM AURORA WATER

A I-SCA-16

10"

GATE-0101

6"

FLOW DIRECTION

FCV-0103

6"

GATE-0102

10"

GATE-0103

TO RANGEVIEW VIA STATE LAND BOARD LINE

S

S

S

S

TBD"

FCV-0104

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS RGV, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-3.dwg
SAVED: KUEO7266, 10/23/2014 3:38:59 PM
PLOTTED: KUEO7266, 10/23/2014 3:37
USER: PHAMTN
DWG VER: 1000

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
PROCESS & INSTRUMENTATION DRAWING
RANGEVIEW CONNECTION

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-3
SHEET
OF

FD7000_PH
07000

PLC-ECCV (NOTE 4)

OTHER PLC

ECCV FLOW DIRECTION
ECCV FLOW PULSE
ECCV LARGE FCV OPEN COMMAND
ECCV LARGE FCV POSITION
ECCV LARGE FCV CLOSE COMMAND
ECCV SMALL FCV OPEN COMMAND
ECCV SMALL FCV POSITION
ECCV SMALL FCV CLOSE COMMAND
ECCV RTU CABINET INTRUSION
ECCV VAULT INTRUSION
ECCV VAULT HIGH WATER ALARM
ECCV VAULT AMBIENT TEMP
ECCV SITE POWER / ON UPS
ECCV FLOW RATE
ECCV UPSTREAM PRESSURE
ECCV DOWNSTREAM PRESSURE

ZS 0206
ZS 0207
LSH 0208
TIT 0209
EA 0210

OPTIONAL: NETWORK CONNECTION BETWEEN TWO PLCs TO SHARE DATA

GRAB SAMPLE LINE (ABOVE GRADE)

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)

FIT 0201
NOTE 4
PIT 0202
ZT 0203
ZT 0204
PIT 0205
ARV-0201
ARV-0202
FE 0201

CONNECTION FOR FUTURE SAMPLE EQUIPMENT

FROM WESTERN PIPELINE — 18" — BFV-0201 — 18" — BFV-0202 — 18" — FLOW DIRECTION — FCV-0203 — 18" — BFV-0203 — 18" — TO ECCV

S S S S

TBD" — FCV-0204

NOTE 5

ALL ITEMS ON THIS SHEET ARE BY OTHERS.

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS ECV, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-4.dwg
SAVED: KUEO7266, 10/16/2014 2:53:52 PM
PLOTTED: KUEO7266, 10/16/2014 2:20
USER: PHAOMIN
DWG VER: 1000

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
PROCESS & INSTRUMENTATION DRAWING
ECCV CONNECTION

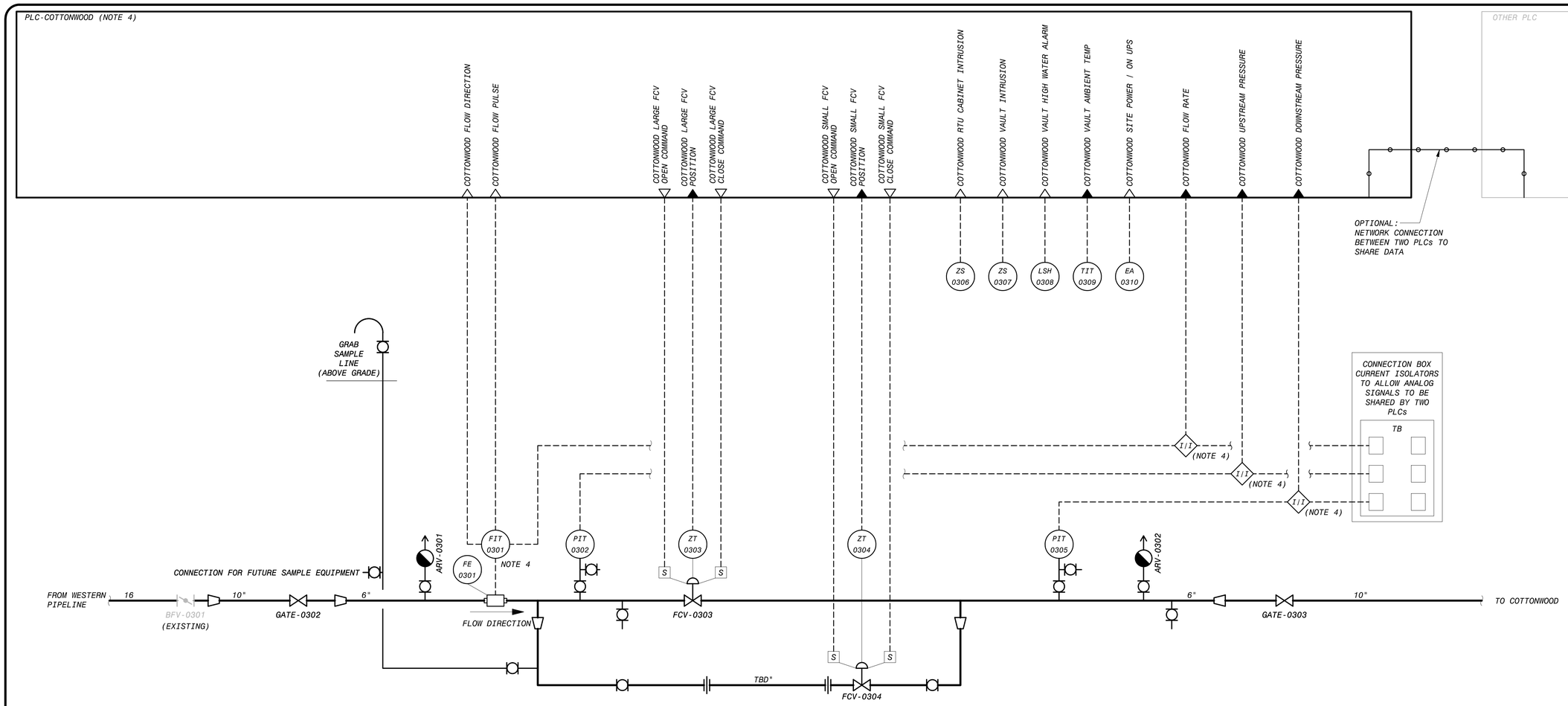
DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-4
SHEET
OF

FD7000_PH_D7000



NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS CTW, UNLESS OTHERWISE NOTED.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
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PLOTTED: KUEO7266, 10/16/2014 3:15
USER: PHAOMIN
DWG VER: 1000

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
PROCESS & INSTRUMENTATION DRAWING
COTTONWOOD CONNECTION

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-5
SHEET
OF

FD7000_PH
D7000

PLC-STONEGATE (NOTE 4)

OTHER PLC

STONEGATE FLOW DIRECTION
STONEGATE FLOW PULSE
STONEGATE LARGE FCV OPEN COMMAND
STONEGATE LARGE FCV POSITION
STONEGATE LARGE FCV CLOSE COMMAND
STONEGATE SMALL FCV OPEN COMMAND
STONEGATE SMALL FCV POSITION
STONEGATE SMALL FCV CLOSE COMMAND
STONEGATE RTU CABINET INTRUSION
STONEGATE VAULT INTRUSION
STONEGATE VAULT HIGH WATER ALARM
STONEGATE VAULT AMBIENT TEMP
STONEGATE SITE POWER / ON UPS
STONEGATE FLOW RATE
STONEGATE UPSTREAM PRESSURE
STONEGATE DOWNSTREAM PRESSURE

OPTIONAL: NETWORK CONNECTION BETWEEN TWO PLCs TO SHARE DATA

ZS 0406
ZS 0407
LSH 0408
TIT 0409
EA 0410

GRAB SAMPLE LINE (ABOVE GRADE)

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)

FIT 0401
NOTE 4
PIT 0402
ZT 0403
ZT 0404
PIT 0405
ARV-0401
ARV-0402
FE 0401

CONNECTION FOR FUTURE SAMPLE EQUIPMENT

FROM WESTERN PIPELINE
20"
BFV-0401
12"
FLOW DIRECTION
FCV-0403
12"
BFV-0402
20"
TO STONEGATE

TBD"
FCV-0404

S

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS STG, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED IN THE PLC ENCLOSURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50_2080 - PID Drawings
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PLOTTED: KUEO7266, 10/16/2014 3:19
USER: PHAMIN
DWG VER: 1001

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
PROCESS & INSTRUMENTATION DRAWING
STONEGATE CONNECTION

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-6
SHEET
OF

FD7000_PH
D7000

PLC-INVERNESS (NOTE 4)

OTHER PLC

INVERNESS FLOW DIRECTION
INVERNESS FLOW PULSE
INVERNESS LARGE FCV OPEN COMMAND
INVERNESS LARGE FCV POSITION
INVERNESS LARGE FCV CLOSE COMMAND
INVERNESS SMALL FCV OPEN COMMAND
INVERNESS SMALL FCV POSITION
INVERNESS SMALL FCV CLOSE COMMAND
INVERNESS RTU CABINET INTRUSION
INVERNESS VAULT INTRUSION
INVERNESS VAULT HIGH WATER ALARM
INVERNESS VAULT AMBIENT TEMP
INVERNESS SITE POWER / ON UPS
INVERNESS FLOW RATE
INVERNESS UPSTREAM PRESSURE
INVERNESS DOWNSTREAM PRESSURE

ZS 0506
ZS 0507
LSH 0508
TIT 0509
EA 0510

OPTIONAL: NETWORK CONNECTION BETWEEN TWO PLCs TO SHARE DATA

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs
TB

I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)

GRAB SAMPLE LINE (ABOVE GRADE)

CONNECTION FOR FUTURE SAMPLE EQUIPMENT

ARV-0501
FIT 0501
FE 0501
NOTE 4
PIT 0502
ZT 0503
ZT 0504
PIT 0505
ARV-0502

FROM WESTERN PIPELINE
10"
GATE-0501
GATE-0502
6"
FLOW DIRECTION
FCV-0503
6"
GATE-0503
10"
GATE-0504
TO INVERNESS

S
S
S
S
TBD"
FCV-0504

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS INV, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-7.dwg
SAVED: KUEO7266, 10/23/2014 11:44:50 AM
PLOTTED: KUEO7266, 10/23/2014 11:4
USER: PHAOMIN

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:
DWG VER: 1000

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SCADA
PROCESS & INSTRUMENTATION DRAWING
INVERNESS CONNECTION

DESIGNED: JB, SBR
DETAILED: TRK
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APPROVED:
DATE:

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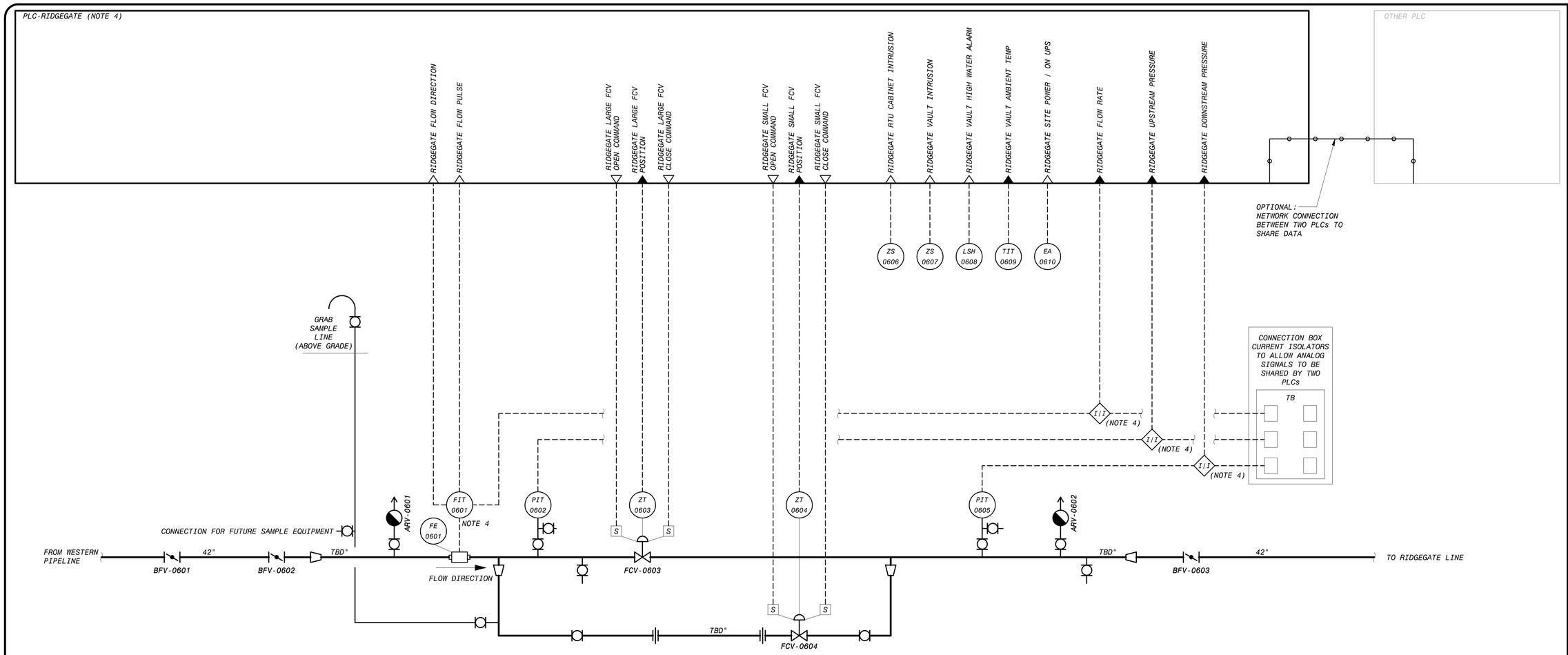
PROJECT NO.
182463

I-SCA-7
SHEET
OF

FD7000_PW
D7000



NOTE 6:

ALL ITEMS ON THIS SHEET ARE BY OTHERS.

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS RDG, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.
5. THIS STATION COULD BE PLACED AT "RIDGEGATE CONNECTION" OR "PARKER CONNECTON @ REUTER-HESS WTP".
6. ALL ITEMS ON THIS SHEET ARE BY OTHERS.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-8.dwg
SAVED: KUEO7266, 10/16/2014 3:30:48 PM
PLOTTED: KUEO7266, 10/16/2014 3:30
USER: PHAMIN
DWG VER: 1000

XREF1: BORDER.dwg
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SCADA
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RIDGEGATE CONNECTION

DESIGNED:	JB, SBR
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CHECKED:	
APPROVED:	
DATE:	

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PROJECT NO.
182463

I-SCA-8
SHEET
OF

FD7000_PH
07000

PLC-MERIDIAN 1 (NOTE 4)

OTHER PLC

MERIDIAN 1 FLOW DIRECTION
MERIDIAN 1 FLOW PULSE
MERIDIAN 1 LARGE FCV OPEN COMMAND
MERIDIAN 1 LARGE FCV POSITION
MERIDIAN 1 LARGE FCV CLOSE COMMAND
MERIDIAN 1 SMALL FCV OPEN COMMAND
MERIDIAN 1 SMALL FCV POSITION
MERIDIAN 1 SMALL FCV CLOSE COMMAND
MERIDIAN 1 RTU CABINET INTRUSION
MERIDIAN 1 VAULT INTRUSION
MERIDIAN 1 VAULT HIGH WATER ALARM
MERIDIAN 1 VAULT AMBIENT TEMP
MERIDIAN 1 SITE POWER / ON UPS
MERIDIAN 1 FLOW RATE
MERIDIAN 1 UPSTREAM PRESSURE
MERIDIAN 1 DOWNSTREAM PRESSURE

OPTIONAL: NETWORK CONNECTION BETWEEN TWO PLCs TO SHARE DATA

ZS 0706
ZS 0707
LSH 0708
TIT 0709
EA 0710

GRAB SAMPLE LINE (ABOVE GRADE)

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)

FIT 0701
NOTE 4
PIT 0702
ZT 0703
ZT 0704
PIT 0705
BACKFLOW PREVENTER
RPZ-0701
ARV-0701
ARV-0702
FE 0701
CONNECTION FOR FUTURE SAMPLE EQUIPMENT

FROM WESTERN PIPELINE
10"
GATE-0701
6"
FLOW DIRECTION
FCV-0703
6"
GATE-0702
10"
TO MERIDIAN

S
S
S
S

TBD"
FCV-0704

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS MR1, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-9.dwg
SAVED: KUEO7266, 10/16/2014 3:36:14 PM
PLOTTED: KUEO7266, 10/16/2014 3:35
USER: PHAMIN
DWG VER: 1000

XREF1: BORDER.dwg
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XREF3:
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SCADA
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MERIDIAN 1 CONNECTION

DESIGNED: JB, SBR
DETAILED: TRK
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APPROVED:
DATE:

0 1/2 1
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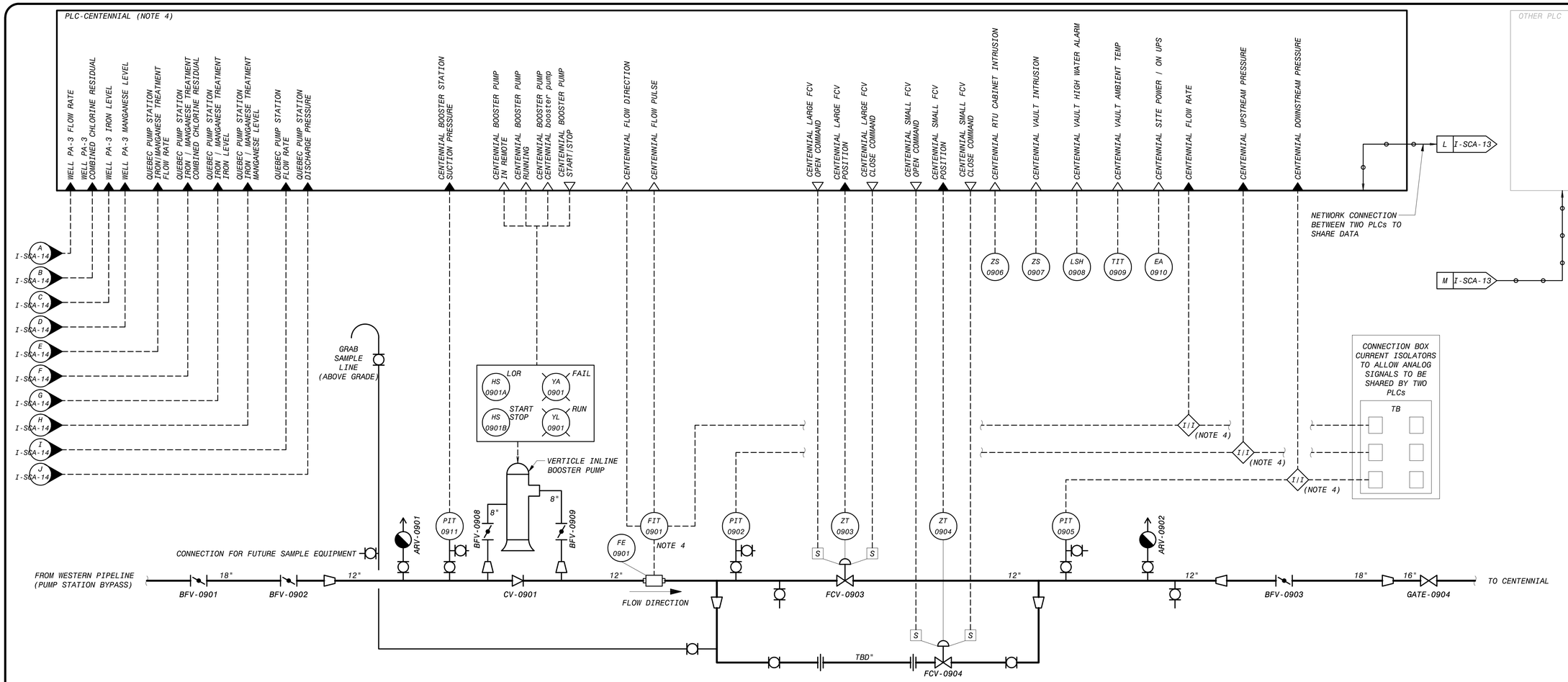
PROJECT NO.
182463

I-SCA-9
SHEET
OF

FD7000_PH
07000



NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS CEN, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-10.dwg
SAVED: KUEO7266, 10/23/2014 3:24:12 PM
PLOTTED: KUEO7266, 10/23/2014 3:23
USER: PHAMIN
DWG VER: 1000

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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SCADA
PROCESS & INSTRUMENTATION DRAWING
CENTENNIAL CONNECTION

DESIGNED:	JB,SBR
DETAILED:	TRK
CHECKED:	
APPROVED:	
DATE:	

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PROJECT NO.
182463

I-SCA-10
SHEET
OF

FD7000_PW
D7000

PLC-DENVER WATER (NOTE 4)

OTHER PLC

DENVER WATER FLOW DIRECTION
DENVER WATER FLOW PULSE
DENVER WATER LARGE FCV OPEN COMMAND
DENVER WATER LARGE FCV POSITION
DENVER WATER LARGE FCV CLOSE COMMAND
DENVER WATER SMALL FCV OPEN COMMAND
DENVER WATER SMALL FCV POSITION
DENVER WATER SMALL FCV CLOSE COMMAND
DENVER WATER RTU CABINET INTRUSION
DENVER WATER VAULT INTRUSION
DENVER WATER VAULT HIGH WATER ALARM
DENVER WATER VAULT AMBIENT TEMP
DENVER WATER SITE POWER / ON UPS
DENVER WATER FLOW RATE
DENVER WATER UPSTREAM PRESSURE
DENVER WATER DOWNSTREAM PRESSURE

ZS 1006
ZS 1007
LSH 1008
TIT 1009
EA 1010

OPTIONAL: NETWORK CONNECTION BETWEEN TWO PLCs TO SHARE DATA

GRAB SAMPLE LINE (ABOVE GRADE)

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)

ARV-1001
FE 1001
FIT 1001
NOTE 4
PIT 1002
ZT 1003
ZT 1004
PIT 1005
ARV-1002

CONNECTION FOR FUTURE SAMPLE EQUIPMENT

FROM WESTERN PIPELINE
TBD"
BFV-1001 (OPTIONAL)
BFV-1002
FLOW DIRECTION
FCV-1003
BFV-1003
TBD"
BFV-1004 (OPTIONAL)
TO DENVER WATER

S
S
S
S

TBD"
FCV-1004

NOTE:

ALL ITEMS ON THIS SHEET ARE BY OTHERS

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS DVW, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-11.dwg
SAVED: KUEO7266, 10/23/2014 10:57:20 AM
PLOTTED: KUEO7266, 10/23/2014 10:5
USER: PHAMIN
DWG VER: 1000

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
PROCESS & INSTRUMENTATION DRAWING
DENVER WATER TURNOUT

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-11
SHEET
OF

FD7000_PH
07000

PLC-SMOKEY HILL (NOTE 4)

PRESSURE MONITORING STATION WESTERN PIPELINE PRESSURE
PRESSURE MONITORING STATION VAULT HATCH INTRUSION ALARM
SMOKY HILL TANK 1101 DRAIN MANHOLE HIGH WATER ALARM
SMOKY HILL TANK 1101 LEVEL HIGH
SMOKY HILL TANK 1101 LEVEL LOW
SMOKY HILL TANK 1101 LEVEL (ULTRASONIC)
SMOKY HILL TANK 1101 LEVEL (PRESSURE)
SMOKY HILL RTU CABINET INTRUSION
SMOKY HILL TANK HATCH INTRUSION
SMOKY HILL SITE POWER / ON UPS
SMOKY HILL TANK 1102 DRAIN MANHOLE HIGH WATER ALARM
FUTURE SMOKY HILL TANK 1102 LEVEL (PRESSURE)
FUTURE SMOKY HILL TANK 1102 LEVEL (ULTRASONIC)
FUTURE SMOKY HILL TANK 1102 LEVEL HIGH
FUTURE SMOKY HILL TANK 1102 LEVEL LOW

ZS 1106
ZS 1107
EA 1108

LSH 1101
LSL 1101
LIT 1103
LE 1101
LE 1103

LIT 1113
LHS 1111
LSL 1111
LE 1113
LE 1111

B | I-SCA-2
4G
INTERNET
4G
CAT6
ROUTER WITH CELLULAR CAPABILITY
CAT6
SECURITY CAMERA SYSTEM NVR
CAT6
SECURITY IP CAMERA
CCTV SECURITY ENCLOSURE

FROM PRESSURE MONITORING STATION
A I-SCA-14
OMNIDIRECTIONAL ANTENNA
PHOENIX CONTACT RADISM 900SETUDANT OR EQUIVALENT (RECEIVE)

OVERFLOW
DRAIN
42"
BFV-1103
SAMPLE LINE MANHOLE
LIT 1104
LSH 1105
DRAIN MANHOLE
TANK DRAIN TO STILLING BASIN
42"
BFV-1101
42"
NC
BFV-1102
WESTERN PIPELINE

OVERFLOW
DRAIN
LIT 1114
42"
42"
LSH 1150
DRAIN MANHOLE
TBD"
TBD"
TBD"
BFV-1111
42"
42"
WESTERN PIPELINE
FUTURE PIPE REMOVAL
BFV-1112

NOTES:
1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS SMH, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) IS LOCATED INSIDE THE PLC ENCLOSURE.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-12.dwg
SAVED: KUEO7266, 10/23/2014 11:09:19 AM
PLOTTED: KUEO7266, 10/23/2014 11:0
USER: PHAOMIN
DWG VER: 1000

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:

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SCADA
PROCESS & INSTRUMENTATION DRAWING
SMOKY HILL TANK

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
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PROJECT NO.
182463

I-SCA-12
SHEET
OF

FD7000_PW
D7000

PLC-QUEBEC PUMPING STATION (EXISTING)

WELL PA-3 FLOW RATE
WELL PA-3 COMBINED CHLORINE RESIDUAL
WELL PA-3 IRON LEVEL
WELL PA-3 MANGANESE LEVEL
QUEBEC PUMP STATION IRON / MANGANESE TREATMENT FLOW RATE
QUEBEC PUMP STATION IRON / MANGANESE TREATMENT COMBINED CHLORINE RESIDUAL
QUEBEC PUMP STATION IRON / MANGANESE TREATMENT IRON LEVEL
QUEBEC PUMP STATION IRON / MANGANESE TREATMENT MANGANESE LEVEL
QUEBEC PUMP STATION FLOW RATE
QUEBEC PUMP STATION DISCHARGE PRESSURE

PLC OWNER: ECCV

PLC NAME: QUEBEC PUMP STATION PLC

EXISTING PLC PURPOSE
1) CONTROL ECCV FACILITIES IN REGION
2) RECEIVE WISE SYSTEM OPERATIONS INFORMATION

SOURCE OF INFORMATION
1) WILLOWS WELLS OPERATION
2) WTP TREATMENT AND BY-PASS RATES
3) QUEBEC PUMPING FLOW RATES

QUEBEC SITE DATA TRANSFER PLC

PLC OWNER: WISE

PLC NAME: QUEBEC SITE DATA TRANSFER PLC

NEW PLC PURPOSE
1) TRANSFER DATA BETWEEN ECCV, WISE & CWSD
2) AVOIDS USE OF SIGNAL SPLITTER
3) FLEXIBLE SECURITY BETWEEN SYSTEMS

WRITE PUMP DATA OF INTEREST TO WISE

1) FLOW THROUGH PRESSURE FILTERS
2) FLOW BY-PASSING PRESSURE FILTERS
3) WELL PA-3 PUMPING RATE
4) CHLORINE RESIDUAL INFORMATION
5) P.S. FLOW RATE
6) P.S. DISCHARGE PRESSURE

READ PUMP DATA OF INTEREST TO WISE

1) FLOW THROUGH PRESSURE FILTERS
2) FLOW BY-PASSING PRESSURE FILTERS
3) WELL PA-3 PUMPING RATE
4) CHLORINE RESIDUAL INFORMATION
5) P.S. FLOW RATE
6) P.S. DISCHARGE PRESSURE

L I-SCA-10

READ WISE DATA OF INTEREST TO ECCV

1) FLOW TO ECCV AT SMOKEY HILL
2) FLOW INTO SYSTEM FROM AURORA WATER
3) SMOKEY HILL TANK LEVEL
4) CHLORINE RESIDUAL INFORMATION AT SMOKEY HILL TANK
5) OTHER WISE OPERATIONS PARAMETERS OF INTEREST IF REQUESTED

WRITE WISE DATA OF INTEREST TO ECCV

1) FLOW TO ECCV AT SMOKEY HILL
2) FLOW INTO SYSTEM FROM AURORA WATER
3) SMOKEY HILL TANK LEVEL
4) CHLORINE RESIDUAL INFORMATION AT SMOKEY HILL TANK
5) OTHER WISE OPERATIONS PARAMETERS OF INTEREST IF REQUESTED

M I-SCA-10

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

A I-SCA-10
B I-SCA-10
C I-SCA-10
D I-SCA-10

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

E I-SCA-10
F I-SCA-10
G I-SCA-10
H I-SCA-10

I/I

FIT ????
AIT ????
AIT ????
AIT ????

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

I I-SCA-10
J I-SCA-10

FIT ????
AIT ????

OPTIONAL

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-13.dwg
SAVED: KUEO7266, 10/24/2014 9:18:13 AM
PLOTTED: KUEO7266, 10/24/2014 9:10
USER: PHAMTN

XREF1: BORDER.dwg
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QUEBEC PUMPING STATION

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
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DATE:

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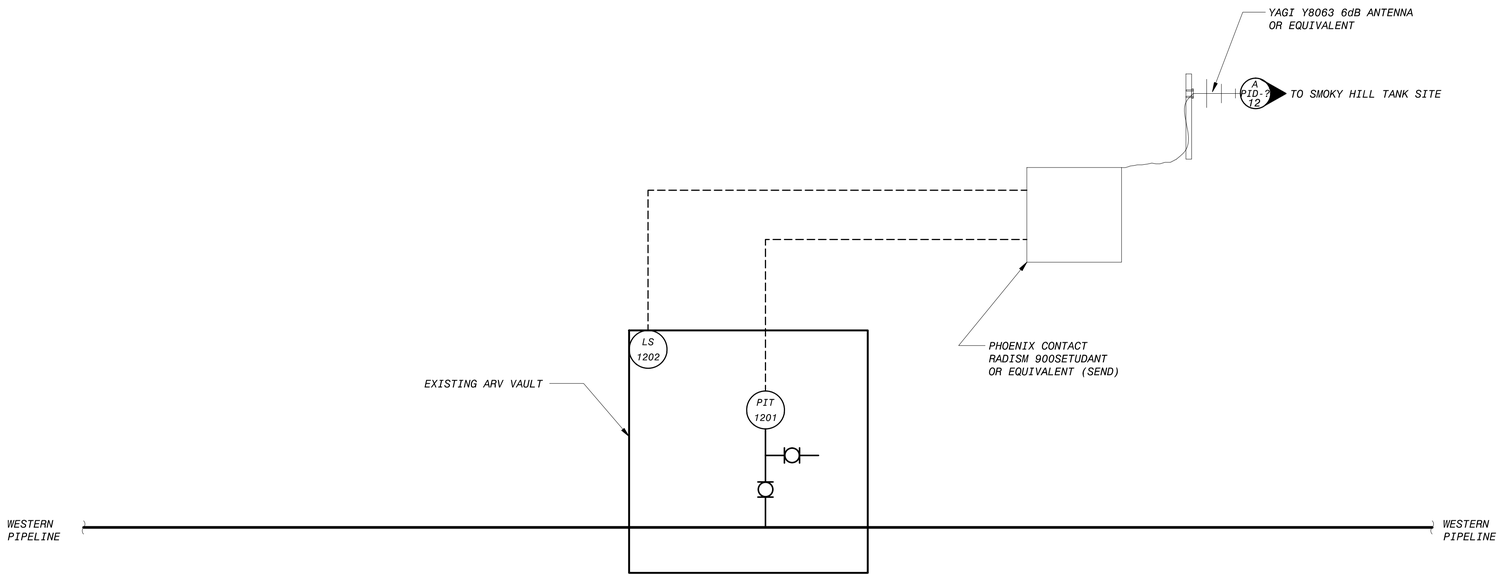
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-13
SHEET
OF

FD7000_PW
D7000



NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS PM1, UNLESS OTHERWISE NOTED.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS AND RECORD OF ISSUE	BY	CK	APP

50.2080 - PID Drawings
I-SCA-14.dwg
SAVED: KUEO7266, 10/23/2014 11:17:43 AM
PLOTTED: KUEO7266, 10/23/2014 11:1
USER: PHAMIN

XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:
DWG VER: 1000

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
PROCESS & INSTRUMENTATION DRAWING
PRESSURE MONITORING STATION

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-14
SHEET
OF

FD7000_PW
D7000

PLC-AURORA (NOTES 4 AND 5)

AURORA FLOW DIRECTION
AURORA FLOW PULSE
AURORA LARGE FCV OPEN COMMAND
AURORA LARGE FCV POSITION
AURORA LARGE FCV CLOSE COMMAND
AURORA SMALL FCV OPEN COMMAND
AURORA SMALL FCV POSITION
AURORA SMALL FCV CLOSE COMMAND
AURORA RTU CABINET INTRUSION
AURORA VAULT INTRUSION
AURORA VAULT HIGH WATER ALARM
AURORA VAULT AMBIENT TEMP
AURORA SITE POWER / ON UPS
AURORA FLOW RATE
AURORA UPSTREAM PRESSURE
AURORA DOWNSTREAM PRESSURE
AURORA WATER QUALITY ANALYZER 1 (CL?)
AURORA WATER QUALITY ANALYZER 2 (pH?)
SMOKEY HILL TANK LEVEL

ZS 1406
ZS 1407
LSH 1408
TIT 1409
EA 1410

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs
TB
CONTINUED ON DRAWING I-SCA-3

I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)

GRAB SAMPLE LINE (ABOVE GRADE)

CONNECTION FOR FUTURE SAMPLE EQUIPMENT
ARV-1401
FE 1401
FIT 1401
NOTE 4
PIT 1402
ZT 1403
ZT 1404
PIT 1405
ARV-1402
AIT 1421
CL2
AE 1421
AIT 1422
pH
AE 1422

FROM PRESSURE ZONE 7
24"
GATE-1401
BFV-1402
20"
FLOW DIRECTION
FCV-1403
S
S
S
S
TBD"
FCV-1404
CV-1401
20"
BFV-1403
24"
BFV-1404
A I-SCA-3 TO RANGEVIEW
TO STATE LAND BOARD LINE

D
D

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS AW1, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.
5. PLC MANUFACTURER AND CONFIGURATION SELECTED BY AURORA.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-15.dwg
SAVED: KUEO7266, 10/23/2014 11:20:18 AM
PLOTTED: KUEO7266, 10/23/2014 11:2
USER: PHAOMIN
DWG VER: 1000

XREF1: BORDER.dwg
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XREF3:
XREF4:

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SCADA
PROCESS & INSTRUMENTATION DRAWING
AURORA TEMPORARY CONNECTION

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-15
SHEET
OF

FD7000_PM
D7000

PLC-ACCWA (NOTE 4)

EXISTING ACCWA PLC

ACCWA WATER FLOW DIRECTION
ACCWA WATER FLOW PULSE
ACCWA WATER LARGE FCV OPEN COMMAND
ACCWA WATER LARGE FCV POSITION
ACCWA WATER LARGE FCV CLOSE COMMAND
ACCWA WATER SMALL FCV OPEN COMMAND
ACCWA WATER SMALL FCV POSITION
ACCWA WATER SMALL FCV CLOSE COMMAND
ACCWA WATER RTU CABINET INTRUSION
ACCWA WATER VAULT INTRUSION
ACCWA WATER VAULT HIGH WATER ALARM
ACCWA WATER VAULT AMBIENT TEMP
ACCWA WATER SITE POWER / ON UPS
ACCWA WATER FLOW RATE
ACCWA WATER UPSTREAM PRESSURE
ACCWA WATER DOWNSTREAM PRESSURE

OPTIONAL: NETWORK CONNECTION BETWEEN TWO PLCs TO SHARE DATA

ZS 1306
ZS 1307
LSH 1308
TIT 1309
EA 1310

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)

FE 1301
FIT 1301
NOTE 4
PIT 1302
ZT 1303
ZT 1304
PIT 1305

FROM WESTERN PIPELINE
TBD"
BFV-1301
FLOW DIRECTION
FCV-1303
BFV-1303
TBD"
TO ACCWA

S
S
S
S

TBD"
FCV-1304

NOTE:

PIPING, VALVES AND FLOWMETER ARE EXISTING

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS ACW, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.
5. REUSE EXISTING SENSORS IF THEY ARE SIMILAR TO WISE STANDARDS.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.2080 - PID Drawings
I-SCA-16.dwg
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XREF1: BORDER.dwg
XREF2:
XREF3:
XREF4:
DWG VER: 1001

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DESIGN/BUILD PACKAGE

SCADA
PROCESS & INSTRUMENTATION DRAWING
ACWWA WATER TURNOUT

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-16
SHEET
OF

FD7000_PH
D7000

PLC-HERITAGE EAGLE-BEND (NOTE 4)

OTHER PLC

HEB FLOW DIRECTION
HEB FLOW PULSE
HEB LARGE FCV OPEN COMMAND
HEB LARGE FCV POSITION
HEB LARGE FCV CLOSE COMMAND
HEB SMALL FCV OPEN COMMAND
HEB SMALL FCV POSITION
HEB SMALL FCV CLOSE COMMAND
HEB RTU CABINET INTRUSION
HEB VAULT INTRUSION
HEB VAULT HIGH WATER ALARM
HEB VAULT AMBIENT TEMP
HEB SITE POWER / ON UPS
HEB FLOW RATE
HEB UPSTREAM PRESSURE
HEB DOWNSTREAM PRESSURE

ZS 1506
ZS 1507
LSH 1508
TIT 1509
EA 1510

OPTIONAL: NETWORK CONNECTION BETWEEN TWO PLCs TO SHARE DATA

CONNECTION BOX CURRENT ISOLATORS TO ALLOW ANALOG SIGNALS TO BE SHARED BY TWO PLCs

TB

I/I (NOTE 4)
I/I (NOTE 4)
I/I (NOTE 4)

FIT 1501
NOTE 4
FE 1501
PIT 1502
ZT 1503
ZT 1504
PIT 1505

FROM WESTERN PIPELINE
EXISTING
EXISTING
BFV-1501
FLOW DIRECTION
FCV-1503
EXISTING
EXISTING
BFV-1503
HERITAGE EAGLE BEND

S
S
S
S

TBD"
FCV-1504

NOTE:

PIPING, VALVES AND FLOWMETER ARE EXISTING

NOTES:

1. SEE P&ID LEGEND AND ABBREVIATIONS ON DRAWINGS G-SCA-1, G-SCA-2 AND G-SCA-3.
2. LOCAL CONTROL DEVICES SUCH AS INDICATING LIGHTS AND SWITCHES, LOCATED ON ON CONTROL PANELS OR AT EQUIPMENT, MAY NOT BE SHOWN ON THIS P&ID.
3. SYSTEM CODE IS HEB, UNLESS OTHERWISE NOTED.
4. PROGRAMMABLE LOGIC CONTROLLER (PLC) AND SIGNAL BOOSTER/ISOLATORS ARE LOCATED INSIDE THE PLC ENCLOSURE.
5. REUSE EXISTING SENSORS IF THEY ARE SIMILAR TO OTHER WISE STANDARDS.

PRELIMINARY - NOT FOR CONSTRUCTION

DATE	REVISIONS AND RECORD OF ISSUE	NO.	BY	CK.	APP

50.2080 - PID Drawings
I-SCA-17.dwg
SAVED: KUEO7266, 10/23/2014 11:39:55 AM
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SCADA
PROCESS & INSTRUMENTATION DRAWING
HERITAGE EAGLE-BEND

DESIGNED: JB, SBR
DETAILED: TRK
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

I-SCA-17
SHEET
OF

FD7000_PH
D7000

DRAWINGS FOR

SOUTH METRO WISE AUTHORITY

DESIGN/BUILD PACKAGE
SMOKY HILL STORAGE TANK

SHEET LIST

SHEET NO.	DRAWING NO.	TITLE
		SMOKY HILL STORAGE TANK
1	G-SHT-1	COVER & SHEET LIST
2	G-SHT-2	SMOKY HILL TANK - GENERAL NOTES AND ABBREVIATIONS
3	G-SHT-3	SMOKY HILL TANK - GENERAL LEGEND AND SYMBOLS
4	G-SHT-4	SMOKY HILL TANK - VICINITY MAP
5	M-SHT-1	SMOKY HILL TANK - SITE PLAN
6	M-SHT-2	SMOKY HILL TANK - TANK SECTION
7	M-SHT-3	SMOKY HILL TANK - LANDSCAPE PLAN

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PROJECT NO.182463

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Black & Veatch Corporation
Centennial, Colorado

OCTOBER 2014

D50012

GENERAL NOTES

1. HORIZONTAL AND VERTICAL CONTROL:
   NAD 83/92 (BASIS OF AURORA GRID) NGVD 29

2. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES AND FACILITIES MAY BE INDICATED. OVERHEAD UTILITIES ARE NOT INDICATED IN ARCHITECTURAL ELEVATIONS, PROFILE OR SECTION DRAWINGS. THE ENGINEERING INVESTIGATIONS,LOCATION, AND DESIGNATION OF SUBSURFACE UTILITIES INDICATED IN THESE CONTRACT DOCUMENTS HAS BEEN PERFORMED TO QUALITY LEVEL D IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES AS OUTLINED IN ASCE STANDARD AND GUIDELINE BULLETIN CI/ASCE 38-02 UNLESS OTHERWISE DESIGNATED.

3. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIAL AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.

4. CONTRACTOR SHALL SUBMIT A STAGING, PARKING AND MATERIAL STORAGE PLAN AS PART OF RESPONSE TO RFP.

5. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY PRECISE LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STRUCTURES, WHETHER INDICATED ON THE DRAWINGS OR NOT, IN THE FIELD IN ADVANCE OF EXCAVATING, BY CONTACTING ALL UTILITIES AND OTHER AGENCIES, AND BY PROSPECTING. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, DEMOLITION, RECONSTRUCTION, AND RECONNECTION OF EXISTING FACILITIES AS REQUIRED TO COMPLETE THE WORK. IF REQUIRED AFTER FIELD VERIFICATION, CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE ANY NECESSARY MODIFICATIONS TO PROPOSED NEW WORK.

6. BEFORE CONSTRUCTION IS STARTED, CONTRACTOR SHALL COORDINATE WITH THE OWNER OF EACH UTILITY AND DEFINE THE REQUIREMENTS AND METHODS TO ACCOMMODATE THE PROTECTION, TEMPORARY SUPPORT, ADJUSTMENT, OR RELOCATION OF ANY UTILITIES AFFECTED BY THE PROPOSED NEW WORK.

7. CONTRACTOR SHALL COMPLY WITH THE GOVERNING AGENCY NPDES CONSTRUCTION REQUIREMENTS, AND SHALL PROVIDE APPROPRIATE MITIGATION MEASURES OR PROTECTION AND RESTORATION AT ALL LOCATIONS AS REQUIRED BY THEIR OPERATIONS, AND AS DIRECTED BY ENGINEER. SPECIAL CONSTRUCTION REQUIREMENTS, TEMPORARY PROTECTIVE FENCING OR BARRICADES, SHEETING, SHORING, EROSION PROTECTION, AND SURFACE RESTORATION AT CERTAIN LOCATIONS ARE INDICATED ON THE DRAWINGS TO BRING CONTRACTOR'S ATTENTION TO SENSITIVE AREAS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL PROPERTY CORNER MARKERS. PROPERTY CORNER MARKERS DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REESTABLISHED BY A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF COLORADO.

9. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING TREES, SHRUBS, AND PLANTS UNLESS OTHERWISE NOTED.

10. CONTRACTOR SHALL INSTALL ALL PIPELINES, PAVING, WALKWAYS, AND CURB AND GUTTER AT A UNIFORM GRADE BETWEEN ELEVATIONS DEPICTED ON THE DRAWINGS.

11. FOR ALL SITE GRADING, SMOOTH PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE. PARABOLIC ROUNDING SHALL APPLY TO ALL CUT AND FILL SECTIONS.

12. FINISH GRADE NEAR ACCESS HATCHES WILL SLOPE GENERALLY AWAY FROM STRUCTURE.

13. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.

14. RESTRAINED JOINTS SHALL BE PROVIDED FOR ALL BURIED PRESSURE PIPING.

15. THE PUMP STATION AND SUPPLY AND DISCHARGE PIPELINES CAN BE TAKEN OUT OF SERVICE FOR LIMITED PERIODS OF TIME TO FACILITATE CONSTRUCTION BETWEEN THE MONTHS OF NOVEMBER AND MARCH. SHORT DURATION SHUTDOWNS DURING OTHER MONTHS MAY BE POSSIBLE IF APPROVED BY THE OWNER.

16. CONTRACTOR SHALL REPLACE EXISTING PIPE CULVERTS THAT ARE REMOVED TO INSTALL THE NEW PIPELINE WITH NEW PIPE CULVERTS OF THE SAME SIZE, MATERIAL AND CONSTRUCTION AT THE SAME LOCATION AND INVERT ELEVATION AS THOSE THAT WERE REMOVED, AND SHAPE THE DITCH TO DRAIN WITH THE REPLACED CULVERT. CONTRACTOR SHALL PROVIDE ANY TEMPORARY CULVERTS THAT MAY BE REQUIRED FOR CONTRACTOR'S OPERATIONS. CONTRACTOR SHALL COORDINATE REMOVAL AND REPLACEMENT OF ANY CULVERTS WITHIN PUBLIC RIGHT-OF-WAY WITH THE REGULATING AGENCY.

17. UNLESS OTHERWISE SPECIFIED, INDICATED ON THE DRAWINGS, OR UNLESS APPROVED IN ADVANCE BY THE OWNER, INSTALL PIPELINES SLOPING DOWNWARD FROM AN AIR VALVE. MINIMUM 5'-0" COVER AT MANHOLE OR AT MANUAL ARV TO A BLOWOFF, AND PROVIDE THE SPECIFIED MINIMUM PIPE COVER. MINIMUM PIPE COVER SHALL BE FROM THE EXISTING, PROPOSED, OR FUTURE GROUND SURFACE OR ROAD PROFILE, WHICHEVER GROUND SURFACE OR ROAD PROFILE IS APPLICABLE AS INDICATED ON THE DRAWINGS. IF THE PROPOSED GROUND SURFACE IS ABOVE THE EXISTING GROUND SURFACE INDICATED ON THE DRAWINGS AND IS NOT THE ACTUAL GROUND SURFACE AT THE TIME OF PIPELINE INSTALLATION, INSTALL THE PIPELINE TO PROVIDE MINIMUM PIPE COVER FROM THE ACTUAL GROUND SURFACE IF ACCEPTABLE TO THE ENGINEER. HIGH POINTS IN THE PIPELINE WILL NOT BE PERMITTED EXCEPT AT LOCATIONS OF AIR VALVES AS INDICATED ON THE DRAWINGS. REVIEW THE PIPELINE PROFILE REQUIREMENTS WITH THE ENGINEER PRIOR TO PREPARING LAYING SCHEDULES AND PERFORMING FIELD STAKING.

18. CONTRACTOR SHALL FIELD VERIFY PRECISE LOCATION, ELEVATION, AND ARRANGEMENT OF CONNECTIONS OF NEW PIPELINES WITH EXISTING PIPELINES BASED ON FIELD CONDITIONS, INCLUDING EXPOSING EXISTING PIPING PRIOR TO FABRICATING NEW PIPING. CONTRACTOR SHALL PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVE CLOSURES, AND HARNESSED MECHANICAL COUPLING; ROTATE FITTINGS; DEFLECT JOINTS; AND MODIFY EXISTING PIPING AS APPLICABLE AND AS REQUIRED TO MAKE CONNECTIONS, INCLUDING ADJUSTMENTS FOR ANY OFFSETS IN CENTERLINE ELEVATIONS BETWEEN PIPELINES. CONTRACTOR SHALL PROVIDE TEMPORARY PLUG WITH FACTORY OUTLET SIZED AS REQUIRED FOR CONTRACTOR'S TESTING AND DISINFECTION WORK BEFORE MAKING CONNECTION, WHEN APPLICABLE. CONTRACTOR SHALL COORDINATE MAKING EACH CONNECTION WITH THE OWNER.

19. ALL DIP SHALL BE PROTECTED WITH A MINIMUM OF ONE WRAP OF POLYETHYLENE ENCASEMENT.

20. ALL OWNERSHIP, RIGHT-OF-WAY, AND EASEMENT INFORMATION WAS OBTAINED FROM THE DOUGLAS/ARAPAHOE COUNTY CLERK AND RECORDERS OFFICE AND DOUGLAS/ARAPAHOE COUNTY ASSESSORS OFFICE. NO TITLE COMMITMENT WAS PROVIDED TO FARNSWORTH GROUP, THEREFORE, THE SURVEYOR DOES NOT GUARANTEE ALL RECORDED INFORMATION IS SHOWN HEREIN.

21. CONTRACTOR SHALL INSTALL 3 INCH WIDE BLUE, NON-DETECTABLE, MARKER TAPE LABELED "CAUTION, WATER LINE BURIED BELOW" IN TRENCH APPROXIMATELY 2' – 6" ABOVE TOP OF PIPE ELEVATION ALONG ENTIRE LENGTH OF PIPELINE.

22. CONTRACTOR SHALL INSTALL TRACER WIRE ABOVE METALLIC PIPELINE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

23. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING FENCING DISTURBED BY CONSTRUCTION ACTIVITIES ALONG THE ENTIRE PIPELINE ROUTE, WHETHER OR NOT IT IS IDENTIFIED ON THE DRAWINGS. REPLACEMENT FENCING SHALL IDENTICALLY MATCH ORIGINAL FENCING AND SHALL BE CONSTRUCTED OF ENTIRELY NEW MATERIALS UNLESS APPROVED IN ADVANCE BY OWNER.

24. CONTRACTOR SHALL OPEN CUT EXISTING GRAVEL AND ASPHALT SURFACED ROADS WHERE INDICATED ON THE DRAWINGS. THICKNESS AND TYPE OF REPLACEMENT ASPHALT, BASE COURSE, AND AGGREGATE ROAD BASE SHALL BE AS SPECIFIED AND SHALL, AS A MINIMUM, MATCH EXISTING SURFACING.

25. PIPE JOINTS MAY BE DEFLECTED AS NECESSARY TO INSTALL PIPELINE ALONG THE LINES AND GRADES SHOWN. THE PIPE VERTICAL ALIGNMENT MAY BE SLIGHTLY ADJUSTED TO ACHIEVE 5 FOOT OF COVER, HOWEVER NO NEW HIGH POINTS OR LOW POINTS SHALL BE CREATED. MAXIMUM JOINT PULL OUT FOR HORIZONTAL CURVES AND VERTICAL SLOPE CHANGES WITH DEFLECTED JOINTS SHALL BE 75 PERCENT OF THE MANUFACTURERS MAXIMUM ALLOWABLE PULL OUT FOR THE PARTICULAR TYPE OF JOINT BEING DEFLECTED. VERTICAL SLOPE CHANGES SHOWN ON THE DRAWINGS TO BE POINT DEFLECTIONS SHALL BE DISTRIBUTED OVER MULTIPLE PIPE JOINTS TO THE LIMIT THE PULL OUR PER JOINT TO THE ABOVE LIMIT.

26. CONTRACTOR TO CONFINE ITS CONSTRUCTION DISTURBANCE TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS.

27. ALL OPEN CUT ROADS AND STREETS SHALL HAVE A MINIMUM OF ONE LANE OPEN AT ALL TIMES FOR EMERGENCY ACCESS. CONTRACTOR SHALL ALSO PROVIDE TRAFFIC CONTROL AT ALL OPEN CUT ROAD AND STREET CROSSINGS.

28. REFERENCES TO EXISTING PIPE MATERIAL TYPES ARE NOT CONFIRMED. CONTRACTOR TO FIELD VERIFY AS REQUIRED.

ABBREVIATIONS

&	AND
@	AT
Ø	DIAMETER
#	NUMBER
%	PERCENT
AB	ANCHOR BOLT
ALUM	ALUMINUM
AW	AIR WASH
APPROX	APPROXIMATE
A/V	AIR VAC
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BOL	BEGINNING OF LINE
BV	BALL VALVE
BWW	BACKWASH WATER
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
CLR	CLEAR
CLSM	CONCRETE LOW STRENGTH MATERIAL
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
COR	CORNER
CP	CONTROL POINT
CPLG	COUPLING
CRB	CONCRETE REACTION BLOCK
CISP	CAST IRON SOIL PIPE
CTRS	CENTERS
CU	CUBIC
CWSD	CENTENNIAL WATER AND SANITATION DISTRICT
C/L	CENTER LINE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DMJ	DISMANTLING JOINT
DN	DOWN
DWG	DRAWING
DWLS	DOWELS
E	EAST
EA	EACH
ECC	ECCENTRIC
ELEC	ELECTRICITY
EL	ELEVATION
EMBED	EMBEDDED
ENCSMT	ENCASEMENT
EOL	END OF LINE
EQUIP	EQUIPMENT
EQ	EQUAL
ESMT	EASEMENT
EXIST,EX	EXISTING
EXP	EXPANSION
FCV	FLOW CONTROL VALVE
FE	FILTER EFFLUENT
FH	FIRE HYDRANT
FIN	FINISHED
FL	FLOOR
FLG	FLANGE
FM	FLOWMETER
FS	FAR SIDE, FILTER SLUDGE
FT	FEET
GAL	GALLON(S)
GALV	GALVANIZED
GR	GRADE
G-R	GORMAN-RUPP PUMPS
GV	GATE VALVE
HDPE	HIGH DENSITY POLYURETHANE
HORIZ	HORIZONTAL
HMC	HARNESSED MECHANICAL COUPLING
HWY	HIGHWAY
ID	INSIDE DIAMETER
INV,IE	INVERT ELEVATION
IRR	IRRIGATION
JT	JOINT
LAS	LIQUID AMMONIUM SULFATE
MAX	MAXIMUM
MC	MECHANICAL COUPLING
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
N	NORTH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NO.	NUMBER
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
PC	POINT OF CURVE
PE	PLAIN END
PI	POINT OF INTERSECTION
PL	PLATE
PRV	PRESSURE REDUCING VALVE
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSV	PRESSURE SUSTAINING VALVE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
REINF	REINFORCING
REQD	REQUIRED
RESTRD	RESTRAINED
ROW	RIGHT OF WAY
RW	RAW WATER
S	SOUTH, SLOPE
SAN	SANITARY SEWER
SEC	SECTION
SH(SHT)	SHEET
SHC	SODIUM HYPOCHLORITE
SIM	SIMILAR
SMW	SOUTH METRO WATER SUPPLY AUTHORITY
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
ST	STEEL, STORM
STA	STATION
STD	STANDARD
TEMP	TEMPORARY
T.O.P.	TOP OF PIPE
TYP	TYPICAL
USGS	UNITED STATES GEOLOGICAL SURVEY
UTIL	UTILITY
VERT	VERTICAL
VPI	VERTICAL POINT OF INTERSECTION
W	WEST
W/	WITH
WWF	WELDED WIRE FABRIC

NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.3770 - Smoky Hill Tank
G-SHT-2.dwg

XREF1:BORDER.dwg
XREF2:G-GRAL1-XREF.dwg
XREF3:
XREF4:

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USER:PHAMTN

DWG VER:1000

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SMOKY HILL TANK
GENERAL NOTES AND ABBREVIATIONS

DESIGNED: DDM
DETAILED: TSH
CHECKED: KCH
APPROVED: DRK
DATE: 6/2/2014

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-SHT-2
SHEET
OF

PRELIMINARY - NOT FOR CONSTRUCTION

FD7000_PW
D7000

GENERAL LEGEND

- SURFACED STREET, ROAD OR DRIVE
- SURFACED STREET, ROAD OR DRIVE WITH CURBS
- NON-SURFACED STREET, ROAD OR DRIVE
- CONCRETE WALK
- CB — CATCH BASIN
- MANHOLE
- DRAINAGE COURSE OR FLOW LINE
- 326 — EXISTING GROUND CONTOUR
- 326 — FINISH GRADE CONTOUR
- BANK OR SLOPE LINES
- #3 OR T.H.#3 / B3 — TEST HOLE AND NUMBER
- SURVEY LINE WITH PI, PT, OR POT
- CONCRETE ENCASEMENT - PLAN
- CONCRETE REACTION BLOCKING AT BEND, PLUG OR TEE
- CULVERTS
- TUNNEL CASING - PLAN
- SMALLER THAN 24" / 24" AND LARGER } EXISTING
- GENERAL LAYOUT YARD PIPING
- SMALLER THAN 24" / 24" AND LARGER } NEW
- NEW WATER LINE OR SEWER IN PROFILE
- TUNNEL CASING - PROFILE
- LOC — LIMITS OF CONSTRUCTION
- PE/L — PERMANENT EASEMENT LINE
- TE/L — TEMPORARY EASEMENT LINE
- UE/L — UTILITY EASEMENT LINE
- R/W — RIGHT-OF-WAY LINE
- S/L — SURVEY LINE / SECTION LINE
- P/L — PROPERTY LINE
- W — WATER LINE (UNDERGROUND)
- G — GAS LINE (UNDERGROUND)
- T — TELEPHONE (UNDERGROUND)
- E — ELECTRICAL (UNDERGROUND)
- OHE — POWER OR TELEPHONE LINES (OVERHEAD)
- FO — FIBER OPTIC (UNDERGROUND)
- SAN — SANITARY SEWER (UNDERGROUND)
- SS — STORM SEWER (UNDERGROUND)
- X — FENCE
- X — X — SILT FENCE
- CENTERLINE
- (G) (W) — WATER OR GAS VALVE
- (WM) (GM) — WATER OR GAS METER
- TELEPHONE OR POWER POLE WITH GUY ANCHOR
- FH — FIRE HYDRANT
- Y — YARD HYDRANT
- UTILITY POLE
- TRAFFIC SIGNAL
- TRAFFIC SIGN
- S — SIGN

- BUILDINGS, STRUCTURES
- STRUCTURES UNDERGROUND
- FUTURE BUILDINGS, STRUCTURES
- RAILROAD, EACH TRACK
- 1 / AC45 — SECTION NUMBER OR DETAIL LETTER; DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS; OR WHERE SECTION IS CUT OR DETAIL IS NOTED
- 1 / A045 — DOOR, WINDOW AND LOUVER SCHEDULE REFERENCE; WALL ELEVATION
- D / 4 — ABBREVIATION; SCHEDULE NUMBER
- F102 — ROOM NUMBER; AREA DESIGNATION
- PV 10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- PV-10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- EQUIP CALLOUT — EQUIPMENT REPRESENTATION WITH CALLOUT
- EXISTING FACILITY TO BE DEMOLISHED OR REMOVED
- 123 — CONTROL POINT, BENCH MARK, AND STATION NUMBER
- SOIL TEST HOLE
- SS — SANITARY SEWER MANHOLE
- ST — STORM SEWER MANHOLE
- HEDGE, BRUSH, SHRUBS, WOODS
- 10" — DECIDUOUS TREE AND TRUNK DIAMETER
- DO NOT DISTURB EXISTING VEGETATION. EXISTING VEGETATION TO REMAIN AND BE PROTECTED
- CP — INDICATES CATHODIC PROTECTION TEST STATION
- F — INDICATES FIBER PULL BOX
- INDICATES SPOT SHOT ON TOP OF 12" OR 24" WATER LINE

MATERIALS LEGEND

- EARTH OR GRADE
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- ROCK
- NEW CONCRETE
- EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE
- BRICK, FACE
- BRICK, COMMON
- CONCRETE MASONRY UNITS (CMU)
- CUT STONE OR SAND FILL, GROUT, MORTAR, CLSM, AND PLASTER
- RIPRAP
- CHECKERED PLATE
- STEEL (FOR 1"SCALE & LARGER)
- STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER)
- BAR GRATING (LINES IN DIRECTION OF SPAN)
- ALUMINUM
- INSULATION (BATT)
- INSULATION (RIGID)

PIPING SYSTEMS

(solid line)	NEW PIPING
(dashed line)	UNDERGROUND PIPING
(screened line)	EXISTING PIPING
(long dash line)	FUTURE PIPING
A	AIR (COMPRESSED)
ALUM	ALUMINUM SULFATE (ALUM)
AR	ARGON
CRW	CHEMICAL RESISTANT ACID WASTE
CRV	CHEMICAL RESISTANT ACID WASTE VENT
TW	TEMPERED OR BLENDED WATER
C	CARBON SLURRY
ACET	ACETYLENE
CWR	CHILLED WATER RETURN
CWS	CHILLED WATER SUPPLY
CL(G)	CHLORINE GAS
CL(L)	CHLORINE LIQUID
CL(S)	CHLORINE SOLUTION
CDWR	CONDENSER WATER RETURN
CDWS	CONDENSER WATER SUPPLY
Co2(G)	CARBON DIOXIDE GAS
Co2(S)	CARBON DIOXIDE SOLUTION
CW	WATER, COLD
DW	DISTILLED WATER
FeCl	FERRIC CHLORIDE
FeS	FERRIC SULFATE
F	FIRE PROTECTION WATER SYSTEM
FL	FLUORIDE
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FOV	FUEL OIL VENT
G	GAS, NATURAL
H	HYDROGEN
HE	HELIUM
HP	HYDROGEN PEROXIDE
PA	PHOSPHORIC ACID
HWR	HEATING SYSTEM WATER RETURN
HWS	HEATING SYSTEM WATER SUPPLY
HW	WATER, POTABLE HOT
HWC	HOT WATER CIRCULATING
IA	INSTRUMENT AIR
PERM	POTASSIUM PERMANGANATE
LIME	LIME
PG	LP GAS (PROPANE)
N	NITROGEN
SA	SODA ASH
NaOH	SODIUM HYDROXIDE
SP	SODIUM HEXAMETAPHOSPHATE (PHOSPHATE)
NaOCL	SODIUM HYPOCHLORITE
AMM(G)	AMMONIA GAS
AMM(S)	AMMONIA SOLUTION
NO	NITROUS OXIDE
NPW	WATER, NON-POTABLE
NPHW	WATER, NON-POTABLE HOT
OX	OXYGEN
OZ	OZONE
OF	OVERFLOW
POLY	POLYMER SOLUTION
RF	REFRIGERANT
SS	STORM DRAIN
SG	SLUDGE GAS
SI	SILICA
PD	SUMP PUMP DISCHARGE
SAN	SANITARY SEWER
V	VENT
VAC	VACUUM
W	WATER

PIPING ACCESSORIES LEGEND

- BLIND FLANGE
- CAP OR PLUG
- CO — CLEANOUT
- CROSS
- DIAPHRAGM SEAL
- ELBOW
- ELBOW DOWN
- ELBOW TURNING UP
- SIZE — HOSE CONNECTION
- Q — QUICK COUPLING
- REDUCER
- RUPTURE DISK
- TEE
- TEE LINE DOWN
- TEE LINE UP
- WYE
- WYE STRAINER
- WYE STRAINER WITH BLOWOFF
- DRAIN OR BELL-UP
- CALIBRATING COLUMN
- TRAP
- UNION
- WALL SLEEVE
- AT — AUTOMATIC DRAIN TRAP
- DT — DRIP TRAP
- S S — DUPLEX STRAINER
- EXPANSION COMPENSATOR
- F — INLINE FILTER
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE CONNECTOR
- HOSE REEL
- INJECTOR, EDUCTOR, BLENDER
- ORIFICE PLATE
- PIPE GUIDE
- S — SEDIMENT TRAP
- S — STRAINER
- SUCTION DIFFUSER
- SURGE CHAMBER
- VENT - SCREENED
- VENT
- P — PRESSURE GAUGE W/SNUBBER
- SIGHT FLOW INDICATOR
- T — TEMPERATURE INDICATOR
- THERMOMETER
- ELECTROMAGNETIC/ULTRASONIC FLOWMETER
- PITOT TUBE
- ROTAMETER
- TURBINE OR PROPELLOR FLOWMETER
- M — SET STOP METER
- VENTURI
- FM — FLOW METER
- PIPE DIFFUSER

MISCELLANEOUS EQUIPMENT

- STATIC MIXER
- VERTICAL MIXER
- SIGHT GLASS
- CENTRIFUGE
- CHANNEL DIFFUSER
- COMPRESSOR OR BLOWER
- PIPE ANCHOR
- PUMP
- SLUICE GATE
- SLIDE GATE
- STOP PLATE
- BAR SCREEN
- EXPANSION TANK
- SCREW (LIFT) PUMP
- FLUME
- WEIR

VALVE LEGEND

- PINCH VALVE
- PLUG VALVE, ECCENTRIC
- PLUG VALVE, NON-ECCENTRIC
- BUTTERFLY VALVE
- GATE VALVE
- BALL VALVE
- GLOBE VALVE
- CHECK VALVE
- 3 WAY VALVE
- 4 WAY VALVE
- ANGLE VALVE
- CHLORINE INSTITUTE VALVE
- DIAPHRAGM VALVE
- THROTTLING VALVE
- FLAME ARRESTER OR CHECK
- BACKWATER VALVE
- INLINE PRESSURE RELIEF VALVE
- PRESSURE REGULATING VALVE
- PRESSURE SUSTAINING OR MAINTAINING VALVE
- VACUUM BREAKER
- THERMAL SHUTOFF VALVE
- EXPLOSION RELIEF VALVE
- HOSE FAUCET
- HOSE FAUCET W/VACUUM BREAKER
- HOSE VALVE W/HOSE NIPPLE
- BACKFLOW PREVENTER
- SAFETY RELIEF VALVE
- V — VACUUM RELIEF CHECK VALVE
- PRESSURE VACUUM RELIEF VALVE

ACTUATOR LEGEND

- E — ELECTRIC
- FLOAT
- DIAPHRAGM
- P/O — AIR/OIL TANDEM
- S — SOLENOID
- A — AIR

NOTE:

SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED.
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY).
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW ON OTHER PACKAGES SHALL BE DELINEATED AS DASHED.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP
DATE	REVISIONS AND RECORD OF ISSUE		

50.3170 - Smoky Hill Tank
G-SHT-3.dwg
SAVED: FRE08341, 7/19/2013 3:17:13 PM
PLOTTED:
USER: PWADMIN
DWG VER: 1000
XREF1: G-GNRL2-XREF.dwg
XREF2: BORDER.dwg
XREF3:
XREF4:

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SMOKY HILL TANK
GENERAL LEGEND AND SYMBOLS

DESIGNED: DDM
DETAILED: TSH
CHECKED: KCH
APPROVED: DRK
DATE: 6/2/2014

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-SHT-3
SHEET
OF

FD7000_PW
D7000

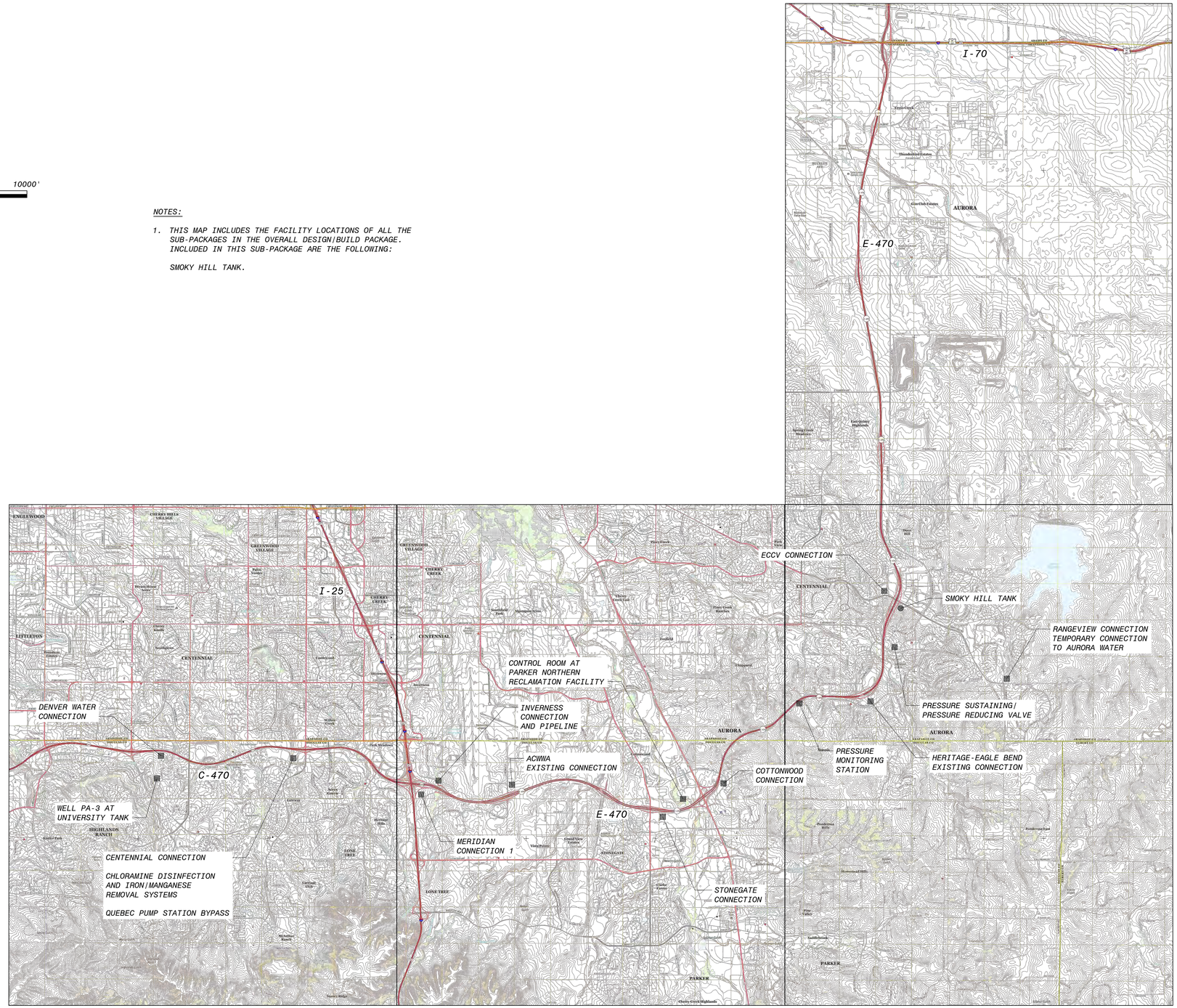
5000' 2500' 0 5000' 10000'

1"=5000'

NOTES:

1. THIS MAP INCLUDES THE FACILITY LOCATIONS OF ALL THE SUB-PACKAGES IN THE OVERALL DESIGN/BUILD PACKAGE. INCLUDED IN THIS SUB-PACKAGE ARE THE FOLLOWING:

   SMOKY HILL TANK.



PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50.377G - Smoky Hill Tank
G-SHT-4.dwg
SAVED: FRE08841, 7/19/2013 3:17:13 PM
PLOTTED:
USER: PHAOMIN

XREF1:G-CVR-HIGHLAND RANCH.dwg
XREF2:G-CVR-COAL CREEK.dwg
XREF3:OD_Parker_20130808_TW_geo.pdf
XREF4:G-CVR-VIC-ANNO.dwg
DWG VER: 1000

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SMOKY HILL TANK
VICINITY MAP

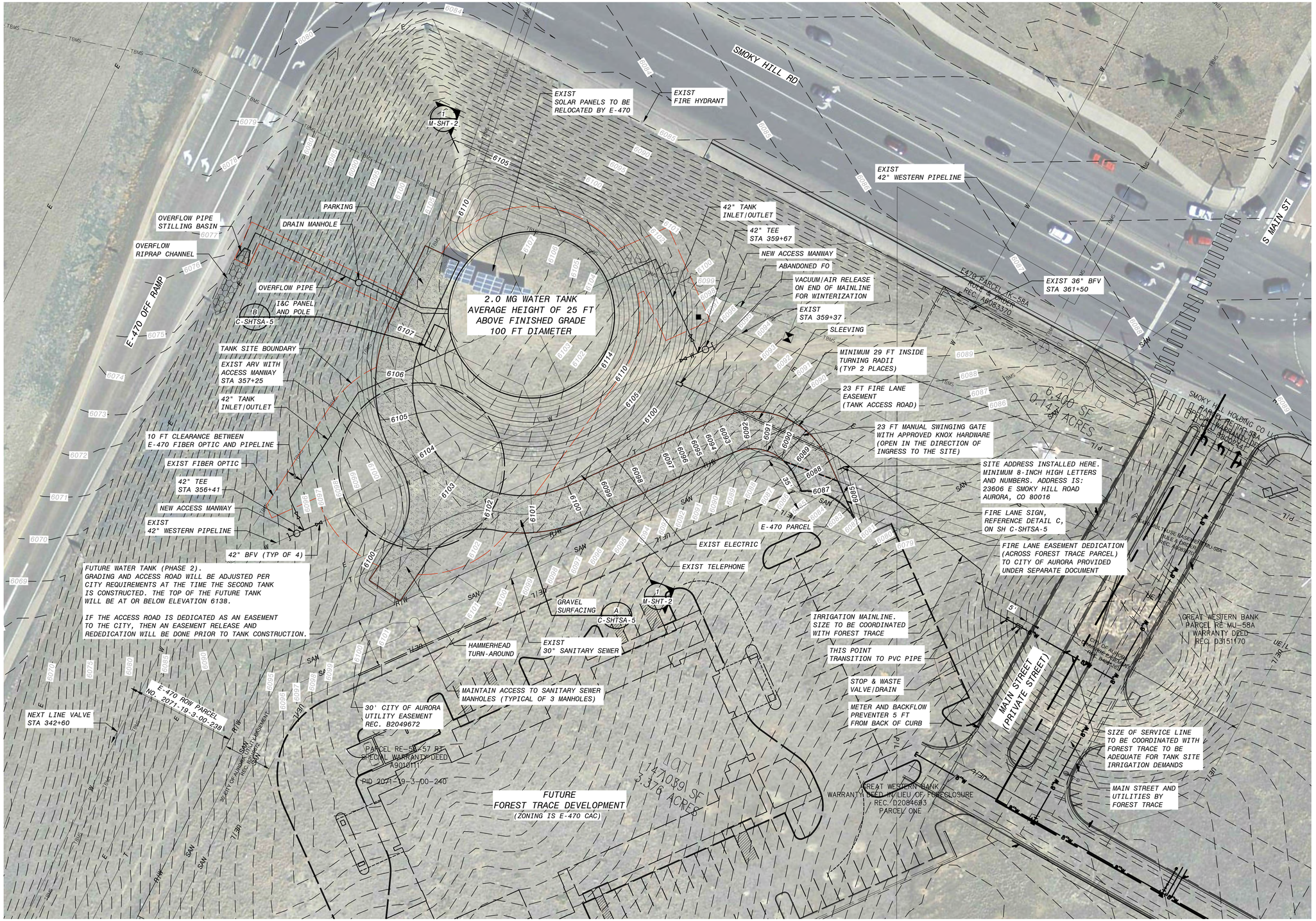
DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-SHT-4
SHEET
OF

FD7000_PH
D7000



PLAN
1" = 30'-0"

30' 20' 10' 0 30' 60'
1"=30'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3170 - Smoky Hill Tank	

M-SHT-1.dwg
SAVED: SWA29179, 9/16/2013 8:55:52 AM
PLOTTED:
USER: PWAGMIN
DWG VER: 1002
XREF1:
XREF2:
XREF3:
XREF4:

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SMOKY HILL TANK
SITE PLAN

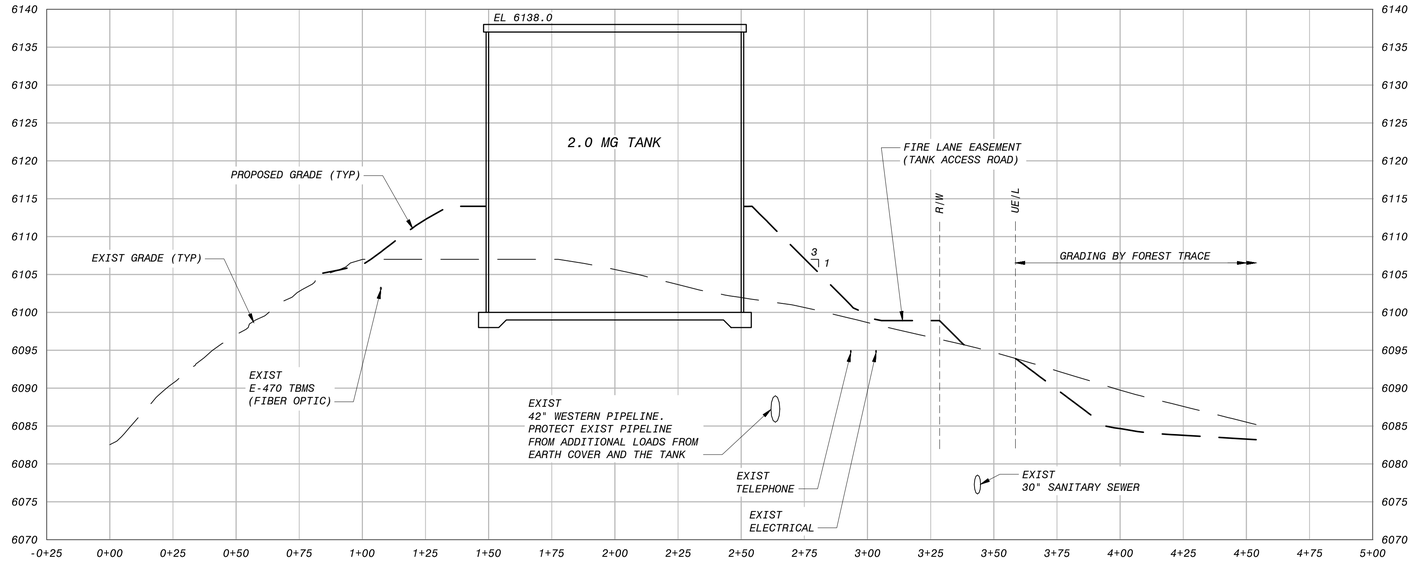
DESIGNED: DDM
DETAILED: TSH
CHECKED: KCH
APPROVED: DRK
DATE: 6/2/2014

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

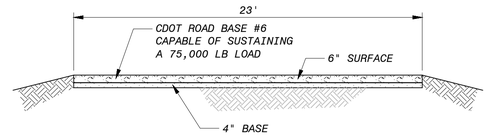
PROJECT NO.
182463

M-SHT-1
SHEET
OF

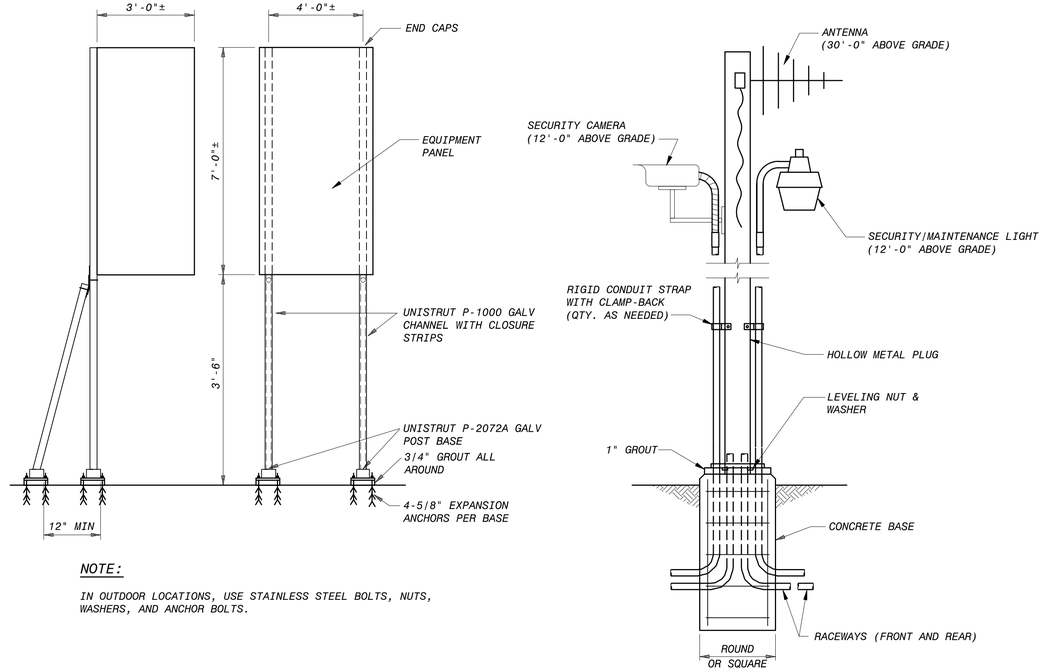
FD7000
D7000



1 SECTION
M-SHT-1 1" = 30'-0"



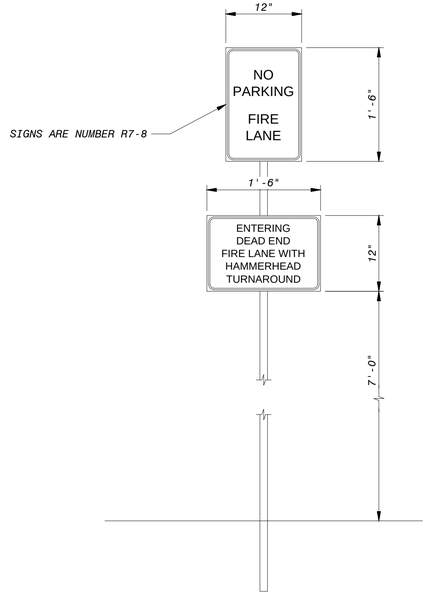
FIRE LANE (TANK ACCESS ROAD)
A CROSS-SECTION
- NO SCALE



NOTE:

IN OUTDOOR LOCATIONS, USE STAINLESS STEEL BOLTS, NUTS, WASHERS, AND ANCHOR BOLTS.

B I&C PANEL AND POLE
NO SCALE



C FIRE LANE SIGN
- NO SCALE

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	REVISIONS AND RECORD OF ISSUE	DATE
				Smoky Hill Tank	50.3170
				M-SHT-2.dwg	
				SAVED:SWA29179, 9/16/2013 8:55:52 AM	
				PLOTTED:	
				USER:PWAOMIN	DWG VER:1003

XREF1:
XREF2:
XREF3:
XREF4:

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

SMOKY HILL TANK
TANK SECTION

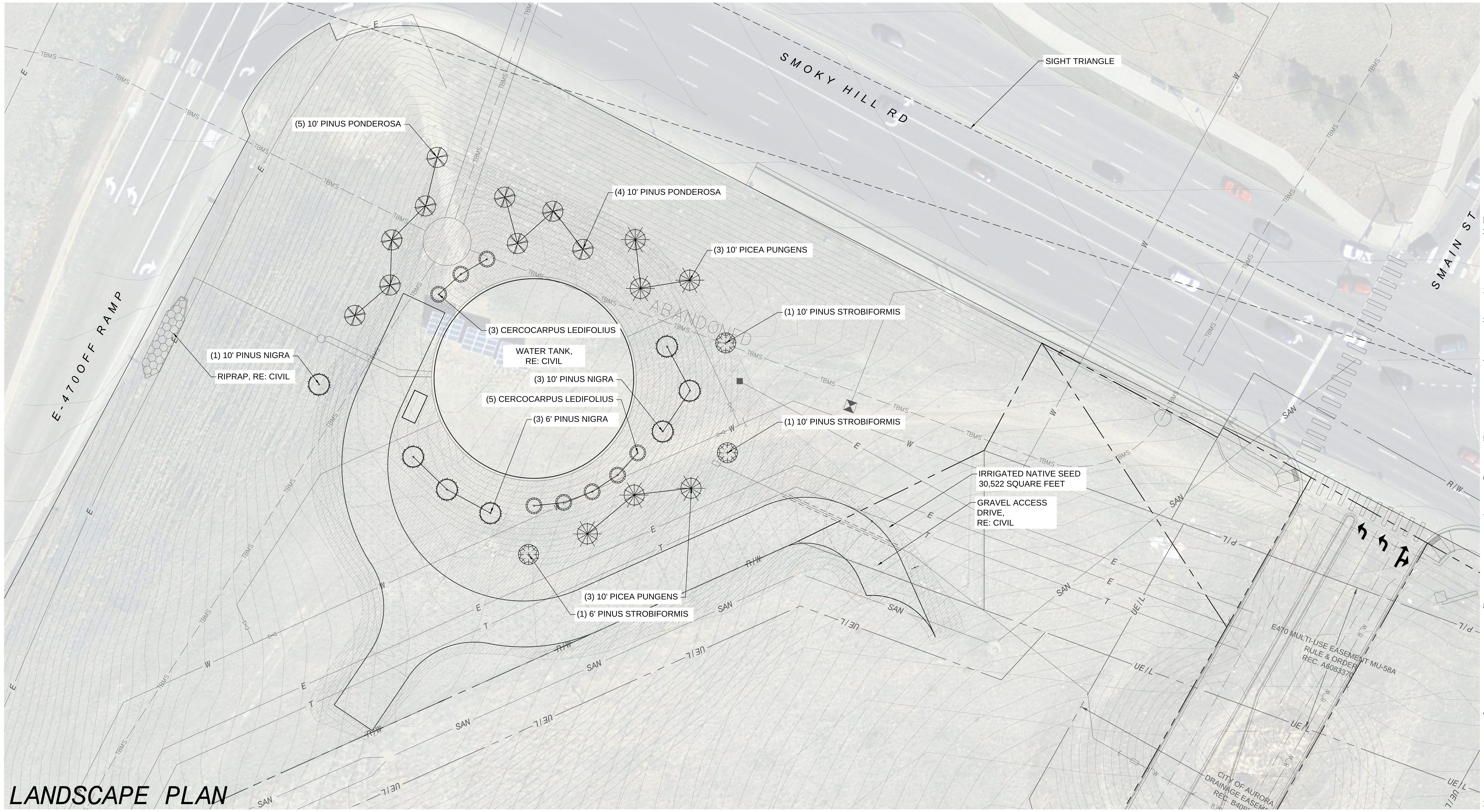
DESIGNED: DDM
DETAILED: TSH
CHECKED: KCH
APPROVED: DRK
DATE: 6/2/2014

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

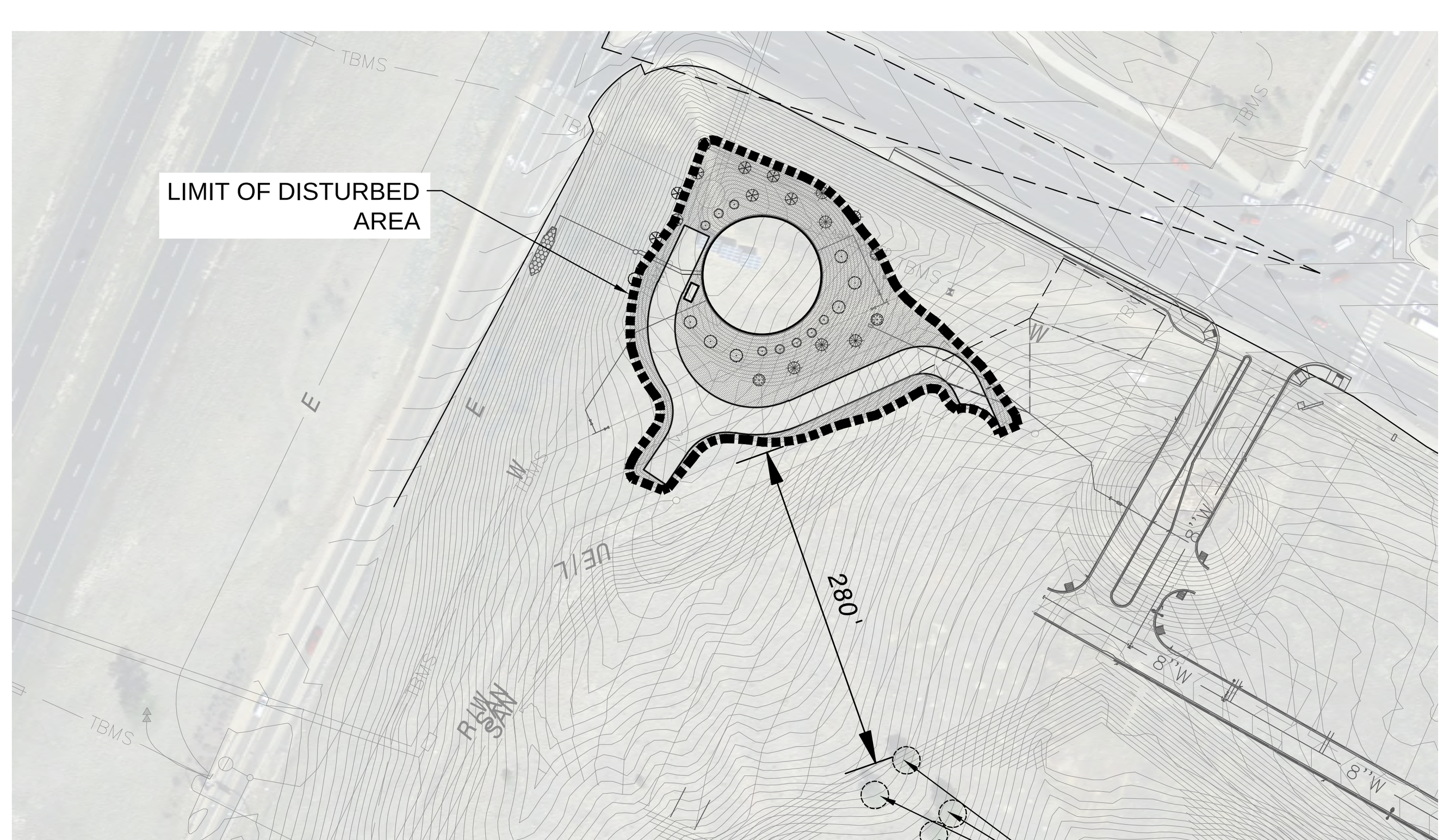
PROJECT NO.
182463

M-SHT-2
SHEET
OF

FD7000
D7000



LANDSCAPE PLAN



TREE PROTECTION PLAN

EXISTING TREES NUMBERED 355 - 358 TO BE PROTECTED WITH TREE PROTECTIVE FENCING DURING CONSTRUCTION. MINIMUM DISTANCE BETWEEN THE TRUNK AND THE DISTURBANCE SHALL BE EQUAL TO ½ OF THE TREE'S DIAMETER CONVERTED TO FEET.
RE: FOREST TRACE TREE PROTECTION PLAN

PLANTING SCHEDULE

EVERGREEN TREES

QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	DESCRIPTION	WATER USAGE
6	COLORADO SPRUCE	PICEA PUNGENS	10'-0"	NATIVE CONIFER	LOW
3	AUSTRIAN PINE	PINUS NIGRA	6'-0"	CONIFER	LOW
4	AUSTRIAN PINE	PINUS NIGRA	10'-0"	CONIFER	LOW
9	PONDEROSA PINE	PINUS PONDEROSA	10'-0"	NATIVE CONFIER	LOW
1	PINUS STROBIFORMIS	WHITE PINE	6'-0"	CONIFER	LOW
2	PINUS STROBIFORMIS	WHITE PINE	10'-0"	CONIFER	LOW

SHRUBS

QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	DESCRIPTION	WATER USAGE
8	CURLLEAF MOUNTAIN MAHOGANY	CERCOCARPUS LEDIFOLIUS	5 GAL.	NATIVE BROADLEAF EVERGREEN	LOW

SEED

QUANTITY	COMMON NAME	BOTANICAL NAME	SIZE	DESCRIPTION	WATER USAGE
30,522 SF	NATIVE PRAIRE SEED MIX	T.B.D.	N/A	XERIC SEED MIX	LOW

LANDSCAPE DATA (CITY OF AURORA)

STREET FRONTAGES TABLE

AREA	DESCRIPTION	LENGTH	TREES REQ.	TREES PROVIDED
SMOKY HILL RD.	1 T / 40 LF	EST. 560'	14	NONE

SUMMARY OF SPECIAL BUFFERS

AREA	DESCRIPTION	LENGTH	TREES/ SHRUBS REQ.	TREES / SHRUBS PROVIDED
TANK PERIMETER	1T, 10S / 40 L.F.	314 FEET	8 TREES, 79 SHRUBS	25 TREES, 8 SHRUBS
E-470 SPECIAL BUFFER	MUST PROVIDE 25' WIDE BUFFER WITH 1 T , 10S /25 L.F.	EST. 300'	12 TREES, 120 SHRUBS	NONE
NON-STREET FRONTAGE PROPERTY LINE BUFFERS	25' WIDE W/ 1T, 5S / 25 LF (MIN 3" CAL DECID., 10' EVG., MIN. 50% EVG.)	UNKNOWN		NONE

TREE PRESERVATION AND PROTECTION PLAN

EXISTING TREES NUMBERED 355 - 358 (LOCATED SOUTH OF TANK BEYOND AREA OF IMPACT) TO BE PROTECTED DURING CONSTRUCTION PER FOREST TRACE TREE PROTECTION PLAN

404 PERMIT AND WETLANDS APPLICATION

NOT APPLICABLE

LANDSCAPE AREA TABLE AND WATER CONSERVATION AREAS

NOT APPLICABLE

30' 20' 10' 0 30' 60'
1" = 30'

LANDSCAPE NOTES

1. A FINAL LANDSCAPE PLAN CONFORMING TO THE FORMAT OF THE PLANNING DEPARTMENT WILL BE REQUIRED FOR SUBMITTAL AND APPROVAL AT TIME CIVIL ENGINEERING AND/OR BUILDING PLANS ARE SUBMITTED.
2. A FINAL LANDSCAPE PLAN SHALL COMPLY WITH THE APPROVED PRELIMINARY LANDSCAPE PLAN.
3. THE FINAL LANDSCAPE PLAN WILL BE UTILIZED FOR CODE ENFORCEMENT AND LANDSCAPE INSPECTION PURPOSES.
4. ALL NATIVE SEED AREAS SHALL RECEIVE SOIL PREPARATION OF THOROUGHLY TILLING AREA TO A DEPTH OF 6". SOIL CONDITIONER MAY BE REQUIRED BY SOIL TEST. PRIOR TO SOIL PREPARATION, CONTRACTOR TO CONDUCT TESTS AT (3) LOCATIONS ON-SITE. SOIL TEST LOCATIONS TO BE APPROVED BY OWNER'S REPRESENTATIVE.
5. EMERGENCY ACCESS DRIVE LANE WILL BE 6" THICK OF CDOT ROAD BASE #6, CAPABLE OF SUSTAINING A 75,000 LB. LOAD.
6. ALL UTILITY EASEMENTS SHALL REMAIN UNOBSTRUCTED AND FULLY ACCESSIBLE ALONG THEIR ENTIRE LENGTH FOR MAINTENANCE EQUIPMENT ENTRY.
7. THE DEVELOPER, HIS SUCCESSORS AND ASSIGN, SHALL BE RESPONSIBLE FOR INSTALLATION, MAINTENANCE AND REPLACEMENT OF ALL LANDSCAPING MATERIALS SHOWN OR INDICATED ON THE APPROVED SITE PLAN OR LANDSCAPE PLAN ON FILE IN THE PLANNING DEPARTMENT. ALL LANDSCAPING WILL BE INSTALLED AS DELINEATED ON THE PLAN, PRIOR TO ISSUANCE OF CERTIFICATES OF OCCUPANCY.
8. ALL LANDSCAPED AREAS AND PLANT MATERIAL, EXCEPT FOR NON-IRRIGATED NATIVE, RESTORATIVE, AND DRYLAND GRASS AREAS THAT COMPLY WITH REQUIREMENTS FOUND IN SEC. 146-1429 AND/OR SEC. 146-1435, MUST BE WATERED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. IRRIGATION SYSTEM DESIGN, INSTALLATION, OPERATION, AND MAINTENANCE SHALL CONFORM TO THE REQUIREMENTS FOUND IN THE CITY OF AURORA IRRIGATION ORDINANCE.
9. LANDSCAPE MATERIAL PLACEMENT SHALL NOT BE PLACED OR KEPT NEAR FIRE HYDRANTS, FIRE DEPARTMENT INLET CONNECTIONS OR FIRE PROTECTION CONTROL VALVES IN A MANNER THAT WOULD PREVENT SUCH EQUIPMENT OR FIRE HYDRANTS FROM BEING IMMEDIATELY DISCERNIBLE. THE FIRE DEPARTMENT SHALL NOT BE DETERRED OR HINDERED FROM GAINING IMMEDIATE ACCESS TO FIRE PROTECTION EQUIPMENT OR HYDRANTS.
10. A 5-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF FIRE HYDRANTS.
11. LANDSCAPING MATERIAL SHOWN WITHIN THE SITE PLAN CANNOT ENCROACH INTO ROADWAYS THAT ARE DEDICATED (OR DESIGNATED) AS FIRE LANE EASEMENTS (OR CORRIDORS).
12. IN ORDER TO SCREEN THE WATER TANK, TREES ARE BEING PLANTED IN AN AREA THAT IS RESERVED FOR A POTENTIAL FUTURE WATER TANK. PROPOSED TREES MAY BE RELOCATED OR REPLACED IF AND WHEN THE FUTURE TANK IS CONSTRUCTED.

LANDSCAPE LEGEND

- PROPERTY LINE
- WATER LINE
- SANITARY LINE
- TBMS LINE
- ELECTRIC LINE
- PROPOSED EVERGREEN TREES
- PROPOSED EVERGREEN SHRUBS
- NATIVE SEED
- SIGHT TRIANGLE

PRELIMINARY - NOT FOR CONSTRUCTION

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE
SMOKY HILL TANK
CONTEXTUAL LANDSCAPE PLAN

BLACK & VEATCH
Building a world of difference
Black & Veatch Corporation
Centennial, Colorado

DESIGNED: LCC
DETAILED:
CHECKED: JJC
APPROVED:
DATE: 10/09/2014

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-SHT-3
SHEET
OF

DRAWINGS FOR

SOUTH METRO WISE AUTHORITY

DESIGN/BUILD PACKAGE QUEBEC PUMP STATION BYPASS

SHEET LIST

SHEET NO.	DRAWING NO.	TITLE
		QUEBEC PUMP STATION BYPASS
1	G-BYP-1	COVER & SHEET LIST
2	G-BYP-2	PS BYPASS - GENERAL NOTES AND ABBREVIATIONS
3	G-BYP-3	PS BYPASS - GENERAL LEGEND AND SYMBOLS
4	G-BYP-4	PS BYPASS - VICINITY MAP
5	M-BYP-1	PS BYPASS - SITE PLAN
6	M-BYP-2	PS BYPASS - FLOWMETER

BLACK & VEATCH
PROJECT NO.182463

BLACK & VEATCH
building a world of difference™

Black & Veatch Corporation
Centennial, Colorado

OCTOBER 2014

D50012

GENERAL NOTES

1. HORIZONTAL AND VERTICAL CONTROL:
   NAD 83/92 (BASIS OF AURORA GRID) NGVD 29

2. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES AND FACILITIES MAY BE INDICATED. OVERHEAD UTILITIES ARE NOT INDICATED IN ARCHITECTURAL ELEVATIONS, PROFILE OR SECTION DRAWINGS. THE ENGINEERING INVESTIGATIONS,LOCATION, AND DESIGNATION OF SUBSURFACE UTILITIES INDICATED IN THESE CONTRACT DOCUMENTS HAS BEEN PERFORMED TO QUALITY LEVEL D IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES AS OUTLINED IN ASCE STANDARD AND GUIDELINE BULLETIN CI/ASCE 38-02 UNLESS OTHERWISE DESIGNATED.

3. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIAL AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.

4. CONTRACTOR SHALL SUBMIT A STAGING, PARKING AND MATERIAL STORAGE PLAN AS PART OF RESPONSE TO RFP.

5. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY PRECISE LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STRUCTURES, WHETHER INDICATED ON THE DRAWINGS OR NOT, IN THE FIELD IN ADVANCE OF EXCAVATING, BY CONTACTING ALL UTILITIES AND OTHER AGENCIES, AND BY PROSPECTING. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, DEMOLITION, RECONSTRUCTION, AND RECONNECTION OF EXISTING FACILITIES AS REQUIRED TO COMPLETE THE WORK. IF REQUIRED AFTER FIELD VERIFICATION, CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE ANY NECESSARY MODIFICATIONS TO PROPOSED NEW WORK.

6. BEFORE CONSTRUCTION IS STARTED, CONTRACTOR SHALL COORDINATE WITH THE OWNER OF EACH UTILITY AND DEFINE THE REQUIREMENTS AND METHODS TO ACCOMMODATE THE PROTECTION, TEMPORARY SUPPORT, ADJUSTMENT, OR RELOCATION OF ANY UTILITIES AFFECTED BY THE PROPOSED NEW WORK.

7. CONTRACTOR SHALL COMPLY WITH THE GOVERNING AGENCY NPDES CONSTRUCTION REQUIREMENTS, AND SHALL PROVIDE APPROPRIATE MITIGATION MEASURES OR PROTECTION AND RESTORATION AT ALL LOCATIONS AS REQUIRED BY THEIR OPERATIONS, AND AS DIRECTED BY ENGINEER. SPECIAL CONSTRUCTION REQUIREMENTS, TEMPORARY PROTECTIVE FENCING OR BARRICADES, SHEETING, SHORING, EROSION PROTECTION, AND SURFACE RESTORATION AT CERTAIN LOCATIONS ARE INDICATED ON THE DRAWINGS TO BRING CONTRACTOR'S ATTENTION TO SENSITIVE AREAS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL PROPERTY CORNER MARKERS. PROPERTY CORNER MARKERS DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REESTABLISHED BY A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF COLORADO.

9. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING TREES, SHRUBS, AND PLANTS UNLESS OTHERWISE NOTED.

10. CONTRACTOR SHALL INSTALL ALL PIPELINES, PAVING, WALKWAYS, AND CURB AND GUTTER AT A UNIFORM GRADE BETWEEN ELEVATIONS DEPICTED ON THE DRAWINGS.

11. FOR ALL SITE GRADING, SMOOTH PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE. PARABOLIC ROUNDING SHALL APPLY TO ALL CUT AND FILL SECTIONS.

12. FINISH GRADE NEAR ACCESS HATCHES WILL SLOPE GENERALLY AWAY FROM STRUCTURE.

13. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.

14. RESTRAINED JOINTS SHALL BE PROVIDED FOR ALL BURIED PRESSURE PIPING.

15. THE PUMP STATION AND SUPPLY AND DISCHARGE PIPELINES CAN BE TAKEN OUT OF SERVICE FOR LIMITED PERIODS OF TIME TO FACILITATE CONSTRUCTION BETWEEN THE MONTHS OF NOVEMBER AND MARCH. SHORT DURATION SHUTDOWNS DURING OTHER MONTHS MAY BE POSSIBLE IF APPROVED BY THE OWNER.

16. CONTRACTOR SHALL REPLACE EXISTING PIPE CULVERTS THAT ARE REMOVED TO INSTALL THE NEW PIPELINE WITH NEW PIPE CULVERTS OF THE SAME SIZE, MATERIAL AND CONSTRUCTION AT THE SAME LOCATION AND INVERT ELEVATION AS THOSE THAT WERE REMOVED, AND SHAPE THE DITCH TO DRAIN WITH THE REPLACED CULVERT. CONTRACTOR SHALL PROVIDE ANY TEMPORARY CULVERTS THAT MAY BE REQUIRED FOR CONTRACTOR'S OPERATIONS. CONTRACTOR SHALL COORDINATE REMOVAL AND REPLACEMENT OF ANY CULVERTS WITHIN PUBLIC RIGHT-OF-WAY WITH THE REGULATING AGENCY.

17. UNLESS OTHERWISE SPECIFIED, INDICATED ON THE DRAWINGS, OR UNLESS APPROVED IN ADVANCE BY THE OWNER, INSTALL PIPELINES SLOPING DOWNWARD FROM AN AIR VALVE. MINIMUM 5'-0" COVER AT MANHOLE OR AT MANUAL ARV TO A BLOWOFF, AND PROVIDE THE SPECIFIED MINIMUM PIPE COVER. MINIMUM PIPE COVER SHALL BE FROM THE EXISTING, PROPOSED, OR FUTURE GROUND SURFACE OR ROAD PROFILE, WHICHEVER GROUND SURFACE OR ROAD PROFILE IS APPLICABLE AS INDICATED ON THE DRAWINGS. IF THE PROPOSED GROUND SURFACE IS ABOVE THE EXISTING GROUND SURFACE INDICATED ON THE DRAWINGS AND IS NOT THE ACTUAL GROUND SURFACE AT THE TIME OF PIPELINE INSTALLATION, INSTALL THE PIPELINE TO PROVIDE MINIMUM PIPE COVER FROM THE ACTUAL GROUND SURFACE IF ACCEPTABLE TO THE ENGINEER. HIGH POINTS IN THE PIPELINE WILL NOT BE PERMITTED EXCEPT AT LOCATIONS OF AIR VALVES AS INDICATED ON THE DRAWINGS. REVIEW THE PIPELINE PROFILE REQUIREMENTS WITH THE ENGINEER PRIOR TO PREPARING LAYING SCHEDULES AND PERFORMING FIELD STAKING.

18. CONTRACTOR SHALL FIELD VERIFY PRECISE LOCATION, ELEVATION, AND ARRANGEMENT OF CONNECTIONS OF NEW PIPELINES WITH EXISTING PIPELINES BASED ON FIELD CONDITIONS, INCLUDING EXPOSING EXISTING PIPING PRIOR TO FABRICATING NEW PIPING. CONTRACTOR SHALL PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVE CLOSURES, AND HARNESSED MECHANICAL COUPLING; ROTATE FITTINGS; DEFLECT JOINTS; AND MODIFY EXISTING PIPING AS APPLICABLE AND AS REQUIRED TO MAKE CONNECTIONS, INCLUDING ADJUSTMENTS FOR ANY OFFSETS IN CENTERLINE ELEVATIONS BETWEEN PIPELINES. CONTRACTOR SHALL PROVIDE TEMPORARY PLUG WITH FACTORY OUTLET SIZED AS REQUIRED FOR CONTRACTOR'S TESTING AND DISINFECTION WORK BEFORE MAKING CONNECTION, WHEN APPLICABLE. CONTRACTOR SHALL COORDINATE MAKING EACH CONNECTION WITH THE OWNER.

19. ALL DIP SHALL BE PROTECTED WITH A MINIMUM OF ONE WRAP OF POLYETHYLENE ENCASEMENT.

20. ALL OWNERSHIP, RIGHT-OF-WAY, AND EASEMENT INFORMATION WAS OBTAINED FROM THE DOUGLAS/ARAPAHOE COUNTY CLERK AND RECORDERS OFFICE AND DOUGLAS/ARAPAHOE COUNTY ASSESSORS OFFICE. NO TITLE COMMITMENT WAS PROVIDED TO FARNSWORTH GROUP, THEREFORE, THE SURVEYOR DOES NOT GUARANTEE ALL RECORDED INFORMATION IS SHOWN HEREIN.

21. CONTRACTOR SHALL INSTALL 3 INCH WIDE BLUE, NON-DETECTABLE, MARKER TAPE LABELED "CAUTION, WATER LINE BURIED BELOW" IN TRENCH APPROXIMATELY 2' – 6" ABOVE TOP OF PIPE ELEVATION ALONG ENTIRE LENGTH OF PIPELINE.

22. CONTRACTOR SHALL INSTALL TRACER WIRE ABOVE METALLIC PIPELINE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

23. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING FENCING DISTURBED BY CONSTRUCTION ACTIVITIES ALONG THE ENTIRE PIPELINE ROUTE, WHETHER OR NOT IT IS IDENTIFIED ON THE DRAWINGS. REPLACEMENT FENCING SHALL IDENTICALLY MATCH ORIGINAL FENCING AND SHALL BE CONSTRUCTED OF ENTIRELY NEW MATERIALS UNLESS APPROVED IN ADVANCE BY OWNER.

24. CONTRACTOR SHALL OPEN CUT EXISTING GRAVEL AND ASPHALT SURFACED ROADS WHERE INDICATED ON THE DRAWINGS. THICKNESS AND TYPE OF REPLACEMENT ASPHALT, BASE COURSE, AND AGGREGATE ROAD BASE SHALL BE AS SPECIFIED AND SHALL, AS A MINIMUM, MATCH EXISTING SURFACING.

25. PIPE JOINTS MAY BE DEFLECTED AS NECESSARY TO INSTALL PIPELINE ALONG THE LINES AND GRADES SHOWN. THE PIPE VERTICAL ALIGNMENT MAY BE SLIGHTLY ADJUSTED TO ACHIEVE 5 FOOT OF COVER, HOWEVER NO NEW HIGH POINTS OR LOW POINTS SHALL BE CREATED. MAXIMUM JOINT PULL OUT FOR HORIZONTAL CURVES AND VERTICAL SLOPE CHANGES WITH DEFLECTED JOINTS SHALL BE 75 PERCENT OF THE MANUFACTURERS MAXIMUM ALLOWABLE PULL OUT FOR THE PARTICULAR TYPE OF JOINT BEING DEFLECTED. VERTICAL SLOPE CHANGES SHOWN ON THE DRAWINGS TO BE POINT DEFLECTIONS SHALL BE DISTRIBUTED OVER MULTIPLE PIPE JOINTS TO THE LIMIT THE PULL OUR PER JOINT TO THE ABOVE LIMIT.

26. CONTRACTOR TO CONFINE ITS CONSTRUCTION DISTURBANCE TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS.

27. ALL OPEN CUT ROADS AND STREETS SHALL HAVE A MINIMUM OF ONE LANE OPEN AT ALL TIMES FOR EMERGENCY ACCESS. CONTRACTOR SHALL ALSO PROVIDE TRAFFIC CONTROL AT ALL OPEN CUT ROAD AND STREET CROSSINGS.

28. REFERENCES TO EXISTING PIPE MATERIAL TYPES ARE NOT CONFIRMED. CONTRACTOR TO FIELD VERIFY AS REQUIRED.

ABBREVIATIONS

&	AND	E	EAST	N	NORTH
@	AT	EA	EACH	NC	NORMALLY CLOSED
Ø	DIAMETER	ECC	ECCENTRIC	NO	NORMALLY OPEN
#	NUMBER	ELEC	ELECTRICITY	NO.	NUMBER
%	PERCENT	EL	ELEVATION	NPT	NATIONAL PIPE THREAD
		EMBED	EMBEDDED	NS	NEAR SIDE
AB	ANCHOR BOLT	ENCSMT	ENCASEMENT		
ALUM	ALUMINUM	EOL	END OF LINE	OC	ON CENTER
AW	AIR WASH	EQUIP	EQUIPMENT	OD	OUTSIDE DIAMETER
APPROX	APPROXIMATE	EQ	EQUAL	OPNG	OPENING
A/V	AIR VAC	ESMT	EASEMENT		
		EXIST,EX	EXISTING	PC	POINT OF CURVE
BF	BLIND FLANGE	EXP	EXPANSION	PE	PLAIN END
BFV	BUTTERFLY VALVE			PI	POINT OF INTERSECTION
BLDG	BUILDING	FCV	FLOW CONTROL VALVE	PL	PLATE
BOL	BEGINNING OF LINE	FE	FILTER EFFLUENT	PRV	PRESSURE REDUCING VALVE
BV	BALL VALVE	FH	FIRE HYDRANT	PS	PIPE SUPPORT
BWW	BACKWASH WATER	FIN	FINISHED	PSF	POUNDS PER SQUARE FOOT
		FL	FLOOR	PSI	POUNDS PER SQUARE INCH
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION	FLG	FLANGE	PSV	PRESSURE SUSTAINING VALVE
		FM	FLOWMETER	PT	POINT OF TANGENCY
CLR	CLEAR	FS	FAR SIDE, FILTER SLUDGE	PVC	POLYVINYL CHLORIDE
CLSM	CONCRETE LOW STRENGTH MATERIAL	FT	FEET	R	RADIUS
CMP	CORRUGATED METAL PIPE	GAL	GALLON(S)	RCP	REINFORCED CONCRETE PIPE
CONC	CONCRETE	GALV	GALVANIZED	RED	REDUCER
CONST	CONSTRUCTION	GR	GRADE	REINF	REINFORCING
CONT	CONTINUOUS, CONTINUATION	G-R	GORMAN-RUPP PUMPS	REQD	REQUIRED
COR	CORNER	GV	GATE VALVE	RESTRD	RESTRAINED
CP	CONTROL POINT			ROW	RIGHT OF WAY
CPLG	COUPLING	HDPE	HIGH DENSITY POLYURETHANE	RW	RAW WATER
CRB	CONCRETE REACTION BLOCK	HORIZ	HORIZONTAL	S	SOUTH, SLOPE
CISP	CAST IRON SOIL PIPE	HMC	HARNESSED MECHANICAL COUPLING	SAN	SANITARY SEWER
CTRS	CENTERS	HWY	HIGHWAY	SEC	SECTION
CU	CUBIC			SH(SHT)	SHEET
CWSD	CENTENNIAL WATER AND SANITATION DISTRICT	ID	INSIDE DIAMETER	SHC	SODIUM HYPOCHLORITE
		INV,IE	INVERT ELEVATION	SIM	SIMILAR
C/L	CENTER LINE	IRR	IRRIGATION	SMW	SOUTH METRO WATER SUPPLY AUTHORITY
DET	DETAIL			SPEC	SPECIFICATION
DIA	DIAMETER	JT	JOINT	SQ	SQUARE
DIM	DIMENSION			SS	STAINLESS STEEL
DIP	DUCTILE IRON PIPE	LAS	LIQUID AMMONIUM SULFATE	ST	STEEL, STORM
DMJ	DISMANTLING JOINT			STA	STATION
DN	DOWN	MAX	MAXIMUM	STD	STANDARD
DWG	DRAWING	MC	MECHANICAL COUPLING		
DWLS	DOWELS	MECH	MECHANICAL	TEMP	TEMPORARY
		MFR	MANUFACTURER	T.O.P.	TOP OF PIPE
		MH	MANHOLE	TYP	TYPICAL
		MIN	MINIMUM		
		MISC	MISCELLANEOUS	USGS	UNITED STATES GEOLOGICAL SURVEY
		MJ	MECHANICAL JOINT	UTIL	UTILITY
				VERT	VERTICAL
				VPI	VERTICAL POINT OF INTERSECTION
				W	WEST
				W/	WITH
				WWF	WELDED WIRE FABRIC

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NO.	BY	CK.	APP	DATE	REVISIONS AND RECORD OF ISSUE

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GENERAL NOTES AND ABBREVIATIONS

DESIGNED: DRK
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0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

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GENERAL LEGEND

- SURFACED STREET, ROAD OR DRIVE
- SURFACED STREET, ROAD OR DRIVE WITH CURBS
- NON-SURFACED STREET, ROAD OR DRIVE
- CONCRETE WALK
- CB — CATCH BASIN
- MANHOLE
- DRAINAGE COURSE OR FLOW LINE
- 326 — EXISTING GROUND CONTOUR
- 326 — FINISH GRADE CONTOUR
- BANK OR SLOPE LINES
- •#3 OR B3 — T.H.#3 — TEST HOLE AND NUMBER
- SURVEY LINE WITH PI, PT, OR POT
- CONCRETE ENCASEMENT - PLAN
- CONCRETE REACTION BLOCKING AT BEND, PLUG OR TEE
- CULVERTS
- TUNNEL CASING - PLAN
- SMALLER THAN 24" / 24" AND LARGER — EXISTING
- SMALLER THAN 24" / 24" AND LARGER — NEW — GENERAL LAYOUT YARD PIPING
- NEW WATER LINE OR SEWER IN PROFILE
- TUNNEL CASING - PROFILE
- LOC — LIMITS OF CONSTRUCTION
- PE/L — PERMANENT EASEMENT LINE
- TE/L — TEMPORARY EASEMENT LINE
- UE/L — UTILITY EASEMENT LINE
- R/W — RIGHT-OF-WAY LINE
- S/L — SURVEY LINE / SECTION LINE
- P/L — PROPERTY LINE
- W — WATER LINE (UNDERGROUND)
- G — GAS LINE (UNDERGROUND)
- T — TELEPHONE (UNDERGROUND)
- E — ELECTRICAL (UNDERGROUND)
- OHE — POWER OR TELEPHONE LINES (OVERHEAD)
- FO — FIBER OPTIC (UNDERGROUND)
- SAN — SANITARY SEWER (UNDERGROUND)
- SS — STORM SEWER (UNDERGROUND)
- X — FENCE
- X — X — SILT FENCE
- CENTERLINE
- (G) / (W) — WATER OR GAS VALVE
- (WM) / (GM) — WATER OR GAS METER
- TELEPHONE OR POWER POLE WITH GUY ANCHOR
- FH — FIRE HYDRANT
- Y — YARD HYDRANT
- UTILITY POLE
- TRAFFIC SIGNAL
- TRAFFIC SIGN
- S — SIGN

- BUILDINGS, STRUCTURES
- STRUCTURES UNDERGROUND
- FUTURE BUILDINGS, STRUCTURES
- RAILROAD, EACH TRACK
- 1 / AC45 — SECTION NUMBER OR DETAIL LETTER; DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS; OR WHERE SECTION IS CUT OR DETAIL IS NOTED
- 1 / A045 — DOOR, WINDOW AND LOUVER SCHEDULE REFERENCE; WALL ELEVATION
- D / 4 — ABBREVIATION; SCHEDULE NUMBER
- F102 — ROOM NUMBER; AREA DESIGNATION
- PV / 10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- PV-10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- EQUIP CALLOUT — EQUIPMENT REPRESENTATION WITH CALLOUT
- EXISTING FACILITY TO BE DEMOLISHED OR REMOVED
- 123 — CONTROL POINT, BENCH MARK, AND STATION NUMBER
- SOIL TEST HOLE
- SS — SANITARY SEWER MANHOLE
- ST — STORM SEWER MANHOLE
- HEDGE, BRUSH, SHRUBS, WOODS
- 10" — DECIDUOUS TREE AND TRUNK DIAMETER
- DO NOT DISTURB EXISTING VEGETATION. EXISTING VEGETATION TO REMAIN AND BE PROTECTED
- CP — INDICATES CATHODIC PROTECTION TEST STATION
- F — INDICATES FIBER PULL BOX
- INDICATES SPOT SHOT ON TOP OF 12" OR 24" WATER LINE

MATERIALS LEGEND

- EARTH OR GRADE
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- ROCK
- NEW CONCRETE
- EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE
- BRICK, FACE
- BRICK, COMMON
- CONCRETE MASONRY UNITS (CMU)
- CUT STONE OR SAND FILL, GROUT, MORTAR, CLSM, AND PLASTER
- RIPRAP
- CHECKERED PLATE
- STEEL (FOR 1"SCALE & LARGER)
- STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER)
- BAR GRATING (LINES IN DIRECTION OF SPAN)
- ALUMINUM
- INSULATION (BATT)
- INSULATION (RIGID)

PIPING SYSTEMS

NEW PIPING	CDWR	CONDENSER WATER RETURN	HWR — HEATING SYSTEM WATER RETURN
UNDERGROUND PIPING	CDWS	CONDENSER WATER SUPPLY	HWS — HEATING SYSTEM WATER SUPPLY
EXISTING PIPING	Co2(G)	CARBON DIOXIDE GAS	HW — WATER, POTABLE HOT
FUTURE PIPING	Co2(S)	CARBON DIOXIDE SOLUTION	HWC — HOT WATER CIRCULATING
A — AIR (COMPRESSED)	CW	WATER, COLD	IA — INSTRUMENT AIR
ALUM — ALUMINUM SULFATE (ALUM)	DW	DISTILLED WATER	PERM — POTASSIUM PERMANGANATE
AR — ARGON	FeCl	FERRIC CHLORIDE	LIME — LIME
CRW — CHEMICAL RESISTANT ACID WASTE	FeS	FERRIC SULFATE	PG — LP GAS (PROPANE)
CRV — CHEMICAL RESISTANT ACID WASTE VENT	F	FIRE PROTECTION WATER SYSTEM	N — NITROGEN
TW — TEMPERED OR BLENDED WATER	FL	FLUORIDE	SA — SODA ASH
C — CARBON SLURRY	FOR	FUEL OIL RETURN	NaOH — SODIUM HYDROXIDE
ACET — ACETYLENE	FOS	FUEL OIL SUPPLY	SP — SODIUM HEXAMETAPHOSPHATE (PHOSPHATE)
CWR — CHILLED WATER RETURN	FOV	FUEL OIL VENT	NaOCL — SODIUM HYPOCHLORITE
CWS — CHILLED WATER SUPPLY	G	GAS, NATURAL	AMM(G) — AMMONIA GAS
CL(G) — CHLORINE GAS	H	HYDROGEN	AMM(S) — AMMONIA SOLUTION
CL(L) — CHLORINE LIQUID	HE	HELIUM	NO — NITROUS OXIDE
CL(S) — CHLORINE SOLUTION	HP	HYDROGEN PEROXIDE	
	PA	PHOSPHORIC ACID	

NPW	WATER, NON-POTABLE
NPHW	WATER, NON-POTABLE HOT
OX	OXYGEN
OZ	OZONE
OF	OVERFLOW
POLY	POLYMER SOLUTION
RF	REFRIGERANT
SS	STORM DRAIN
SG	SLUDGE GAS
SI	SILICA
PD	SUMP PUMP DISCHARGE
SAN	SANITARY SEWER
V	VENT
VAC	VACUUM
W	WATER

PIPING ACCESSORIES LEGEND

- BLIND FLANGE
- CAP OR PLUG
- CO — CLEANOUT
- CROSS
- DIAPHRAGM SEAL
- ELBOW
- ELBOW DOWN
- ELBOW TURNING UP
- SIZE — HOSE CONNECTION
- Q — QUICK COUPLING
- REDUCER
- RUPTURE DISK
- TEE
- TEE LINE DOWN
- TEE LINE UP
- WYE
- WYE STRAINER
- WYE STRAINER WITH BLOWOFF
- DRAIN OR BELL-UP
- CALIBRATING COLUMN
- TRAP
- UNION
- WALL SLEEVE
- AT — AUTOMATIC DRAIN TRAP
- DT — DRIP TRAP
- DUPLEX STRAINER
- EXPANSION COMPENSATOR
- F — INLINE FILTER
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE CONNECTOR
- HOSE REEL
- INJECTOR, EDUCTOR, BLENDER
- ORIFICE PLATE
- PIPE GUIDE
- S — SEDIMENT TRAP
- S — STRAINER
- SUCTION DIFFUSER
- SURGE CHAMBER
- VENT - SCREENED
- VENT
- P — PRESSURE GAUGE W/SNUBBER
- SIGHT FLOW INDICATOR
- T — TEMPERATURE INDICATOR
- THERMOMETER
- ELECTROMAGNETIC/ULTRASONIC FLOWMETER
- PITOT TUBE
- ROTAMETER
- TURBINE OR PROPELLOR FLOWMETER
- M — SET STOP METER
- VENTURI
- FM — FLOW METER
- PIPE DIFFUSER

VALVE LEGEND

- PINCH VALVE
- PLUG VALVE, ECCENTRIC
- PLUG VALVE, NON-ECCENTRIC
- BUTTERFLY VALVE
- GATE VALVE
- BALL VALVE
- GLOBE VALVE
- CHECK VALVE
- 3 WAY VALVE
- 4 WAY VALVE
- ANGLE VALVE
- CHLORINE INSTITUTE VALVE
- DIAPHRAGM VALVE
- THROTTLING VALVE
- FLAME ARRESTER OR CHECK
- BACKWATER VALVE
- INLINE PRESSURE RELIEF VALVE
- PRESSURE REGULATING VALVE
- PRESSURE SUSTAINING OR MAINTAINING VALVE
- VACUUM BREAKER
- THERMAL SHUTOFF VALVE
- EXPLOSION RELIEF VALVE
- HOSE FAUCET
- HOSE FAUCET W/VACUUM BREAKER
- HOSE VALVE W/HOSE NIPPLE
- BACKFLOW PREVENTER
- SAFETY RELIEF VALVE
- V — VACUUM RELIEF CHECK VALVE
- PRESSURE VACUUM RELIEF VALVE

ACTUATOR LEGEND

- E — ELECTRIC
- FLOAT
- DIAPHRAGM
- P/O — AIR/OIL TANDEM
- S — SOLENOID
- A — AIR

MISCELLANEOUS EQUIPMENT

- STATIC MIXER
- VERTICAL MIXER
- SIGHT GLASS
- 6 — CENTRIFUGE
- CHANNEL DIFFUSER
- COMPRESSOR OR BLOWER
- PIPE ANCHOR
- PUMP
- SLUICE GATE
- SLIDE GATE
- STOP PLATE
- BAR SCREEN
- EXPANSION TANK
- SCREW (LIFT) PUMP
- FLUME
- WEIR

NOTE:

SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED ———— .
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY) ———— .
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW ON OTHER PACKAGES SHALL BE DELINEATED AS DASHED – – – – – .

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XREF2: G-GNRL2-XREF.dwg
XREF3:
XREF4:
DWG VER: 1000

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

PS BYPASS
GENERAL LEGEND AND SYMBOLS

DESIGNED: DRK
DETAILED: TSH
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APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-BYP-3
SHEET
OF

FD7000_PW
D7000

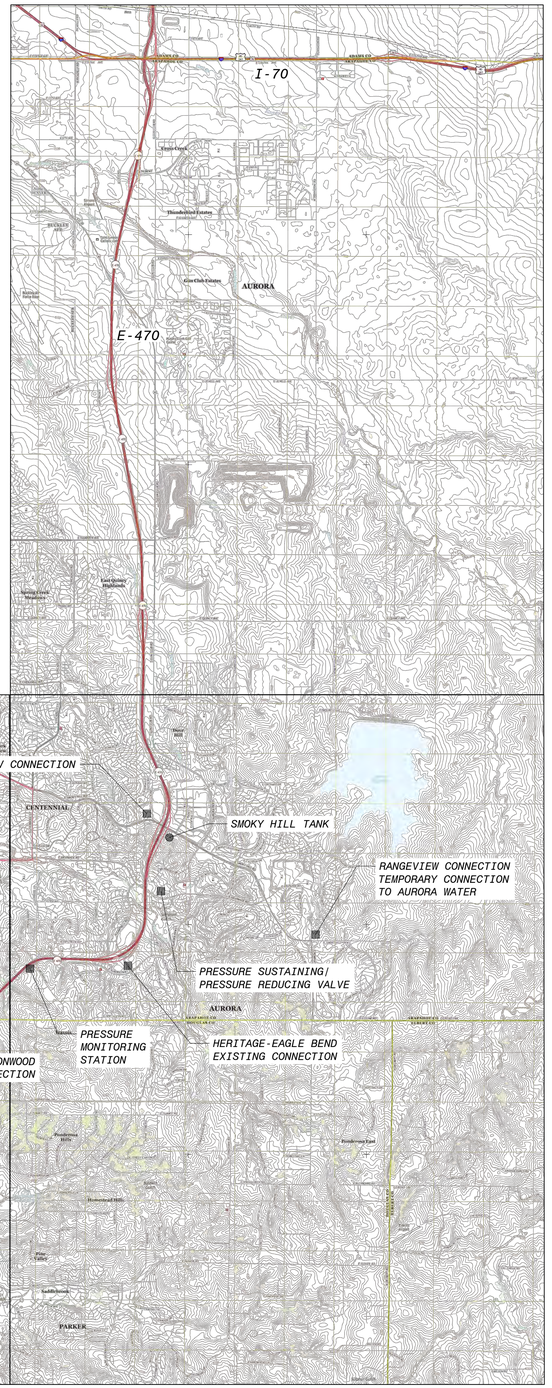
5000' 2500' 0 5000' 10000'

1"=5000'

NOTES:

1. THIS MAP INCLUDES THE FACILITY LOCATIONS OF ALL THE SUB-PACKAGES IN THE OVERALL DESIGN/BUILD PACKAGE. INCLUDED IN THIS SUB-PACKAGE ARE THE FOLLOWING:

   QUEBEC PUMP STATION BYPASS.



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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

PS BYPASS
VICINITY MAP

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DATE:

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PROJECT NO.
182463

G-BYP-4
SHEET
OF

FD7000_PH
D7000

PLAN
1" = 30'-0"

30' 20' 10' 0 30' 60'
1"=30'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3190	- PS Bypass

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

PS BYPASS
SITE PLAN

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

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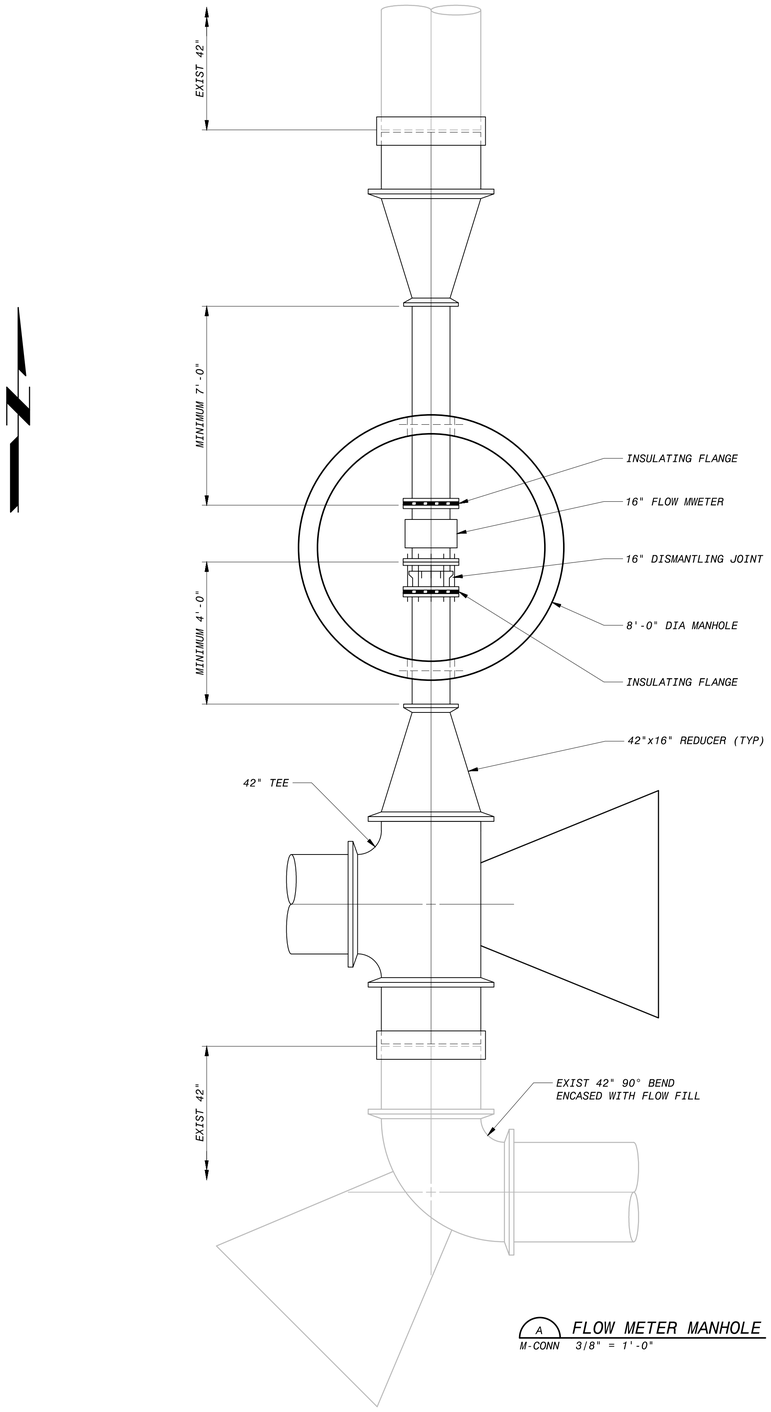
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-BYP-1
SHEET
OF

FD7000
D7000



A FLOW METER MANHOLE
M-CONN 3/8" = 1'-0"

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	DATE	REVISIONS AND RECORD OF ISSUE	BY	CK.	APP

50_3190 - PS Bypass
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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

PS BYPASS
FLOW METER

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

M-BYP-2
SHEET
OF

FD7000_PW
D7000

DRAWINGS FOR

SOUTH METRO WISE AUTHORITY

DESIGN/BUILD PACKAGE TEMPORARY CONNECTION TO AURORA WATER

SHEET LIST

SHEET NO.	DRAWING NO.	TITLE
		TEMPORARY CONNECTION TO AW
1	G-AW-1	COVER & SHEET LIST
2	G-AW-2	AW CONNECTION - GENERAL NOTES AND ABBREVIATIONS
3	G-AW-3	AW CONNECTION - GENERAL LEGEND AND SYMBOLS
4	G-AW-4	AW CONNECTION - VICINITY MAP
5	M-AW-1	AW CONNECTION - SITE PLAN
6	M-AW-2	AW CONNECTION - PLAN VIEW AND SECTION VIEW
7	M-AW-3	AW CONNECTION - MISCELLANEOUS DETAILS

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OCTOBER 2014

D50012

GENERAL NOTES

1. HORIZONTAL AND VERTICAL CONTROL:
   NAD 83/92 (BASIS OF AURORA GRID) NGVD 29

2. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES AND FACILITIES MAY BE INDICATED. OVERHEAD UTILITIES ARE NOT INDICATED IN ARCHITECTURAL ELEVATIONS, PROFILE OR SECTION DRAWINGS. THE ENGINEERING INVESTIGATIONS,LOCATION, AND DESIGNATION OF SUBSURFACE UTILITIES INDICATED IN THESE CONTRACT DOCUMENTS HAS BEEN PERFORMED TO QUALITY LEVEL D IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING PRINCIPLES AND PRACTICES AS OUTLINED IN ASCE STANDARD AND GUIDELINE BULLETIN CI/ASCE 38-02 UNLESS OTHERWISE DESIGNATED.

3. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIAL AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.

4. CONTRACTOR SHALL SUBMIT A STAGING, PARKING AND MATERIAL STORAGE PLAN AS PART OF RESPONSE TO RFP.

5. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY PRECISE LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STRUCTURES, WHETHER INDICATED ON THE DRAWINGS OR NOT, IN THE FIELD IN ADVANCE OF EXCAVATING, BY CONTACTING ALL UTILITIES AND OTHER AGENCIES, AND BY PROSPECTING. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, DEMOLITION, RECONSTRUCTION, AND RECONNECTION OF EXISTING FACILITIES AS REQUIRED TO COMPLETE THE WORK. IF REQUIRED AFTER FIELD VERIFICATION, CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE ANY NECESSARY MODIFICATIONS TO PROPOSED NEW WORK.

6. BEFORE CONSTRUCTION IS STARTED, CONTRACTOR SHALL COORDINATE WITH THE OWNER OF EACH UTILITY AND DEFINE THE REQUIREMENTS AND METHODS TO ACCOMMODATE THE PROTECTION, TEMPORARY SUPPORT, ADJUSTMENT, OR RELOCATION OF ANY UTILITIES AFFECTED BY THE PROPOSED NEW WORK.

7. CONTRACTOR SHALL COMPLY WITH THE GOVERNING AGENCY NPDES CONSTRUCTION REQUIREMENTS, AND SHALL PROVIDE APPROPRIATE MITIGATION MEASURES OR PROTECTION AND RESTORATION AT ALL LOCATIONS AS REQUIRED BY THEIR OPERATIONS, AND AS DIRECTED BY ENGINEER. SPECIAL CONSTRUCTION REQUIREMENTS, TEMPORARY PROTECTIVE FENCING OR BARRICADES, SHEETING, SHORING, EROSION PROTECTION, AND SURFACE RESTORATION AT CERTAIN LOCATIONS ARE INDICATED ON THE DRAWINGS TO BRING CONTRACTOR'S ATTENTION TO SENSITIVE AREAS.

8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL PROPERTY CORNER MARKERS. PROPERTY CORNER MARKERS DAMAGED BY CONSTRUCTION ACTIVITIES SHALL BE REESTABLISHED BY A PROFESSIONAL SURVEYOR LICENSED IN THE STATE OF COLORADO.

9. CONTRACTOR SHALL PROTECT AND MAINTAIN ALL EXISTING TREES, SHRUBS, AND PLANTS UNLESS OTHERWISE NOTED.

10. CONTRACTOR SHALL INSTALL ALL PIPELINES, PAVING, WALKWAYS, AND CURB AND GUTTER AT A UNIFORM GRADE BETWEEN ELEVATIONS DEPICTED ON THE DRAWINGS.

11. FOR ALL SITE GRADING, SMOOTH PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE. PARABOLIC ROUNDING SHALL APPLY TO ALL CUT AND FILL SECTIONS.

12. FINISH GRADE NEAR ACCESS HATCHES WILL SLOPE GENERALLY AWAY FROM STRUCTURE.

13. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.

14. RESTRAINED JOINTS SHALL BE PROVIDED FOR ALL BURIED PRESSURE PIPING.

15. THE PUMP STATION AND SUPPLY AND DISCHARGE PIPELINES CAN BE TAKEN OUT OF SERVICE FOR LIMITED PERIODS OF TIME TO FACILITATE CONSTRUCTION BETWEEN THE MONTHS OF NOVEMBER AND MARCH. SHORT DURATION SHUTDOWNS DURING OTHER MONTHS MAY BE POSSIBLE IF APPROVED BY THE OWNER.

16. CONTRACTOR SHALL REPLACE EXISTING PIPE CULVERTS THAT ARE REMOVED TO INSTALL THE NEW PIPELINE WITH NEW PIPE CULVERTS OF THE SAME SIZE, MATERIAL AND CONSTRUCTION AT THE SAME LOCATION AND INVERT ELEVATION AS THOSE THAT WERE REMOVED, AND SHAPE THE DITCH TO DRAIN WITH THE REPLACED CULVERT. CONTRACTOR SHALL PROVIDE ANY TEMPORARY CULVERTS THAT MAY BE REQUIRED FOR CONTRACTOR'S OPERATIONS. CONTRACTOR SHALL COORDINATE REMOVAL AND REPLACEMENT OF ANY CULVERTS WITHIN PUBLIC RIGHT-OF-WAY WITH THE REGULATING AGENCY.

17. UNLESS OTHERWISE SPECIFIED, INDICATED ON THE DRAWINGS, OR UNLESS APPROVED IN ADVANCE BY THE OWNER, INSTALL PIPELINES SLOPING DOWNWARD FROM AN AIR VALVE. MINIMUM 5'-0" COVER AT MANHOLE OR AT MANUAL ARV TO A BLOWOFF, AND PROVIDE THE SPECIFIED MINIMUM PIPE COVER. MINIMUM PIPE COVER SHALL BE FROM THE EXISTING, PROPOSED, OR FUTURE GROUND SURFACE OR ROAD PROFILE, WHICHEVER GROUND SURFACE OR ROAD PROFILE IS APPLICABLE AS INDICATED ON THE DRAWINGS. IF THE PROPOSED GROUND SURFACE IS ABOVE THE EXISTING GROUND SURFACE INDICATED ON THE DRAWINGS AND IS NOT THE ACTUAL GROUND SURFACE AT THE TIME OF PIPELINE INSTALLATION, INSTALL THE PIPELINE TO PROVIDE MINIMUM PIPE COVER FROM THE ACTUAL GROUND SURFACE IF ACCEPTABLE TO THE ENGINEER. HIGH POINTS IN THE PIPELINE WILL NOT BE PERMITTED EXCEPT AT LOCATIONS OF AIR VALVES AS INDICATED ON THE DRAWINGS. REVIEW THE PIPELINE PROFILE REQUIREMENTS WITH THE ENGINEER PRIOR TO PREPARING LAYING SCHEDULES AND PERFORMING FIELD STAKING.

18. CONTRACTOR SHALL FIELD VERIFY PRECISE LOCATION, ELEVATION, AND ARRANGEMENT OF CONNECTIONS OF NEW PIPELINES WITH EXISTING PIPELINES BASED ON FIELD CONDITIONS, INCLUDING EXPOSING EXISTING PIPING PRIOR TO FABRICATING NEW PIPING. CONTRACTOR SHALL PROVIDE FITTINGS, ADAPTERS, SOLID SLEEVE CLOSURES, AND HARNESSED MECHANICAL COUPLING; ROTATE FITTINGS; DEFLECT JOINTS; AND MODIFY EXISTING PIPING AS APPLICABLE AND AS REQUIRED TO MAKE CONNECTIONS, INCLUDING ADJUSTMENTS FOR ANY OFFSETS IN CENTERLINE ELEVATIONS BETWEEN PIPELINES. CONTRACTOR SHALL PROVIDE TEMPORARY PLUG WITH FACTORY OUTLET SIZED AS REQUIRED FOR CONTRACTOR'S TESTING AND DISINFECTION WORK BEFORE MAKING CONNECTION, WHEN APPLICABLE. CONTRACTOR SHALL COORDINATE MAKING EACH CONNECTION WITH THE OWNER.

19. ALL DIP SHALL BE PROTECTED WITH A MINIMUM OF ONE WRAP OF POLYETHYLENE ENCASEMENT.

20. ALL OWNERSHIP, RIGHT-OF-WAY, AND EASEMENT INFORMATION WAS OBTAINED FROM THE DOUGLAS/ARAPAHOE COUNTY CLERK AND RECORDERS OFFICE AND DOUGLAS/ARAPAHOE COUNTY ASSESSORS OFFICE. NO TITLE COMMITMENT WAS PROVIDED TO FARNSWORTH GROUP, THEREFORE, THE SURVEYOR DOES NOT GUARANTEE ALL RECORDED INFORMATION IS SHOWN HEREIN.

21. CONTRACTOR SHALL INSTALL 3 INCH WIDE BLUE, NON-DETECTABLE, MARKER TAPE LABELED "CAUTION, WATER LINE BURIED BELOW" IN TRENCH APPROXIMATELY 2' – 6" ABOVE TOP OF PIPE ELEVATION ALONG ENTIRE LENGTH OF PIPELINE.

22. CONTRACTOR SHALL INSTALL TRACER WIRE ABOVE METALLIC PIPELINE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

23. CONTRACTOR SHALL REMOVE AND REPLACE ALL EXISTING FENCING DISTURBED BY CONSTRUCTION ACTIVITIES ALONG THE ENTIRE PIPELINE ROUTE, WHETHER OR NOT IT IS IDENTIFIED ON THE DRAWINGS. REPLACEMENT FENCING SHALL IDENTICALLY MATCH ORIGINAL FENCING AND SHALL BE CONSTRUCTED OF ENTIRELY NEW MATERIALS UNLESS APPROVED IN ADVANCE BY OWNER.

24. CONTRACTOR SHALL OPEN CUT EXISTING GRAVEL AND ASPHALT SURFACED ROADS WHERE INDICATED ON THE DRAWINGS. THICKNESS AND TYPE OF REPLACEMENT ASPHALT, BASE COURSE, AND AGGREGATE ROAD BASE SHALL BE AS SPECIFIED AND SHALL, AS A MINIMUM, MATCH EXISTING SURFACING.

25. PIPE JOINTS MAY BE DEFLECTED AS NECESSARY TO INSTALL PIPELINE ALONG THE LINES AND GRADES SHOWN. THE PIPE VERTICAL ALIGNMENT MAY BE SLIGHTLY ADJUSTED TO ACHIEVE 5 FOOT OF COVER, HOWEVER NO NEW HIGH POINTS OR LOW POINTS SHALL BE CREATED. MAXIMUM JOINT PULL OUT FOR HORIZONTAL CURVES AND VERTICAL SLOPE CHANGES WITH DEFLECTED JOINTS SHALL BE 75 PERCENT OF THE MANUFACTURERS MAXIMUM ALLOWABLE PULL OUT FOR THE PARTICULAR TYPE OF JOINT BEING DEFLECTED. VERTICAL SLOPE CHANGES SHOWN ON THE DRAWINGS TO BE POINT DEFLECTIONS SHALL BE DISTRIBUTED OVER MULTIPLE PIPE JOINTS TO THE LIMIT THE PULL OUR PER JOINT TO THE ABOVE LIMIT.

26. CONTRACTOR TO CONFINE ITS CONSTRUCTION DISTURBANCE TO WITHIN THE PERMANENT AND TEMPORARY EASEMENTS.

27. ALL OPEN CUT ROADS AND STREETS SHALL HAVE A MINIMUM OF ONE LANE OPEN AT ALL TIMES FOR EMERGENCY ACCESS. CONTRACTOR SHALL ALSO PROVIDE TRAFFIC CONTROL AT ALL OPEN CUT ROAD AND STREET CROSSINGS.

28. REFERENCES TO EXISTING PIPE MATERIAL TYPES ARE NOT CONFIRMED. CONTRACTOR TO FIELD VERIFY AS REQUIRED.

ABBREVIATIONS

&	AND
@	AT
Ø	DIAMETER
#	NUMBER
%	PERCENT
AB	ANCHOR BOLT
ALUM	ALUMINUM
AW	AIR WASH
APPROX	APPROXIMATE
A/V	AIR VAC
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BOL	BEGINNING OF LINE
BV	BALL VALVE
BWW	BACKWASH WATER
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
CLR	CLEAR
CLSM	CONCRETE LOW STRENGTH MATERIAL
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION
COR	CORNER
CP	CONTROL POINT
CPLG	COUPLING
CRB	CONCRETE REACTION BLOCK
CISP	CAST IRON SOIL PIPE
CTRS	CENTERS
CU	CUBIC
CWSD	CENTENNIAL WATER AND SANITATION DISTRICT
C/L	CENTER LINE
DET	DETAIL
DIA	DIAMETER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DMJ	DISMANTLING JOINT
DN	DOWN
DWG	DRAWING
DWLS	DOWELS
E	EAST
EA	EACH
ECC	ECCENTRIC
ELEC	ELECTRICITY
EL	ELEVATION
EMBED	EMBEDDED
ENCSMT	ENCASEMENT
EOL	END OF LINE
EQUIP	EQUIPMENT
EQ	EQUAL
ESMT	EASEMENT
EXIST,EX	EXISTING
EXP	EXPANSION
FCV	FLOW CONTROL VALVE
FE	FILTER EFFLUENT
FH	FIRE HYDRANT
FIN	FINISHED
FL	FLOOR
FLG	FLANGE
FM	FLOWMETER
FS	FAR SIDE, FILTER SLUDGE
FT	FEET
GAL	GALLON(S)
GALV	GALVANIZED
GR	GRADE
G-R	GORMAN-RUPP PUMPS
GV	GATE VALVE
HDPE	HIGH DENSITY POLYURETHANE
HORIZ	HORIZONTAL
HMC	HARNESSED MECHANICAL COUPLING
HWY	HIGHWAY
ID	INSIDE DIAMETER
INV,IE	INVERT ELEVATION
IRR	IRRIGATION
JT	JOINT
LAS	LIQUID AMMONIUM SULFATE
MAX	MAXIMUM
MC	MECHANICAL COUPLING
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
N	NORTH
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NO.	NUMBER
NPT	NATIONAL PIPE THREAD
NS	NEAR SIDE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OPNG	OPENING
PC	POINT OF CURVE
PE	PLAIN END
PI	POINT OF INTERSECTION
PL	PLATE
PRV	PRESSURE REDUCING VALVE
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSV	PRESSURE SUSTAINING VALVE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
RED	REDUCER
REINF	REINFORCING
REQD	REQUIRED
RESTRD	RESTRAINED
ROW	RIGHT OF WAY
RW	RAW WATER
S	SOUTH, SLOPE
SAN	SANITARY SEWER
SEC	SECTION
SH(SHT)	SHEET
SHC	SODIUM HYPOCHLORITE
SIM	SIMILAR
SMW	SOUTH METRO WATER SUPPLY AUTHORITY
SPEC	SPECIFICATION
SQ	SQUARE
SS	STAINLESS STEEL
ST	STEEL, STORM
STA	STATION
STD	STANDARD
TEMP	TEMPORARY
T.O.P.	TOP OF PIPE
TYP	TYPICAL
USGS	UNITED STATES GEOLOGICAL SURVEY
UTIL	UTILITY
VERT	VERTICAL
VPI	VERTICAL POINT OF INTERSECTION
W	WEST
W/	WITH
WWF	WELDED WIRE FABRIC

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50.3160 - AW Connection
G-AW-2.dwg
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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

AW CONNECTION
GENERAL NOTES AND ABBREVIATIONS

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-AW-2
SHEET
OF

FD7000_PW
D7000

GENERAL LEGEND

- SURFACED STREET, ROAD OR DRIVE
- SURFACED STREET, ROAD OR DRIVE WITH CURBS
- NON-SURFACED STREET, ROAD OR DRIVE
- CONCRETE WALK
- CB — CATCH BASIN
- MANHOLE
- DRAINAGE COURSE OR FLOW LINE
- 326 — EXISTING GROUND CONTOUR
- 326 — FINISH GRADE CONTOUR
- BANK OR SLOPE LINES
- •#3 OR T.H.#3 B3 — TEST HOLE AND NUMBER
- SURVEY LINE WITH PI, PT, OR POT
- CONCRETE ENCASEMENT - PLAN
- CONCRETE REACTION BLOCKING AT BEND, PLUG OR TEE
- CULVERTS
- TUNNEL CASING - PLAN
- SMALLER THAN 24" / 24" AND LARGER — EXISTING
- SMALLER THAN 24" / 24" AND LARGER — NEW
- GENERAL LAYOUT YARD PIPING
- NEW WATER LINE OR SEWER IN PROFILE
- TUNNEL CASING - PROFILE
- LOC — LIMITS OF CONSTRUCTION
- PE/L — PERMANENT EASEMENT LINE
- TE/L — TEMPORARY EASEMENT LINE
- UE/L — UTILITY EASEMENT LINE
- R/W — RIGHT-OF-WAY LINE
- S/L — SURVEY LINE / SECTION LINE
- P/L — PROPERTY LINE
- W — WATER LINE (UNDERGROUND)
- G — GAS LINE (UNDERGROUND)
- T — TELEPHONE (UNDERGROUND)
- E — ELECTRICAL (UNDERGROUND)
- OHE — POWER OR TELEPHONE LINES (OVERHEAD)
- FO — FIBER OPTIC (UNDERGROUND)
- SAN — SANITARY SEWER (UNDERGROUND)
- SS — STORM SEWER (UNDERGROUND)
- X — FENCE
- X X — SILT FENCE
- CENTERLINE
- (G) (W) — WATER OR GAS VALVE
- (WM) (GM) — WATER OR GAS METER
- TELEPHONE OR POWER POLE WITH GUY ANCHOR
- FH — FIRE HYDRANT
- Y — YARD HYDRANT
- UTILITY POLE
- TRAFFIC SIGNAL
- TRAFFIC SIGN
- S — SIGN

- BUILDINGS, STRUCTURES
- STRUCTURES UNDERGROUND
- FUTURE BUILDINGS, STRUCTURES
- RAILROAD, EACH TRACK
- 1 / AC45 — SECTION NUMBER OR DETAIL LETTER; DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS; OR WHERE SECTION IS CUT OR DETAIL IS NOTED
- 1 / A045 — DOOR, WINDOW AND LOUVER SCHEDULE REFERENCE; WALL ELEVATION
- D / 4 — ABBREVIATION; SCHEDULE NUMBER
- F102 — ROOM NUMBER; AREA DESIGNATION
- PV / 10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- PV-10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- EQUIP / CALLOUT — EQUIPMENT REPRESENTATION WITH CALLOUT
- EXISTING FACILITY TO BE DEMOLISHED OR REMOVED
- 123 — CONTROL POINT, BENCH MARK, AND STATION NUMBER
- SOIL TEST HOLE
- SS — SANITARY SEWER MANHOLE
- ST — STORM SEWER MANHOLE
- HEDGE, BRUSH, SHRUBS, WOODS
- 10" — DECIDUOUS TREE AND TRUNK DIAMETER
- DO NOT DISTURB EXISTING VEGETATION. EXISTING VEGETATION TO REMAIN AND BE PROTECTED
- CP — INDICATES CATHODIC PROTECTION TEST STATION
- F — INDICATES FIBER PULL BOX
- INDICATES SPOT SHOT ON TOP OF 12" OR 24" WATER LINE

MATERIALS LEGEND

- EARTH OR GRADE
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- ROCK
- NEW CONCRETE
- EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE
- BRICK, FACE
- BRICK, COMMON
- CONCRETE MASONRY UNITS (CMU)
- CUT STONE OR SAND FILL, GROUT, MORTAR, CLSM, AND PLASTER
- RIPRAP
- CHECKERED PLATE
- STEEL (FOR 1"SCALE & LARGER)
- STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER)
- BAR GRATING (LINES IN DIRECTION OF SPAN)
- ALUMINUM
- INSULATION (BATT)
- INSULATION (RIGID)

PIPING SYSTEMS

NEW PIPING	CDWR	CONDENSER WATER RETURN	HWR — HEATING SYSTEM WATER RETURN
UNDERGROUND PIPING	CDWS	CONDENSER WATER SUPPLY	HWS — HEATING SYSTEM WATER SUPPLY
EXISTING PIPING	Co2(G)	CARBON DIOXIDE GAS	HW — WATER, POTABLE HOT
FUTURE PIPING	Co2(S)	CARBON DIOXIDE SOLUTION	HWC — HOT WATER CIRCULATING
A — AIR (COMPRESSED)	CW	WATER, COLD	IA — INSTRUMENT AIR
ALUM — ALUMINUM SULFATE (ALUM)	DW	DISTILLED WATER	PERM — POTASSIUM PERMANGANATE
AR — ARGON	FeCl	FERRIC CHLORIDE	LIME — LIME
CRW — CHEMICAL RESISTANT ACID WASTE	FeS	FERRIC SULFATE	PG — LP GAS (PROPANE)
CRV — CHEMICAL RESISTANT ACID WASTE VENT	F	FIRE PROTECTION WATER SYSTEM	N — NITROGEN
TW — TEMPERED OR BLENDED WATER	FL	FLUORIDE	SA — SODA ASH
C — CARBON SLURRY	FOR	FUEL OIL RETURN	NaOH — SODIUM HYDROXIDE
ACET — ACETYLENE	FOS	FUEL OIL SUPPLY	SP — SODIUM HEXAMETAPHOSPHATE (PHOSPHATE)
CWR — CHILLED WATER RETURN	FOV	FUEL OIL VENT	NaOCL — SODIUM HYPOCHLORITE
CWS — CHILLED WATER SUPPLY	G	GAS, NATURAL	AMM(G) — AMMONIA GAS
CL(G) — CHLORINE GAS	H	HYDROGEN	AMM(S) — AMMONIA SOLUTION
CL(L) — CHLORINE LIQUID	HE	HELIUM	NO — NITROUS OXIDE
CL(S) — CHLORINE SOLUTION	HP	HYDROGEN PEROXIDE	
	PA	PHOSPHORIC ACID	

NPW	WATER, NON-POTABLE
NPHW	WATER, NON-POTABLE HOT
OX	OXYGEN
OZ	OZONE
OF	OVERFLOW
POLY	POLYMER SOLUTION
RF	REFRIGERANT
SS	STORM DRAIN
SG	SLUDGE GAS
SI	SILICA
PD	SUMP PUMP DISCHARGE
SAN	SANITARY SEWER
V	VENT
VAC	VACUUM
W	WATER

PIPING ACCESSORIES LEGEND

- BLIND FLANGE
- CAP OR PLUG
- CO — CLEANOUT
- CROSS
- DIAPHRAGM SEAL
- ELBOW
- ELBOW DOWN
- ELBOW TURNING UP
- SIZE — HOSE CONNECTION
- Q — QUICK COUPLING
- REDUCER
- RUPTURE DISK
- TEE
- TEE LINE DOWN
- TEE LINE UP
- WYE
- WYE STRAINER
- WYE STRAINER WITH BLOWOFF
- DRAIN OR BELL-UP

- CALIBRATING COLUMN
- TRAP
- UNION
- WALL SLEEVE
- AT — AUTOMATIC DRAIN TRAP
- DT — DRIP TRAP
- DUPLEX STRAINER
- EXPANSION COMPENSATOR
- F — INLINE FILTER
- FLEXIBLE HOSE OR TUBING
- FLEXIBLE CONNECTOR
- HOSE REEL
- INJECTOR, EDUCTOR, BLENDER
- ORIFICE PLATE
- PIPE GUIDE
- S — SEDIMENT TRAP
- S — STRAINER
- SUCTION DIFFUSER

- SURGE CHAMBER
- VENT - SCREENED
- VENT
- P — PRESSURE GAUGE W/SNUBBER
- SIGHT FLOW INDICATOR
- T — TEMPERATURE INDICATOR
- THERMOMETER
- ELECTROMAGNETIC/ULTRASONIC FLOWMETER
- PITOT TUBE
- ROTAMETER
- TURBINE OR PROPELLOR FLOWMETER
- M — SET STOP METER
- VENTURI
- FM — FLOW METER
- PIPE DIFFUSER

MISCELLANEOUS EQUIPMENT

- STATIC MIXER
- VERTICAL MIXER
- SIGHT GLASS
- CENTRIFUGE
- CHANNEL DIFFUSER
- COMPRESSOR OR BLOWER
- PIPE ANCHOR
- PUMP
- SLUICE GATE
- SLIDE GATE
- STOP PLATE
- BAR SCREEN
- EXPANSION TANK
- SCREW (LIFT) PUMP
- FLUME
- WEIR

VALVE LEGEND

- PINCH VALVE
- PLUG VALVE, ECCENTRIC
- PLUG VALVE, NON-ECCENTRIC
- BUTTERFLY VALVE
- GATE VALVE
- BALL VALVE
- GLOBE VALVE
- CHECK VALVE
- 3 WAY VALVE
- 4 WAY VALVE

- ANGLE VALVE
- CHLORINE INSTITUTE VALVE
- DIAPHRAGM VALVE
- THROTTLING VALVE
- FLAME ARRESTER OR CHECK
- BACKWATER VALVE
- INLINE PRESSURE RELIEF VALVE
- PRESSURE REGULATING VALVE
- PRESSURE SUSTAINING OR MAINTAINING VALVE
- VACUUM BREAKER

- THERMAL SHUTOFF VALVE
- EXPLOSION RELIEF VALVE
- HOSE FAUCET
- HOSE FAUCET W/VACUUM BREAKER
- HOSE VALVE W/HOSE NIPPLE
- BACKFLOW PREVENTER
- SAFETY RELIEF VALVE
- V — VACUUM RELIEF CHECK VALVE
- PRESSURE VACUUM RELIEF VALVE

ACTUATOR LEGEND

- E — ELECTRIC
- FLOAT
- DIAPHRAGM
- P/O — AIR/OIL TANDEM
- S — SOLENOID
- A — AIR

NOTE:

SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED ———— .
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY) ———— .
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW ON OTHER PACKAGES SHALL BE DELINEATED AS DASHED – – – – – .

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DWG VER: 1000

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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

AW CONNECTION
GENERAL LEGEND AND SYMBOLS

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-AW-3
SHEET
OF

FD7000_PW
D7000

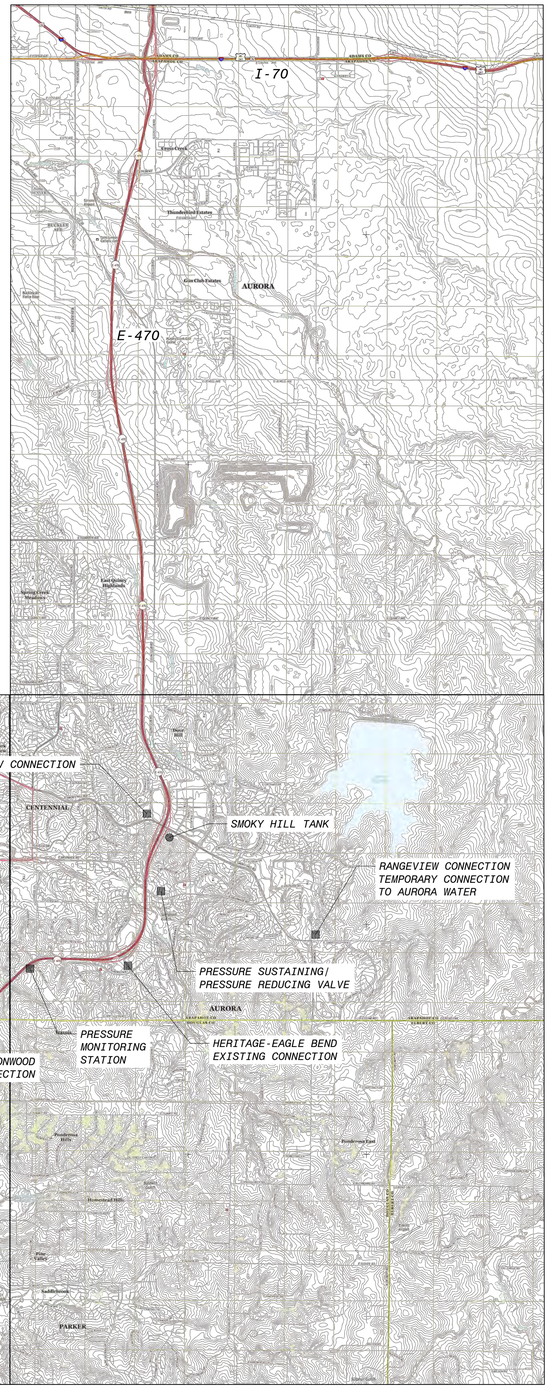
5000' 2500' 0 5000' 10000'

1"=5000'

NOTES:

1. THIS MAP INCLUDES THE FACILITY LOCATIONS OF ALL THE SUB-PACKAGES IN THE OVERALL DESIGN/BUILD PACKAGE. INCLUDED IN THIS SUB-PACKAGE ARE THE FOLLOWING:

   TEMPORARY CONNECTION TO AURORA WATER.



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NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

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XREF4:G-CVR-VIC-ANNO.dwg

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

AW CONNECTION VICINITY MAP

DESIGNED: DRK
DETAILED: TSH
CHECKED:
APPROVED:
DATE:

0 1/2 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO FULL SCALE

PROJECT NO.
182463

G-AW-4
SHEET
OF

FD7000_PH
07000

PROPOSED POWHATON ROAD ROW LINE

EXIST PROPERTY LINE

PROPOSED EDGE OF POWHATON ROAD

PROPOSED SIDEWALK (BY OTHERS) (ANTICIPATED TO BE COMPLETED BY JANUARY 2015)

SOUTHSHORE RECOVERY ACQUISITION, LLC
1251 AVENUE OF THE AMERICAS, SUITE F150
NEW YORK, NY 10020
PID: 2071-00-0-00-180

PROPOSED LOT LINES

NOTES:

1. MINIMUM ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL ALWAYS BE OPEN.
2. LICENSE AGREEMENT FROM CITY OF AURORA IS REQUIRED FOR PIPELINES LOCATED WITHIN CITY OF AURORA STREET RIGHT-OF-WAY.

EXIST 24" PVC AURORA WATER ZONE 8 PIPELINE

EXIST 36" STEEL AURORA WATER ZONE 7 PIPELINE

FUTURE EXPANSION OF POWHATON ROAD (BY OTHERS) (CONCRETE PAVEMENT) (ANTICIPATED TO BE COMPLETED BY JANUARY 2015)

ENTRANCE SIGN (BY OTHERS)

24" BFV (TYP OF 3)

TEMPORARY CONNECTION TO AURORA WATER

RANGEVIEW CONNECTION (INCLUDED IN CONNECTIONS PACKAGE)

ABOVE GRADE SCADA PANELS, COMMUNICATIONS ANTENNA, AND ELECTRICAL PANELS SHALL BE LOCATED WITHIN THE PERMANENT EASEMENT

SOUTHSHORE RECOVERY ACQUISITION, LLC
1251 AVENUE OF THE AMERICAS, SUITE F150
NEW YORK, NY 10020
PID: 2071-29-2-00-006

EXIST PROPERTY LINE

10" GATE VALVE (TYP OF 2)

BLOWOFF LOCATED WITHIN PERMANENT EASEMENT. TYPE OF BLOWOFF TO BE DETERMINED

PROPOSED SMOKY HILL ROAD ROW LINE

CONCRETE THRUST BLOCK

36"x24" WELDED OUTLET
N=1637425.25
E=3231257.72

A
M-AW-3

24" GATE VALVE

WATER LINE CROSSING

PROPOSED SMOKY HILL EDGE OF ROAD

ANTICIPATED TO BE COMPLETED BY JANUARY 2015

ANTICIPATED TO BE COMPLETED IN SUMMER OR FALL OF 2015

A
M-AW-2

TEMPORARY CONNECTION TO AURORA WATER

PROPOSED PERMANENT EASEMENT FOR AURORA WATER AND RANGEVIEW (AREA = 5,597 SQ FT)

PROPOSED SIDEWALK (BY OTHERS) (ANTICIPATED TO BE COMPLETED IN SUMMER OR FALL OF 2015)

PROPOSED LANDSCAPE AREA (BY OTHERS) (ANTICIPATED TO BE COMPLETED IN SUMMER OR FALL OF 2015)

PROPOSED EXPANSION OF SMOKY HILL ROAD (BY OTHERS) (ANTICIPATED TO BE COMPLETED IN SUMMER OR FALL OF 2015)

NORTH/SOUTH ALIGNMENT TO BE ADJUSTED TO BE LOCATED IN THE CENTER OF STREET CONCRETE PANELS. ONLY FULL CONCRETE PANELS IN THE STREET CAN BE REMOVED AND REPLACED (NO PARTIAL PANEL REMOVAL/REPLACEMENT)

24" CROSS W/ 24"x10" REDUCER TO RANGEVIEW

FUTURE CONCRETE PAVEMENT

FUTURE ASPHALT PAVEMENT

EXIST PROPERTY LINE

FUTURE EXPANSION OF POWHATON ROAD (BY OTHERS)(CONCRETE PAVEMENT) (ANTICIPATED TO BE COMPLETED BY JANUARY 2015)

E SMOKY HILL PKWY

36"x24" TEE
N=1637315.72
E=3231476.19

36"x10" TEE
N=1637316.22
E=3231580.43

10" GATE VALVE

EXIST 36" STATE LAND BOARD LINE

NEW ACCESS MANWAY

EXIST 6" BUBBLE-UP BO MANHOLE STA 191+50

NEXT LINE VALVE STA 206+25

STA 187+90 EXIST ACCESS MANHOLE

STA 188+00 EXIST 30" BFV VAULT

NEXT BLOW OFF STA 175+00
NEXT LINE VALVE STA 168+50

CONCRETE THRUST BLOCK BEHIND TEE

CONCRETE THRUST BLOCK BEHIND TEE

S POWHATON RD

HIGH PLAINS METRO DISTRICT
450 E. 17TH AVE. #400
DENVER, CO 80203
RID: 2071-33-2-08-017

PLAN
1" = 20'-0"

20' 10' 0 20' 40'
1"=20'

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE
				50.3160 - AW Connection	

XREF1: M-AW-1.dwg
XREF2:
XREF3:
XREF4:
SAVED: SWA29179, 9/16/2013 8:55:52 AM
PLOTTED:
USER: PHAMIN
DWG VER: 1005

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Black & Veatch Corporation
Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

AW CONNECTION
SITE PLAN

DESIGNED: DRK
DETAILED: TSH
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APPROVED:
DATE:

0 1/2 1
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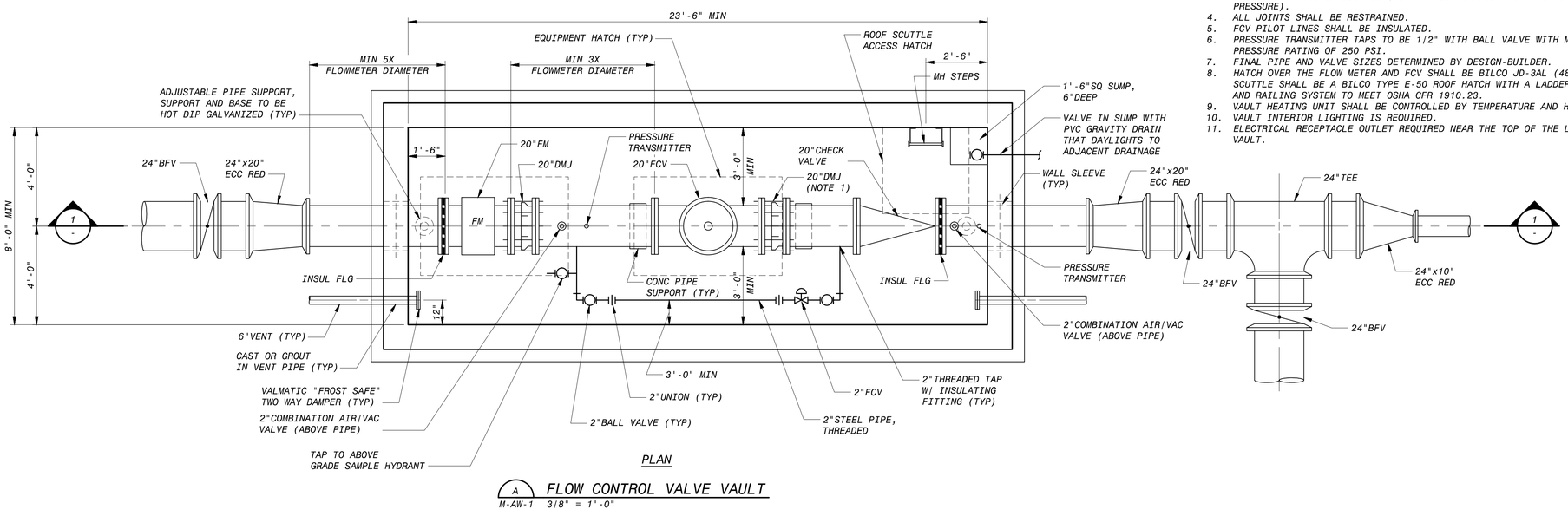
PROJECT NO.
182463

M-AW-1
SHEET
OF

FD7000
D7000

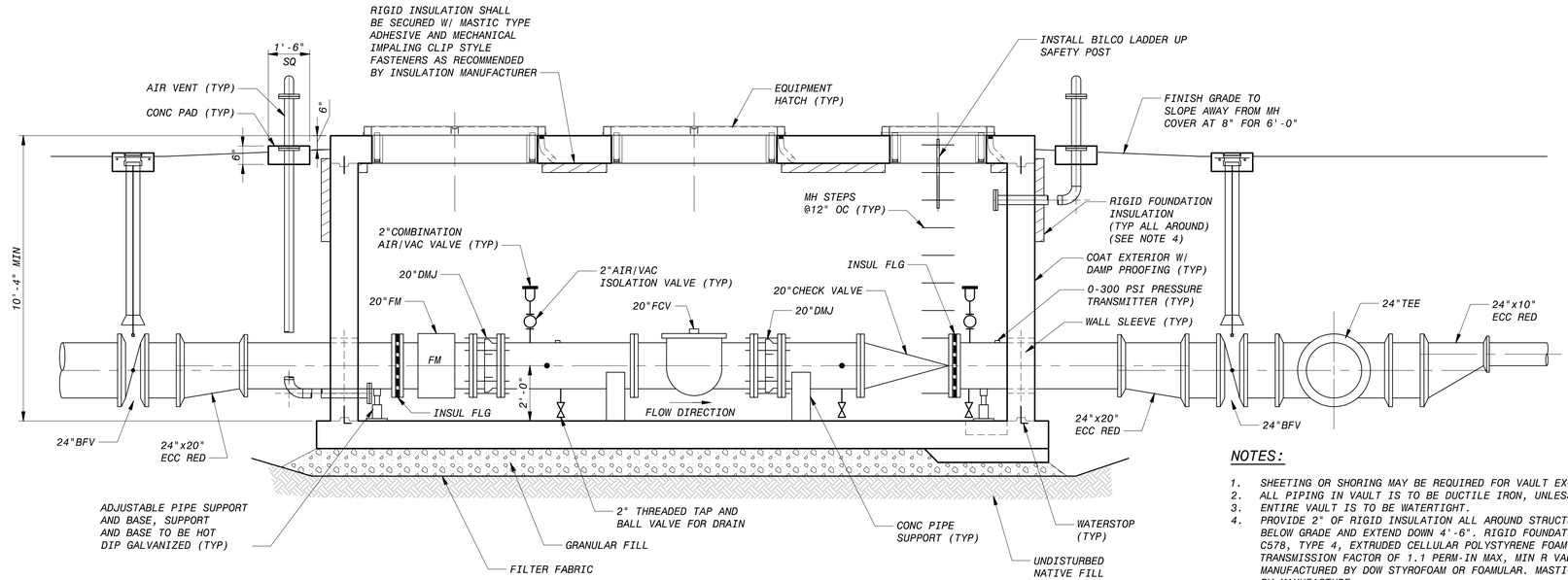


PLAN

A M-AW-1 FLOW CONTROL VALVE VAULT 3/8" = 1'-0"

NOTES:

1. DESIGN-BUILDER TO ENSURE THAT THE FLANGE PATTERNS FOR THE PIPE, VALVES, FLOWMETER, AND DISMANTLING JOINTS ARE COMPATIBLE.
2. THE 2 INCH BYPASS LINE SHALL HAVE AT LEAST ONE ADJUSTABLE PIPE SUPPORT.
3. THE 2 INCH BYPASS PIPE, VALVES, AND FITTINGS ARE TO HAVE A MINIMUM WORKING PRESSURE RATING OF 250 PSI (WITH A TEST GRADIENT OF 1.5 TIMES WORKING PRESSURE).
4. ALL JOINTS SHALL BE RESTRAINED.
5. FCV PILOT LINES SHALL BE INSULATED.
6. PRESSURE TRANSMITTER TAPS TO BE 1/2" WITH BALL VALVE WITH MINIMUM WORKING PRESSURE RATING OF 250 PSI.
7. FINAL PIPE AND VALVE SIZES DETERMINED BY DESIGN-BUILDER.
8. HATCH OVER THE FLOW METER AND FCV SHALL BE BILCO JD-3AL (48"x72"). THE ROOF SCUTTLE SHALL BE A BILCO TYPE E-50 ROOF HATCH WITH A LADDER-UP SAFETY POST AND RAILING SYSTEM TO MEET OSHA CFR 1910.23.
9. VAULT HEATING UNIT SHALL BE CONTROLLED BY TEMPERATURE AND HUMIDITY.
10. VAULT INTERIOR LIGHTING IS REQUIRED.
11. ELECTRICAL RECEPTACLE OUTLET REQUIRED NEAR THE TOP OF THE LADDER AND INSIDE VAULT.



1 - SECTION 3/8" = 1'-0"

NOTES:

1. SHEETING OR SHORING MAY BE REQUIRED FOR VAULT EXCAVATIONS.
2. ALL PIPING IN VAULT IS TO BE DUCTILE IRON, UNLESS NOTED OTHERWISE.
3. ENTIRE VAULT IS TO BE WATERTIGHT.
4. PROVIDE 2" OF RIGID INSULATION ALL AROUND STRUCTURE. TERMINATE INSULATION 6" BELOW GRADE AND EXTEND DOWN 4'-6". RIGID FOUNDATION INSULATION SHALL BE ASTM C578, TYPE 4, EXTRUDED CELLULAR POLYSTYRENE FOAM BOARD W/ WATER VAPOR TRANSMISSION FACTOR OF 1.1 PERM-IN MAX, MIN R VALUE OF 5 PER INCH, AS MANUFACTURED BY DOW STYROFOAM OR FOAMULAR. MASTIC ADHESIVE AS RECOMMENDED BY MANUFACTURE.
5. TOP SLAB SHALL HAVE A REMOVEABLE SECTION LARGE ENOUGH TO REMOVE AND RE-INSTALL ALL COMPONENTS.

PRELIMINARY - NOT FOR CONSTRUCTION

NO.	BY	CK	APP	REVISIONS AND RECORD OF ISSUE	DATE
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				SAVED: FRE08341, 7/19/2013 3:17:13 PM	
				PLOTTED:	
				USER: PHAMIN	DWG VER: 1004

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XREF2: BORDER.dwg
XREF3:
XREF4:

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Centennial, Colorado

SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

AW CONNECTION
PLAN VIEW AND SECTION VIEW

DESIGNED: DRK
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CHECKED:
APPROVED:
DATE:

0 1/2 1
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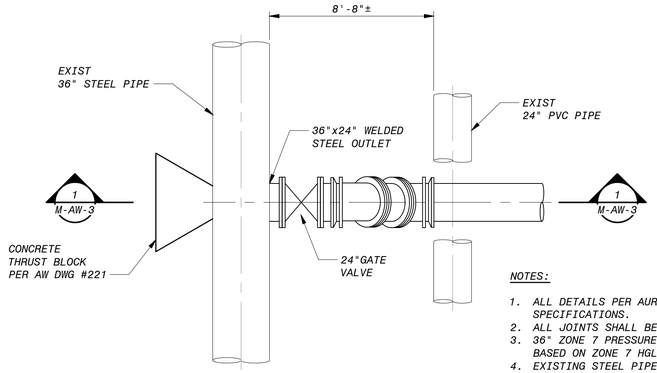
PROJECT NO. 182463

M-AW-2 SHEET OF

FD7000_PW
D7000

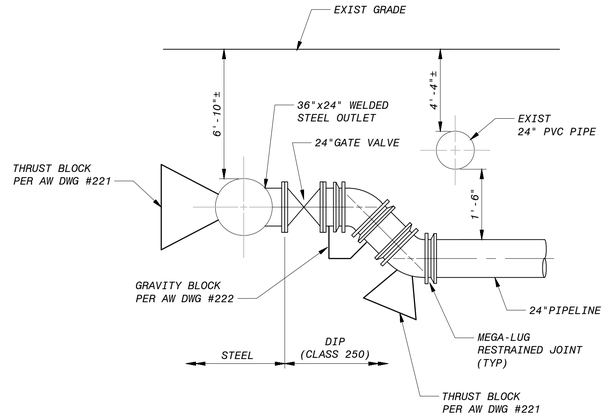


PLAN

A — AW STUB OUT DETAIL
- 1/4" = 1'-0"

NOTES:

1. ALL DETAILS PER AURORA WATER STANDARD SPECIFICATIONS.
2. ALL JOINTS SHALL BE RESTRAINED.
3. 36" ZONE 7 PRESSURE APPROXIMATELY 55 PSI BASED ON ZONE 7 HGL OF 6209.
4. EXISTING STEEL PIPE TO BE WET-TAPPED.
5. EXTERIOR COATINGS ON EXISTING 36-INCH STEEL PIPE REMOVED FOR WELDED OUTLET SHALL BE REPAIRED.
6. AQUAVAC POTHOLES OF THE 36-INCH STEEL PIPE AND 24-INCH PVC PIPE SHALL BE COMPLETED PRIOR TO CONSTRUCTION TO CONFIRM ADEQUATE SPACE IS AVAILABLE FOR PIPE LOWERING DETAIL.



1 — SECTION
M-AW-3 1/4" = 1'-0"

NO.	BY	CK	APP	DATE	REVISIONS AND RECORD OF ISSUE

50_3160 - AW Connection
M-AW-3.dwg
SAVED: FRE08341, 7/19/2013 3:17:13 PM
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DWG VER: 1004
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SOUTH METRO WISE AUTHORITY
DESIGN/BUILD PACKAGE

AW CONNECTION
MISCELLANEOUS DETAILS

DESIGNED: DRK
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CHECKED:
APPROVED:
DATE:

0 1/2 1
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PROJECT NO.
182463

M-AW-3
SHEET
OF

PRELIMINARY - NOT FOR CONSTRUCTION

FD7000_PW
D7000