Farnsworth GROUP

APRIL 2020

CITY OF BRIGHTON
SOUTH PLATTE WELLS TRANSMISSION PROJECT
BRIGHTON, CO

LOCATION MAP

CONTROL STATEMENT:

HORIZONTAL DATUM:
HORIZONTAL PROJECT CONTROL IS BASED ON MODIFIED COLORADO STATE PLANE, CENTRAL ZONE (0502), NAD 83 (2011) COORDINATE SYSTEM VALUES SCALED FROM GRID TO GROUND. A COMBINED SCALE FACTOR OF 1.0001857907 WAS APPLIED TO STATE PLANE COORDINATES DERIVED FROM AN OPUS SOLUTION AT CONTROL POINT 801. CONTROL POINT 801 IS A RED PLASTIC CAP ON A 24" #5 REBAR LOCATED AT THE SOUTH SIDE OF SOUTH 21ST COURT, CITY OF BRIGHTON, COLORADO, AND ALL COORDINATE VALUES ARE RELATIVE THERETO. STATE PLANE COORDINATES, PRIOR TO APPLICATION OF GRID TO GROUND SCALE FACTOR, WERE VERIFIED AGAINST NATIONAL GEODETIC SOCIETY (NGS) PID KK1303. LINEAL UNITS IS U.S. SURVEY FOOT.

VERTICAL DATUM:
ELEVATIONS ARE BASED UPON THE NATIONAL GEODETIC SOCIETY (NGS) BENCHMARK PID KK1304, BEING A 3 ½" BRASS MONUMENT IN A 1.0' DIAMETER SLEEVE.
ELEVATION: 4997.68 (NAVD 88)

PROJECT NO.: 0181377.00

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OWNER:
CITY OF BRIGHTON
500 SOUTH 4TH
BRIGHTON, CO 80601
303-655-2034

ENGINEER:
FARNSWORTH GROUP, INC.
1612 SPECHT POINT ROAD,
SUITE 105
FORT COLLINS, CO 80525
970-484-7477
970-484-7488 (FAX)

SURVEYOR:
FARNSWORTH GROUP, INC.
1612 SPECHT POINT ROAD,
SUITE 105
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CITY OF BRIGHTON SIGNATURE BLOCK:

CONSTRUCTION MUST BE IN ACCORDANCE WITH APPLICABLE CITY OF BRIGHTON CONSTRUCTION STANDARDS. THE CITY'S ACCEPTANCE ALLOWS FOR PLAN DISTRIBUTION AND PERMIT APPLICATION. THE CITY'S ACCEPTANCE SHALL NOT RELIEVE THE DESIGN ENGINEER'S RESPONSIBILITY FOR ERRORS, OMISSIONS, OR DESIGN DEFICIENCIES FOR WHICH THE CITY IS HELD HARMLESS.

ACCEPTED BY: ______________________ ____________
CITY ENGINEER DATE

DATE: APRIL 2020

UTILITY CONTACTS

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811 Know what's below. Call before you dig.

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

ABBREVIATIONS

UNIT ABBREVIATIONS

AC	ACRE
CU	CUBIC
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CY	CUBIC YARD
OF	DEGREE FAHRENHEIT
EA	EACH
FT	FEET OR FOOT
IN.	INCHES
LBS	POUNDS
PSF	POUNDS PER SQUARE FEET
PSI	POUNDS PER SQUARE INCH
Q	FLOW RATE
SF	SQUARE FEET
SY	SQUARE YARD

&	AND
~	APPROXIMATE
@	AT
°	DEGREE
#	NUMBER
%	PERCENT
±	PLUS OR MINUS
AGG	AGGREGATE
ALT	ALTERNATE
APPROX	APPROXIMATE
AVE.	AVENUE
BC	BACK OF CURB
BLVD.	BOULEVARD
BM	BENCH MARK
BMP	BEST MGMT. PRACTICE
BOT	BOTTOM
BW	BACK OF WALK
C & G	CURB AND GUTTER
C to C	CENTER TO CENTER
CIP	CAST-IN-PLACE
CL	CENTERLINE
CMP	CORRUGATED METAL PIPE
CONC	CONCRETE
CS	COMBINED SEWER
CT.	COURT
CTR	CENTER
CULV	CULVERT
DEPT	DEPARTMENT
DIA	DIAMETER
DR.	DRIVE
DT	DRAIN TILE
DWG	DRAWING
DWGS	DRAWINGS
E	EAST
EL	ELEVATION
ELE	ELEVATION
ELEV	ELEVATION
EQ	EQUAL
EXP	EXPANSION
EXST	EXISTING
FF	FINISH FLOOR ELEVATION
FG	FRAME AND GRATE
FH	FIRE HYDRANT
FIN	FINISH
FL	FLOW LINE
FLR	FLOOR
FM	FORCE MAIN
FTG	FOOTING
G	GROUND ELEVATION
GALV	GALVANIZED
GV	GATE VALVE
HDWL	HEADWALL
HMA	HOT MIX ASPHALT
HORIZ	HORIZONTAL
HW	HIGH WATER
HWY	HIGHWAY
ID	INSIDE DIAMETER
CDOT	COLORADO DEPARTMENT OF TRANSPORTATION
JT	JOINT
LAT	LATITUDE
LF	LINEAR FEET
LONG	LONGITUDE
LS	LUMP SUM
LT	LEFT
MAX	MAXIMUM
MES	METAL END SECTION
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
N	NORTH
NO.	NUMBER
NTS	NOT TO SCALE
OD	OUTSIDE DIAMETER
P	PAVEMENT ELEVATION
PC	POINT OF CURVATURE
PL	PROPERTY LINE
POC	POINT OF CURVE
POI	POINT OF INTERSECTION
POT	POINT OF TANGENT
PRELIM	PRELIMINARY
PROP	PROPERTY
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENT
QTY	QUANTITY
R	RADIUS
RAD	RADIUS
RC	REVERSE CURVE
RCP	REINF. CONCRETE PIPE
RD	ROAD
REINF	REINFORCED
RET	RETAINING
ROW	RIGHT-OF-WAY
RR	RAILROAD
RT	RIGHT
S	SOUTH
SA	SANITARY SEWER
SECT	SECTION
SHT	SHEET
SPCL	SPECIAL
ST	STORM SEWER
ST.	STREET
STA	STATION
STD	STANDARD
TBD	TO BE DETERMINED
TBF	TRENCH BACKFILL
TC	TOP OF CURB ELEVATION
TRW	TOP RET. WALL ELEVATION
TW	TOP OF WALK ELEVATION
TY	TYPE
TYP	TYPICAL
VC	VERTICAL CURVE
VERT	VERTICAL
W	WEST
WM	WATER MAIN

1 **PROJECT CONTROL MAP**

SCALE: 1"=800'

0 400 800 1600 U.S. SURVEY FEET

NORTH

SYMBOL LEGEND

NOTE: NOT ALL SYMBOLS ARE USED IN CONSTRUCTION DOCUMENTS

EXISTING CONDITIONS

- BENCHMARK
- CONTROL POINT
- PK NAIL
- IRON PIPE
- RIGHT-OF-WAY MARKER
- BOLLARD
- BORE HOLE
- SIGN
- MAILBOX
- SATELLITE
- FLOW LINE
- DECIDUOUS TREE W/ SIZE
- EVERGREEN TREE W/ SIZE
- UTILITY DOWN GUY
- UTILITY POLE
- UTILITY POLE DROP
- UTILITY POLE + TRANSFORMER
- TRAFFIC HANDLE BOX
- COMMUNICATION BOX
- ELECTRICAL HANDLE BOX
- ELECTRICAL METER
- LOT LIGHT
- STREET LIGHT
- TRAFFIC SIGNAL MAST ARM
- 8"SA — UTILITY LINE (UTILITY SIZE/TYPE DESIGNATOR, SEE ABBREVIATIONS)
- SANITARY MANHOLE
- SEWER CLEANOUT
- GAS METER
- GAS MARKER
- STORM INLET (CURB TYPE)
- STORM INLET (GRATE TYPE)
- STORM INLET (MANHOLE TYPE)
- STORM MANHOLE
- FIRE HYDRANT
- YARD HYDRANT
- SHUTOFF VALVE
- VALVE
- (R) RECORD INFORMATION
- PROPERTY LINE
- RIGHT-OF-WAY
- FENCE LINE
- 755 CONTOUR LINE MAJOR
- 756 CONTOUR LINE MINOR
- BUILDING LINE

NEW DEVELOPMENT

- SILT FILTER FENCE
- DITCH CHECK
- CONCRETE CURB & GUTTER TYPE PER PLAN, REGULAR PAN
- CONCRETE CURB & GUTTER TYPE PER PLAN, INVERTED PAN
- INLET PROTECTION
- NO. REGULAR PARKING SPACES PROVIDED
- ADJUST UTILITY TO FINISH GRADE
- FLOOD ROUTE
- FLOW LINE
- PIPE BOLLARD
- UTILITY POLE
- UTILITY POLE DROP
- UTILITY POLE + TRANSFORMER
- LIGHT POLE
- WALL-MOUNTED LIGHT
- HANDICAP PARKING SIGN
- SAW CUT LINE
- LOD — APPROXIMATE LIMITS OF DEVELOPMENT
- UTILITY REMOVAL
- ABANDONED UTILITY
- SITE ELEMENT REMOVAL
- 8"SA — UTILITY LINE (UTILITY SIZE/TYPE DESIGNATOR, SEE ABBREVIATIONS)
- SANITARY MANHOLE
- FLARED END SECTION
- BUILDING DOWNSPOUT
- STORM/SANITARY CLEANOUT
- STORM INLET (CURB TYPE)
- STORM INLET (GRATE TYPE)
- STORM INLET (MANHOLE TYPE)
- STORM MANHOLE
- FIRE HYDRANT
- REDUCER
- VALVE
- WATER METER
- TAPPING SLEEVE, VALVE & BOX
- PERMANENT/ CONSTRUCTION EASEMENT
- FENCE LINE
- 755 CONTOUR LINE MAJOR
- 756 CONTOUR LINE MINOR
- BUILDING LINE

REMOVAL HATCH

- CONCRETE REMOVAL
- ASPHALT REMOVAL
- SIDEWALK REMOVAL
- BRICK REMOVAL
- ROCK REMOVAL
- TOP SOIL/CLEARING AND GRUBBING REMOVAL
- 24" TREE/BUSH REMOVAL

NEW DEVELOPMENT HATCH

- SIDEWALK TYPE SPECIAL
- STANDARD P.C. CONCRETE PAVEMENT
- HEAVY DUTY P.C. CONCRETE PAVEMENT
- STANDARD HOT MIX ASPHALT PAVEMENT
- HEAVY DUTY HOT MIX ASPHALT PAVEMENT
- 8" COMPACTED AGG BASE CSE, TYPE B
- STONE RIP-RAP
- EROSION CONTROL BLANKET
- DOORWAY THRESHOLD

Farnsworth GROUP

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Engineers | Architects | Surveyors | Scientists

ISSUE:

#	DATE:	DESCRIPTION:
1	8/29	FIRST SUBMITTAL TO CITY
2	11/5	SECOND SUBMITTAL TO CITY
3	04/3	FINAL SUBMITTAL

PROJECT:

CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:

GENERAL INFORMATION

SHEET NUMBER:

G1

PROJECT NO.: 0181377.00

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EROSION & SEDIMENT CONTROL NOTES

CITY OF BRIGHTON STANDARD EROSION & SEDIMENT CONTROL NOTES

1. LANDOWNERS AND/OR CONTRACTORS ARE RESPONSIBLE FOR OBTAINING A PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES FROM THE COLORADO DEPARTMENT OF HEALTH & ENVIRONMENT (CDPHE), AT LEAST TEN (10) DAYS PRIOR TO THE START OF CONSTRUCTION ACTIVITIES IF CONSTRUCTION ACTIVITIES WILL DISTURB 1 (ONE) OR MORE ACRES OF LAND, OR IF THE PROJECT BELONGS TO A COMMON PLAN OF DEVELOPMENT THAT WILL DISTURB 1 (ONE) OR MORE ACRES. IN THE EVENT THAT LOT/PARCEL, WHICH BELONGS A COMMON PLAN OF DEVELOPMENT THAT DISTURBED 1 (ONE) OR MORE ACRES, IS SOLD THEN THE NEW LANDOWNER AND/OR CONTRACTOR IS RESPONSIBLE FOR OBTAINING PERMIT COVERAGE FOR THAT LOT/PARCEL.

2. LANDOWNERS AND/OR CONTRACTORS ARE RESPONSIBLE FOR OBTAINING AN EROSION & SEDIMENT CONTROL (ESC) PERMIT FROM THE CITY OF BRIGHTON IF CONSTRUCTION ACTIVITIES WILL DISTURB 1 (ONE) OR MORE ACRES OF LAND, OR IF THE PROJECT BELONGS TO A COMMON PLAN OF DEVELOPMENT THAT WILL DISTURB 1 (ONE) OR MORE ACRES.

3. THE PERMITTED LANDOWNER AND/OR CONTRACTOR MUST KEEP A COPY OF THE CDPHE'S STORMWATER DISCHARGE PERMIT, CITY'S ESC PERMIT, EROSION AND SEDIMENT CONTROL PLAN (ESCP) ALSO KNOWN AS STORMWATER MANAGEMENT PLAN (SWMP) AND EROSION AND SEDIMENT CONTROL INSPECTION LIST (ESCIL) OR INSPECTION LOG AVAILABLE ON-SITE THROUGHOUT THE DURATION OF THE PROJECT, AND FOR AN ADDITIONAL THREE (3) YEARS AFTER THE PERMIT INACTIVATION FORM IS FILED WITH THE STATE.

4. THE PERMITTED LANDOWNER AND/OR CONTRACTOR MAY INACTIVATE THE STATE AND CITY PERMIT WHEN FINAL STABILIZATION IS REACHED AS LONG AS ALL SOIL DISTURBING ACTIVITIES AT THE SITE HAVE BEEN COMPLETED AND A UNIFORM VEGETATIVE COVER HAS BEEN ESTABLISHED WITH A DENSITY OF AT LEAST 70 PERCENT OF PRE-DISTURBANCE LEVELS, OR EQUIVALENT PERMANENT, PHYSICAL EROSION REDUCTION METHODS HAVE BEEN EMPLOYED.

5. THE PERMITTED LANDOWNER AND/OR CONTRACTOR MUST PERFORM INSPECTIONS OF ALL BEST MANAGEMENT PRACTICES (BMPS) EVERY 14 DAYS AND ALSO AFTER ANY SIGNIFICANT STORM EVENT (RAIN OR SNOWMELT) THAT MAY CAUSE EROSION TO ENSURE THAT BMPS ARE FUNCTIONING PROPERLY. ESCIL (OR INSPECTION LOGS) MUST BE KEPT WITH THE ESCP/SWMP. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IN IMMEDIATELY.

6. ALL CONSTRUCTION PROJECTS (WHETHER THEY DISTURB LESS OR MORE THAN 1 (ONE) ACRE) SHALL INSTALL, MAINTAIN AND REPAIR EROSION AND SEDIMENT CONTROL BMPS ACCORDING TO THE ESCP/SWMP AND/OR EROSION CONTROL PLAN (CIVIL DRAWING) TO ASSURE THEY CONTINUE PERFORMING AS ORIGINALLY INTENDED. BMPS MUST BE INSTALLED PRIOR TO GRADING OR LAND DISTURBING ACTIVITIES.

7. ALL BMPS SHALL CONFORM TO THE URBAN DRAINAGE FLOOD CONTROL CRITERIA MANUAL VOLUME 3 AND CITY OF BRIGHTON STANDARD AND SPECIFICATION MANUAL.

8. LANDOWNERS AND/OR CONTRACTORS MUST ENSURE THAT VEHICLES DO NOT TRACK EARTH MATERIALS ONTO STREETS AND MUST IMMEDIATELY REMOVE SUCH MATERIALS IF THIS OCCURS. EITHER SWEEPING BY HAND OR THE USE OF STREET SWEEPERS IS ACCEPTABLE. FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.

9. ALL LOADS OF CUT AND FILL MATERIAL IMPORTED TO OR EXPORTED FROM THE SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORTATION ON PUBLIC ROW.

10. THE USE OF DIRT RAMPS IS PROHIBITED. A ROCK PAD ENTRANCE MUST BE INSTALLED WHERE CONSTRUCTION VEHICLES NEED TO ENTER OR EXIT FROM AN UNPAVED AREA INTO A PAVED ROAD.
500 S 4TH AVE BRIGHTON CO, 80601 – PH: 303-655-2000

11. LANDOWNERS AND/OR CONTRACTORS ARE RESPONSIBLE FOR CONTROLLING WASTE SUCH AS DISCARDING BUILDING MATERIALS, CONCRETE TRUCK WASHOUT, CHEMICALS, LITTER AND SANITARY WASTE, AS APPLICABLE.

12. WASTE COLLECTION AREAS MUST BE LOCATED AWAY FROM THE STORM DRAINAGE SYSTEM. DUMPSTERS MUST BE COVERED TO CONTAIN WINDBLOWN MATERIALS.

13. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED. ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS OCCUR MUST BE PROTECTED.

14. WATER USE TO CLEAN CONCRETE TRUCKS SHALL BE DISCHARGED INTO A CONCRETE WASHOUT AREA (CWA). THE PREDEFINED CONTAINMENT AREA MUST BE IDENTIFIED WITH A SIGN, AND SHALL ALLOW THE LIQUIDS TO EVAPORATE OR DRY OUT. DRIED OUT CONCRETE WASTE SHALL BE REMOVED AND PROPERLY DISPOSED OF.

15. THE DISCHARGE OF SANITARY WASTE INTO THE STORM SEWER SYSTEM IS PROHIBITED. PORTABLE TOILETS MUST BE PROVIDED AND PLACED ON PERMEABLE SURFACES, AWAY FROM THE CURBSIDE, STORM INLETS AND/OR DRAINAGE WAYS.

16. SPILL PREVENTION AND CONTAINMENT BMP'S FOR CONSTRUCTION MATERIALS, WASTE AND FUEL STORAGE AREAS MUST BE PROVIDED. SPILLS THAT MAY REACH THE STORM SEWER SYSTEM MUST BE REPORTED ACCORDING TO FEDERAL, STATE AND CITY OF BRIGHTON REGULATIONS.

17. STORM INLETS WITHIN AND/OR ADJACENT TO THE CONSTRUCTION SITE MUST BE PROTECTED. ANY PONDING OF STORMWATER AROUND INLET PROTECTION MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

18. RUNOFF FROM STOCKPILE AREA MUST BE CONTROLLED. SOILS THAT WILL BE STOCKPILED FOR MORE THAN 30 DAYS SHALL BE PROTECTED FROM WIND AND WATER EROSION WITHIN 14 DAYS OF STOCKPILE CONSTRUCTION.

19. NATURAL VEGETATION SHALL BE PRESERVED AND PROTECTED WHENEVER POSSIBLE. REMOVAL OR DISTURBANCE OF EXISTING VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS. DISTURBED AREAS THAT MAY NOT BE AT FINAL GRADE BUT WILL REMAIN DORMANT (UNDISTURBED) FOR LONGER THAN 30 DAYS MUST BE STABILIZED WITHIN 14 DAYS.

20. FUGITIVE DUST EMISSIONS RESULTING FROM GRADING ACTIVITIES AND/OR WIND SHALL BE CONTROLLED.

21. ALL TEMPORARY BMPS SHALL BE REMOVED AFTER THE SITE HAS REACHED FINAL STABILIZATION. THE STORMWATER VOLUME CAPACITY OF PONDS MUST BE RESTORED, AND STORM SEWER LINES AND/OR DRAINAGE INFRASTRUCTURE SHALL BE CLEANED UPON COMPLETION OF PROJECT.

22. CONDITIONS IN THE FIELD MAY WARRANT OTHER EROSION AND SEDIMENT CONTROL MEASURES IN ADDITION TO THE ONES SHOWN ON THE ESCP/SWMP AND/OR EROSION CONTROL PLAN (CIVIL DRAWING). THE LANDOWNER OR CONTRACTOR SHALL IMPLEMENT WHATEVER MEASURES ARE DETERMINED NECESSARY, AS DIRECTED BY THE CITY.

NOTE: THE BEST WAY TO PREVENT SEDIMENT OR POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM IS TO STABILIZE THE SITE AS QUICKLY AS POSSIBLE, PREVENTING EROSION AND STOPPING SEDIMENT RUN-OFF AT ITS SOURCE. DOCUMENT REVISED: 11/9/2011

GENERAL NOTES

CITY OF BRIGHTON GENERAL NOTES

FOLLOWING FINAL APPROVAL OF THE PLANS, THE CONTRACTOR MAY PROCEED WITH CONSTRUCTION. IN ADDITION TO ALL CONSTRUCTION REQUIREMENTS CONTAINED IN OTHER PORTIONS OF THESE STANDARDS, THE DEVELOPER AND HIS CONTRACTOR SHALL OBSERVE THE FOLLOWING:

A. PRIOR TO THE COMMENCEMENT OF WORK, A PRECONSTRUCTION CONFERENCE SHALL BE HELD BETWEEN PERSONNEL REPRESENTING THE BRIGHTON DEPARTMENT OF PUBLIC WORKS AND THE CONTRACTOR WHO IS SCHEDULED TO PERFORM THE WORK.

B. CONSTRUCTION SHALL COMMENCE WITHIN 6 MONTHS OF THE APPROVAL DATE SHOWN ON THE PLANS OR THE PLANS MUST BE RESUBMITTED FOR REVIEW AND RE-APPROVAL.

C. THE WORK SHALL BE SURVEYED AND STAKED UNDER THE SUPERVISION OF A LICENSED LAND SURVEYOR IN ACCORDANCE WITH THE APPROVED PLANS.

D. THE BRIGHTON DEPARTMENT OF PUBLIC WORKS SHALL BE NOTIFIED AT LEAST FORTY 48 HOURS PRIOR TO START OF WORK.

E. ADEQUATE PROVISIONS FOR NOTIFICATION OF CUSTOMERS WHO MAY EXPERIENCE A LOSS OF WATER OR SEWER SERVICES MUST BE DEVELOPED. SUCH OUTAGES SHALL BE KEPT TO A MINIMUM IN COMPLIANCE WITH THESE STANDARDS.

F. ALL WORK RELATING TO WATER AND SANITARY SEWER UTILITIES SHALL BE INSPECTED BY A DEPARTMENT OF PUBLIC WORKS INSPECTOR. MAINS WILL ONLY BE TAPPED AFTER HAVING BEEN INSTALLED TO THE SATISFACTION OF THE INSPECTOR, CHLORINATED, PRESSURE/CLEARWATER TESTED AND RELEASED BY THE DEPARTMENT OF PUBLIC WORKS. THE CONTRACTOR SHALL MAKE HIS OWN WATER TAPS ON NEW WATER MAINS INSTALLED BY THE CONTRACTOR PRIOR TO INTEGRATION WITH THE PRESENT CITY WATER SYSTEM, AND THE CITY SHALL NOT ASSESS ANY TAP CHARGE FOR THE SAME EXCEPT THAT THE OWNER SHALL PAY AN INSPECTION FEE AND THE COST OF THE WATER METER IN EFFECT AT THE TIME THE BUILDING PERMIT IS ISSUED, THE METER TO BE SUPPLIED BY THE CITY.

G. NO WORK SHALL COMMENCE UNTIL THE INSTALLING CONTRACTOR HAS AN APPROVED SET OF PLANS FROM THE BRIGHTON DEPARTMENT OF PUBLIC WORKS AND CURRENT SPECIFICATIONS IN HIS POSSESSION. THE CITY'S APPROVAL WILL BE FOR GENERAL CONFORMITY TO THE PLANS AND WILL NOT CONSTITUTE BLANKET APPROVAL OF ALL DIMENSIONS, QUANTITIES AND DETAILS OF THE MATERIAL OR EQUIPMENT SHOWN. NOR SHALL SUCH APPROVAL RELIEVE THE CONTRACTOR OR CONSULTING ENGINEER OF THIS RESPONSIBILITY FOR ERRORS CONTAINED IN THE DRAWINGS.

H. STREETS SHALL NOT BE PAVED UNTIL METER PIT LOCATIONS HAVE BEEN VERIFIED IN THE FIELD. NO PAVING PERMITS SHALL BE ISSUED UNTIL A RELEASE IS GIVEN BY THE BRIGHTON DEPARTMENT OF PUBLIC WORKS.

I. APPROVAL BY THE CITY SHALL IN NO MANNER RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR ERRORS OR OMISSIONS IN THE PLANS. ANY ERRORS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE BRIGHTON DEPARTMENT OF PUBLIC WORKS AND AT NO EXPENSE TO THE CITY.

J. WHERE A CONFLICT OCCURS BETWEEN OR WITHIN STANDARDS, SPECIFICATIONS, AND DRAWINGS, THE MORE STRINGENT OR HIGHER QUALITY REQUIREMENTS SHALL APPLY.

K. INSTALLATION OF ALL NEW FACILITIES IN BRIGHTON'S SERVICE AREA SHALL BE INSPECTED AND APPROVED BY A BRIGHTON DEPARTMENT OF PUBLIC WORKS INSPECTOR.

L. THE INSPECTOR SHALL SEE THAT MATERIALS ARE FURNISHED AND THE WORK IS PERFORMED IN ACCORDANCE WITH CITY DEPARTMENT OF PUBLIC WORKS APPROVED PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL FURNISH ALL REASONABLE AID AND ASSISTANCE REQUIRED BY THE CITY OR INSPECTOR FOR THE PROPER EXAMINATION OF THE MATERIAL AND WORK. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ACCEPTED WORKMANSHIP PRACTICES AND THESE ENGINEERING STANDARDS. ANY WORK NOT ACCEPTED BY THE INSPECTOR SHALL BE REDONE UNTIL COMPLIANCE WITH THESE STANDARDS IS ACHIEVED. INSTRUCTIONS GIVEN BY THE INSPECTOR RELATING TO QUALITY OF MATERIALS AND WORKMANSHIP MUST BE OBEYED AT ONCE BY THE CONTRACTOR. THE INSPECTOR SHALL NOT SUPERVISE NOR SET OUT WORK OR GIVE LINE AND GRADE STAKES. ALL MATERIALS USED SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE INSPECTOR AT ALL TIMES. THE INSPECTOR HAS THE RIGHT TO PERFORM ANY TESTING DEEMED NECESSARY TO ENSURE COMPLIANCE OF THE MATERIAL WITH THESE STANDARDS. NO MATERIAL SHALL BE USED BEFORE BEING INSPECTED AND APPROVED BY THE INSPECTOR. FAILURE OR NEGLECT ON THE PART OF THE INSPECTOR TO CONDEMN OR REJECT INFERIOR MATERIALS OR WORK SHALL NOT BE CONSTRUED TO IMPLY THEIR ACCEPTANCE SHOULD THEIR INFERIORITY BECOME EVIDENT AT ANY TIME PRIOR TO FINAL ACCEPTANCE OF THE WORK. INSPECTORS HAVE THE AUTHORITY TO REJECT DEFECTIVE OR INFERIOR MATERIALS AND/OR DEFECTIVE WORKMANSHIP AND TO SUSPEND WORK UNTIL SUCH TIME AS THE CONTRACTOR SHALL CORRECT THE DISCREPANCIES IN QUESTION. WHENEVER DEFECTIVE MATERIALS AND WORK ARE REJECTED, THE CONTRACTOR SHALL PROMPTLY REMOVE SUCH DEFECTIVE MATERIALS FROM THE JOB SITE AND REPLACE ALL DEFECTIVE PORTIONS TO THE SATISFACTION OF THE ENGINEER OR HIS REPRESENTATIVE. IN THE EVENT THE CONTRACTOR FAILS TO REMOVE REJECTED ITEMS FROM THE JOB SITE WITHIN A REASONABLE LENGTH OF TIME, THE ENGINEER MAY ARRANGE FOR SUCH REMOVAL AT THE EXPENSE OF THE CONTRACTOR. INSPECTION SHALL NOT RELIEVE THE CONTRACTOR FROM ANY OBLIGATION TO PERFORM THE WORK STRICTLY IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS OR ANY APPROVED MODIFICATIONS THEREOF. WORK NOT SO CONSTRUCTED SHALL BE REMOVED AND CORRECTED BY THE CONTRACTOR AT HIS SOLE EXPENSE, WHENEVER SO ORDERED BY THE ENGINEER, WITHOUT REFERENCE TO ANY PREVIOUS ERROR OR OVERSIGHT IN INSPECTION.

M. EXCEPT IN CASES OF EMERGENCY, AUTHORIZATION FROM THE CITY IN ADVANCE, MAINTENANCE OR PROTECTION OF WORK ALREADY DONE, NO WORK SHALL BE ALLOWED BETWEEN THE HOURS OF 5 P.M. AND 8 A.M. NOR ON SATURDAY, SUNDAY OR LEGAL HOLIDAYS UNLESS APPROVED BY THE ENGINEER IN EACH CASE. WHEN INSPECTORS ARE REQUIRED TO WORK OVERTIME, IT SHALL BE AT THE CONTRACTOR'S EXPENSE, PROVIDED, HOWEVER, SUCH INSPECTORS SHALL REMAIN EMPLOYEES OF THE CITY FOR ALL PURPOSES. FORTY-EIGHT HOURS NOTICE SHALL BE REQUIRED FOR REQUESTING ANY INSPECTION IN SERVICES OUTSIDE OF NORMAL BUSINESS HOURS. PAYMENT FOR SUCH OVERTIME WORK SHALL BE MADE BY CHECK TO THE CITY DEPARTMENT OF PUBLIC WORKS PRIOR TO FINAL ACCEPTANCE.

N. IN THE EVENT ONE OR MORE INSPECTORS REPRESENTING PRIVATE CONSULTING ENGINEERING FIRMS ARE ALSO INSPECTING A PROJECT, ALONG WITH CITY DEPARTMENT OF PUBLIC WORKS INSPECTORS, THE INSTRUCTIONS GIVEN BY THE DEPARTMENT OF PUBLIC WORKS SHALL PREVAIL IN THE EVENT OF CONFLICTING INSTRUCTIONS.

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2	11/5	SECOND SUBMITTAL TO CITY
3	04/3	FINAL SUBMITTAL

PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER:
G2

PROJECT NO.: 0181377.00

| jbwery | J:\2018\0181377.00 – Brighton Wells Transmission\04_Drawings\DWG\Sheets\Legend And Notes – 0181377.00.dwg | 3/27/2020 10:53 AM |

Pothole Number	Utility	Owner	Pipe Size	Material	Depth to Top (ft)	Notes
1	Raw Water	Brighton	16"	Steel	7.25	Found at 90° bend
1A	Raw Water	Brighton	16"	Steel	7.5	
3	Water	Brighton	12"	DI	7.1	
4	Electric	United Power	6"	PVC	3.65/3.85/3.90	Three Pipes
5	Water	Brighton				Not found
6	Water	Brighton	12"	Unknown	9.1	Thrust Block
7	FO	Comcast	2"	PE	2	
8	Gas	Xcel	2"	PE	3.9	
9	FO	Comcast				Not found by locator
10	Irrigation	Brighton	6"	PVC	1.3	
11	Electric	United Power	5"	PVC	5.5	
12	FO	Adams County	2"	PE	1.65	
13	Water	Brighton	12"	DI	6.7	No visual
14	Water	Brighton	8"	Steel	6.2	
15	Water	Brighton	12"	PVC	5.8	
16	FO	Brighton	2"	PE	5.2	
17	Electric	United Power	4"	PVC	4.2	
18	Water	Brighton	24"	PVC	6	
19	Electric	United Power	4"	PVC	5.05	
20	Electric	United Power	4"	PVC	5.3	
21	Water	Brighton	12"	Steel	5.7	
22	Water	Brighton	12"	PVC	4.6	
23	Gas	Xcel	3"	PE	3.45	Locates are 3' off
24	FO	Century Link	4"	PE	1.8	
25	Water	Brighton	10"	DI	4.3	
26	FO	Zayo	1"	PE	4.2	
27	Water	Brighton	10"	DI	4.25	
30	Water	Brighton	10"	PVC	5.6	
31	Electric	United Power	8"	PVC	5.4	
33	Electric	United Power	1"	PE	4.3	
34	Gas	Xcel	4"	PE	4.1	
35	Water	Brighton	8"	PVC	5.7	Locates 6' off
37	Water	Brighton	12"	DI	6.15	
38	FO	Adams County	2"	PE	3.45	
39	Gas	Xcel	2"	PE	2.55	
40	Water	Brighton	8"	PVC	6.25	
41	FO	Zayo	(2) 1.5"	PE	4.3	
42	Water	Brighton	12"	DI	7.2	
43	Non-Potable Water	Brighton	16"	PVC	9.5	Tracer wire found at 2.7'
44	Gas	Xcel	1/2"	PE	2.8	
45	Electric	United Power	2"	PE	7.45	
46	Electric	United Power	1/4"	Direct Bury	4.65	
47	Water	Brighton	8"	DI	6.1	Wrapped in Plastic
48	Gas	Xcel	3/4"	PE	3.4	Locate is app. 30' feet off
49	Water	Brighton	12"	DI	6.2	
50	Water	Brighton	12"	PVC	7	
51	Gas	Xcel	1.25"	PVC	3.3	
53	Water	Brighton			6	Concrete cap over waterline
54	FO	Century Link				Not Found
55	CTV	Comcast	(2) 2"	PE	2.9	
56	Electric	Brighton	-	-		Empty Conduit
57	Water	Brighton	12"	PVC	6.6	
59	Water	Brighton	12"	PVC	7.6	
62	Water	Brighton	12"	PVC	6.2	
65	Irrigation	Brighton	4"	PVC	2.8	
66	FO	Adams County	2"	PE	4	
67	Water	Brighton	20"	DI	5.8	
68	FO	Comcast	(2) 2"	PE	3.6	
69	Water	Brighton	20"	DI	4.6	
70	Water	Brighton	20"	DI	7	
71	Raw Water	Brighton	24"	Steel	6.8	

Sheet List Table

Sheet Number	Sheet Title
G0	GENERAL INFORMATION
SUE 1	SUBSURFACE UTILITY ENGINEERING PLAN
SUE 2	SUBSURFACE UTILITY ENGINEERING PLAN
SUE 3	SUBSURFACE UTILITY ENGINEERING PLAN
SUE 4	SUBSURFACE UTILITY ENGINEERING PLAN

LEGEND

Symbol	Description
W	CITY OF BRIGHTON WATERLINE
SA	CITY OF BRIGHTON SANITARY SEWER
ST	CITY OF BRIGHTON STORM DRAIN
E	UNITED POWER LINE
G	XCEL ENERGY GAS LINE
IRR	IRRIGATION LINE
FO	FIBER OPTIC LINE
T	TELEPHONE LINE
⯐	POTHOLE LOCATION

ALL UTILITIES ARE DESIGNATED QUALITY LEVEL B UNLESS OTHERWISE NOTED. THE UTILITIES AT POTHOLE LOCATIONS ARE QUALITY LEVEL A ONLY AT THE SPOT OF POTHOLE.

Utility Owner	Utility Type	Contact	Phone/Email
Adams County	Fiber Optics	Adams County	Phone: 303-906-5156
Adams County Communication	Fiber Optics	Jim Siedlecki	Phone: 720-523-6793
Comcast	Telecommunications	Comcast Mapping	Phone: 303-603-2682
ATT Transmission	Fiber Optics	ATT Transmission	**Phone:** 800-252-1133
City of Brighton	Water and Sewer	City of Brighton	Phone: 303-435-8904
DCP Midstream	Oil and Gas	DCP Midstream	Phone: 970-356-9700
City of Brighton Info Technology	Fiber		Phone: 303-906-5156
Century Link	Fiber	USIC (Locate Contractor)	Phone: 800-778-9140
MCI	Fiber Optics	MCI	Phone: 800-289-3427
Zayo Bandwith	Fiber Optics	Tony Belford	Phone: 888-267-1063
Xcel Energy	Electric	Tony Belford	Phone: 801-364-1063
Xcel Energy Hi Pressure Gas	Gas	XCEL Engineering/Mapping	Phone: 303-628-2623
United Power	Electric	ELM (Locate Contractor)	Phone: 888-728-9343
School District 27J-Brighton	Fiber Optics	Diversified Underground (Locate Contractor)	Phone: 720-490-6499

UTILITY GENERAL NOTES:

1. UTILITIES ARE DEPICTED ON THESE PLANS IN ACCORDANCE WITH THEIR ACHIEVED QUALITY LEVELS AS DEFINED IN THE AMERICAN SOCIETY OF CIVIL ENGINEERS' DOCUMENT ASCE 38, STANDARD GUIDELINE FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY INFORMATION AND REPRESENT CONDITIONS AT THE TIME OF DATA COLLECTION. THESE PLANS DO NOT RELIEVE THE CONTRACTOR FROM FOLLOWING ALL APPLICABLE UTILITY DAMAGE PREVENTION STATUTES AND PROCEDURES DURING EXCAVATION. PRIOR TO CONSTRUCTION, CONTRACTOR VERIFICATION OF LOCATION AND DEPTHS OF UTILITIES FOR DAMAGE PREVENTION SHALL BE BORNE BY THE CONTRACTOR AND SHALL BE COMPLETED PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
2. ALL UTILITIES DEPICTED WERE LOCATED AT A QUALITY LEVEL B, EXCEPT AS NOTED ON THE DRAWINGS AND IN THE REPORT.
3. PRIOR TO COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT ALL UTILITIES TO COORDINATE SCHEDULING, SHOULD ANY CONFLICTS, RECONSTRUCTION, OR INTERRUPTIONS IN SERVICE BE REQUIRED, THE CONTRACTOR SHALL COORDINATE UTILITY SCHEDULING.
4. THE CONTRACTOR SHALL CORRECTLY SHOW ON SUBMITTED DRAWINGS THE LOCATIONS OF ALL UTILITIES IN THE VICINITY WHERE THE CONTRACTOR MAY BORE, TRENCH, EXCAVATE, AND INSTALL CONDUIT, FIBER, FIBER ENCLOSURES, VAULTS, AND HANDHOLDS. IN THE EVENT THAT THE CONDUIT RUN, FIBER ENCLOSURES, VAULTS, OR HANDHOLDS ARE LOCATED WITHIN THE VICINITY OF ANY UTILITY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION THAT WILL PREVENT DAMAGE TO THE INSTALLATION UNDER NORMAL UTILITY OPERATING CONDITIONS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN INFORMATION ON EACH OF THE UTILITIES AS APPLICABLE SUCH AS GAS PRESSURE, STEAM, AND WATER PRESSURES, TEMPERATURES, ETC.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO EXAMINE THE SITE FOR EVIDENCE OF FAILURES OF OR DEFICIENCIES IN UTILITY COMPANY FACILITIES (I.E. XCEL, CENTURYLINK, ETC) AND TO IMMEDIATELY CALL ANY SUCH EVIDENCE OF PRE-EXISTING DAMAGE TO THE ATTENTION OF THE UTILITY COMPANY ALONG WITH THE PROPER DOCUMENTATION. THE CONTRACTOR HEREBY AGREES THAT THE REPAIR OF ANY AND ALL DAMAGES (DIRECT AND INDIRECT), THAT MAY BE SUBSEQUENTLY DISCOVERED AND PROVEN TO HAVE BEEN CAUSED BY THE CONSTRUCTION ACTIVITIES, IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR WITHOUT SUCH EVIDENCE OF PRE-EXISTING DAMAGE. THE CONTRACTOR HEREBY AGREES THAT ANY AND ALL DAMAGES (DIRECT OR INDIRECT) TO UTILITY COMPANY FACILITIES, WHICH MAY BE SUBSEQUENTLY DISCOVERED WITHIN THOSE AREAS WHERE CONSTRUCTION OCCURRED WITHIN SIX-FEET (6') OF UTILITY COMPANY FACILITIES (DIRECT OR INDIRECT), AND WITHIN A PERIOD OF THREE YEARS FROM THE DATE OF CONSTRUCTION, WERE CAUSED BY THE CONSTRUCTION ACTIVITIES. FURTHERMORE, THE REPAIR IS AGREED TO BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PROTECT ALL UTILITY COMPANY FACILITIES WITHIN THE AREA OF CONSTRUCTION. THIS INCLUDES ALL STEPS NECESSARY TO PREVENT SUBSIDENCE OF THE SOIL ADJACENT TO OR NEAR UTILITY COMPANY FACILITIES.
6. FARNSWORTH GROUP AND SURVEYOR OF RECORD ARE NOT RESPONSIBLE FOR LOCATING FEATURES WHICH WERE ADDED OR REMOVED AFTER THE SURVEY OF THE UTILITY LOCATES WAS COMPLETED.

CALL UTILITY NOTIFICATION CENTER OF COLORADO

811 Know what's below. Call before you dig.

CALL 2 BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES

ENGINEER'S CERTIFICATION

A PRAGMATIC EFFORT HAS BEEN MADE TO SYSTEMATICALLY DESIGNATE AND DEPICT BURIED UTILITIES WITHIN THE CORRIDOR TO THE EXTENT PRACTICAL. FINAL UTILITY PLANS ARE FOR DESIGN PURPOSES ONLY AND REFLECT SUBSURFACE UTILITY CONDITIONS AT THE TIME SURVEYED. EXISTING UTILITY LOCATIONS DEPICTED ON THE PLANS DO NOT SUPERSEDE COLORADO STATE ONE CALL DEMARCATIONS OF BURIED UTILITIES OR RELIEVE THE CONTRACTOR FROM THE LEGAL REQUIREMENT TO CALL ONE CALL TWO WORKING DAYS PRIOR TO CONSTRUCTION. FARNSWORTH GROUP, KINETIC INDUSTRY, AND THE PROJECT DESIGN ENGINEER SHOULD BE NOTIFIED OF ANY DISCREPANCIES BETWEEN THE UTILITY DESIGNATING / LOCATING SURVEY AND ONE CALL MARKINGS, AND THE CONTRACTOR SHALL USE CAUTION UNTIL DISCREPANCIES ARE RESOLVED. EXISTING UTILITIES ARE LOCATED TO A QUALITY LEVEL B, EXCEPT WHERE NOTED, ACCORDING TO ASCE 38-02.

CONTRACTOR SHALL CALL THE UTILITY NOTIFICATION SERVICE BEFORE EXCAVATION AS REQUIRED BY LAW.

COLORADO REGISTERED PROFESSIONAL ENGINEER 41831 11/15/19

I HEREBY CERTIFY THAT THESE DRAWINGS AND REPORT WERE PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF COLORADO.

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#	DATE:	DESCRIPTION:
1	8/29	FIRST SUBMITTAL TO CITY
2	11/5	SECOND SUBMITTAL TO CITY
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PROJECT:
CITY OF BRIGHTON

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BRIGHTON, CO

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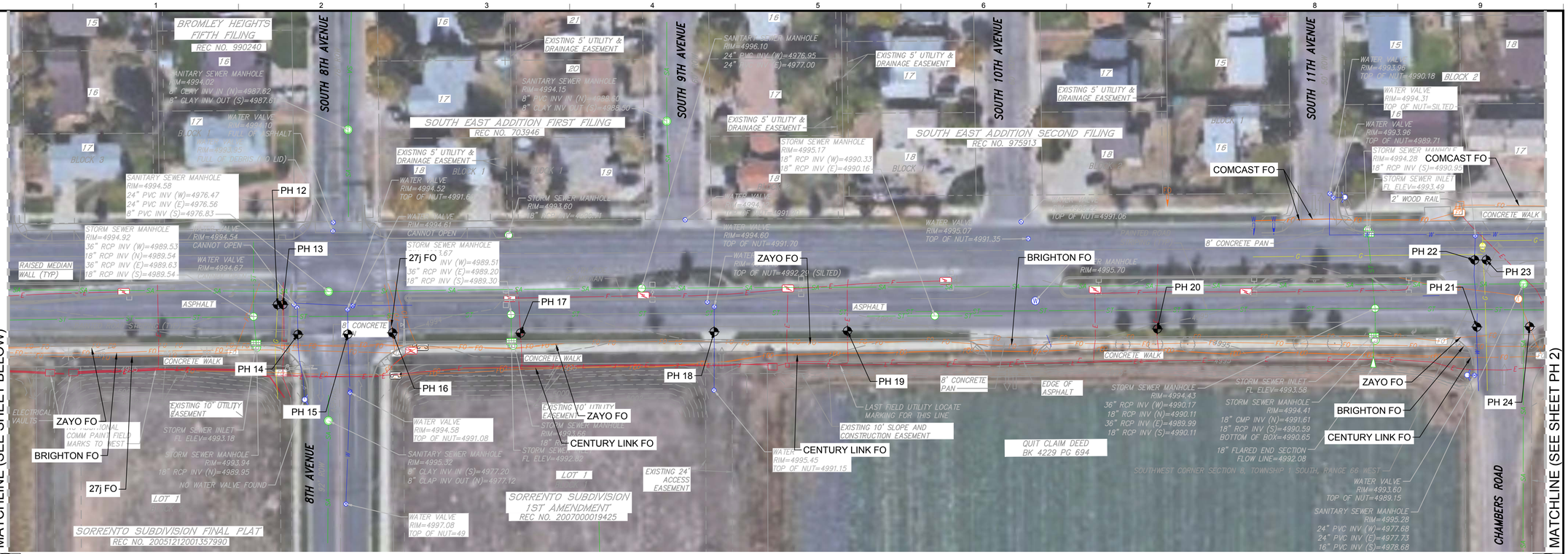
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
SUE GENERAL INFORMATION

SHEET NUMBER:
SUE0

PROJECT NO.: 0181377.00



2 EXISTING UTILITY LOCATIONS
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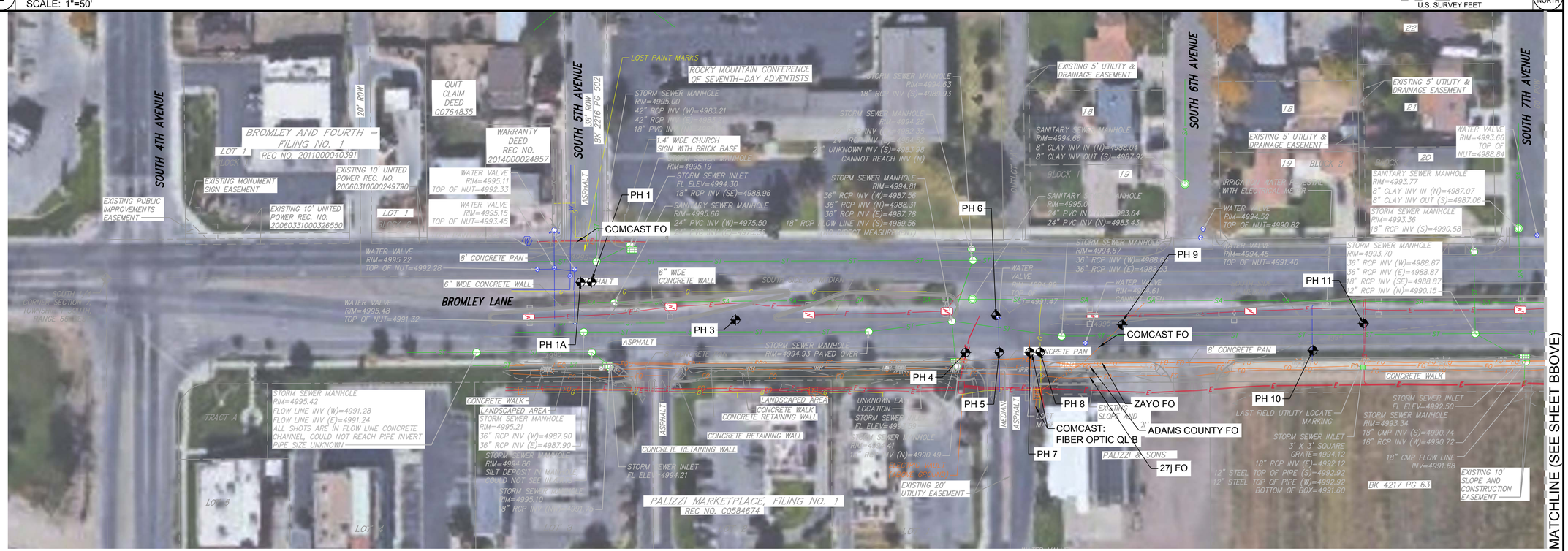

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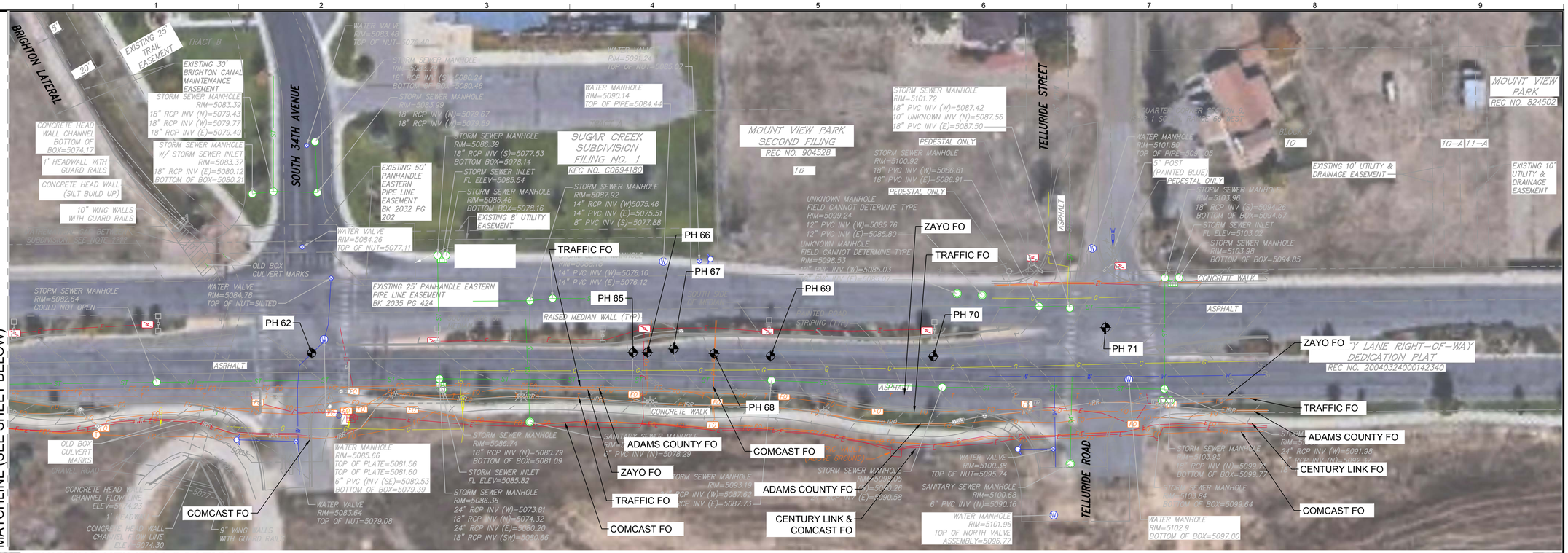
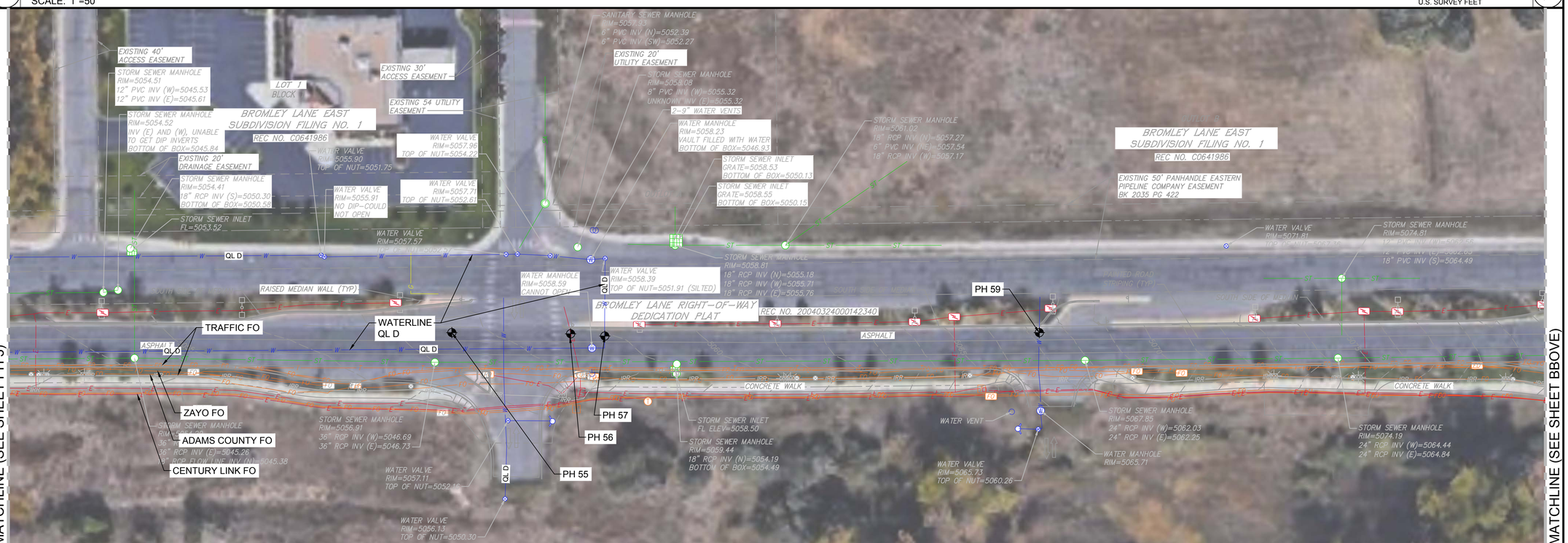


2 EXISTING UTILITY LOCATIONS

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH



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NORTH

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SHEET NUMBER:

SUE 4

PROJECT NO.: 0181377.00

2 EXISTING UTILITY LOCATIONS

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH

1 EXISTING UTILITY LOCATIONS

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

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2 EXISTING UTILITY LOCATIONS

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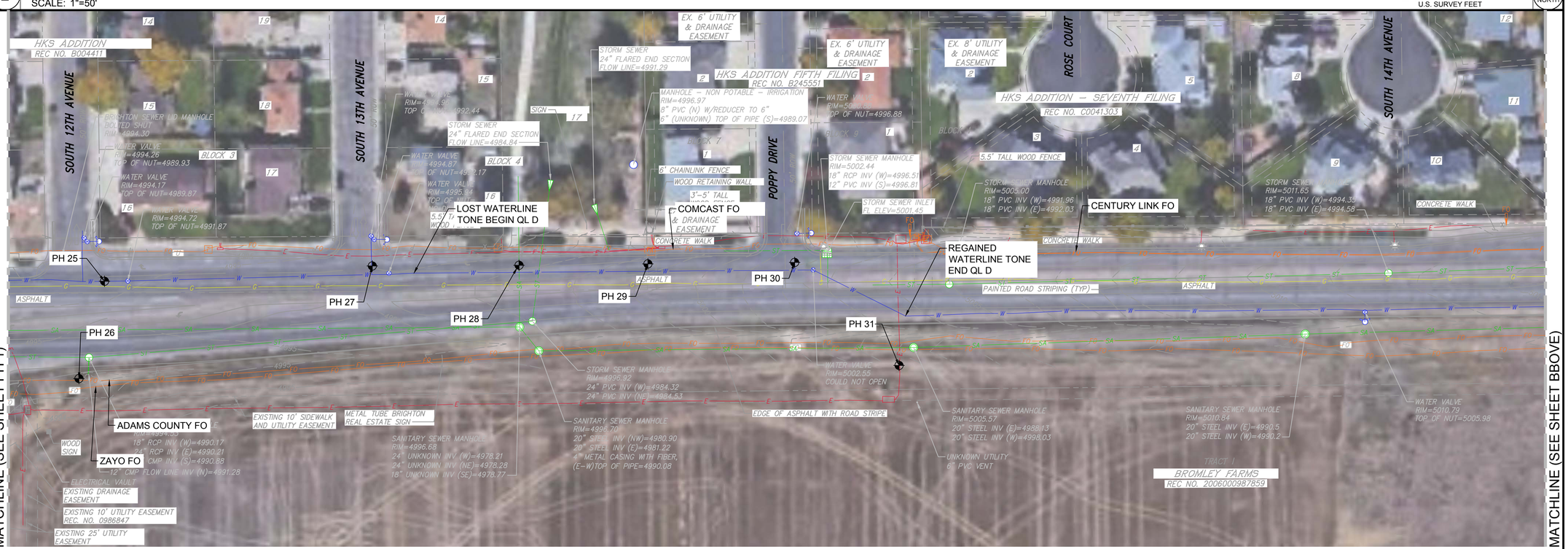
0 25 50 100 U.S. SURVEY FEET

NORTH



1 EXISTING UTILITY LOCATIONS

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PROJECT NO.: 0181377.00

1 **OVERALL SITE PLAN**

SCALE: 1"=400'

0 200 400 800
U.S. SURVEY FEET

NORTH

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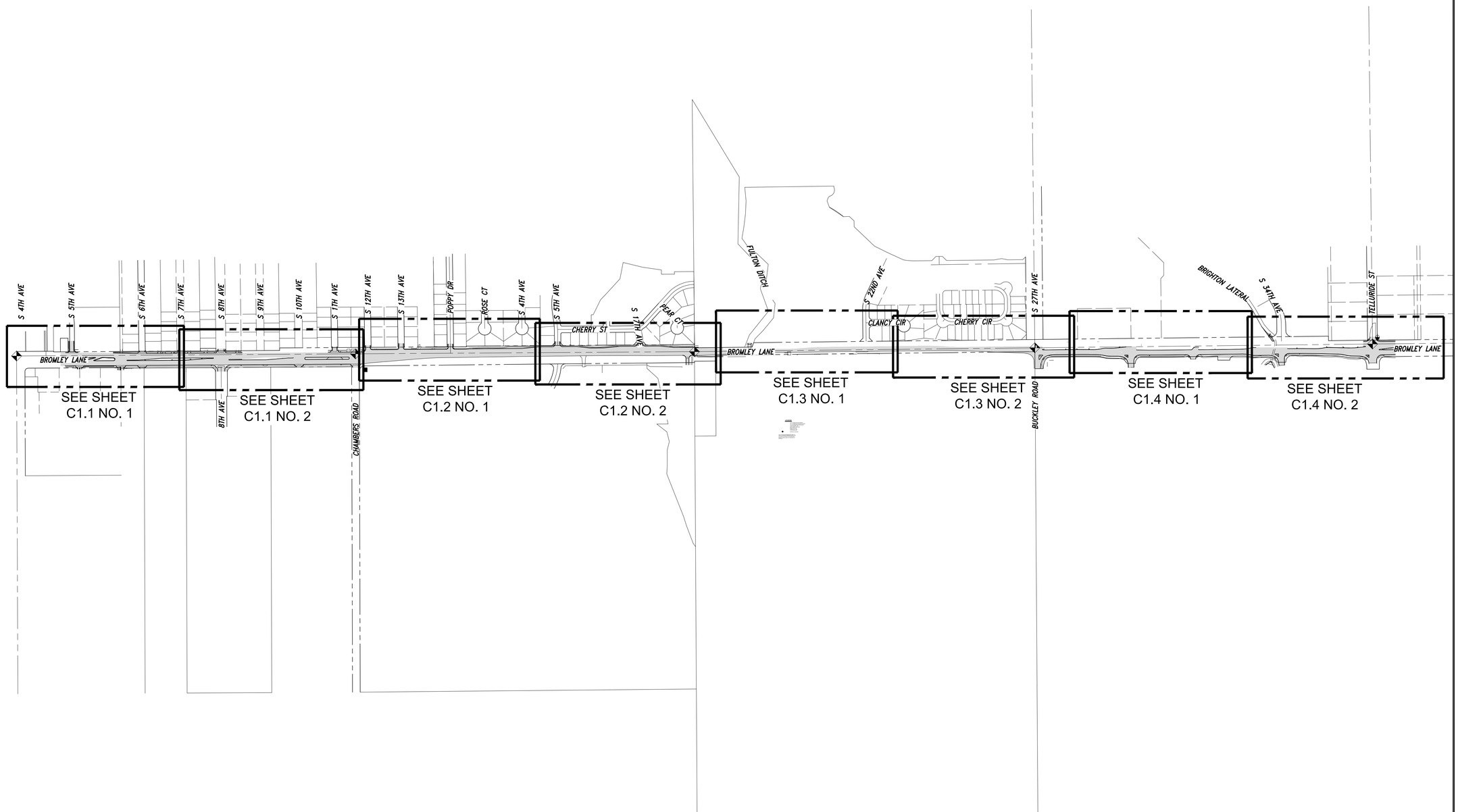

1 **EXISTING CONDITIONS SHEET INDEX**

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0 200 400 800
U.S. SURVEY FEET

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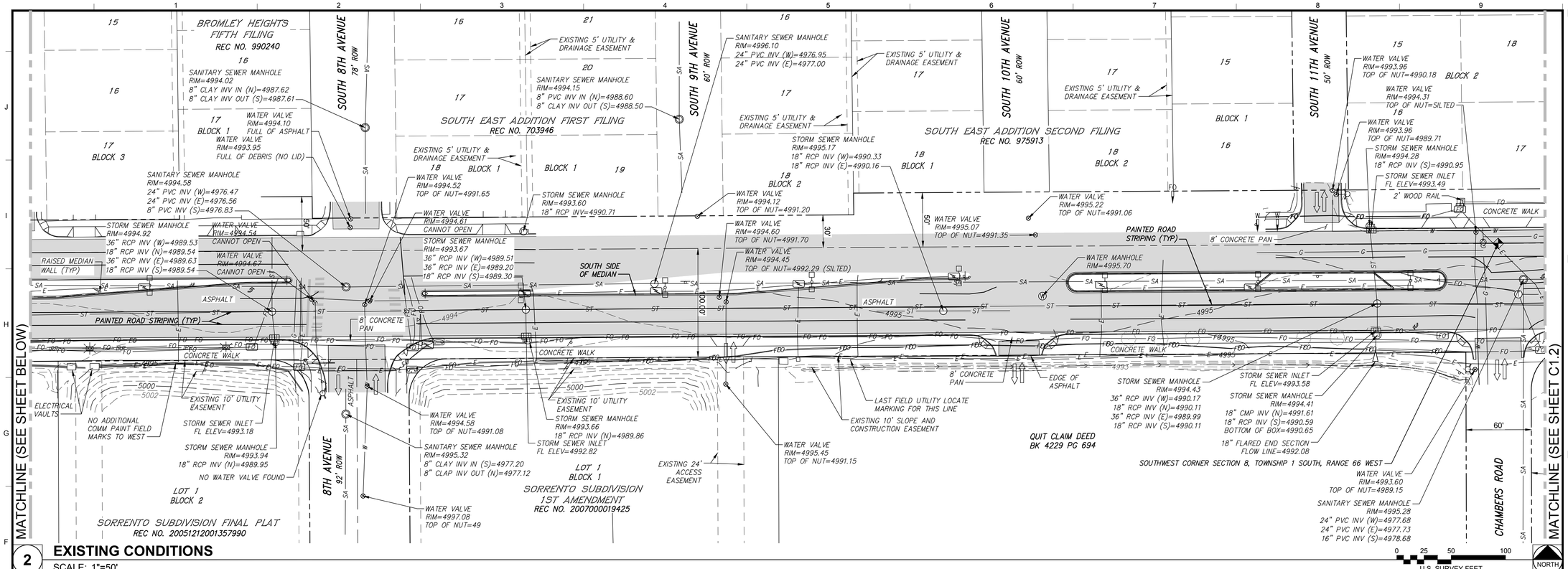

2 **EXISTING CONDITIONS**
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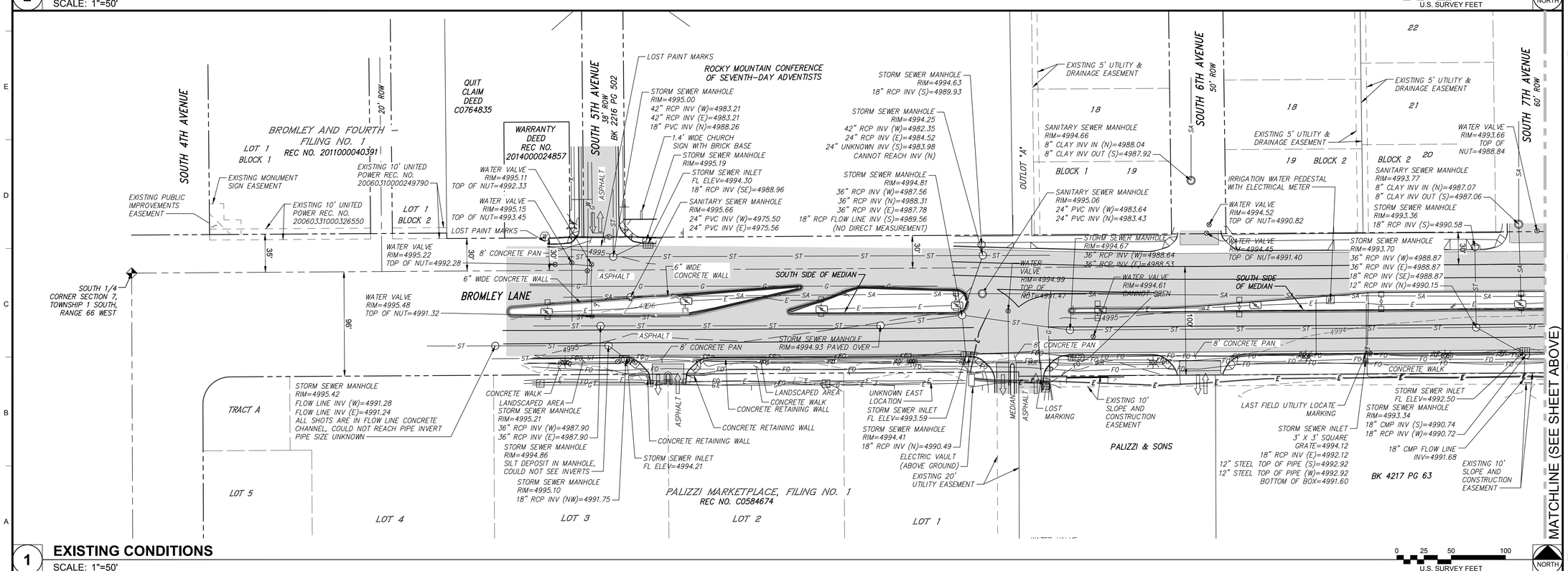

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FIELD BOOK NO.:	

SHEET TITLE:
EXISTING CONDITIONS

SHEET NUMBER:
C1.1

PROJECT NO.: 0181377.00

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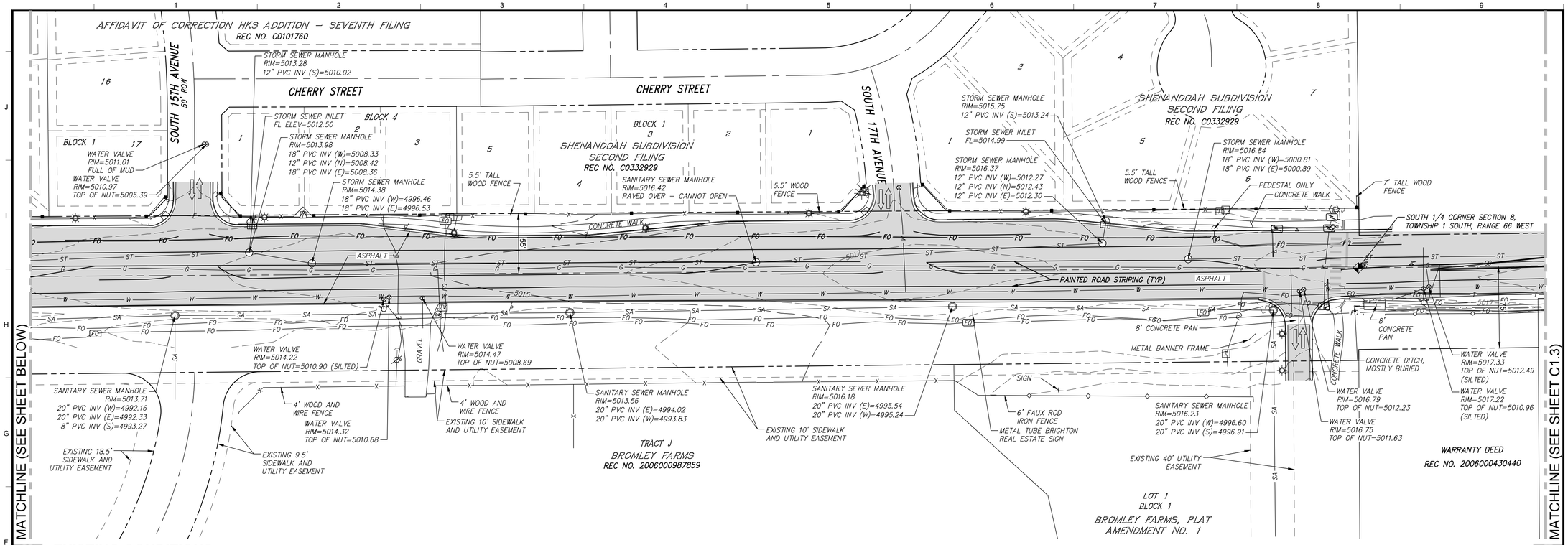

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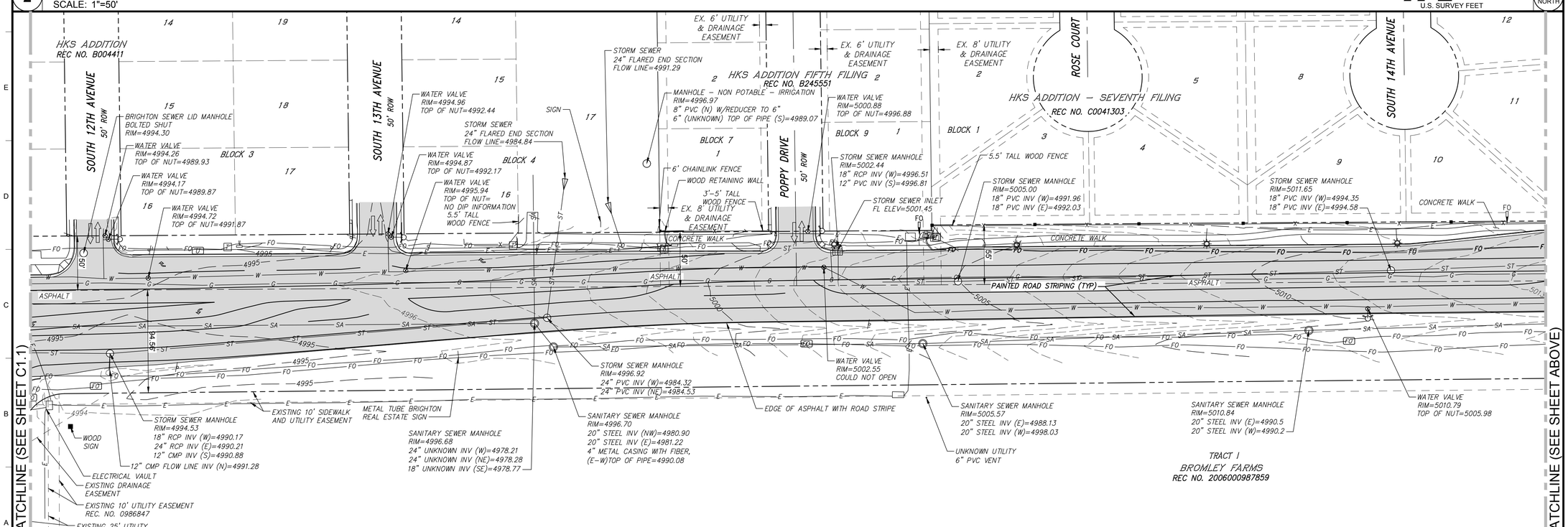

1 EXISTING CONDITIONS

SCALE: 1"=50'

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CITY OF BRIGHTON

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BRIGHTON, CO

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C1.2

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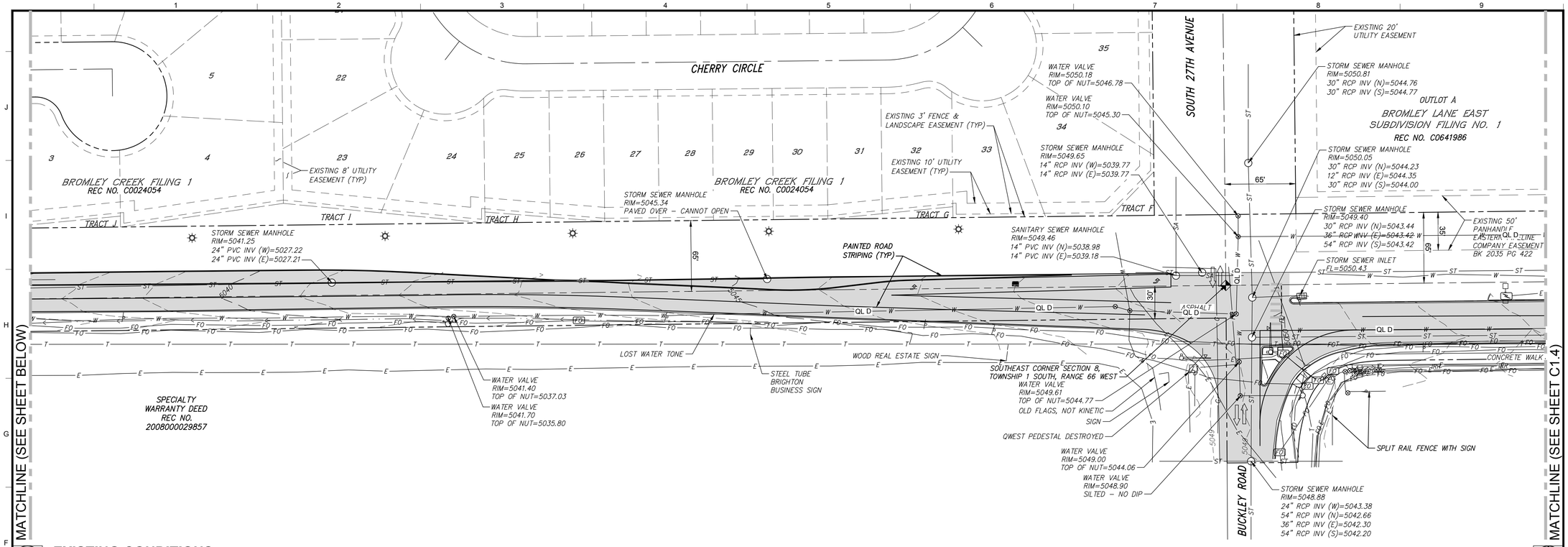

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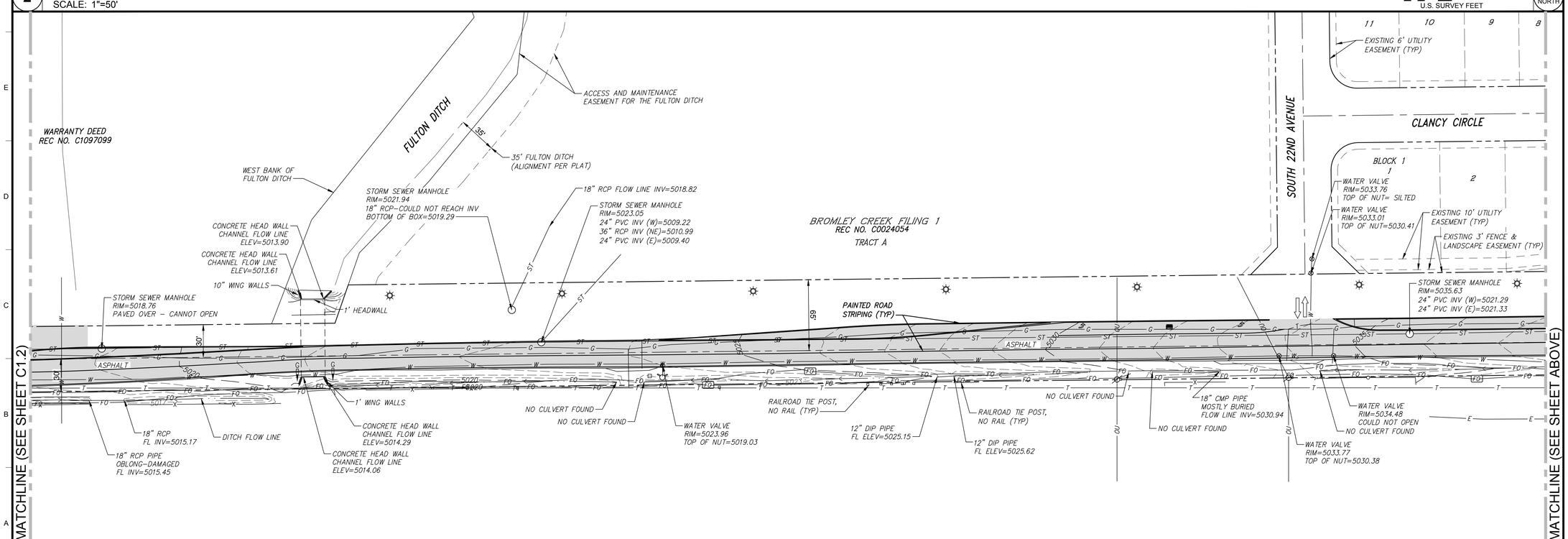

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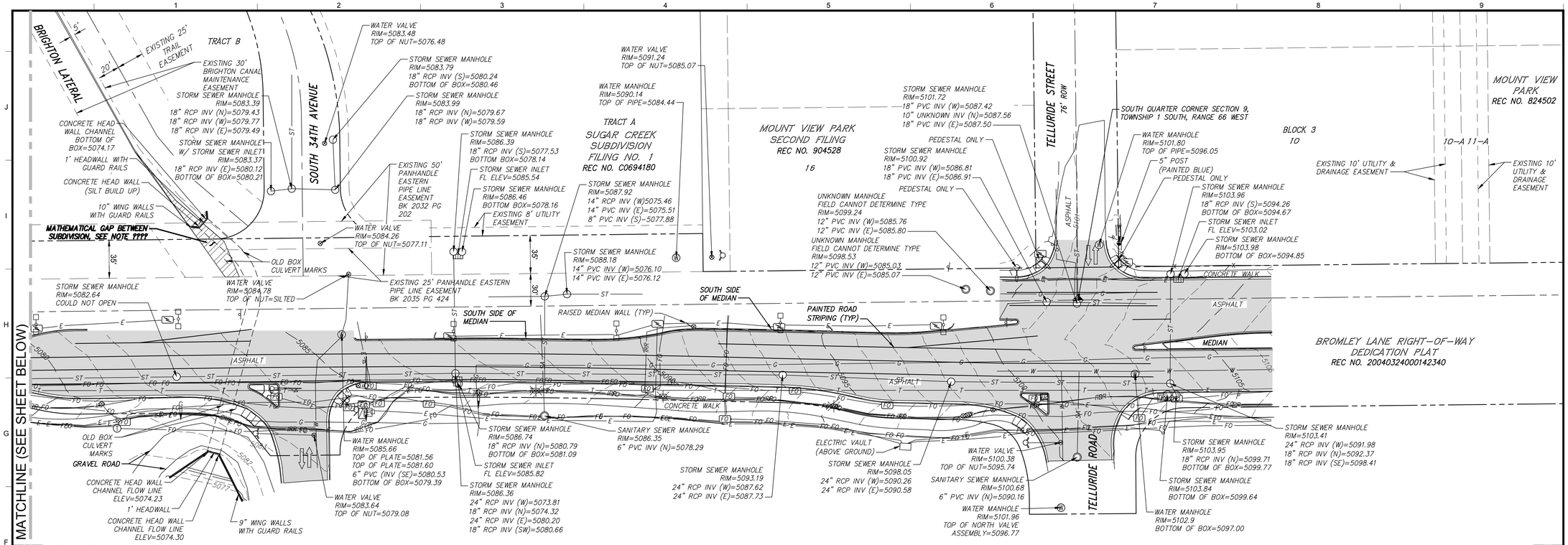

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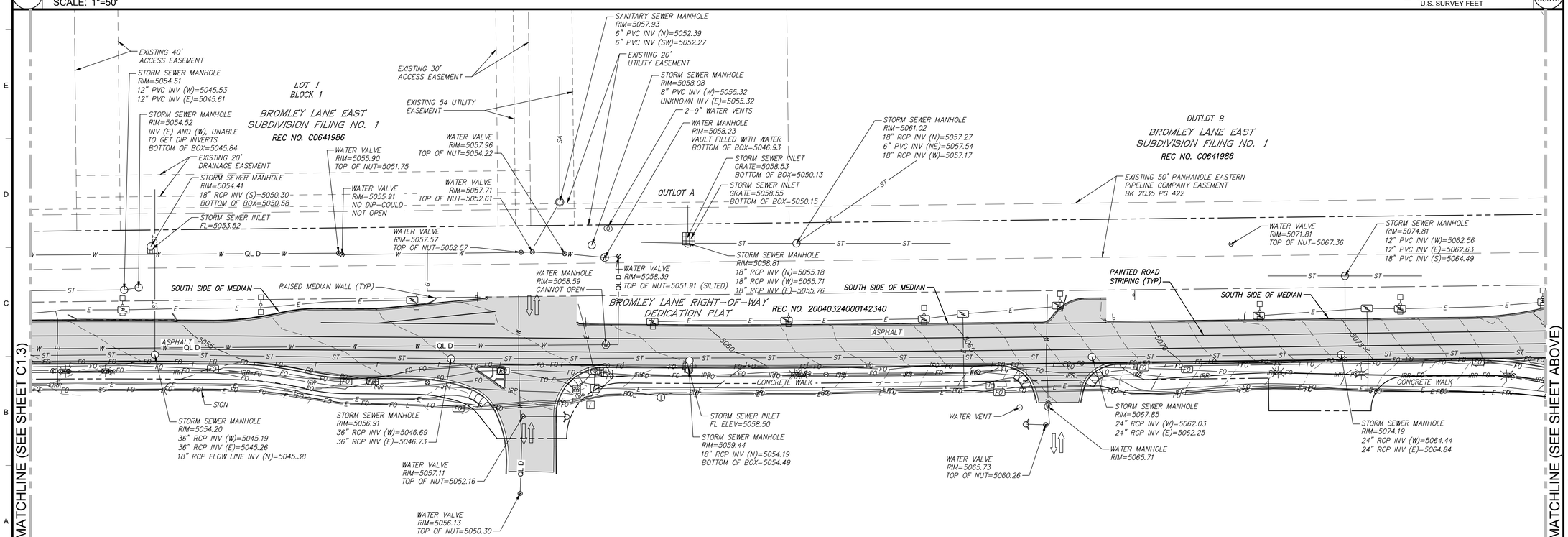
0 25 50 100 U.S. SURVEY FEET

NORTH



1 EXISTING CONDITIONS

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH

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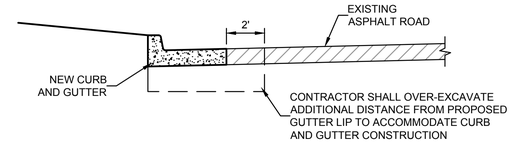
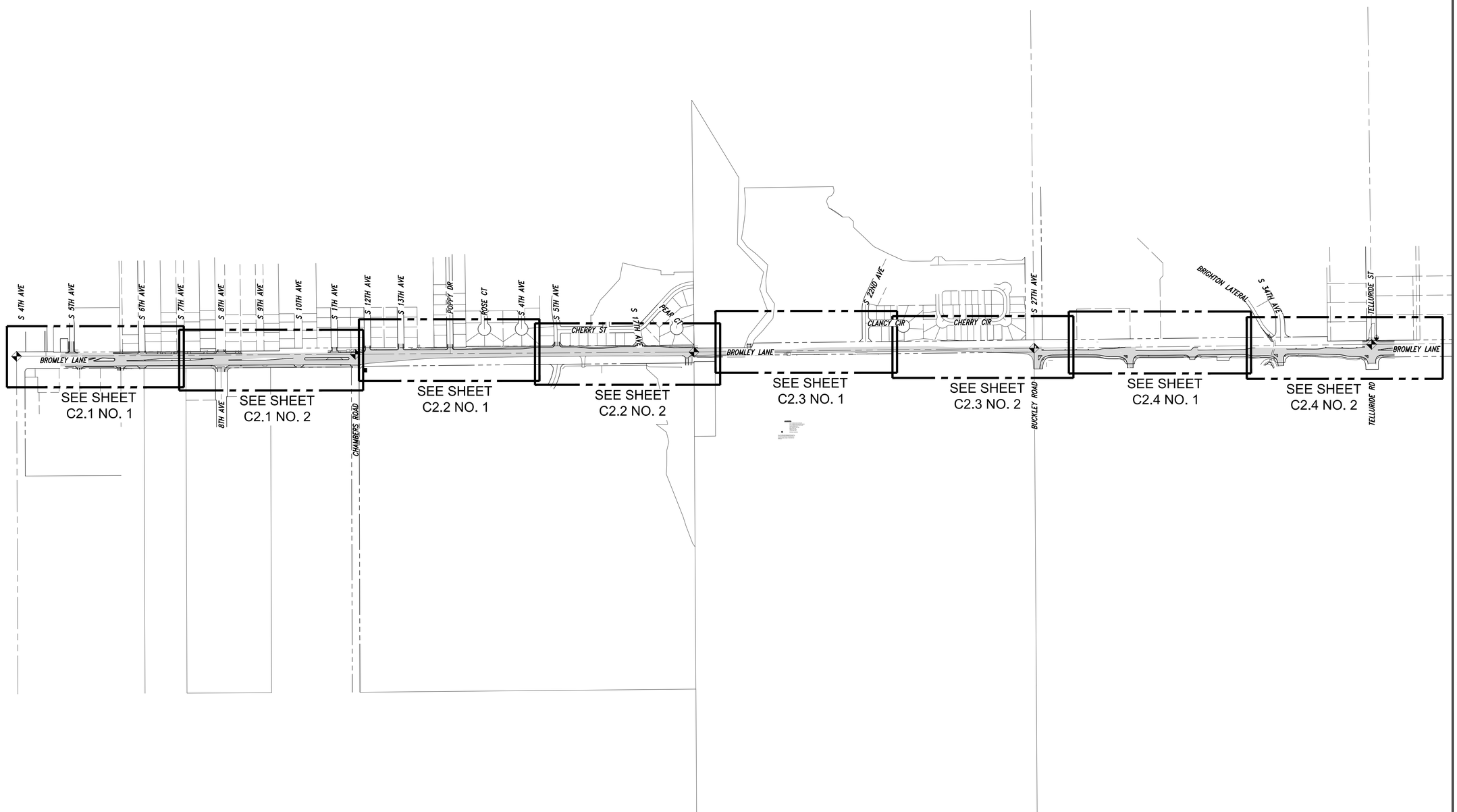


CURB AND GUTTER ADDITIONAL DEMO DETAIL

N.T.S.

DEMOLITION NOTES:

1. CONTRACTOR RESPONSIBLE TO COORDINATE WITH PROPERTY OWNERS CONCERNING MAINTAINING ACCESS.
2. ALL WATER LINE TRENCHES WILL REQUIRE SAW CUTTING EXISTING ASPHALT FOR COMPLETE ASPHALT REMOVAL.
3. CONTRACTOR SHALL SAW CUT CONCRETE TO BE DEMOLISHED TO CREATE STRAIGHT EDGE TO CONSTRUCT NEW CONCRETE AND/OR ASPHALT AGAINST.
4. CONTRACTOR SHALL MAINTAIN TEMPORARY TRAFFIC SIGNS TO MAINTAIN EXISTING SIGN DIRECTIVES DURING CONSTRUCTION ACTIVITIES.
5. CONTRACTOR SHALL NOT REMOVE ANY TREES NOT IDENTIFIED FOR REMOVAL.



1 **DEMOLITION SHEET INDEX**

SCALE: 1"=400'

0 200 400 800
U.S. SURVEY FEET

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C2.0

PROJECT NO.: 0181377.00

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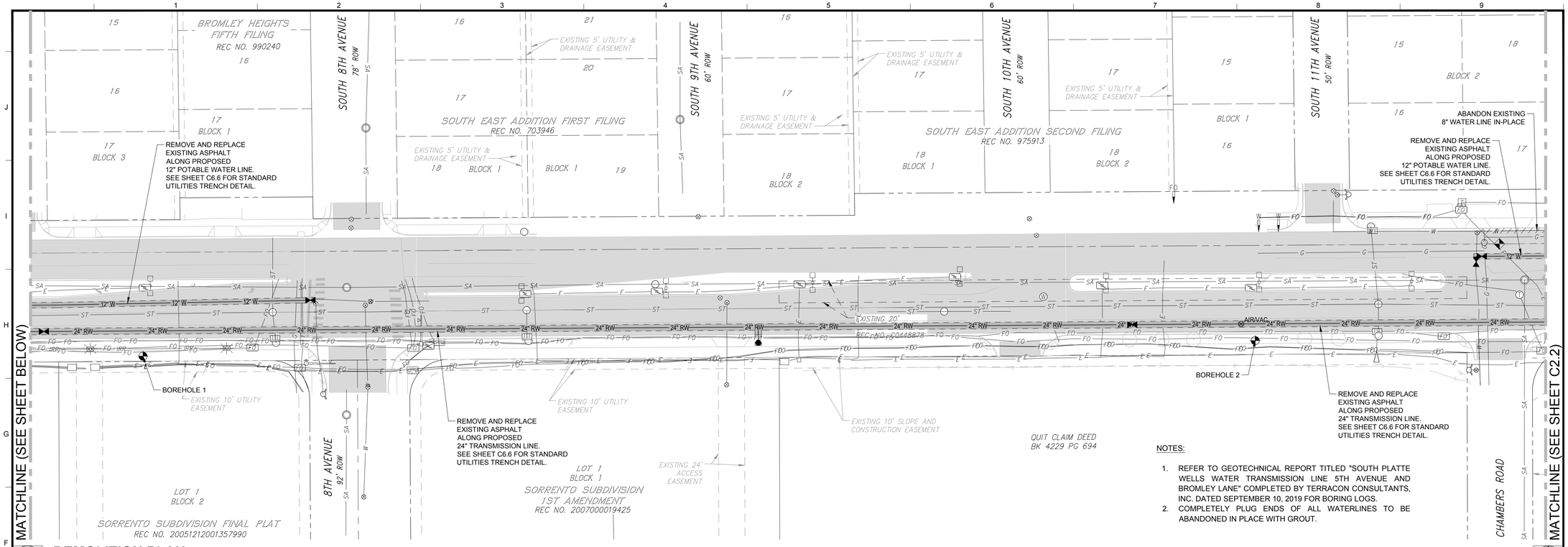
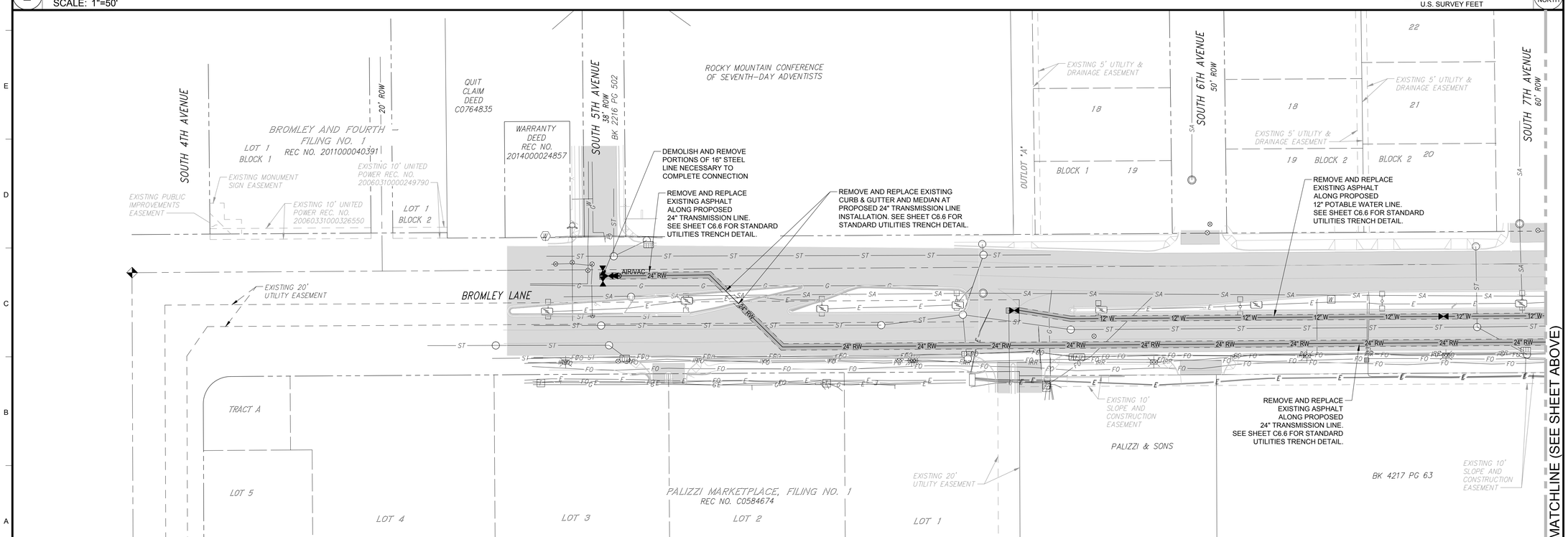


2 DEMOLITION PLAN

SCALE: 1"=50'

NOTES:

1. REFER TO GEOTECHNICAL REPORT TITLED "SOUTH PLATTE WELLS WATER TRANSMISSION LINE 5TH AVENUE AND BROMLEY LANE" COMPLETED BY TERRACON CONSULTANTS, INC. DATED SEPTEMBER 10, 2019 FOR BORING LOGS.
2. COMPLETELY PLUG ENDS OF ALL WATERLINES TO BE ABANDONED IN PLACE WITH GROUT.



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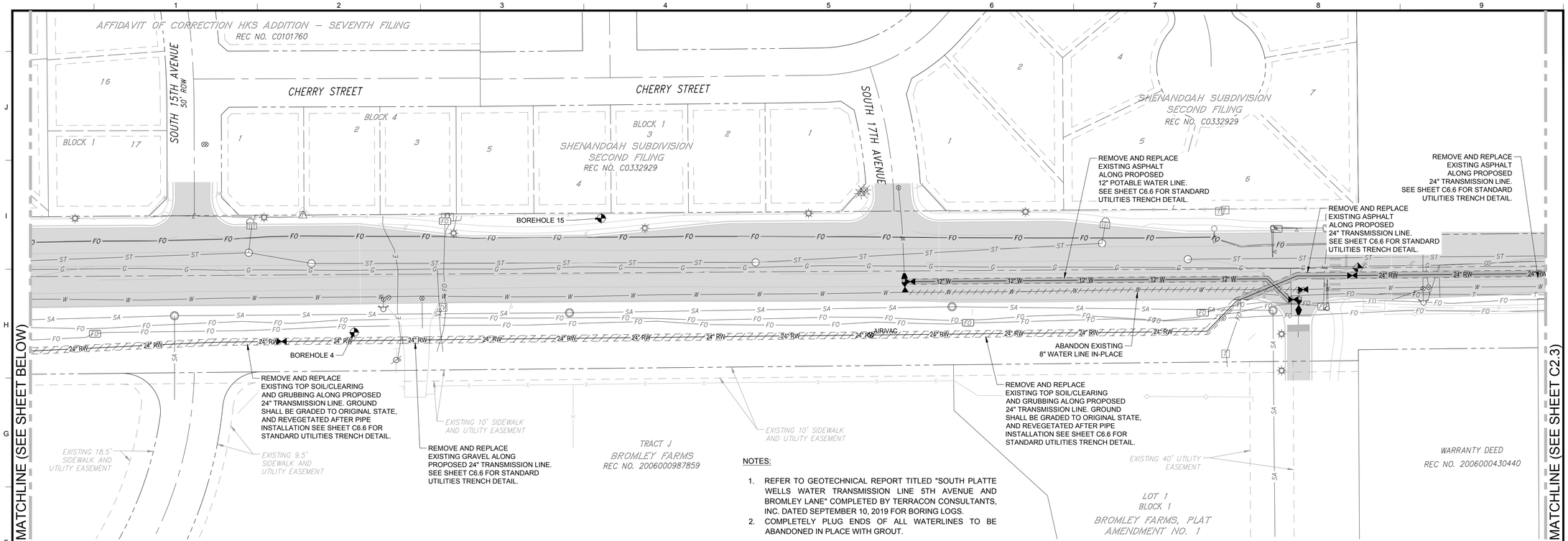

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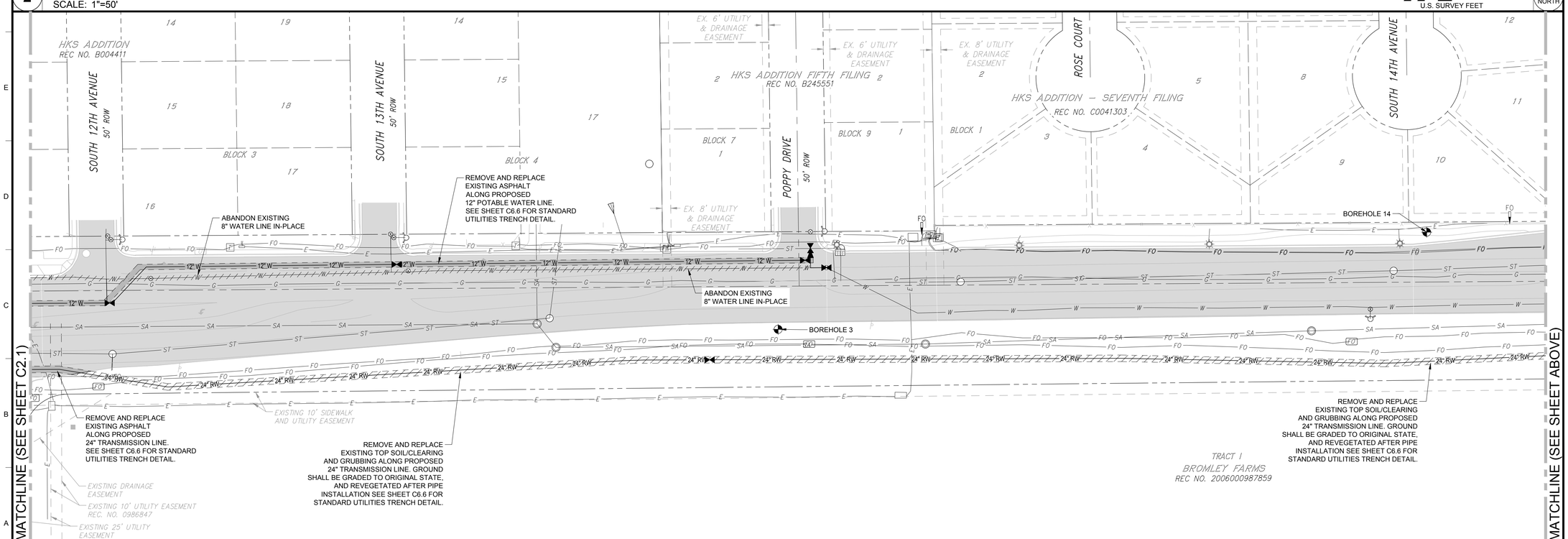
SCALE: 1"=50'



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SCALE: 1"=50'

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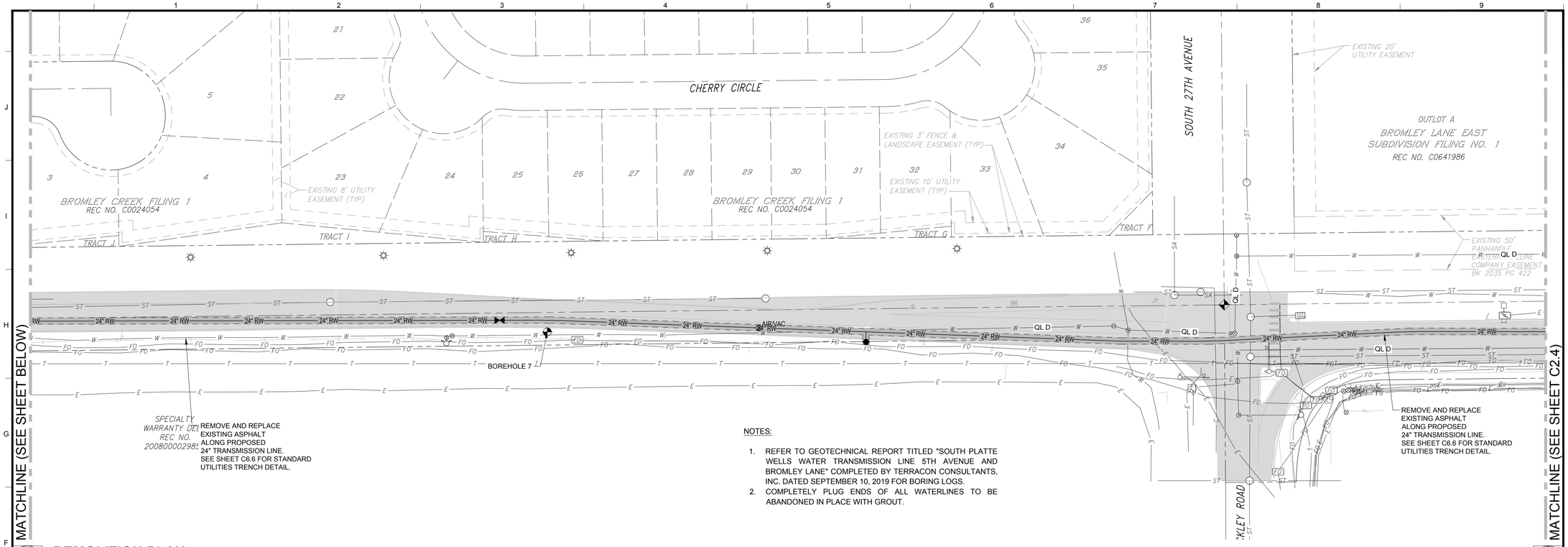

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SCALE: 1"=50'

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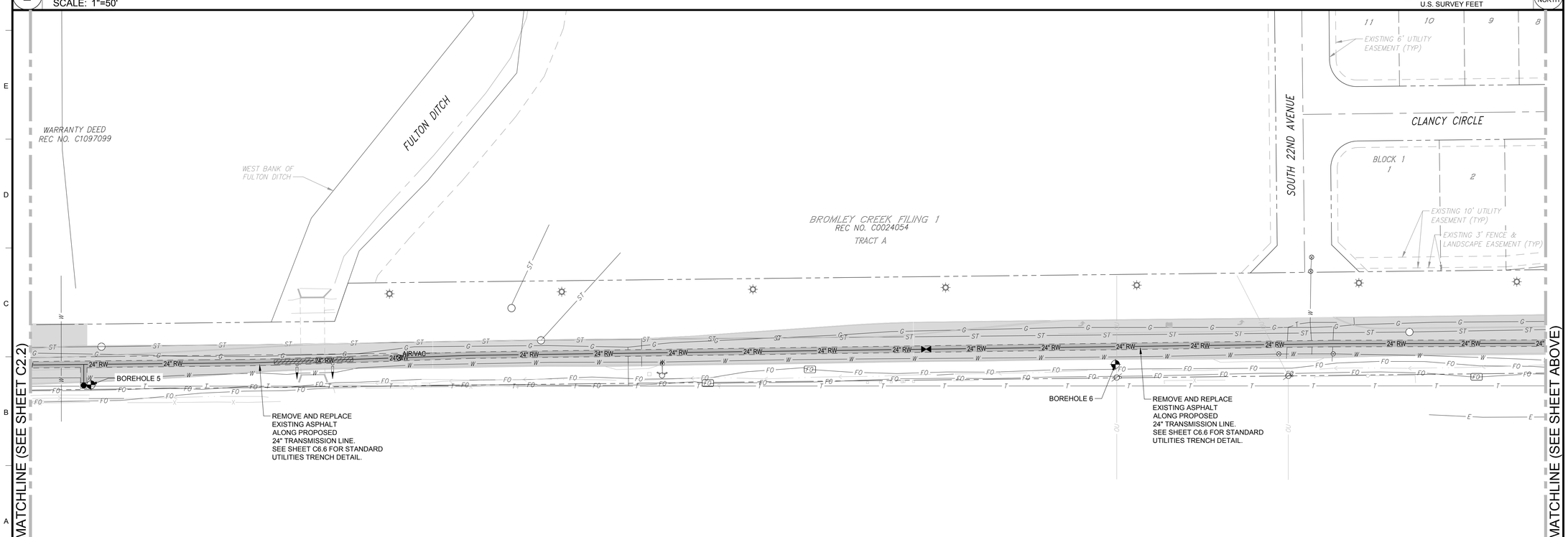

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SHEET NUMBER:

C2.3

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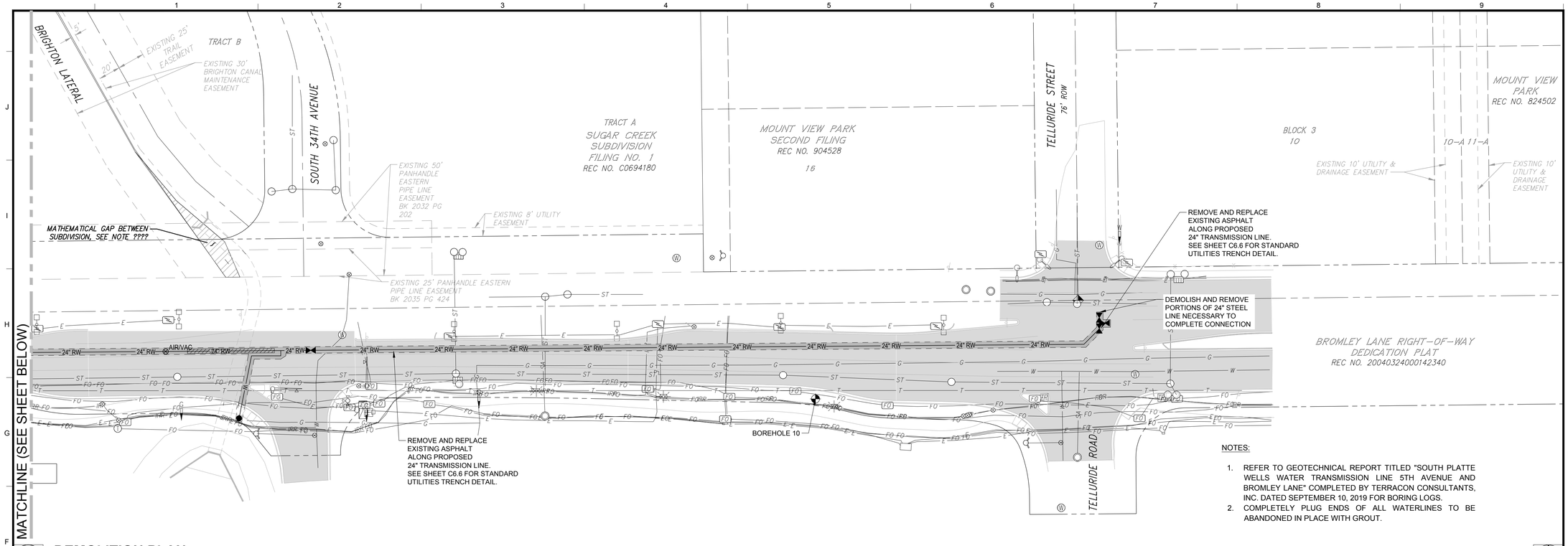

2 DEMOLITION PLAN

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH

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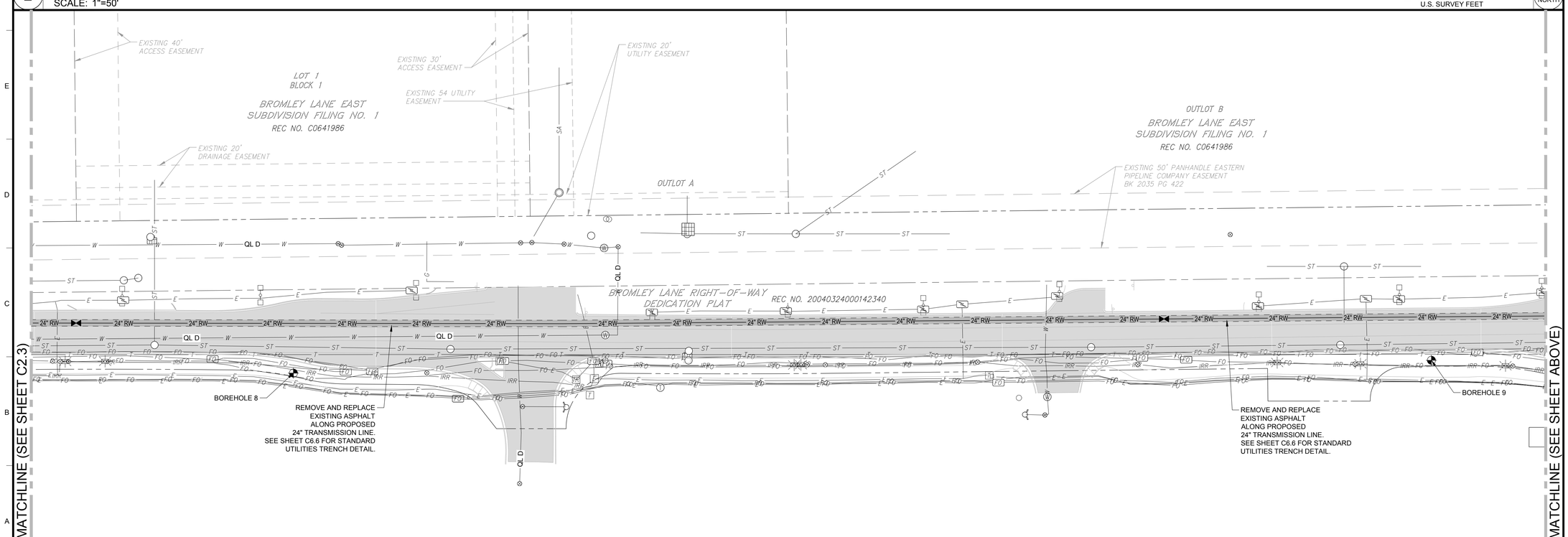

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SCALE: 1"=50'

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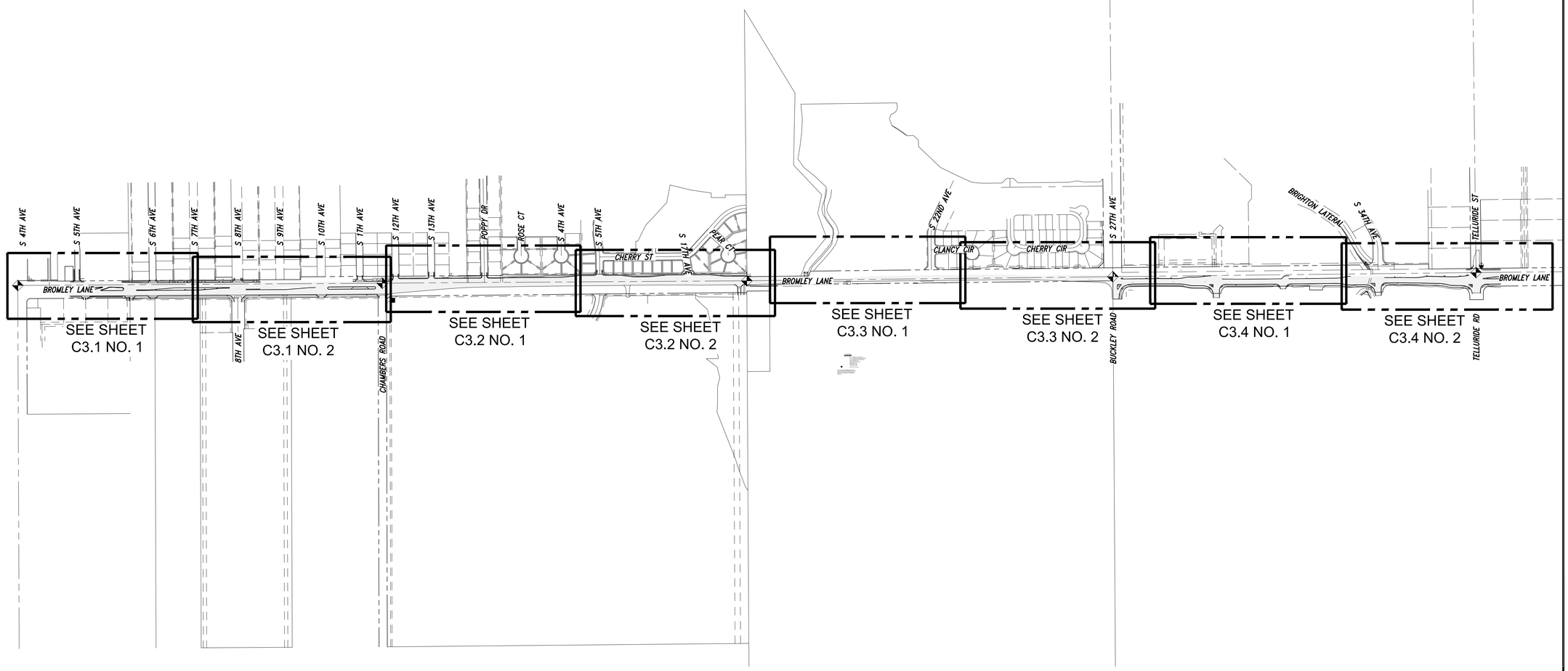
NOTES:

1. REFER TO CITY'S GENERAL EROSION CONTROL NOTES ON SHEET G2.
2. EROSION AND SEDIMENT CONTROL PLAN ENFORCEMENT IS THE RESPONSIBILITY OF CONTRACTOR.
3. STAGING AREA WILL VARY BASED ON CONSTRUCTION PHASING.
4. CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN LAND OWNERS PROPERTY IF PORTIONS OF THE EXISTING WATER PROTECTION HAS BEEN AFFECTED DURING CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE TO EXCAVATE ANY SEDIMENT THAT INHIBITS TRAVEL ON THE PROJECT SITE AND ADJACENT TO PROJECT SITE IF CAUSED BY CONSTRUCTION ACTIVITIES.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EROSION AND SEDIMENT CONTROL OF THE STAGING AREA AND MATERIAL STORAGE AREA.
7. CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS NOT COVERED BY PAVEMENT, PER CITY STANDARDS AT FIRST OPPORTUNITY, SEASONAL CONDITIONS ALLOWING.
8. LIMIT SOIL EXPOSURE TO AS PER PROJECT SPECIFICATIONS.
9. EROSION CONTROL BLANKET SHALL BE PLACED IN ALL AREAS WITH 3:1 SLOPE OR STEEPER.
10. CONTRACTOR SHALL CONFORM TO THE EROSION CONTROL REPORT AND STORM WATER MANAGEMENT PLAN PREPARED FOR THIS PROJECT.

STAGING AREA:
THE FOLLOWING WILL OCCUR OR BE STORED AT THE STAGING AREA:
-EQUIPMENT FUELING
-CONCRETE WASHOUT AREA
-EQUIPMENT MAINTENANCE
-EQUIPMENT STORAGE
-MATERIALS STORAGE
-FUEL TANK STORAGE
-STOCKPILES OF MATERIAL
-TEMPORARY RESTROOM FACILITY

BMP LEGEND

CD	CHECK DAM	SCL	SEDIMENT CONTROL LOG
CB	COMPOST BLANKET	ST	SEDIMENT TRAP
CFB	COMPOST FILTER BERM	SM	SEEDING AND MULCHING
CWA	CONCRETE WASHOUT AREA	SF	SILT FENCE
CF	CONSTRUCTION FENCE	SSA	STABILIZED STAGING AREA
CM	CONSTRUCTION MARKER	SR	SURFACE ROUGHENING
DW	DEWATERING	SW	STRAW WATTLES
DD	DIVERSION DITCH	TSD	TEMPORARY SLOPE DRAIN
ECB	EROSION CONTROL BLANKET	TSC	TEMPORARY STREAM CROSSING
IP	INLET PROTECTION	TER	TERRACING
RCD	REINFORCED CHECK DAM	VTC	VEHICLE TRACKING CONTROL
RRB	REINFORCED ROCK BERM	WW	VTC WITH WHEEL WASH
RRC	RRB FOR CULVERT PROTECTION	RRG	ROCK AND RIPRAP GRADATIONS
SB	SEDIMENT BASIN		



1 **EROSION CONTROL SHEET INDEX**
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0 200 400 800
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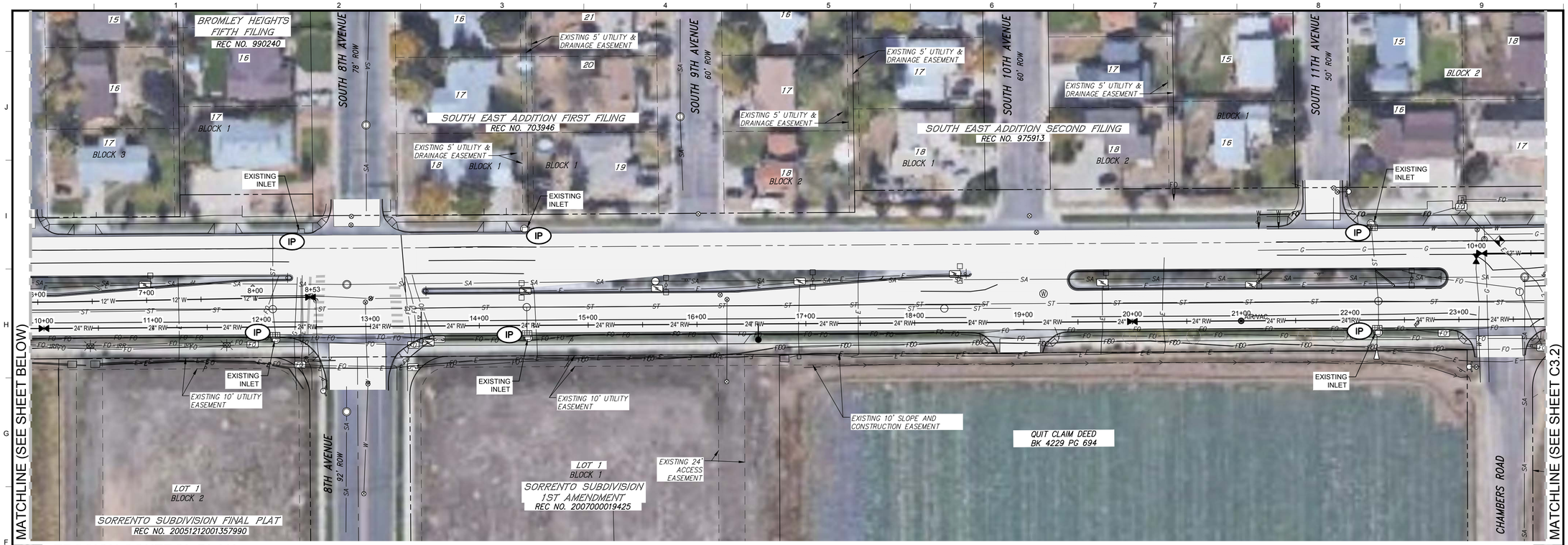
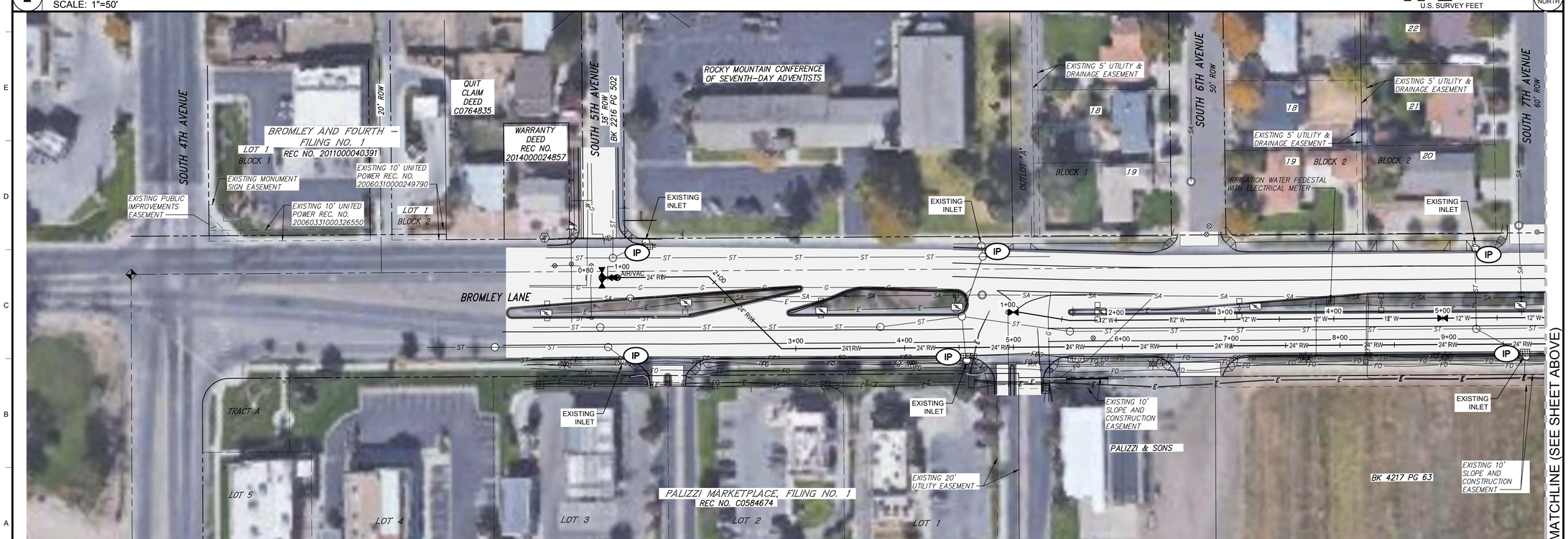


2 EROSION CONTROL PLAN

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH



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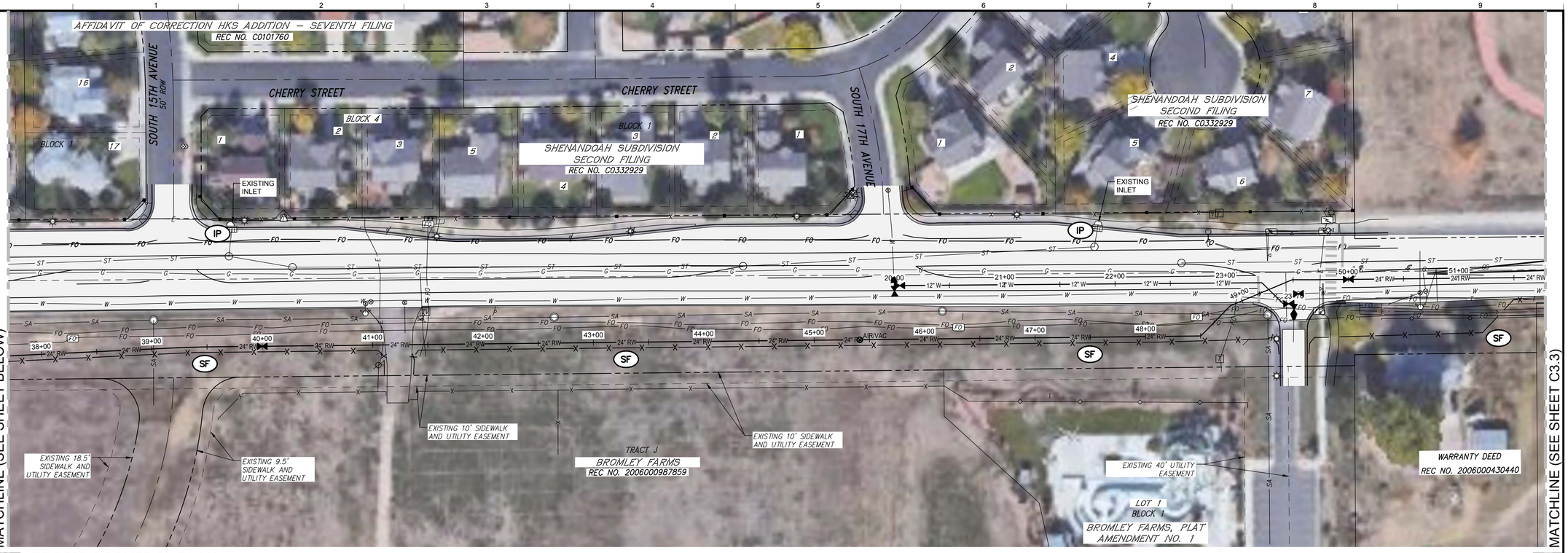

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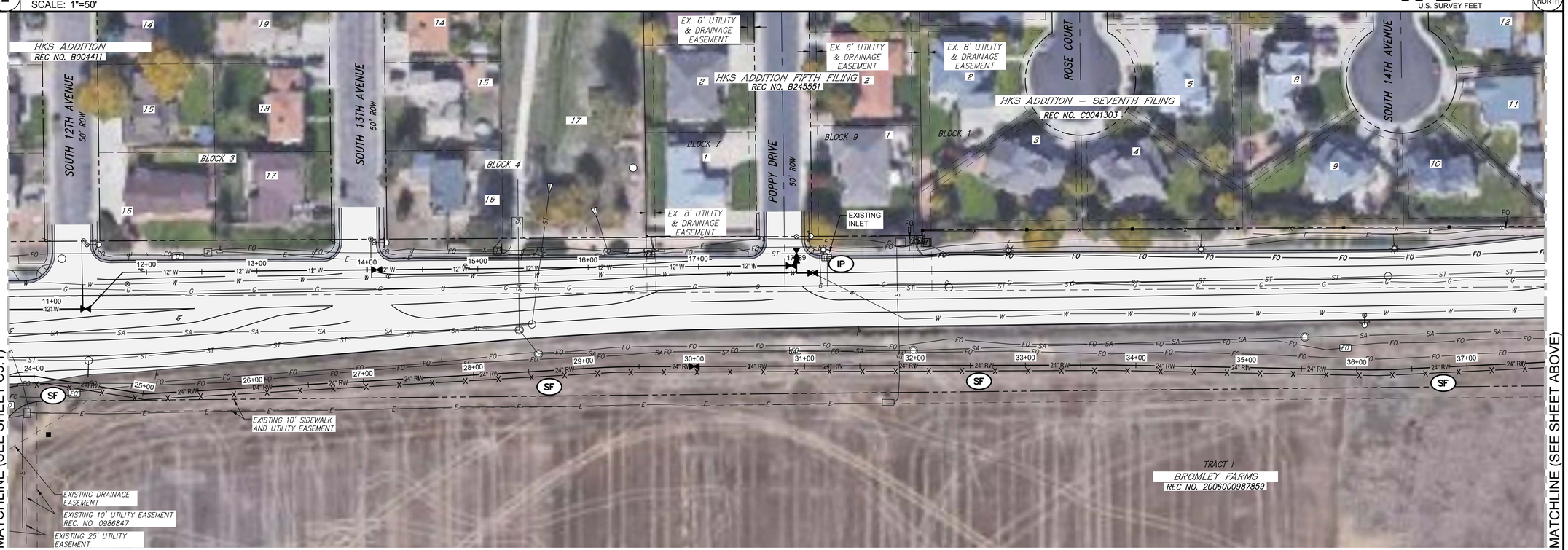

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2 **EROSION CONTROL PLAN**
SCALE: 1"=50'

0 25 50 100
U.S. SURVEY FEET
NORTH

1 **EROSION CONTROL PLAN**
SCALE: 1"=50'

0 25 50 100
U.S. SURVEY FEET
NORTH

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#	DATE:	DESCRIPTION:
1	8/29	FIRST SUBMITTAL TO CITY
2	11/5	SECOND SUBMITTAL TO CITY
3	04/3	FINAL SUBMITTAL

PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

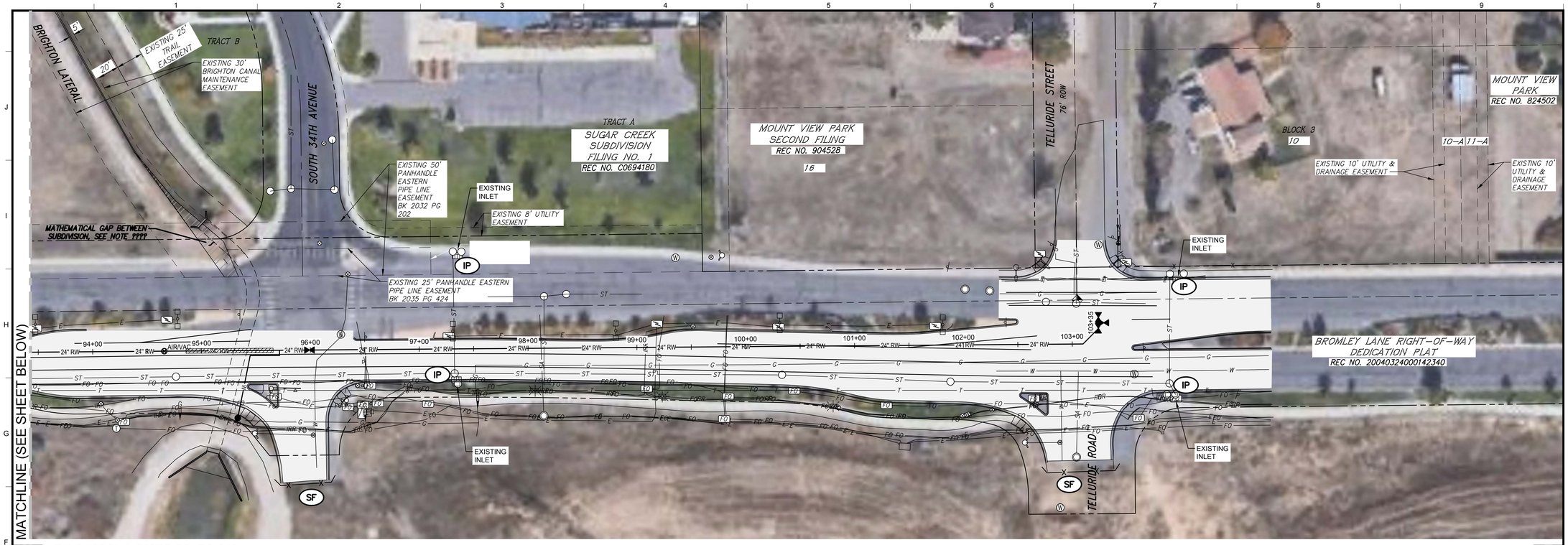
BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
EROSION CONTROL PLAN

SHEET NUMBER:
C3.3

PROJECT NO.: 0181377.00

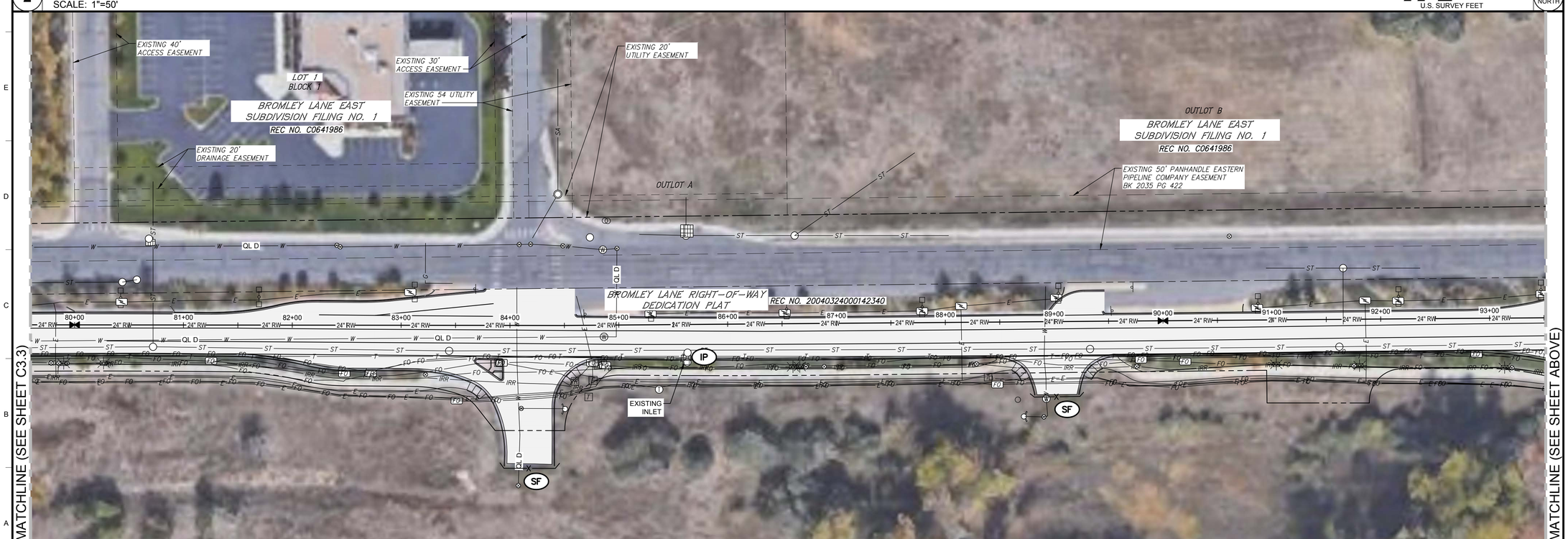


2 EROSION CONTROL PLAN

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH



1 EROSION CONTROL PLAN

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH

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EROSION CONTROL PLAN

SHEET NUMBER:

C3.4

PROJECT NO.: 0181377.00

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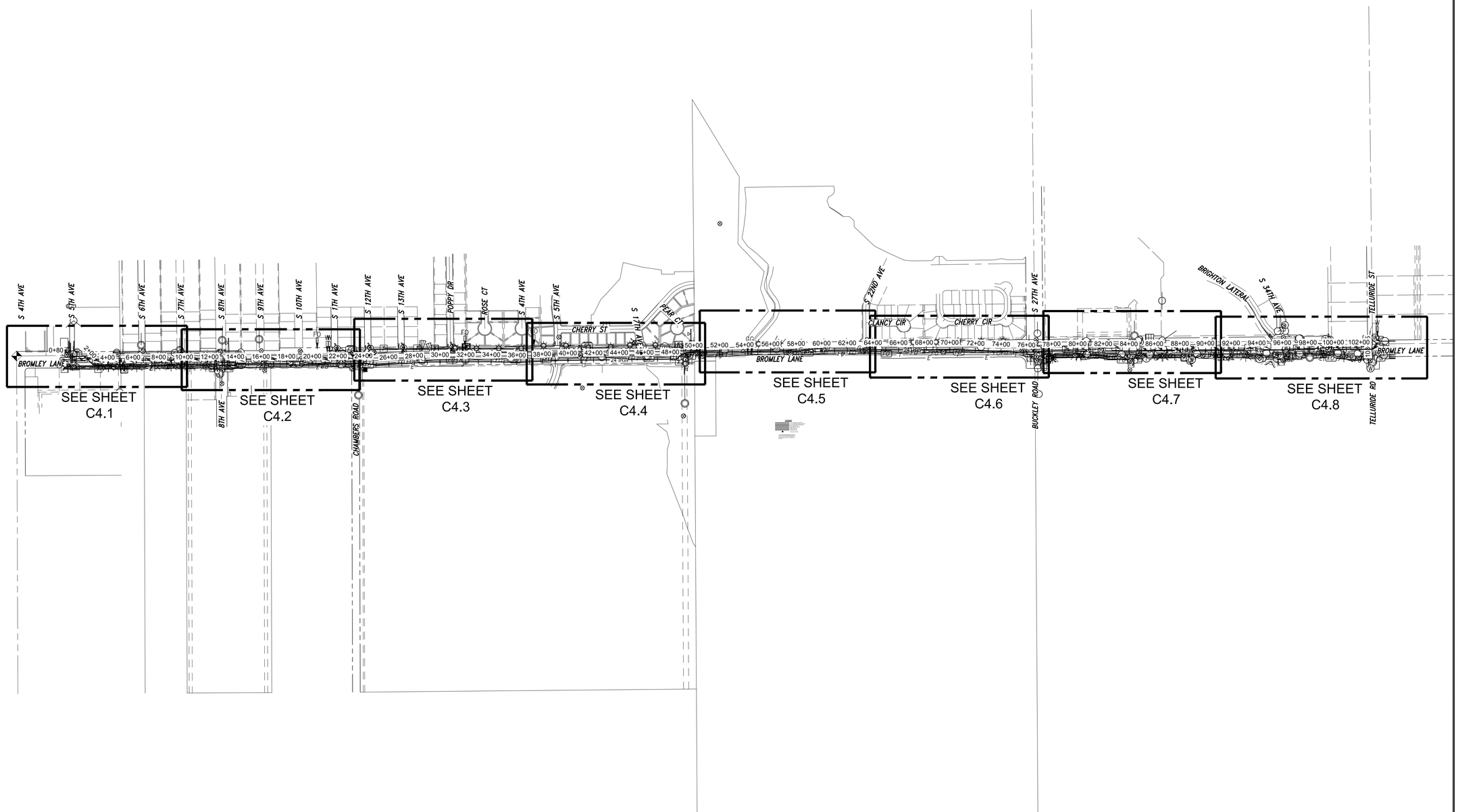

1 **TRANSMISSION LINE SHEET INDEX**

SCALE: 1"=400'

0 200 400 800
U.S. SURVEY FEET

NORTH

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SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

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SHEET TITLE:

TRANSMISSION LINE SHEET INDEX

SHEET NUMBER:

C4.0

PROJECT NO.: 0181377.00

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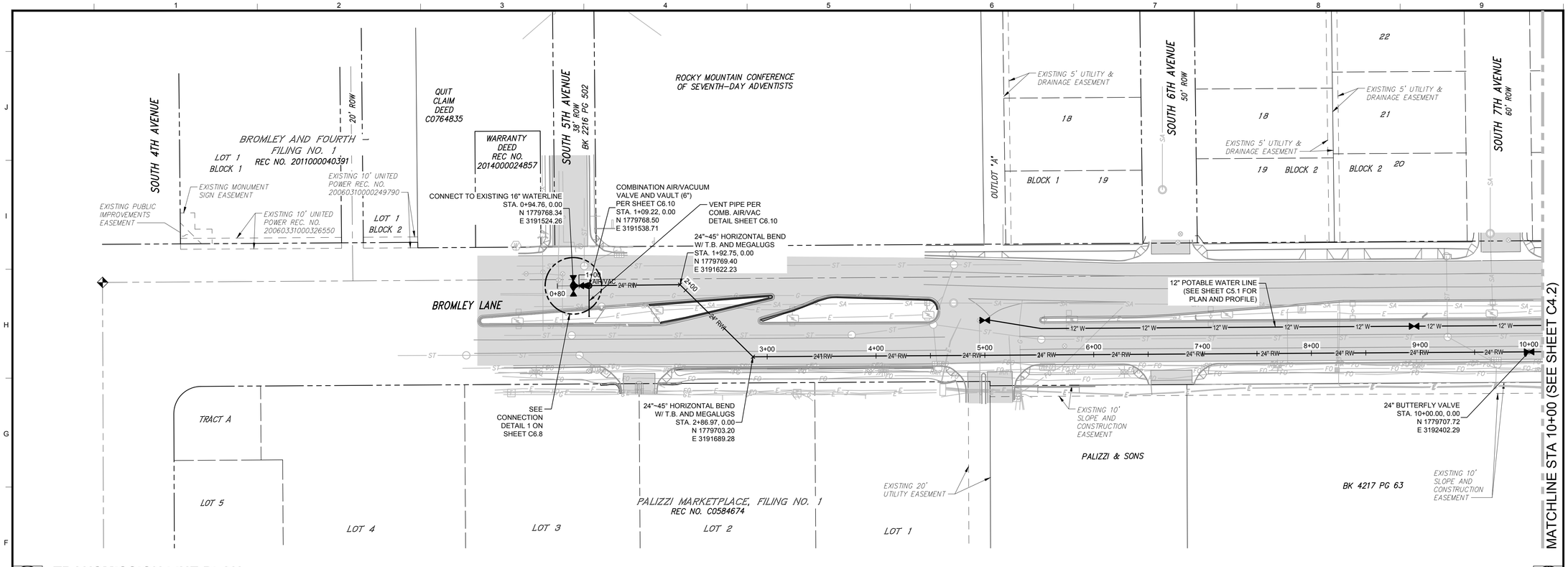

2 TRANSMISSION LINE PLAN

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH

NOTES:

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3. ALL PIPE WITHIN BORING CASINGS SHALL BE FUSIBLE PVC OR CERTAINTEED CERTA-LOK PVC.
4. ALL VALVE BOXES LOCATED WITHIN LANDSCAPED ARES SHALL BE FLUSH WITH FINAL GRADES.
5. ALL VALVE BOXES LOCATED WITHIN SHOULDERS AND ROADWAYS SHALL BE FLUSH WITH FINAL GRADE AND HAVE A CONCRETE COLLAR PER DETAIL. PLACE CONCRETE COLLARS AROUND ALL VALVE BOXES, INCLUDING IN LANDSCAPED AREAS.
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7. ALL FITTINGS SHALL BE EPOXY COATED AND WRAPPED IN POLYETHYLENE.
8. WHERE WATERLINES CROSS OVER SANITARY AND STORM SEWERS WITH LESS THAN 2 FEET OF CLEARANCE, THE SEWER SHALL BE ENCASED WITH A MINIMUM OF 6" OF CONCRETE FROM THE SPRINGLINE TO 6" ABOVE THE TOP OF THE SEWER. ENCASEMENT SHALL EXTEND ALONG THE CENTERLINE OF THE SEWER FOR A MIN. 1' BEYOND THE OD OF THE WATER MAIN.
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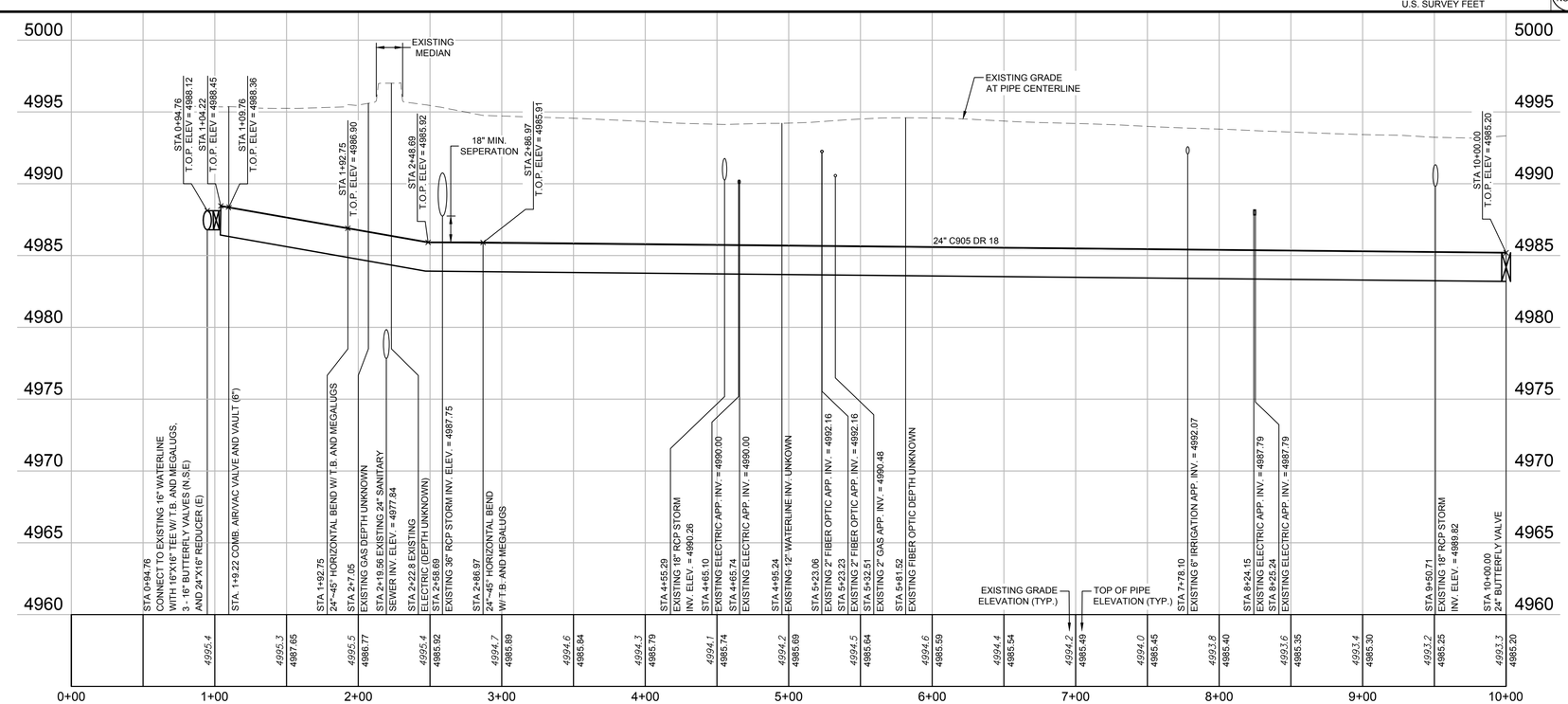
12. REPLACE DEMOLISHED ROADWAY, MEDIAN, AND CURB AND GUTTER PER CITY OF BRIGHTON STANDARDS.
13. REFER TO DETAIL 600-11 ON SHEET C6.4 FOR RESTRAINED PIPE LENGTHS.
14. BUTTERFLY VALVES TO BE PLACED IN VAULTS PER DETAIL ON SHEET C6.5
15. JOINT RESTRAINTS AND THRUST BLOCKS SHALL BE USED TO RESTRAIN 16" AND 24" PIPE.



1 TRANSMISSION LINE PROFILE

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

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CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:

TRANSMISSION LINE PLAN AND PROFILE

SHEET NUMBER:

C4.1

PROJECT NO.: 0181377.00

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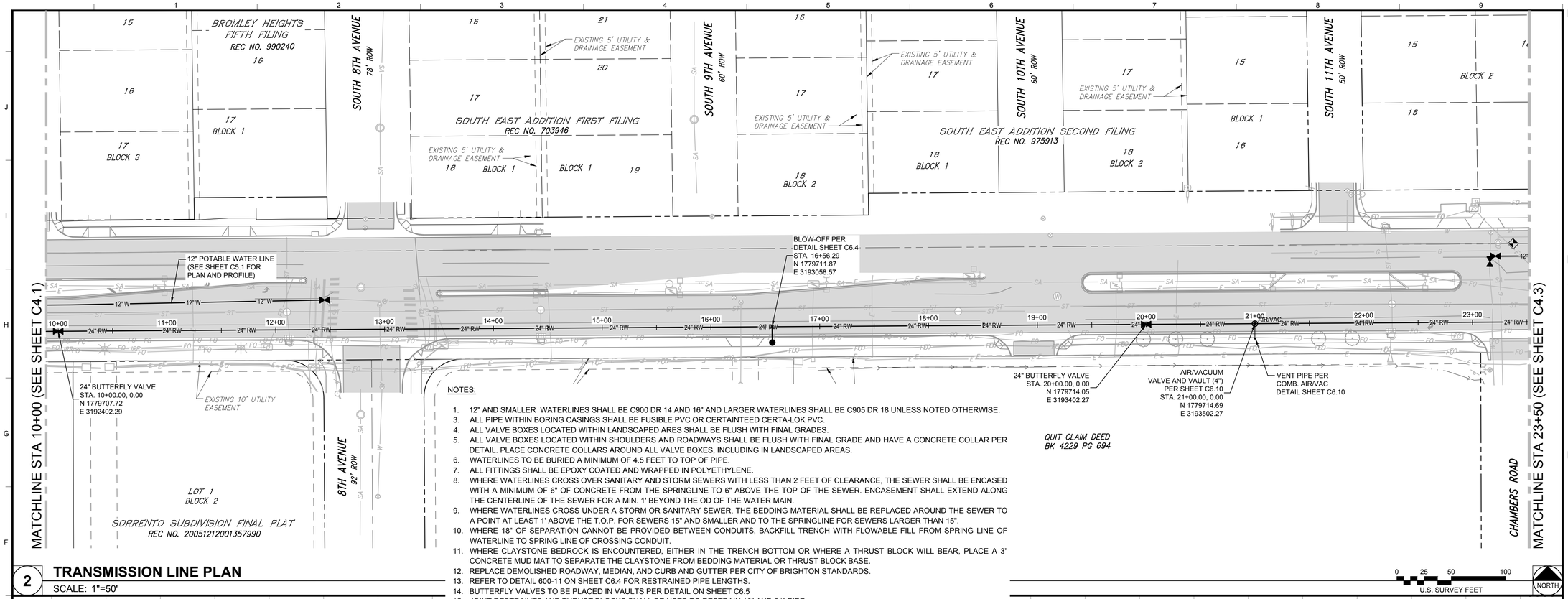

2 TRANSMISSION LINE PLAN

SCALE: 1"=50'

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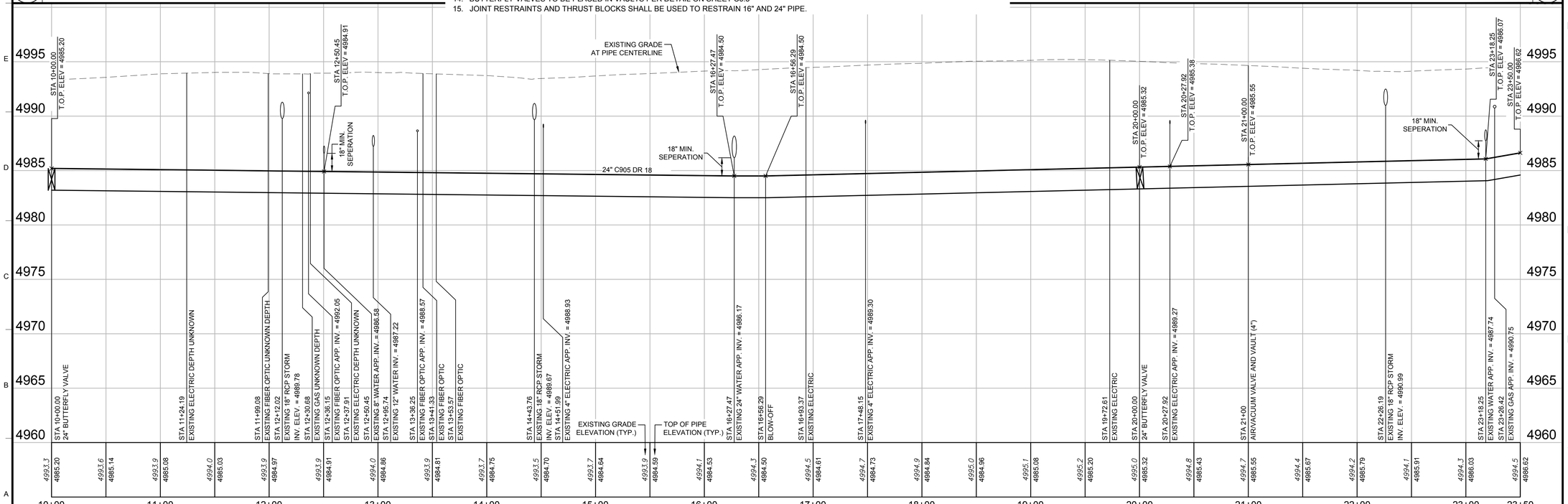

1 TRANSMISSION LINE PROFILE

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

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SOUTH PLATTE WELLS TRANSMISSION PROJECT

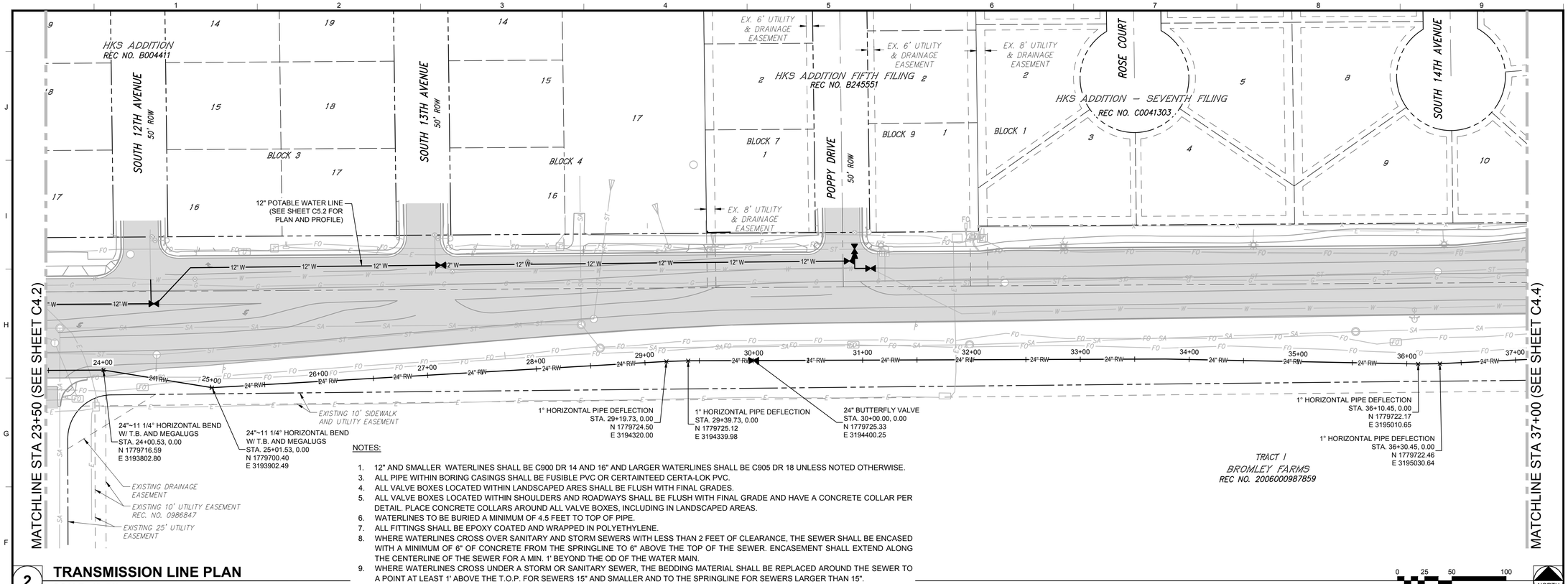
BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
TRANSMISSION LINE PLAN AND PROFILE

SHEET NUMBER:
C4.2

PROJECT NO.: 0181377.00



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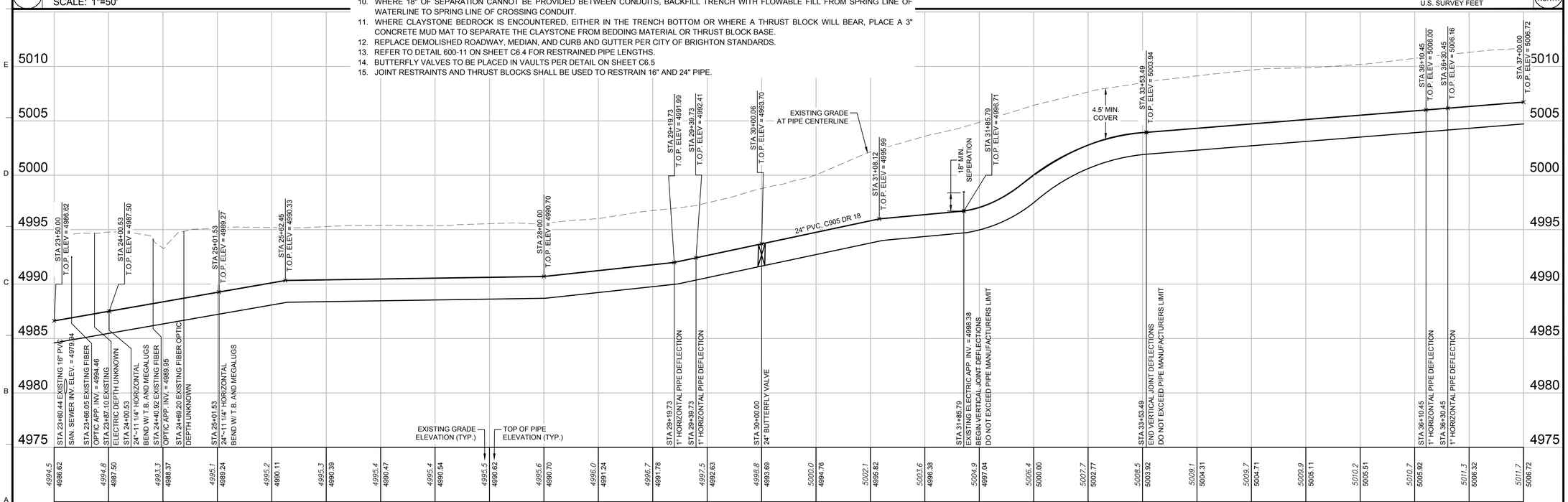
0 25 50 100
U.S. SURVEY FEET
NORTH



1 TRANSMISSION LINE PROFILE

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

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TRANSMISSION LINE PLAN AND PROFILE

SHEET NUMBER:
C4.3

PROJECT NO.: 0181377.00

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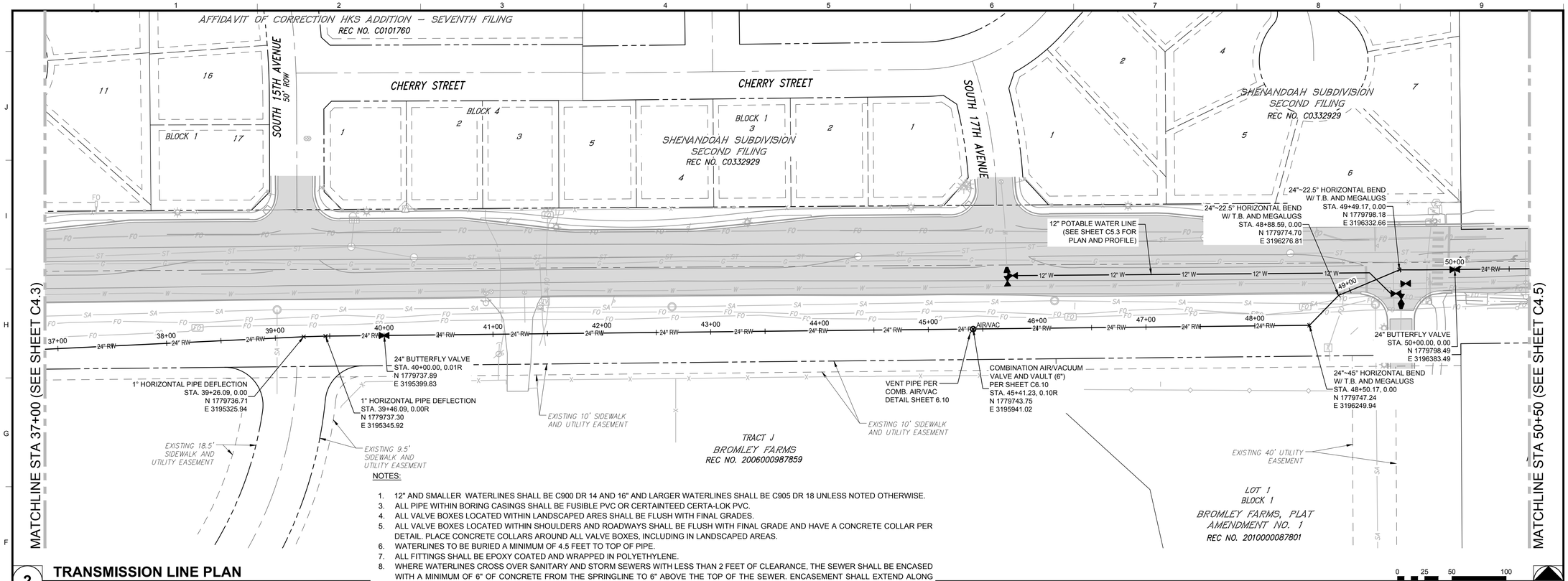

2 TRANSMISSION LINE PLAN

SCALE: 1"=50'

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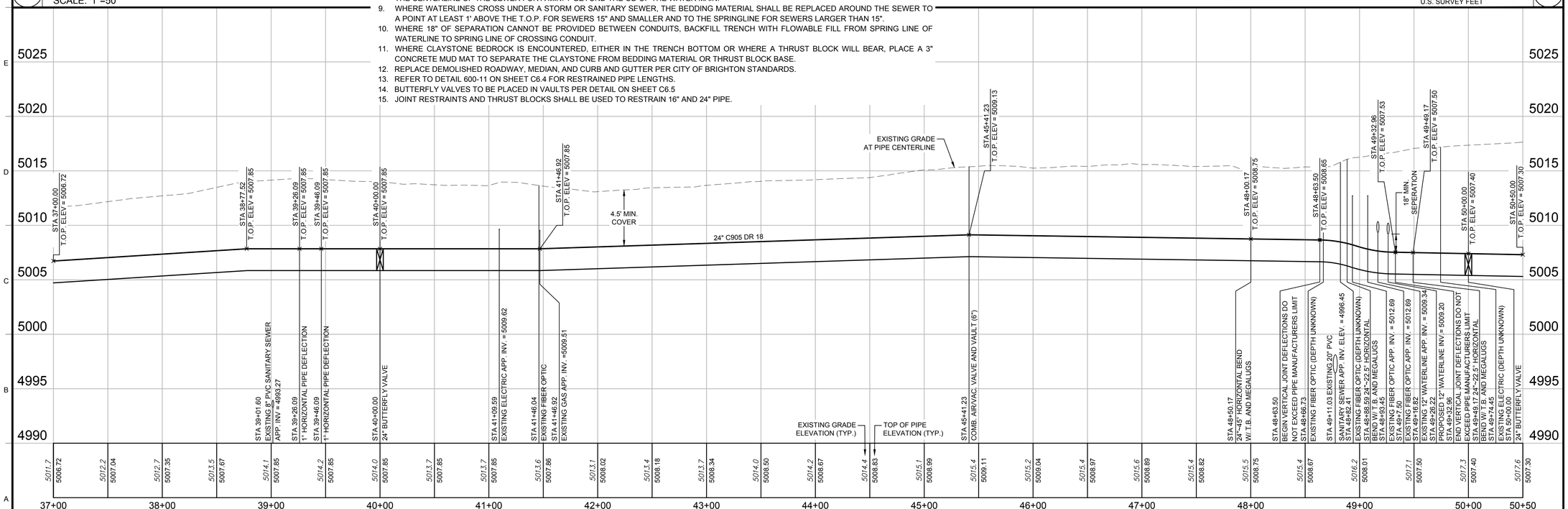

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BRIGHTON, CO

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SHEET TITLE:

TRANSMISSION LINE PLAN AND PROFILE

SHEET NUMBER:

C4.4

PROJECT NO.: 0181377.00

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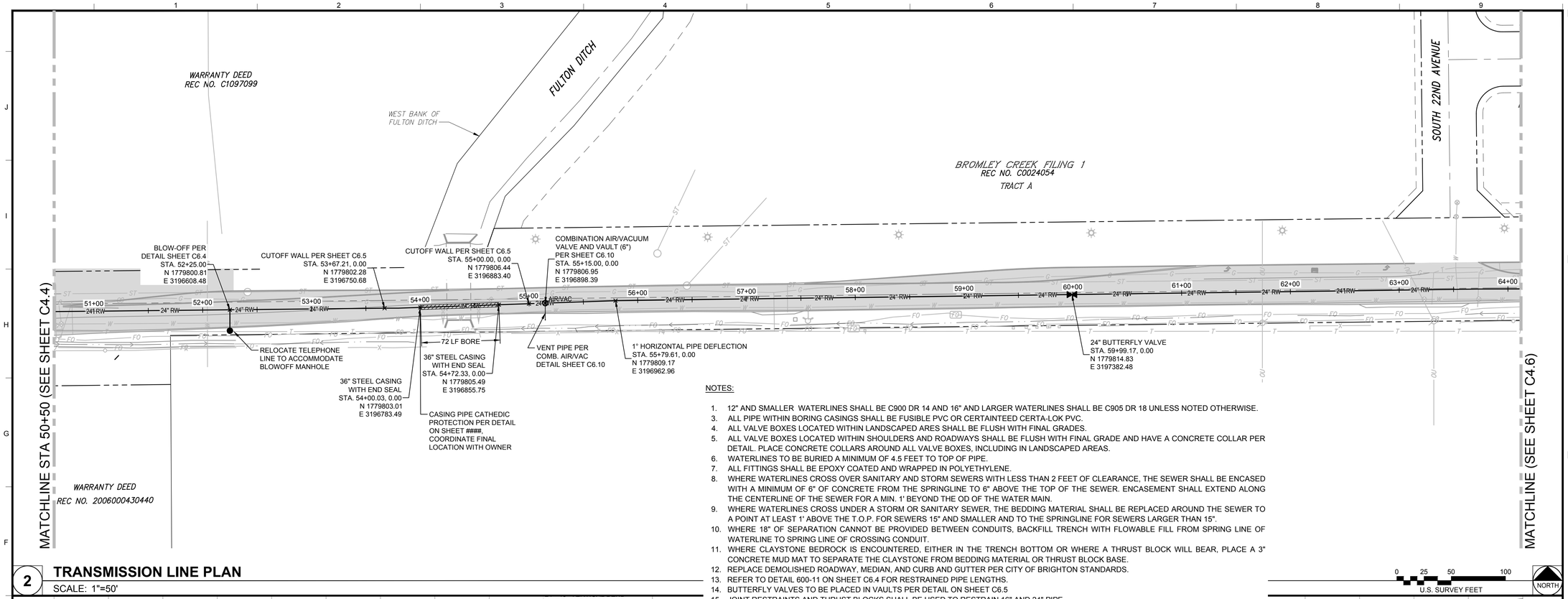

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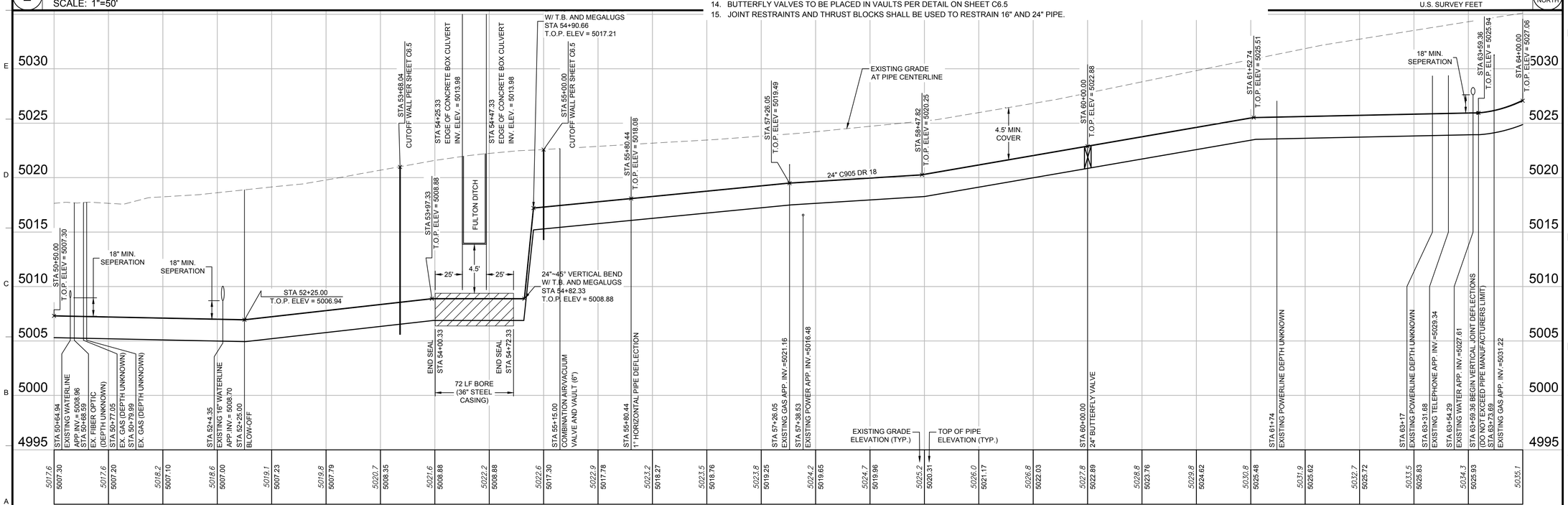

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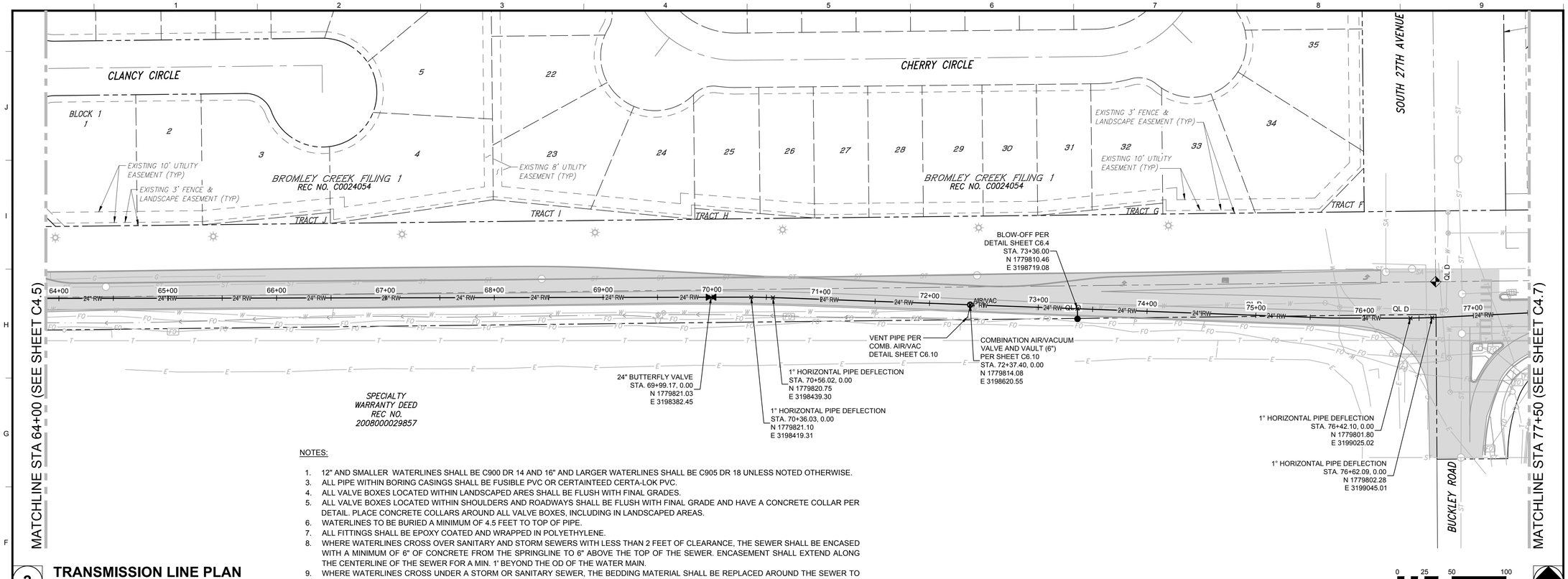
SHEET NUMBER:
C4.5

PROJECT NO.: 0181377.00



NOTES:

1. 12" AND SMALLER WATERLINES SHALL BE C900 DR 14 AND 16" AND LARGER WATERLINES SHALL BE C905 DR 18 UNLESS NOTED OTHERWISE.
3. ALL PIPE WITHIN BORING CASINGS SHALL BE FUSIBLE PVC OR CERTAINTEED CERTA-LOK PVC.
4. ALL VALVE BOXES LOCATED WITHIN LANDSCAPED ARES SHALL BE FLUSH WITH FINAL GRADES.
5. ALL VALVE BOXES LOCATED WITHIN SHOULDERS AND ROADWAYS SHALL BE FLUSH WITH FINAL GRADE AND HAVE A CONCRETE COLLAR PER DETAIL. PLACE CONCRETE COLLARS AROUND ALL VALVE BOXES, INCLUDING IN LANDSCAPED AREAS.
6. WATERLINES TO BE BURIED A MINIMUM OF 4.5 FEET TO TOP OF PIPE.
7. ALL FITTINGS SHALL BE EPOXY COATED AND WRAPPED IN POLYETHYLENE.
8. WHERE WATERLINES CROSS OVER SANITARY AND STORM SEWERS WITH LESS THAN 2 FEET OF CLEARANCE, THE SEWER SHALL BE ENCASED WITH A MINIMUM OF 6" OF CONCRETE FROM THE SPRINGLINE TO 6" ABOVE THE TOP OF THE SEWER. ENCASEMENT SHALL EXTEND ALONG THE CENTERLINE OF THE SEWER FOR A MIN. 1' BEYOND THE OD OF THE WATER MAIN.
9. WHERE WATERLINES CROSS UNDER A STORM OR SANITARY SEWER, THE BEDDING MATERIAL SHALL BE REPLACED AROUND THE SEWER TO A POINT AT LEAST 1' ABOVE THE T.O.P. FOR SEWERS 15" AND SMALLER AND TO THE SPRINGLINE FOR SEWERS LARGER THAN 15".
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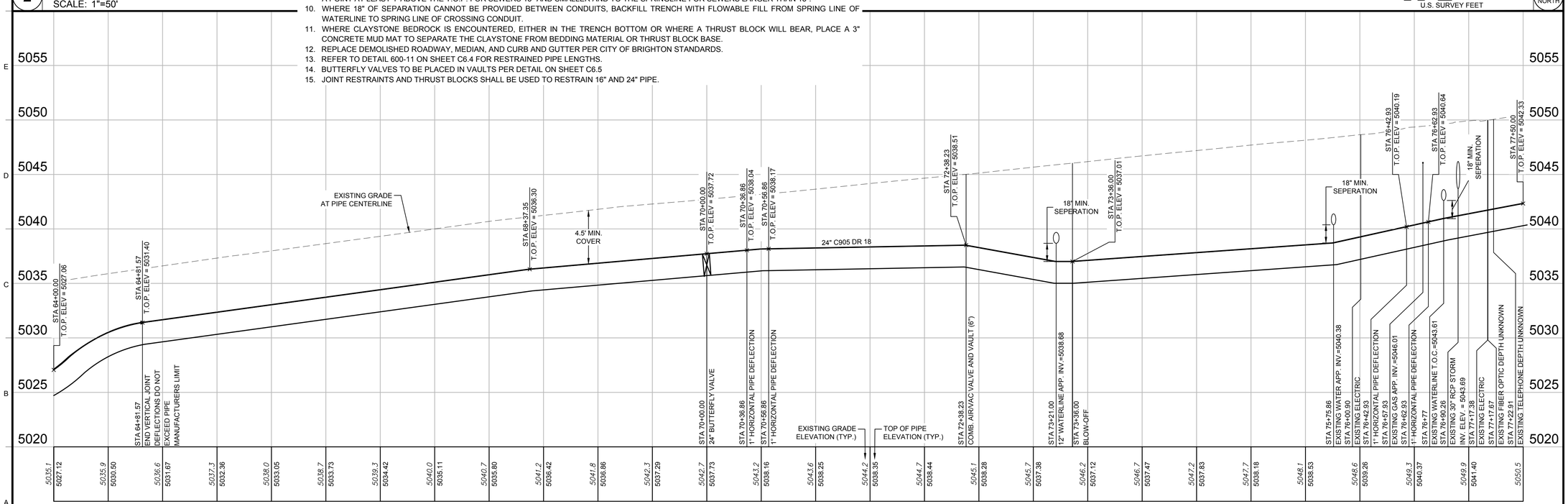
11. WHERE CLAYSTONE BEDROCK IS ENCOUNTERED, EITHER IN THE TRENCH BOTTOM OR WHERE A THRUST BLOCK WILL BEAR, PLACE A 3" CONCRETE MUD MAT TO SEPARATE THE CLAYSTONE FROM BEDDING MATERIAL OR THRUST BLOCK BASE.
12. REPLACE DEMOLISHED ROADWAY, MEDIAN, AND CURB AND GUTTER PER CITY OF BRIGHTON STANDARDS.
13. REFER TO DETAIL 600-11 ON SHEET C6.4 FOR RESTRAINED PIPE LENGTHS.
14. BUTTERFLY VALVES TO BE PLACED IN VAULTS PER DETAIL ON SHEET C6.5
15. JOINT RESTRAINTS AND THRUST BLOCKS SHALL BE USED TO RESTRAIN 16" AND 24" PIPE.

2 TRANSMISSION LINE PLAN

SCALE: 1"=50'



1 TRANSMISSION LINE PROFILE

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

Farnsworth GROUP
1612 SPECHT POINT ROAD, SUITE 105
FORT COLLINS, COLORADO 80525
(970) 484-7477 / info@f-w.com
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ISSUE:

#	DATE:	DESCRIPTION:
1	8/29	FIRST SUBMITTAL TO CITY
2	11/5	SECOND SUBMITTAL TO CITY
3	04/3	FINAL SUBMITTAL

PROJECT:

CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:

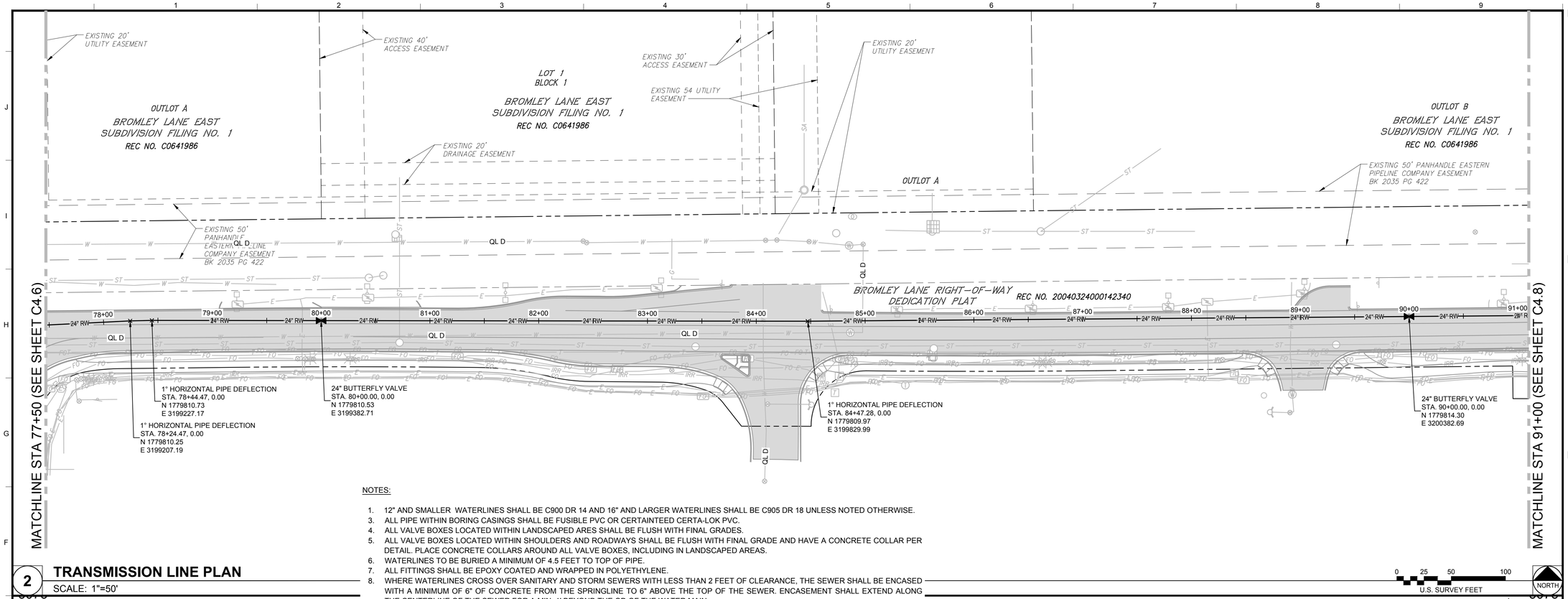
TRANSMISSION LINE PLAN AND PROFILE

SHEET NUMBER:

C4.6

PROJECT NO.: 0181377.00

[jowery] -z:\2018\0181377.00 - Brighton Wells Transmission\04_Drawings\DWG\Sheets\Transmission Line Plan And Profile - 0181377.00.dwg [3/27/2020 1:18 PM]



2 TRANSMISSION LINE PLAN

SCALE: 1"=50'

NOTES:

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3. ALL PIPE WITHIN BORING CASINGS SHALL BE FUSIBLE PVC OR CERTAINTEED CERTA-LOK PVC.
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6. WATERLINES TO BE BURIED A MINIMUM OF 4.5 FEET TO TOP OF PIPE.
7. ALL FITTINGS SHALL BE EPOXY COATED AND WRAPPED IN POLYETHYLENE.
8. WHERE WATERLINES CROSS OVER SANITARY AND STORM SEWERS WITH LESS THAN 2 FEET OF CLEARANCE, THE SEWER SHALL BE ENCASED WITH A MINIMUM OF 6" OF CONCRETE FROM THE SPRINGLINE TO 6" ABOVE THE TOP OF THE SEWER. ENCASEMENT SHALL EXTEND ALONG THE CENTERLINE OF THE SEWER FOR A MIN. 1' BEYOND THE OD OF THE WATER MAIN.
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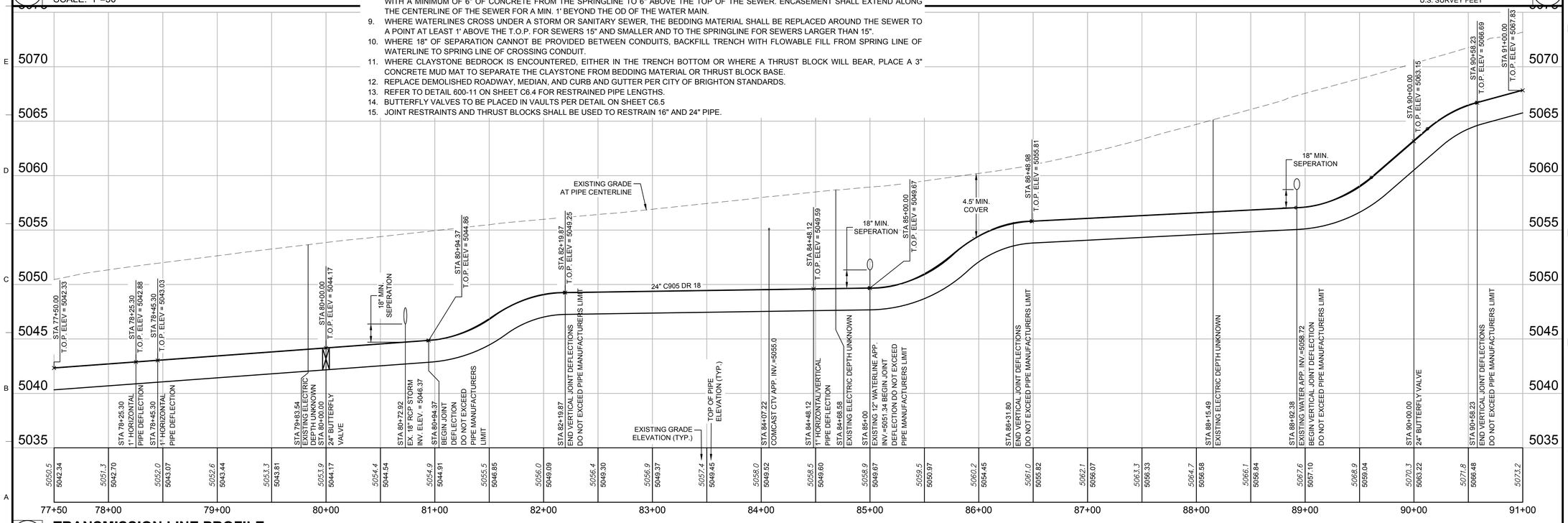
0 25 50 100
U.S. SURVEY FEET

NORTH



1 TRANSMISSION LINE PROFILE

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

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PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
TRANSMISSION LINE PLAN AND PROFILE

SHEET NUMBER:
C4.7

PROJECT NO.: 0181377.00

NOTES:

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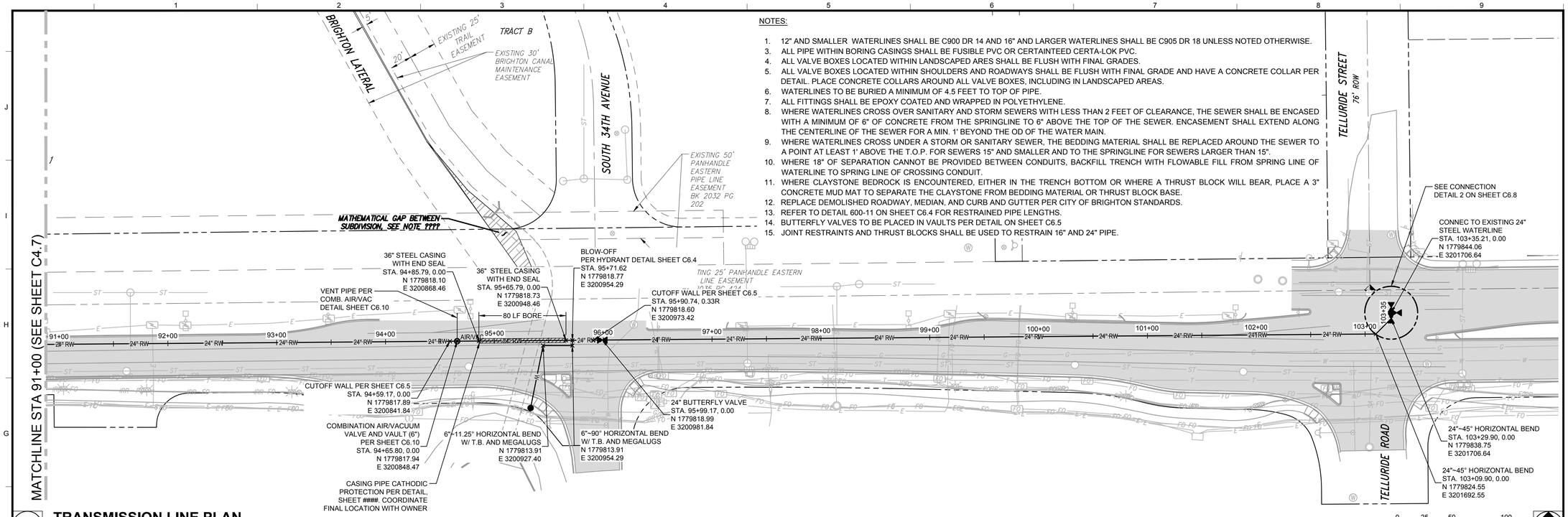
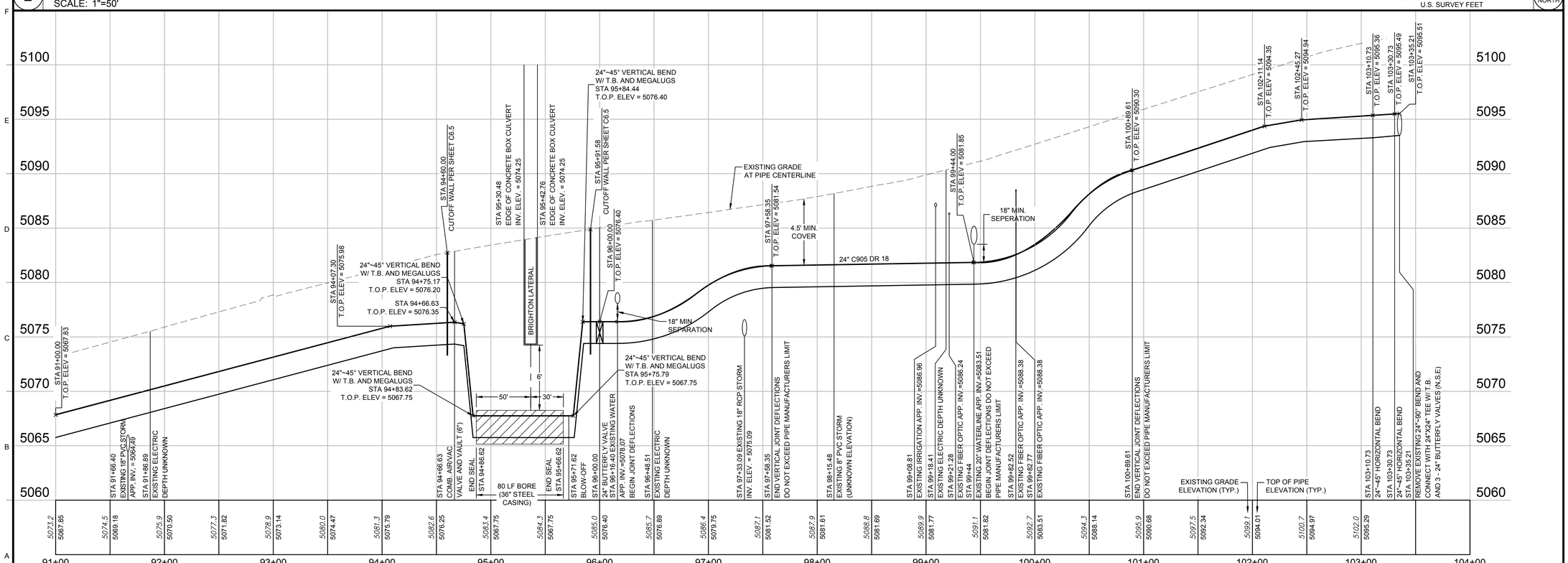


2 TRANSMISSION LINE PLAN

SCALE: 1"=50'



1 TRANSMISSION LINE PROFILE

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

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PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

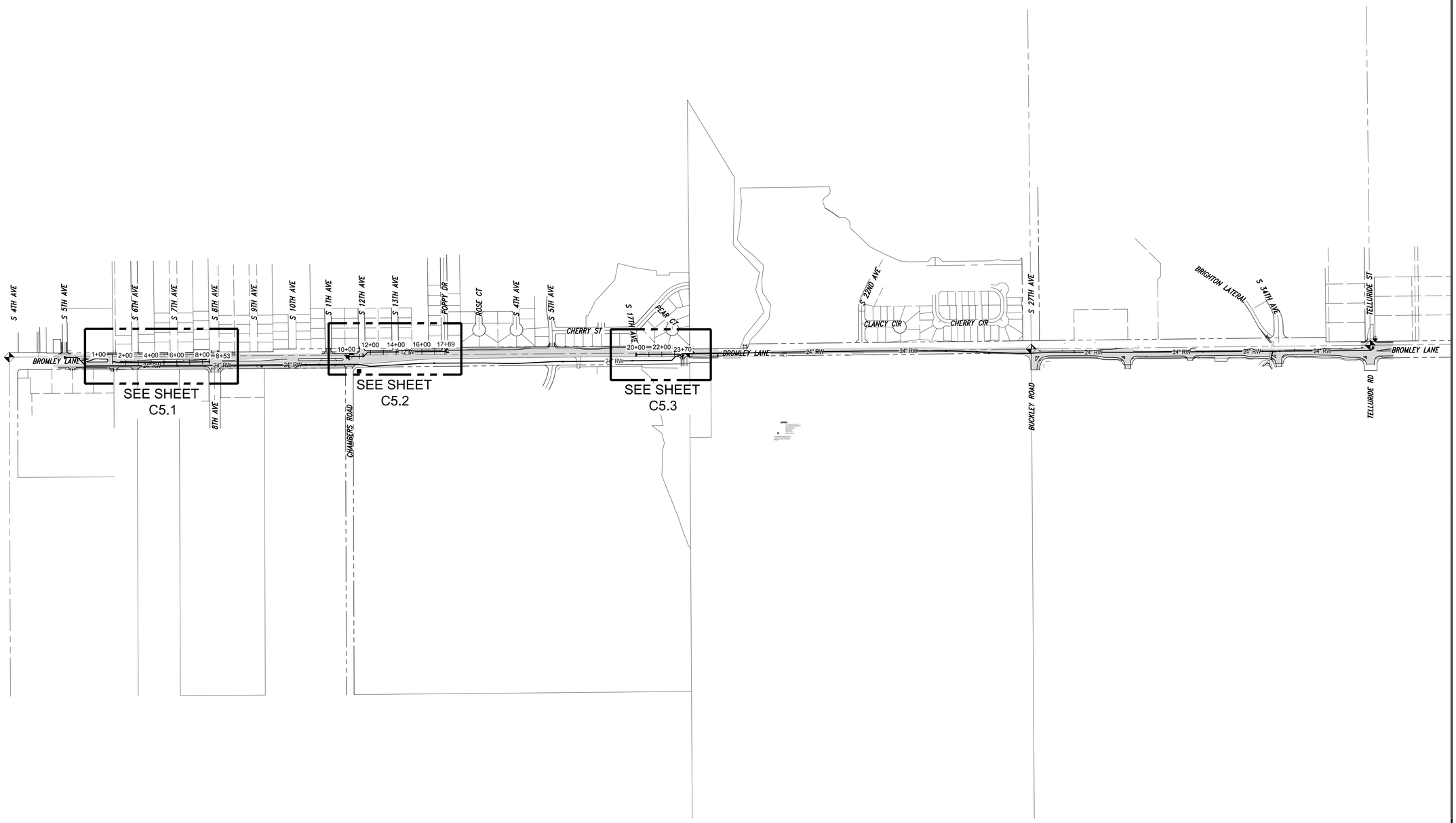
BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
TRANSMISSION LINE PLAN AND PROFILE

SHEET NUMBER:
C4.8

PROJECT NO.: 0181377.00



1 **POTABLE WATER LINE SHEET INDEX**

SCALE: 1"=400'

0 200 400 800
U.S. SURVEY FEET

NORTH

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SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

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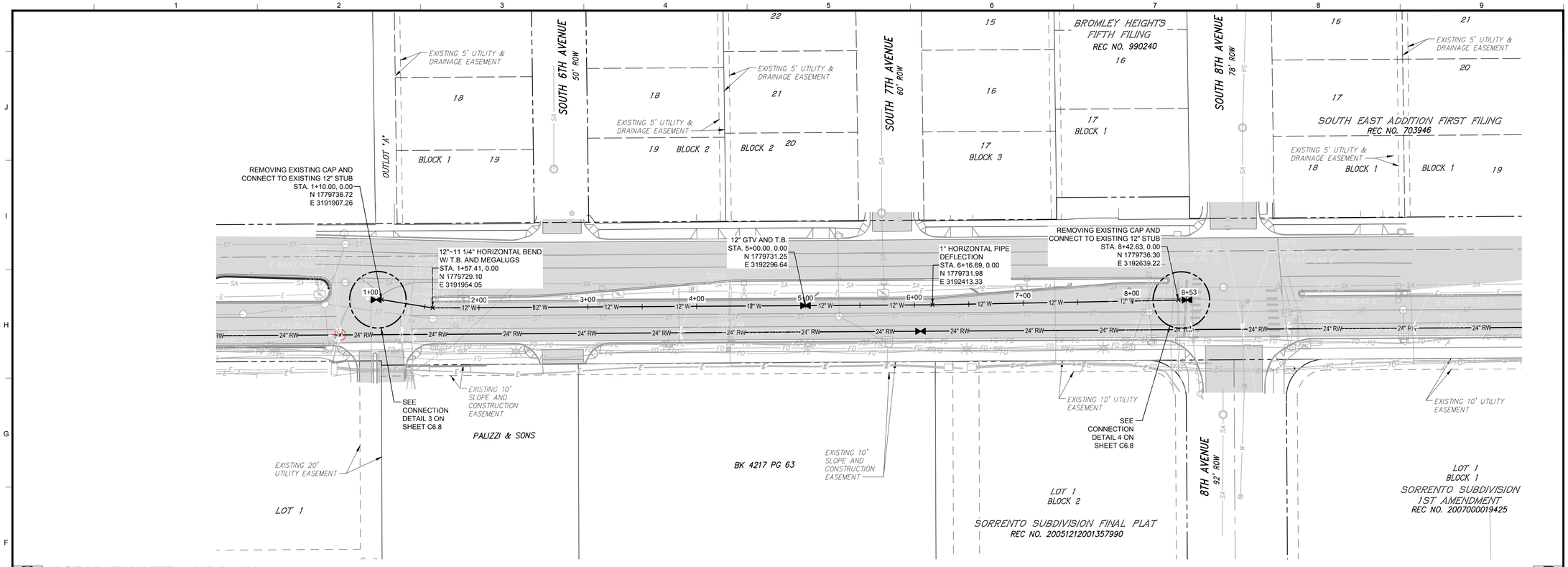
SHEET TITLE:

POTABLE WATER LINE SHEET INDEX

SHEET NUMBER:

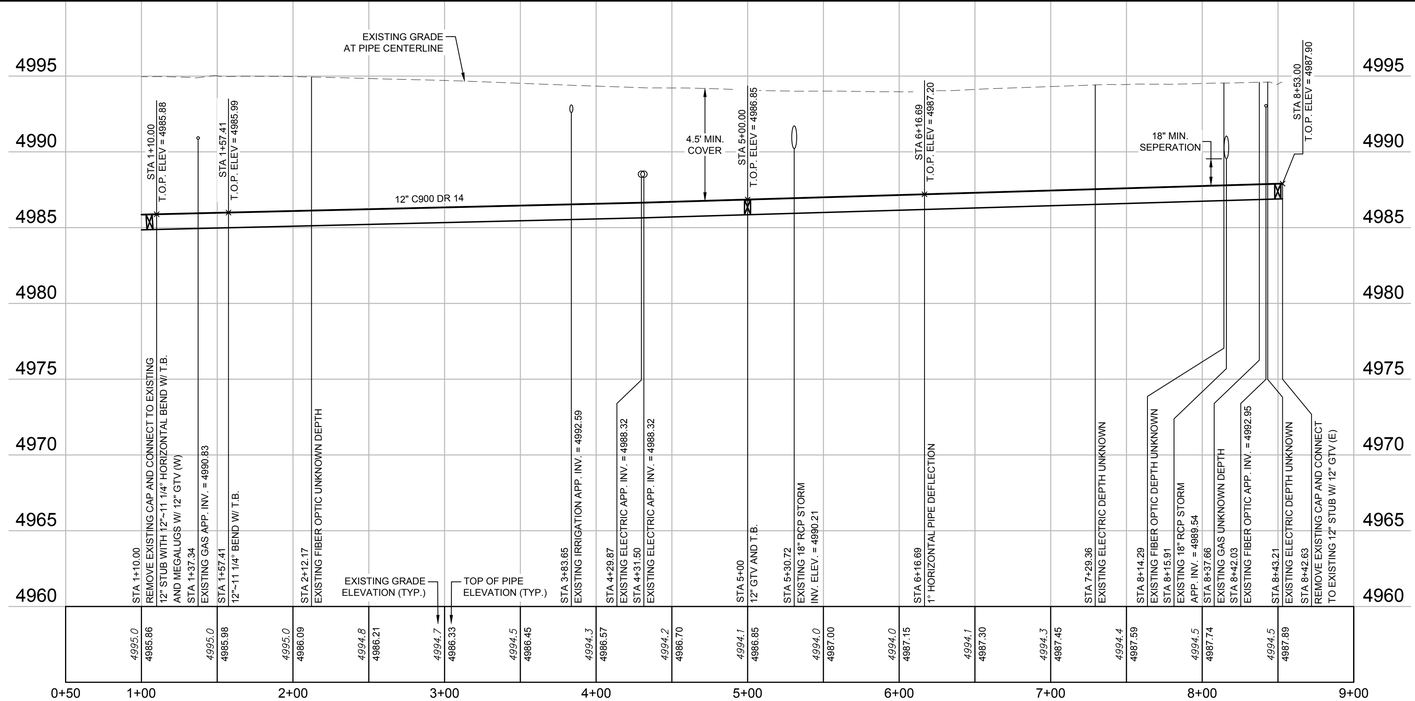
C5.0

PROJECT NO.: 0181377.00



2 POTABLE WATER LINE PLAN

SCALE: 1"=50'



1 POTABLE WATER LINE PROFILE

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

NOTES:

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PROJECT:

CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:

POTABLE WATER LINE PLAN AND PROFILE-1

SHEET NUMBER:

C5.1

PROJECT NO.: 0181377.00

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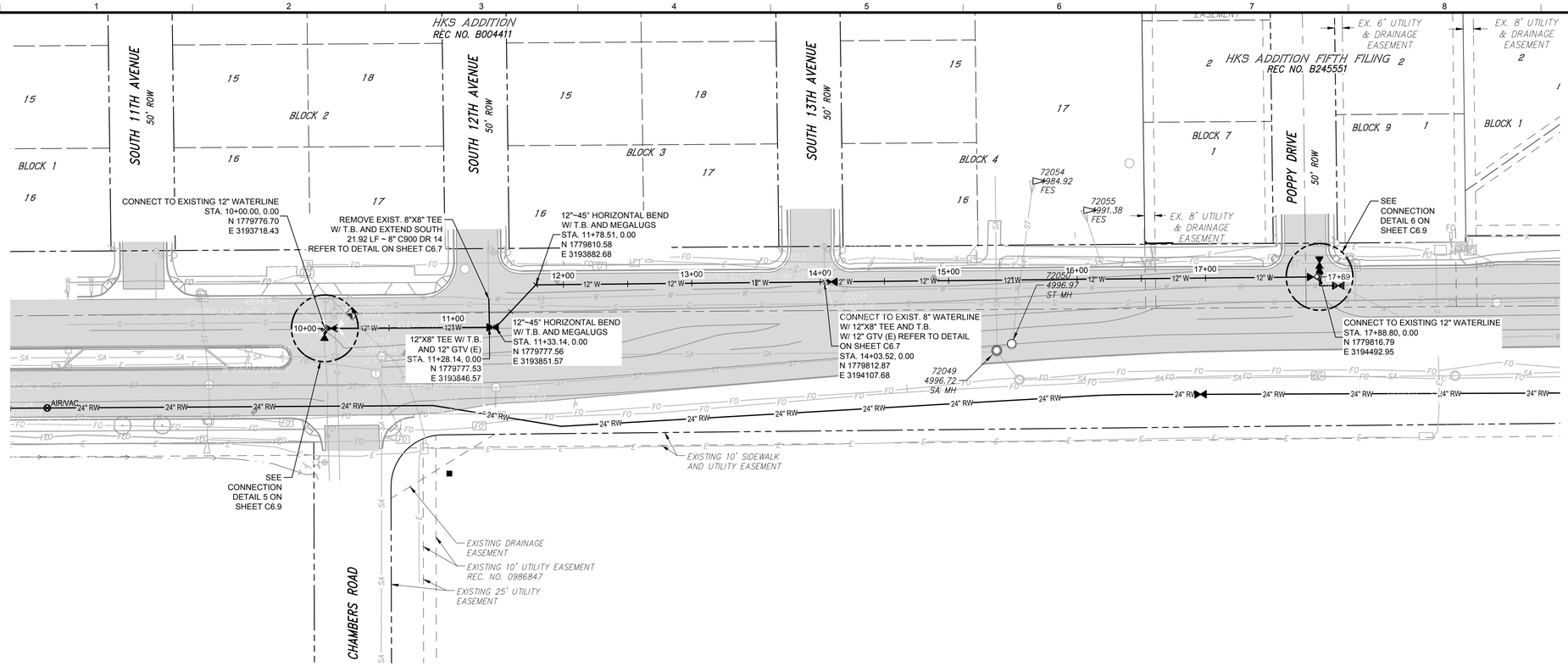
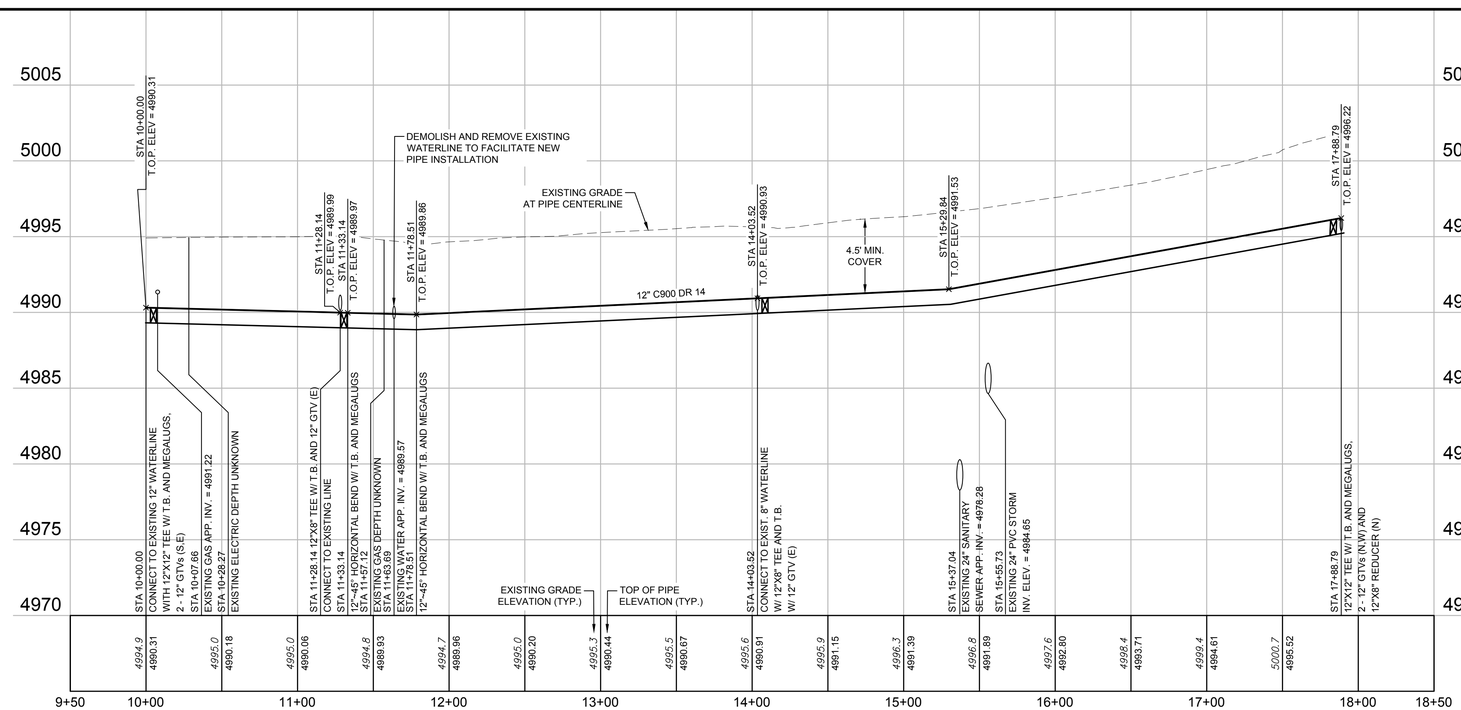


2 POTABLE WATER LINE PLAN

SCALE: 1"=50'

0 25 50 100 U.S. SURVEY FEET

NORTH



1 POTABLE WATER LINE PROFILE

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

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PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

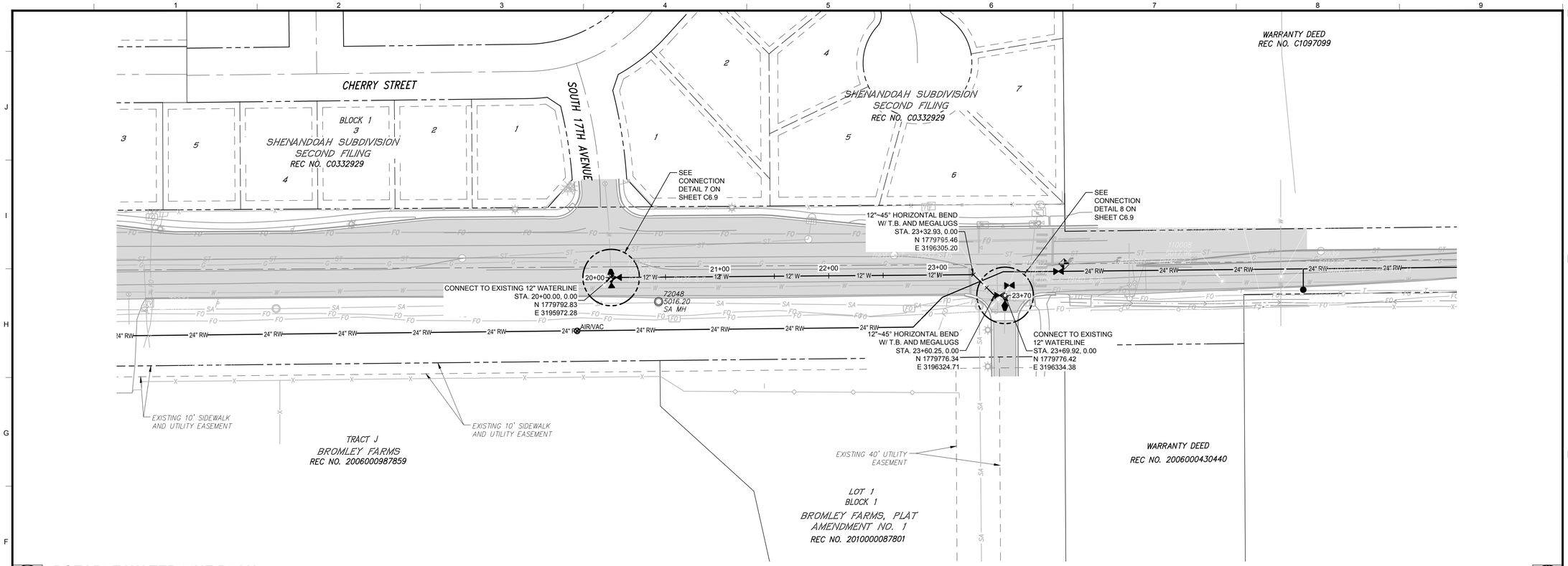
DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
POTABLE WATER LINE PLAN AND PROFILE-2

SHEET NUMBER:
C5.2

PROJECT NO.: 0181377.00

| | sturner | J:\2018\0181377.00 - Brighton Wells Transmission\04_Drawings\DWG\Sheets\Potable Water Line Plan And Profile - 0181377.00.dwg | 3/26/2020 12:52 PM |

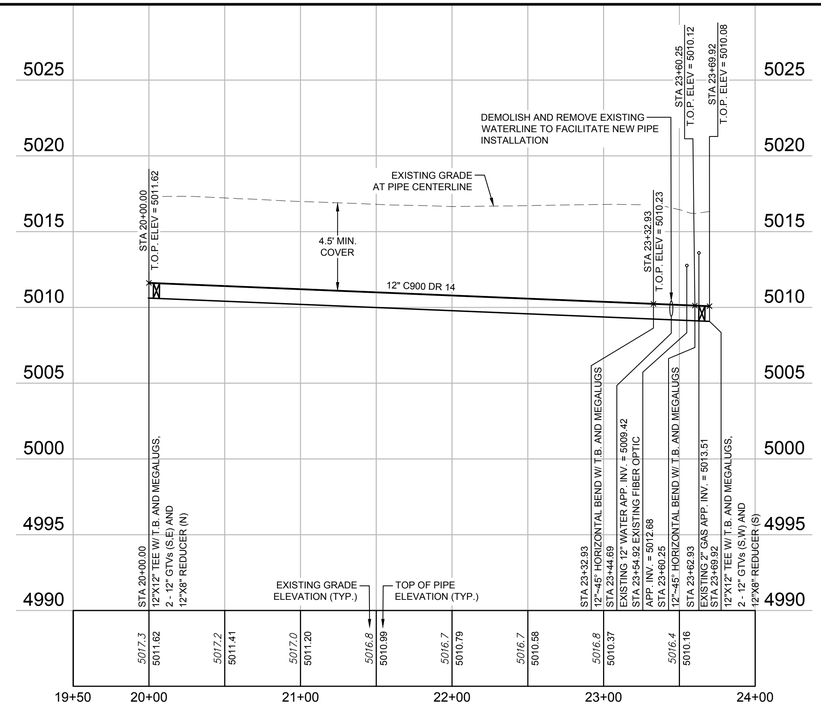


2 POTABLE WATER LINE PLAN

SCALE: 1"=50'

0 25 50 100
U.S. SURVEY FEET

NORTH



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3	04/3	FINAL SUBMITTAL

PROJECT:

CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:

POTABLE WATER LINE PLAN AND PROFILE-3

SHEET NUMBER:

C5.3

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Description

Photograph IP-1. Inlet protection for a curb opening inlet.

Inlet protection consists of permeable barriers installed around an inlet to filter runoff and remove sediment prior to entering a storm drain inlet. Inlet protection can be constructed from rock socks, sediment control logs, silt fence, block and rock socks, or other materials approved by the local jurisdiction. Area inlets can also be protected by over-excavating around the inlet to form a sediment trap.

Appropriate Uses

Install protection at storm sewer inlets that are operable during construction. Consider the potential for tracked-out sediment or temporary stockpile areas to contribute sediment to inlets when determining which inlets must be protected. This may include inlets in the general proximity of the construction area, not limited to downgradient inlets. Inlet protection is not a stand-alone BMP and should be used in conjunction with other upgradient BMPs.

Design and Installation

To function effectively, inlet protection measures must be installed to ensure that flows do not bypass the inlet protection and enter the storm drain without treatment. However, designs must also enable the inlet to function without completely blocking flows into the inlet in a manner that causes localized flooding. When selecting the type of inlet protection, consider factors such as type of inlet (e.g., curb or area, sump or on-grade conditions), traffic, anticipated flows, ability to secure the BMP properly, safety and other site-specific conditions. For example, block and rock socks will be better suited to a curb and gutter along a roadway, as opposed to silt fence or sediment control logs, which cannot be properly secured in a curb and gutter setting, but are effective area inlet protection measures.

Several inlet protection designs are provided in the Design Details. Additionally, a variety of proprietary products are available for inlet protection that may be approved for use by local governments. If proprietary products are used, design details and installation procedures from the manufacturer must be followed. Regardless of the type of inlet protection selected, inlet protection is most effective when combined with other BMPs such as curb socks and check dams. Inlet protection is often the last barrier before runoff enters the storm sewer or receiving water.

Design details with notes are provided for these forms of inlet protection:

IP-1. Block and Rock Sock Inlet Protection for Sump or On-grade Inlets

IP-2. Curb (Rock) Socks Upstream of Inlet Protection, On-grade Inlets

Inlet Protection (various forms)	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No

IP-3. Rock Sock Inlet Protection for Sump/Area Inlet

IP-4. Silt Fence Inlet Protection for Sump/Area Inlet

IP-5. Over-excavation Inlet Protection

IP-6. Straw Bale Inlet Protection for Sump/Area Inlet

CIP-1. Culvert Inlet Protection

Propriety inlet protection devices should be installed in accordance with manufacturer specifications.

More information is provided below on selecting inlet protection for sump and on-grade locations.

Inlets Located in a Sump

When applying inlet protection in sump conditions, it is important that the inlet continue to function during larger runoff events. For curb inlets, the maximum height of the protective barrier should be lower than the top of the curb opening to allow overflow into the inlet during larger storms without excessive localized flooding. If the inlet protection height is greater than the curb elevation, particularly if the filter becomes clogged with sediment, runoff will not enter the inlet and may bypass it, possibly causing localized flooding, public safety issues, and downstream erosion and damage from bypassed flows.

Area inlets located in a sump setting can be protected through the use of silt fence, concrete block and rock socks (on paved surfaces), sediment control logs/straw wattles embedded in the adjacent soil and stacked around the area inlet (on pervious surfaces), over-excavation around the inlet, and proprietary products providing equivalent functions.

Inlets Located on a Slope

For curb and gutter inlets on paved sloping streets, block and rock sock inlet protection is recommended in conjunction with curb socks in the gutter leading to the inlet. For inlets located along unpaved roads, also see the Check Dam Fact Sheet.

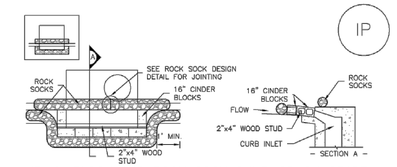
Maintenance and Removal

Inspect inlet protection frequently. Inspection and maintenance guidance includes:

- Inspect for tears that can result in sediment directly entering the inlet, as well as result in the contents of the BMP (e.g., gravel) washing into the inlet.
- Check for improper installation resulting in untreated flows bypassing the BMP and directly entering the inlet or bypassing to an unprotected downstream inlet. For example, silt fence that has not been properly trenched around the inlet can result in flows under the silt fence and directly into the inlet.
- Look for displaced BMPs that are no longer protecting the inlet. Displacement may occur following larger storm events that wash away or reposition the inlet protection. Traffic or equipment may also crush or displace the BMP.
- Monitor sediment accumulation upgradient of the inlet protection.

- Remove sediment accumulation from the area upstream of the inlet protection, as needed to maintain BMP effectiveness, typically when it reaches no more than half the storage capacity of the inlet protection. For silt fence, remove sediment when it accumulates to a depth of no more than 6 inches. Remove sediment accumulation from the area upstream of the inlet protection as needed to maintain the functionality of the BMP.
- Propriety inlet protection devices should be inspected and maintained in accordance with manufacturer specifications. If proprietary inlet insert devices are used, sediment should be removed in a timely manner to prevent devices from breaking and spilling sediment into the storm drain.

Inlet protection must be removed and properly disposed of when the drainage area for the inlet has reached final stabilization.



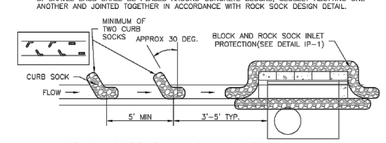
IP–1. BLOCK AND ROCK SOCK SUMP OR ON GRADE INLET PROTECTION

BLOCK AND CURB SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. CONCRETE "CINDER" BLOCKS SHALL BE LAID ON THEIR SIDES AROUND THE INLET IN A SINGLE ROW, ABUTTING ONE ANOTHER WITH THE OPEN END FACING AWAY FROM THE CURB.

3. GRAVEL BAGS SHALL BE PLACED AROUND CONCRETE BLOCKS, CLOSELY ABUTTING ONE ANOTHER AND JOINTED TOGETHER IN ACCORDANCE WITH ROCK SOCK DESIGN DETAIL.



IP–2. CURB ROCK SOCKS UPSTREAM OF INLET PROTECTION

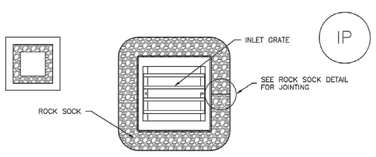
CURB ROCK SOCK INLET PROTECTION INSTALLATION NOTES

1. SEE ROCK SOCK DESIGN DETAIL INSTALLATION REQUIREMENTS.

2. PLACEMENT OF THE SOCK SHALL BE APPROXIMATELY 30 DEGREES FROM PERPENDICULAR IN THE OPPOSITE DIRECTION OF FLOW.

3. SOCKS ARE TO BE FLUSH WITH THE CURB AND SPACED A MINIMUM OF 5 FEET APART.

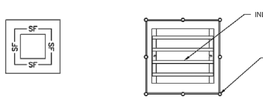
4. AT LEAST TWO CURB SOCKS IN SERIES ARE REQUIRED UPSTREAM OF ON–GRADE INLETS.



IP–3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



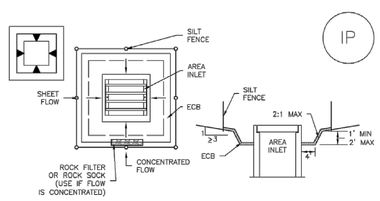
IP–4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



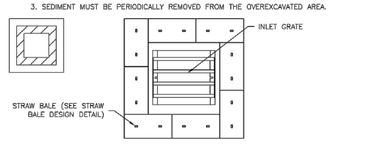
IP–5. OVEREXCAVATION INLET PROTECTION

OVEREXCAVATION INLET PROTECTION INSTALLATION NOTES

1. THIS FORM OF INLET PROTECTION IS PRIMARILY APPLICABLE FOR SITES THAT HAVE NOT YET REACHED FINAL GRADE AND SHOULD BE USED ONLY FOR INLETS WITH A RELATIVELY SMALL CONTRIBUTING DRAINAGE AREA.

2. WHEN USING FOR CONCENTRATED FLOWS, SHAPE BASIN IN 2:1 RATIO WITH LENGTH ORIENTED TOWARDS DIRECTION OF FLOW.

3. SEDIMENT MUST BE PERIODICALLY REMOVED FROM THE OVEREXCAVATED AREA.

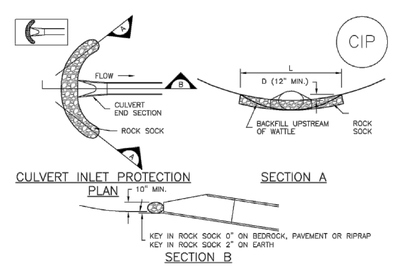


IP–6. STRAW BALE FOR SUMP INLET PROTECTION

STRAW BALE BARRIER INLET PROTECTION INSTALLATION NOTES

1. SEE STRAW BALE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. BALES SHALL BE PLACED IN A SINGLE ROW AROUND THE INLET WITH ENDS OF BALES TIGHTLY ABUTTING ONE ANOTHER.



CULVERT INLET PROTECTION PLAN

SECTION A

SECTION B

CIP–1. CULVERT INLET PROTECTION

CULVERT INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR
–LOCATION OF CULVERT INLET PROTECTION.

2. SEE ROCK SOCK DESIGN DETAIL FOR ROCK GRADATION REQUIREMENTS AND JOINTING DETAIL.

CULVERT INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE CULVERT SHALL BE REMOVED WHEN THE SEDIMENT DEPTH IS ½ THE HEIGHT OF THE ROCK SOCK.

5. CULVERT INLET PROTECTION SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

(DETAILS ADAPTED FROM AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

GENERAL INLET PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
–LOCATION OF INLET PROTECTION.
–TYPE OF INLET PROTECTION (IP.1, IP.2, IP.3, IP.4, IP.5, IP.6)

2. INLET PROTECTION SHALL BE INSTALLED PROMPTLY AFTER INLET CONSTRUCTION OR PAVING IS COMPLETE (TYPICALLY WITHIN 48 HOURS). IF A RAINFALL/RUNOFF EVENT IS FORECAST, INSTALL INLET PROTECTION PRIOR TO ONSET OF EVENT.

3. MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

INLET PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¾ OF THE HEIGHT FOR STRAW BALES.

5. INLET PROTECTION IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS PERMANENTLY STABILIZED, UNLESS THE LOCAL JURISDICTION APPROVES EARLIER REMOVAL OF INLET PROTECTION IN STREETS.

6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

NOTE: THE DETAILS INCLUDED WITH THIS FACT SHEET SHOW COMMONLY USED, CONVENTIONAL METHODS OF INLET PROTECTION IN THE DENVER METROPOLITAN AREA. THERE ARE MANY PROPRIETARY INLET PROTECTION METHODS ON THE MARKET. UDFCD NEITHER ENDORSES NOR DISCOURAGES USE OF PROPRIETARY INLET PROTECTION; HOWEVER, IN THE EVENT PROPRIETARY METHODS ARE USED, THE APPROPRIATE DETAIL FROM THE MANUFACTURER MUST BE INCLUDED IN THE SWMP AND THE BMP MUST BE INSTALLED AND MAINTAINED AS SHOWN IN THE MANUFACTURER'S DETAILS.

NOTE: SOME MUNICIPALITIES DISCOURAGE OR PROHIBIT THE USE OF STRAW BALES FOR INLET PROTECTION. CHECK WITH LOCAL JURISDICTION TO DETERMINE IF STRAW BALE INLET PROTECTION IS ACCEPTABLE.

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1	8/29	FIRST SUBMITTAL TO CITY
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PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
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REVIEWED:	JC
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SHEET TITLE:

EROSION CONTROL DETAILS

SHEET NUMBER:

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Description

A silt fence is a woven geotextile fabric attached to wooden posts and trenched into the ground. It is designed as a sediment barrier to intercept sheet flow runoff from disturbed areas.

Photograph SF-1. Silt fence creates a sediment barrier, forcing sheet flow runoff to evaporate or infiltrate.

Appropriate Uses

A silt fence can be used where runoff is conveyed from a disturbed area as sheet flow. Silt fence is not designed to receive concentrated flow or to be used as a filter fabric. Typical uses include:

- Down slope of a disturbed area to accept sheet flow.
- Along the perimeter of a receiving water such as a stream, pond or wetland.
- At the perimeter of a construction site.

Design and Installation

Silt fence should be installed along the contour of slopes so that it intercepts sheet flow. The maximum recommended tributary drainage area per 100 lineal feet of silt fence, installed along the contour, is approximately 0.25 acres with a disturbed slope length of up to 150 feet and a tributary slope gradient no steeper than 3:1. Longer and steeper slopes require additional measures. This recommendation only applies to silt fence installed along the contour. Silt fence installed for other uses, such as perimeter control, should be installed in a way that will not produce concentrated flows. For example, a "J-hook" installation may be appropriate to force runoff to pond and evaporate or infiltrate in multiple areas rather than concentrate and cause erosive conditions parallel to the silt fence.

See Detail SF-1 for proper silt fence installation, which involves proper trenching, staking, securing the fabric to the stakes, and backfilling the silt fence. Properly installed silt fence should not be easily pulled out by hand and there should be no gaps between the ground and the fabric.

Silt fence must meet the minimum allowable strength requirements, depth of installation requirement, and other specifications in the design details. Improper installation of silt fence is a common reason for silt fence failure; however, when properly installed and used for the appropriate purposes, it can be highly effective.

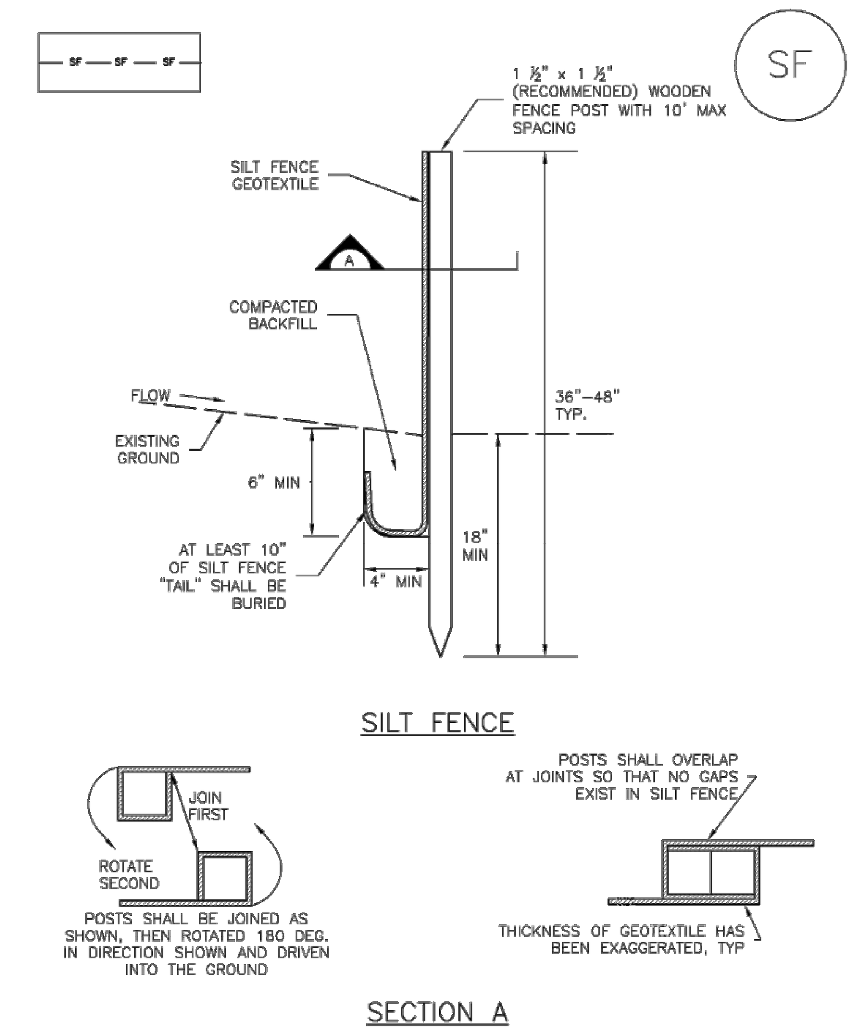
Silt Fence	
Functions	
Erosion Control	No
Sediment Control	Yes
Site/Material Management	No

Maintenance and Removal

Inspection of silt fence includes observing the material for tears or holes and checking for slumping fence and undercut areas bypassing flows. Repair of silt fence typically involves replacing the damaged section with a new section. Sediment accumulated behind silt fence should be removed, as needed to maintain BMP effectiveness, typically before it reaches a depth of 6 inches.

Silt fence may be removed when the upstream area has reached final stabilization.

Photograph SF-2. When silt fence is not installed along the contour, a "J-hook" installation may be appropriate to ensure that the BMP does not create concentrated flow parallel to the silt fence. Photo courtesy of Tom Gore.



SF–1. SILT FENCE

SILT FENCE INSTALLATION NOTES

1. SILT FENCE MUST BE PLACED AWAY FROM THE TOE OF THE SLOPE TO ALLOW FOR WATER PONDING. SILT FENCE AT THE TOE OF A SLOPE SHOULD BE INSTALLED IN A FLAT LOCATION AT LEAST SEVERAL FEET (2–5 FT) FROM THE TOE OF THE SLOPE TO ALLOW ROOM FOR PONDING AND DEPOSITION.

2. A UNIFORM 6" X 4" ANCHOR TRENCH SHALL BE EXCAVATED USING TRENCHER OR SILT FENCE INSTALLATION DEVICE. NO ROAD GRADERS, BACKHOES, OR SIMILAR EQUIPMENT SHALL BE USED.

3. COMPACT ANCHOR TRENCH BY HAND WITH A "JUMPING JACK" OR BY WHEEL ROLLING. COMPACTION SHALL BE SUCH THAT SILT FENCE RESISTS BEING PULLED OUT OF ANCHOR TRENCH BY HAND.

4. SILT FENCE SHALL BE PULLED TIGHT AS IT IS ANCHORED TO THE STAKES. THERE SHOULD BE NO NOTICEABLE SAG BETWEEN STAKES AFTER IT HAS BEEN ANCHORED TO THE STAKES.

5. SILT FENCE FABRIC SHALL BE ANCHORED TO THE STAKES USING 1" HEAVY DUTY STAPLES OR NAILS WITH 1" HEADS. STAPLES AND NAILS SHOULD BE PLACED 3" ALONG THE FABRIC DOWN THE STAKE.

6. AT THE END OF A RUN OF SILT FENCE ALONG A CONTOUR, THE SILT FENCE SHOULD BE TURNED PERPENDICULAR TO THE CONTOUR TO CREATE A "J–HOOK." THE "J–HOOK" EXTENDING PERPENDICULAR TO THE CONTOUR SHOULD BE OF SUFFICIENT LENGTH TO KEEP RUNOFF FROM FLOWING AROUND THE END OF THE SILT FENCE (TYPICALLY 10' – 20').

7. SILT FENCE SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

SILT FENCE MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. SEDIMENT ACCUMULATED UPSTREAM OF THE SILT FENCE SHALL BE REMOVED AS NEEDED TO MAINTAIN THE FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY 6".

5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

6. SILT FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION, OR IS REPLACED BY AN EQUIVALENT PERIMETER SEDIMENT CONTROL BMP.

7. WHEN SILT FENCE IS REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAIL ADAPTED FROM TOWN OF PARKER, COLORADO AND CITY OF AURORA, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Description

Vehicle tracking controls provide stabilized construction site access where vehicles exit the site onto paved public roads. An effective vehicle tracking control helps remove sediment (mud or dirt) from vehicles, reducing tracking onto the paved surface.

Photograph VTC-1. A vehicle tracking control pad constructed with properly sized rock reduces off-site sediment tracking.

Appropriate Uses

Implement a stabilized construction entrance or vehicle tracking control where frequent heavy vehicle traffic exits the construction site onto a paved roadway. An effective vehicle tracking control is particularly important during the following conditions:

- Wet weather periods when mud is easily tracked off site.
- During dry weather periods where dust is a concern.
- When poorly drained, clayey soils are present on site.

Although wheel washes are not required in designs of vehicle tracking controls, they may be needed at particularly muddy sites.

Design and Installation

Construct the vehicle tracking control on a level surface. Where feasible, grade the tracking control towards the construction site to reduce off-site runoff. Place signage, as needed, to direct construction vehicles to the designated exit through the vehicle tracking control. There are several different types of stabilized construction entrances including:

VTC-1. Aggregate Vehicle Tracking Control. This is a coarse-aggregate surfaced pad underlain by a geotextile. This is the most common vehicle tracking control, and when properly maintained can be effective at removing sediment from vehicle tires.

VTC-2. Vehicle Tracking Control with Construction Mat or Turf Reinforcement Mat. This type of control may be appropriate for site access at very small construction sites with low traffic volume over vegetated areas. Although this application does not typically remove sediment from vehicles, it helps protect existing vegetation and provides a stabilized entrance.

Vehicle Tracking Control	
Functions	
Erosion Control	Moderate
Sediment Control	Yes
Site/Material Management	Yes

VTC-3. Stabilized Construction Entrance/Exit with Wheel Wash. This is an aggregate pad, similar to VTC-1, but includes equipment for tire washing. The wheel wash equipment may be as simple as hand-held power washing equipment to more advance proprietary systems. When a wheel wash is provided, it is important to direct wash water to a sediment trap prior to discharge from the site.

Vehicle tracking controls are sometimes installed in combination with a sediment trap to treat runoff.

Maintenance and Removal

Inspect the area for degradation and replace aggregate or material used for a stabilized entrance/exit as needed. If the area becomes clogged and ponds water, remove and dispose of excess sediment or replace material with a fresh layer of aggregate as necessary.

With aggregate vehicle tracking controls, ensure rock and debris from this area do not enter the public right-of-way.

Remove sediment that is tracked onto the public right of way daily or more frequently as needed. Excess sediment in the roadway indicates that the stabilized construction entrance needs maintenance.

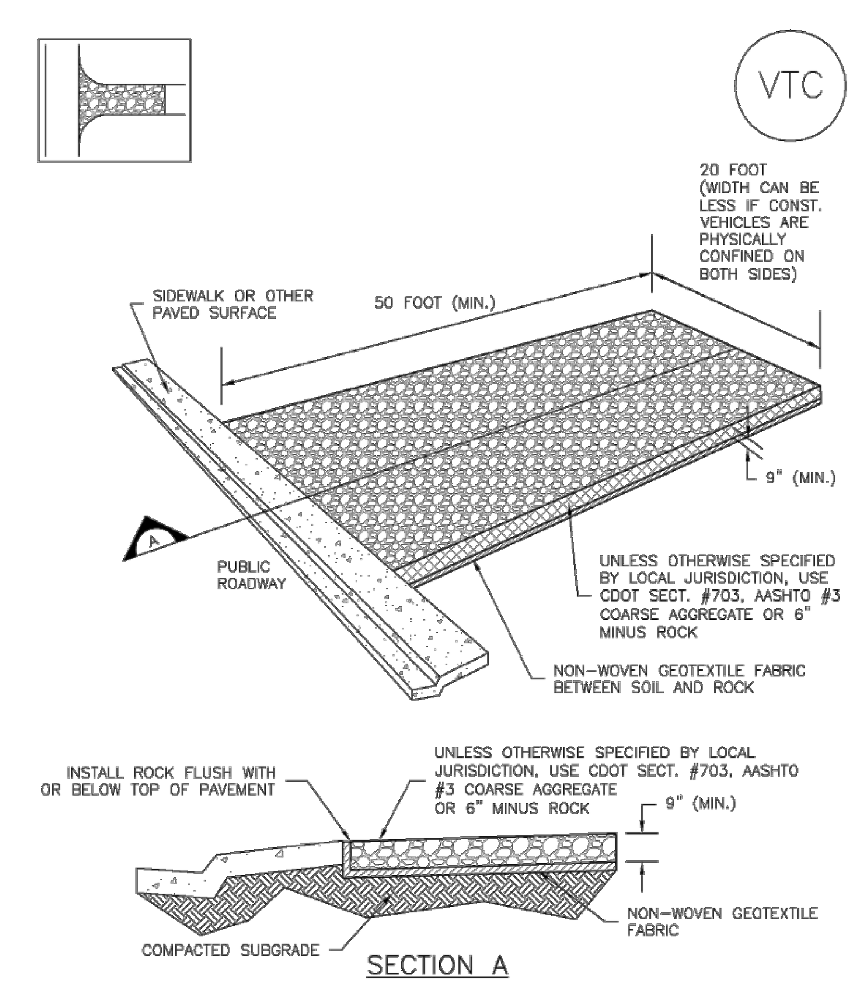
Photograph VTC-2. A vehicle tracking control pad with wheel wash facility. Photo courtesy of Tom Gore.

Ensure that drainage ditches at the entrance/exit area remain clear.

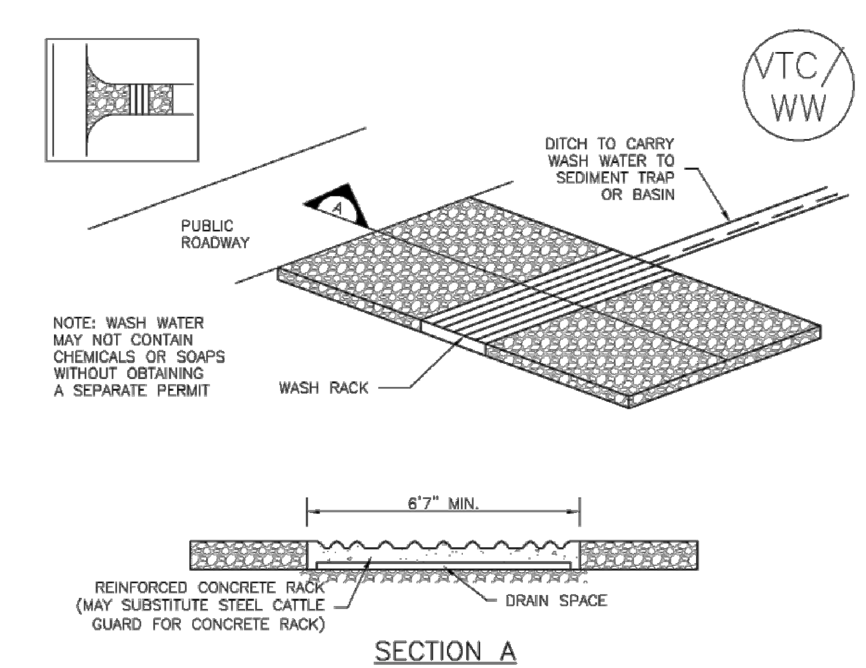
A stabilized entrance should be removed only when there is no longer the potential for vehicle tracking to occur. This is typically after the site has been stabilized.

When wheel wash equipment is used, be sure that the wash water is discharged to a sediment trap prior to discharge. Also inspect channels conveying the water from the wash area to the sediment trap and stabilize areas that may be eroding.

When a construction entrance/exit is removed, excess sediment from the aggregate should be removed and disposed of appropriately. The entrance should be promptly stabilized with a permanent surface following removal, typically by paving.



VTC–1. AGGREGATE VEHICLE TRACKING CONTROL



VTC–2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK

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3	04/3	FINAL SUBMITTAL

PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
EROSION CONTROL DETAILS

SHEET NUMBER:
C6.1

PROJECT NO.: 0181377.00

Concrete Washout Area (CWA) MM-1

Description

Photograph CWA-1. Example of concrete washout area. Note gravel tracking pad for access and sign.

Concrete waste management involves designating and properly managing a specific area of the construction site as a concrete washout area. A concrete washout area can be created using one of several approaches designed to receive wash water from washing of tools and concrete mixer chutes, liquid concrete waste from dump trucks, mobile batch mixers, or pump trucks. Three basic approaches are available: excavation of a pit in the ground, use of an above ground storage area, or use of prefabricated haul-away concrete washout containers. Surface discharges of concrete washout water from construction sites are prohibited.

Appropriate Uses

Concrete washout areas must be designated on all sites that will generate concrete wash water or liquid concrete waste from onsite concrete mixing or concrete delivery.

Because pH is a pollutant of concern for washout activities, when unlined pits are used for concrete washout, the soil must have adequate buffering capacity to result in protection of state groundwater standards; otherwise, a liner/containment must be used. The following management practices are recommended to prevent an impact from unlined pits to groundwater:

- The use of the washout site should be temporary (less than 1 year), and
- The washout site should be not be located in an area where shallow groundwater may be present, such as near natural drainages, springs, or wetlands.

Design and Installation

Concrete washout activities must be conducted in a manner that does not contribute pollutants to surface waters or stormwater runoff. Concrete washout areas may be lined or unlined excavated pits in the ground, commercially manufactured prefabricated washout containers, or aboveground holding areas constructed of berms, sandbags or straw bales with a plastic liner.

Although unlined washout areas may be used, lined pits may be required to protect groundwater under certain conditions.

Do not locate an unlined washout area within 400 feet of any natural drainage pathway or waterbody or within 1,000 feet of any wells or drinking water sources. Even for lined concrete washouts, it is advisable to locate the facility away from waterbodies and drainage paths. If site constraints make these

Concrete Washout Area	
Functions	
Erosion Control	No
Sediment Control	No
Site/Material Management	Yes

setbacks infeasible or if highly permeable soils exist in the area, then the pit must be installed with an impermeable liner (16 mil minimum thickness) or surface storage alternatives using prefabricated concrete washout devices or a lined aboveground storage area should be used.

Design details with notes are provided in Detail CWA-1 for pits and CWA-2 for aboveground storage areas. Pre-fabricated concrete washout container information can be obtained from vendors.

Maintenance and Removal

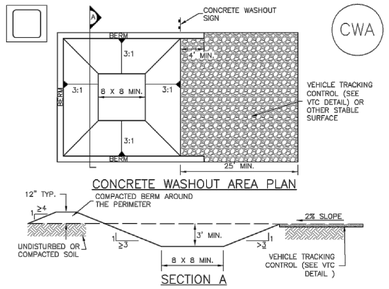
A key consideration for concrete washout areas is to ensure that adequate signage is in place identifying the location of the washout area. Part of inspecting and maintaining washout areas is ensuring that adequate signage is provided and in good repair and that the washout area is being used, as opposed to washout in non-designated areas of the site.

Remove concrete waste in the washout area, as needed to maintain BMP function (typically when filled to about two-thirds of its capacity). Collect concrete waste and deliver offsite to a designated disposal location.

Upon termination of use of the washout site, accumulated solid waste, including concrete waste and any contaminated soils, must be removed from the site to prevent on-site disposal of solid waste. If the wash water is allowed to evaporate and the concrete hardens, it may be recycled.

Photograph CWA-2. Prefabricated concrete washout. Photo courtesy of CDOT.

Photograph CWA-3. Earthen concrete washout. Photo courtesy of CDOT.



CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   -CWA INSTALLATION LOCATION.

2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.

3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.

4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.

5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.

6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.

7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

CWA MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.

5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.

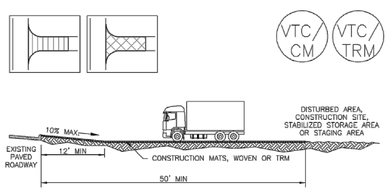
6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

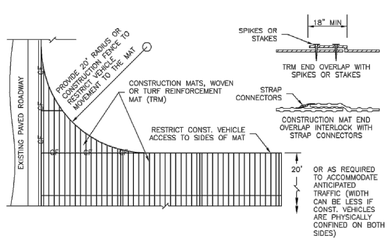
7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Vehicle Tracking Control (VTC) SM-4





VTC-3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   -TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT-OF-WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON-WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

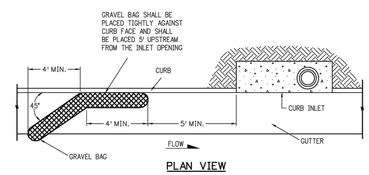
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

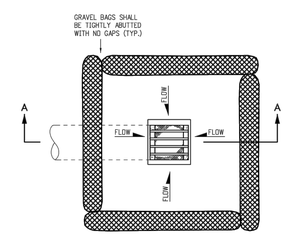
5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

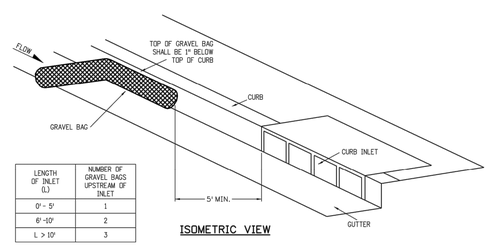
(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)



PLAN VIEW

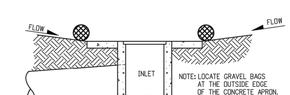


PLAN VIEW



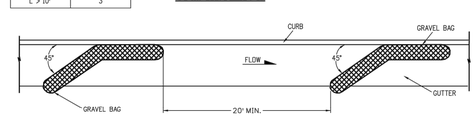
LENGTH OF INLET (L)	NUMBER OF GRAVEL BAGS UPSTREAM OF INLET
0' - 5'	1
6'-10'	2
L > 10'	3

ISOMETRIC VIEW



SECTION A-A

GRAVEL BAG FILTER AT DROP INLET



PLAN VIEW FOR MULTIPLE GRAVEL BAGS

GRAVEL BAG CURB CHECK

GRAVEL BAG APPLICATIONS

Computer File Information	
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Last Modification Date: 07/04/12	Initials: LTA
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Sheet Revisions		
	Date:	Comments

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Project Development Branch DD/LTA

TEMPORARY EROSION CONTROL

Issued By: Project Development Branch on July 4, 2012

STANDARD PLAN NO.
M-208-1
Sheet No. 6 of 12

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ISSUE:

#	DATE:	DESCRIPTION:
1	8/29	FIRST SUBMITTAL TO CITY
2	11/5	SECOND SUBMITTAL TO CITY
3	04/3	FINAL SUBMITTAL

PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
EROSION CONTROL DETAILS

SHEET NUMBER:
C6.2

PROJECT NO.: 0181377.00

Stockpile Management (SP) MM-2

Description

Stockpile management includes measures to minimize erosion and sediment transport from soil stockpiles.

Photograph SP-1. A topsoil stockpile that has been partially revegetated and is protected by silt fence perimeter control.

Appropriate Uses

Stockpile management should be used when soils or other erodible materials are stored at the construction site. Special attention should be given to stockpiles in close proximity to natural or manmade storm systems.

Design and Installation

Locate stockpiles away from all drainage system components including storm sewer inlets. Where practical, choose stockpile locations that that will remain undisturbed for the longest period of time as the phases of construction progress. Place sediment control BMPs around the perimeter of the stockpile, such as sediment control logs, rock socks, silt fence, straw bales and sand bags. See Detail SP-1 for guidance on proper establishment of perimeter controls around a stockpile. For stockpiles in active use, provide a stabilized designated access point on the upgradient side of the stockpile.

Stabilize the stockpile surface with surface roughening, temporary seeding and mulching, erosion control blankets, or soil binders. Soils stockpiled for an extended period (typically for more than 60 days) should be seeded and mulched with a temporary grass cover once the stockpile is placed (typically within 14 days). Use of mulch only or a soil binder is acceptable if the stockpile will be in place for a more limited time period (typically 30-60 days). Timeframes for stabilization of stockpiles noted in this fact sheet are "typical" guidelines. Check permit requirements for specific federal, state, and/or local requirements that may be more prescriptive.

Stockpiles should not be placed in streets or paved areas unless no other practical alternative exists. See the Stabilized Staging Area Fact Sheet for guidance when staging in roadways is unavoidable due to space or right-of-way constraints. For paved areas, rock socks must be used for perimeter control and all inlets with the potential to receive sediment from the stockpile (even from vehicle tracking) must be protected.

Maintenance and Removal

Inspect perimeter controls and inlet protection in accordance with their respective BMP Fact Sheets. Where seeding, mulch and/or soil binders are used, reseeding or reapplication of soil binder may be necessary.

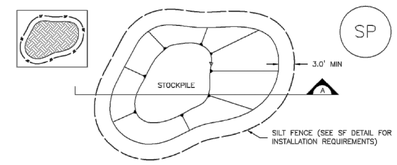
When temporary removal of a perimeter BMP is necessary to access a stockpile, ensure BMPs are reinstalled in accordance with their respective design detail section.

Stockpile Management	
Functions	
Erosion Control	Yes
Sediment Control	Yes
Site/Material Management	Yes

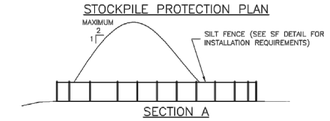
MM-2 Stockpile Management (SM)

When the stockpile is no longer needed, properly dispose of excess materials and revegetate or otherwise stabilize the ground surface where the stockpile was located.

Stockpile Management (SP) MM-2



STOCKPILE PROTECTION PLAN



SECTION A

SP–1. STOCKPILE PROTECTION

STOCKPILE PROTECTION INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF STOCKPILES.
   –TYPE OF STOCKPILE PROTECTION.

2. INSTALL PERIMETER CONTROLS IN ACCORDANCE WITH THEIR RESPECTIVE DESIGN DETAILS. SILT FENCE IS SHOWN IN THE STOCKPILE PROTECTION DETAILS; HOWEVER, OTHER TYPES OF PERIMETER CONTROLS INCLUDING SEDIMENT CONTROL LOGS OR ROCK SOCKS MAY BE SUITABLE IN SOME CIRCUMSTANCES. CONSIDERATIONS FOR DETERMINING THE APPROPRIATE TYPE OF PERIMETER CONTROL FOR A STOCKPILE INCLUDE WHETHER THE STOCKPILE IS LOCATED ON A PERVIOUS OR IMPERVIOUS SURFACE, THE RELATIVE HEIGHTS OF THE PERIMETER CONTROL AND STOCKPILE, THE ABILITY OF THE PERIMETER CONTROL TO CONTAIN THE STOCKPILE WITHOUT FAILING IN THE EVENT THAT MATERIAL FROM THE STOCKPILE SHIFTS OR SLUMPS AGAINST THE PERIMETER, AND OTHER FACTORS.

3. STABILIZE THE STOCKPILE SURFACE WITH SURFACE ROUGHENING, TEMPORARY SEEDING AND MULCHING, EROSION CONTROL BLANKETS, OR SOIL BINDERS. SOILS STOCKPILED FOR AN EXTENDED PERIOD (TYPICALLY FOR MORE THAN 60 DAYS) SHOULD BE SEEDED AND MULCHED WITH A TEMPORARY GRASS COVER ONCE THE STOCKPILE IS PLACED (TYPICALLY WITHIN 14 DAYS). USE OF MULCH ONLY OR A SOIL BINDER IS ACCEPTABLE IF THE STOCKPILE WILL BE IN PLACE FOR A MORE LIMITED TIME PERIOD (TYPICALLY 30–60 DAYS).

4. FOR TEMPORARY STOCKPILES ON THE INTERIOR PORTION OF A CONSTRUCTION SITE, WHERE OTHER DOWNGRADIENT CONTROLS, INCLUDING PERIMETER CONTROL, ARE IN PLACE, STOCKPILE PERIMETER CONTROLS MAY NOT BE REQUIRED.

MM-2 Stockpile Management (SM)

STOCKPILE PROTECTION MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

STOCKPILE PROTECTION MAINTENANCE NOTES

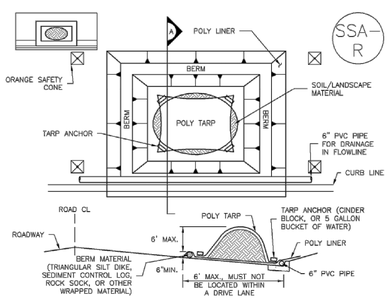
4. IF PERIMETER PROTECTION MUST BE MOVED TO ACCESS SOIL STOCKPILE, REPLACE PERIMETER CONTROLS BY THE END OF THE WORKDAY.

5. STOCKPILE PERIMETER CONTROLS CAN BE REMOVED ONCE ALL THE MATERIAL FROM THE STOCKPILE HAS BEEN USED.

(DETAILS ADAPTED FROM PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

Stockpile Management (SP) MM-2



SP–2. MATERIALS STAGING IN ROADWAY

MATERIALS STAGING IN ROADWAYS INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF MATERIAL STAGING AREA(S).
   –CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.

2. FEATURE MUST BE INSTALLED PRIOR TO EXCAVATION, EARTHWORK OR DELIVERY OF MATERIALS.

3. MATERIALS MUST BE STATIONED ON THE POLY LINER. ANY INCIDENTAL MATERIALS DEPOSITED ON PAVED SECTION OR ALONG CURB LINE MUST BE CLEANED UP PROMPTLY.

4. POLY LINER AND TARP COVER SHOULD BE OF SIGNIFICANT THICKNESS TO PREVENT DAMAGE OR LOSS OF INTEGRITY.

5. SAND BAGS MAY BE SUBSTITUTED TO ANCHOR THE COVER TARP OR PROVIDE BERMING UNDER THE BASE LINER.

6. FEATURE IS NOT INTENDED FOR USE WITH WET MATERIAL THAT WILL BE DRAINING AND/OR SPREADING OUT ON THE POLY LINER OR FOR DEMOLITION MATERIALS.

7. THIS FEATURE CAN BE USED FOR:
   –UTILITY REPAIRS.
   –WHEN OTHER STAGING LOCATIONS AND OPTIONS ARE LIMITED.
   –OTHER LIMITED APPLICATION AND SHORT DURATION STAGING.

MM-2 Stockpile Management (SM)

MATERIALS STAGING IN ROADWAY MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

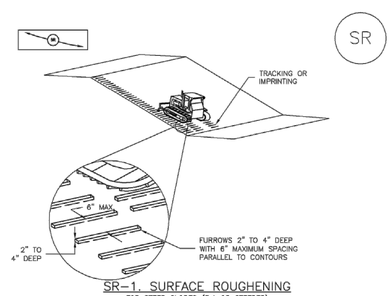
4. INSPECT PVC PIPE ALONG CURB LINE FOR CLOGGING AND DEBRIS. REMOVE OBSTRUCTIONS PROMPTLY.

5. CLEAN MATERIAL FROM PAVED SURFACES BY SWEEPING OR VACUUMING.

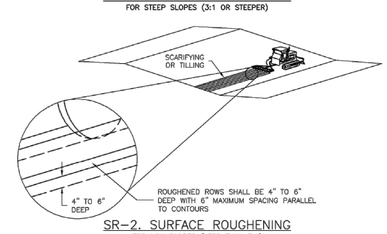
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM AURORA, COLORADO)

Surface Roughening (SR) EC-1



SR–1. SURFACE ROUGHENING
FOR STEEP SLOPES (3:1 OR STEEPER)



SR–2. SURFACE ROUGHENING
FOR LOW SLOPES (LESS THAN 3:1)

EC-1 Surface Roughening (SR)

SURFACE ROUGHENING INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF SURFACE ROUGHENING.

2. SURFACE ROUGHENING SHALL BE PROVIDED PROMPTLY AFTER COMPLETION OF FINISHED GRADING (FOR AREAS NOT RECEIVING TOPSOIL) OR PRIOR TO TOPSOIL PLACEMENT OR ANY FORECASTED RAIN EVENT.

3. AREAS WHERE BUILDING FOUNDATIONS, PAVEMENT, OR SOD WILL BE PLACED WITHOUT DELAY IN THE CONSTRUCTION SEQUENCE, SURFACE ROUGHENING IS NOT REQUIRED.

4. DISTURBED SURFACES SHALL BE ROUGHENED USING RIPPING OR TILLING EQUIPMENT ON THE CONTOUR OR TRACKING UP AND DOWN A SLOPE USING EQUIPMENT TREADS.

5. A FARMING DISK SHALL NOT BE USED FOR SURFACE ROUGHENING.

SURFACE ROUGHENING MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.

2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.

3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACE UPON DISCOVERY OF THE FAILURE.

4. VEHICLES AND EQUIPMENT SHALL NOT BE DRIVEN OVER AREAS THAT HAVE BEEN SURFACE ROUGHENED.

5. IN NON–TURF GRASS FINISHED AREAS, SEEDING AND MULCHING SHALL TAKE PLACE DIRECTLY OVER SURFACE ROUGHENED AREAS WITHOUT FIRST SMOOTHING OUT THE SURFACE.

6. IN AREAS NOT SEEDED AND MULCHED AFTER SURFACE ROUGHENING, SURFACES SHALL BE RE–ROUGHENED AS NECESSARY TO MAINTAIN GROOVE DEPTH AND SMOOTH OVER RILL EROSION.

(DETAILS ADAPTED FROM TOWN OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD)

NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

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ISSUE:

#	DATE:	DESCRIPTION:
1	8/29	FIRST SUBMITTAL TO CITY
2	11/5	SECOND SUBMITTAL TO CITY
3	04/3	FINAL SUBMITTAL

PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
EROSION CONTROL DETAILS

SHEET NUMBER:
C6.3

PROJECT NO.: 0181377.00

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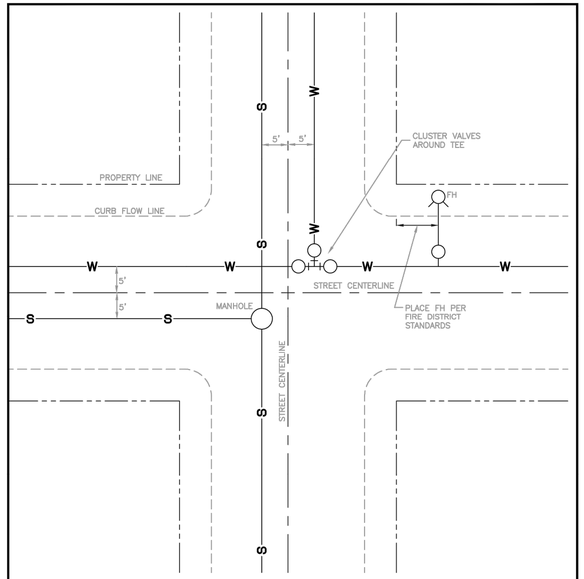


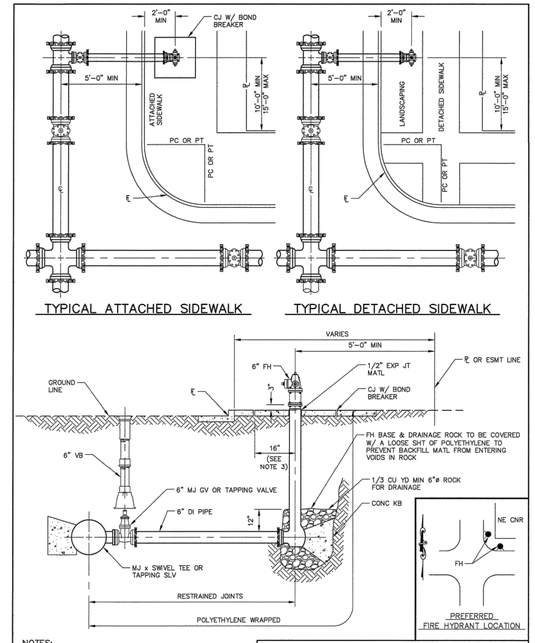
WATER AND SANITARY SEWER MUST BE SEPERATED BY 10' MINIMUM DISTANCE.

Brighton

RESIDENTIAL UTILITY LOCATION

DATE 5/1/2016
REVISED BY CVB

DRAWING NUMBER
600-3



NOTES:

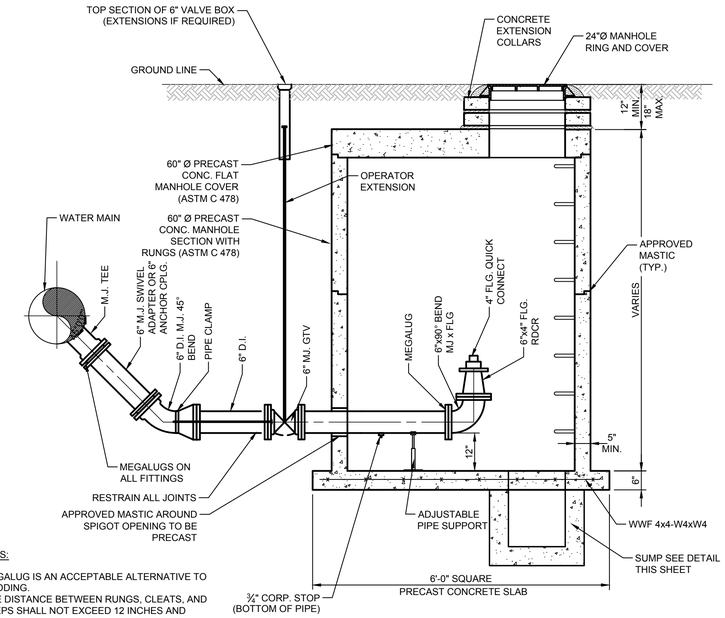
1. NO HORIZONTAL OR VERTICAL BENDS ARE ALLOWED IN FIRE HYDRANT BRANCH.
2. DO NOT COVER OR PLUG DRAIN HOLES WITH CONCRETE.
3. PROVIDE A 32-INCH BY 32-INCH BY 4-INCH CONCRETE PAD WITH CONSTRUCTION JOINT BOND BREAKERS WHEN FIRE HYDRANT IS INSTALLED IN SIDEWALK OR SIMILAR PAVED AREA.
4. FIRE HYDRANT SHALL NOT BE INSTALLED WITHIN CURB RAMP.

DENVER WATER

PLAN, PROFILE, & LOCATION FOR FIRE HYDRANTS, MAINS, & VALVES

Scale: NONE	Date: May 2018
Drawn: RLB	Ck: K ROSS
Approved:	Dr. 127 No. 35

SHEET 10



NOTES:

1. MEGALUG IS AN ACCEPTABLE ALTERNATIVE TO RODDING.
2. THE DISTANCE BETWEEN RUNGS, CLEATS, AND STEPS SHALL NOT EXCEED 12 INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER.

ELEVATION

TRANSMISSION LINE BLOW-OFF DETAIL

N.T.S.

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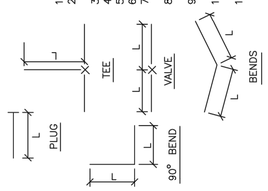
LENGTH OF RESTRAINED PIPE

PIPE SIZE	4"		6"		8"		12"		16"		20"		24"	
FITTING	D L	G	D L	G	D L	G	D L	G	D L	G	D L	G	D L	G
90° BEND TEE, PLUG OR VALVE	¾" 30'	M.S.	¾" 45'	M.S.	¾" 60'	M.S.	¾" 86'	H.S.	1" 108'	H.S.	1¼" 132'	H.S.	— 155'	—
45° BEND	¾" 9'	M.S.	¾" 13'	M.S.	¾" 18'	M.S.	¾" 25'	M.S.	1" 32'	M.S.	¾" 39'	H.S.	— 45'	—
22½° BEND	¾" 1'	M.S.	¾" 4'	M.S.	¾" 5'	M.S.	¾" 7'	M.S.	¾" 8'	M.S.	¾" 10'	M.S.	— 12'	—
11¼° BEND	— —	—	— —	—	¾" 1'	M.S.	¾" 2'	M.S.	¾" 2'	M.S.	¾" 3'	M.S.	— 3'	—

NOTES:

1.) LENGTH OF RESTRAINED PIPE MEASURED EACH WAY FROM VALVES AND BENDS.
2.) D=DIAMETER, L=LENGTH, G=GRADE
M.S.=MILD STEEL, H.S.=HIGH STRENGTH.
3.) MINIMUM 4.5' GROUND COVER REQUIRED.
4.) BASED ON 150 PSI INTERNAL PRESSURE.
5.) M.S. = MILD STEEL ROD ASTM A 36.
6.) H.S. = HIGH STRENGTH ROD ASTM A193 GRADE B7.
7.) NUTS SHALL BE ASTM A307 GRADE A OR B HEXAGON HEAVY SERIES, HIGH STRENGTH NUTS SHALL BE ASTM A194, GRADE 2H.
8.) SEE TIE ROD DETAIL DRAWING, ALSO, TIE ROD COUPLING DETAILS, CLAMP DETAILS AND SET CLAMP DETAILS.
9.) LENGTH REFERS TO THE AMOUNT OF PIPE WHICH MUST BE RESTRAINED LENGTHWISE AND NOT NECESSARY THE LENGTH OF THE ROD.
10.) LENGTH OF RESTRAINED PIPE CHART IS ALSO FOR THE LENGTH OF JOINT RESTRAINT FOR MEGALUGS.
11.) TEE AND CROSS MUST BE RESTRAINED IN ALL APPLICABLE DIRECTIONS.

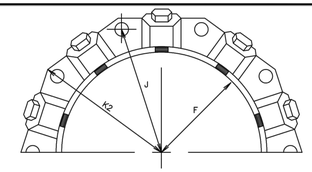


Brighton

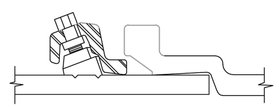
RESTRAINED PIPE LENGTHS

DATE 5/1/2016
REVISED BY CVB

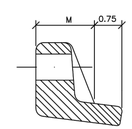
DRAWING NUMBER
600-11



MECHANICAL JOINT RESTRAINT



WEDGE DETAIL



BOLT HOLE DETAIL

DIMENSIONS

	NOMINAL PIPE SIZE	NO. OF BOLTS	NO. OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES	
PVC	4"	2	2					PVC
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	
DI	4"	4	2					DI
	6"	6	3	11.12	9.50	7.00	0.88	
	8"	6	4	13.37	11.75	9.15	1.00	
	10"	8	6	15.62	14.00	11.20	1.00	
	12"	8	8	17.88	16.25	13.30	1.25	

NOTES:

1.) REFER TO MS-28 OR SECTION 6.05 PARAGRAPH D.
2.) DIMENSIONS FOR 16" AND 20" D.I. PIPE NOT SHOWN.
3.) OTHER MECHANICAL JOINT RESTRAINT DEVICES MUST BE APPROVED BEFORE INSTALLATION.

Brighton

MECHANICAL JOINT RESTRAINT

DATE 5/1/2016
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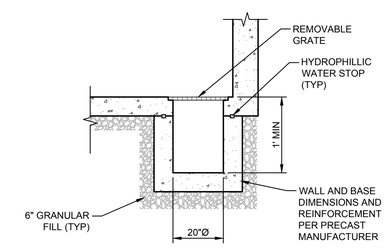

SUMP DETAIL

N.T.S.

PROJECT:

CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
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DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:

WATER DETAILS

SHEET NUMBER:

C6.4

PROJECT NO.: 0181377.00

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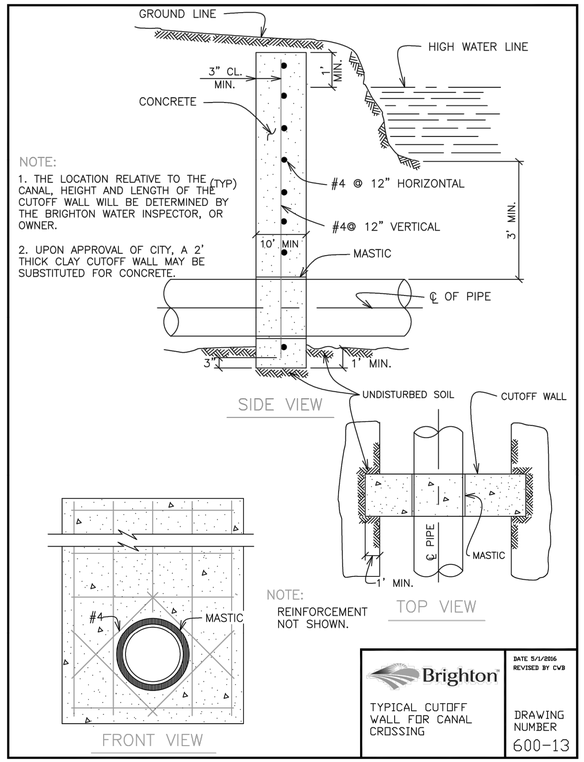
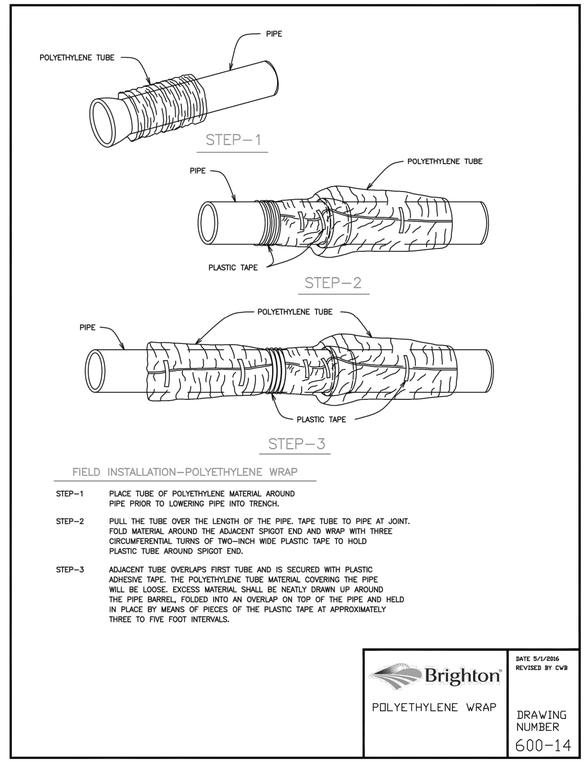


NOTE:
1. THE LOCATION RELATIVE TO THE CANAL, HEIGHT AND LENGTH OF THE CUTOFF WALL WILL BE DETERMINED BY THE BRIGHTON WATER INSPECTOR, OR OWNER.
2. UPON APPROVAL OF CITY, A 2' THICK CLAY CUTOFF WALL MAY BE SUBSTITUTED FOR CONCRETE.

NOTE:
REINFORCEMENT NOT SHOWN.

Brighton
TYPICAL CUTOFF WALL FOR CANAL CROSSING
DATE 5/1/2016 REVISED BY CVB
DRAWING NUMBER 600-13



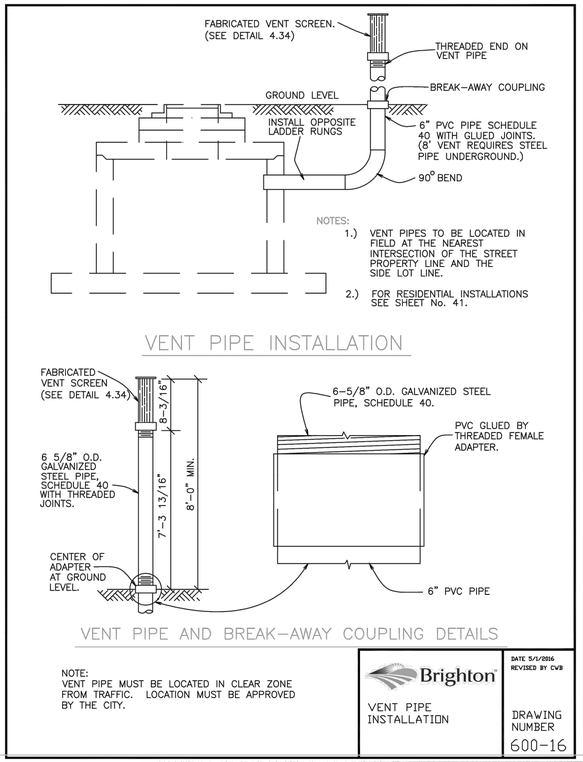
FIELD INSTALLATION-POLYETHYLENE WRAP

STEP-1 PLACE TUBE OF POLYETHYLENE MATERIAL AROUND PIPE PRIOR TO LOWERING PIPE INTO TRENCH.

STEP-2 PULL THE TUBE OVER THE LENGTH OF THE PIPE. TAPE TUBE TO PIPE AT JOINT. FOLD MATERIAL AROUND THE ADJACENT SPIGOT END AND WRAP WITH THREE CIRCUMFERENTIAL TURNS OF TWO-INCH WIDE PLASTIC TAPE TO HOLD PLASTIC TUBE AROUND SPIGOT END.

STEP-3 ADJACENT TUBE OVERLAPS FIRST TUBE AND IS SECURED WITH PLASTIC ADHESIVE TAPE. THE POLYETHYLENE TUBE MATERIAL COVERING THE PIPE WILL BE LOOSE. EXCESS MATERIAL SHALL BE NEATLY DRAWN UP AROUND THE PIPE BARREL, FOLDED INTO AN OVERLAP ON TOP OF THE PIPE AND HELD IN PLACE BY MEANS OF PIECES OF THE PLASTIC TAPE AT APPROXIMATELY THREE TO FIVE FOOT INTERVALS.

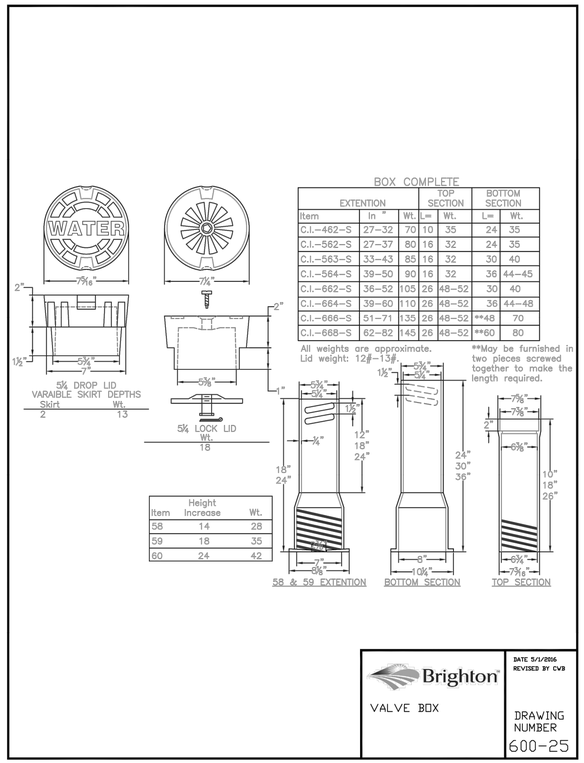
Brighton
POLYETHYLENE WRAP
DATE 5/1/2016 REVISED BY CVB
DRAWING NUMBER 600-14



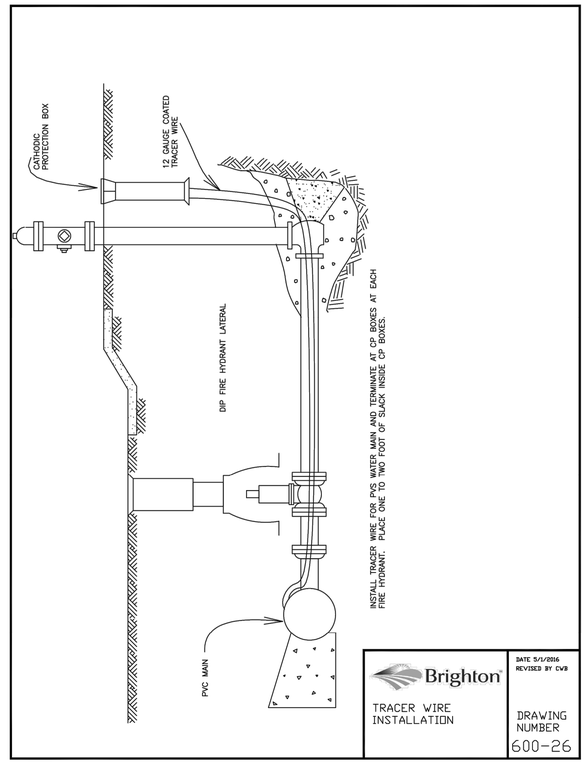
NOTES:
1.) VENT PIPES TO BE LOCATED IN FIELD AT THE NEAREST INTERSECTION OF THE STREET PROPERTY LINE AND THE SIDE LOT LINE.
2.) FOR RESIDENTIAL INSTALLATIONS SEE SHEET No. 41.

NOTE:
VENT PIPE MUST BE LOCATED IN CLEAR ZONE FROM TRAFFIC. LOCATION MUST BE APPROVED BY THE CITY.

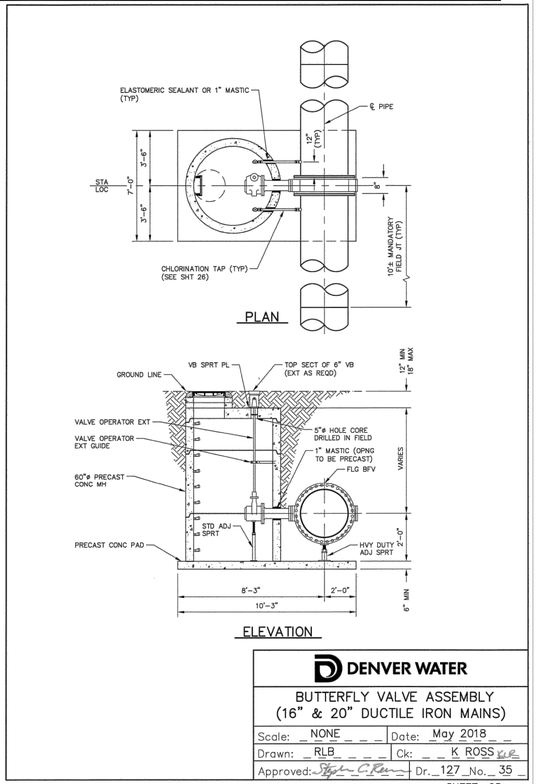
Brighton
VENT PIPE INSTALLATION
DATE 5/1/2016 REVISED BY CVB
DRAWING NUMBER 600-16



Brighton
VALVE BOX
DATE 5/1/2016 REVISED BY CVB
DRAWING NUMBER 600-25



Brighton
TRACER WIRE INSTALLATION
DATE 5/1/2016 REVISED BY CVB
DRAWING NUMBER 600-26



DENVER WATER
BUTTERFLY VALVE ASSEMBLY
(16" & 20" DUCTILE IRON MAINS)
Scale: NONE Date: May 2018
Drawn: RLB Ck: K ROSS
Approved: Dr. 127 No. 35
SHEET 25

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CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
WATER DETAILS

SHEET NUMBER:
C6.5

PROJECT NO.: 0181377.00

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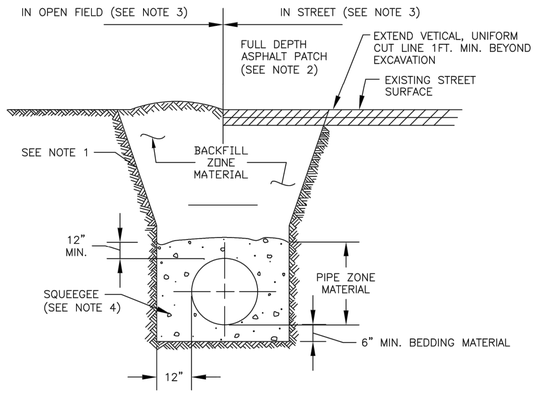


TYPICAL TRENCH SECTION

NOTES:

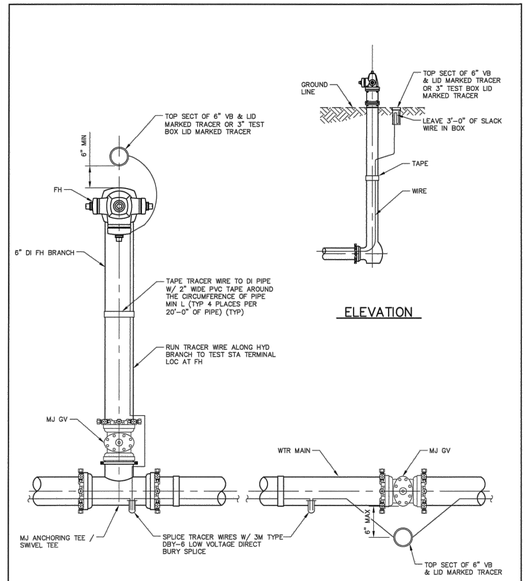
1. TRENCH WALLS TO BE SUPPORTED AS REQUIRED BY O.S.H.A.
2. TRENCH CUTS IN PAVEMENT SHALL BE REPLACED PER BRIGHTON TRANSPORTATION STANDARDS AND SPECS.
3. COMPACTION IN TRENCH SHALL BE PERFORMED IN ACCORDANCE WITH THE TRENCH BACKFILL COMPACTION OF THIS SECTION.
4. SQUEEGEE SHALL CONFORM TO THE REQUIREMENTS OF THE TRENCH BACKFILL OF THIS SECTION.

Brighton

STANDARD UTILITIES TRENCH

DATE 11/8/2017
REVISED BY SJC

DRAWING NUMBER 600-29



ELEVATION

FIRE HYDRANT PLAN

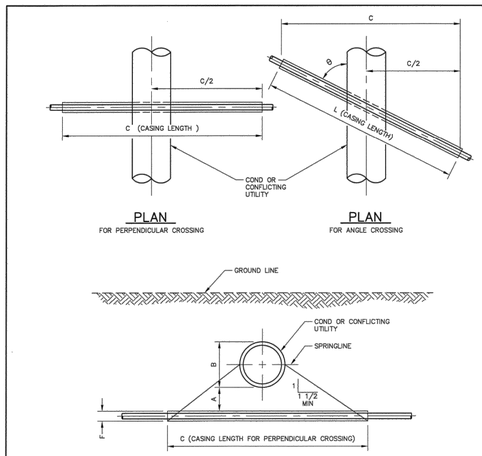
LINE VALVE

DENVER WATER

TRACER WIRE INSTALLATION FOR PVC WATER MAIN

Scale: NONE	Date: May 2018
Drawn: RLB	Ck: K ROSS
Approved:	Dr. 127 No. 35

SHEET 11



PLAN
FOR PERPENDICULAR CROSSING

PLAN
FOR ANGLE CROSSING

PROFILE

FORMULA FOR FINDING C: $C = B+(2)(1.5)\left[\frac{OD}{2}+A+F\right]$

PERPENDICULAR CROSSING CASING LENGTH
OD DW COND
CONSTANT
RATIO OF MIN SLOPE
CASING OD
VERT DIST BTWN CASING & DW COND
1/2 OD DW COND

FORMULA FOR FINDING L: $L = \frac{C}{\sin \theta}$

NOTES:

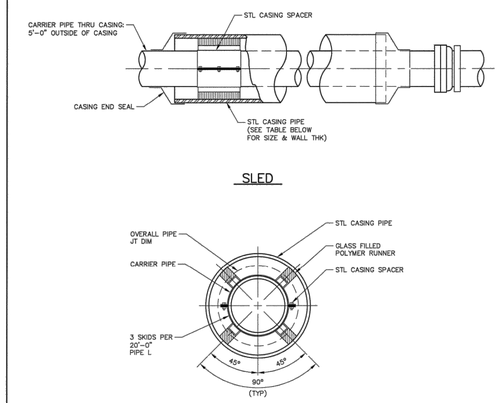
1. THE BORING AND CASING METHOD AND MATERIALS SHALL BE APPROVED IN WRITING BY DENVER WATER PRIOR TO CONSTRUCTION.
2. SOIL AT ENDS OF CASING SHALL BE STABLE AT ALL TIMES.
3. CATHODIC PROTECTION SHALL BE PROVIDED FOR STEEL CASING AS REQUIRED BY DENVER WATER.
4. CASING PIPE SHALL BE STRAIGHT, ROUND, AND OF NEW MATERIAL.

DENVER WATER

BORED CROSSING

Scale: NONE	Date: May 2018
Drawn: RLB	Ck: K ROSS
Approved:	Dr. 127 No. 35

SHEET 16



SLED

PIPE CASING

CARRIER PIPE NOMINAL ø	CASING PIPE	
	MIN OD	MIN WALL THICKNESS
4"	12"	0.25"
6"	16"	0.3125"
8"	18"	0.3125"
12"	22"	0.375"
16"	28"	0.500"
20"	32"	0.500"

NOTES:

1. REFER TO SPECIFICATIONS FOR CASING SIZING FOR CARRIER PIPE LARGER THAN 20".
2. CASING LENGTH ACCORDING TO PLAN AND PROFILE SHEETS.
3. ALL PIPE WITHIN THE CASING, INCLUDING FIRST PIPE LENGTH ON SIDES OF CASING, SHALL BE FUSIBLE PVC OR CERTAINTEED CERTA-LOK PVC.
4. PIPE TRACER WIRE TO BE INSTALLED THROUGH ALL CASED BORINGS AND CONNECTED TO CONTINUOUS TRACER WIRE (WHERE APPLICABLE).
5. CASING PIPE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A283, GRADE B, C, OR D. ALL JOINTS SHALL BE WELDED. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AWWA C206.
6. COAT CASING PIPE PER SPECIFICATIONS.
7. CASING PIPE SHALL BE INSTALLED SYMMETRICAL ABOUT WATER MAIN CENTERLINE. PIPE CASING SHALL BE LAID TRUE TO LINE AND GRADE WITH NO BENDS OR CHANGES IN GRADE FOR THE FULL LENGTH OF THE CASING.

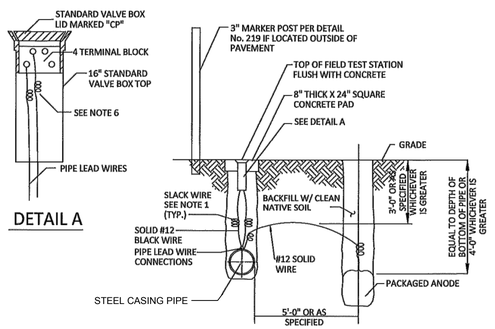
DENVER WATER

BORE CASING DETAIL

Scale: NONE	Date: May 2018
Drawn: RLB	Ck: K ROSS
Approved:	Dr. 127 No. 35

SHEET 17

STANDARD



DETAIL A

NOTES:

1. ALL LEAD WIRES BURIED IN THE EARTH ABOVE THE PIPE AND ABOVE THE ANODE SHALL BE INSTALLED WITH A MINIMUM OF 18" SLACK TO PREVENT STRESSING OF WIRE OR DIMINISHING THE SLACK REQUIRED ISN THE TEST STATION VAULT BECAUSE OF BACKFILL SETTLEMENT.
2. PIPE LEAD WIRES SHALL BE ATTACHED APPROXIMATELY 12" APART ON THE TOP CENTERLINE OF THE PIPE.
3. AT LEAST 5 GALLONS OF WATER SHALL BE POURED OVER THE ANODE BEFORE BACKFILLING.
4. PERMANENT, LEGIBLE IDENTIFICATION MARKERS SHALL BE ATTACHED TO EACH LEAD WIRE IN THE FIELD TEST STATION.
5. ALL MATERIALS AND INSTALLATION SHALL BE AS SPECIFIED.
6. LEAD WIRES INSIDE THE TEST STATION VAULT SHALL BE PROVIDED WITH SUFFICIENT SLACK TO LIFT THE TERMINAL BOARD A MINIMUM OF 12" ABOVE THE VAULT TO ALLOW ACCESS TO THE CONNECTIONS, YET ALLOW THE TERMINAL BOARD AND LID TO BE INSTALLED IN THE VAULT WITHOUT BINDING ON THE SLACK WIRES.

SACRIFICIAL ANODE INSTALLATION W/ BELOW GROUND FIELD TEST STATION

AURORA WATER

CITY ENGINEER	09/25/2019 DATE
AURORA WATER	09/23/2019 DATE

SACRIFICIAL ANODE INSTALLATION

1 of 1

218-1

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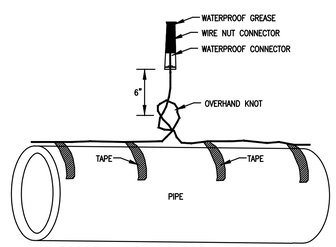


NOTES:

WATERPROOF CONNECTOR SHALL BE "3M DBY DIRECT BURY SPLICE KIT" OR AN APPROVED EQUAL.

THE TRACER WIRE COATING SHALL BE STRIPPED BACK 1/2".

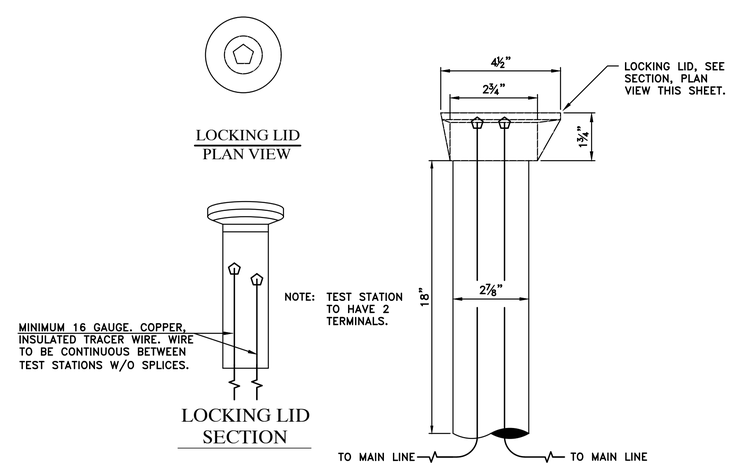
A WIRE NUT SHALL BE USED TO CONNECT THE BARE METAL ENDS OF THE TRACER WIRE.

THE WIRE NUT SHALL BE PLACED INSIDE THE WATERPROOF CONNECTOR ACCORDING TO THE MANUFACTURES INSTALLATION INSTRUCTIONS.

AN OVERHAND KNOT SHALL BE TIED 6" FROM THE WATERPROOF CONNECTOR.

THE TRACER WIRE SHALL BE TAPED TO THE PIPE ON BOTH SIDES OF THE SPLICE.

TRACER WIRE SPLICE DETAIL



TRACER WIRE TEST STATION DETAIL

NTS

Farnsworth GROUP

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WATER DETAILS

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PROJECT NO.: 0181377.00

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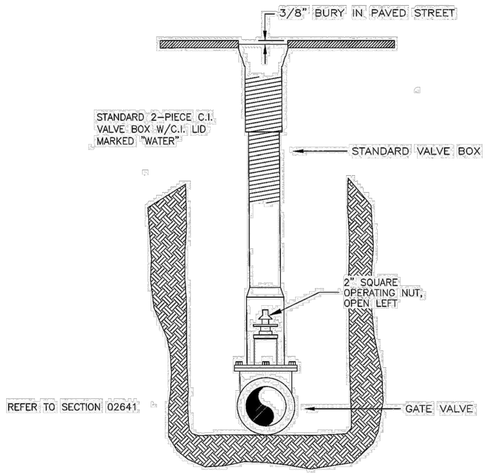
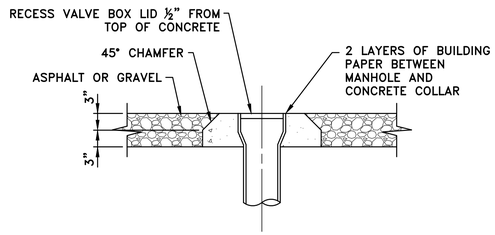


NOTE:
VALVE BOX SHALL BE CENTERED AND PLUMB OVER THE OPERATING NUT.

TYPICAL GATE VALVE INSTALLATION

N.T.S.



NOTE:
1. CONCRETE COLLARS SHALL BE PLACED AROUND ALL VALVE BOXES.

VALVE BOX CONCRETE COLLAR DETAIL

N.T.S.

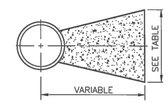
BEARING THRUST BLOCKS

MINIMUM BEARING SURFACE AREA (A_b)
(IN SQUARE FEET)
(BASED ON A MINIMUM SOIL BEARING CAPACITY OF 2000PSF)

	SIZE OF PIPE	BENDS				TEE OR DEAD END
		11 1/4°	22 1/2°	45°	90°	
Pp=2000 PSF	6"	1.0	1.5	3.0	5.3	4.0
	8"	1.5	2.5	5.0	9.5	6.5
	12"	3.0	5.5	10.5	19.5	14.0
	16"	4.0	7.0	14.0	25.5	18.0
	24"	8.0	15.5	30.0	56.0	40.0

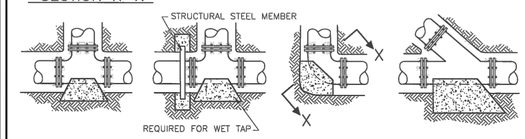
LENGTH OF TIED PIPE (ft)

SIZE OF PIPE	HORIZONTAL BENDS				TEE OR DEAD END
	11 1/4°	22 1/2°	45°	90°	
6"	4.0	8.0	17.0	42.0	55.0
8"	5.0	11.0	23.0	54.0	73.0
12"	8.0	16.0	33.0	79.0	106.0
16"	10.0	20.0	43.0	103.0	140.0
24"	15.0	30.0	62.0	149.0	207.0



SECTION X–X

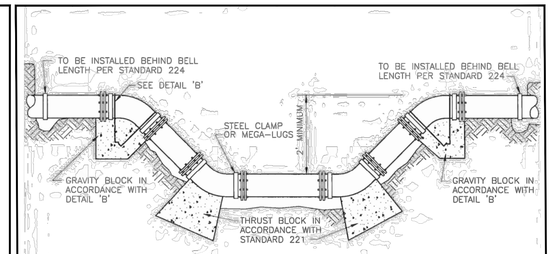
NOTES:
1. ALL FITTINGS SHALL BE HARNESS RODDED IN ACCORDANCE TO STANDARD No. 225.
2. ALL METAL SHALL BE WRAPPED IN POLYETHYLENE IN ACCORDANCE WITH THESE SPECIFICATIONS.
3. LARGE DIAMETER LINES WILL REQUIRE ENGINEERING DESIGN AND CALCULATIONS SUBMITTED AND APPROVED.
4. IF THE BRANCH OF A TEE OR WET–TAP IS LESS THAN ONE HALF THE DIAMETER OF THE MAIN, THRUST BLOCK IS NOT REQUIRED.
5. LARGER THAN 24" BY DESIGN.



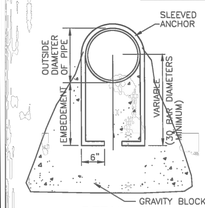
CITY ENGINEER DATE 2-6-12 / AURORA WATER DATE 2/8/12	THRUST BLOCK LOCATION AND BEARING AREAS & VOLUMES	221

THRUST BLOCK DETAIL

N.T.S.



WATERLINE LOWERING DETAIL



DETAIL B

GRAVITY BLOCKS

MINIMUM VOLUME (IN CUBIC FEET)

SIZE OF PIPE	BENDS		
	11 1/4°	22 1/2°	45°
6"	10.5	20.5	40.0
8"	17.5	35.0	68.0
12"	37.0	74.0	145.0
16"	48.5	96.0	189.0
24"	106.0	211.0	414.0

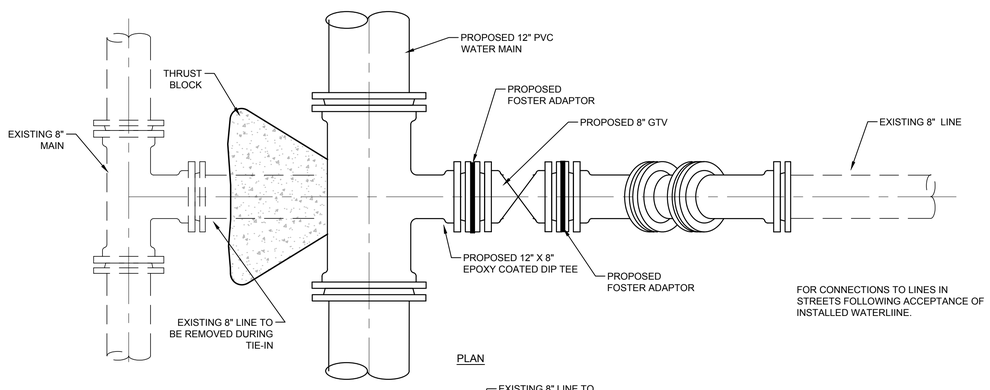
LARGER THAN 24" BY SPECIAL DESIGN

NOTES:
1. VERTICAL 90° BENDS ARE NOT ALLOWED.
2. ALL LINES 12" AND LARGER WILL REQUIRE BODY CLAMPS (NATIONAL PIPE HANGER HEAVY TWO–BOLT PIPE CLAMP OR APPROVED EQUAL) APPROPRIATELY SIZED ALL–THREAD AND DOUBLE NUT.
3. THERE SHALL BE A MINIMUM CLEARANCE OF 24" BETWEEN WATERLINE AND ANY NEW CONSTRUCTION.
4. ALL JOINTS SHALL BE RESTRAINED BETWEEN THE FITTINGS.
5. ANCHORS SHALL BE SLEEVED TO PREVENT CORROSION OF THE PIPE AND/OR BAR. THIS COULD INCLUDE, BUT NOT LIMITED TO, REINFORCED GARDEN HOSE, CURVED FIBERGLASS BOARD, ETC.

CITY ENGINEER DATE 2-6-12 / AURORA WATER DATE 2/8/12	WATER LINE LOWERING DETAIL	222

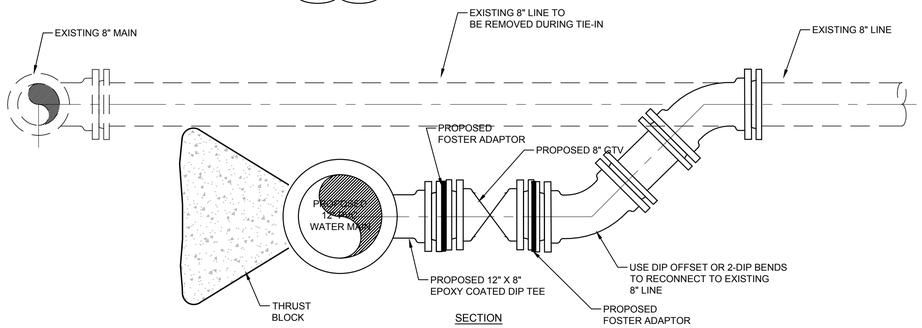
WATER LINE LOWERING DETAIL

N.T.S.



FOR CONNECTIONS TO LINES IN STREETS FOLLOWING ACCEPTANCE OF INSTALLED WATERLIINE.

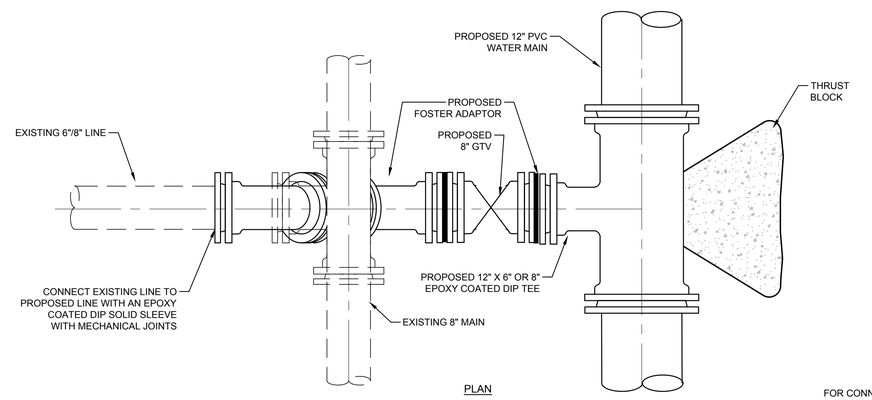
PLAN



SECTION

1 LINE CONNECTION BY CUTTING EXISTING LINE DETAIL (TYPICAL)

SCALE: NOT TO SCALE



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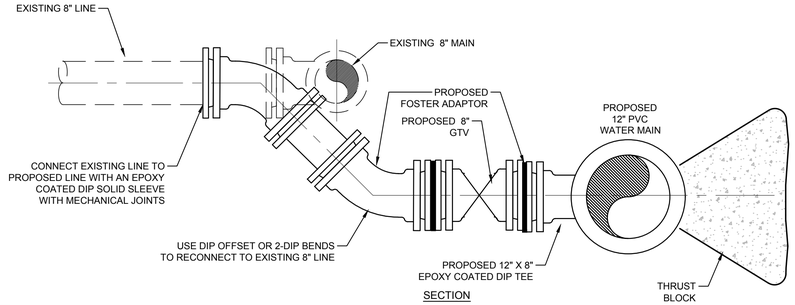
FOR CONNECTIONS TO LINES IN STREETS FOLLOWING ACCEPTANCE OF INSTALLED WATERLIINE.



SECTION

2 LINE CONNECTION BY EXTENDING PROPOSED LINE TO EXISTING LINE DETAIL (TYPICAL)

SCALE: NOT TO SCALE

Farnsworth GROUP
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ISSUE:

#	DATE:	DESCRIPTION:
1	8/29	FIRST SUBMITTAL TO CITY
2	11/5	SECOND SUBMITTAL TO CITY
3	04/3	FINAL SUBMITTAL

PROJECT:
CITY OF BRIGHTON

SOUTH PLATTE WELLS TRANSMISSION PROJECT

BRIGHTON, CO

DATE:	11/05/2019
DESIGNED:	RL
DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:
WATER DETAILS

SHEET NUMBER:
C6.7

PROJECT NO.: 0181377.00

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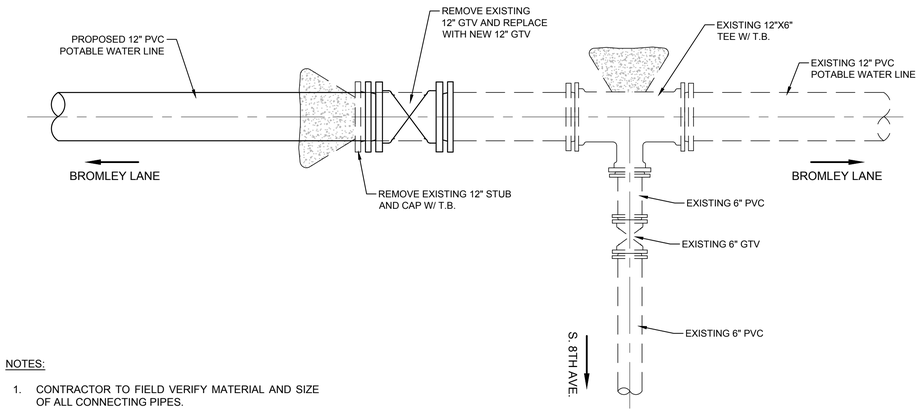


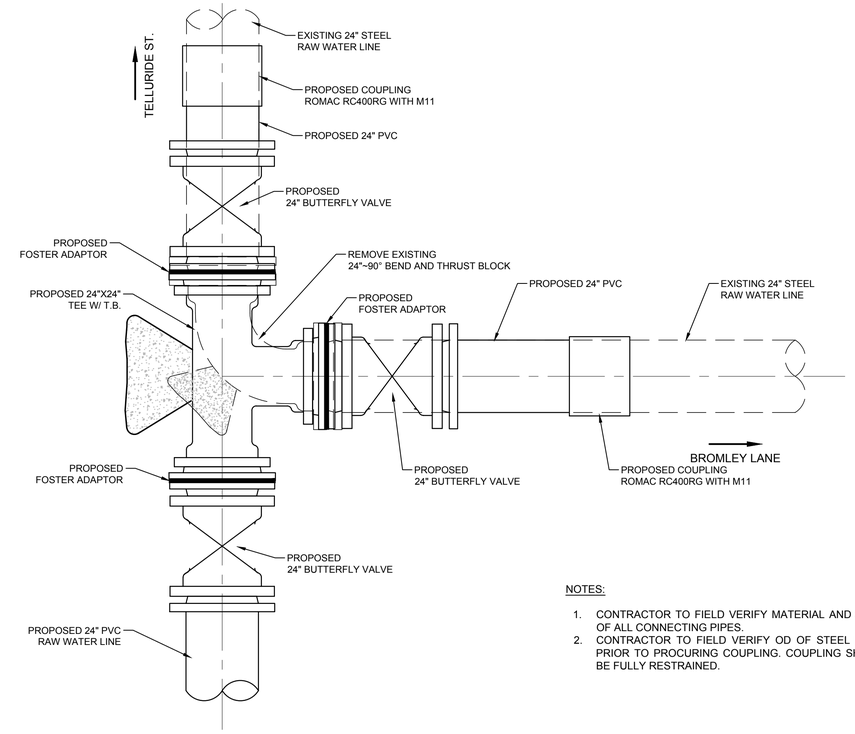
NOTES:

1. CONTRACTOR TO FIELD VERIFY MATERIAL AND SIZE OF ALL CONNECTING PIPES.

4 CONNECTION DETAIL 4

SCALE: N.T.S.

NORTH



NOTES:

1. CONTRACTOR TO FIELD VERIFY MATERIAL AND SIZE OF ALL CONNECTING PIPES.
2. CONTRACTOR TO FIELD VERIFY OD OF STEEL PIPE PRIOR TO PROCURING COUPLING. COUPLING SHALL BE FULLY RESTRAINED.

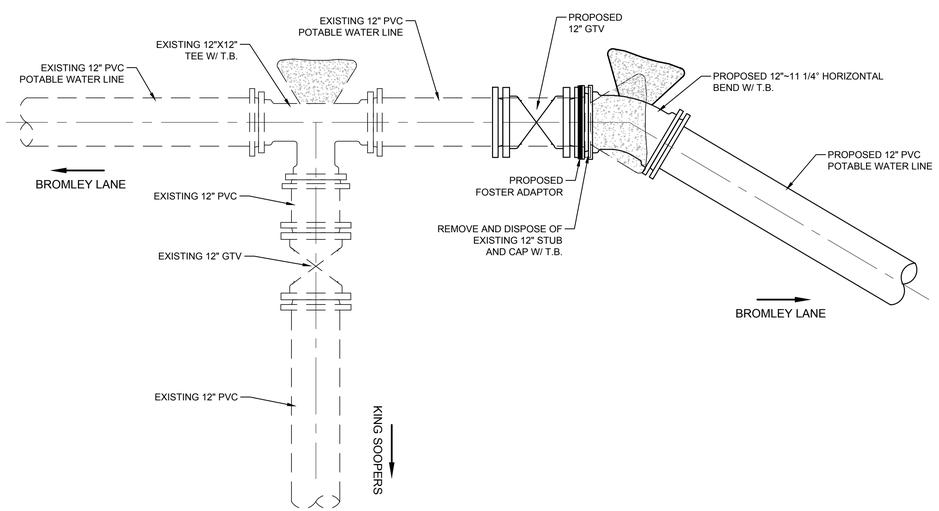
2 CONNECTION DETAIL 2

SCALE: N.T.S.

NORTH

NOTES:

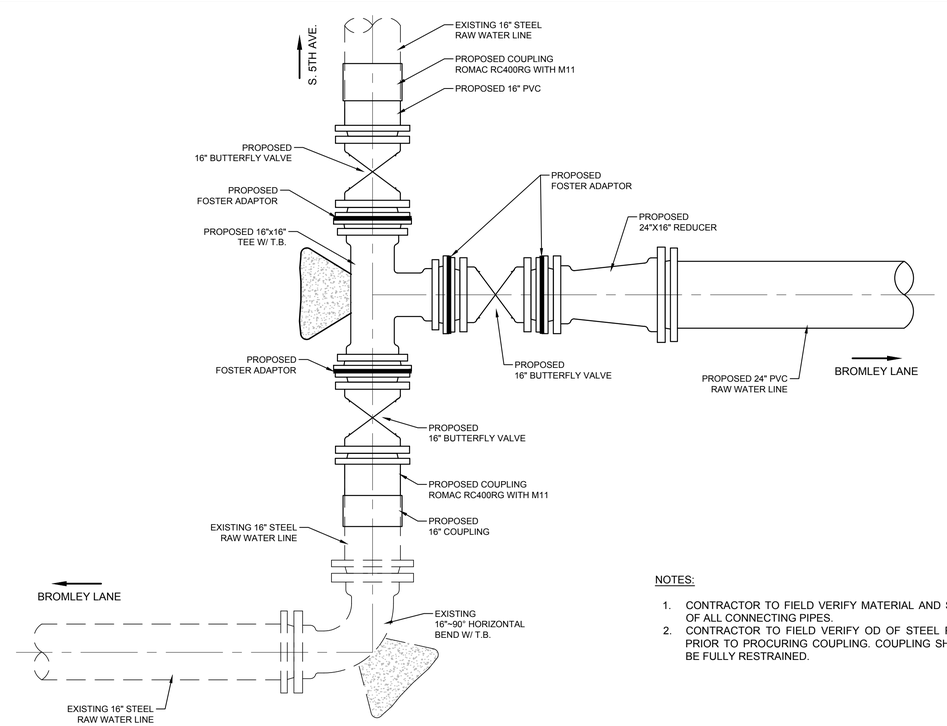
1. CONTRACTOR TO FIELD VERIFY MATERIAL AND SIZE OF ALL CONNECTING PIPES.



3 CONNECTION DETAIL 3

SCALE: N.T.S.

NORTH



NOTES:

1. CONTRACTOR TO FIELD VERIFY MATERIAL AND SIZE OF ALL CONNECTING PIPES.
2. CONTRACTOR TO FIELD VERIFY OD OF STEEL PIPE PRIOR TO PROCURING COUPLING. COUPLING SHALL BE FULLY RESTRAINED.

1 CONNECTION DETAIL 1

SCALE: N.T.S.

NORTH

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CITY OF BRIGHTON

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BRIGHTON, CO

DATE:	11/05/2019
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DRAWN:	RL
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FIELD BOOK NO.:	

SHEET TITLE:

CONNECTION DETAILS

SHEET NUMBER:

C6.8

PROJECT NO.: 0181377.00

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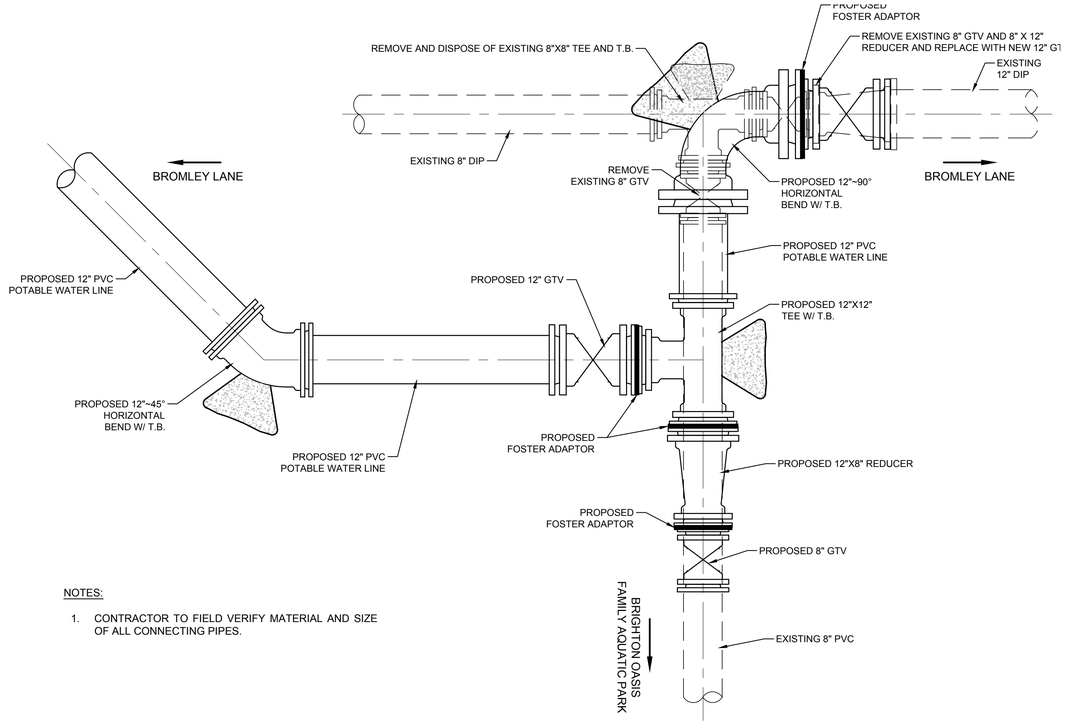


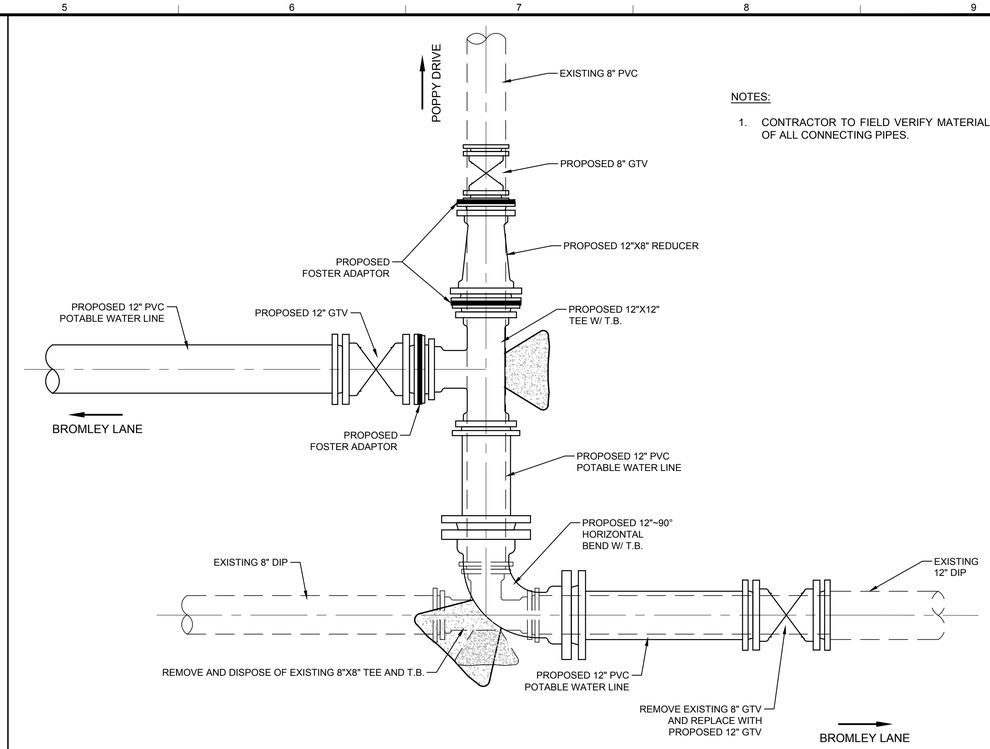
NOTES:

1. CONTRACTOR TO FIELD VERIFY MATERIAL AND SIZE OF ALL CONNECTING PIPES.

8 CONNECTION DETAIL 8

SCALE: N.T.S.

NORTH



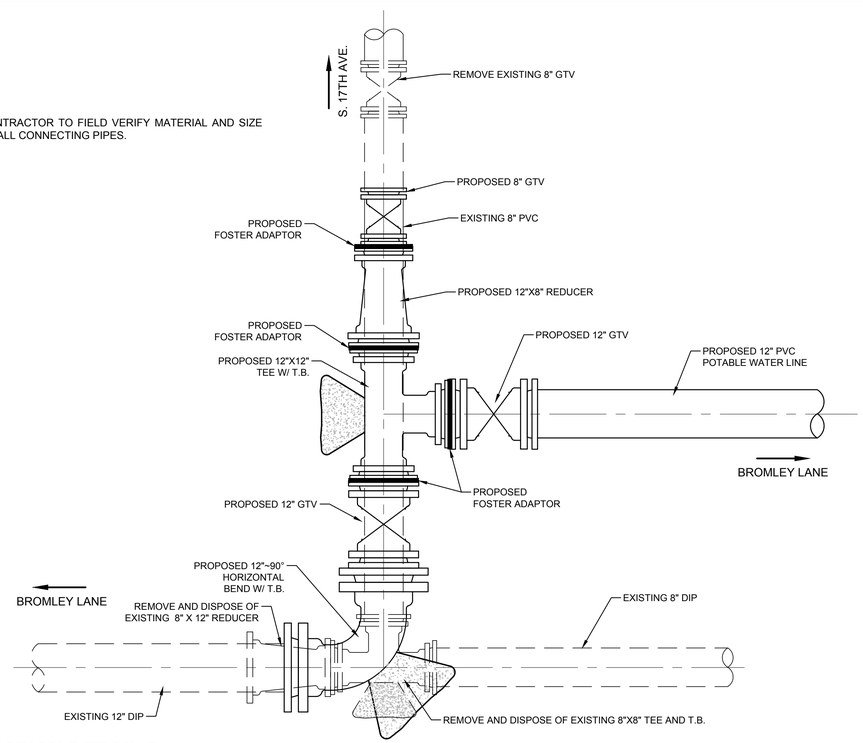
NOTES:

1. CONTRACTOR TO FIELD VERIFY MATERIAL AND SIZE OF ALL CONNECTING PIPES.

6 CONNECTION DETAIL 6

SCALE: N.T.S.

NORTH



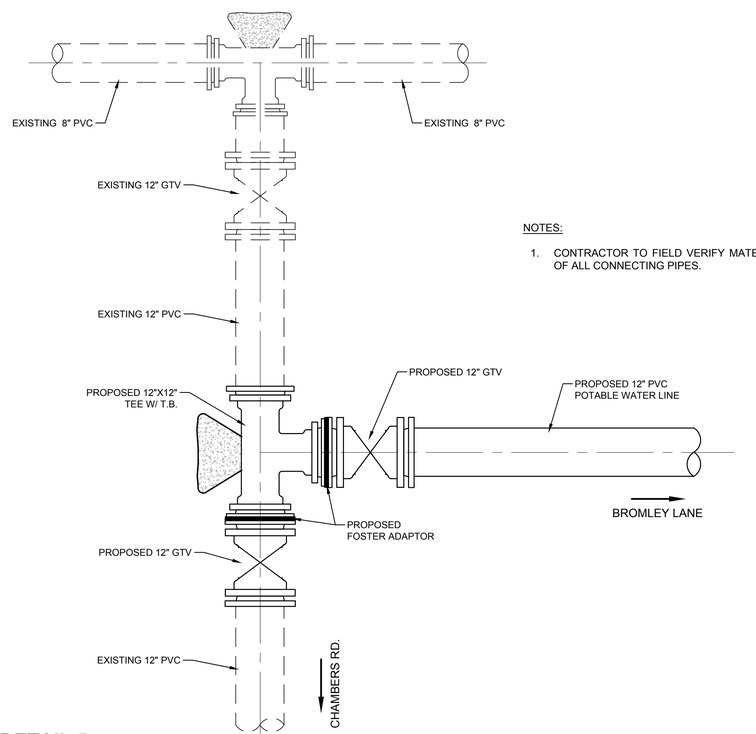
NOTES:

1. CONTRACTOR TO FIELD VERIFY MATERIAL AND SIZE OF ALL CONNECTING PIPES.

7 CONNECTION DETAIL 7

SCALE: N.T.S.

NORTH



NOTES:

1. CONTRACTOR TO FIELD VERIFY MATERIAL AND SIZE OF ALL CONNECTING PIPES.

5 CONNECTION DETAIL 5

SCALE: N.T.S.

NORTH

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BRIGHTON, CO

DATE:	11/05/2019
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DRAWN:	RL
REVIEWED:	JC
FIELD BOOK NO.:	

SHEET TITLE:

CONNECTION DETAILS

SHEET NUMBER:

C6.9

PROJECT NO.: 0181377.00

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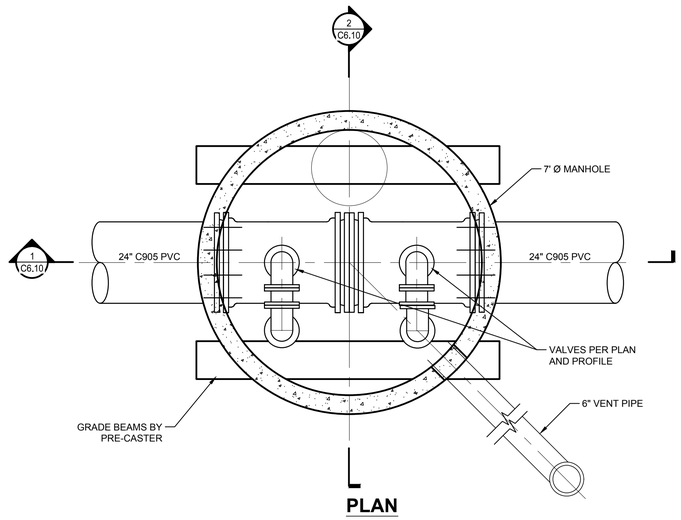

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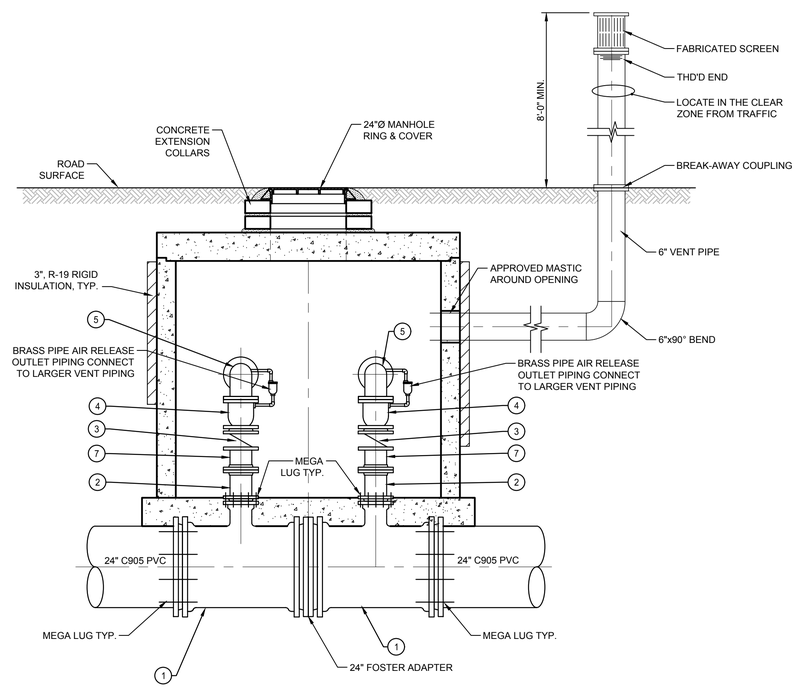
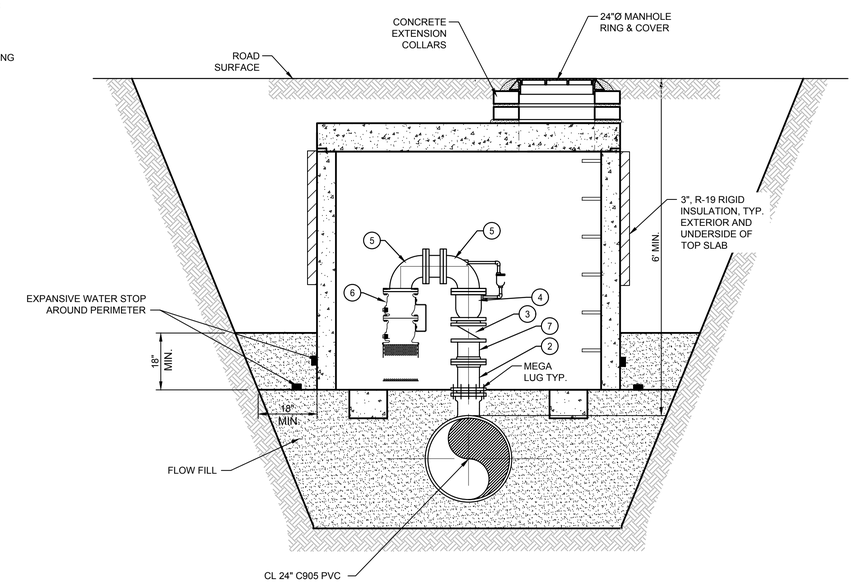


SECTION - 1



SECTION - 2

NOTES:

1. THE DISTANCE BETWEEN RUNGS, CLEATS AND STEPS SHALL NOT EXCEED 12" AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF THE LADDER.
2. LADDER RUNGS ARE REQUIRED IN PRECAST MANHOLES.

MATERIAL LIST

NO.	DESCRIPTION
1	MJ TEE
2	PE x FLG SPOOL
3	BUTTERFLY VALVE
4	COMBINATION AIR VALVE
5	PIPING MANIFOLD PER VALMATIC SPECIFICATIONS
6	VALMATIC FLOOD SAFE INFLOW PREVENTER
7	FLG REDUCER (IF NECESSARY)

1 **AIR / VACUUM VALVE VAULT DETAIL**

SCALE: NOT TO SCALE

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AIR VACUUM VALVE VAULT DETAIL

SHEET NUMBER:

C6.10

PROJECT NO.: 0181377.00