Appendix C – Example Sheets

Main Extensions:

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- General Notes Sheet
- Water Only Plan 1
- Water Only Plan 2
- Utility Plan 1
- Utility Plan 2
- Detail Sheet
- Inside Meter Setting

Licenses and Easements:

- GENERAL INSTRUCTIONS 4-06
- DW STANDARDS 4-06A Page 1
- DW STANDARDS 4-06A Page 2
- BORDER/TITLE BLOCK 4-06B
- BORDER/TITLE BLOCK 4-06B Blank
- PERIMETER DESCRIPTION 4-06C
- CROSSING OVERHEAD 4-06D
- CROSSING UNDERGROUND 4-06E
- UNDERGROUND DITCH/CANAL CROSSING 4-06F
- CENTERLINE DESCRIPTION 4-06G
- SIMPLIFIED AREA 4-06H
- FIRE HYDRANT EASEMENT 4-06I
- DISTRIBUTOR PERIMETER DESCRIPTION 4-06J
- DISTRIBUTOR BORDER/TITLE BLOCK 4-06K Blank
- Exhibit A Example
- Closure Calculations Example

Capital Projects:

- Cover
- Survey Control
- Plan & Profile
- Plan, Profile & Sections
- Architectural & Structural Dimensioning
- Mechanical Dimensioning
- Reference Only

Capital Projects Electrical:

- Instrument Control
- Process & Instrumentation Diagram
- Power & Grounding
- Lighting & Control
- Cathodic Protection
- Conduit & Conductor Schedule
- One-Line Diagram Plan View

Main Extensions Example Sheets

The following is an example of required information needed for main extension submittals. These examples shall be used in conjunction with the Engineering Standards and the CAD Standards External Requirements (CAD Standards).

The examples illustrate common submittal types and are for graphic representation only. Graphic examples are not given for every submittal type; further clarification can be requested by contacting Denver Water's Sales Administration section. Denver Water has authority over water facilities only; the remainder of the plan presentation is at the discretion of the submitting engineering firm.

- Callouts in **BLUE** indicate which layer can be used
- Callouts in **MAGENTA** are directions for reference purposes – each magenta reference is hyperlinked for PDF use

ATTENTION
Denver Water will not provide main extension example drawings in DWG format.

Index of Sheets

- Cover Sheet
- General Notes Sheet
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- Water Only Plan 2
- Utility Plan 1
- Utility Plan 2
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PROJECT NAME

SECTION, TOWNSHIP AND RANGE
CITY OF GREENWOOD VILLAGE COLORADO
COUNTY OF ARAPAHOE, STATE OF COLORADO

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

COVER SHEET
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

STANDARD ABBREVIATIONS

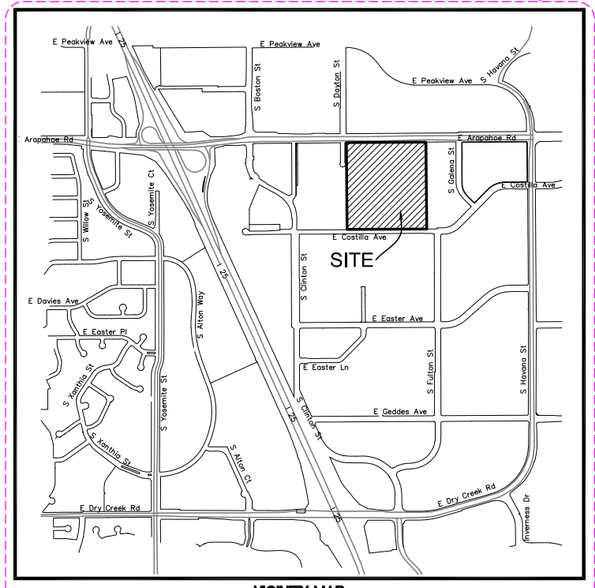
AC	–ASPHALTIC CONCRETE
BCR	–BEGINNING OF CURB RETURN
BM	–BENCHMARK
BW	–BOTTOM OF WALL
C1	–CURVE LABEL (SEE CURVE TABLE)
CL	–CENTER LINE
CP	–CONTROL POINT
CPP	–CORRUGATED PLASTIC PIPE
DIA	–DIAMETER
E	–ELECTRIC
EL	–ELEVATION
EQ	–EQUAL
EXIST	–EXISTING
FF	–FINISHED FLOOR
FG	–FINISHED GRADE
FH	–FIRE HYDRANT
FL	–FLOW LINE
G	–GAS
GB	–GRADE BREAK
HDCP	–HANDICAP
HORIZ	–HORIZONTAL
HP	–HIGH POINT
ID	–INSIDE DIAMETER
INV	–INVERT
JT	–JOINT TRENCH
L1	–LINE LABEL (SEE LINE TABLE)
LF	–LINEAL FEET
LS	–LANDSCAPE
MATL	–MATERIAL
MAX	–MAXIMUM
MH	–MANHOLE
MIN	–MINIMUM
NO	–NUMBER
OD	–OUTSIDE DIAMETER
PC	–POINT OF CURVATURE
PCC	–POINT OF COMPOUND CURVATURE
PCR	–POINT CURB RETURN
PT	–POINT OF TANGENCY
PVC	–POLYVINYL CHLORIDE PIPE
R	–RADIUS
RCP	–REINFORCED CONCRETE PIPE
RL	–RIDGELINE
RR	–RAILROAD
SAN	–SANITARY
SF	–SQUARE FOOTAGE
STM	–STORM
T	–TELEPHONE
TC	–TOP OF CURB
TF	–TOP OF FOOTING
TG	–TOP OF GRATE
TW	–TOP OF WALL
TYP	–TYPICAL
VERT	–VERTICAL
W	–WATER
W/	–WITH

LEGEND

- CONSTRUCTION NOTE
- PARKING STALL COUNT
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- EXISTING VALVE
- PROPOSED VALVE
- PROPOSED TAPPING VALVE & SLEEVE
- EXISTING CURB STOP
- PROPOSED CURB STOP
- EXISTING CORP STOP
- PROPOSED CORP STOP
- EXISTING TEMPORARY BLOWOFF
- PROPOSED TEMPORARY BLOWOFF
- PROPOSED PERMANENT BLOWOFF
- FIRE DEPARTMENT CONNECTION
- PROPOSED REDUCER
- PROPOSED BEND FITTINGS
- PROPOSED TEE & CROSS FITTINGS
- PROPOSED PRV MANHOLE
- EXISTING MANHOLE
- PROPOSED MANHOLE
- EXISTING LIGHT STANDARD
- PROPOSED LIGHT STANDARD
- SIGNAGE AS NOTED
- EXISTING ELECTRIC LINE
- PROPOSED ELECTRIC LINE
- EXISTING GAS LINE
- PROPOSED GAS LINE
- SANITARY LINE WITH MANHOLE
- PROPOSED SANITARY LINE
- EXISTING FIRELINE/HYDRANT/DOMESTIC LINE
- PROPOSED FIRELINE/HYDRANT/DOMESTIC LINE
- PROPOSED 6" WATER LINE
- PROPOSED 8" WATER LINE
- PROPOSED 12" WATER LINE
- EXISTING 6" WATER LINE
- EXISTING 8" WATER LINE
- EXISTING 12" WATER LINE
- EXISTING CONDUIT
- EXISTING STORM DRAINAGE LINE
- PROPOSED STORM DRAINAGE PLAN
- PROPERTY LINE
- EXISTING MAJOR CONTOURS
- PROPOSED MAJOR CONTOURS
- SCREEN WALL
- HANDICAP PARKING (V=VAN ACCESSIBLE) W/ WHEEL STOPS SHOWN
- HEAVY DUTY ASPHALT
- CONCRETE PAVEMENT

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

WATER RELATED SYMBOLS PROVIDED IN DRAWING "MainExtension.dwg"



VICINITY MAP
SCALE: 1" = 1000'

CIVIL ENGINEER
DOE ENGINEERING SERVICES, INC.
100 E. HAMPDEN AVENUE, SUITE 2
DENVER, CO. 80224
PH: 303-555-5555
FAX: 303-555-5556
CONTACT: JOHN DOE, P.E.
JOHN.DOE@EMAIL.COM

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

SHEET INDEX

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

MATERIALS LIST

DESCRIPTION	QTY.	UNIT
FIRE HYDRANT ASSEMBLY (INCL. 6" GATE VALVE AND BOX)	9	EA
12" GATE VALVE	32	EA
12" RECYCLED WATER GATE VALVE	4	EA
12" X 10" TAPPING SLEEVE	3	EA
12" TAPPING VALVE	5	EA
8" GATE VALVE	7	EA
6" GATE VALVE	23	EA
6" TAPPING VALVE	1	EA
6" X 8" SWIVEL TEE	4	EA
6" X 12" SWIVEL TEE	9	EA
3" GATE VALVE	2	EA
3" ANCHOR COUPLING	1	EA
2" PERMANENT BO VALVE	1	EA
2" TEMPORARY BO VALVE 90D	2	EA
PRESSURE REGULATING VALVE IN MH	1	EA
12" PVC	3132	LF
12" FUSIBLE PVC	148	LF
12" PVC RECYCLED WATER MAIN	467	LF
8" PVC	526	LF
8" DI	9	LF
6" PVC	320	LF
6" DI	89	LF
3" DI	9	LF
36" STEEL CASING	140	LF
12 x 12 CROSS	1	EA
12 X 12 TEE	5	EA
12 X 8 TEE	1	EA
12 X 6 TEE	2	EA
12"x 8" REDUCER	1	EA
12" PLUG	2	EA
12" 45D VERTICAL BEND	4	EA
8" 45D HORIZONTAL BEND	2	EA
8" 90D HORIZONTAL BEND	2	EA
6" DIP – FIRE HYDRANT	330	LF

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

RETAIN SPACE FOR DENVER WATER APPROVAL STAMP

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

PROVIDED IN TEMPLATE DRAWING

Fire hydrants shall be installed according to Denver Water Standards. The number and location(s) of fire hydrants(s) and fire flow as shown on this water main installation is correct as specified by the _____ Fire Department.

_____ gpm fire flow

_____
Signature of Fire Chief or Designated Representative

_____
Date

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

RETAIN SPACE FOR DENVER FIRE DEPARTMENT APPROVAL STAMP

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

FIRE FLOW DATA:

FIRE FLOW REQUIREMENTS ARE 2,500 GPM
THIS BUILDING REQUIRES 2, FIRE HYDRANTS TO MEET FIRE FLOW REQUIREMENTS
EACH FIRE HYDRANT MUST SUPPLY 1500 GPM MINIMUM @ 20 PSI RESIDUAL PRESSURE

CODE USED FOR ANALYSIS: NFPA 13, 2007 EDITION

OCCUPANCY GROUP: MERCANTILE

CONSTRUCTION TYPE: II-B

FIRE AREA: ENTIRE BUILDING, 55,113 SFT.

THIS BUILDING IS FULLY SPRINKLERED

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

NOTE:

COORDINATES SHOWN ON THIS PLAN SET ARE ARBITRATRY. TO CONVERT TO NAD83:

- ADD 1,542,010.46 FEET TO PROJECT NORTHING TO GET NAD83 SPC (0502 CO C)
- ADD 3,076,078.11 FEET TO PROJECT EASTING TO GET NAD83 SPC (00502 CO C)
- ROTATE PROJECT BEARINGS 00 DEGREES 00 MINUTES 33 SECONDS COUNTERCLOCKWISE ABOUT PROJECT SITE BENCHMARK/PROPERTY PIN & CAP ON NORTHEASTERLY PROPERTY LINE FOR GRID BEARINGS.

811 FOR BURIED UTILITY INFORMATION THREE (3) BUSINESS DAYS BEFORE YOU DIG CALL 811 (or 1-800-922-1987) UTILITY NOTIFICATION CENTER OF COLORADO (UNCC) www.uncc.org

PREPARED UNDER THE SUPERVISION OF

TITLE BLOCK AS PER ENGINEERING STANDARDS 16TH EDITION

COVER SHEET
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REVISION DATE: OCTOBER 17, 2018

GENERAL CONSTRUCTION AND WATER NOTES:

1. PROJECTS LOCATED IN DISTRIBUTOR CONTRACT AREAS SHALL REQUIRE THE DISTRICT TO CONTACT DENVER WATER PRIOR TO THE PRE-CONSTRUCTION MEETING.
2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH DENVER WATER'S ENGINEERING STANDARDS, MATERIALS SPECIFICATIONS, AND DRAWINGS. ALL MAIN INSTALLATIONS/SYSTEM MODIFICATIONS WILL BE APPROVED AND INSPECTED BY DENVER WATER. FIELD CHANGE DIRECTIVES MADE BY DISTRIBUTION INSPECTION SHALL BE MADE WITHIN 24 HOURS BY THE CONTRACTOR.
3. CONTRACTORS SHALL MAINTAIN A COPY OF THE CURRENT ENGINEERING STANDARDS ON-SITE AT ALL TIMES DURING CONSTRUCTION. SEE THE CHART BELOW FOR A QUICK REFERENCE TO THE FREQUENTLY USED MATERIAL SPECIFICATIONS.

MATERIAL SPECIFICATION QUICK REFERENCES:

MATERIAL SPECIFICATION	DESCRIPTION
MS 01	DUCTILE IRON PIPE
MS 02	POLYVINYL CHLORIDE PRESSURE PIPE
MS 03	DUCTILE IRON WATERWORKS FITTINGS
MS 5	RESILIENT SEATED GATE VALVES
MS 6	RUBBER SEATED BUTTERFLY VALVES
MS 8	TAPPING VALVES - MECHANICAL JOINT TYPE
MS 9	FABRICATED CARBON STEEL AND STAINLESS STEEL TAPPING SLEEVES
MS 12	CAST IRON VALVE BOXES
MS 13	DRY– BARREL FIRE HYDRANTS
MS 14	POLYETHYLENE ENCASEMENT MATERIAL
MS 23	BRASS AND BRONZE GOODS
MS 28	CONCRETE VAULTS
MS 29	MECHANICAL JOINT RESTRAINT
MS 30	BOLTED SLEEVE-TYPE COUPLINGS
MS 36	FLANGED JOINT ACCESSORIES

4. AWG 12 SOLID COPPER WIRE SHALL BE INSTALLED ON ALL NON-METALLIC WATER MAINS.
5. THE DEPTH OF COVER OVER THE PIPE, MEASURED FROM OFFICIAL STREET GRADE TO THE TOP OF THE PIPE, SHALL BE A MINIMUM OF 4-1/2 FEET AND SHALL BE KNOWN AS THE *COVER OVER THE PIPE*. IF DIFFICULTIES ARISE WHEN CROSSING INTERFERENCE, AND WHERE SPECIFICALLY APPROVED BY DENVER WATER, DEVIATIONS FROM 4-1/2 FEET OF COVER WILL BE PERMITTED. THE COVER OVER THE PIPE SHALL BE A MINIMUM OF 4-1/2 FEET AND A MAXIMUM OF 10 FEET WITH DENVER WATER APPROVAL.
6. ANY CHANGES IN ALIGNMENT AND GRADE SHALL BE AUTHORIZED BY DENVER WATER AND SHALL BE ACCOMPLISHED BY THE INSTALLATION OF ADDITIONAL FITTINGS. THE DEFLECTION OF JOINTS IS PERMITTED ONLY WHEN INSTALLING PIPE ON HORIZONTAL OR VERTICAL CURVES.
7. PRIOR TO THE INSTALLATION OF WATER MAINS, ROAD CONSTRUCTION MUST HAVE PROGRESSED TO AT LEAST THE SUB-GRADE STATE. SUB-GRADE IS DEFINED AS AN ELEVATION OF NO MORE THAN 7 INCHES BELOW THE FINISHED STREET GRADE.
8. THE CONTRACTOR SHALL ADJUST ALL VALVE BOXES AND FIRE HYDRANTS TO THE FINAL FINISHED GRADE.
9. BENDS, TEES, FIRE HYDRANTS, BLOW-OFFS, AND PLUGS AT DEAD-END MAINS SHALL BE PROTECTED FROM THRUST WITH MECHANICAL RESTRAINT AND CONCRETE KICK BLOCKS IN ACCORDANCE WITH DENVER WATER'S ENGINEERING STANDARDS.
10. VALVES SHALL BE LOCATED ON PROPERTY LINE EXTENSIONS, EXCEPT FOR TAPPING TEES WHERE AN ADDITIONAL VALVE SHALL BE PLACED ON THE TAPPING TEE. OTHER VALVE LOCATIONS MAY BE REQUIRED AS SHOWN ON THE PLANS.
11. UTILITY CROSSINGS SHALL MAINTAIN A MINIMUM CLEARANCE OF 18-INCHES FROM THE OUTSIDE OF THE PIPES.
12. ONLY ONE POINT OF CONNECTION IS ALLOWED UNTIL THE TESTING OF THE NEW MAIN INSTALLATIONS IS COMPLETE.
13. NEWLY INSTALLED WATER MAINS AND FIRE SERVICE LINES SHALL BE HYDROSTATICALLY TESTED IN ACCORDANCE WITH DENVER WATER ENGINEERING STANDARDS, SECTION 8.25.
14. THE TRENCH SHALL BE EXCAVATED AND THE PIPE EXPOSED FOR INSPECTION AT ANY LOCATION ON THE PROJECT, WHEN REQUESTED BY DENVER WATER.
15. THE STERILIZATION AND FLUSHING OF MAINS SHALL BE INSPECTED AND CERTIFIED BY THE HEALTH DEPARTMENT HAVING JURISDICTION; ONE COPY OF THE CERTIFICATION SHALL BE PROVIDED TO DENVER WATER. THE CERTIFICATION SHALL NOTE THE LOCATION OF THE MAIN AND STATE THE MAIN HAS BEEN INSPECTED BY A REPRESENTATIVE OF THE HEALTH DEPARTMENT HAVING JURISDICTION AND COMPLIES WITH THE PROCEDURES SET FORTH BY THAT DEPARTMENT.
16. THE CONTRACTOR IS RESPONSIBLE FOR:

A. NOTIFYING CUSTOMERS VERBALLY OR IN WRITING WHO MAY BE AFFECTED BY A WATER OUTAGE DURING CONSTRUCTION.

B. OBTAINING, AT THE CONTRACTOR'S EXPENSE, APPLICABLE LICENSES, PERMITS, BONDS, ETC., THAT ARE REQUIRED FOR THE MAIN INSTALLATION/SYSTEM MODIFICATION.

C. CONTACTING DENVER WATER'S CONSTRUCTION ENGINEERING PERSONNEL FOR THE PRE_CONSTRUCTION MEETING AND INSPECTION, AT 303-628-6671, AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION.

D. IN THE EVENT OF AN EMERGENCY IN DENVER OR IN A TOTAL SERVICE AREA AFTER WORKING HOURS, CALL DENVER WATER'S WESTSIDE DISPATCHER: 303-628-6801. IN A MASTER METER OR READ & BILL DISTRICT, PLEASE CONTACT THE REPRESENTATIVE OF THE DISTRICT IN WHICH THE PROJECT IS TAKING PLACE.

E. PAYING ALL ADDITIONAL CHARGES FOR INSPECTION OUTSIDE NORMAL WORK HOURS.

NOTE: BE ADVISED THAT ON OCCASION VALVES IN OUR SYSTEM MAY BE INOPERABLE. ON SUCH OCCASIONS, IT MAY BECOME NECESSARY TO BACK UP AN ADDITIONAL BLOCK FOR THE SHUT OUT. IF THAT OCCURS, MAKE ADDITIONAL NOTIFICATIONS VERBALLY OR IN WRITING TO CUSTOMERS WITH THE MANDATORY 24 HOURS ADVANCE NOTICE. WHEN VALVE MAINTENANCE IS REQUIRED, A DELAY OF SEVERAL DAYS SHOULD BE EXPECTED.

TAP AND METER NOTES (FOR DENVER, TOTAL SERVICE, AND READ AND BILL AREAS ONLY. IN MASTER METER DISTRICTS PLEASE REFER TO THE SPECIFICATION FOR THAT DISTRICT).

1. BEFORE ANY TAPS ARE MADE ON MAINS, TAP APPLICATIONS AND PAYMENT MUST BE RECEIVED AND APPROVED BY THE DISTRIBUTOR AND DENVER WATER, AND THE WATER MAIN HAS PASSED WATER QUALITY TESTING.
2. DENVER WATER WILL MAKE ALL TAPS THAT ARE 2 INCHES AND SMALLER.
3. INDIVIDUAL SERVICE LINE PRVS SHALL BE INSTALLED BY THE LICENSEE WHEN AREA PRESSURE EXCEEDS 80 PSI.
4. SERVICES AND METERS:

A. THE CONTRACTOR MAY REQUEST AN ON-SITE PRE-CONSTRUCTION CONFERENCE WITH THE METER INSPECTOR FOR ALL TAPS, SERVICE LINES, AND METERS LARGER THAN ONE-INCH, AND FOR PROJECTS INVOLVING MORE THAN ONE TAP AND SERVICE. TO SCHEDULE A PRE_CONSTRUCTION CONFERENCE, CALL METER INSPECTION AT 303– 628-6145.

B. A COPY OF THE APPROVED PLANS WITH DENVER WATER'S APPROVAL STICKER MUST BE PRESENT ON-SITE AT THE TIME THE TAP IS MADE AND THE METER IS INSPECTED OR INSTALLED.

C. PRIOR TO THE TAP BEING MADE, THE SERVICE ADDRESS SHALL BE POSTED, AND THE CURB VALVE SHALL BE INSTALLED. UPON TAP INSTALLATION, THE CONTRACTOR MAY REQUEST THE METER INSPECTION AFTER THE FIRST POUR OF CONCRETE FOUNDATION HAS OCCURRED. THE SERVICE ADDRESS SHALL REMAIN POSTED UNTIL THE METER SETTING PASSES INSPECTION.

D. METERS CANNOT BE SET, INSPECTED, OR SERVICES ACTIVATED, UNTIL THE REQUIREMENTS FOR BACKFLOW PREVENTION HAVE BEEN COMPLETED. CONTACT THE BACKFLOW PREVENTION PROGRAM PERSONNEL AT 303-628-5969 FOR FURTHER INFORMATION.

E. METER PITS AND VAULTS MUST BE SET FLUSH WITH THE FINAL GRADE OF THE LANDSCAPE, INCLUDING THE PROPER DEPTH FOR SOIL AMENDMENT. IF FINAL GRADING HAS NOT BEEN COMPLETED AT THE TIME OF METER INSPECTION, THE OWNER WILL BE REQUIRED TO RAISE OR LOWER THE METER PIT/VAULT WHEN FINAL GRADE IS ESTABLISHED. ADJUSTMENT OF THE PIT MAY REQUIRE ADJUSTMENT OF THE METER SETTING WITHIN THE PIT.

F. METER SETTING, VALVES, AND SERVICE LINES FROM THE MAIN TO THE BACKFLOW PREVENTER ASSEMBLY, IF PRESENT, OR TO 5 FEET AFTER THE METER VAULT, MUST MEET ALL APPLICABLE ENGINEERING STANDARDS IN EFFECT AT THE TIME OF ACTIVATION. MODIFICATIONS MAY BE REQUIRED FROM THE DETAILS ON THESE PLANS TO COMPLY WITH THE CURRENT ENGINEERING STANDARDS.

G. NO PRESENT OR FUTURE FENCES OR WALLS ARE PERMITTED BETWEEN THE RIGHT– OF– WAY (ROW) OR EASEMENT AND THE METER SETTING. THERE SHALL BE NO PERMANENT OBSTRUCTIONS WITHIN 5 FEET OF THE OUTSIDE WALL OF THE METER PIT OR VAULT.

H. INSIDE THE CITY OF DENVER, ALL MULTI-FAMILY DWELLINGS WITH A SINGLE TAP, SERVICE LINE, AND METER ARE REQUIRED TO SUB-METER EACH INDIVIDUAL UNIT (SEC 401.3.2 OF DENVER MODIFICATIONS TO THE INTERNATIONAL PLUMBING CODE, ORDINANCE NUMBER 576, SERIES OF 2004). CALL THE CITY AND COUNTY OF DENVER PLUMBING INSPECTOR FOR INFORMATION AT 720-865-2625.

I. INSIDE THE CITY OF DENVER, ALL SERVICE LINES MUST BE INSTALLED TO AVOID EXISTING OR PROPOSED STREET TREES. CONTACT THE CITY AND COUNTY OF DENVER'S FORESTER AT 720-913-0647 FOR INFORMATION.

CROSS-CONNECTION CONTROL REQUIREMENTS:

THE LICENSEES LISTED BELOW SHALL BE IN CONFORMANCE WITH DENVER WATER'S ENGINEERING STANDARDS, CHAPTER 5.05, *CROSS-CONNECTION CONTROL AND BACKFLOW PREVENTION*. BACKFLOW PREVENTION ASSEMBLIES ARE REQUIRED TO BE INSTALLED ON THE FOLLOWING WATER SERVICE LINES:

1. COMMERCIAL DOMESTIC SERVICE LINES
2. MULTI-FAMILY DOMESTIC SERVICE LINES (DEPENDING ON POTENTIAL HAZARD)
3. FIRE SERVICE LINES
4. IRRIGATION SERVICE LINES
5. SINGLE FAMILY RESIDENTIAL DOMESTIC SERVICE LINES WITH AN AUXILIARY WATER SOURCE (DUAL WATER SERVICE AGREEMENT REQUIRED)
6. RECYCLED WATER SERVICE LINES, IF SYSTEM DESIGN INCLUDES CHEMICAL INJECTION OR PUMPS.
   a. BACKFLOW PREVENTION ASSEMBLIES INSTALLED ON RECYCLED WATER SERVICE LINES SHALL BE IDENTIFIED AS "RECYCLED WATER".
7. IT IS AT THE SOLE DISCRETION OF DENVER WATER'S CROSS-CONNECTION CONTROL SECTION TO APPROVE OR DENY A VARIANCE REQUEST RELATED TO A PROPOSED BACKFLOW PREVENTION ASSEMBLY INSTALLATION.

A. BACKFLOW PREVENTION ASSEMBLIES SHALL BE A MODEL MANUFACTURED IN ACCORDANCE WITH AWWA C510 AND C511 AND SHALL HAVE MET THE SPECIFICATIONS BY THE UNIVERSITY OF SOUTHERN CALIFORNIA FOUNDATION FOR CROSS-CONNECTION CONTROL AND HYDRAULIC RESEARCH.

B. THE LICENSEE IS REQUIRED TO HAVE A CERTIFIED AMERICAN BACKFLOW PREVENTION ASSOCIATION (ABPA) OR AMERICAN SOCIETY OF SANITARY ENGINEERING (ASSE) TESTER INSPECT AND TEST THE EXISTING AND/OR NEWLY INSTALLED CONTAINMENT BACKFLOW PREVENTION ASSEMBLIES ON DEDICATED DOMESTIC, IRRIGATION, FIRE AND RECYCLE WATER SERVICE LINES UPON INSTALLATION AND ANNUALLY THEREAFTER.

C. WITHIN 48 HOURS OF DENVER WATER SETTING THE METER AND TURNING ON THE WATER SERVICE, THE ABPA OR ASSE TESTER IS REQUIRED TO SUBMIT THE CONTAINMENT BACKFLOW ASSEMBLY TEST REPORT(S) TO THE CROSS-CONNECTION CONTROL OFFICE:

FAX: 303-794-8325

E-MAIL: CROSSCONNECTIONCONTROL@DENVERWATER.ORG

D. THERE SHALL BE NO UNPROTECTED TAKEOFFS FROM THE SERVICE LINE AHEAD OF ANY METER OR BACKFLOW PREVENTION ASSEMBLY LOCATED AT THE POINT OF DELIVERY TO THE CUSTOMER'S WATER SYSTEM.

E. NO BRANCH LINE OR TAPS ARE ALLOWED ON DEDICATED IRRIGATION WATER SERVICE LINES OR RECYCLED WATER SERVICE LINE FOR DOMESTIC (POTABLE) USE (E.G., DRINKING FOUNTAINS, WATER PLAY FEATURES, SWIMMING POOL, RESTROOM FACILITIES, ETC.)

DEN REQUIREMENTS:

1. CONTRACTORS SHALL MAINTAIN A COPY OF THE CURRENT ENGINEERING STANDARDS AND CAPITAL PROJECT CONSTRUCTION STANDARDS, WHEN APPLICABLE, ON SITE AT ALL TIMES DURING CONSTRUCTION.
2. WAX TAPE, METALLIC FITTINGS, AND APPURTENANCES SHALL BE IN ACCORDANCE WITH DENVER WATER CAPITAL PROJECTS CONSTRUCTION STANDARDS, 3RD EDITION SECTION 09 97 13.04.
3. AN AMI ENDPOINT IS REQUIRED TO BE PURCHASED BY THE CONTRACTOR AT THE TIME OF METER INSTALLATION.
4. CONTACT THE FOLLOWING DENVER WATER PERSONNEL PRIOR TO CONSTRUCTION FOR PROJECT COORDINATION AND INSPECTION SERVICES AT DEN:

   DEN AIRSIDE CONSTRUCTION INSPECTION
   a. MINIMUM OF 30 DAYS PRIOR TO CONSTRUCTION
   b. DENVER WATER CONSTRUCTION MANAGEMENT - JEFF SLANKARD 303-628-6165

   DEN LANDSIDE CONSTRUCTION INSPECTION
   c. MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION
   d. DENVER WATER CONSTRUCTION ENGINEERING - 303-628-6671

   DEN CATHODIC PROTECTION INSPECTION
   a. MINIMUM OF 48 HOURS PRIOR TO CONSTRUCTION
   b. DENVER WATER CONSTRUCTION MANAGEMENT - LEE BURKE 303-628-6293

GENERAL NOTES SHEET REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

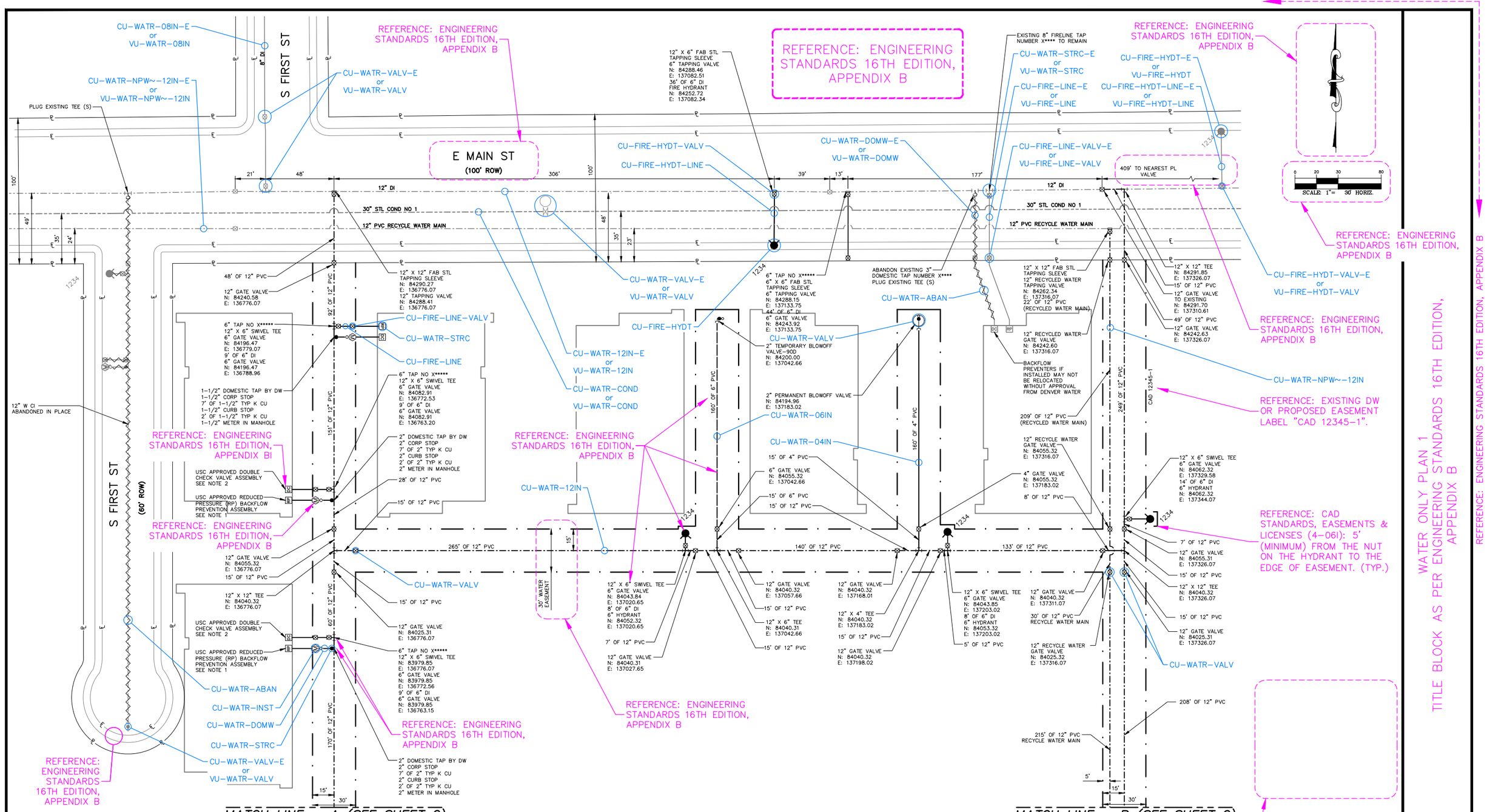
RETAIN SPACE FOR DENVER WATER APPROVAL STAMP

PREPARED UNDER THE SUPERVISION OF

CURRENT NOTES FOUND: https://www.denverwater.org/contractors/construction-information/design-standards/engineering-standards

GENERAL NOTES SHEET REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

TITLE BLOCK AS PER ENGINEERING STANDARDS 16TH EDITION APPENDIX B



STANDARD DETAIL INDEX

STANDARD DETAILS INCORPORATED BY REFERENCE WITHIN THESE DRAWINGS SHALL CONSIST OF THE FOLLOWING STANDARD DETAILS INDICATED AND ALL SUBSEQUENT DETAILS WHICH MAY BE REFERENCE THEREIN.

31002 – TYPICAL TRENCH SECTION FOR PIPE 24" ø AND SMALLER
31004 – TYPICAL TRENCH SECTION FOR PIPELINE IN DIPPING BEDROCK
33206 – PLAN, PROFILE, & LOCATION FOR FIRE HYDRANTS, MAINS, & VALVES
33225 – TRACER WIRE INSTALLATION FOR PVC WATER MAIN
33215 – STORM & SANITARY SEWER CROSSING
33216 – OPEN CUT CROSSING OVER OR UNDER CONDUIT OR CONFLICTING UTILITY
03001 – CONCRETE KICKBLOCKS
03005 – CONCRETE KICKBLOCK REQUIREMENTS FOR WATER MAIN & TAP SIZE COMBOS
33144 – LENGTH OF RESTRAINED PIPE
33061 – STANDARD DESIGN FOR 2" BLOWOFF IN MANHOLE
33260 – GENERAL METER & SERVICE NOTES
33261 – 3" & LARGER DOMESTIC & FIRELINE CONNECTIONS
33264 – 3/4" & 1" SERVICE LINE, STOP BOX, & OUTSIDE METER INSTALLATION
33270 – OUTSIDE SETTING FOR 1 1/2" & 2" METER WITH CHECK VALVE & BYPASS IN MANHOLE
13020 – FIELD INSTALLATION – POLYETHYLENE WRAP

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

DISCLAIMER: THESE PLANS ARE FOR EXAMPLE ONLY AND ARE NOT REFLECTIVE OF ACTUAL FIELD CONDITIONS:

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

RETAIN SPACE FOR DENVER WATER APPROVAL STAMP

PREPARED UNDER THE SUPERVISION OF

WATER ONLY PLAN 1
TITLE BLOCK AS PER ENGINEERING STANDARDS 16TH EDITION, APPENDIX B
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

MATCH LINE – A (SEE SHEET 1)

MATCH LINE – B (SEE SHEET 2)

170' OF 12" PVC

12" GATE VALVE
N: 83810.31
E: 136776.07

CU–WATR–VALV

15' OF 12" PVC

12" X 12" TEE
PLUGGED (W)
N: 83795.31
E: 136776.07

15' OF 12" PVC

12" GATE VALVE
N: 83795.31
E: 136791.07

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

105' OF 12" PVC

CU–WATR–VALV

144' OF 12" PVC

CU–FIRE–HYDT

CU–FIRE–HYDT–LINE

178' OF 12" PVC

CU–FIRE–HYDT–VALV

12" X 6" SWIVEL TEE
6" GATE VALVE
N: 83798.81
E: 137020.65
12' OF 6" DI
6" HYDRANT
N: 83811.31
E: 137020.65

SEE DETAIL SHEET

(PRV)

107' OF 12" PVC

12" RECYCLE WATER
GATE VALVE
N: 83810.31
E: 137316.07
12" X 12" TEE
PLUGGED (W)
N: 83805.31
E: 137316.07

208' OF 12" PVC

215' OF 12" PVC RECYCLE WATER MAIN

12" X 6" SWIVEL TEE
N: 83817.31
E: 137326.07
6" GATE VALVE
N: 83817.31
E: 137329.57
18' OF 6" DI
FIRE HYDRANT
N: 83817.31
E: 137347.07
12" GATE VALVE
N: 83810.31
E: 137326.07

2" TEMPORARY BLOWOFF VALVE–90D
N: 83805.31
E: 137332.52

12" X 12" CROSS
PLUGGED (E)
N: 83795.31
E: 137326.07

12" GATE VALVE
N: 83780.31
E: 137326.07

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

0 20 30 80
SCALE: 1"= 30' HORIZ.

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

12" GATE VALVE
N: 83795.31
E: 136861.46

15' OF 12" PVC

12" GATE VALVE
N: 83795.31
E: 136891.46

15' OF 12" PVC

12" X 8" TEE
N: 83795.31
E: 136876.46

15' OF 8" PVC

8" GATE VALVE
N: 83780.31
E: 136876.46

CU–FIRE–LINE–VALV

CU–FIRE–LINE

68' OF 8" PVC

USC APPROVED DOUBLE CHECK VALVE ASSEMBLY SEE NOTE 2

USC APPROVED REDUCED PRESSURE (RP) BACKFLOW PREVENTION ASSEMBLY SEE NOTE 1

6" TAP NO X*****
8" X 6" SWIVEL TEE
6" GATE VALVE
N: 83727.69
E: 136872.87
9' OF 6" DI
6" GATE VALVE
N: 83727.69
E: 136863.46

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

CU–WATR–08IN

1–1/2" DOMESTIC TAP BY DW
1–1/2" CORP STOP
7' OF 1–1/2" TYP K CU
1–1/2" CURB STOP
2' OF 1–1/2" TYP K CU
1–1/2" METER IN MANHOLE

128' OF 8" PVC

REFERENCE: CAD STANDARDS, EASEMENTS & LICENSES (4–06I): 5' (MINIMUM) FROM THE NUT ON THE HYDRANT TO THE EDGE OF EASEMENT. (TYP.)

8" X 6" SWIVEL TEE
6" GATE VALVE
N: 83599.75
E: 136872.94
12' OF 6" DI
6" HYDRANT
N: 83599.75
E: 136860.46

21' OF 8" PVC

CU–WATR–STRC

6" TAP NO X*****
8" X 6" SWIVEL TEE
6" GATE VALVE
N: 83578.87
E: 136872.37
9' OF 6" DI
6" GATE VALVE
N: 83578.87
E: 136863.60

USC APPROVED DOUBLE CHECK VALVE ASSEMBLY SEE NOTE 2

USC APPROVED REDUCED PRESSURE (RP) BACKFLOW PREVENTION ASSEMBLY SEE NOTE 1

2" DOMESTIC TAP BY DW
2" CORP STOP
7' OF 2" TYP K CU
2" CURB STOP
2' OF 2" TYP K CU
2" METER IN MANHOLE

CU–WATR–INST

CU–WATR–DOMW

128' OF 8" PVC

30' WATER EASEMENT

15'

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

8" 45D BEND
N: 83450.78
E: 136876.46

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

3" TAP NO X*****
12" X 3" TEE
3" ANCHOR COUPLING
3" GATE VALVE
N: 83420.00
E: 136902.25
9' OF 3" DI
3" GATE VALVE
N: 83413.30
E: 136895.55

CU–WATR–STRC

40' OF 8" PVC

8" 45D BEND
N: 83387.14
E: 136940.10

CU–WATR–VALV

CU–WATR–DOMW

CU–WATR–INST

M

50' OF 8" PVC

44' OF 8" PVC

8" X 6" SWIVEL TEE
6" GATE VALVE
N: 83367.78
E: 136936.54
9' OF 6" DI
6" HYDRANT
N: 83367.78
E: 136927.10

CU–WATR–STRC

7' OF 8" PVC

8" GATE VALVE
N: 83360.78
E: 136940.10

30' OF 8" PVC

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: EXISTING DW OR PROPOSED EASEMENT LABEL "CAD 12345–1".

METER ROOM, SEE DETAIL SHEET

200'

104' OF 12" PVC

3" TAP NO X*****
12" X 3" TEE
3" ANCHOR COUPLING
N: 83676.58
E: 137326.07
3" GATE VALVE
N: 83676.58
E: 137322.54
9' OF 3" DI
3" GATE VALVE
N: 83676.58
E: 137313.34

10' OF 12" PVC

CU–WATR–STRC

8" TAP NO X*****
12" X 8" SWIVEL TEE
8" GATE VALVE
N: 83666.58
E: 137322.54
9' OF 8" DI
8" GATE VALVE
N: 83666.58
E: 137313.34

78' OF 12" PVC

CAD 12345–1

12" 45D BEND (DOWN)
N: 83588.22
E: 137326.07
4' OF 12" DI
12" 45D BEND (LEVEL)
N: 83584
E: 137326

CU–WATR–12IN

CU–WATR–STRC

148' OF 12" FUSIBLE PVC IN 140' OF 36" STL CASING

CU–CSWK

12" 45D BEND (UP)
N: 83436
E: 137326
4' OF 12" DI
12" 45D BEND (LEVEL)
N: 83432.22
E: 137326.07

CU–WATR–STRC

64' OF 12" PVC

12" X 6" SWIVEL TEE
6" GATE VALVE
N: 83367.78
E: 137322.53
12' OF 6" DI
6" HYDRANT
N: 83367.78
E: 137310.07

7' OF 12" PVC

12" GATE VALVE
N: 83360.78
E: 137326.07

30' OF 12" PVC

6851 S FIRST ST

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

CU–WATR–12IN–E
or
VU–WATR–12IN

WATER ONLY PLAN
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

RETAIN SPACE FOR DENVER WATER APPROVAL STAMP

E TOWN AVE
(60' ROW)

60'

35'

50'

371'

400' TO NEAREST PL VALVE

12" PVC

12" PVC

8" PVC

CU–WATR–08IN–E
or
VU–WATR–08IN

CU–WATR–STRC

12" GATE VALVE
TO EXISTING
N: 83330.78
E: 137311.07

15' OF 12" PVC

12" X 12" TEE
N: 83330.78
E: 137326.07

20' OF 12" PVC

12" X 8" REDUCER
TO EXISTING
N: 83330.78
E: 137346.07

5' OF 12" PVC

12" GATE VALVE
N: 83330.78
E: 137341.07

12" X 8" FAB STL TAPPING SLEEVE
N: 83330.78
E: 136940.10
8" TAPPING VALVE
N: 83332.69
E: 136940.10

CU–WATR–VALV

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

STANDARD DETAIL INDEX

STANDARD DETAILS INCORPORATED BY REFERENCE WITHIN THESE DRAWINGS SHALL CONSIST OF THE FOLLOWING STANDARD DETAILS INDICATED AND ALL SUBSEQUENT DETAILS WHICH MAY BE REFERENCE THEREIN.

31002 – TYPICAL TRENCH SECTION FOR PIPE 24" ø AND SMALLER
31004 – TYPICAL TRENCH SECTION FOR PIPELINE IN DIPPING BEDROCK
33206 – PLAN, PROFILE, & LOCATION FOR FIRE HYDRANTS, MAINS, & VALVES
33225 – TRACER WIRE INSTALLATION FOR PVC WATER MAIN
33215 – STORM & SANITARY SEWER CROSSING
33216 – OPEN CUT CROSSING OVER OR UNDER CONDUIT OR CONFLICTING UTILITY
03001 – CONCRETE KICKBLOCKS
03005 – CONCRETE KICKBLOCK REQUIREMENTS FOR WATER MAIN & TAP SIZE COMBOS
33144 – LENGTH OF RESTRAINED PIPE
33061 – STANDARD DESIGN FOR 2" BLOWOFF IN MANHOLE
33260 – GENERAL METER & SERVICE NOTES
33261 – 3" & LARGER DOMESTIC & FIRELINE CONNECTIONS
33264 – 3/4" & 1" SERVICE LINE, STOP BOX, & OUTSIDE METER INSTALLATION
33270 – OUTSIDE SETTING FOR 1 1/2" & 2" METER WITH CHECK VALVE & BYPASS IN MANHOLE
13020 – FIELD INSTALLATION – POLYETHYLENE WRAP

DISCLAIMER: THESE PLANS ARE FOR EXAMPLE ONLY AND ARE NOT REFLECTIVE OF ACTUAL FIELD CONDITIONS:

PREPARED UNDER THE SUPERVISION OF

WATER ONLY PLAN 2
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

TITLE BLOCK AS PER ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

EXIST. 27" SANITARY SEWER (TYP)

EXIST. 30" SANITARY SEWER (TYP)

EX. SANITARY MANHOLE
RIM=5215.60
INV(SE)=5199.85
INV(NE)=5199.74

PROP. SANITARY MANHOLE
(TIE INTO EXISTING EX. SANITARY MAIN)
RIM=5210.45
INV(SE)=5195.75
INV(NE)=5195.65

EXIST. GAS (TYP)

EXIST. 30" SANITARY SEWER (TYP)

S FIRST ST

8" DI

E MAIN ST
(100' ROW)

S FIRST ST
(60' ROW)

12" DI

30" STL COND NO 1

12" PVC (RECYCLED WATER MAIN)

12" RECYCLED WATER MAIN

100'
34'
18'
49'
35'
23'

6856 S FIRST ST

6914 E MAIN ST

6912 E MAIN ST

6910 E MAIN ST

6908 E MAIN ST

6854 S FIRST ST

30" WATER EASEMENT

15'

30" C-900 PVC SANITARY
518 LF @ 1.82%

24" C-900 PVC RTD STORM
610 LF @ 1.36%

15' 10'

30'

5' 10' 10'

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

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REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

0 20 30 80
SCALE 1"= 30' HORIZ.

UTILITY PLAN
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

GENERAL NOTES

1. INSTALL 4' DIAMETER SANITARY MANHOLE. COORDINATE EXACT LOCATION WITH MECHANICAL PLANS.
2. CONNECT 4" PVC TO EXISTING SERVICE WITH CLEANOUT. CONTRACTOR SHALL POTHOLE TO LOCATE LINE AND VERIFY ELEVATION.
3. CONNECT PROPOSED 6" D.I.P. FIRE SERVICE LINE TO EXISTING. CONTRACTOR SHALL POTHOLE TO LOCATE LINE AND NOTIFY ENGINEER OF EXACT LOCATION.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF FIRE SERVICE WITH FIRE PROTECTION PLANS.

MATCH LINE – A (SEE SHEET 4)

MATCH LINE – B (SEE SHEET 4)

DISCLAIMER: THESE PLANS ARE FOR EXAMPLE ONLY AND ARE NOT REFLECTIVE OF ACTUAL FIELD CONDITIONS:

PREPARED UNDER THE SUPERVISION OF

UTILITY PLAN 1
TITLE BLOCK AS PER ENGINEERING STANDARDS 16TH EDITION
APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

MATCH LINE – A (SEE SHEET 3)

MATCH LINE – B (SEE SHEET 3)

30" C-900 PVC SANITARY
518 LF @ 1.82%

30" C-900 PVC SANITARY
100 LF @ 1.82%

PROP. SANITARY MANHOLE
RIM=5191.91
INV(SE)=5181.76
INV(NE)=5181.56

PRV

24" C-900 PVC RTD STORM
610 LF @ 1.36%

24" C-900 PVC RTD STORM
98 LF @ 1.36%

24" C-900 PVC RTD STORM
36 LF @ 1.36%

24" C-900 PVC RTD STORM
202 LF @ 1.36%

PROP. STORM MANHOLE
RIM=5179.89
INV(SE)=5169.76
INV(NE)=5169.56

PROPOSED DETENTION

PROP. STORM MANHOLE
RIM=5175.71
INV(SE)=5165.74
INV(NE)=5165.69

PROP. STORM MANHOLE
RIM=5177.80
INV(SE)=5167.69
INV(NE)=5167.62

24" C-900 PVC RTD STORM
180 LF @ 1.36%

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

6852 S FIRST ST

6848 S FIRST ST

6851 E TOWN AVE

30" C-900 PVC SANITARY
350 LF @ 1.82%

PROP. GAS
(BY OTHERS)

PROP. STORM MANHOLE
RIM=5176.84
INV(SE)=5159.69
INV(NE)=5159.56

24" C-900 PVC RTD STORM
39 LF @ 1.36%

PROP. STORM MANHOLE
RIM=5156.89
INV(SE)=5150.45
INV(NE)=5150.41

24" C-900 PVC RTD STORM
184 LF @ 1.36%

30" WATER EASEMENT

30" C-900 PVC SANITARY
90 LF @ 1.82%

30" C-900 PVC SANITARY
74 LF @ 1.82%

24" C-900 PVC RTD STORM
883 LF @ 1.36%

24" C-900 PVC RTD STORM
883 LF @ 1.36%

E TOWN AVE
(60' ROW)

12" PVC

12" PVC

8" PVC

EXIST. 30" SANITARY SEWER (TYP)

PROP. SANITARY MANHOLE
(TIE INTO EXISTING EX. SANITARY MAIN)
RIM=5190.82
INV(SE)=5179.24
INV(NE)=5179.44

EX. SANITARY MANHOLE
RIM=5190.79
INV(SE)=5182.64
INV(NE)=5182.74

EXIST. 30" SANITARY SEWER (TYP)

SCALE 1"= 30' HORIZ.

UTILITY PLAN
REFERENCE: ENGINEERING
STANDARDS 16TH EDITION,
APPENDIX B

GENERAL NOTES

1. INSTALL 4' DIAMETER SANITARY MANHOLE. COORDINATE EXACT LOCATION WITH MECHANICAL PLANS.
2. CONNECT 4" PVC TO EXISTING SERVICE WITH CLEANOUT. CONTRACTOR SHALL POTHOLE TO LOCATE LINE AND VERIFY ELEVATION.
3. CONNECT PROPOSED 6" D.I.P. FIRE SERVICE LINE TO EXISTING. CONTRACTOR SHALL POTHOLE TO LOCATE LINE AND NOTIFY ENGINEER OF EXACT LOCATION.
4. CONTRACTOR SHALL COORDINATE EXACT LOCATION OF FIRE SERVICE WITH FIRE PROTECTION PLANS.

DISCLAIMER: THESE PLANS ARE FOR EXAMPLE ONLY AND ARE NOT REFLECTIVE OF ACTUAL FIELD CONDITIONS:

NOTE:

COORDINATES SHOWN ON THIS PLAN SET ARE ARBITRATRY. TO CONVERT TO NAD83:

- ADD 1,542,010.46 FEET TO PROJECT NORTHING TO GET NAD83 SPC (0502 CO C)
- ADD 3,076,078.11 FEET TO PROJECT EASTING TO GET NAD83 SPC (00502 CO C)
- ROTATE PROJECT BEARINGS 00 DEGREES 00 MINUTES 33 SECONDS COUNTERCLOCKWISE ABOUT PROJECT SITE BENCHMARK/PROPERTY PIN & CAP ON NORTHEASTERLY PROPERTY LINE FOR GRID BEARINGS.

PREPARED UNDER THE SUPERVISION OF

UTILITY PLAN 2
TITLE BLOCK AS PER ENGINEERING STANDARDS 16TH EDITION
APPENDIX B
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

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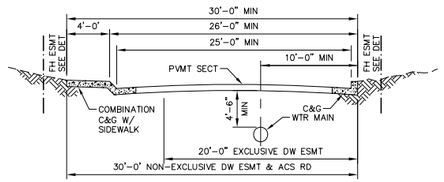
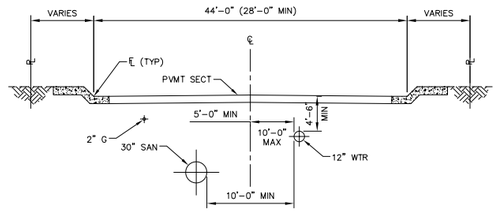
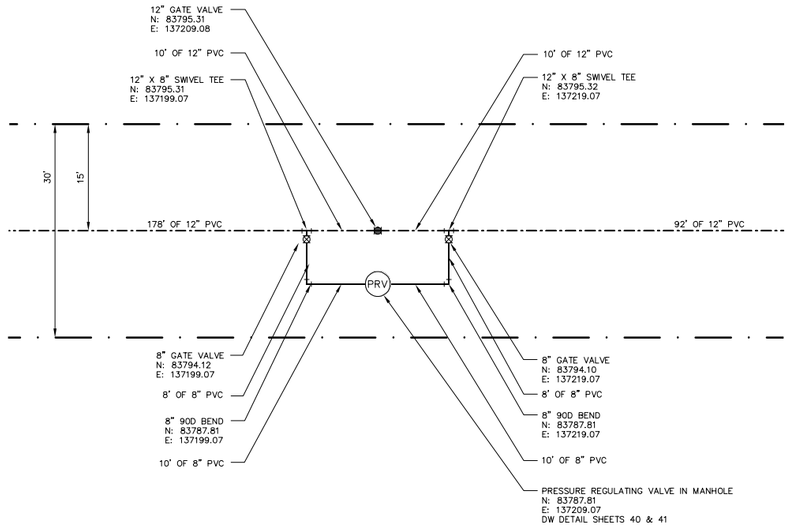


TYPICAL CURB & GUTTER WITH SIDEWALK



TYPICAL RIGHT-OF-WAY SECTION

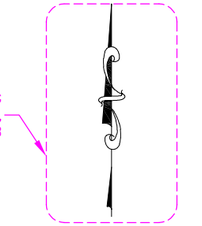
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B



PRV DETAIL

SCALE: 1" = 10'

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B



REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

DETAIL SHEETS
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

RETAIN SPACE FOR DENVER WATER APPROVAL STAMP

STANDARD DETAIL INDEX

STANDARD DETAILS INCORPORATED BY REFERENCE WITHIN THESE DRAWINGS SHALL CONSIST OF THE FOLLOWING STANDARD DETAILS INDICATED AND ALL SUBSEQUENT DETAILS WHICH MAY BE REFERENCE THEREIN.

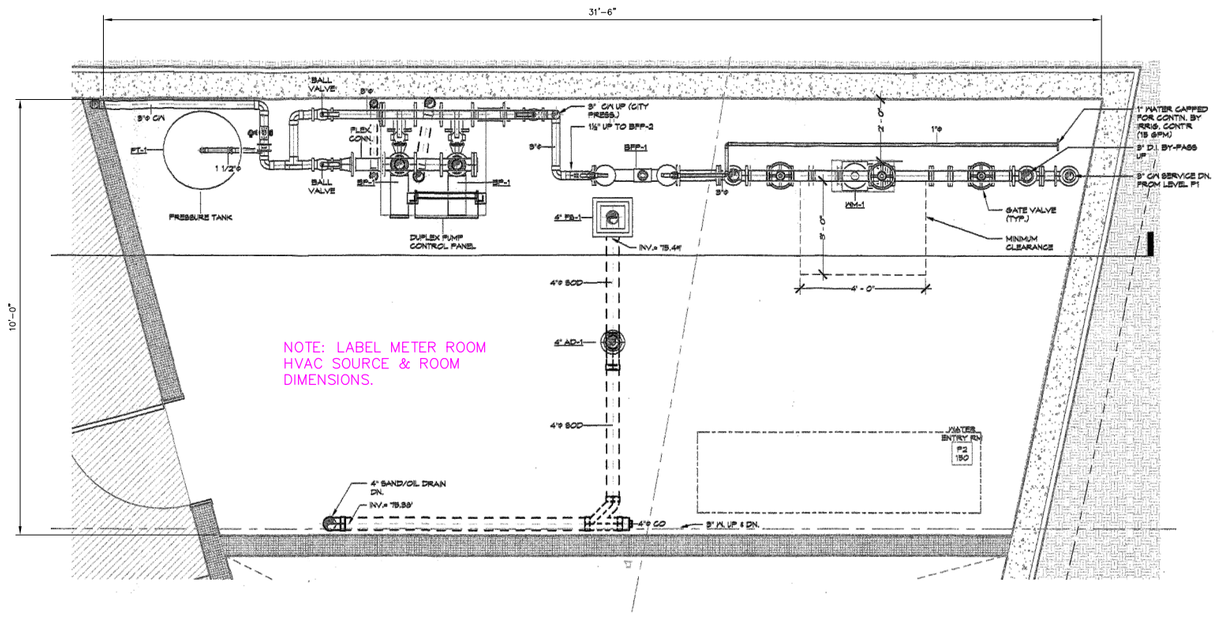
31002 – TYPICAL TRENCH SECTION FOR PIPE 24" ø AND SMALLER
31004 – TYPICAL TRENCH SECTION FOR PIPELINE IN DIPPING BEDROCK
33206 – PLAN, PROFILE, & LOCATION FOR FIRE HYDRANTS, MAINS, & VALVES
33225 – TRACER WIRE INSTALLATION FOR PVC WATER MAIN
33215 – STORM & SANITARY SEWER CROSSING
33216 – OPEN CUT CROSSING OVER OR UNDER CONDUIT OR CONFLICTING UTILITY
03001 – CONCRETE KICKBLOCKS
03005 – CONCRETE KICKBLOCK REQUIREMENTS FOR WATER MAIN & TAP SIZE COMBOS
33144 – LENGTH OF RESTRAINED PIPE
33061 – STANDARD DESIGN FOR 2" BLOWOFF IN MANHOLE
33260 – GENERAL METER & SERVICE NOTES
33261 – 3" & LARGER DOMESTIC & FIRELINE CONNECTIONS
33264 – 3/4" & 1" SERVICE LINE, STOP BOX, & OUTSIDE METER INSTALLATION
33270 – OUTSIDE SETTING FOR 1 1/2" & 2" METER WITH CHECK VALVE & BYPASS IN MANHOLE
13020 – FIELD INSTALLATION – POLYETHYLENE WRAP

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

DISCLAIMER: THESE PLANS ARE FOR EXAMPLE ONLY AND ARE NOT REFLECTIVE OF ACTUAL FIELD CONDITIONS.

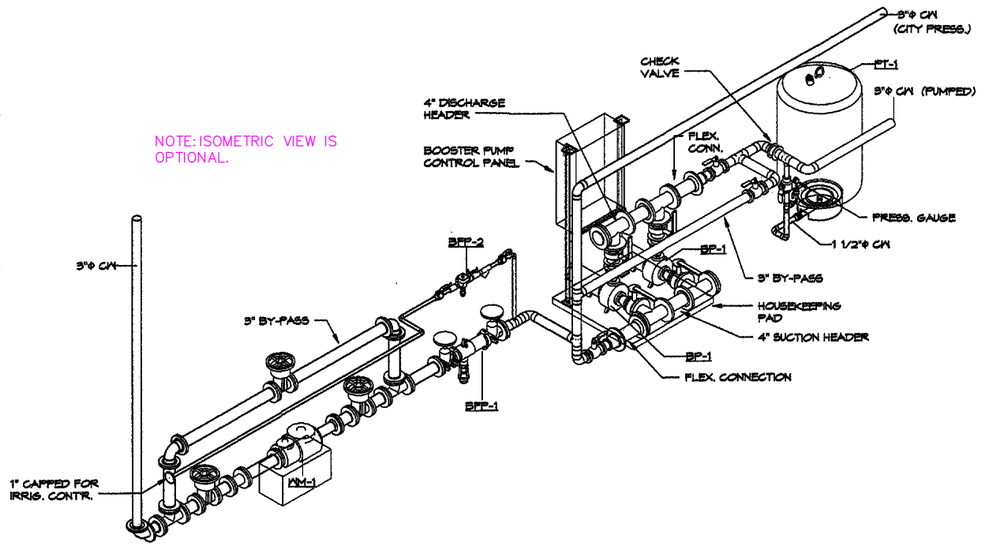
PREPARED UNDER THE SUPERVISION OF

TITLE BLOCK AS PER ENGINEERING STANDARDS 16TH EDITION
DETAIL
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

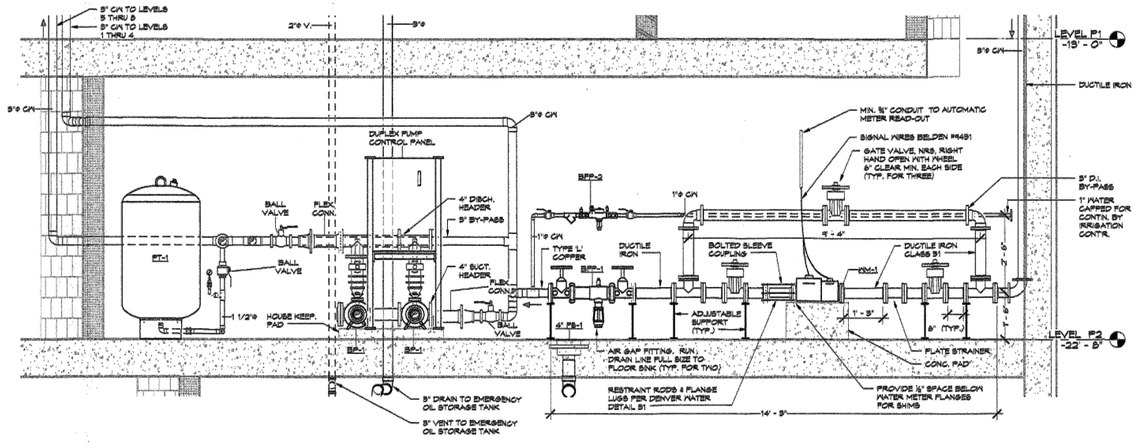


PLAN
1/2" = 1' – 0"

NOTE: ISOMETRIC VIEW IS OPTIONAL.



ISOMETRIC
NTS



SECTION
1/2" = 1' – 0"

NOTES:
1.) A USC APPROVED REDUCED PRESSURE (RP) BACKFLOW PREVENTION ASSEMBLY MUST BE INSTALLED ON THE DOMESTIC SERVICE LINE DOWNSTREAM OF THE METER. REFERENCE DENVER WATERS ENGINEERING STANDARD 5.05 FOR CROSS– CONNECTION CONTROL.
2.) A USC APPROVED DOUBLE CHECK VALVE ASSEMBLY MUST BE INSTALLED ON FIRELINE IMMEDIATELY UPON ENTRY INTO THE HEATED PART OF THE BUILDING 5' MAX FROM WALL OR FLOOR. ACKNOWLEDGE IF CHEMICAL EXTINGUISHING AGENTS OR ANTIFREEZE SOLUTIONS WILL BE USED, THEIR USE WILL REQUIRE A HIGH HAZARD (RP) BACKFLOW PREVENTION ASSEMBLY. REFERENCE DENVER WATER ENGINEERING STANDARD 5.05 FOR CROSS–CONNECTION CONTROL.

DISCLAIMER: THESE PLANS ARE FOR EXAMPLE ONLY AND ARE NOT REFLECTIVE OF ACTUAL FIELD CONDITIONS.

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

STANDARD DETAIL INDEX

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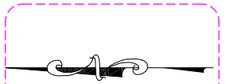
33264 – 3/4" & 1" SERVICE LINE, STOP BOX, & OUTSIDE METER INSTALLATION
33270 – OUTSIDE SETTING FOR 1 1/2" & 2" METER WITH CHECK VALVE & BYPASS IN MANHOLE
13020 – FIELD INSTALLATION – POLYETHYLENE WRAP

METER ROOM DETAIL
REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B



SCALE: 1"= 30' HORIZ.

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

RETAIN SPACE FOR DENVER WATER APPROVAL STAMP

PREPARED UNDER THE SUPERVISION OF

METER ROOM DETAIL
REFERENCE: ENGINEERING STANDARDS 16TH EDITION
APPENDIX B

TITLE BLOCK AS PER ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

REFERENCE: ENGINEERING STANDARDS 16TH EDITION, APPENDIX B

Licenses and Easements Example Sheets

The following is a list of the example sheets for Easements and Licenses submittals, including how to use each sheet; sheet notes are not always specific to the given example and may be used throughout.

- **GENERAL INSTRUCTIONS 4-06**
  - Provides general instructions as to drawing setup and appearance
- **DW STANDARDS 4-06A Page 1**
  - Lists acceptable layers, colors, text styles, line weights, and linetypes for Easements and Licenses submittals, use only the supplied information
  - Line weights are based on Denver Water's plot file (DW Engineering-PMGT.ctb) and are set to default within the example drawings
- **DW STANDARDS 4-06A Page 2**
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
- **BORDER/TITLE BLOCK 4-06B**
  - See GENERAL INSTRUCTIONS 4-06, note 6 for North Arrow specifications
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
  - The North Arrow is provided as a dynamic block; symbol name: NorthArrow
  - ***Legend has been provided as a dynamic block; symbol name: Legend
- **BORDER/TITLE BLOCK 4-06B Blank**
  - See GENERAL INSTRUCTIONS 4-06, note 6 for North Arrow specifications
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
  - The North Arrow is provided as a dynamic block; symbol name: NorthArrow
  - ***Legend has been provided as a dynamic block; symbol name: Legend
- **PERIMETER DESCRIPTION 4-06C**
  - ***In some cases, linetype scales can be forced to show properly
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
  - Street names can use either layer C-ANNO-L140-ITAL or C-ANNO-L120-ITAL, with corresponding text styles, depending on street width and scale of drawing
  - Shadow fonts can use either layer C-ANNO-L120-SHAD or C-ANNO-L175-SHAD, with corresponding text styles, depending on scale of drawing
- **CROSSING OVERHEAD 4-06D**
  - ***In some cases, linetype scales can be forced to show properly
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
  - Round stationing to the nearest 5 feet (i.e., 1232+75)
  - Bar scale not required on sheets with profiles, when scale is clearly labeled
- **CROSSING UNDERGROUND 4-06E**
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
- **UNDERGROUND DITCH/CANAL CROSSING 4-06F**

- *In some cases, linetype scales can be forced to show properly
- Callouts in **BLUE** indicate which layer is used
- Callouts in **MAGENTA** are directions for reference purposes

- **CENTERLINE DESCRIPTION 4-06G**
  - *LEGEND – AREA LICENSE GRANTED – is shown as a user-defined example on this sheet
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
- **SIMPLIFIED AREA 4-06H**
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
  - This sheet shall only be used when requesting a License for an irregular area for a use such as grading, riprap, or a lawn irrigation system; the perimeter shall be simplified to avoid using multiple small courses
- **FIRE HYDRANT EASEMENT 4-06I**
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
  - The fire hydrant is provided as a dynamic block; symbol name: DW_Fire Hydrant
  - This sheet is for informational purposes only
- **DISTRIBUTOR PERIMETER DESCRIPTION 4-06J**
  - *In some cases, linetype scales can be forced to show properly
  - Callouts in **BLUE** indicate which layer is used
  - Callouts in **MAGENTA** are directions for reference purposes
  - Street names can use either layer C-ANNO-L140-ITAL or C-ANNO-L120-ITAL, with corresponding text styles, depending on street width and scale of drawing
  - Shadow fonts can use either layer C-ANNO-L120-SHAD or C-ANNO-L175-SHAD, with corresponding text styles, depending on scale of drawing
- **DISTRIBUTOR BORDER/TITLE BLOCK 4-06K** *(not shown)*
  - See BORDER/TITLE BLOCK 4-06B for specifications
- **DISTRIBUTOR BORDER/TITLE BLOCK 4-06K Blank**
  - See BORDER/TITLE BLOCK 4-06B for specifications

GENERAL INSTRUCTIONS 4–06

INSTRUCTIONS FOR THE PREPARATION OF DENVER WATER EXHIBIT DRAWINGS

1) The purpose of the drawing is to clearly show the easement area or the location of the item to be licensed and the area immediately surrounding it.

2) You must start your drawing using one of our standards drawings which contain all of the proper layers, linetypes and settings required. Then bring your line work and information into it.

3) Submitted CAD drawing files must not contain any X–referencing.

   Use the provided layers only do not change layer names or layer colors.

4) The LINETYPE scale and DRAWING scale must be the same.

5) All text sizes are based on the Simplex text style L100 being 0.10 of an inch high. Except for the Shadow Font. No substitutions for the Simplex template are allowed. The shadow font Shadow.shx is included with this standards package.

6) The North direction and arrow must be in the range from 90° to the left to 45° to the right. Having "North" at the top of the page is preferred. The 8 1/2" side of the drawing is always the bottom of the page.

7) The tie should be to a monumented corner of the quarter section in which the easement parcel or licensed item lies. A direct tie is preferred but a tie with a maximum of two courses will be accepted.

8) All designations for quarter section lines and land corners must be for the quarter section in which they lie. Place them within that quarter section.

9) Basis of Bearings: Note that the bearing basis has three parts.

   - Numeric value: degrees, minutes, seconds (i.e. S89°59'18"W)
   - Monumentation: The monuments used for the bearing basis must be shown on the parcel map or described in the Basis of Bearing note.
   - Source of Basis: Denver Metro Area, State Plane Central Zone: Outside the Metro Area, Subdivision Plat, or existing Denver Water Maps.
   - Denver Water requires two monumented corners for the Basis of Bearings.

10) A 0.10" tic mark must be used to delineate the end points of curves and angle points if its location is not obvious. Rotate tic marks to be radial to the curve or to bi–sect the angle and place them on the C–ANNO–L060 layer.

11) "Easement Hatching Lines". Hatch lines must be spaced 0.06" apart. (The Hatch Scale equals 0.48 times the drawing scale). The hatch angle must be 45° or 135° to match the Legend. Use the C–PATT layer for all hatch patterns.

12) Show the easement or property area in square feet and "round" it to the nearest foot if the area is less than one half acre. Show the easement or property area in acres and to three decimal places if the area is one half acre or more. i.e., 21,884 SQ FT or 0.503 acres.

13) The initials of the person who prepared the drawing should be entered in the area marked "DRN". All other fields will be completed by Denver Water.

14) A separate paper space layout tab must be created for each page of a drawing.

15) General Information:

   - All Z coordinates must be Zero.
   - Files must not be Zipped if they will fit on a CD.
   - The use of course tables should be avoided.
   - Label the quarter/quarter for each one shown on the parcel map.
   - Include a Bar Scale that matches the DW standard of 0.10" by 3.00".
   - Drawing Accuracy: All lines and curves must be drawn accurately to two decimal places for distance.
   - When multiple easement parcels exist they must be separated by the type of easement document being used and grouped by owners.

16) SIMPLIFIED AREA 4–06H should only be used when requesting a license for an irregular area for a use such as grading, riprap, or a lawn irrigation system. The perimeter should be simplified to avoid using multiple small courses.

17) Before submitting CAD files remove all drawings and tabs that are not necessary.

Note: If you have any questions while you are preparing your drawing regarding our standards please feel free to email and we will be glad to assist you.

LEGEND	DOCUMENT DATED:	FACILITY TYPE	DENVER WATER
EASEMENT ACQUIRED	SEC'Y FILE DOC.	EASEMENT/LICENSE/PERMIT	1600 West 12th Ave. Denver, Colorado 80204–3412 T: 303.628.6000 F: 303.628.6851 denverwater.org
BNDRY EXISTING DW ESMT	RIMS ITEM NO.	COMPANY/OWNER	
BNDRY EXISTING DW PROP	CARD NO.		
	DRN. PM. S.		SCALE: 1" = 100'
	APPD.		
	SHEET 1 OF 1 SHEET	DATE: DECEMBER 20, 2016	CAD XXXXX–X_PMGT

D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

DW STANDARDS 4–06A Page 1

USE ONLY SUPPLIED LAYERS, COLORS, TEXT STYLES, LINE WEIGHTS, and LINETYPES SPECIFIED ON THIS SHEET

LAYER NAME	LAYER COLOR	TEXT STYLE	EXAMPLE	LINE WEIGHT
C–ANNO–L050	211	L50	STANDARDS 03232012	0.005 IN
C–ANNO–L060	212	L60	Lot 1	0.007 IN
C–ANNO–L060–ITAL	212	L60 Italic	*N Line NW 1/4 Sec 36*	0.007 IN
C–ANNO–L080	223	L80	N89°22'45"W	0.010 IN
C–ANNO–L080	223	L80	BASIS OF BEARING:	0.010 IN
C–ANNO–L100	144	L100	BLK 1	0.014 IN
C–ANNO–L120	85	L120	SCALE 1" = 100'	0.020 IN
C–ANNO–L120–ITAL	85	L120 Italic	*ANY STREET*	0.020 IN
C–ANNO–L120–SHAD	211	L120 Shadow	POLLOCK OAKS	0.007 IN
C–ANNO–L140	245	L140	NE1/4 NE1/4	0.028 IN
C–ANNO–L140–ITAL	245	L140 Italic	*ANY STREET*	0.028 IN
C–ANNO–L175	126	L175	4–06A	0.039 IN
C–ANNO–L175–SHAD	211	L175 Shadow	BAILEY HEIGHTS	0.007 IN
G–ANNO–LOGO	211	N/A		0.005 IN
			LINETYPE	
C–ANNO–TTLB	7			0.039 IN
C–CHAN–CNTR	212			0.007 IN
C–DTCH–CNTR	212			0.007 IN
C–ESMT–ACQU	156			0.028 IN
C–ESMT–CONV	26			0.028 IN
C–ESMT–DIST	165			0.020 IN
C–ESMT–DW	7			0.039 IN
C–ESMT–OTHR	212			0.007 IN
C–FENC	212			0.007 IN
C–GRLN–PROF	223			0.010 IN
C–LICN–ACQU	7			0.039 IN
C–LICN–ACQU–AREA	26			0.028 IN
C–LICN–CONV	7			0.039 IN
C–LICN–CONV–AREA	26			0.028 IN
C–NPLT	212			0.007 IN
C–PATT	212			0.007 IN
C–POND	164			0.014 IN
C–PROP–ACQU	156			0.028 IN
C–PROP–CONV	26			0.028 IN
C–PROP–DW	7			0.039 IN
C–PROP–LINE	212			0.007 IN
C–PROP–LOTS	212			0.007 IN
C–ROAD–CNTR	212			0.007 IN
C–ROAD–CURB	212			0.007 IN
C–ROAD–RWAY	85			0.020 IN
C–SECT–LINE–16TH	212			0.007 IN
C–SECT–LINE–64TH	212			0.007 IN
C–SECT–LINE–FULL	212			0.007 IN
C–SECT–LINE–QTRS	212			0.007 IN
C–SITE	211			0.010 IN
CU–COND–CNTR	212			0.007 IN
CU–WATR–CNTR	212			0.007 IN
V–CTRL	85			0.020 IN
VF–MONM	212			0.007 IN

LEGEND

- EASEMENT ACQUIRED
- BNDRY EXISTING DW ESMT
- BNDRY EXISTING DW PROP

DOCUMENT DATED:
SEC'Y FILE DOC.
RIMS ITEM NO.
CARD NO.
DRN. | PM. | S.
APPD.
SHEET 1 OF 1 SHEET

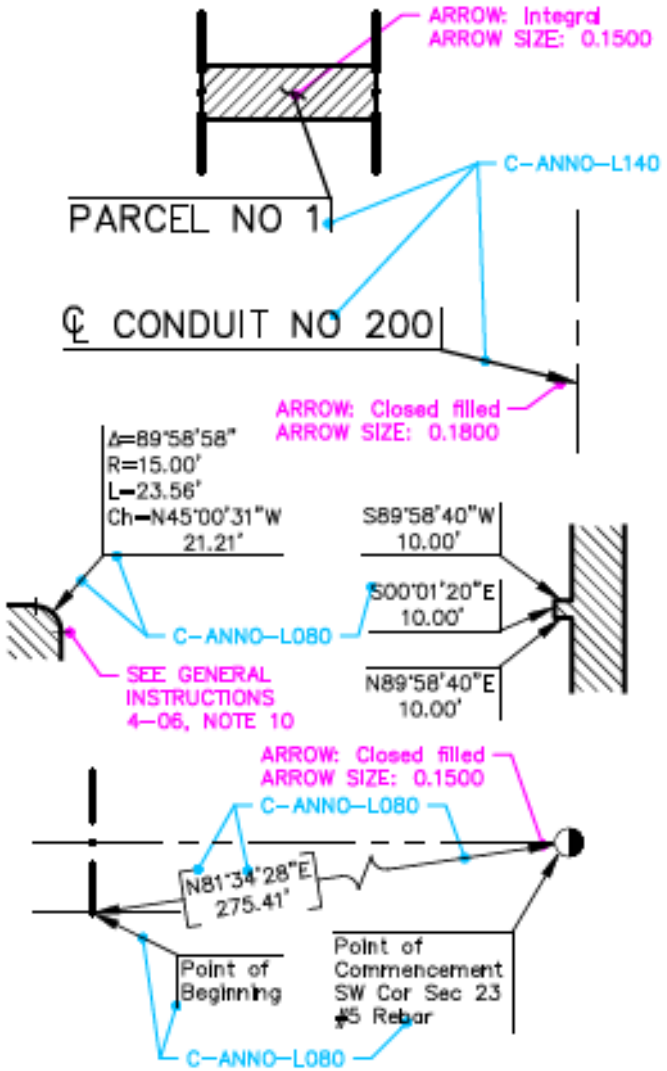
FACILITY TYPE
EASEMENT/LICENSE/PERMIT
COMPANY/OWNER
DATE: DECEMBER 20, 2016

DENVER WATER
1600 West 12th Ave
Denver, Colorado 80204–3412
T 303.628.6000
F 303.628.6851
denverwater.org
SCALE: 1" = 100'
CAD XXXXX–X_PMGT

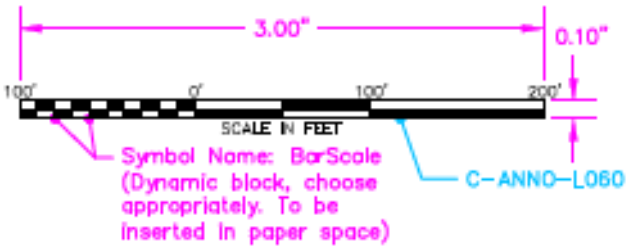
D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

DW STANDARDS 4–06A Page 2

LABELS AND LEADERS



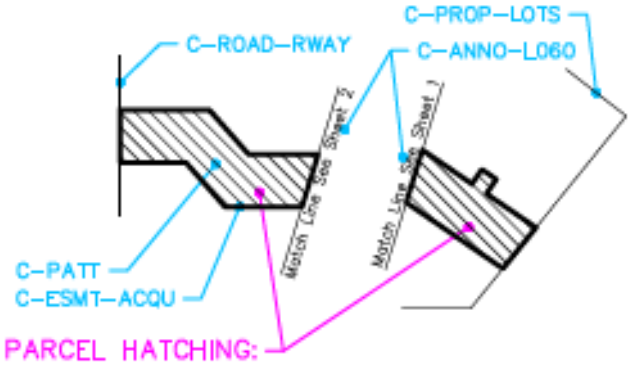
STANDARD GRAPHIC SCALE



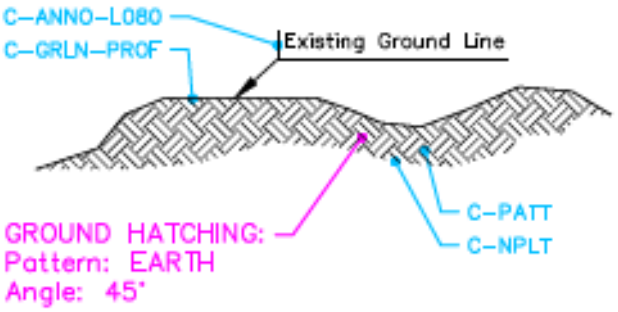
STANDARD SYMBOLS

SYMBOL	NAME	LAYER
	SRVY_MON (Dynamic block, choose appropriately)	VF–MONM
	Head Gate–2011	C–SITE
	Breakline–2011	VARIES
	Property Line Monument–2011	VF–MONM
	DW_Fire Hydrant	C–SITE

SAMPLE MATCH LINE AND HATCHING



SEE GENERAL INSTRUCTIONS 4–06, NOTE 11 FOR HATCHING SCALE SPECIFICATIONS.

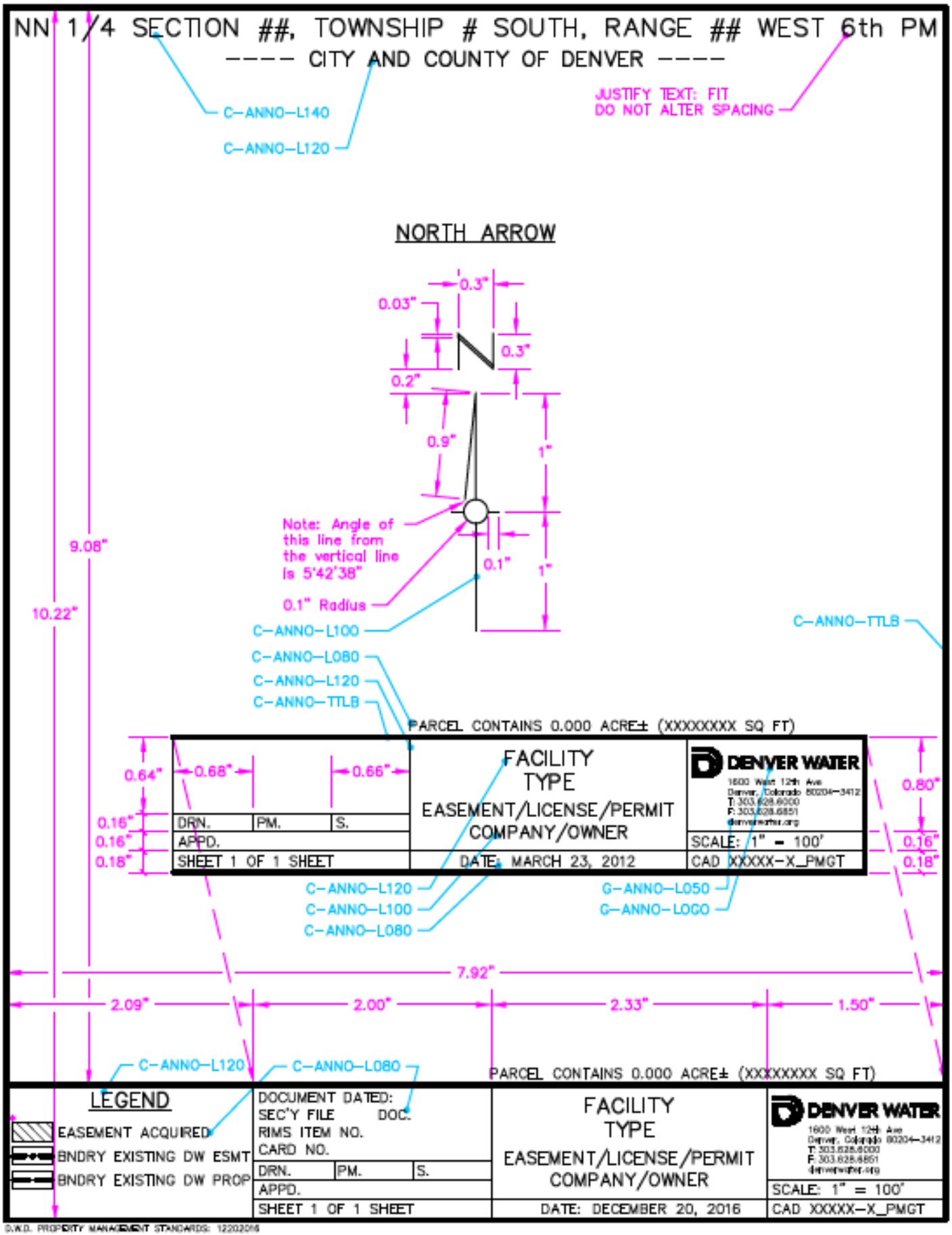


PARCEL CONTAINS 0.000 ACRE± (XXXXXXXX SQ FT)

LEGEND					
EASEMENT ACQUIRED BNDRY EXISTING DW ESMT BNDRY EXISTING DW PROP	DOCUMENT DATED: SEC'Y FILE DOC. RIMS ITEM NO. CARD NO.			FACILITY TYPE EASEMENT/LICENSE/PERMIT COMPANY/OWNER	DENVER WATER 1600 West 12th Ave Denver, Colorado 80204–3412 T 303.628.6000 F 303.628.6851 denverwater.org
	DRN.	PM.	S.		
	APPD.				SCALE: 1" = 100'
	SHEET 1 OF 1 SHEET			DATE: DECEMBER 20, 2016	CAD XXXXX–X_PMGT

D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

BORDER/TITLE BLOCK 4–06B



BORDER/TITLE BLOCK 4–06B

NW 1/4 SECTION ##, TOWNSHIP # SOUTH, RANGE ## WEST 6th PM

---- CITY AND COUNTY OF DENVER ----

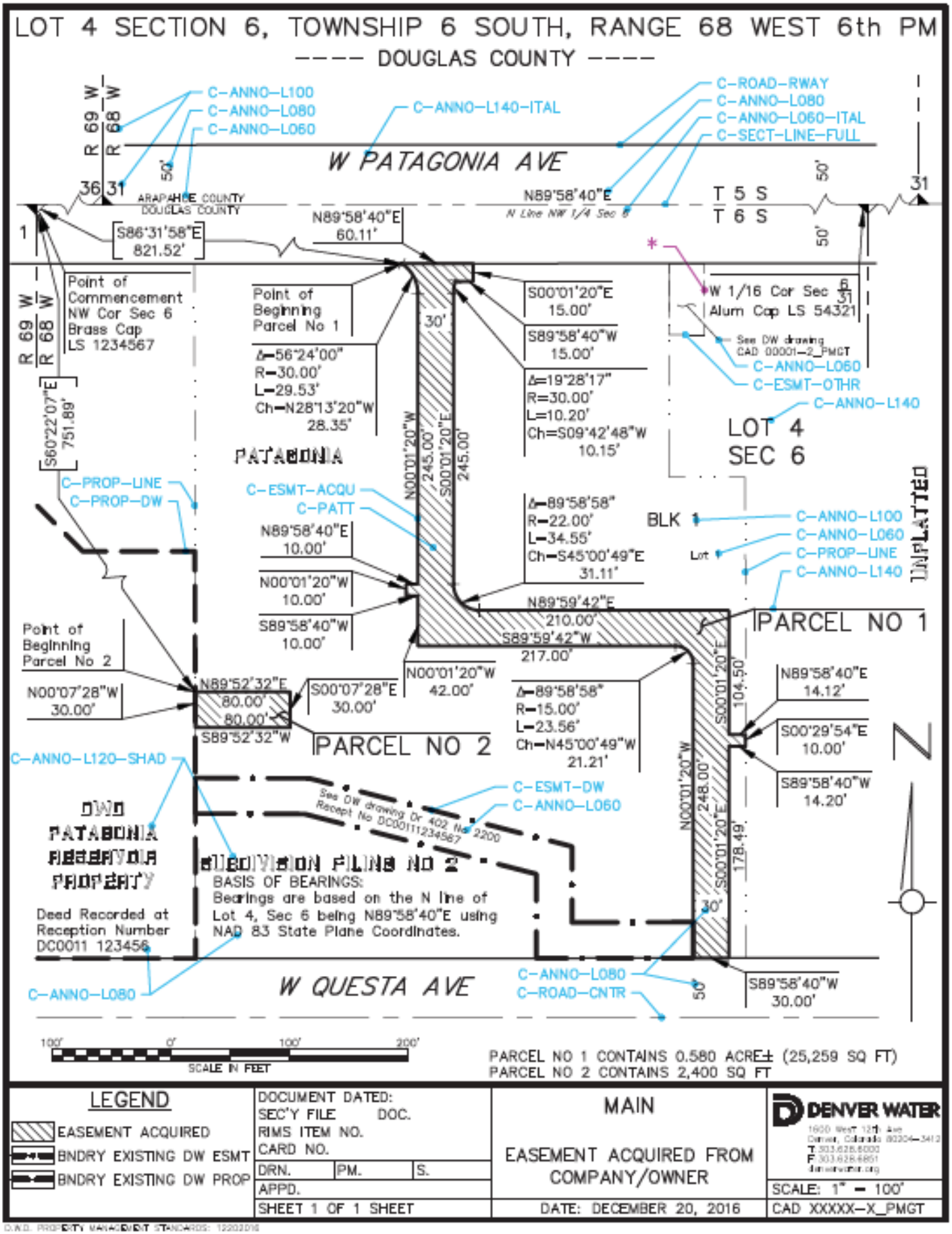
YOUR DRAWING IN THIS SPACE

PARCEL CONTAINS 0.000 ACRE± (XXXXXX SQ FT)

LEGEND	DOCUMENT DATED:	FACILITY TYPE	DENVER WATER
EASEMENT ACQUIRED	SEC'Y FILE DOC.	EASEMENT/LICENSE/PERMIT	1600 West 12th Ave. Denver, Colorado 80204–3412 T 303.628.6000 F 303.628.6851 denverwater.org
BNDRY EXISTING DW ESMT	RIMS ITEM NO.	COMPANY/OWNER	
BNDRY EXISTING DW PROP	CARD NO.		
	DRN. PM. S.		SCALE: 1" = 100'
	APPD.		
	SHEET 1 OF 1 SHEET	DATE: DECEMBER 20, 2016	CAD XXXXX–X_PMGT

D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

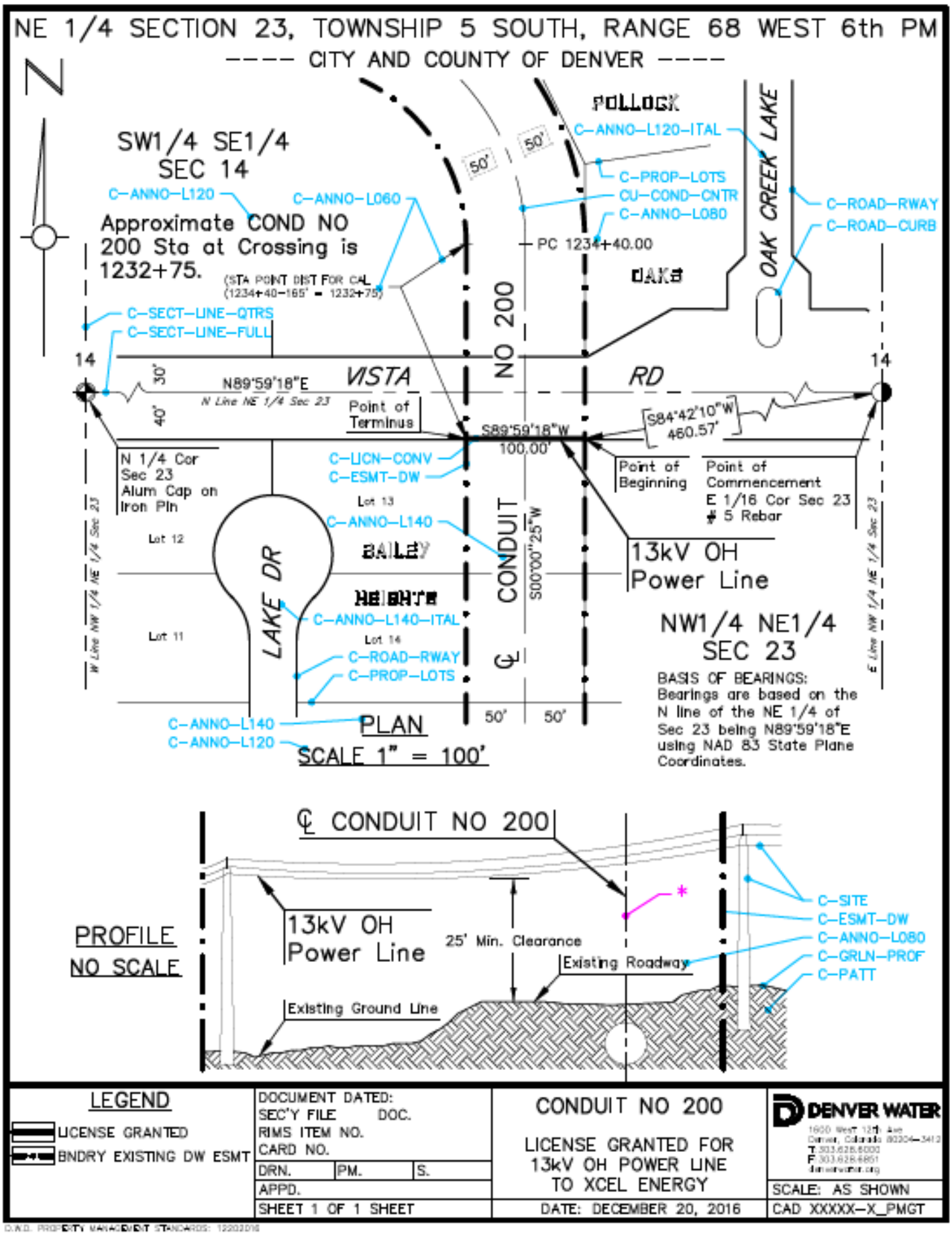
PERIMETER DESCRIPTION 4–06C



LEGEND				MAIN	DENVER WATER
EASEMENT ACQUIRED	DOCUMENT DATED:				
BNDRY EXISTING DW ESMT	SEC'Y FILE DOC.			EASEMENT ACQUIRED FROM COMPANY/OWNER	
BNDRY EXISTING DW PROP	RIMS ITEM NO.				
	CARD NO.				
	DRN.	PM.	S.		SCALE: 1" = 100'
	APPD.				
	SHEET 1 OF 1 SHEET			DATE: DECEMBER 20, 2016	CAD XXXXX-X_PMGT

D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

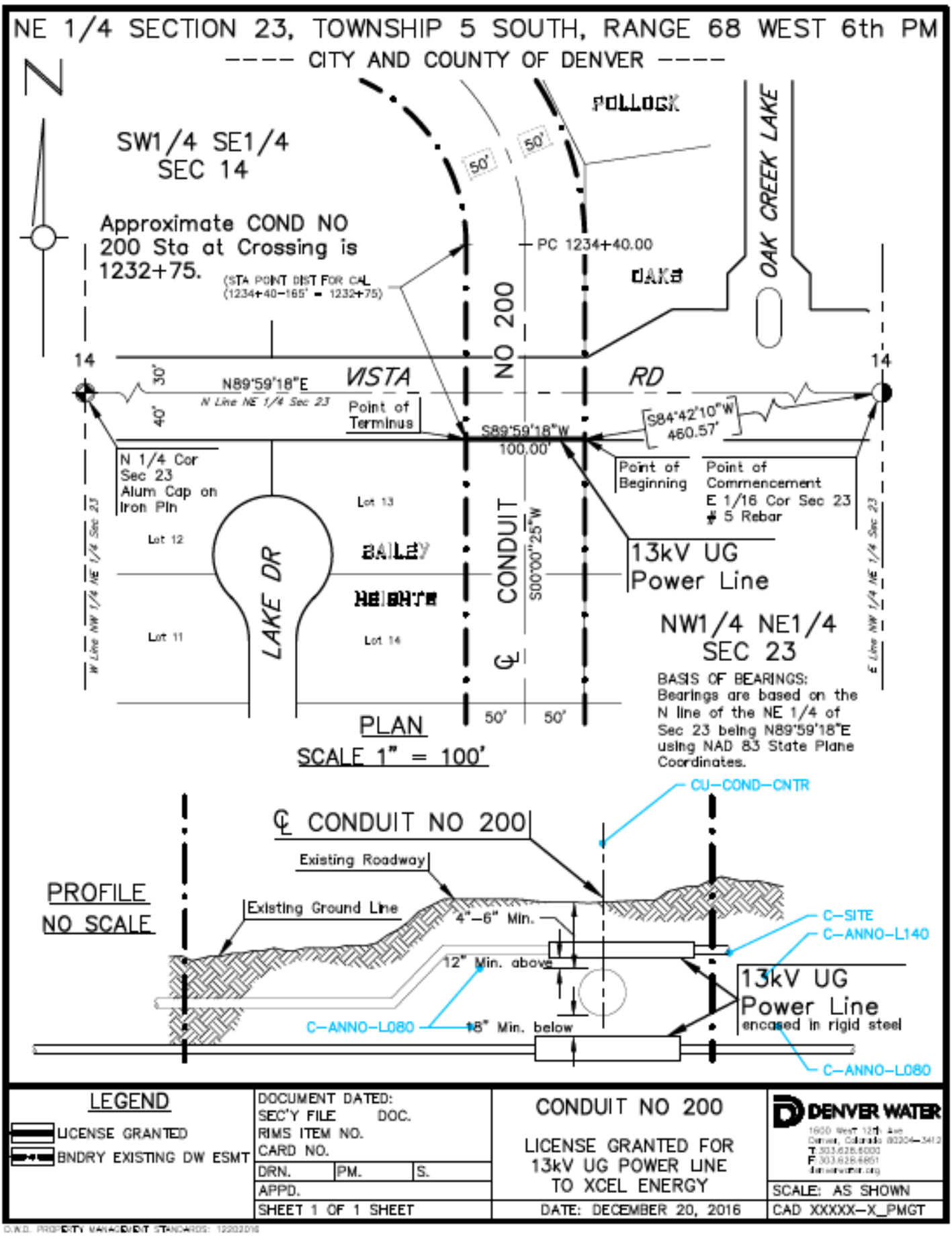
CROSSING OVERHEAD 4–06D



LEGEND LICENSE GRANTED BNDRY EXISTING DW ESMT	DOCUMENT DATED: SEC'Y FILE DOC. RIMS ITEM NO. CARD NO. DRN. | PM. | S. APPD. SHEET 1 OF 1 SHEET	CONDUIT NO 200 LICENSE GRANTED FOR 13kV OH POWER LINE TO XCEL ENERGY DATE: DECEMBER 20, 2016	DENVER WATER 1600 West 12th Ave Denver, Colorado 80204-3412 T 303.628.6000 F 303.628.6851 denverwater.org SCALE: AS SHOWN CAD XXXXX-X_PMGT

D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

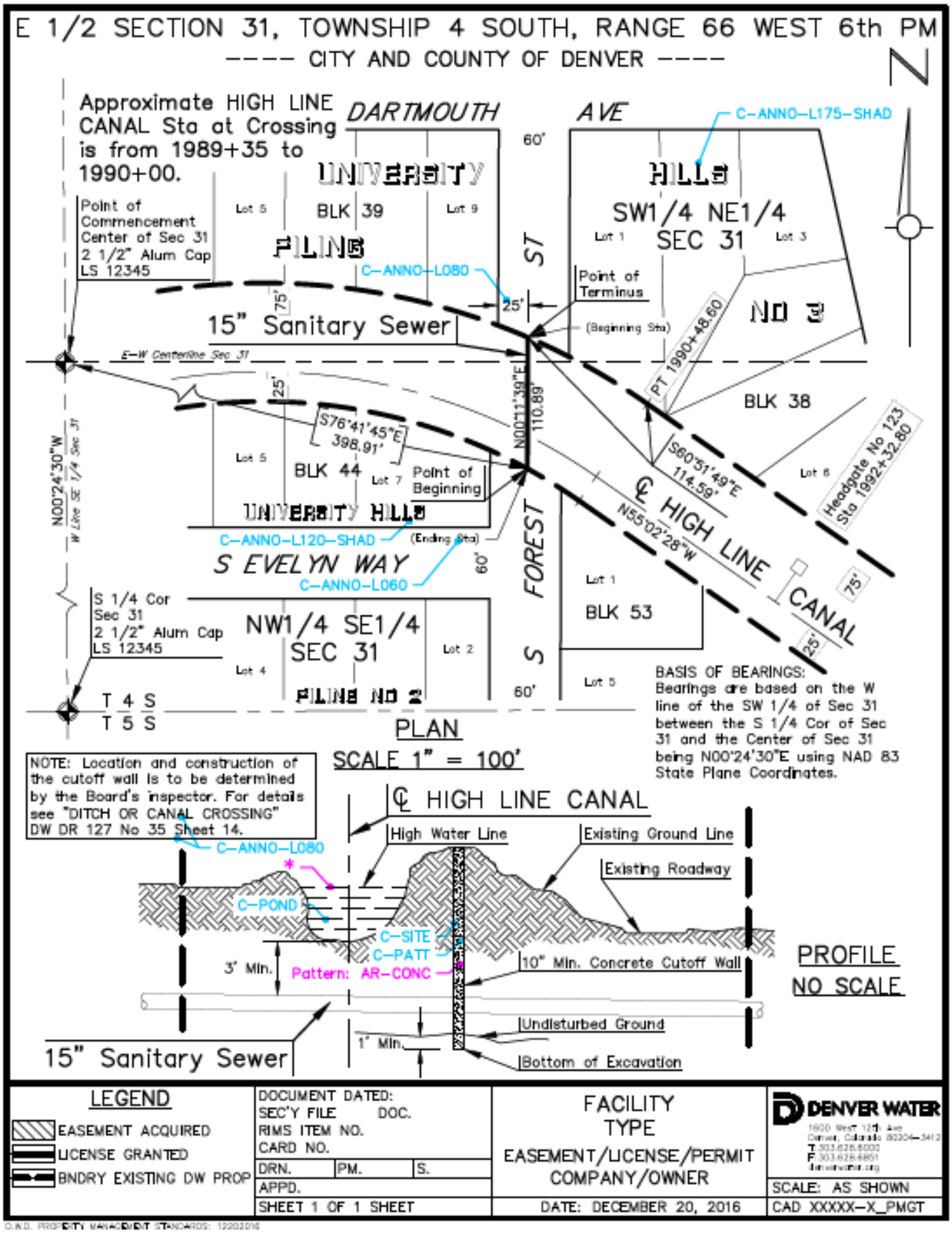
CROSSING UNDERGROUND 4–06E



LEGEND					
LICENSE GRANTED BNDRY EXISTING DW ESMT	DOCUMENT DATED: SEC'Y FILE DOC. RIMS ITEM NO. CARD NO.			CONDUIT NO 200 LICENSE GRANTED FOR 13kV UG POWER LINE TO XCEL ENERGY	DENVER WATER 1600 West 12th Ave Denver, Colorado 80204-3412 T 303.628.6000 F 303.628.6851 denverwater.org
	DRN.	PM.	S.		
	APPD.				SCALE: AS SHOWN
	SHEET 1 OF 1 SHEET			DATE: DECEMBER 20, 2016	CAD XXXXX-X_PMGT

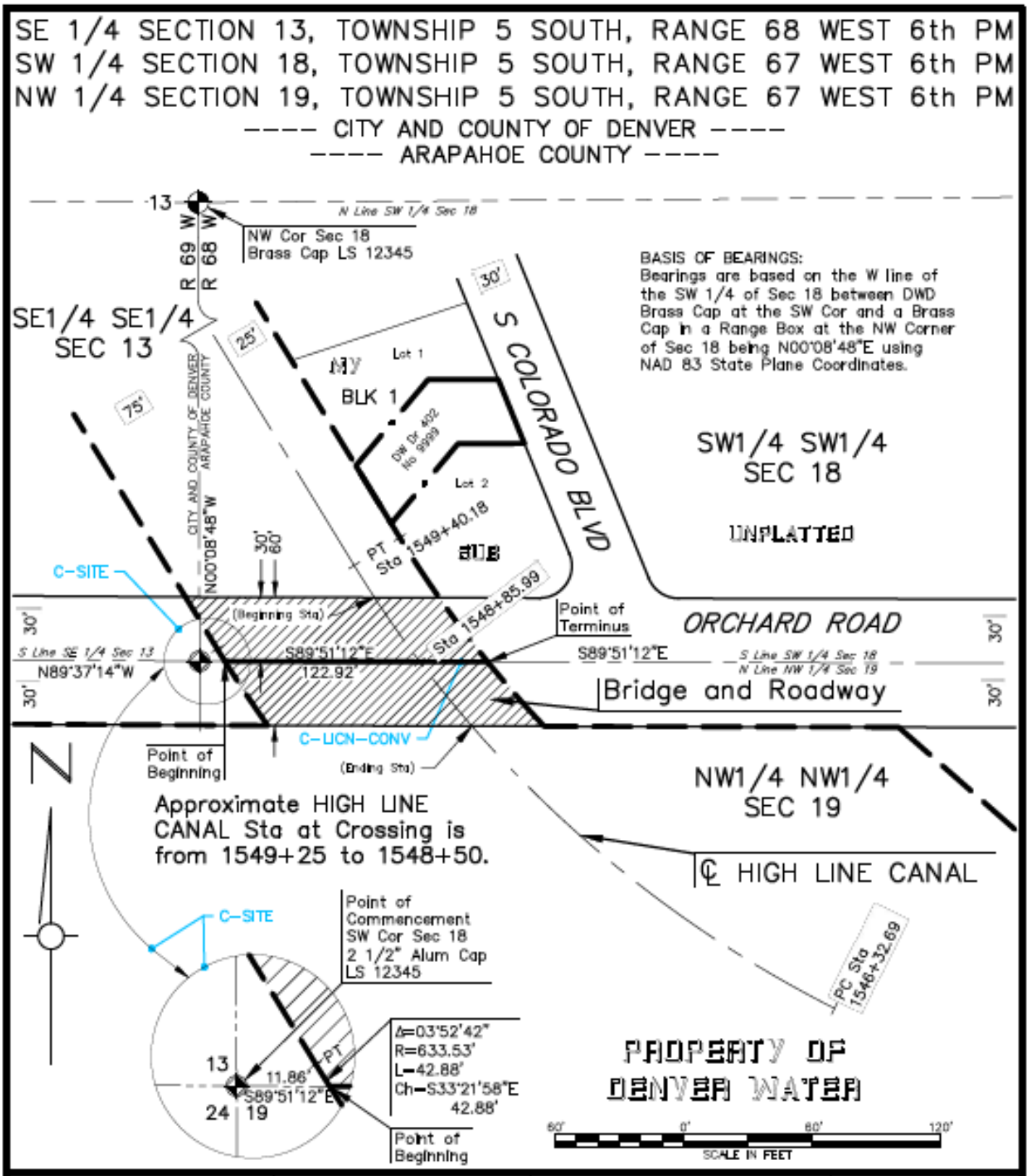
D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

UNDERGROUND DITCH/CANAL CROSSING 4–06F



D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

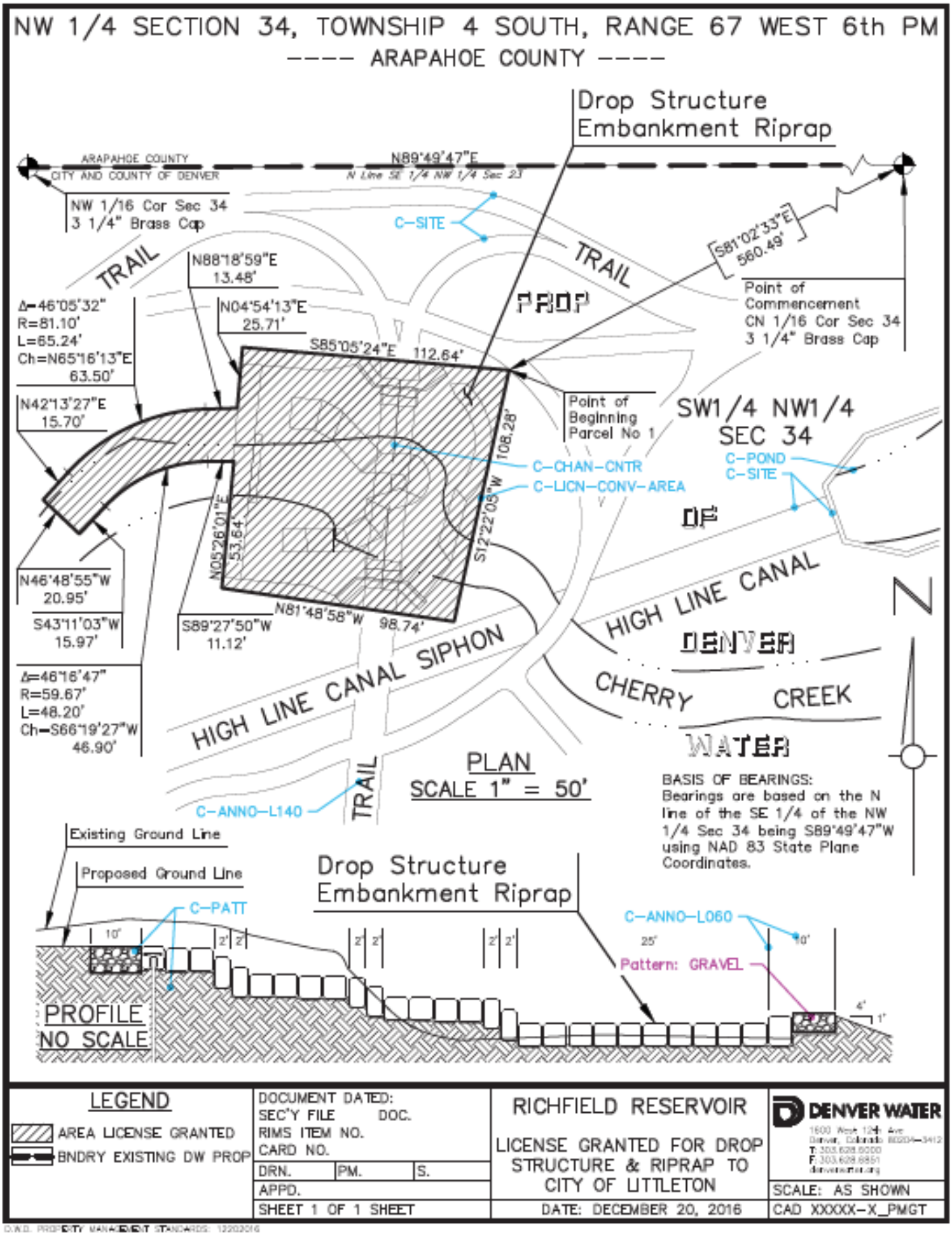
CENTERLINE DESCRIPTION 4–06G



LEGEND					
AREA LICENSE GRANTED BNDRY EXISTING DW ESMT BNDRY EXISTING DW PROP	DOCUMENT DATED: SEC'Y FILE DOC. RIMS ITEM NO. CARD NO.			HIGH LINE CANAL LICENSE GRANTED FOR A BRIDGE AND ROADWAY TO ARAPAHOE COUNTY	DENVER WATER 1600 West 12th Ave Denver, Colorado 80204–5412 T: 303.628.6000 F: 303.628.6851 denverwater.org
	DRN.	PM.	S.		
	APPD.				SCALE: 1" = 60'
	SHEET 1 OF 1 SHEET			DATE: DECEMBER 20, 2016	CAD XXXXX–X_PMGT

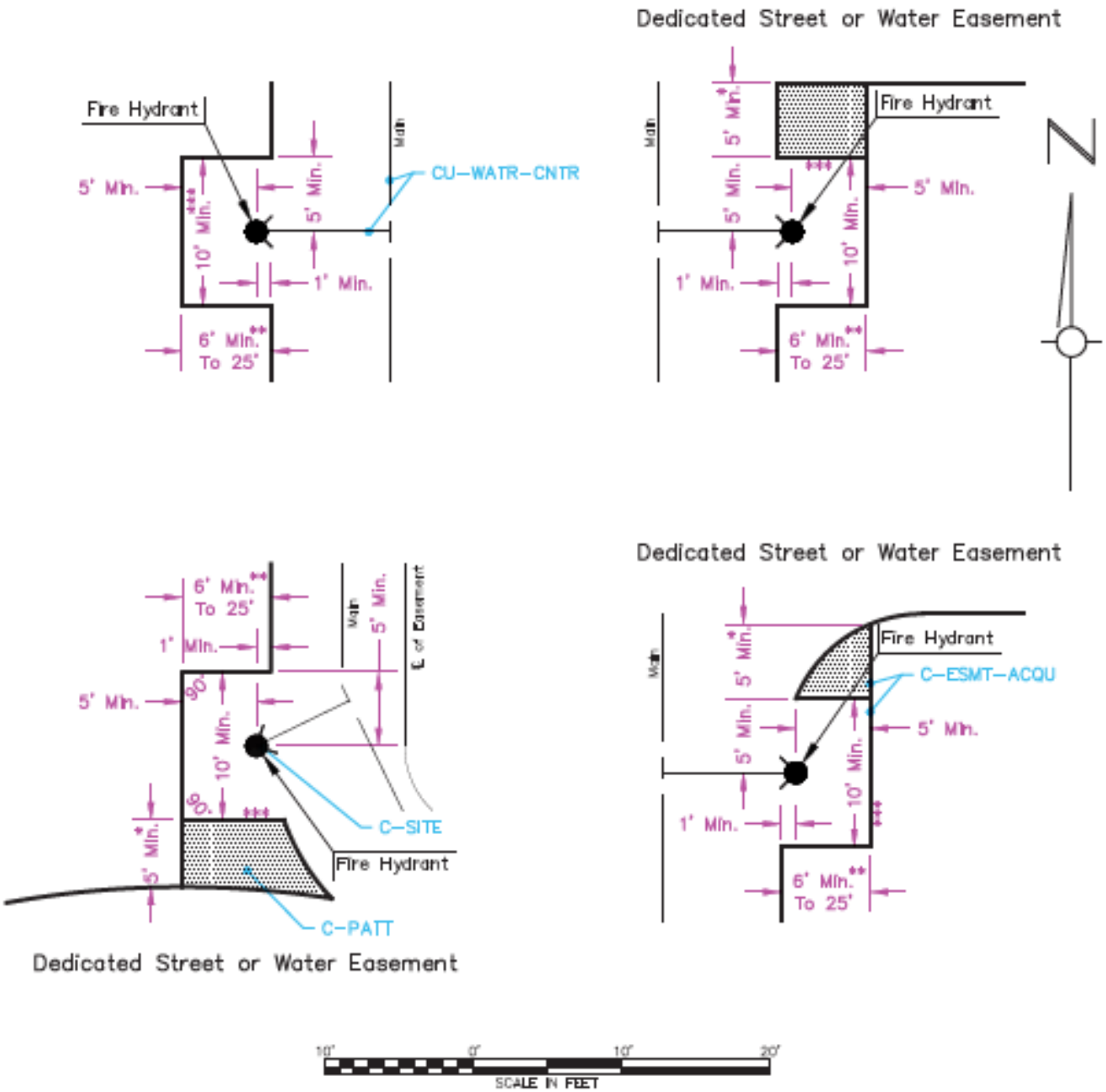
D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

SIMPLIFIED AREA 4–06H



D.W.D. PROPERTY MANAGEMENT STANDARDS 12202016

FIRE HYDRANT EASEMENT 4–061



* If this distance is less than 5 feet the shaded area must be added to the water easement.

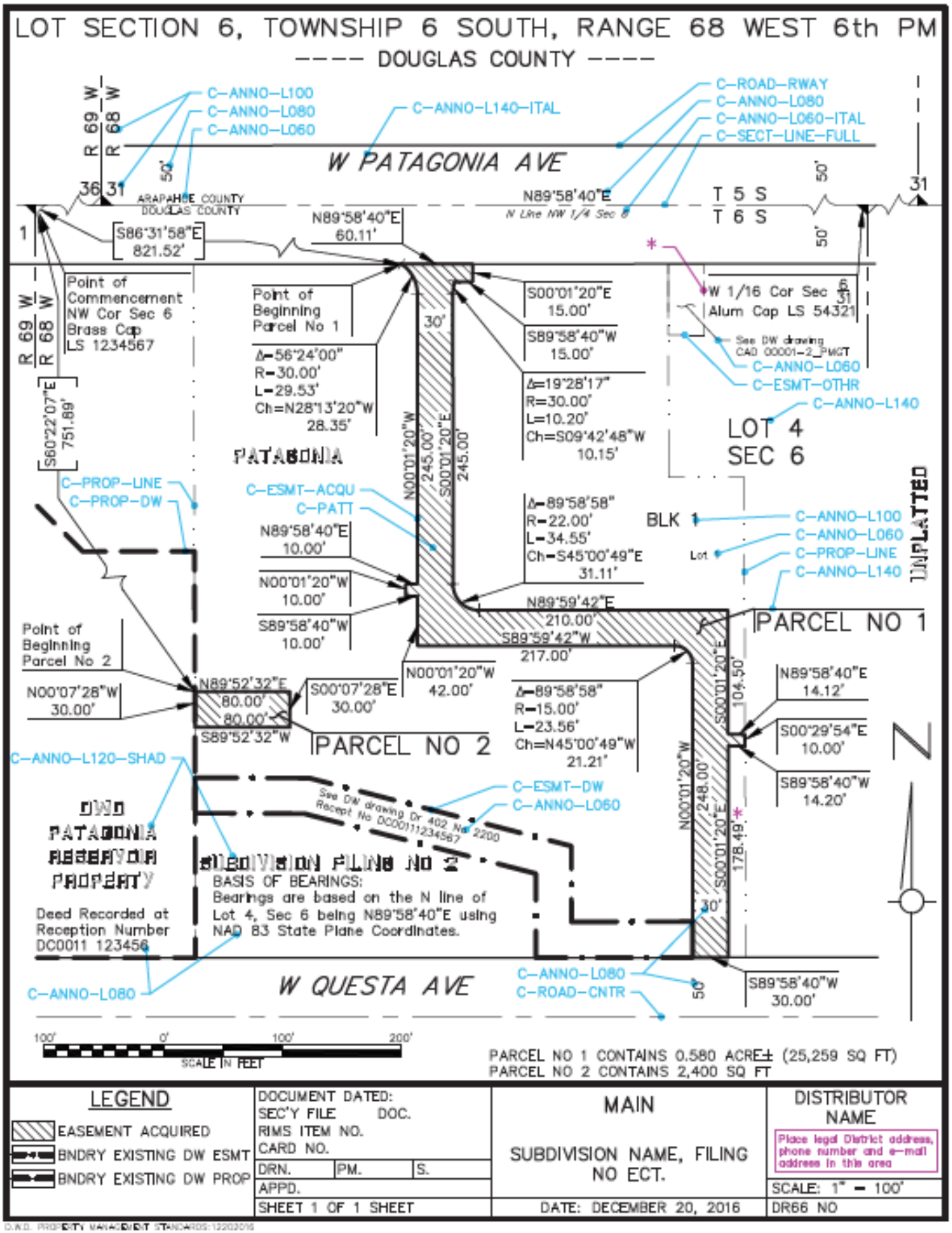
** If the easement length is over 25 feet it must be a minimum of 30 feet wide.

*** All water easement lines around any fire hydrant must be straight with the side easement lines perpendicular to or parallel with the radial line from the center line of the main easement.

LEGEND	DOCUMENT DATED: SEC'Y FILE DOC. RIMS ITEM NO. CARD NO.	FACILITY TYPE EASEMENT/LICENSE/PERMIT COMPANY/OWNER	DENVER WATER 1600 West 12th Ave Denver, Colorado 80204–3412 T 303.628.6000 F 303.628.6851 denverwater.org
	DRN. | PM. | S. APPD. SHEET 1 OF 1 SHEET	DATE: DECEMBER 20, 2016	SCALE: 1" = 10' CAD XXXXX–X_PMGT

D.W.D. PROPERTY MANAGEMENT STANDARDS: 12202016

DISTRIBUTOR PERIMETER DESCRIPTION 4–06J



D.W.D. PROPERTY MANAGEMENT STANDARDS 12202016

DISTRIBUTOR BORDER/TITLEBLOCK 4–06K

NW 1/4 SECTION ##, TOWNSHIP # SOUTH, RANGE ## WEST 6th PM

---- ANY COUNTY ----

YOUR DRAWING IN THIS SPACE

PARCEL CONTAINS 0.000 ACRE± (XXXXXX SQ FT)

LEGEND			
EASEMENT ACQUIRED	DOCUMENT DATED: SEC'Y FILE DOC. RIMS ITEM NO. CARD NO.	MAIN	DISTRIBUTOR NAME
BNDRY EXISTING DW ESMT			Place legal District address, phone number and e-mail address in this area
BNDRY EXISTING DW PROP	DRN. PM. S.	SUBDIVISION NAME, FILING NO ECT.	
	APPD.		SCALE: 1" = 100'
	SHEET 1 OF 1 SHEET	DATE: DECEMBER 20, 2016	DR66 NO

D.N.D. PROPERTY MANAGEMENT STANDARDS: 12202016

Exhibit A Example

The following exhibit shows an example as described in the Engineering Standards.

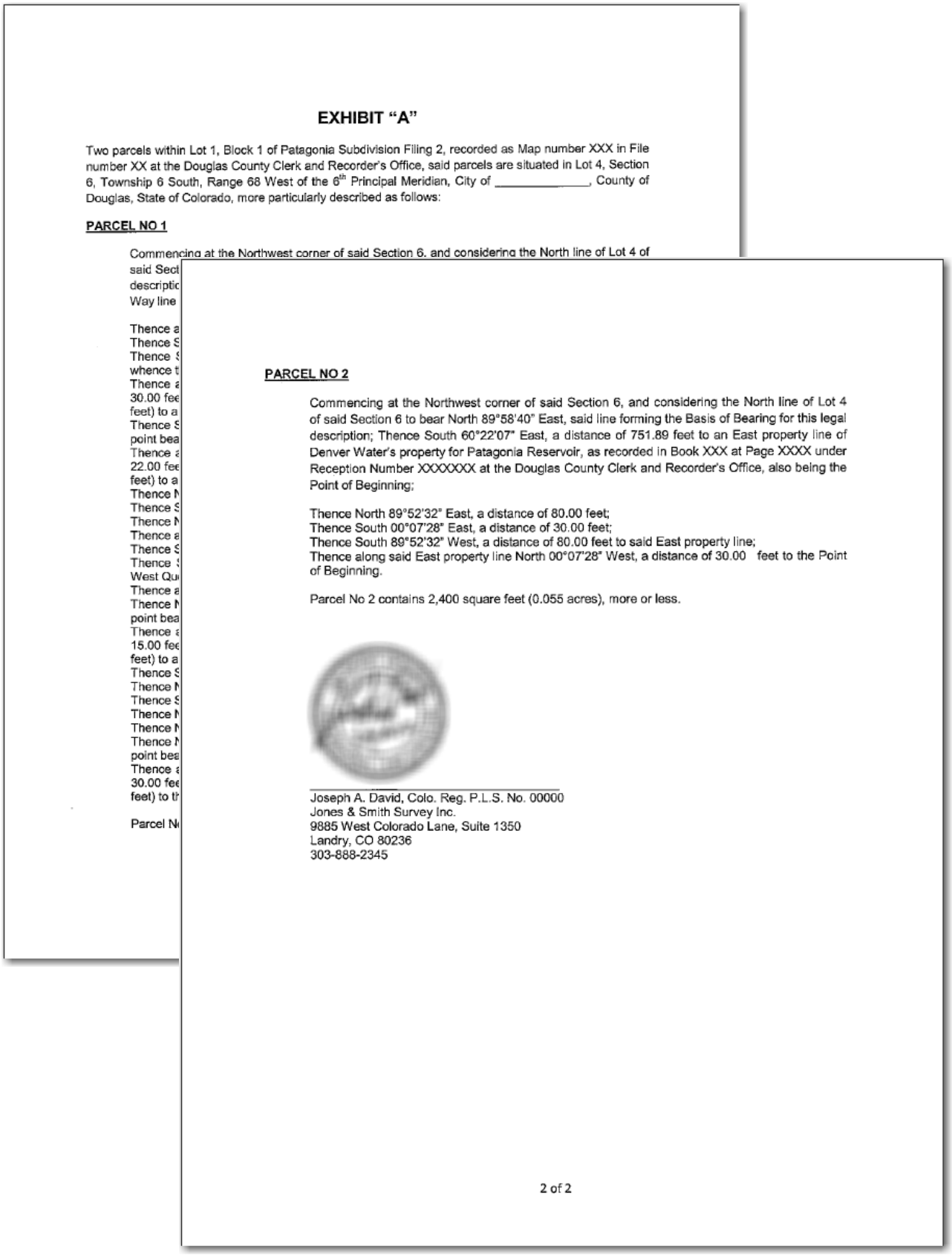


EXHIBIT "A"

Two parcels within Lot 1, Block 1 of Patagonia Subdivision Filing 2, recorded as Map number XXX in File number XX at the Douglas County Clerk and Recorder's Office, said parcels are situated in Lot 4, Section 6, Township 6 South, Range 68 West of the 6th Principal Meridian, City of _____, County of Douglas, State of Colorado, more particularly described as follows:

PARCEL NO 1

Commencing at the Northwest corner of said Section 6, and considering the North line of Lot 4 of
said Sect
descriptic
Way line

Thence a
Thence S
Thence S
whence t
Thence a
30.00 fee
feet) to a
Thence S
point bea
Thence a
22.00 fee
feet) to a
Thence N
Thence S
Thence N
Thence a
Thence S
Thence S
West Qu
Thence a
Thence N
point bea
Thence a
15.00 fee
feet) to a
Thence S
Thence N
Thence S
Thence N
Thence N
Thence N
point bea
Thence a
30.00 fee
feet) to th

Parcel N

PARCEL NO 2

Commencing at the Northwest corner of said Section 6, and considering the North line of Lot 4 of said Section 6 to bear North 89°58'40" East, said line forming the Basis of Bearing for this legal description; Thence South 60°22'07" East, a distance of 751.89 feet to an East property line of Denver Water's property for Patagonia Reservoir, as recorded in Book XXX at Page XXXX under Reception Number XXXXXXX at the Douglas County Clerk and Recorder's Office, also being the Point of Beginning;

Thence North 89°52'32" East, a distance of 80.00 feet;
Thence South 00°07'28" East, a distance of 30.00 feet;
Thence South 89°52'32" West, a distance of 80.00 feet to said East property line;
Thence along said East property line North 00°07'28" West, a distance of 30.00 feet to the Point of Beginning.

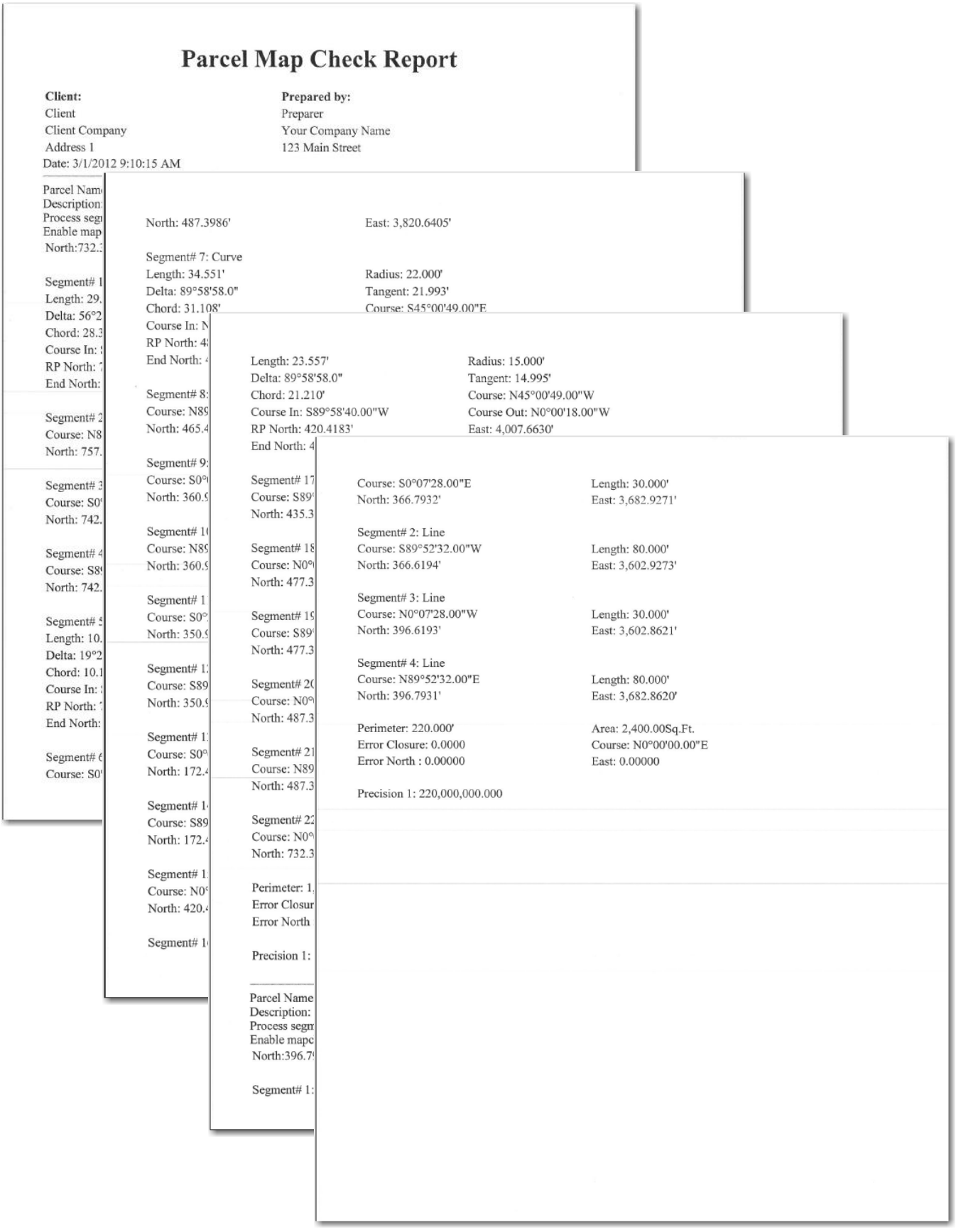
Parcel No 2 contains 2,400 square feet (0.055 acres), more or less.

Joseph A. David, Colo. Reg. P.L.S. No. 00000
Jones & Smith Survey Inc.
9885 West Colorado Lane, Suite 1350
Landry, CO 80236
303-888-2345

2 of 2

Closure Calculations Example

The following example shows the Closure Calculations as described in the Engineering Standards.



Parcel Map Check Report

Client:
Client
Client Company
Address 1
Date: 3/1/2012 9:10:15 AM

Prepared by:
Preparer
Your Company Name
123 Main Street

North: 487.3986'
East: 3,820.6405'

Segment# 7: Curve
Length: 34.551'
Delta: 89°58'58.0"
Chord: 31.108'
Course In:
RP North:
End North:

Segment# 8:
Course: N89
North: 465.4

Segment# 9:
Course: S0°
North: 360.9

Segment# 10
Course: N89
North: 360.9

Segment# 1
Course: S0°
North: 350.9

Segment# 12
Course: S89
North: 350.9

Segment# 13
Course: S0°
North: 172.4

Segment# 14
Course: S89
North: 172.4

Segment# 15
Course: N0°
North: 420.4

Segment# 16

Length: 23.557'
Delta: 89°58'58.0"
Chord: 21.210'
Course In: S89°58'40.00"W
RP North: 420.4183'
End North: 4

Radius: 15.000'
Tangent: 14.995'
Course: N45°00'49.00"W
Course Out: N0°00'18.00"W
East: 4,007.6630'

Segment# 17
Course: S89°
North: 435.3

Segment# 18
Course: N0°
North: 477.3

Segment# 19
Course: S89°
North: 477.3

Segment# 20
Course: N0°
North: 487.3

Segment# 21
Course: N89
North: 487.3

Segment# 22
Course: N0°
North: 732.3

Perimeter: 1.
Error Closur
Error North

Precision 1:

Parcel Name
Description:
Process segm
Enable mapc
North:396.7'

Segment# 1:

Course: S0°07'28.00"E
North: 366.7932'

Length: 30.000'
East: 3,682.9271'

Segment# 2: Line
Course: S89°52'32.00"W
North: 366.6194'

Length: 80.000'
East: 3,602.9273'

Segment# 3: Line
Course: N0°07'28.00"W
North: 396.6193'

Length: 30.000'
East: 3,602.8621'

Segment# 4: Line
Course: N89°52'32.00"E
North: 396.7931'

Length: 80.000'
East: 3,682.8620'

Perimeter: 220.000'
Error Closure: 0.0000
Error North : 0.00000

Area: 2,400.00Sq.Ft.
Course: N0°00'00.00"E
East: 0.00000

Precision 1: 220,000,000.000

Capital Projects Example Sheets

The following is an example of required information needed for Capital projects submittals. These examples shall be used in conjunction with the CPCS and the CAD Standards.

The examples illustrate common submittal types and are for graphic representation only. Graphic examples are not given for every submittal type; further clarification can be requested by contacting Denver Water's Sales Administration section. Denver Water has authority over water facilities only; the remainder of the plan presentation is at the discretion of the submitting engineering firm.

- Highlights in **BLUE** indicate drafter input is required
- Notes in **RED** are directions for reference purposes

Index of Sheets

This section outlines how Denver Water's Capital project drawings shall appear:

- Cover
- Survey Control
- Plan & Profile
- Plan, Profile, & Sections
- Architectural & Structural Dimensioning
- Mechanical Dimensioning
- Reference Only

This section outlines how Denver Water's Capital project electrical drawings shall appear:

- Instrument Control
- Process & Instrumentation Diagram
- Power & Grounding
- Lighting & Control
- Cathodic Protection
- Conduit & Conductor Schedule
- One-Line Diagram Plan View

ATTENTION
Denver Water will not provide example drawings in DWG format.

DENVER WATER
DENVER, COLORADO

DENVER WATER ENGINEERING - DESIGN DRAFTING

DRAFTING STANDARDS FOR CAPITAL PROJECTS

CONTRACT

CONTRACT NUMBER COVER

BOARD OF WATER COMMISSIONERS
DENVER, COLORADO
Gary M. Reiff – President
James S. Lochhead – CEO/Manager
Robert J. Mahoney – Chief Engineering Officer

TITLE BLOCK VISIBILITY STATE: "DW COVER PAGE"

ADD LOCATION MAP HERE

PROJECT TITLE

PROJECT DESCRIPTION

PROJECT LOCATION

CURRENT SHEET DESCRIPTION:
LOCATION (IF VARIES IN PROJECT) OR SERIES (IF USED IN PROJECT)
OTHERWISE, LEAVE BLANK

ADD VICINITY MAP\AERIAL PHOTO HERE

PROJECT LOCATION

VICINITY MAP
NO SCALE

LOCATION MAP
SCALE: 1" = 3 miles

PROJCT DIRECTORY NOTE

PROJECT DIRECTORY

OWNER:
DENVER WATER
1600 W 12TH AVE
DENVER, CO 80204
303-628-6000

CONTACT:
DESIGN PROJECT MANAGER
XXXXX, PE
303-628-XXXX
XXXXXn@denverwater.org

DRAWING INDEX

DRAWING INDEX

DWG NO	DWG TITLE
G-1	CAPITAL PROJECTS COVER
G-2	CAPITAL PROJECTS SURVEY CONTROL
C-1	CAPITAL PROJECTS CIVIL PLAN AND PROFILE – 1
C-2	CAPITAL PROJECTS CIVIL PLAN AND PROFILE – 2
C-3	CAPITAL PROJECTS CIVIL PLAN, PROFILE AND SECTIONS
A-1	CAPITAL PROJECTS ARCHITECTURAL AND STRUCTURAL DIMENSIONING
M-1	CAPITAL PROJECTS MECHANICAL DIMENSIONING

CURRENT SHEET TITLE

CURRENT SHEET NUMBER

– INDICATES DRAFTER INPUT REQUIRED
ALL VALUES AVAILABLE THROUGH SHEET SET MANAGER

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1600 West 12th Ave
Denver, Colorado 80204-3412
T: 303.628.6000
F: 303.628.6851
denverwater.org

CONSULTANT

CONSULTANT LOGO

ENGINEER'S STAMP IF REQUIRED

DENVER WATER ENGINEERING – DESIGN DRAFTING

DRAFTING STANDARDS FOR CAPITAL PROJECTS

SAMPLE COVER SHEET

REFERENCE:
CAPITAL PROJECTS CONSTRUCTION STANDARDS 3rd Edition

THIS DRAWING IS BASED ON THE COORDINATE SYSTEM

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REVISIONS

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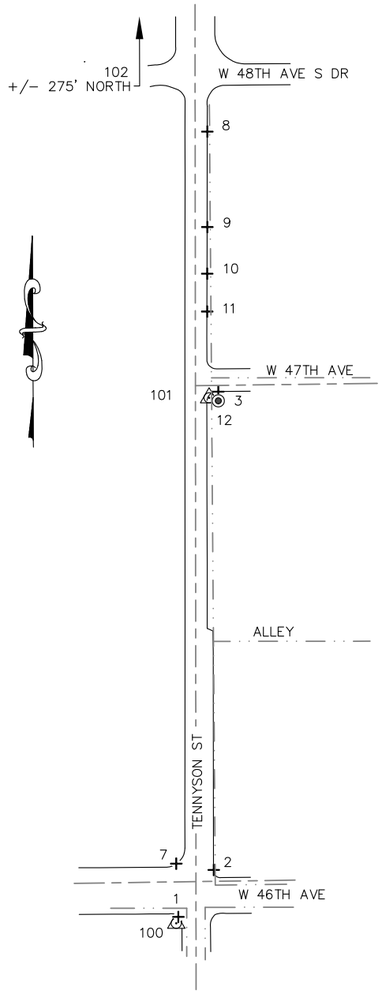
AS-BUILT BY:

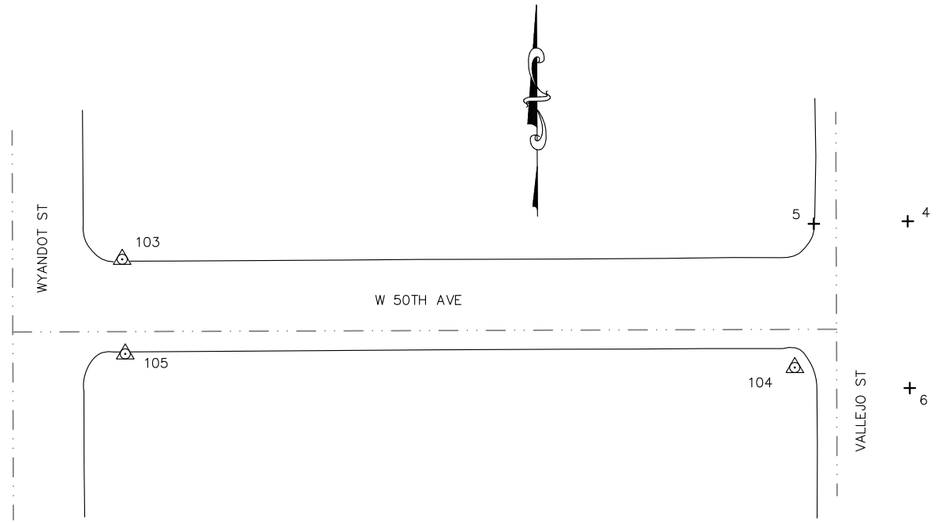
DRAWING TITLE

C:\bms\denverwater-pw\warren Geissler\d0170225\00000_DSGN_COVER.dwg COVER 4/13/2023 1:33 PM



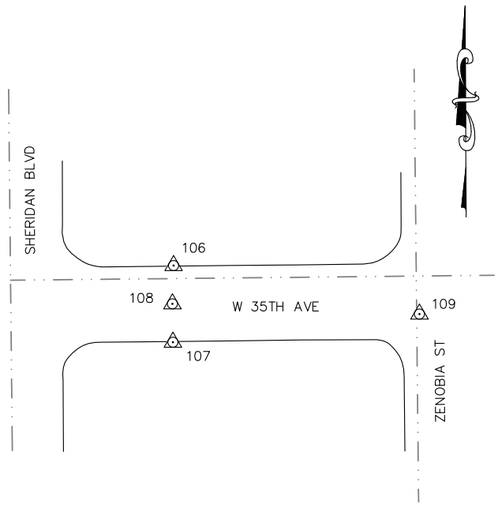
TENNYSON ST & W 47TH AVE

SCALE: 1" = 100'



W 50TH AVE & WYANDOT ST

SCALE: 1" = 30'



W 35TH AVE & SHERIDAN BLVD

SCALE: 1" = 30'

FOUND SURVEY MARKERS

POINT	NORTHING	EASTING	DESCRIPTION
1	109364.57	128302.00	FOUND CHISELED CROSS
2	109426.53	128348.67	FOUND CHISELED CROSS
3	110057.70	128354.68	FOUND CHISELED CROSS
4	112098.87	136886.47	FOUND CHISELED CROSS
5	112097.85	136849.29	FOUND CHISELED CROSS
6	112032.83	136887.29	FOUND CHISELED CROSS
7	109434.85	128299.27	FOUND CHISELED CROSS
8	110400.87	128340.25	FOUND CHISELED CROSS
9	110274.90	128340.20	FOUND CHISELED CROSS
10	110213.37	128340.02	FOUND CHISELED CROSS
11	110163.41	128340.06	FOUND CHISELED CROSS
12	110045.69	128354.68	FOUND 1 1/2" PLASTIC CAP STAMPED "MILLER E&S"

SURVEY PROJECT CONTROL

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	109356.08	128299.24	5376.91	1/2" SHINER IN SIDEWALK ON THE SOUTHWEST CORNER OF TENNYSON ST AND W 46TH AVE
101	110049.66	128342.62	5367.38	CROWS FOOT CHISELED IN SIDEWALK ON THE SOUTHEAST CORNER OF TENNYSON AND W 47TH AVE
102	110749.07	128303.49	5358.64	1 1/2" ALUMINUM CAP ON THE NORTHWEST SIDE OF TENNYSON ST AND W 48TH AVE
103	112083.80	136575.48	5305.72	CHISELED "X" IN BACK OF CURB ON THE NORTHEAST CORNER OF W 50TH AVE AND WYANDOT ST
104	112040.95	136841.76	5298.37	3\4" COPPER PLUG ON THE SOUTHWEST CORNER OF W 50TH AVE AND VALLEJO ST
105	112046.37	136576.68	5305.76	CHISELED "X" IN BACK OF CURB ON THE SOUTHEAST CORNER OF W 50TH AVE AND WYANDOT ST
106	104110.00	125814.79	5455.35	CHISELED "X" IN BACK OF CURB ON THE NORTH SIDE OF W 35TH AVE BETWEEN SHERIDAN BLVD AND ZENOBIA ST
107	104079.65	125814.54	5455.77	CHISELED "X" IN BACK OF CURB ON THE SOUTH SIDE OF W 35TH AVE BETWEEN SHERIDAN BLVD AND ZENOBIA ST
108	104094.83	125814.35	5455.89	CHISELED "+"IN NORTH EDGE OF MANHOLE RIM LOCATED ALONG 35TH AVE BETWEEN SHERIDAN BLVD AND ZENOBIA ST
109	104090.78	125912.14	5456.23	CHISELED "+"IN NORTH EDGE OF MANHOLE RIM LOCATED AT THE INTERSECTION OF 35TH AVE AND ZENOBIA ST

LEGEND:

- CONTROL POINT
- FOUND CHISELED "+"
- FOUND 1 1/2" PLASTIC CAP
- RANGE LINE
- SECTION LINE

NOTES:

THIS PROJECT IS ON A MODIFIED COLORADO STATE PLANE CENTRAL ZONE COORDINATE SYSTEM, NAD 83

GRID NAME: DW_METRO_GRID
TRUNCATION NORTH: 1600030
TRUNCATION EAST: 2999880
COMBINED FACTOR: 1.00026
UNITS: US SURVEY FEET

TO CONVERT FROM STATE PLANE COORDINATES TO DW_METRO_GRID COORDINATES:
GRID NORTH = (SP NORTH −1600030)*1.00026
GRID EAST = (SP EAST −2999880)*1.00026

VERTICAL DATUM: THE PUBLISHED ELEVATIONS SHOWN ARE ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
−W 35TH AVE & SHERIDAN BLVD ELEVATIONS ARE BASED ON THE CITY & COUNTY OF DENVER BENCHMARK 110A
−W 50TH AVE & WYANDOT ST ELEVATIONS ARE BASED ON THE CITY & COUNTY OF DENVER BENCHMARK VM_11
−TENNYSON ST & W 47TH AVE ELEVATIONS ARE BASED ON THE CITY & COUNTY OF DENVER BENCHMARK 479B

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DENVER WATER ENGINEERING − DESIGN DRAFTING

DRAFTING STANDARDS FOR CAPTIAL PROJECTS

REFERENCE:
CAPITAL PROJECTS CONSTRUCTION STANDARDS 4th EDITION

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		30% REVIEW

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CHKD BY: *"ENGINEERING MANAGER LAST NAME"*
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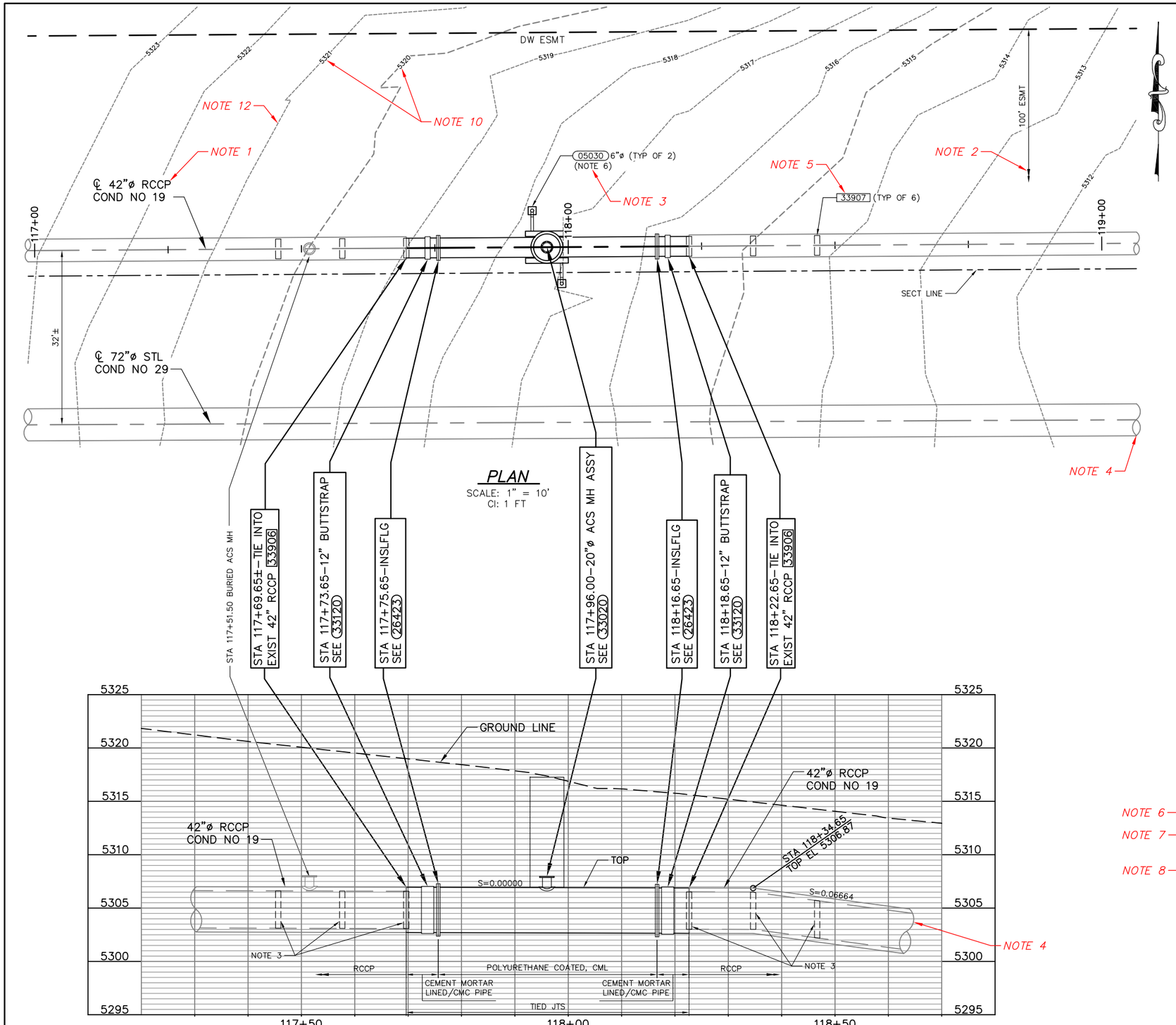
AS−BUILT BY:

DRAWING TITLE

CAPITAL PROJECTS SURVEY CONTROL

EXAMPLE



PLAN

SCALE: 1" = 10'
CI: 1 FT

PROFILE

SCALE: 1" = 10' HORIZ
1" = 5' VERT

INSTRUCTION NOTES:

1. EXISTING CONDUIT CENTERLINE CALLOUTS USE L140 TEXT. CREATED ON A CORRESPONDING ANNOTATION LAYER, FOR EXAMPLE: "G–ANNO–L140". NEW CONDUIT CENTERLINE CALLOUTS USE L175 TEXT CREATED ON A CORRESPONDING ANNOTATION LAYER.
2. DOUBLE ARROWHEADS TO INDICATE THAT THE DIMENSION CONTINUES AND THE TERMINATING END IS NOT SHOWN.
3. REFERENCE NOTES THAT ACCOMPANY CALLOUTS USE PARENTHESIS. STAND ALONE REFERENCE NOTES DO NOT USE PARENTHESIS.
4. PIPE END BREAK SYMBOL REQUIRED FOR ALL PIPES, THE HALF–HEIGHT SHALL BE ø/2 AND THE WIDTH SHALL BE ø/8.
5. BLOCK NAME IS "CPCS Detail callouts". VISIBILITY STATE IS SET TO "Revised" BECAUSE THE DETAIL IS INCLUDED WITHIN THE SUBJECT PLAN SET (DETAIL NOT INCLUDED IN THIS EXAMPLE DRAWING SET).
6. MULTITEXT OBJECT CREATED ON AN L120 ANNOTATION LAYER, FOR EXAMPLE: "G–ANNO–L120". THE TEXT HEIGHT AND COLOR OF "NOTES:" IS MODIFIED USING THE MULTITEXT EDITOR. THE SETTINGS ARE MODIFIED TO 0.14 AND COLOR PEN 23 RESPECTIVELY. GENERALLY, NOTES ARE PLACED IN THE LOWER RIGHT HAND CORNER OF THE SHEET.
7. THERE ARE TWO CARRIAGE RETURNS FOLLOWING "NOTES:".
8. ONE SPACE INDENT SET BEFORE THE NUMBERED BULLET.
9. AMPERSAND SHALL ONLY BE USED WHEN THE DRAWING TITLE IS TOO LONG TO OTHERWISE FIT IN THE TITLE BLOCK SPACE. IF AMPERSAND IS USED IN ONE PLAN TITLE THEN IT NEEDS TO BE USED IN ALL PLAN TITLES CONSISTENTLY.
10. CONTOUR LABELING SHALL USE THE DW TEMPLATE STYLE OF "MAJOR LABELS" AND "MINOR LABELS".
11. DATES IN TITLE BLOCK SHOULD BE ENTERED THRU SSM, IN THE SET MANAGER NOT THE SHEET MANAGER, USE MM/DD/YR FORMAT, DO NOT ADD LEADING ZEROS.
12. SHOWING CONTOURS IN THE PLAN VIEW OF PROFILE DRAWINGS IS NOT REQUIRED. PROFESSIONAL DISCRETION IS REQUIRED FOR DETERMINING IF SHOWING CONTOURS IS NECESSARY TO CONVEY THE DESIGN INTENT EFFECTIVELY.

– INDICATES DRAFTER INPUT REQUIRED

NOTE 11

NOTE 6
NOTE 7
NOTE 8

NOTES:

1. ADJUST STARTING AND ENDING STATIONS BASED ON LOCATION OF CONCRETE PIPE JOINTS.
2. PIPE SHALL BE LAID AT EVEN SLOPE BETWEEN TIE–IN POINTS.
3. INSTALL INTERNAL SEALS AT EACH STEEL TO CONCRETE PIPE JOINT AND 2 CONCRETE JOINTS BEYOND (TOTAL = 6). ASSUMED JOINT SPACING IS 12 FEET.
4. DO NOT STOCKPILE EQUIPMENT OR MATERIALS ON CONDUIT NO. 19 OR 29.
5. SITE CONTAINS HIGH METHANE LEVELS. MONITOR GAS LEVELS AND USE APPROPRIATE SAFETY PROCEDURES. VENT PIPES ADDED FOR MANHOLE VENTILATION.
6. ENGINEER TO COORDINATE WITH OWNER TO ADD REFERENCE MARKINGS TO VENT POST AFTER IT IS PAINTED.

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REFERENCE:
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△		30% REVIEW

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REVISIONS

NOTE 11

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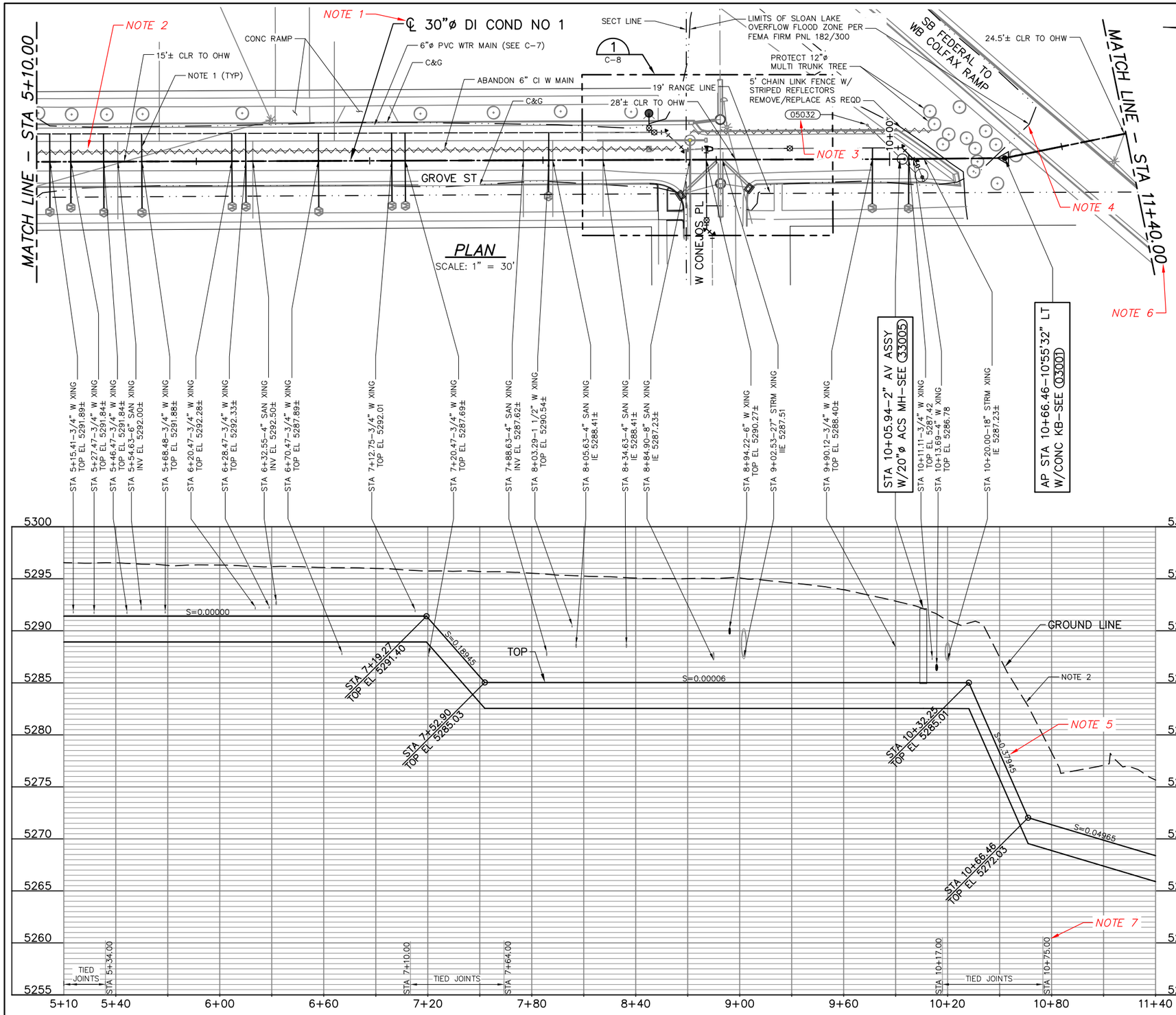
CHKD BY: "ENGINEER'S LAST NAME"
CHKD BY: "ENGINEEPING MANAGER LAST NAME"
APPD BY:
DATE: "MONTH 4–DIGIT YEAR"
CONTRACT: "PROVIDED BY DPM"
AS–BUILT DATE:
AS–BUILT BY:

DRAWING TITLE

CAPITAL PROJECTS CIVIL PLAN AND PROFILE – 1

NOTE 9

EXAMPLE



PROFILE

SCALE: 1" = 30' HORIZ
1" = 5' VERT

INSTRUCTION NOTES:

1. NEW CONDUIT INSTALLATION CALLOUT IS A MULTILEADER, STYLE L175 CREATED ON LAYER "C–ANNO–L175", LAYER COLOR PEN 204.
2. "ZIGZAG" HATCH PATTERN OR LINETYPE INDICATES ABANDONED UTILITY PER CPCS (01010). CREATED ON LAYER "G–PATT".
3. BLOCK NAME IS "CPCS Detail callouts". SCALE THE BLOCK BY A FACTOR OF 1.2, WHEN USED IN THE BODY OF A NOTE.
4. FLOOD ZONE LIMITS CREATED ON LAYER "V–FLHA" (SURVEY: FLOOD HAZARD), LINE TYPE "RIVER2", COLOR PEN 133.
5. PIPE NETWORK, PIPE LABEL STYLE "Conduit Slope". NEGATIVE SLOPES NOT ALLOWED. WHEN NEGATIVE SLOPES OCCUR USE A TEXT OBJECT IN LIEU OF A "Conduit Slope" PIPE LABEL.
6. BLOCK NAME IS "DW MATCHLINE" RESIDES ON LAYER "C–ANNO–MATC". CREATE MATCH LINES ON A EVEN STATION THAT CORRESPONDS TO THE MAJOR GRID STATION ON THE PROFILE.
7. PROFILE LABEL STYLE "Tied Joints Right".

– *INDICATES DRAFTER INPUT REQUIRED*

NOTES:

1. REPLACE EXISTING SERVICE TO METER PIT WITH COPPER PIPE, SIZE AS SHOWN. EXTEND TO NEW MAIN AS REQUIRED PER DENVER WATER ENGINEERING STANDARD SHEET 54. NEW SERVICES TO EXTEND OVER CONDUIT WITH MINIMUM SEPARATION OF 6–INCHES.
2. SLOPE STABILIZATION WITH EROSION CONTROL BLANKET REQUIRED FOR RESTORATION.
3. SEE DRAWING G–4 FOR REQUIRED CATHODIC PROTECTION.
4. REMOVE VEGETATION ON SLOPE AS NECESSARY.
5. FROM STATION 10+20 TO STATION 15+30, LIMIT WORK AREA TO 50–FEET ON EITHER SIDE OF CENTERLINE OF PIPE.

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CHKD BY: *"ENGINEERING MANAGER LAST NAME"*
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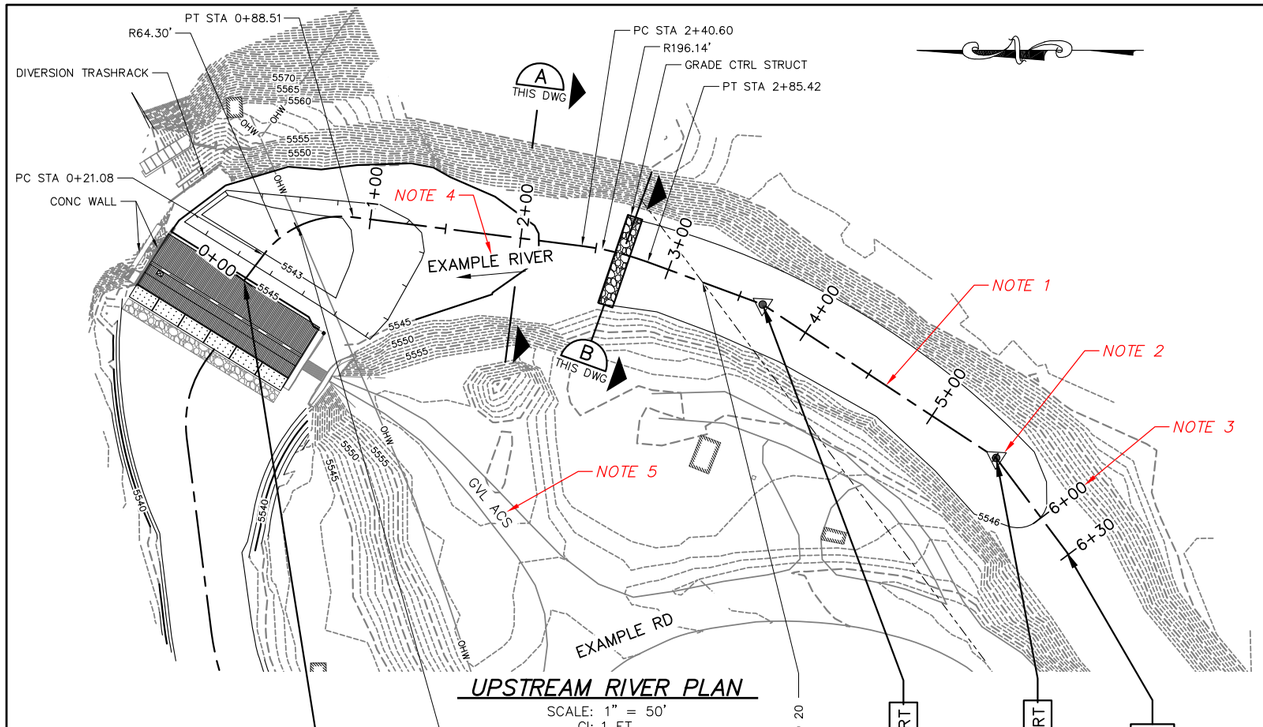
DATE: *"MONTH 4–DIGIT YEAR"*
CONTRACT: *"PROVIDED BY DPM"*
AS–BUILT DATE:
AS–BUILT BY:

DRAWING TITLE

CAPITAL PROJECTS CIVIL PLAN AND PROFILE – 2

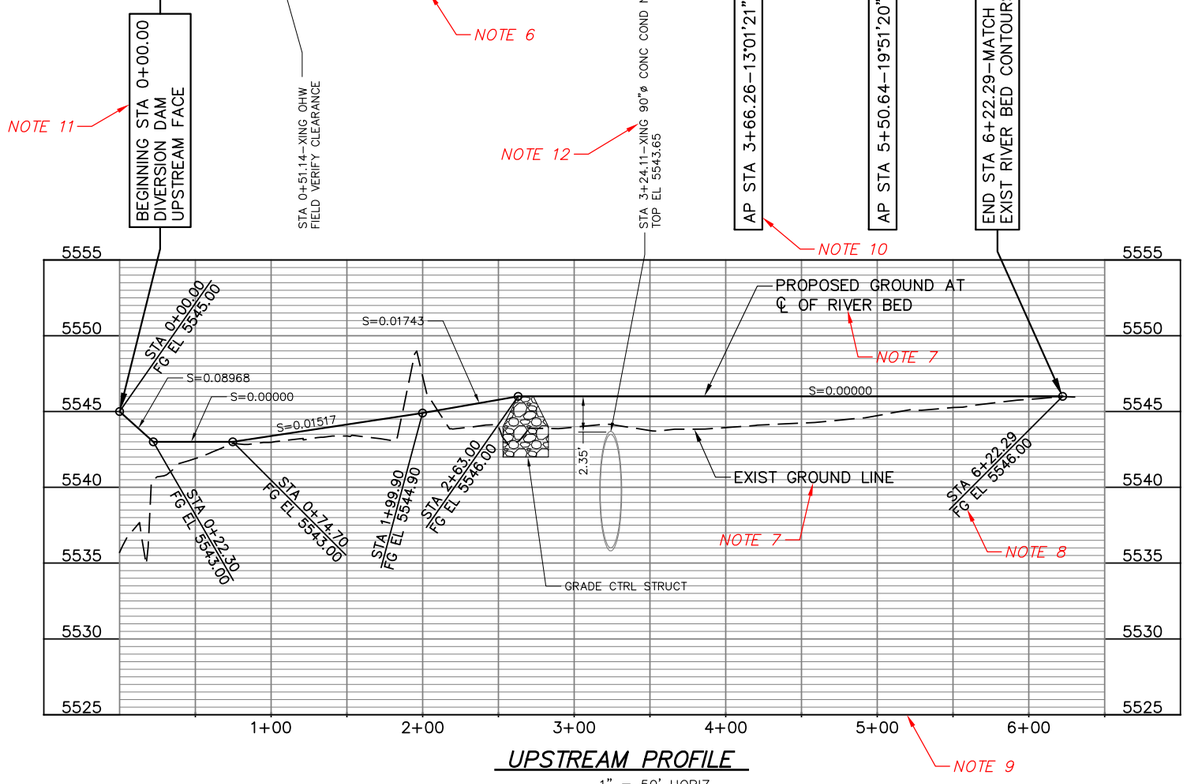
EXAMPLE



UPSTREAM RIVER PLAN

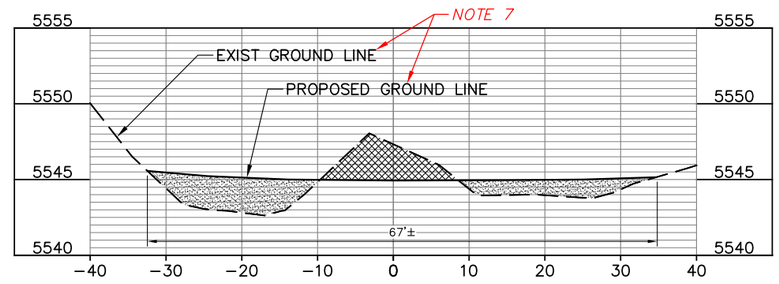
SCALE: 1" = 50'
CI: 1 FT

NOTE 6



UPSTREAM PROFILE

SCALE: 1" = 50' HORIZ
1" = 5' VERT



STA 2+00

A THIS DWG

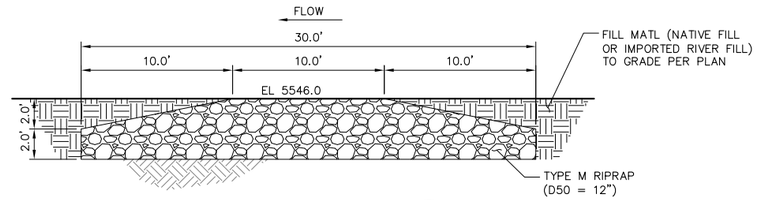
SCALE: 1" = 10' HORIZ
1" = 5' VERT

NOTE 13

LEGEND:

REQUIRED FILL AREA

REQUIRED EXCAVATION AREA



SECTION

B THIS DWG

SCALE: 1" = 5'

INSTRUCTION NOTES:

1. CENTERLINE ALIGNMENT DISPLAYED ON LAYER "CU–WATR–CNTR".
2. BLOCK NAME "DW_Bend Conduit", INSERTED AT ANGLE POINTS ALONG THE ALIGNMENT. INSERT THE BLOCK ON LAYER "C–ANNO–MARK" OR "G–ANNO–SYMB".
3. MAJOR STATION LABEL STYLE IS "Perpendicular with Tick". SET THE BACKGROUND MASK TO "TRUE" WHEN STATIONS APPEAR ON TOP OF LINE WORK.
4. "EXAMPLE RIVER" IS A PROPER NOUN FOR THIS EXAMPLE. L140 TEXT STYLE SIZE IS USED FOR ALL PROPER NOUNS IN PLAN VIEW. THE LAYER IS "C–ANNO–L140" WHICH CORRESPONDS TO THE TEXT OBJECT STYLE.
5. TEXT OBJECT STYLE IS L120. THIS SIZE IS USED TO IDENTIFY GENERAL INFORMATION ABOUT THE PLAN THAT IS SIGNIFICANT TO THE PLAN USER BUT NOT SPECIFICALLY RELATED TO THE DESIGN FEATURES. OTHER EXAMPLES OF GENERAL INFORMATION IS "DW ℄", OR "HYDROELECTRIC POWERHOUSE" (NOT INCLUDED IN THIS EXAMPLE PLAN VIEW).
6. THE "CONTOUR INTERVAL" VISIBILITY STATE OF THE BLOCK "PLAN Title" IS TOGGLED ON AND THE CONTOUR INTERVAL FIELD IS POPULATED WITH THE CORRESPONDING PLAN VIEW INTERVAL VALUE, IN THIS CASE "1 FT".
7. EXISTING AND PROPOSED GROUND LINE CALLOUTS ARE CREATED USING L140 MULTILEADER STYLES, ON PROFILES WITH GRID AND SECTIONS WITH GRID. THE CALLOUT IS CREATED ON LAYER "C–ANNO–L140". ADDING "EXIST" TO "GROUND LINE" IS ONLY REQUIRED WHEN A "PROPOSED" GROUND LINE IS BEING SHOWN WITHIN THE SAME PROFILE OR SECTION THAT THE EXISTING GROUND LINE IS BEING SHOWN.
8. PROFILE VIEW LABEL STYLE "Engineering Profile Labels Pipes [Left]". THIS LABEL IS MOST COMMONLY USED FOR "TOP" (TOP OF PIPE) CALLOUTS. IN THIS CASE THE "Edit Label Text" COMMAND WAS USED TO CHANGE THE DEFAULT "TOP" TO "FG" (FINISH GRADE) WITHIN THE LABEL. THE MARKER STYLE IS SET TO "Profile Marker", WHICH CREATES A CIRCLE AT THE ANCHOR POINT OF THE LABEL.
9. PROFILE VIEW STYLE IS "50 Scale Left to Right". THE PROFILE HORIZONTAL SCALE MUST MATCH THE PLAN VIEW SCALE. MAJOR GRID LINES ARE SPACED AT 1 PER INCH, VERTICALLY AND HORIZONTALLY.
10. PROFILE VIEW LABEL STYLE "Angle Point". THE PLAN VIEW LEADER IS CREATED IN PAPER SPACE ON LAYER "G–ANNO–L175", WITH AN ARROWHEAD SIZE OF 0.25 AND PEN 4 LINE WEIGHT.
11. PROFILE VIEW LABEL STYLE "Beginning" CREATED IN MODEL SPACE. THE PROFILE LEADER IS CREATED IN MODEL SPACE ON LAYER "G–ANNO–L175" WITH AN ARROWHEAD SIZE OF 0.25. THE PLAN VIEW LEADER IS CREATED IN PAPER SPACE ON THE SAME LAYER AS THE PROFILE LEADER.
12. PROFILE VIEW LABEL STYLE "Design Labels [Interference]" USED TO IDENTIFY UTILITIES AND STRUCTURES THAT CROSS THE PROFILE SUBJECT ALIGNMENT. THE PROFILE VIEW LABEL AND THE PROFILE LEADER ARE CREATED IN MODEL SPACE ON LAYER "C–ANNO–DIMS" WITH AN ARROWHEAD SIZE OF 0.125. THE PLAN VIEW LEADER IS CREATED IN PAPER SPACE ON THE SAME LAYER AS THE PROFILE LEADER.
13. ALIGNMENT SAMPLE LINE SECTION TITLE CREATED USING BLOCK NAME "Section or Detail Title – scale". THE HORIZONTAL AND VERTICAL SCALE ARE CREATED USING MULTI–TEXT.

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APPD BY:
DATE: *"MONTH 4–DIGIT YEAR"*
CONTRACT: *"PROVIDED BY DPM"*
AS–BUILT DATE:
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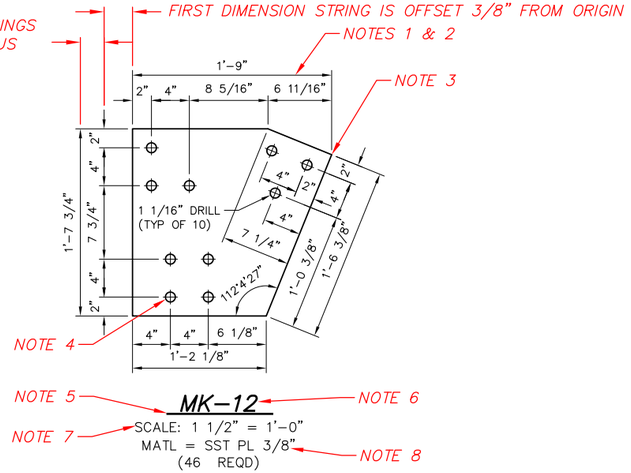
DRAWING TITLE

CAPITAL PROJECTS CIVIL PLAN, PROFILE AND SECTIONS

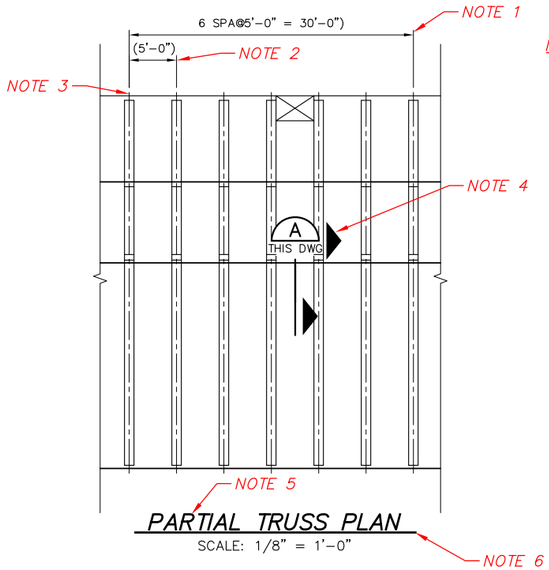
EXAMPLE

SECOND AND ALL SUCCESSIVE DIMENSION STRINGS ARE OFFSET 5/16" FROM FIRST OR PREVIOUS DIMENSION STRING



INSTRUCTION NOTES:

1. DIMENSION STYLE USED IS "L100 – nearest 32nd". ALL LINE WORK, TEXT OBJECTS, AND SUBJECT GRAPHICS CREATED IN MODEL SPACE.
2. DIMENSIONING IS CREATED ON LAYER "S-ANNO-DIMS". THE DISCIPLINE DESIGNATION IN THE LAYER NAME VARIES (I.E. "M-ANNO-DIMS").
3. DETAIL SUBJECT GRAPHICS CREATED ON LAYER "S-DETL-METL" (STRUCTURAL: DETAIL: METAL).
4. CIRCLES (DRILLED HOLE) HAS CENTER LINES ALONG THE X AND Y AXIS, DRAWN ON LAYER "S-ANNO-DIMS-CNTR", PEN 31, "CENTER4" LINE TYPE. THE CENTERLINES EXTEND PAST THE LIMIT OF THE CIRCLE TO A DISTANCE THAT IS LEGIBLE AND LOGICAL.
5. BLOCK NAME IS "PLAN title". INSERTION UNITS IS "FEET" (2), INSERTED IN PAPER SPACE AND MAY BE MOVED INTO MODEL SPACE THROUGH THE VIEWPORT USING THE "CHSPACE" COMMAND. THE PLAN TITLE HAS 1 LEADING AND 1 TRAILING UNDERLINED SPACE. TO CREATE THE UNDERLINE SPACE, HOLD THE "Alt" KEY AND TYPE "0160".
6. THE DETAIL IS A MARK ("MK") NUMBERED DETAIL, IDENTIFIED IN SEVERAL OTHER DETAILS WITHIN THE PLAN SET BUT NOT ALWAYS SHOWN EXACTLY AS REPRESENTED IN THIS VIEW. MARK NUMBERS, DETAIL NUMBERS, SECTION ALPHABETIC CHARACTERS, AND CPCS NUMBERS SHOULD APPEAR ON THE DRAWING IN ASCENDING ORDER FROM LEFT TO RIGHT AND TOP TO BOTTOM.
7. THE SCALE IS IN ARCHITECTURAL UNITS, FEET AND INCHES.
8. MULTI-TEXT L120 CENTER JUSTIFIED.

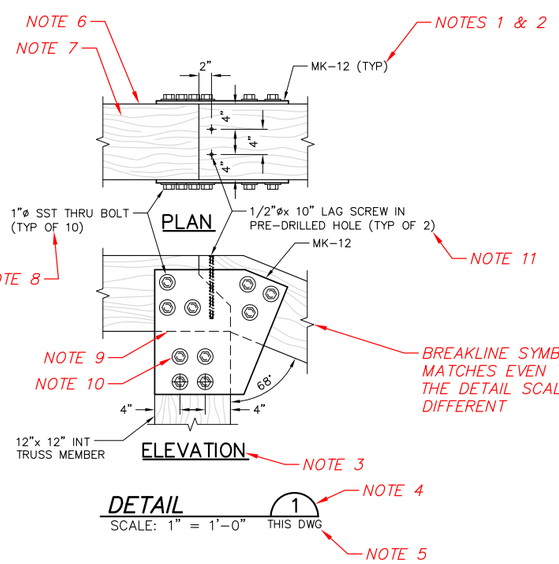


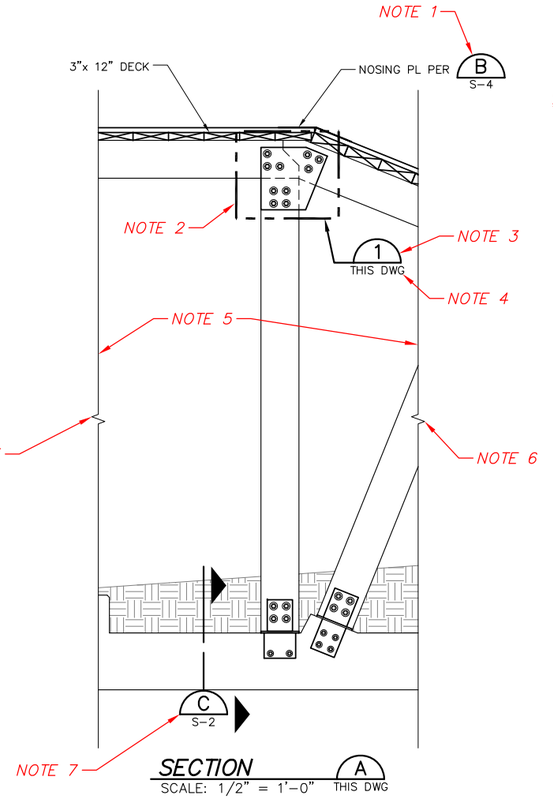
INSTRUCTION NOTES:

1. DIMENSION FORMAT USED WHEN DIMENSIONING A SERIES OF IDENTICAL AND REPEATING DIMENSIONS. IN THIS CASE 6 SPACES AT A DIMENSION OF 5'-0" IS REPEATED. THE TOTAL DISTANCE BEING DIMENSIONED IS 30'-0".
2. THIS DIMENSION IS REQUIRED TO INDICATE THE SUBJECT MATTER OF THE SERIES DIMENSION DISCUSSED IN NOTE 1.
3. A CENTERLINE IS USED TO ESTABLISH THE DIMENSION ORIGIN. THE CENTERLINE IS CREATED ON LAYER "S-ANNO-DIMS-CNTR" (STRUCTURAL: ANNOTATION: DIMENSION: CENTER), PEN 31, "CENTER4" LINE TYPE.
4. BLOCK NAME IS "Section line". INSERTION UNITS IS "FEET" (2), INSERTED IN PAPER SPACE AND MAY BE MOVED INTO MODEL SPACE THROUGH THE VIEWPORT USING THE "CHSPACE" COMMAND. A WIPEOUT POLYLINE FRAME IS USED TO CLEAR THE BACKGROUND LINEWORK. THE WIPEOUT POLYLINE IS CREATED ON LAYER "G-SECT" AND THE "FRAME" TOGGLE SET TO "OFF". SECTIONS ARE ASSIGNED AN ALPHA CHARACTER DESIGNATION, IN THIS CASE SECTION "A".
5. "PARTIAL..." DESIGNATION ADDED BECAUSE THE COMPLETE "TRUSS PLAN" IS IDENTIFIED SOMEWHERE ELSE IN THE PLAN SET (NOT INCLUDED IN THE EXAMPLE DRAWING SET).
6. BLOCK NAME IS "PLAN title". INSERTION UNITS IS "FEET" (2), INSERTED IN PAPER SPACE AND MAY BE MOVED INTO MODEL SPACE THROUGH THE VIEWPORT USING THE "CHSPACE" COMMAND. THE PLAN TITLE HAS 1 LEADING AND 1 TRAILING UNDERLINED SPACE. TO CREATE THE UNDERLINE SPACE, HOLD THE "Alt" KEY AND TYPE "0160".

INSTRUCTION NOTES:

1. THE MULTILEADERS ARE CREATED ON LAYER "S-ANNO-L100". THE SIZE OF THE MULTILEADER TEXT DICTATES THE LAYER WHICH THE MULTILEADER IS ASSIGNED TO.
2. "(TYP)" IS INCLUDED IN THE "MK-12" CALL OUT BECAUSE IT APPEARS, GRAPHICALLY THE SAME, TWICE IN THE "PLAN" PORTION OF THE DETAIL.
3. L175 MULTITEXT ON LAYER "G-ANNO-L175" WITH NO LEADING OR TRAILING SPACE.
4. BLOCK NAME IS "Section or Detail Title – scale". INSERTION UNITS IS "FEET" (2), INSERTED IN PAPER SPACE AND MAY BE MOVED INTO MODEL SPACE THROUGH THE VIEWPORT USING THE "CHSPACE" COMMAND.
5. "THIS DWG" IS A BLOCK ATTRIBUTE AND DIRECTS THE READER TO THE CORRESPONDING LOCATION WITHIN THE PLAN SET.
6. DETAIL GRAPHIC CREATED ON LAYER "S-DETL-WOOD" (STRUCTURAL: DETAIL: WOOD).
7. DETAIL GRAPHIC CREATED ON LAYER "S-PATT-WOOD" (STRUCTURAL: PATTERN: WOOD). LAYER COLOR SET TO PEN 252 TO INCREASE SCREENING OF LINE WEIGHT.
8. "(TYP OF 10)" INDICATES THAT THE SUBJECT OBJECT OF THE MULTILEADER, APPEARS 10 TIMES IN THE DETAIL, 2 LEADERS ARE ALLOWED IN THIS INSTANCE BECAUSE THE SUBJECT OBJECT APPEARS IN THE "PLAN" AND "ELEVATION" PORTIONS OF THE DETAIL.
9. DETAIL GRAPHIC CREATED ON LAYER "S-DETL-WOOD-HDLN" (STRUCTURAL: DETAIL: WOOD: HIDDENLINE). LAYER LINE TYPE IS SET TO "HIDDEN2" AND A PEN 1 COLOR.
10. DETAIL GRAPHIC CREATED ON LAYER "S-DETL-HRDW", (STRUCTURAL: DETAIL: HARDWARE).
11. "(TYP OF 2)" ADDED TO CALL OUT BECAUSE THE CALL OUT LEADER POINTS TO DIFFERENT VIEWS OF THE SUBJECT OBJECT BEING IDENTIFIED. IN THE "ELEVATION" VIEW THE THE SUBJECT OBJECT IS SHOWN ONCE, IN THE "PLAN" VIEW THE SUBJECT IS SHOWN TWICE.





INSTRUCTION NOTES:

1. BLOCK NAME IS "Detail Callout" WITH THE VISIBILITY STATE SET TO "NO ARROW" . INSERTION UNITS IS "FEET" (2), INSERTED IN PAPER SPACE AND MAY BE MOVED INTO MODEL SPACE THROUGH THE VIEWPORT USING THE "CHSPACE" COMMAND. THE CALLOUT IDENTIFIES A COMPONENT THAT IS INCLUDED IN A PORTION OF A SECTION OR DETAIL. IN THIS CASE THE "NOSING PL (PLATE)" MATERIAL AND INSTALLATION INFORMATION IS IDENTIFIED IN SECTION "B" ON SHEET S-4 (NOT INCLUDED IN THE EXAMPLE DRAWING SET).
2. POLYLINE CREATED ON LAYER "S-ANNO-MATC" (STRUCTURAL: ANNOTATION: MATCHLINE), THE LINETYPE GENERATION IS "ENABLED" THROUGH THE PROPERTIES DIALOG BOX. THE GRAPHIC DEFINES THE EXTENTS OF DETAIL 1.
3. BLOCK NAME IS "Detail callout" WITH THE VISIBILITY STATE SET TO "ARROW". INSERTION UNITS IS "FEET"(2), INSERTED IN PAPER SPACE AND MAY BE MOVED INTO MODEL SPACE THROUGH THE VIEWPORT USING THE "CHSPACE" COMMAND. DETAILS ARE ASSIGNED A NUMERIC CHARACTER DESIGNATION, IN THIS CASE "1".
4. "THIS DWG" IS A BLOCK ATTRIBUTE AND DIRECTS THE READER TO THE CORRESPONDING LOCATION WITHIN THE PLAN SET.
5. BREAKLINES ON BOTH ENDS OF THE SECTION TO INDICATE THAT THE STRUCTURE SUBJECT GRAPHICS CONTINUE BEYOND THE SECTION.
6. ONLY ONE BREAKLINE SYMBOL IS REQUIRED PER BREAKLINE.
7. BLOCK NAME IS "Section line". INSERTION UNITS IS "FEET" (2), INSERTED IN PAPER SPACE AND MAY BE MOVED INTO MODEL SPACE THROUGH THE VIEWPORT USING THE "CHSPACE" COMMAND. THE SECTION DESIGNATION IS "C" BECAUSE "A" & "B" DESIGNATIONS ARE ALREADY IN USE ON THIS DRAWING.

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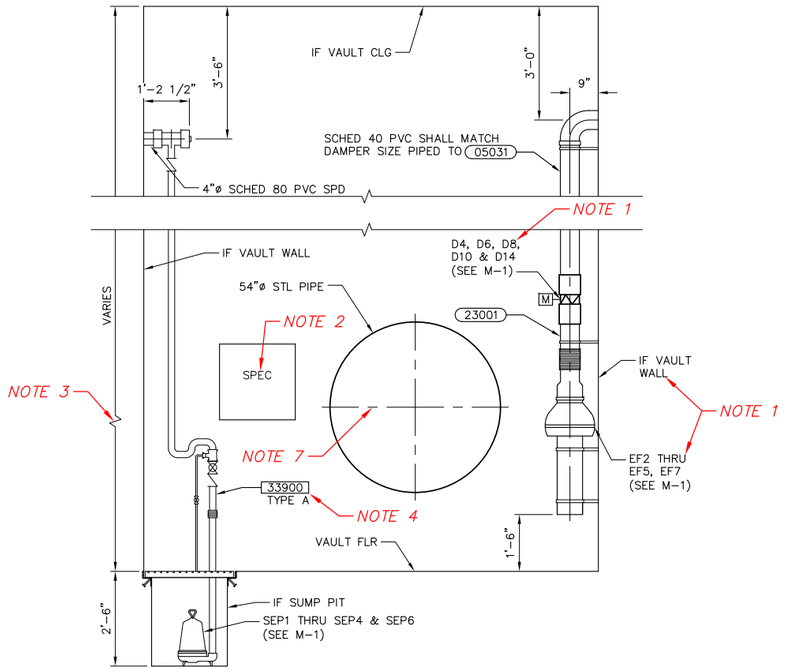
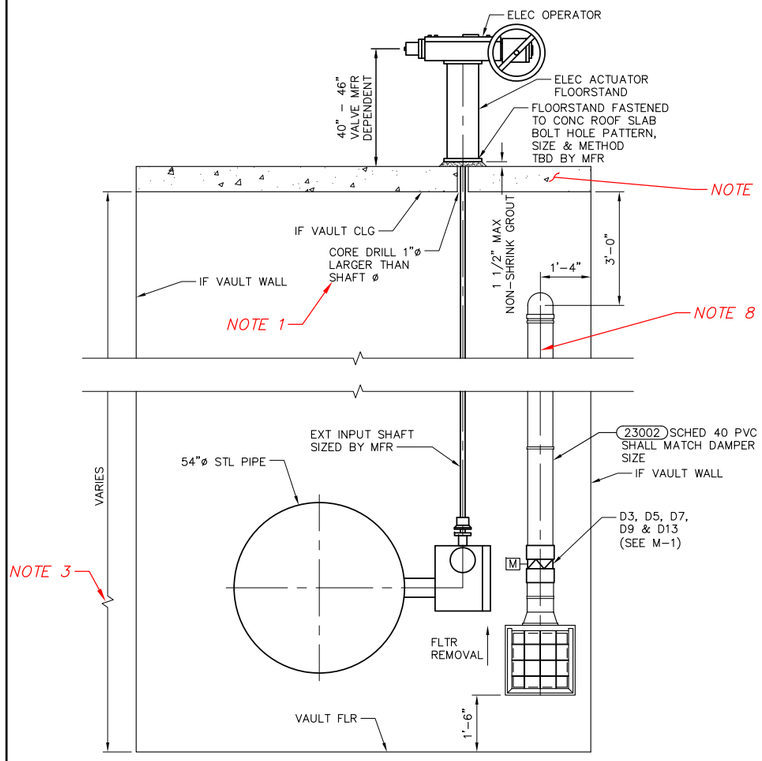
CAPITAL PROJECTS ARCHITECTURAL AND STRUCTURAL DIMENSIONING

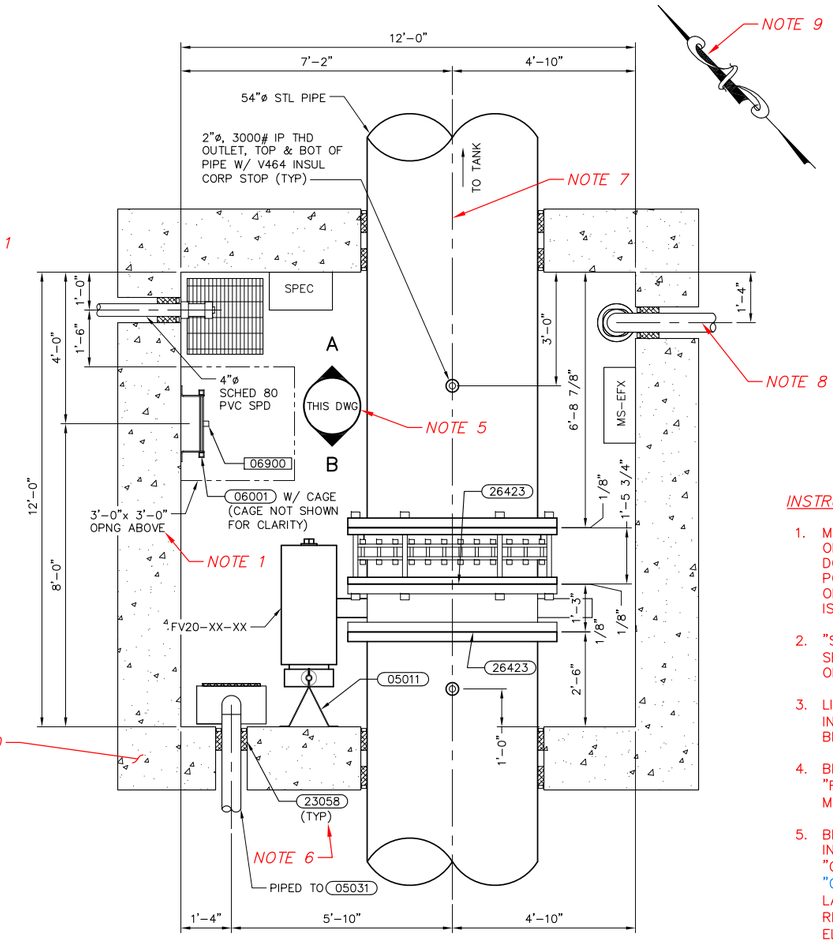
EXAMPLE



ELEVATION A
SCALE: 1/2" = 1'-0" THIS DWG



ELEVATION B
SCALE: 1/2" = 1'-0" THIS DWG



VAULTS NO 1 THRU 3 PLAN
SCALE: 1/2" = 1'-0"

INSTRUCTION NOTES:

1. MULTILEADER STYLE L100, LEFT JUSTIFIED, LEADER ANCHORS TO THE MIDDLE OF THE BOTTOM LINE OF TEXT WHEN LEADER IS POINTING TO THE RIGHT AND DOWN. LEADER ANCHORS TO MIDDLE OF TOP LINE OF TEXT WHEN LEADER IS POINTING TO THE RIGHT AND UP. LEADER ANCHORS TO THE TOP MIDDLE LINE OF TEXT WHEN LEADER IS POINTING TO THE LEFT REGARDLESS IF THE LEADER IS POINTING UP OR DOWN.
2. "SPEC" IS AN ELECTRICAL ENCLOSURE DESIGNATION RELATIVE TO THE PLAN SET. CREATED ON LAYER "E-ANNO-L100" WITH A PEN 1 COLOR. THIS IS THE ONLY TIME PEN 1 IS ACCEPTABLE FOR L100 SIZE TEXT.
3. LINEAR DIMENSION CREATED IN MODEL SPACE ON LAYER "M-ANNO-DIMS", AND INCLUDES A "DIMHJOGLINE" BECAUSE THE DIMENSION SPANS ACROSS A BREAKLINE.
4. BLOCK NAME IS "CPCS Detail Callouts", WITH THE VISIBILITY STATE SET TO "Revised". "TYPE A" IS INCLUDED BECAUSE THE DETAIL BEING REFERENCED HAS MULTIPLE CONFIGURATIONS (NOT INCLUDED IN THIS EXAMPLE DRAWING SET).
5. BLOCK NAME IS "Interior Elevation Indicator". INSERTION UNITS IS "FEET" (2), INSERTED IN PAPER SPACE AND MOVED THROUGH THE VIEWPORT USING THE "CHSPACE" COMMAND. "THIS DWG" IS L100 TEXT ON LAYER "G-WALL-ELEV-TEXT", COLOR SET TO PEN 12. "A" AND "B" IS L175 TEXT ON LAYER "G-WALL-ELEV", COLOR SET TO PEN 4. THE BLOCK REFERS THE READER TO ELEVATION "A" AND ELEVATION "B" ON THIS DRAWING. IF THE ELEVATIONS BEING REFERRED TO RESIDE ON A DIFFERENT SHEET, THEN "THIS DWG" WOULD BE REPLACED WITH THE CORRESPONDING SHEET, FOR EXAMPLE "M-3" (NOT INCLUDED IN THIS EXAMPLE SET).
6. "(TYP)" IS A MULTITEXT OBJECT PLACED BELOW OR BESIDE THE CPCS REFERENCE BLOCK WHEN THE DETAIL INDICATED IS SHOWN IN MULTIPLE PLACES WITHIN THE PLAN VIEW.
7. CENTERLINE OF PIPE CREATED ON LAYER "M-WATR-PIPE-CNTR" (MECHANICAL: WATER: PIPE: CENTERLINE), LAYER COLOR PEN 51 AND "CENTER2" LINE TYPE. CENTERLINE OF PIPE REQUIRED IN ELEVATION AND PLAN VIEW FOR DIMENSION ORIGIN ANCHOR POINT.
8. CENTERLINE OF PIPE CREATED ON LAYER "M-MPIP-CNTR" (MECHANICAL: MISCELLANEOUS PIPING: CENTERLINE), LAYER COLOR PEN 51 AND "CENTER2" LINE TYPE. CENTERLINE OF PIPE REQUIRED IN ELEVATION AND PLAN VIEW FOR DIMENSION ORIGIN ANCHOR POINT.
9. NORTH ARROW REQUIRED FOR ALL "PLAN" REPRESENTATIONS, ON LAYER "G-ANNO-SYMB".
10. HATCH PATTERN PAPER SPACE SIZE MATCHES IN ALL PLACES SHOWN ON SHEET REGARDLESS OF SCALE.

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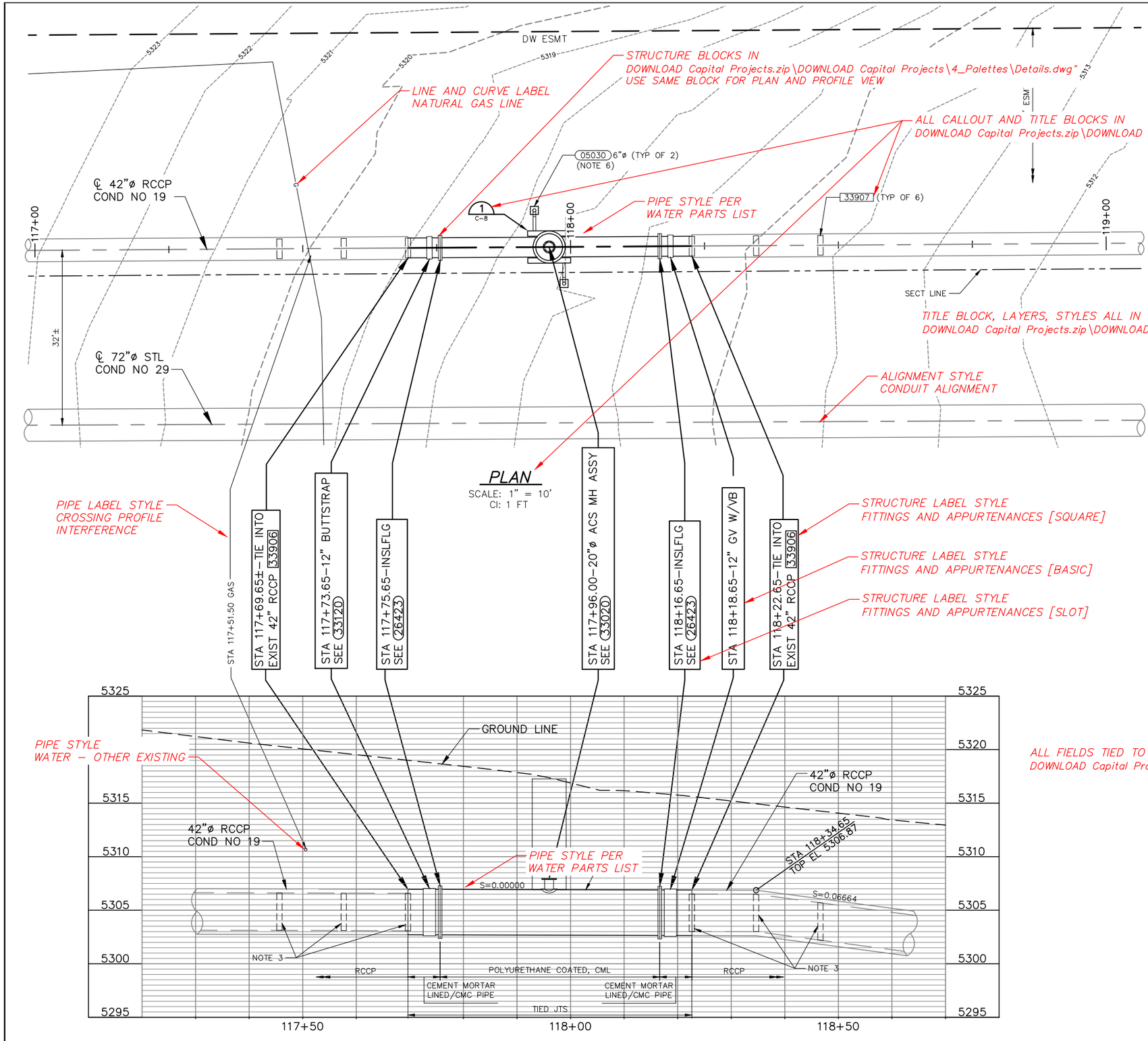
CAPITAL PROJECTS MECHANICAL DIMENSIONING

EXAMPLE



LAYERS AND STYLES ARE ALSO MANAGED THROUGH REFERENCE TEMPLATES. TO PATH TO THE CORRECT REFERENCE TEMPLATES GO TO MANAGE RIBBON - STYLES PANEL - REFERENCE

REFERENCE TEMPLATES ARE IN
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PIPE CATALOG IN
DOWNLOAD Capital Projects.zip\DOWNLOAD Capital Projects\6_Pipe Catalog

USE HOME RIBBON - CREATE DESIGN PANEL - SET PIPE NETWORK CATALOG

ALL FIELDS TIED TO SHEET SET TEMPLATE IN
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NOTES:

1. ADJUST STARTING AND ENDING STATIONS BASED ON LOCATION OF CONCRETE PIPE JOINTS.
2. PIPE SHALL BE LAID AT EVEN SLOPE BETWEEN TIE-IN POINTS.
3. INSTALL INTERNAL SEALS AT EACH STEEL TO CONCRETE PIPE JOINT AND 2 CONCRETE JOINTS BEYOND (TOTAL = 6). ASSUMED JOINT SPACING IS 12 FEET.
4. DO NOT STOCKPILE EQUIPMENT OR MATERIALS ON CONDUIT NO. 19 OR 29.
5. SITE CONTAINS HIGH METHANE LEVELS. MONITOR GAS LEVELS AND USE APPROPRIATE SAFETY PROCEDURES. VENT PIPES ADDED FOR MANHOLE VENTILATION.
6. ENGINEER TO COORDINATE WITH OWNER TO ADD REFERENCE MARKINGS TO VENT POST AFTER IT IS PAINTED.

TITLE BLOCK IS DYNAMIC WITH MULTIPLE VISIBILITY STATES

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DRAWING TITLE

CAPITAL PROJECTS CIVIL PLAN AND PROFILE - 1

FIELD OR AS NOTED

CTRL PNL (LCP-WQB)

BLOCKS USED:

- LA: "EI-CONT-DEVC" DYN BLK: "DIODE"(3)
- LA: "EI-DIAG-CONN" BLK: "ELEC_CONN"
- L — LA: "EI-CONT-WIRE-SHLD" DYN BLK: "ELEC_LABEL-SHIELD WIRING"(7)
- [Pxxx] — LA: "EI-CABL-TEXT" DYN BLK: "ELEC_LABEL-CABLE"
- LA: "EI-CONT-DEVC" BLK: "WIRING CONTINUATION"(2)
- CBxxx — LA: "EI-CONT-DEVC" BLK: "ELEC_CIRCUIT BREAKER"
- UPR CRxxx 12 8 — LA: "EI-CONT-DEVC" DYN BLK: "ELEC_INDICATOR-CONTACT"(2)
- LTxxx W — LA: "EI-CONT-DEVC" BLK: "ELEC_LIGHT-INDICATING"
- 9 5 — LA: "EI-CONT-DEVC" BLK: "ELEC_SWT"
- LA: "EI-CONT-DEVC" BLK: "ELEC_GROUND"
- LA: "EI-CONT-DEVC" BLK: "SWITCH_DISCON"
- LA: "EI-CONT-DEVC-TERM" DYN BLK: "ELEC_SCREWS"(3)
- CRxxx PSR1 — LA: "EI-CONT-DEVC" BLK: "RELAY"
- TSTAT — LA: "EI-CONT-DEVC" DYN BLK: "ELEC_SWT_TEMPERATURE"(2)
- LA: "EI-CONT-DEVC" DYN BLK: "ELEC_TERMINAL BLOCKS"(8)
- LA: "EI-CONT-DEVC" BLK: "ELEC_STRIP HEATER"

LA: "EI-GRID-REFR" BLK: "ELEC_GRID" "FIND AND REPLACE" *! WITH DWG NUMBER

LA: "EI-SECT-LINE"

LA: "EI-ANNO-L140" FONT: "L140"

LA: "EI-ANNO-L175"

LA: "EI-ANNO-L120" FONT: "L120"

LA: "EI-CONT-TEXT" FONT: "L100"

LA: "EI-DIAG-BUSS"

LA: "EI-DIAG-FEED"

120VAC, 1ϕ, 60Hz
PB2-WQB, CKT 3 — [P044] — N, L, GND, SH

801-1 — CB802 20A — 802-1 — 802-2

803 — ISOLATED GND BUS FOR ALL SHLD WIRES

FLUOR LIGHT ASSY — L1 L2 — 804-1

SA1 SURGE ARRESTOR — AC N GND — 806-1 — 806-2

808-1 — 808-2

CB809 3A — 809-1 — GFR — LAPTOP RECEPTACLE

CR810 — 14 NPR 13 — POWER OK RELAY — NPR — 9 5 — DI601 (1303)

CB812 3A — 812-1 — LT812 W — POWER ON AND OK

HTR TSTAT — 814-1 — CLOSE AT 40°F LOWERING — 400W

FAN TSTAT — 816-1 — 816-2 — CLOSE AT 75°F RISING — FAN1

UPR CR823 — 818-1 — 12 4 — CB818 10A — 818-2 — UPS RECEPTACLE

UPS 120VAC 1000VA

UPR CR823 — 12 8 — CB821 15A — 821-1 — 821-2

CR823 — 14 UPR 13 — UPS POWER OK RELAY — UPR — 9 5 — DI602 (1305)

LT825 W — POWER ON AND OK

CB827 3A — 827-1 — COMMUNICATIONS RECEPTACLE

LA: "EI-CONT-TEXT" FONT: "L100" NO ABBREVIATIONS IN THIS AREA, EXCEPTION IS DEVICE NAMES

CB828 — 828-1

CB830 1A — 830-1 — SPARE

CB832 1A — 832-1 — SPARE

LIT 20-02 — L N GND — [P101] — 828 829 GND

LIT 20-03 — GND N L — [P102] — GND 833 834

LA: "EI-ANNO-L120" FONT: "L120"

CB834 1A — 834-1 — PWS1 PWR SPLY 24VDC 5A — L+ DC OK + N- PE - — 835-1 — 835-2 — PHOENIX QUINT POWER

CB836 4A — 836-1 — 13 14 N — 836-3 — CR837 — PSR1 — 24VDC POWER SUPPLY NO 1 OK RELAY — PRS1 — 9 5 — DI603 (1307)

CB839 1A — 839-1 — PWS2 PWR SPLY 24VDC 5A — 840-1 — 841-1 — CR842 — PSR2 — 24VDC POWER SUPPLY NO 2 OK RELAY — PSR2 — 9 5 — DI603 (1307)

CB844 1A — 844-1 — DM DIODE MODULE — IN 1 IN 2 OUT 1 OUT 2 — 844-2 — 845-1 — PHOENIX QUINT DIODE 40

818-1 — 844-2 — 836-3 — 808-2

902 + — 24VDC — - 902

901 L — 120VAC — N 901

NOTE:

TERMINATIONS SHALL BE PERFORMED BY CONTRACTOR.

— INDICATES DRAFTER INPUT REQUIRED

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CONSULTANT

DENVER WATER ENGINEERING – DESIGN DRAFTING

DRAFTING STANDARDS FOR CAPTIAL PROJECTS

REFERENCE:
CAPITAL PROJECTS CONSTRUCTION STANDARDS 4th EDITION

THIS DRAWING IS BASED ON THE COORDINATE SYSTEM

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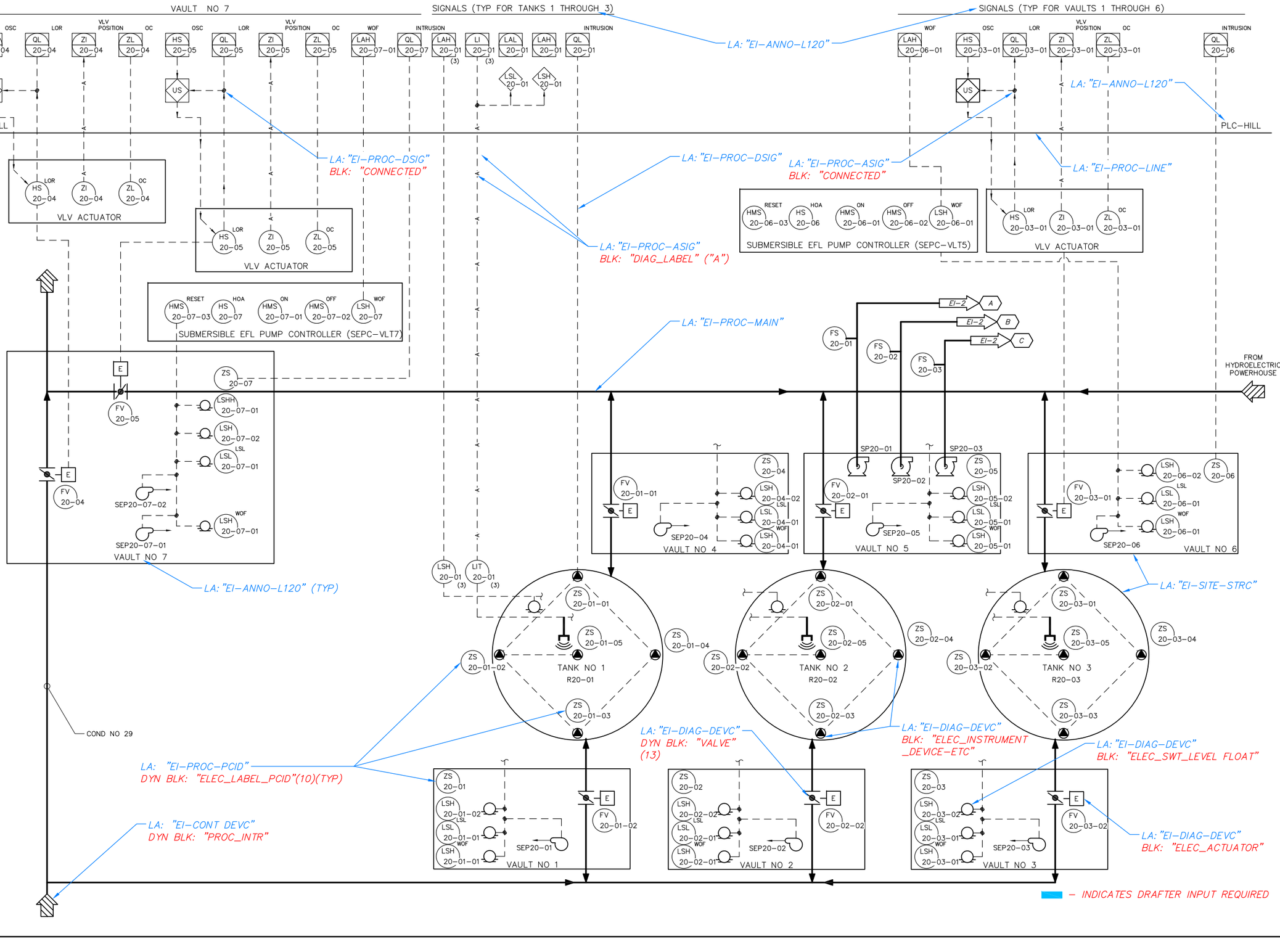
CAPITAL PROJECTS ELEC INSTRUMENTATION AND CONTROL AC POWER EXAMPLE

\\denverwater.org\shares\Engcom\McMillen\Example Drafting Standard\00000_DSGN_EI_INSTRUM_CONTROL.dwg INSTRUMENTATION AND CONTROL 12/10/2018 1:11 PM



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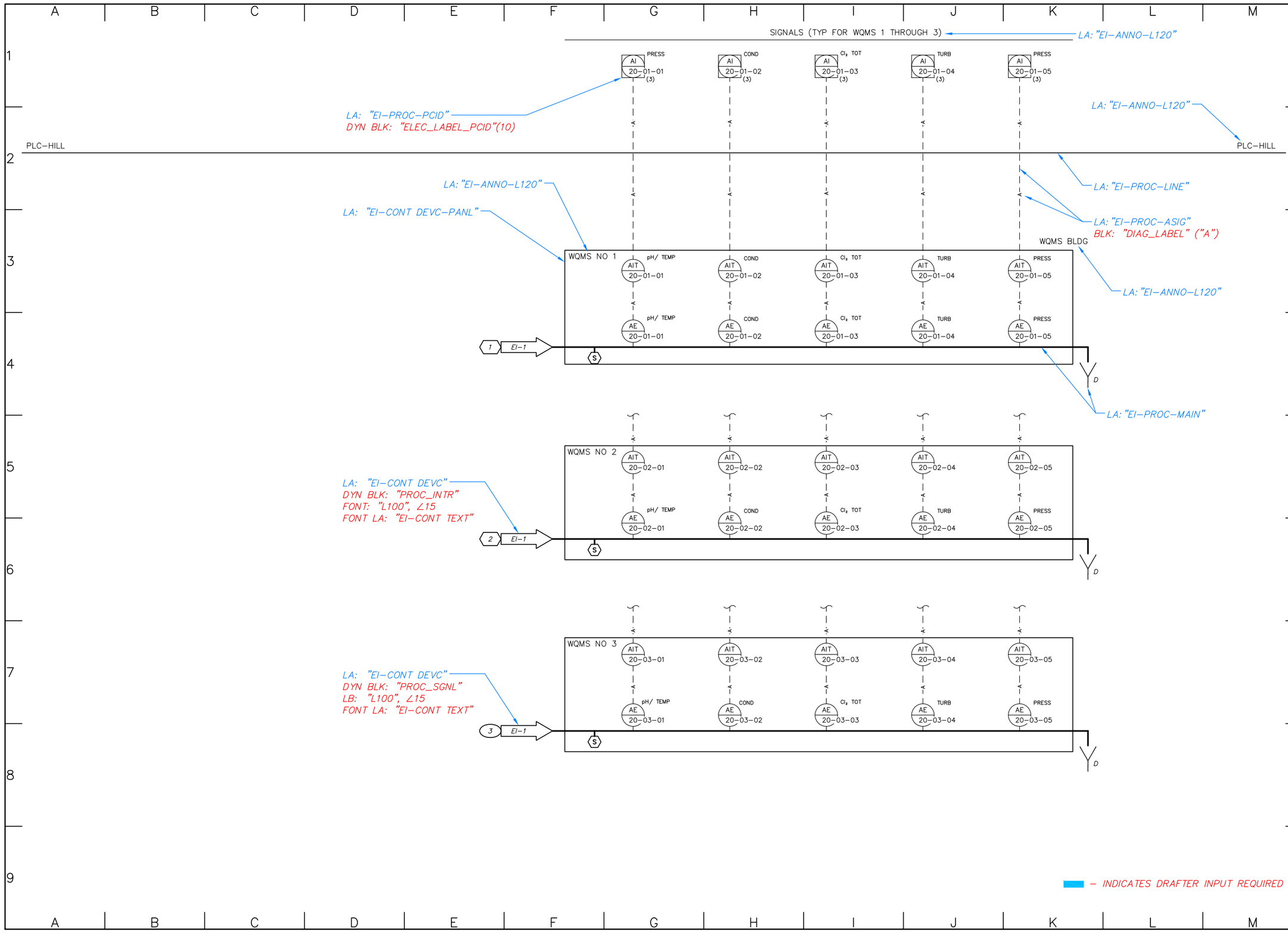
CAPITAL PROJECTS ELEC PROCESS AND INSTRUMENTATION DIAGRAM – 1

EXAMPLE



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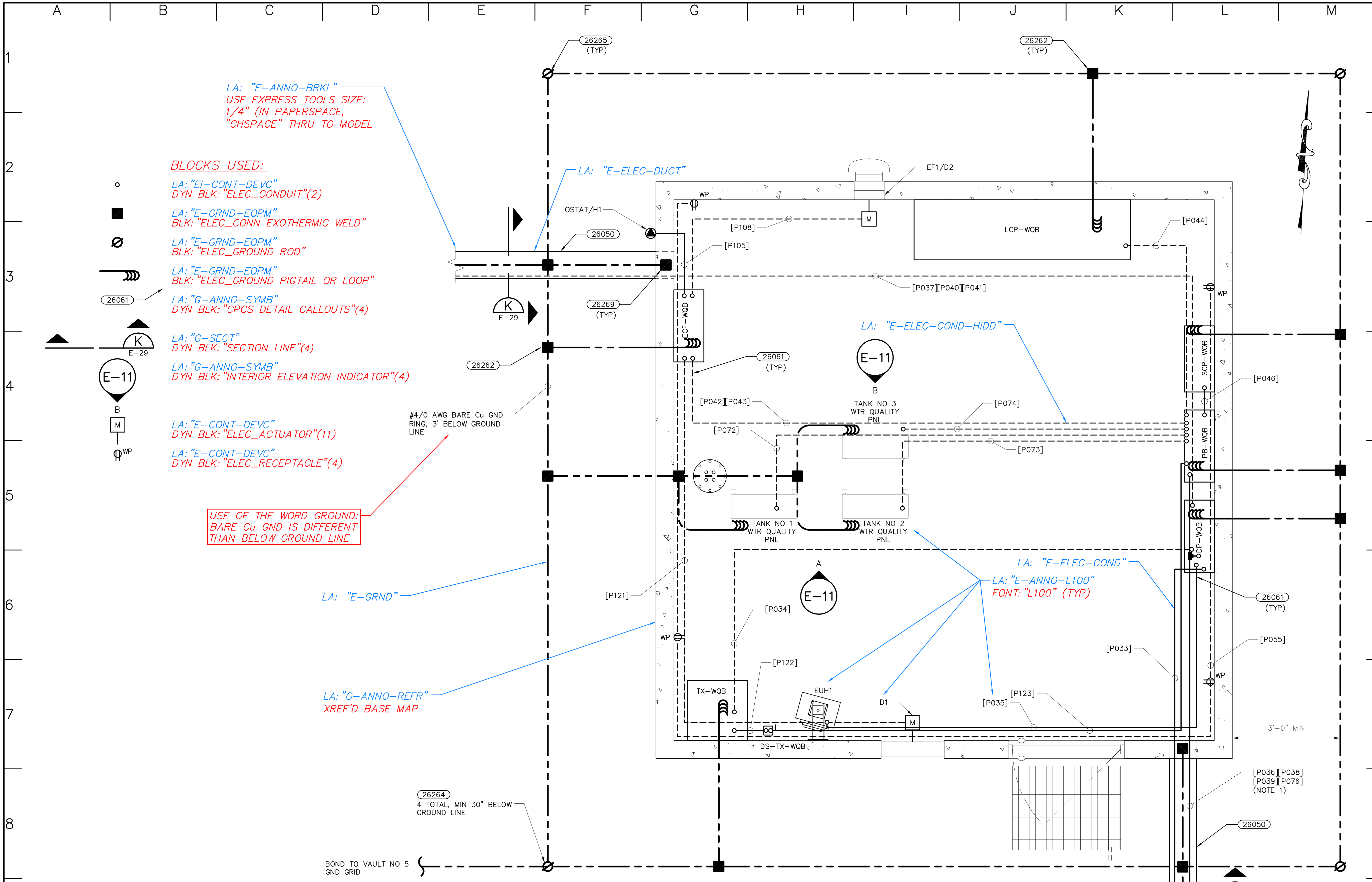
CAPITAL PROJECTS ELEC PROCESS AND INSTRUMENTATION DIAGRAM – 2

EXAMPLE

– INDICATES DRAFTER INPUT REQUIRED



POWER AND GROUNDING PLAN

SCALE: 3/4" = 1'-0"

▬ – INDICATES DRAFTER INPUT REQUIRED

NOTE:

[P036], [P038], [P039], AND [P076] 2-INCH CONDUITS FROM DP-WQB TO PB-WQB VIA T-CONDULET.

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CAPITAL PROJECTS_ELEC PLAN VIEW – POWER & GROUNDING

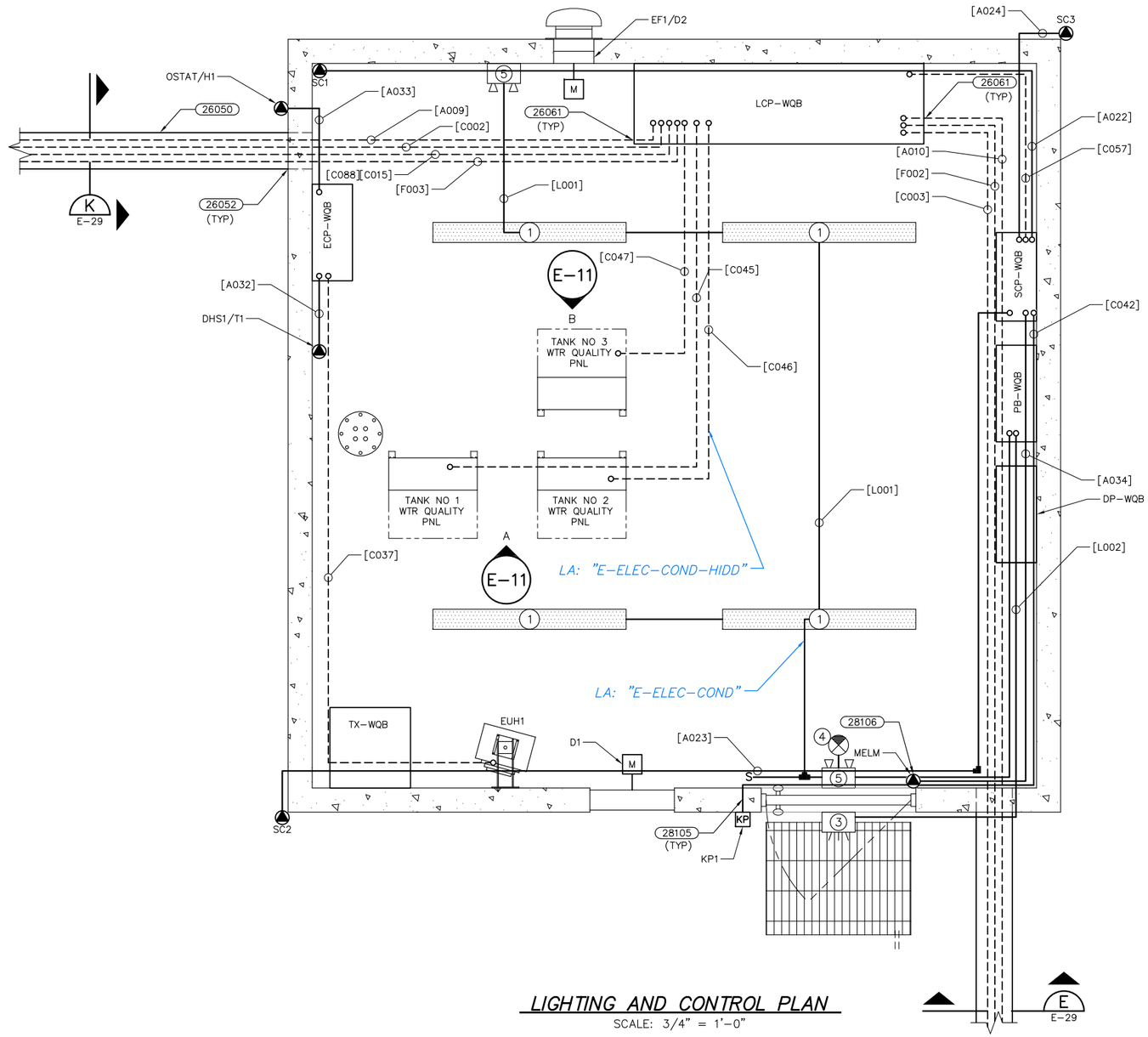
EXAMPLE

BLOCKS USED:

LA: "E-CONT-DEVC"
DYN BLK: "DIAGONAL-CONNECTION"(3)

LA: "E-CONT-DEVC"
BLK: "ELEC_INSTRUMENT-DEVICE-ETC"

KP LA: "E-CONT-DEVC"
BLK: "ELEC_KEYPAD"



LIGHTING AND CONTROL PLAN

SCALE: 3/4" = 1'-0"

■ – INDICATES DRAFTER INPUT REQUIRED

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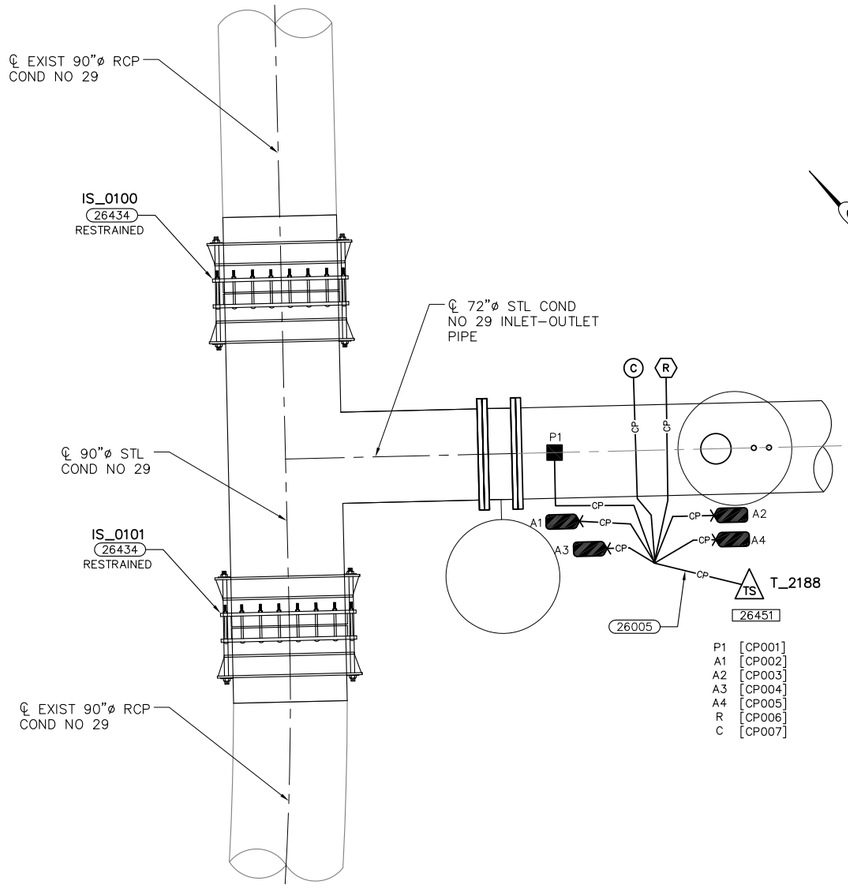
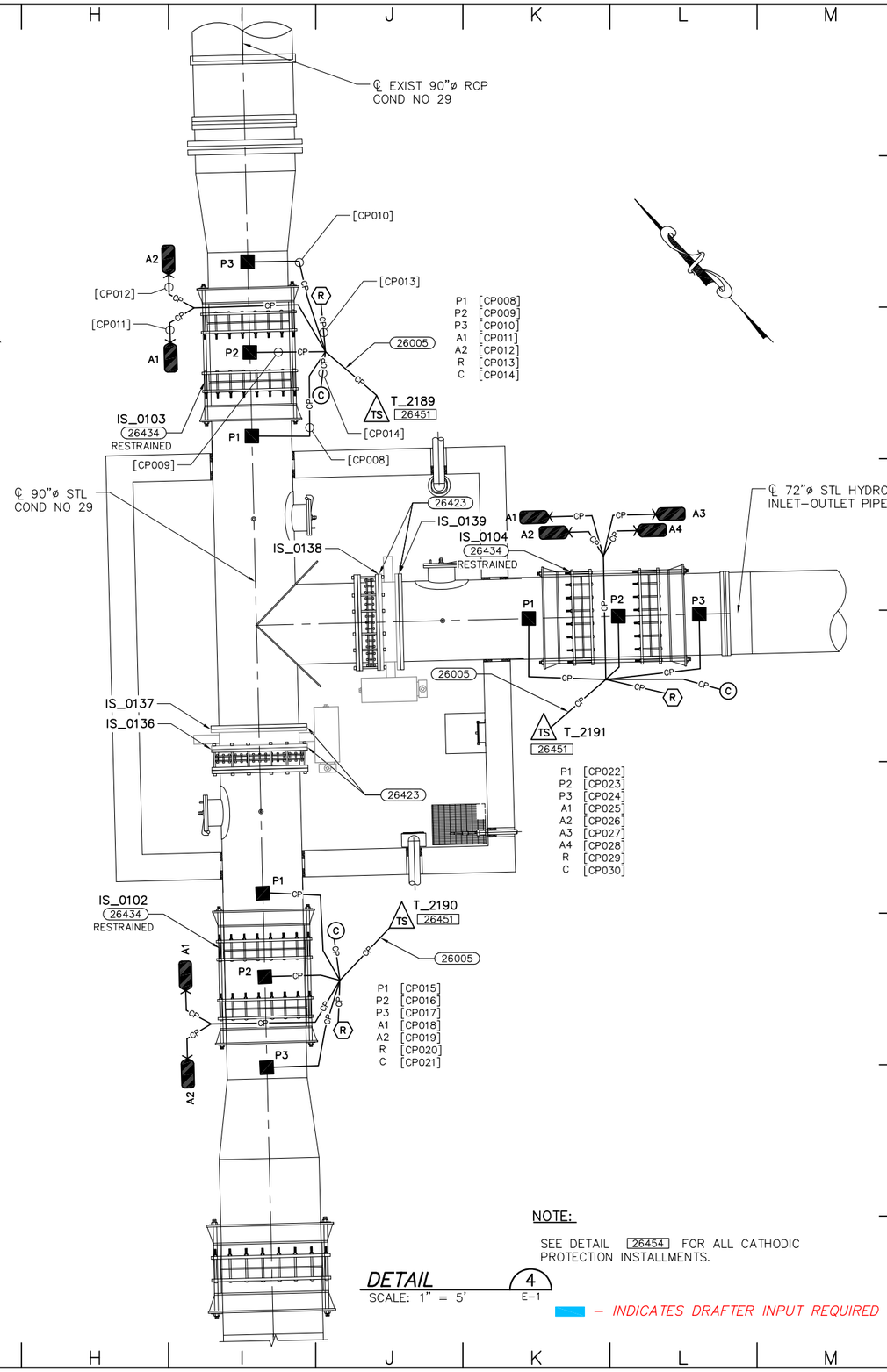
CAPITAL PROJECTS_ELEC PLAN VIEW – LIGHTING & CONTROL

EXAMPLE



DETAIL 3
SCALE: 1" = 5' E-1



DETAIL 4
SCALE: 1" = 5' E-1

BLOCKS USED:

- T_xxxx — *TEST STATION (AT GRADE)*
- T_xxxx — *TEST STATION (POST)*
- *48# MAGNESIUM ANODE*
- *SAMPLE COUPON*
- T_xxxx — *TEST STATION IDENTIFICATION NUMBER*
- IS_xxxx — *INSULATED FLANGE OR COUPLING IDENTIFICATION NUMBER*
- *PERMANENT $CuCuSO_4$ REFERENCE ELECTRODE*

NOTE:

SEE DETAIL 26454 FOR ALL CATHODIC PROTECTION INSTALLMENTS.

— INDICATES DRAFTER INPUT REQUIRED

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CAPITAL PROJECTS ELEC CATHODIC PROTECTION

EXAMPLE

NOTES:

1 AN "*" INDICATES THAT PARTIAL CONDUIT RUNS MAY BE SHARED BY CONDUCTORS & CABLES. ALL CONDUIT, CONDUCTORS AND CABLE SIZES & TYPES SHALL BE APPROVED BY THE ENGINEER. CONDUIT, CONDUCTOR AND CABLE SIZES, LENGTHS & TYPES ARE ESTIMATED ACCEPTABLE MINIMUMS.

2 P## - REPRESENTS POWER
C## - REPRESENTS CONTROL AND COMMUNICATIONS
A## - ANALOG
L## - LIGHTING & RECEPTACLE
F## - FIBER OPTIC
CP# - CORROSION PROTECTION

3 SHADED ROWS INDICATE EXISTING EQUIPMENT, NOT REQUIRING WORK; ALL UN-SHADED FIELDS INDICATE FINAL CONFIGURATION FOLLOWING WORK

4 PLEASE SEE THE CONDUIT AND CONDUCTORS NOTES SECTION IN SPECIFICATION 26 05 33, RACEWAYS FOR FURTHER DETAILS

POWER

No	CONDUIT SIZE	CONDUIT TYPE	CONDUCTORS & CABLES	SOURCE	LENGTH	DESTINATION	VOLTAGE	COMMENTS
[P119]	1	PVC-RGS	1 MANUFACTURER CABLE	SEPC20-05		SEP20-05	208V	
[P120]	1	PVC-RGS	1 MANUFACTURER CABLE	SEPC20-06		SEP20-06	208V	
[P121]	1	PVC-RGS	2#12, 1#12GND XHHW-2	ECP-WQB		D1	120V	POWER TO DAMPER D2 FROM ECP-WQB
[P122]	1.5"	PVC-RGS	4#1, 1#8GND XHHW-2	TX-WQB		DS-TX-WQB	208V	
[P123]	1.5"	PVC-RGS	4#1, 1#8GND XHHW-2	DS-TX-WQB		PB-WQB	208V	
[P124]	2.0"	PVC-RGS	EMPTY WITH PULL STRING	EXIST EHH1		EHH2		
[P125]	2.0"	PVC-RGS	EMPTY WITH PULL STRING	WQB		EHH7		

CONTROL & COMMUNICATIONS

No	CONDUIT SIZE	CONDUIT TYPE	CONDUCTORS & CABLES	SOURCE	LENGTH	DESTINATION	VOLTAGE	COMMENTS
[C001]	1.5"-0.75"	PVC-RGS	(1) TYPE1(25 #14) -3#14 XHHW-2	LCP-VLT7		LSH20-01		TANK NO 1 VIA VLT4-JBC
[C002]	2"-1"	PVC-RGS	1TYPE 2(25#14) -2#14 XHHW-2	LCP-WQB		LSH20-02		PVC CONDUIT IN DUCTBANK
[C003]	2.5"-1"	PVC-RGS	(2) TYPE1(19#14), (1)TYPE2(25#14) -2#14 XHHW-2	LCP-WQB		LSH20-03		(2) TYPE1 IN SECTION F AND (1) TYPE2 IN SECTION O
[C004]	*[C001]-1"	PVC-RGS	2#14 XHHW-2	LCP-VLT7		ZS20-01-(1-5)		TANK NO 1 VIA VLT4-JBC
[C005]	*[C002]-1"	PVC-RGS	2#14 XHHW-2	LCP-WQB		ZS20-02-(1-5)		TANK NO 2 VIA VLT5-JBC
[C006]	*[C003]-0.1"	PVC-RGS	2#14 XHHW-2	LCP-WQB		ZS20-03-(1-5)		TANK NO 3 VIA VLT6-JBC
[C007]	*[C001]-1"	PVC-RGS	11#14 XHHW-2	LCP-VLT7		FV20-01-01		(VAULT NO 4)
[C008]	1.5"-0.75"	PVC-RGS	11#14 XHHW-2	LCP-VLT7		FV20-01-02		(VAULT NO 1) VIA VLT1-JBP
[C009]	*[C002]-0.75"	PVC-RGS	11#14 XHHW-2	LCP-WQB		FV20-02-01		(VAULT NO 5)
[C010]	*[C003]-2"-0.7	PVC-RGS	(2) TYPE1(19#14) -11#14 XHHW-2	LCP-WQB		FV20-02-02		ONE TO VLT2-JBC AND ONE TO VLT3-JBC
[C011]	*[C003]-0.75"	PVC-RGS	11#14 XHHW-2	LCP-WQB		FV20-03-01		(VAULT NO 6)
[C012]	*[C010]-0.75"	PVC-RGS	11#14 XHHW-2	LCP-WQB		FV20-03-02		(VAULT NO 3)
[C013]	0.75"	PVC-RGS	11#14 XHHW-2	LCP-VLT7		FV20-04		(VAULT NO 7)
[C014]	0.75"	PVC-RGS	11#14 XHHW-2	LCP-VLT7		FV20-05		(VAULT NO 7)
[C015]	2.5"	PVC-RGS	(2) TYPE 2 (25#14)	LCP-WQB		LCP-WQSP		VAULT NO 5
[C016]	*[C008]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-VLT7		SEPC20-01		WOF TO PLC FROM VAULT NO 1
[C017]	*[C010]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-WQB		SEPC20-02		WOF TO PLC FROM VAULT NO 2
[C018]	*[C010]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-WQB		SEPC20-03		WOF TO PLC FROM VAULT NO 3
[C019]	*[C001]-1"	PVC-RGS	2#14 XHHW-2	LCP-VLT7		SEPC20-04		WOF TO PLC FROM VAULT NO 4
[C020]	*[C002]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-WQB		SEPC20-05		WOF TO PLC FROM VAULT NO 5
[C021]	*[C003]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-WQB		SEPC20-06		WOF TO PLC FROM VAULT NO 6
[C022]	0.75"	PVC-RGS	2#14 XHHW-2	LCP-VLT7		SEPC20-07		WOF TO PLC FROM VAULT NO 7
[C023]	*[C008]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-VLT7		ZS20-01		VAULT NO 1 INTRUSION
[C024]	*[C010]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-WQB		ZS20-02		VAULT NO 2 INTRUSION
[C025]	*[C010]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-WQB		ZS20-03		VAULT NO 3 INTRUSION
[C026]	*[C001]-1"	PVC-RGS	2#14 XHHW-2	LCP-VLT7		ZS20-04		VAULT NO 4 INTRUSION
[C027]	*[C002]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-WQB		ZS20-05		VAULT NO 5 INTRUSION
[C028]	*[C003]-0.75"	PVC-RGS	2#14 XHHW-2	LCP-WQB		ZS20-06		VAULT NO 6 INTRUSION
[C029]	0.75"	PVC-RGS	2#14 XHHW-2	LCP-VLT7		ZS20-07		VAULT NO 7 INTRUSION
[C030]	1.0"	PVC-RGS	2#14 XHHW-2	LCP-WQSP		FS20-01		
[C031]	1.0"	PVC-RGS	2#14 XHHW-2	LCP-WQSP		FS20-02		
[C032]	1.0"	PVC-RGS	2#14 XHHW-2	LCP-WQSP		FS20-03		
[C033]	1.0"	PVC-RGS	2#14, 1#14 GND XHHW-2	MS-EF8		ZS20-07		
[C035]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	ECP-VLT5		ZS20-05		
[C036]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	ECP-VLT5		EUH2		
[C037]	1.0"	PVC-RGS	2#14, 1#14 GND XHHW-2	ECP-WQB		EUH1		
[C038]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-01		LSL20-01-01		VAULT NO 1
[C039]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-01		LSH20-01-02		VAULT NO 1
[C040]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-01		LSH20-01-02		VAULT NO 1 (WOF)
[C041]	1.0"	PVC-RGS	2#18 XHHW-2	SCP GATE		GATE OPERATOR		
[C042]	0.75"	RGS	4#18 XHHW-2	SCP WQB		DOOR 1		
[C043]								
[C044]	0.75"	RGS	CAT 5E	PLC IN LCP-WQB		ETHERNET SW IN LCP-WQB		
[C045]	1.0"	PVC-RGS	CAT 5E	LCP-WQB		WQMS NO 1		RJ45 CONNECTORS
[C046]	1.0"	PVC-RGS	CAT 5E	LCP-WQB		WQMS NO 2		RJ45 CONNECTORS
[C047]	1.0"	PVC-RGS	CAT 5E	LCP-WQB		WQMS NO 3		RJ45 CONNECTORS
[C048]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-02		LSL20-02-01		VAULT NO 2
[C049]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-02		LSH20-03-02		VAULT NO 2
[C050]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-02		LSH20-02-02		VAULT NO 2 (WOF)
[C051]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-03		LSL20-03-01		VAULT NO 3
[C052]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-03		LSH20-03-02		VAULT NO 3
[C053]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-03		LSH20-03-02		VAULT NO 3 (WOF)
[C054]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-04		LSL20-04-01		VAULT NO 4
[C055]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-04		LSH20-04-02		VAULT NO 4
[C056]	0.75"	PVC-RGS	2#14, 1#14 GND XHHW-2	SEPC20-04		LSH20-04-02		VAULT NO 4 (WOF)
[C057]	1.0"	PVC-RGS	CAT 5E	SCP-WQB		ETHERNET SW IN LCP-WQB		
[C072]	0.75"	PVC-RGS	MANUFACTURER CABLES	SEPC20-05		LSL20-05-01		VAULT NO 5
[C073]	0.75"	PVC-RGS	MANUFACTURER CABLES	SEPC20-05		LSH20-05-02		VAULT NO 5
[C074]	0.75"	PVC-RGS	MANUFACTURER CABLES	SEPC20-05		LSH20-05-02		VAULT NO 5 (WOF)
[C075]	0.75"	PVC-RGS	MANUFACTURER CABLES	SEPC20-06		LSL20-06-01		VAULT NO 6
[C076]	0.75"	PVC-RGS	MANUFACTURER CABLES	SEPC20-06		LSH20-06-02		VAULT NO 6
[C077]	0.75"	PVC-RGS	MANUFACTURER CABLES	SEPC20-06		LSH20-06-02		VAULT NO 6 (WOF)
[C078]	1.25	PVC-RGS	(4) MANUFACTURER CABLES	SEPC20-07		LSL/LSH/LSHH20-07		VAULT NO 7 SUBMERSIBLE EFL PUMP LEVEL SW
[C079]	0.75	PVC-RGS	6#14, 1#14 GND XHHW-2	SEPC20-07		LCP-VLT7		LSHH AND OVERLOAD ALARMS
[C080]	0.75"	PVC-RGS	(1) MANUFACTURER CABLES	LCP-VLT7		WOF-VLT7		VAULT NO 7 WATER-ON-FLOOR ALARM
[C081]	0.75"	PVC-RGS	CAT 5E	PLC IN LCP-VLT7		ETHERNET SW IN LCP-WQB		
[C082]	1.5"	PVC-RGS	PULL-STRING	EHH9		SECURITY GATE		
[C083]	1.5"	PVC-RGS	PULL-STRING	EHH9		VAULT NO 1		
[C084]	1.5"	PVC-RGS	PULL-STRING	EHH8		VAULT NO 4		
[C085]	2.0"	PVC-RGS	PULL-STRING	EHH8		VAULT NO 7		
[C086]	2	PVC-RGS	PULL-STRING	EHH6		EHH7		
[C087]	2	PVC-RGS	PULL-STRING	EHH8		EHH7		
[C088]	2	PVC-RGS	PULL-STRING	LCP-WQB		EHH7		
[C089]	1.0"	PVC-RGS	2#14, 1#14 GND XHHW-2	MS-EF2		ZS20-01		
[C090]	1.0"	PVC-RGS	2#14, 1#14 GND XHHW-2	MS-EF3		ZS20-02		
[C091]	1.0"	PVC-RGS	2#14, 1#14 GND XHHW-2	MS-EF4		ZS20-03		
[C092]	1.0"	PVC-RGS	2#14, 1#14 GND XHHW-2	MS-EF5		ZS20-04		
[C093]	1.0"	PVC-RGS	2#14, 1#14 GND XHHW-2	MS-EF7		ZS20-06		
[C094]	1.0"	PVC-RGS	CAT 5E	EXIST PLC IN PS		ETHERNET SW IN EXIST PS		

COPY FROM "EXCEL" FILE, HOME TAB: IN PAPER SPACE "PASTE SPECIAL", THEN PICK "PICTURE (ENHANCED METAFILE)". ONCE IN, SCALE BY 15% (1.15). CENTER ON PAGE, MOVE BOTTOM OF SCHEDULE TOWARDS RIGHT EDGE OF PAPER.

LA: "E-ANNO-DIMS" (PEN 1)

– INDICATES DRAFTER INPUT REQUIRED

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1600 West 12th Ave
Denver, Colorado 80204–3412
T: 303.628.6000
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denverwater.org

CONSULTANT

DENVER WATER ENGINEERING – DESIGN DRAFTING

DRAFTING STANDARDS FOR CAPTIAL PROJECTS

REFERENCE:
CAPITAL PROJECTS CONSTRUCTION STANDARDS 4th EDITION

THIS DRAWING IS BASED ON THE COORDINATE SYSTEM

No	Date	Description
△		
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△		
△		90% REVIEW
△		60% REVIEW
△		30% REVIEW

REVISIONS

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PT NO: "PROVIDED BY DPM"
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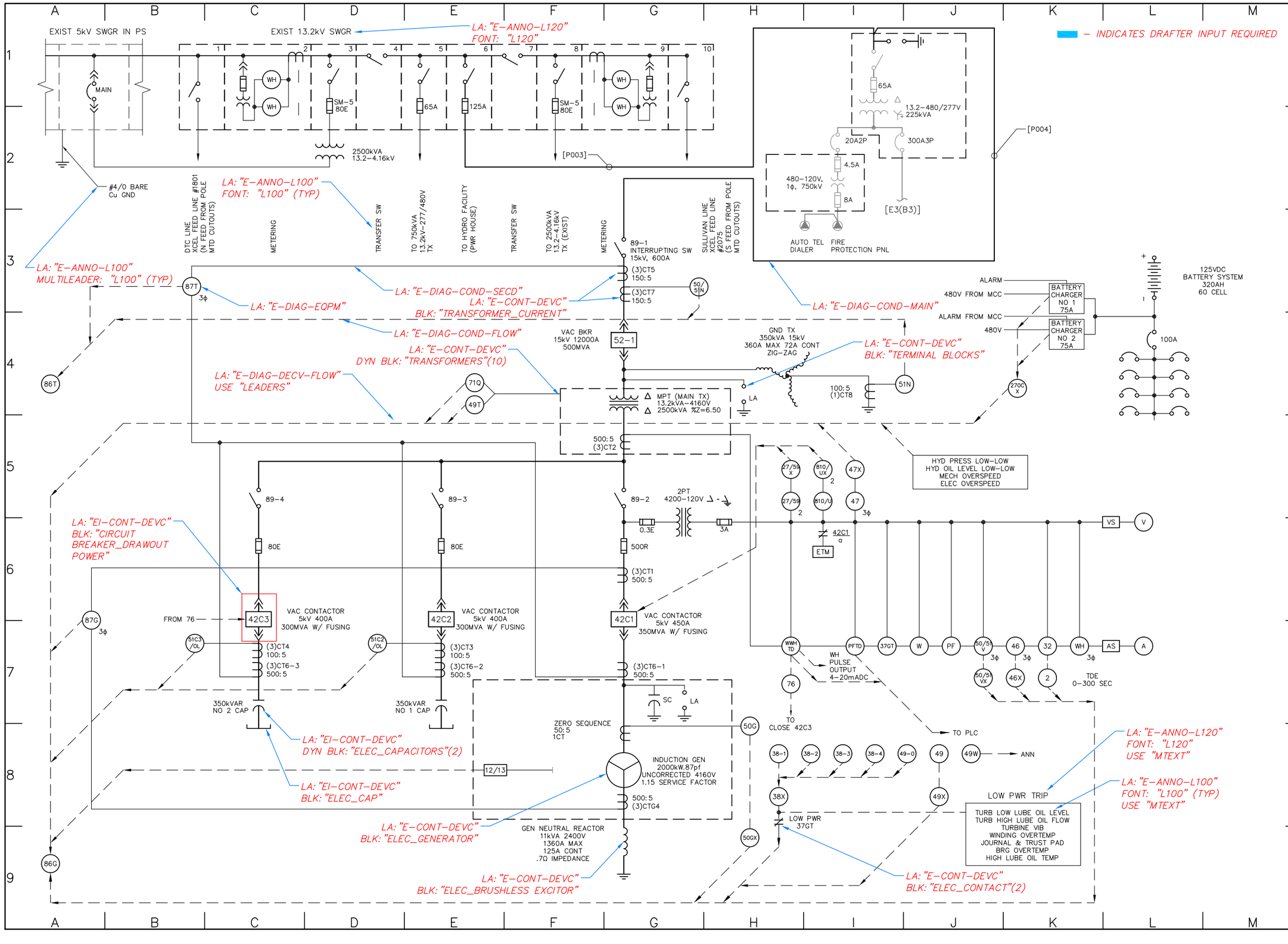
CHKD BY: "ENGINEER'S LAST NAME"
CHKD BY: "ENGINEERING MANAGER LAST NAME"
APPD BY:
DATE: "MONTH 4–DIGIT YEAR"
CONTRACT: "PROVIDED BY DPM"
AS–BUILT DATE:
AS–BUILT BY:

DRAWING TITLE

CAPITAL PROJECTS ELEC CONDUIT AND CONDUCTOR SCHEDULE

EXAMPLE



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CAPITAL PROJECTS ELEC ONE-LINE DIAGRAM

EXAMPLE

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