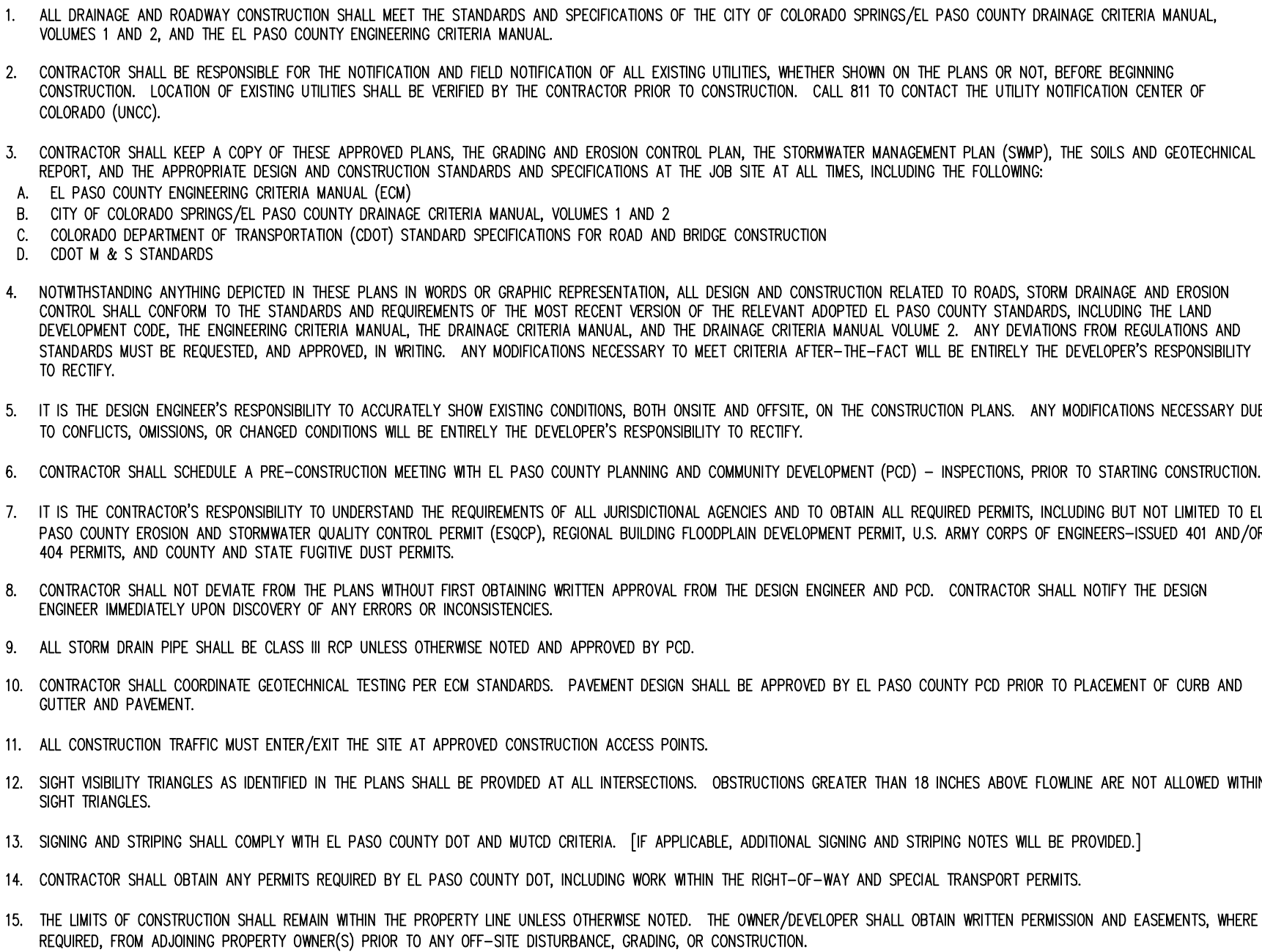


Engineering Review
12/16/2019 11:35:10 PM
dsdrice
JeffRice@elpasoco.com
(719) 520-7877
**EPC Planning & Community
Development Department**

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF THE WORK. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE PLANS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF OR A DEFINITE LOCATION OF EXISTING UNDERGROUND UTILITIES.
2. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PROTECT THE UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPLACED AT THE CONTRACTORS EXPENSE AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
3. ADDITIONAL EROSION CONTROL STRUCTURES MAY BE REQUIRED AT THE TIME OF CONSTRUCTION.
4. ALL BACKFILL, SUB-BASE AND / OR BASE COURSE (CLASS 6) MATERIAL SHALL BE COMPACTED TO THE SOLIDS ENGINEERS RECOMMENDATIONS, AND APPROVED BY EL PASO COUNTY DEVELOPMENT SERVICES ENGINEERING DIVISION
5. ALL STATISTICS IS CERTAINELY UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE FLOW LINE UNLESS OTHERWISE INDICATED.
6. ALL DISTURBED PAVEMENT EDGES SHALL BE CUT TO NEAR LINES. REPAIR SHALL CONFORM TO THE EPCO APPENDIX K - 1.2C.
7. ALL CURBS AND SIDEWALKS SHALL BE CONSTRUCTED WITH A 45 FOOT SLOPE. EXISTING TRIANGLES AND THERE SHALL BE NO OBSTRUCTIONS GREATER THAN 18" IN THIS AREA.
8. ALL CURVED AND STORM PIPES SHALL BE SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE (HPE), OR REINFORCED CONCRETE PIPE (RCP), ALL CURVERTS SHALL BE PLACED COMPLETE WITH FLARED END SECTIONS. ADEQUACY OF MATERIAL THICKNESS FOR ANY CIP INSTALLED SHALL BE VERIFIED BY OWNERS GEOTECHNICAL ENGINEER TO SUPPORT MINIMUM 50 YEAR DESIGN LIFE. CURVERTS MUST CONFORM TO EPCO SECTION 3.32 - CURVERTS.
9. ALL ROADWAYS SHALL BE PROPERLY COMPACTED FOR ROADS SHALL BE PER PERSON REPORT BY OWNERS GEOTECHNICAL ENGINEER. OWNERS GEOTECHNICAL ENGINEER TO BE ON SITE AT TIME OF ROAD CONSTRUCTION TO EVALUATE SOIL CONDITIONS AND DETERMINE IF ADDITIONAL MEASURES ARE NECESSARY TO ASSURE STABILITY OF THE NEW ROAD. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY DEVELOPMENT SERVICES ENGINEERING DIVISION PRIOR TO CONSTRUCTION.
10. ALL EXISTING AND BASE COURSE SHALL BE PROPERLY COMPACTED. ALL EXISTING ROAD MARKINGS SHALL BE REPAIRED. TYPE 1 R/P - R/P WITH MARI-FIN 700 OR EQUIV. IS SPECIFIED.
11. ALL MATERIALS & INSTALLATION PROCEDURES SHALL BE IN COMPLIANCE WITH AND ALL APPLICABLE EL PASO COUNTY STANDARDS AND WITH WOODMAN HILLS METRO DISTRICT CONSULTING ENGINEER APPROVAL.
12. ALL POTABLE WATER MAINS SHALL BE AWWA C900-GRAY-IRON PIPE WITH PUSH-ON SINGLE GASKET TYPE JOINTS AND SHALL MEET THE REQUIREMENTS OF ANS I / NSF 61.
13. ALL WATER MAIN FITTINGS SHALL BE MADE FROM STAINLESS-OR DUCTILE IRON AND FURNISHED WITH MECHANICAL JOINT ENDS. ALL FITTINGS SHALL HAVE A PRESSURE RATING OF 250 PSI AND SHALL MEET THE REQUIREMENTS OF ANS I / NSF 61.
14. ALL WATER LINE BENDS, TEES, BLOW-OFFS AND PLUGS AT DEAD-END MAINS SHALL BE PROTECTED FROM THURST BY USING JOINTED THURST BLOCKS AND / OR RODDING AND RESTRAINED PIPE PER THE PAINT BRUSH HILLS METRO DISTRICT CONSULTING ENGINEER APPROVAL.
15. MAXIMUM DEFLECTION OF 8" OR 12" PIPE WATER MAIN JOINTS IS 4 DEGREES. CORRESPONDING MINIMUM CURVE RADIUS IS 286'. ADDITIONAL 11.25" OR 22.5" BENDS MAY BE REQUIRED FOR PROPER ALIGNMENT.
16. CONTRACTOR IS RESPONSIBLE FOR PROVIDING DETAIL AS-BUILTS OF ALL WATER MAIN, STORM SEWER AND SANITARY. SEWER MAIN INSTALLATIONS, INCLUDING ACCURATE DISTANCES OF MAIN LINES, SHALL BE PROVIDED FOR ALL SEWER MAINS.
17. SANITARY SEWER PIPE AND FITTINGS: PVC 4" - 8" ASTM D3034, TYPE PSM, SDR 35: PUSH-ON JOINTS AND MOLDED RUBBER GASKETS MAXIMUM HORIZONTAL DEFLECTIONS, AFTER INSTALLATION AND BACK FILLING SHALL NOT EXCEED 3% OF THE PIPE DIAMETER. MINIMUM CURVE RADIUS IS 10' FOR 8" SANITARY SEWER MAIN.

3. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFFSITE WATERS, INCLUDING WETLANDS.
2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS TO REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
3. A SEPARATE STORMWATER MANAGEMENT PLAN (SWMP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. DURING CONSTRUCTION THE SWMP IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR AND SHALL BE LOCATED ON SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
4. ONCE THE EROSION IS APPROVED AND A NOTICE TO PROCEED HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT MAY CONTRIBUTE POLLUTANTS TO STORMWATER. TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.
6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF EROSION CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES IS NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN PRIOR TO IMPLEMENTATION.
7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS. AN AREA THAT IS GOING TO REMAIN IN AN INTERIM STATE FOR MORE THAN 60 DAYS SHALL ALSO BE STABILIZED.
8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.
9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DEFINED IN THE APPROVED PLANS, ANY PROPOSED CHANGES THAT EFFECT THE HYDROLOGY OR HYDRAULICS OF A PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECOM ADMINISTRATOR PRIOR TO IMPLEMENTATION.
10. ANY EARTH DISTURBANCE SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE, UNLESS INFEASIBLE.
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED.
12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED. CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF SITE.
13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO RUNOFF TO STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUT SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY.
14. DEWATERING OPERATIONS: UNCONTAMINATED GROUND WATER MAY BE DISCHARGED ON SITE, BUT MAY NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF.
15. EROSION CONTROL BLANKETING IS TO BE USED ON SLOPES STEEPER THAN 3:1.
16. BUILDING, CONSTRUCTION, EXCAVATION, OR OTHER MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. BMP'S MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
17. VEHICLE TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFFSITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL, IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
19. THE OWNER, SITE DEVELOPER, CONTRACTOR, AND/OR THEIR AUTHORIZED AGENTS SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, AND SAND THAT MAY ACCUMULATE IN THE STORM SEWER OR OTHER DRAINAGE SYSTEM AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
21. NO CHEMICALS ARE TO BE USED BY THE CONTRACTOR, WHICH HAVE THE POTENTIAL TO BE RELEASED IN STORMWATER UNLESS PERMISSION FOR THE USE OF A SPECIFIC CHEMICAL IS GRANTED IN WRITING BY THE ECOM ADMINISTRATOR. IN GRANTING THE USE OF SUCH CHEMICALS, SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
22. BULK STORAGE OF PETROLEUM PRODUCTS OR OTHER LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL HAVE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS AND PREVENT ANY SPILLED MATERIAL FROM ENTERING STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES.
23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE FLOW LINE OF THE CURB AND GUTTER OR IN THE DITCH FLOW LINE.
24. INDIVIDUALS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS), AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS INCLUDED IN THE ECOM VOLUME 1 AND THE ECOM APPENDIX 1. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.), IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, OR COUNTY AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.
25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
26. PRIOR TO ACTUAL CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
27. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY ROCKY MOUNTAIN GROUP AND SHALL BE CONSIDERED A PART OF THESE PLANS.

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD -PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT



1. SIGNS AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY A METHOD THAT DOES NOT MATERIALLY DAMAGE THE PAVEMENT. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY WILL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS. AT NO TIME WILL IT BE ACCEPTABLE TO PAINT OVER EXISTING PAVEMENT MARKINGS.
3. ALL SIGNS SHOWING A STOPPING AND GOING PLATE SHALL BE IN ACCORDANCE WITH THE STATE AND COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT'S SIGNAGE AND STRIPING MANUAL.
4. ALL SIGNS SHOWN ON THE SIGNING AND STRIPING PLAN SHALL BE NEW SIGNS. EXISTING SIGNS MAY REMAIN OR BE REUSED IF THEY MEET CURRENT EL PASO COUNTY AND MUTCD STANDARDS.
5. STREET NAME AND REGULATORY STOP SIGNS SHALL BE ON THE SAME POST AT INTERSECTIONS.
6. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
7. ALL STREET NAME SIGNS SHALL HAVE 'D' SERIES LETTERS, WITH LOCAL ROADWAY SIGNS BEING '4' UPPER-LOWER CASE LETTERING ON 8" BLANK AND NON-LOCAL ROADWAY SIGNS BEING '6" LETTERING, UPPER-LOWER CASE ON 12" BLANK, WITH A WHITE BORDER THAT IS NOT RECESSED. MULTI-LANE ROADWAYS WITH SPEED LIMITS OF 40 MPH OR HIGHER SHALL HAVE 8" LETTERING ON 18" BLANK LETTERING ON 18" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. THE WIDTH OF THE NON-RECESSED WHITE BORDERS SHALL MATCH PAGE 255 OF THE 2012 MUTCD "STANDARD HIGHWAY SIGNS".
8. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
9. ALL LOCAL RESIDENTIAL STREET SIGNS SHALL BE MOUNTED ON A 1.75 X 1.75 SQUARE TUBE SIGN POST AND STUB POST BASE. FOR OTHER APPLICATIONS, REFER TO THE CDDT STANDARD S-614-B REGARDING USE OF THE P2 TUBULAR SIGN POST SUBSTITUTION.
10. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH A MINIMUM .0100" MINIMUM THICKNESS.
11. ALL LIMIT LEGS/STOP LEGS, CROSSWALK LEGS, PAVEMENT LEGENDS, AND ARROWS SHALL BE A MINIMUM 12MIL THICKNESS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS WITH STRIPED LEADING EDGES PER CDDT STANDARD S-627-1. WORD AND SYMBOL MARKINGS SHALL BE THE NARROW TYPE. STOP BARS SHALL BE 24" IN WIDTH. CROSSWALKS LEGS SHALL BE 24" IN WIDTH.
12. ALL LONGITUDINAL SIGNS SHALL BE A MINIMUM 15MIL THICKNESS EPOXY PAINT. ALL NON-LOCAL RESIDENTIAL ROADWAYS SHALL INCLUDE BOTH RIGHT AND LEFT EDGE LINE STRIPING AND ANY ADDITIONAL STRIPING AS REQUIRED BY CDDT S-627-1.
13. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (719) 520-6619 PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
14. THE CONTRACTOR SHALL OBTAIN A WORKER IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS (DPW) PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.

SEE BENT GRASS RESIDENTIAL FILING NO. 2 UTILITY CONSTRUCTION PLANS FOR WATER AND SANITARY IMPROVEMENTS

RONALD G. DENNIS, COLORADO P.E. NO. 0051622

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN AND ALL OF THE REQUIREMENT SPECIFIED IN THESE DETAILED PLANS AND SPECIFICATIONS.

EL PASO COUNTY

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT. FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

IN ACCORDANCE WITH EGM SECTION 1.12, THESE CONSTRUCTION DOCUMENTS WILL BE VALID FOR CONSTRUCTION FOR A PERIOD OF 2 YEARS FROM THE DATE SIGNED BY THE EL PASO COUNTY ENGINEER. IF CONSTRUCTION HAS NOT STARTED WITHIN THOSE 2 YEARS, THE PLANS WILL NEED TO BE RESUBMITTED FOR APPROVAL, INCLUDING PAYMENT OF REVIEW FEES AT THE PLANNING AND COMMUNITY DEVELOPMENT DIRECTORS' DISCRETION.

JENNIFER IRVINE, P.E. DATE
COUNTY ENGINEER / ECM ADMINISTRATOR

THESE CONSTRUCTION DOCUMENTS HAVE BEEN REVIEWED AND APPROVED FOR SANITARY SEWER, WATER MAIN AND ASSOCIATED UTILITY SERVICE CONSTRUCTION

FOR AND BEHALF OF WOODMEN HILLS METROPOLITAN DISTRICT DATE

ALL FIRE HYDRANTS SHALL BE INSTALLED ACCORDING TO THE FALCON FIRE PROTECTION DISTRICT SPECIFICATIONS. THE NUMBER OF FIRE HYDRANTS AND HYDRANT LOCATIONS AS SHOWN ON THIS WATER INSTALLATION PLAN ARE CORRECT AND ADEQUATE TO SATISFY THE FIRE PROTECTION REQUIREMENTS AS SPECIFIED BY THE FALCON FIRE PROTECTION DISTRICT.

FOR AND BEHALF OF FALCON FIRE PROTECTION DISTRICT

1. ALL UTILITY LOCATIONS SHOWN ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND FIELD EXAMINATION SHALL BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.

2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

811

Know what's below
Call before you dig

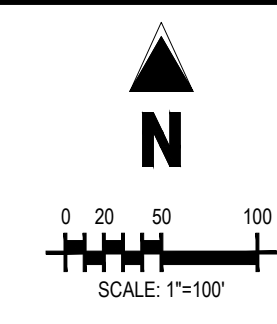
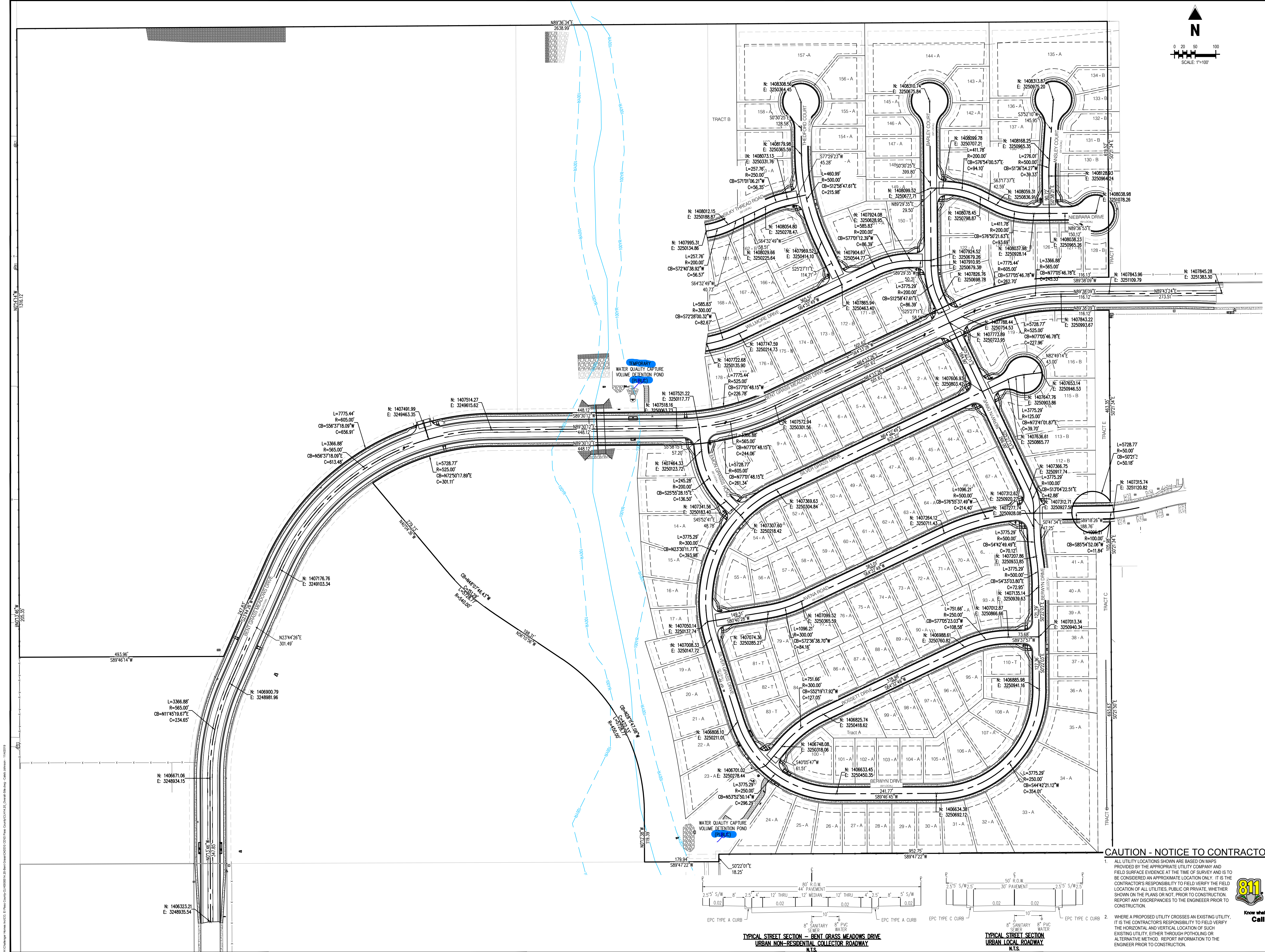


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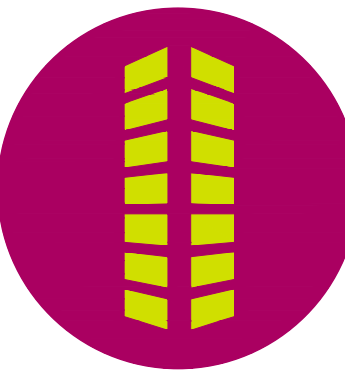
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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

OVERALL SITE PLAN

CAUTION - NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.



2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

TYPICAL STREET SECTION - BENT GRASS MEADOWS DRIVE
URBAN NON-RESIDENTIAL COLLECTOR ROADWAY
N.T.S.

TYPICAL STREET SECTION
URBAN LOCAL ROADWAY
N.T.S.

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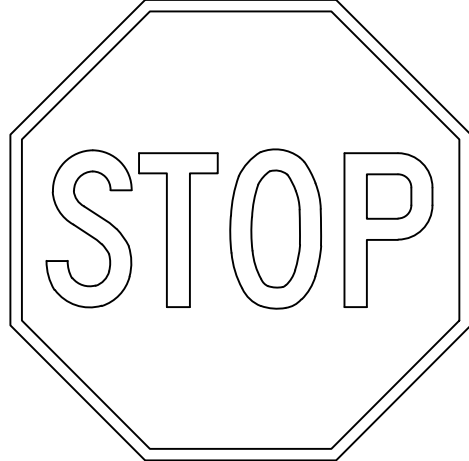


AVENA ROAD (PUBLIC)
(50' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL

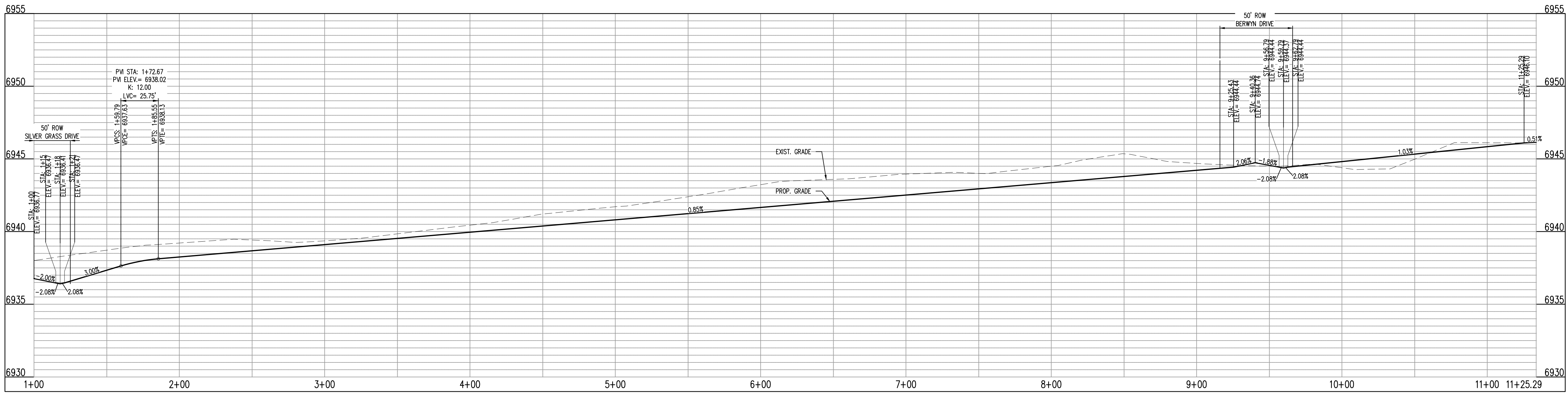
KEY NOTE: A

ROAD NAME

STREET NAME (D-3)



STOP SIGN (R1-1)



AVENA RD - CL - 50' ROW
STA: 1+00 - 11+33.64
SCALE: H: 1"=40' V: 1"=10'

Galloway

1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220
gallowayus.com

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

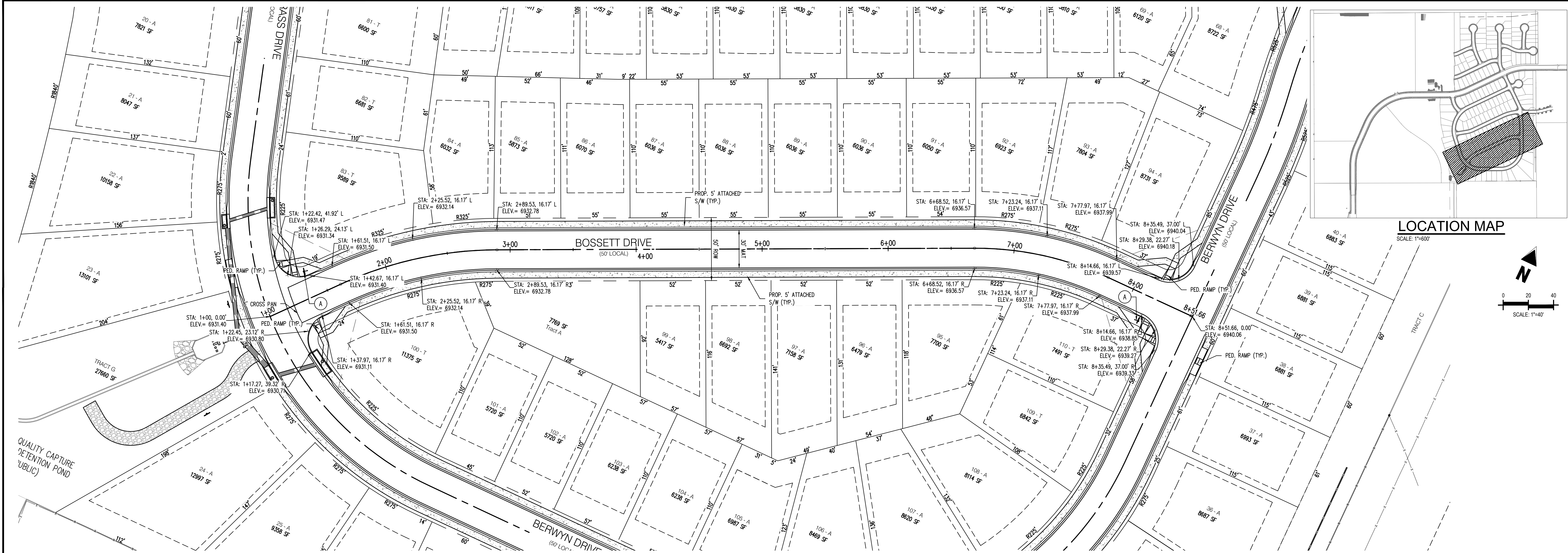
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Project No: CLH000014.20
Drawn By: JDP
Checked By: RGD
Date: 11/4/2019

AVENA ROAD
STREET IMPROVEMENT PLAN

C2.01

Sheet 3 of 43



BOSSETT ROAD (PUBLIC)
(50' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL

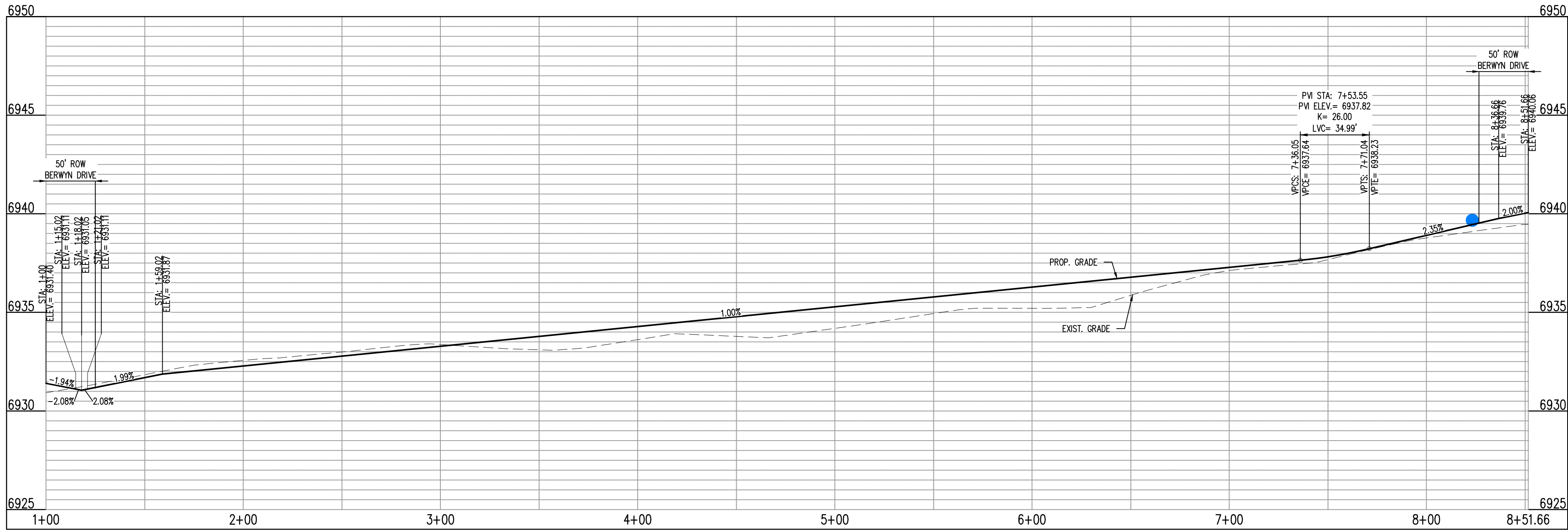
KEY NOTE: A

ROAD NAME

STREET NAME (D-3)

STOP

STOP SIGN (R1-1)



BOSSETT DR - CL - 50' ROW
STA: 1+00 - 8+51.66
SCALE: H: 1"=40' V: 1"=10'

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

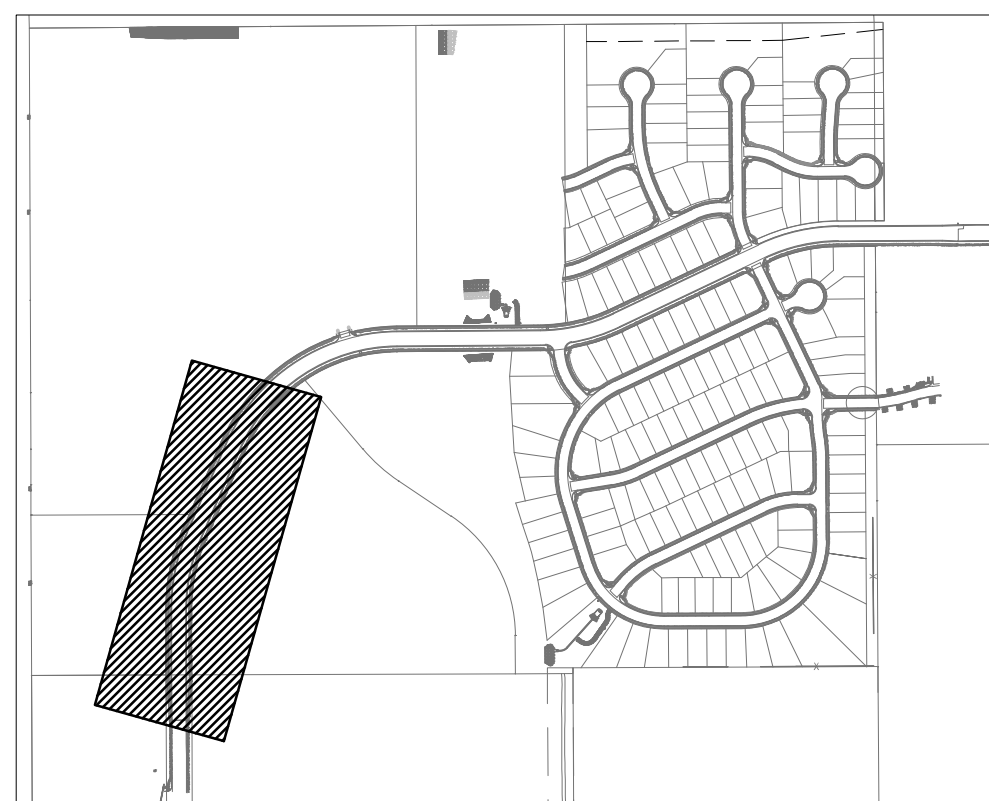
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

#	Date	Issue / Description	Init.
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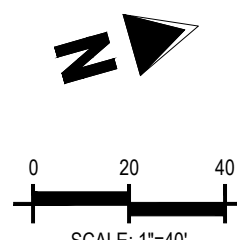
Project No: CLH000014.20
Drawn By: JDP
Checked By: RGD
Date: 11/4/2019

BOSSETT DRIVE
STREET IMPROVEMENT PLAN

1. ALL SIGNS AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY A METHOD THAT DOES NOT MATERIALLY DAMAGE THE PAVEMENT. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY WILL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS. AT NO TIME WILL IT BE ACCEPTABLE TO PAINT OVER EXISTING PAVEMENT MARKINGS.
3. ANY DEVIATION FROM THE STRIPING AND SIGNING PLAN SHALL BE APPROVED BY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT.
4. ALL SIGNS SHOWN ON THE SIGNING AND STRIPING PLAN SHALL BE NEW SIGNS. EXISTING SIGNS MAY REMAIN OR BE REUSED IF THEY MEET CURRENT EL PASO COUNTY AND MUTCD STANDARDS.
5. STREET NAME AND REGULATORY STOP SIGN SHALL BE ON THE SAME POST AT INTERSECTIONS.
6. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
7. ALL STREET NAME SIGNS SHALL HAVE "I" SERIES LETTERS WITH LOCAL ROADWAY SIGNS BEING "A" UPPER-LOWER CASE LETTERING ON 8" BLANK AND NON-LOCAL ROADWAY SIGNS BEING 6" LETTERING; UPPER-LOWER CASE ON 12" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. MULTI-LANE ROADWAYS WITH SPEED LIMITS OF 40 MPH OR HIGHER SHALL HAVE 8" UPPER-LOWER CASE LETTERING ON 18" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. THE WIDTH OF THE NON-RECESSED WHITE BORDERS SHALL MATCH PAGE 255 OF THE 2012 MUTCD "STANDARD HIGHWAY SIGNS".
8. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
9. ALL LOCAL RESIDENTIAL STREET SIGNS SHALL BE MOUNTED ON A 1.5 X 1.75 X 1.75 SQUARE TUBE SIGN POST AND STUB POST. FOR OTHER APPLICATIONS, REFER TO THE CDOT STANDARD S-614-8 REGARDING USE OF THE P2 TUBULAR STEEL POST SUBPASTE DESIGN.
10. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH A 0.007 MINIMUM THICKNESS.
11. ALL LIMIT LINE/STOP SIGNS, CROSSWALK LINES, PAVEMENT WORDS, LEGENDS, AND SYMBOLS SHALL BE A MINIMUM 125 MIL THICKNESS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS WITH PREPARED EMBLEM EXPOSED PER CDDOT STD 542-21. STOP SIGNS SHALL BE 24" IN WIDTH. CROSSWALKS SHALL BE 12" WIDE AND 8 LONG PER CDDOT S-627.1.
12. ALL LONGITUDINAL LINES SHALL BE A MINIMUM 15MIL THICKNESS EXPOSY. PLAN. ALL NON-LOCAL RESIDENTIAL ROADWAYS SHALL INCLUDE BOTH RIGHT AND LEFT EDGE LINE STRIPING AND ANY ADDITIONAL STRIPING AS REQUIRED BY CDDOT S-627.1.
13. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (719) 520-6819 PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
14. THE CONTRACTOR SHALL OBTAIN A WORK IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS (DPW) PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.



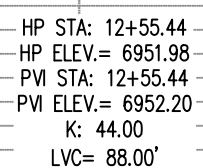
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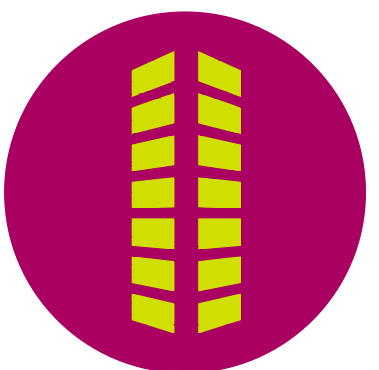
NOTE TO CONTRACTOR
ALL 4", 8" SOLID OR SKIP PAVEMENT MARKING SHALL BE EPOXY.

SIGNS AND POLES SHALL BE PER CDOT STANDARDS S-614-2,
S-614-3, AND S-614-8, LATEST REVISION.

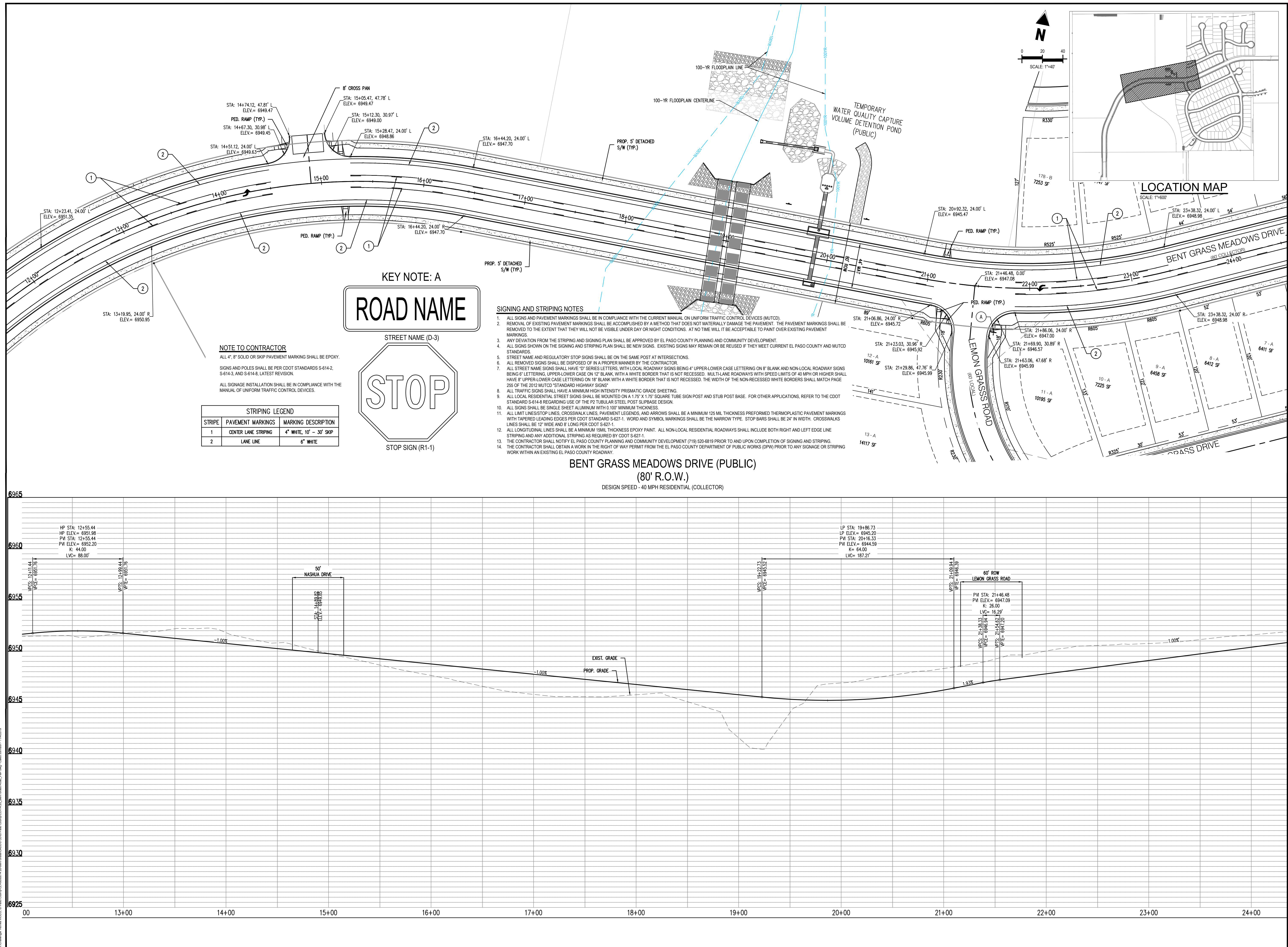
STRIPING LEGEND		
STRIPE	PAVEMENT MARKINGS	MARKING DESCRIPTION
1	CENTER LANE STRIPING	4" WHITE, 10' - 30' SKIP
2	LANE LINE	6" WHITE

[illegible]

Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

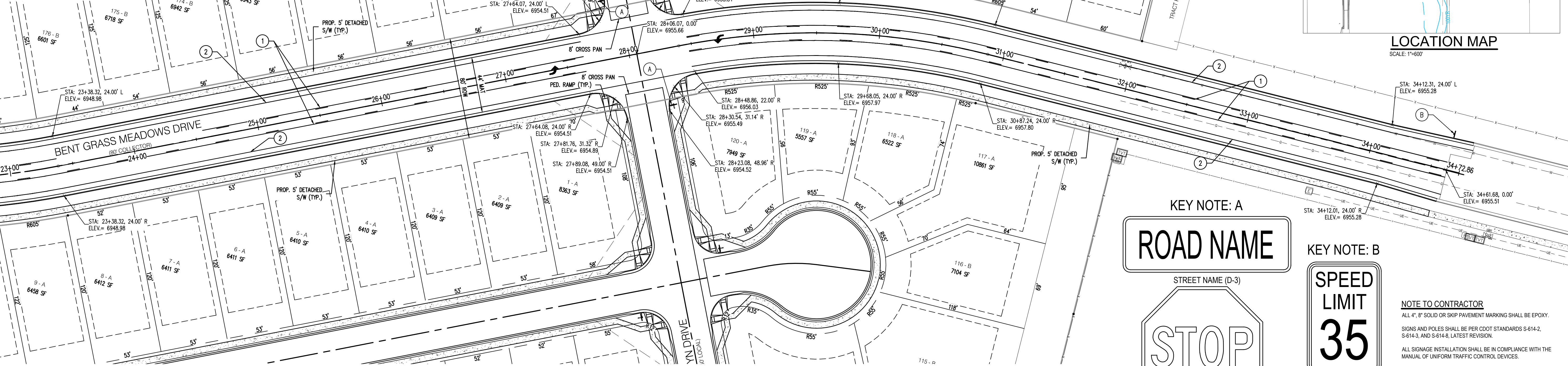
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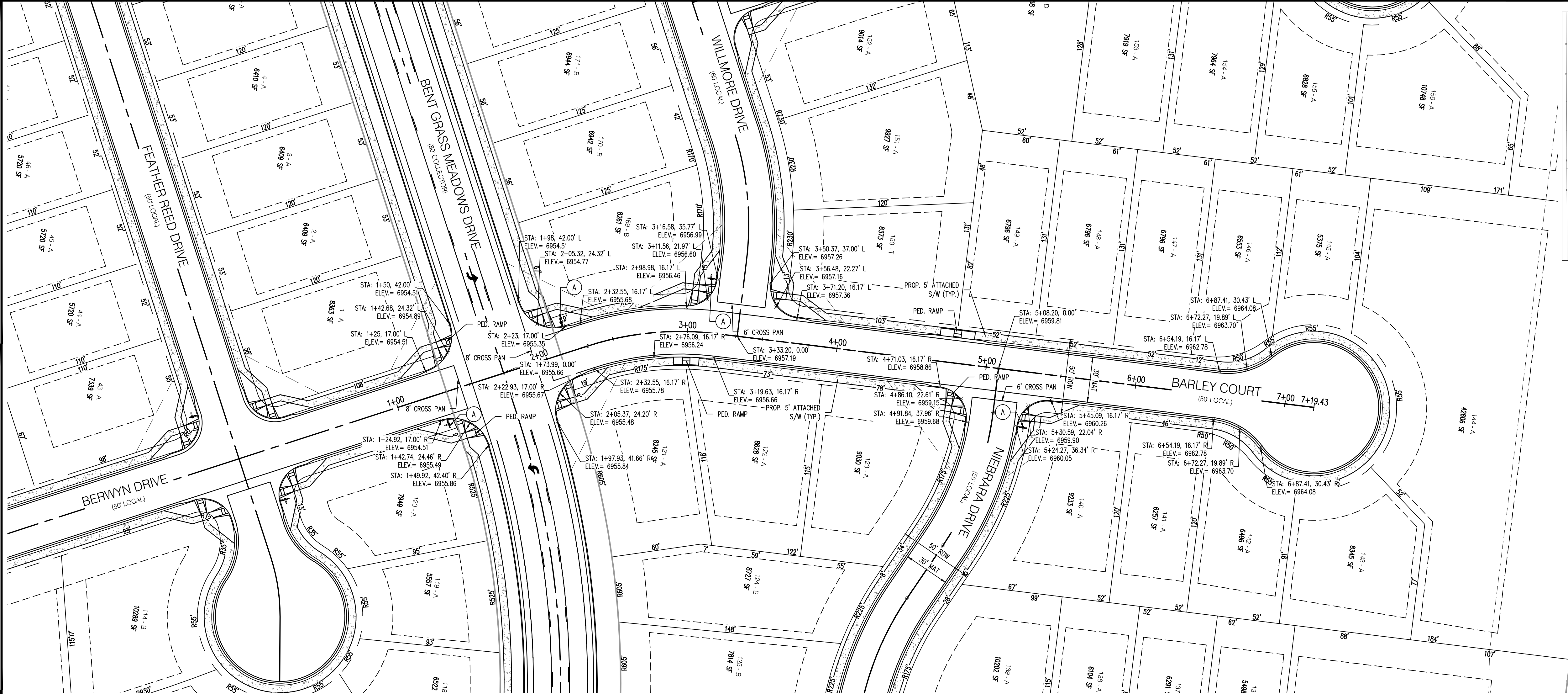
Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

BENT GRASS MEADOWS DRIVE
STREET IMPROVEMENT PLAN

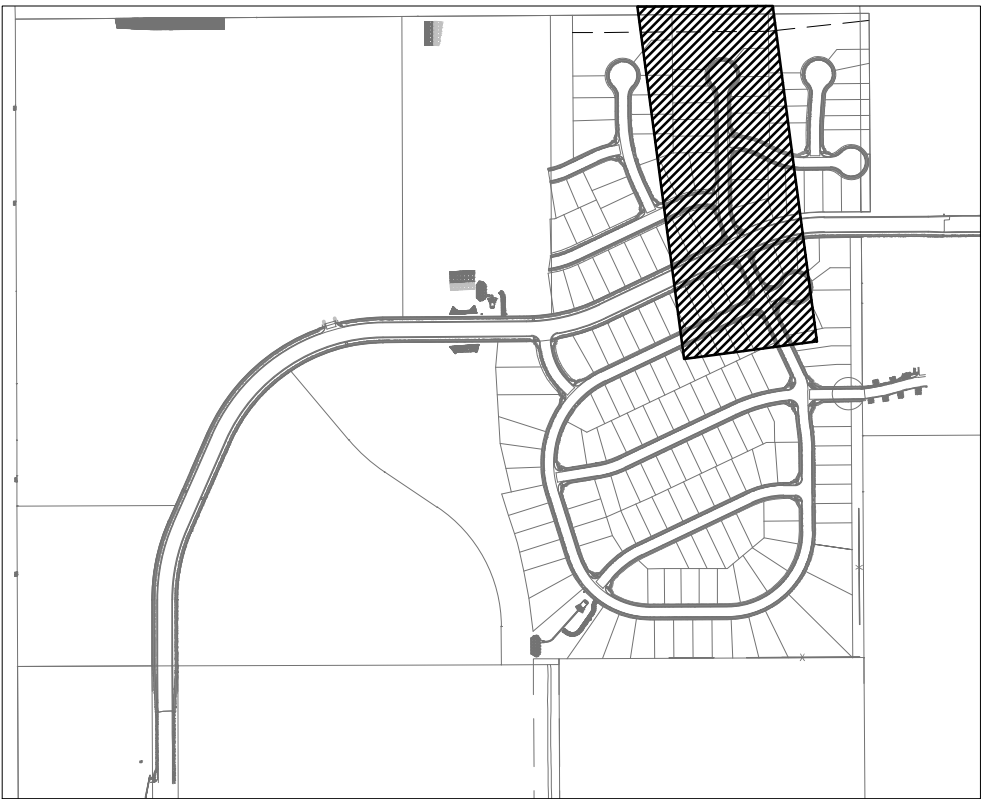
SIGNING AND STRIPING NOTES

1. ALL SIGNS AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY A METHOD THAT DOES NOT MATERIALLY DAMAGE THE PAVEMENT. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY WILL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS. AT NO TIME WILL IT BE ACCEPTABLE TO PAINT OVER EXISTING PAVEMENT MARKINGS.
3. ANY DEVIATION FROM THE STRIPING AND SIGNING PLAN SHALL BE APPROVED BY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT.
4. ALL SIGNS SHOWN ON THE SIGNING AND STRIPING PLAN SHALL BE NEW SIGNS. EXISTING SIGNS MAY REMAIN OR BE REUSED IF THEY MEET CURRENT EL PASO COUNTY AND MUTCD STANDARDS.
5. STREET NAME AND REGULATORY STOP SIGNS SHALL BE ON THE SAME POST AT INTERSECTIONS.
6. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
7. ALL STREET NAME SIGNS SHALL HAVE "D" SERIES LETTERS, WITH LOCAL ROADWAY SIGNS BEING 4" UPPER-LOWER CASE LETTERING ON 8" BLANK AND NON-LOCAL ROADWAY SIGNS BEING 8" LETTERING, UPPER-LOWER CASE ON 12" BLANK, WITH A WHITE BORDER THAT IS NOT RECESSED. MULTI-LANE ROADWAYS WITH SPEED LIMITS OF 40 MPH OR HIGHER SHALL HAVE 8" UPPER-LOWER CASE LETTERING ON 18" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. THE WIDTH OF THE NON-RECESSED WHITE BORDERS SHALL MATCH PAGE 255 OF THE 2012 MUTCD "STANDARD HIGHWAY SIGNS".
8. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
9. ALL LOCAL RESIDENTIAL STREET SIGNS SHALL BE MOUNTED ON A 1.75" X 1.75" SQUARE TUBE SIGN POST AND STUB POST BASE. FOR OTHER APPLICATIONS, REFER TO THE CDOT STANDARD S-614.8 REGARDING USE OF THE P2 TUBULAR STEEL POST SLIPBASE DESIGN.
10. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH 0.100" MINIMUM THICKNESS.
11. ALL LIMIT LINES/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS SHALL BE A MINIMUM 125 MIL THICKNESS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS WITH TAPERED LEADING EDGES PER CDOT STANDARD S-627-1. WORD AND SYMBOL MARKINGS SHALL BE THE NARROW TYPE. STOP BARS SHALL BE 24" IN WIDTH. CROSSWALKS LINES SHALL BE 12" WIDE AND 8' LONG PER CDOT S-627-1.
12. ALL LONGITUDINAL LINES SHALL BE A MINIMUM 15MIL THICKNESS EPOXY PAINT. ALL NON-LOCAL RESIDENTIAL ROADWAYS SHALL INCLUDE BOTH RIGHT AND LEFT EDGE LINE STRIPING AND ANY ADDITIONAL STRIPING AS REQUIRED BY CDOT S-627-1.
13. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (719) 520-6819 PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
14. THE CONTRACTOR SHALL OBTAIN A WORK IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS (DPW) PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.



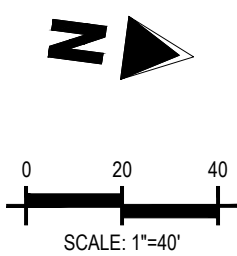


BARLEY COURT (PUBLIC)
(50' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL



LOCATION MAP

SCALE: 1"=600'



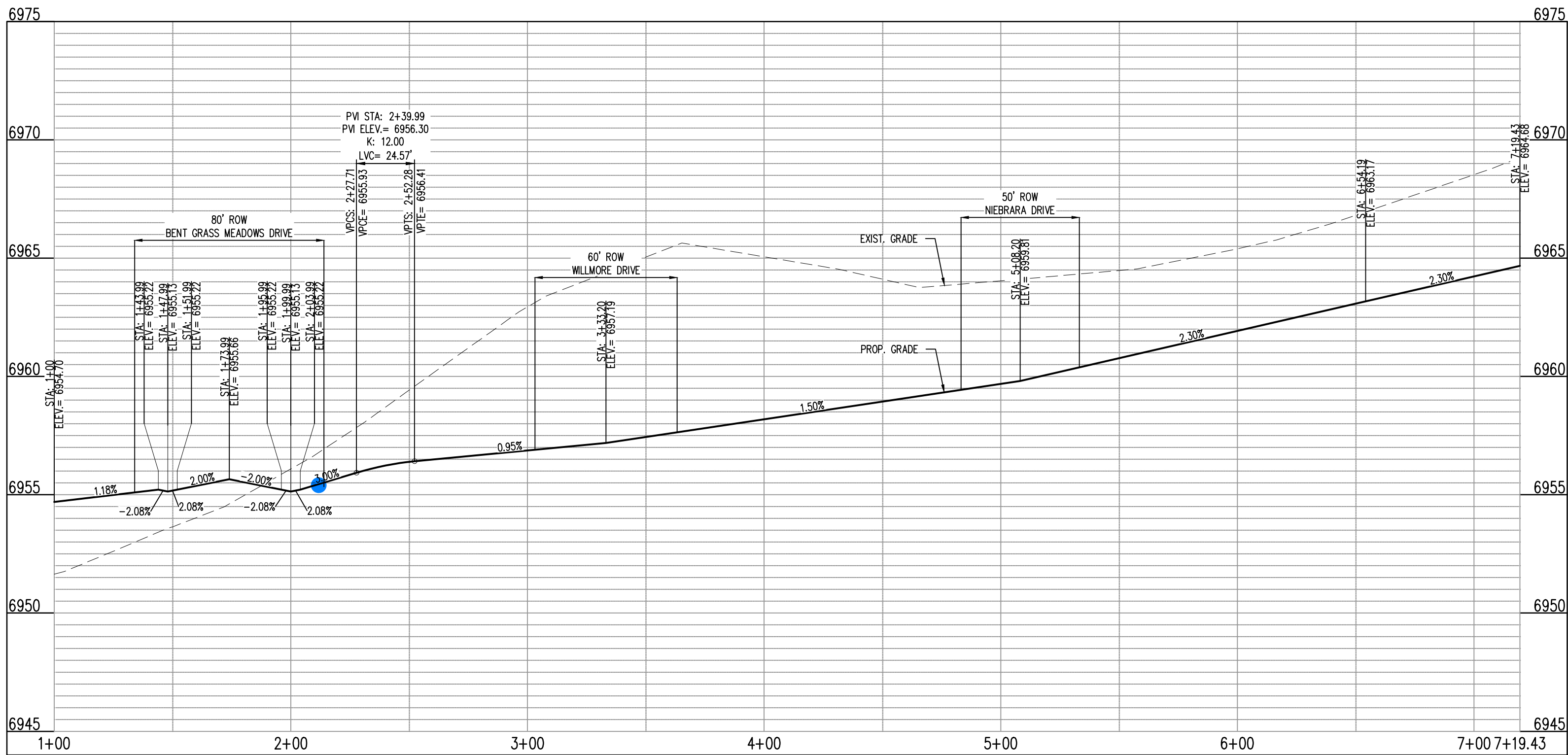
KEY NOTE: A

ROAD NAME

STREET NAME (D-3)

STOP

STOP SIGN (R1-1)



BARLEY COURT - CL - 50' ROW
STA: 1+00 - 7+19.43
SCALE: H: 1"=40' V: 1"=10'

Galloway

1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220
gallowayus.com

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

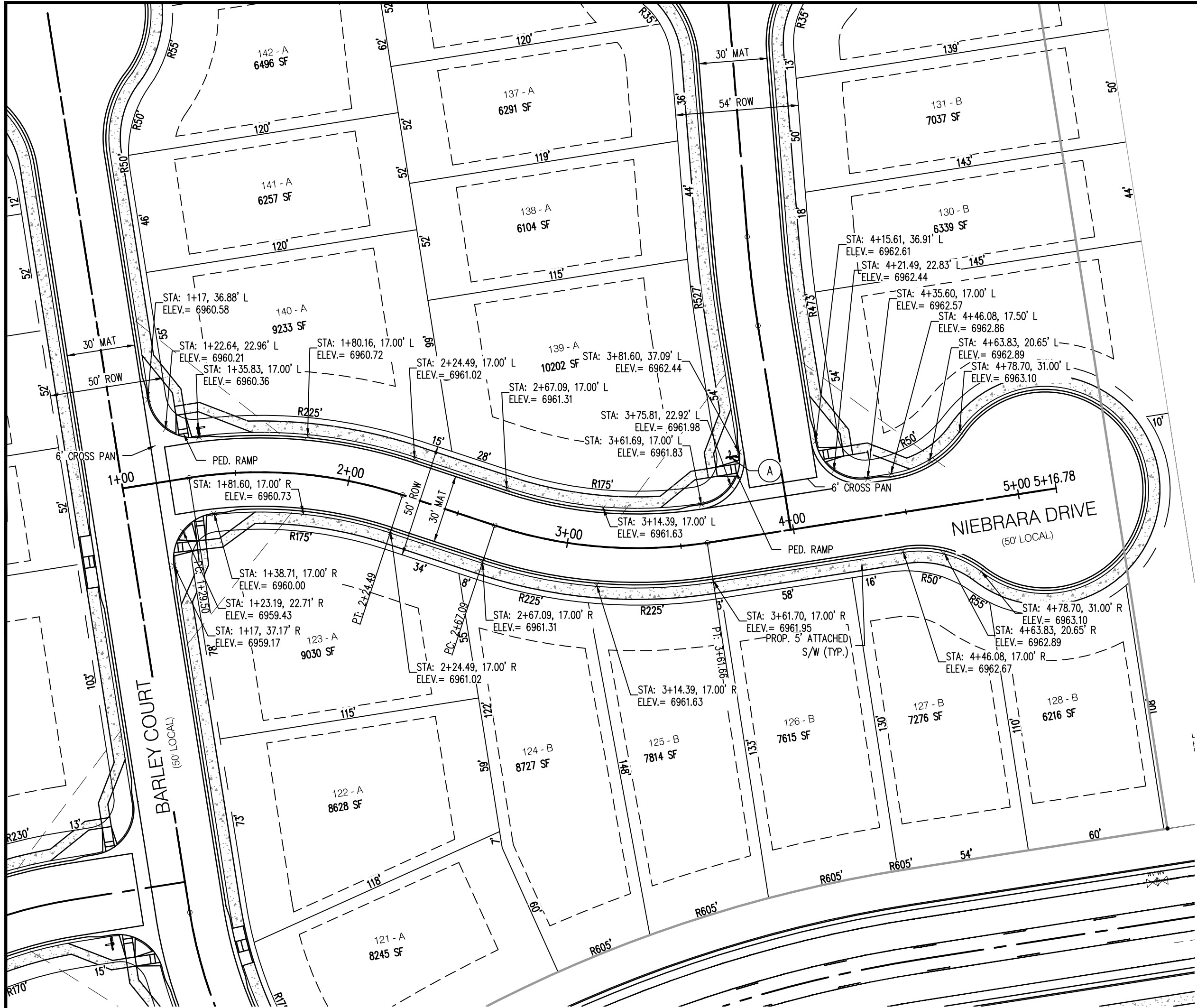
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

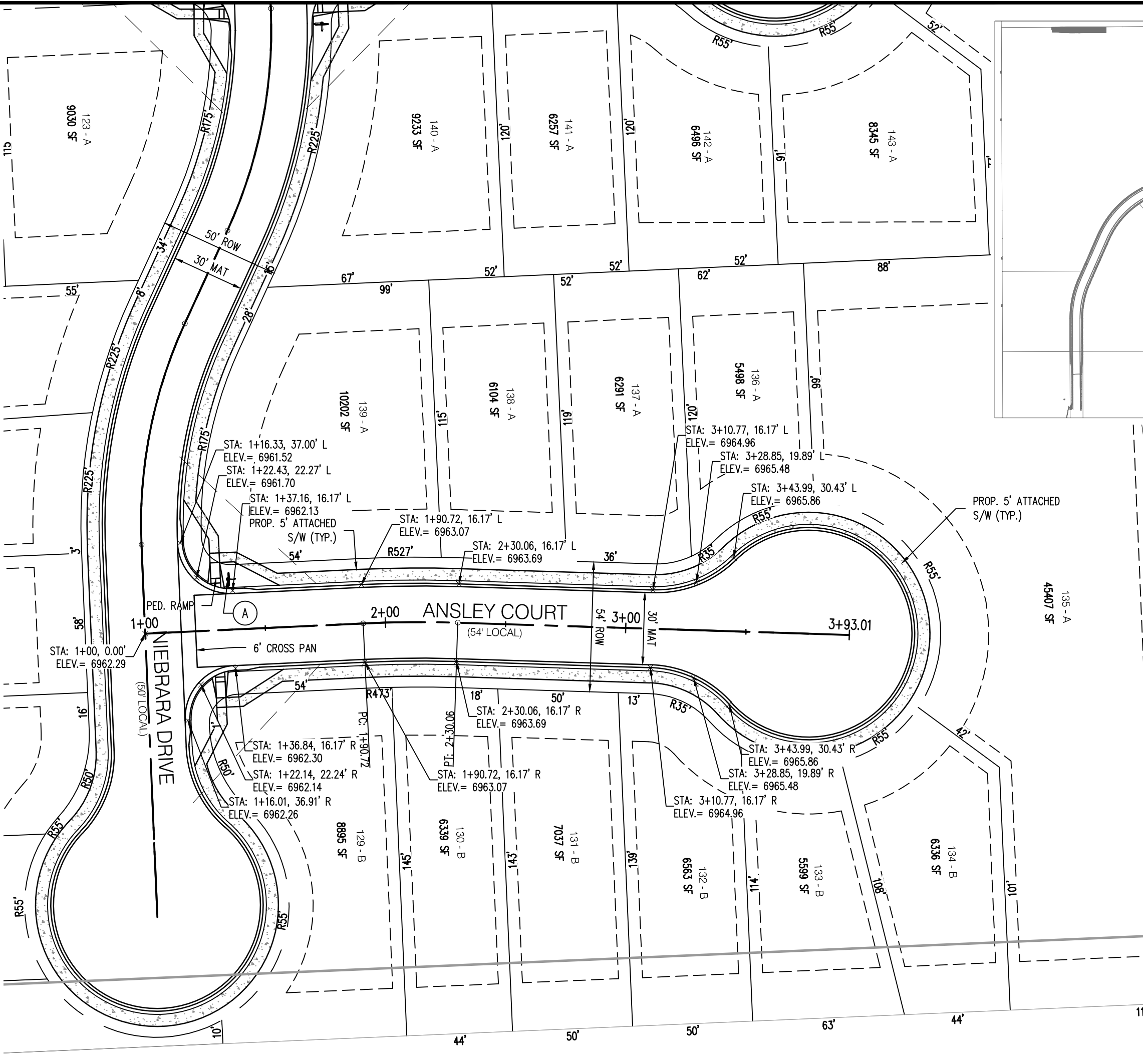
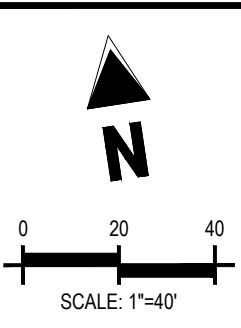
BARLEY COURT
STREET IMPROVEMENT PLAN

C2.06

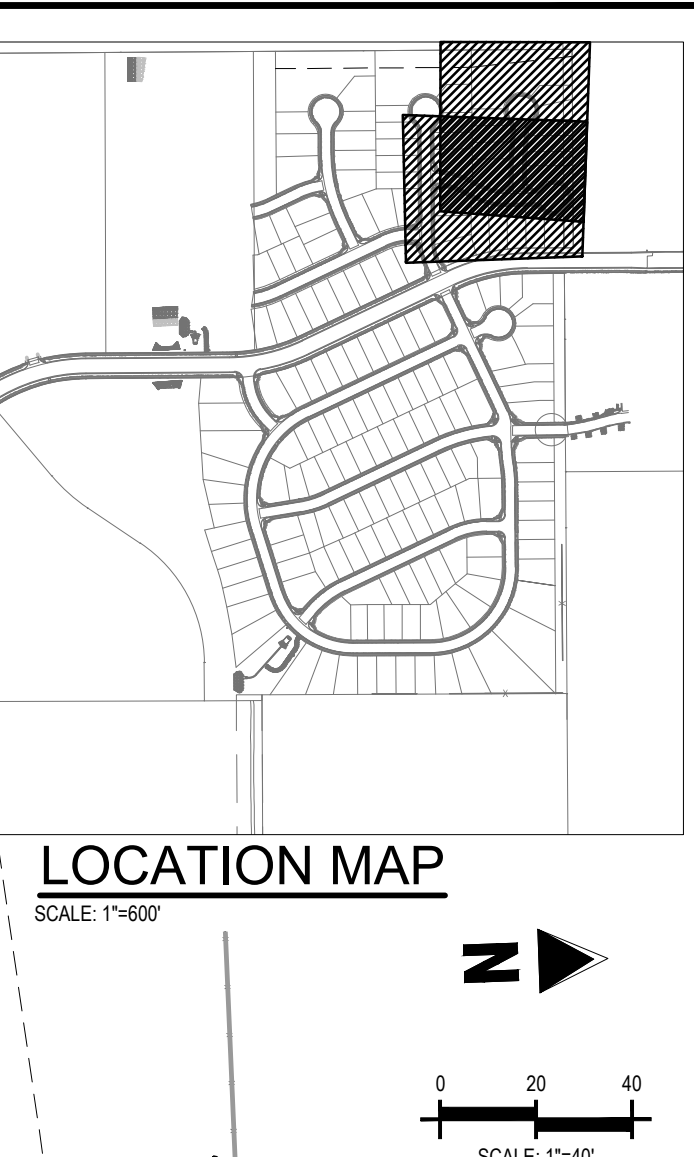
Sheet 8 of 43



NIEBRARA DRIVE (PUBLIC)
(50' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL



ANSLEY COURT (PUBLIC)
(54' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL



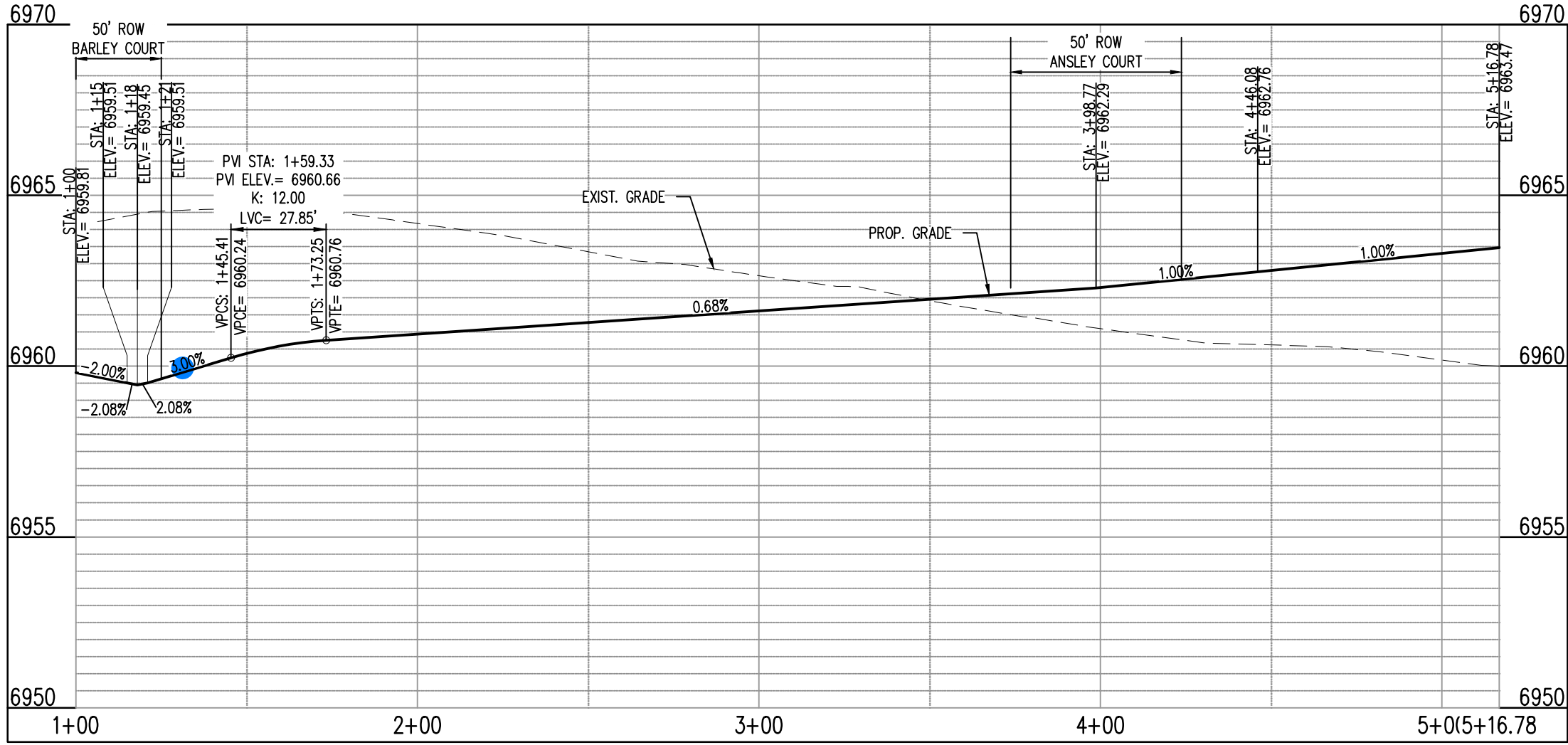
KEY NOTE: A

ROAD NAME

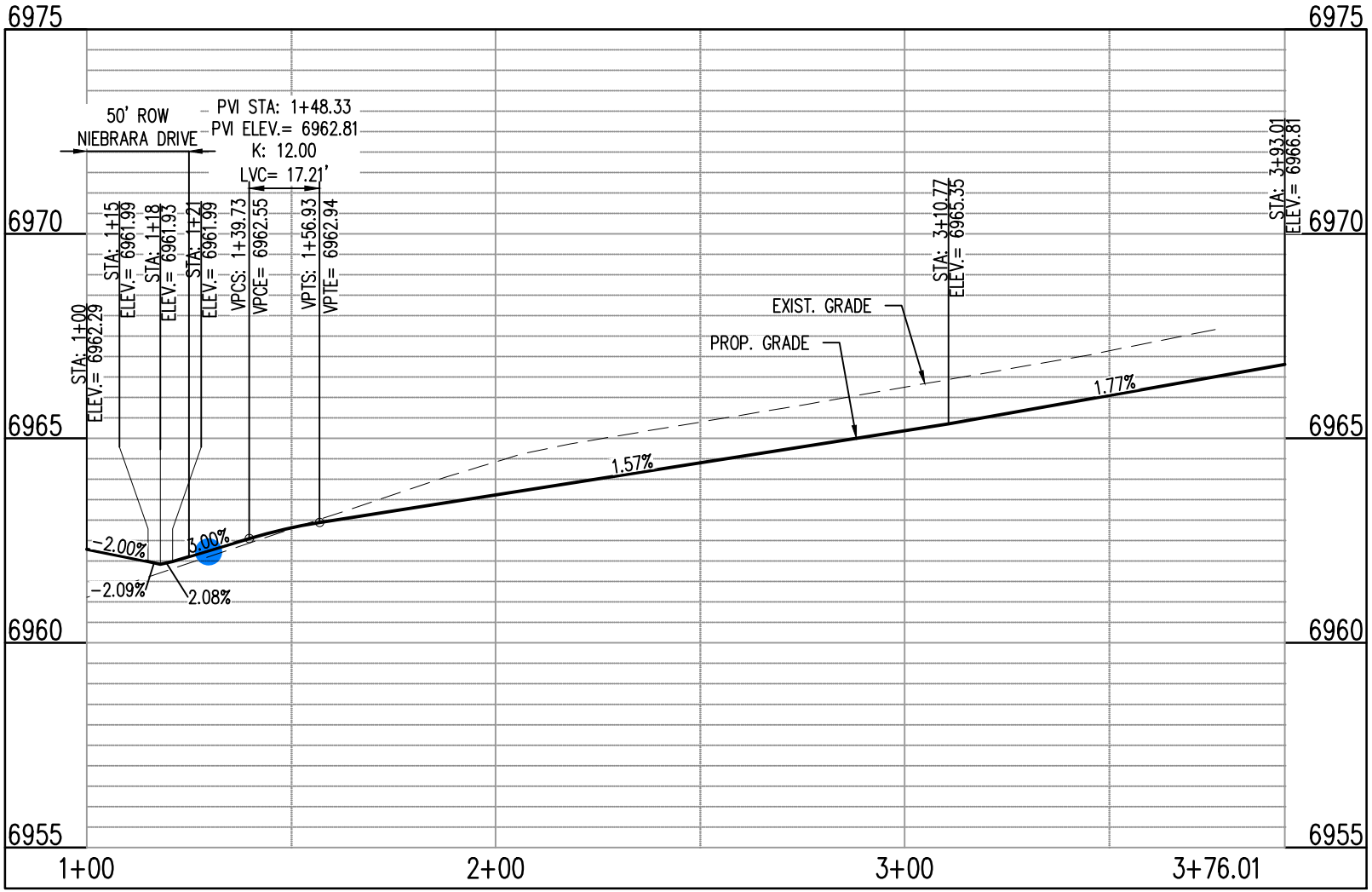
STREET NAME (D-3)

STOP

STOP SIGN (R1-1)

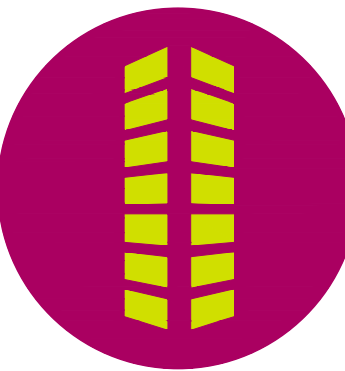


NIEBRARA - CL - 50' ROW
STA: 1+00 - 5+16.78
SCALE: H: 1"=40' V: 1"=10'



ANSLEY CT - CL - 50' ROW
STA: 1+00 - 3+93.01
SCALE: H: 1"=40' V: 1"=10'

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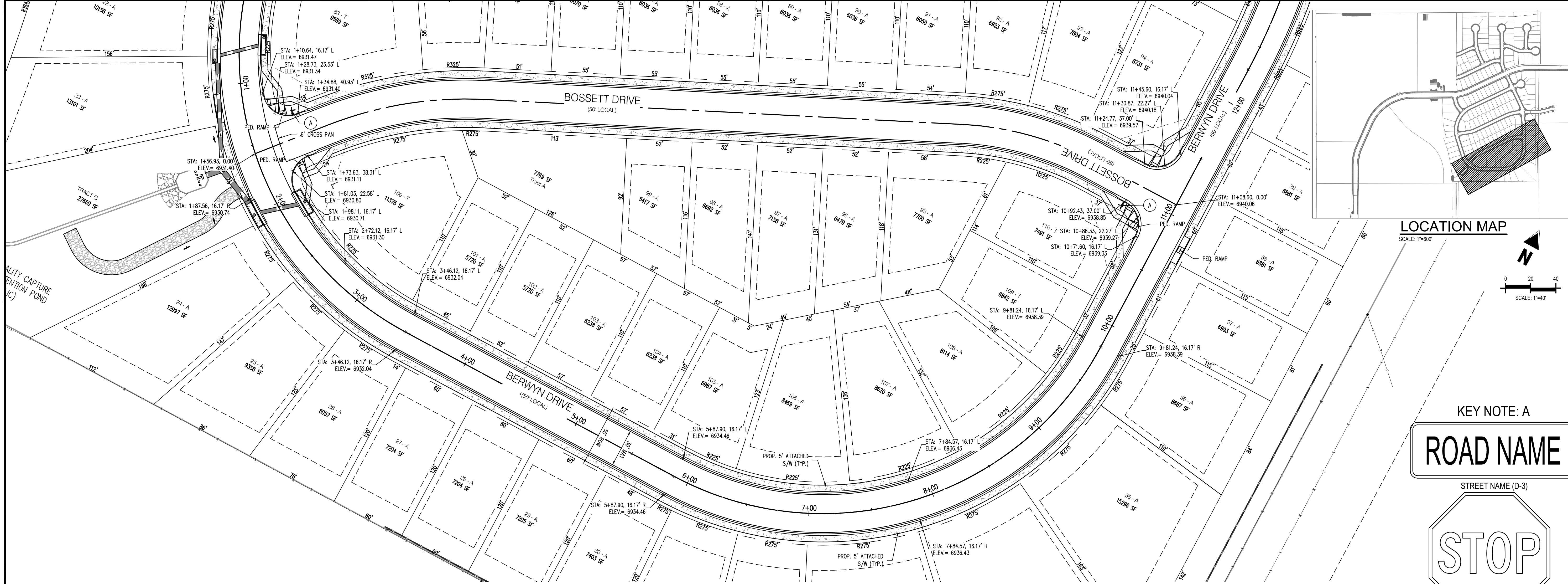
CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

NIEBRARA DRIVE &
ANSLEY COURT
STREET IMPROVEMENT PLAN



BERWYN DRIVE (PUBLIC)
(50' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL

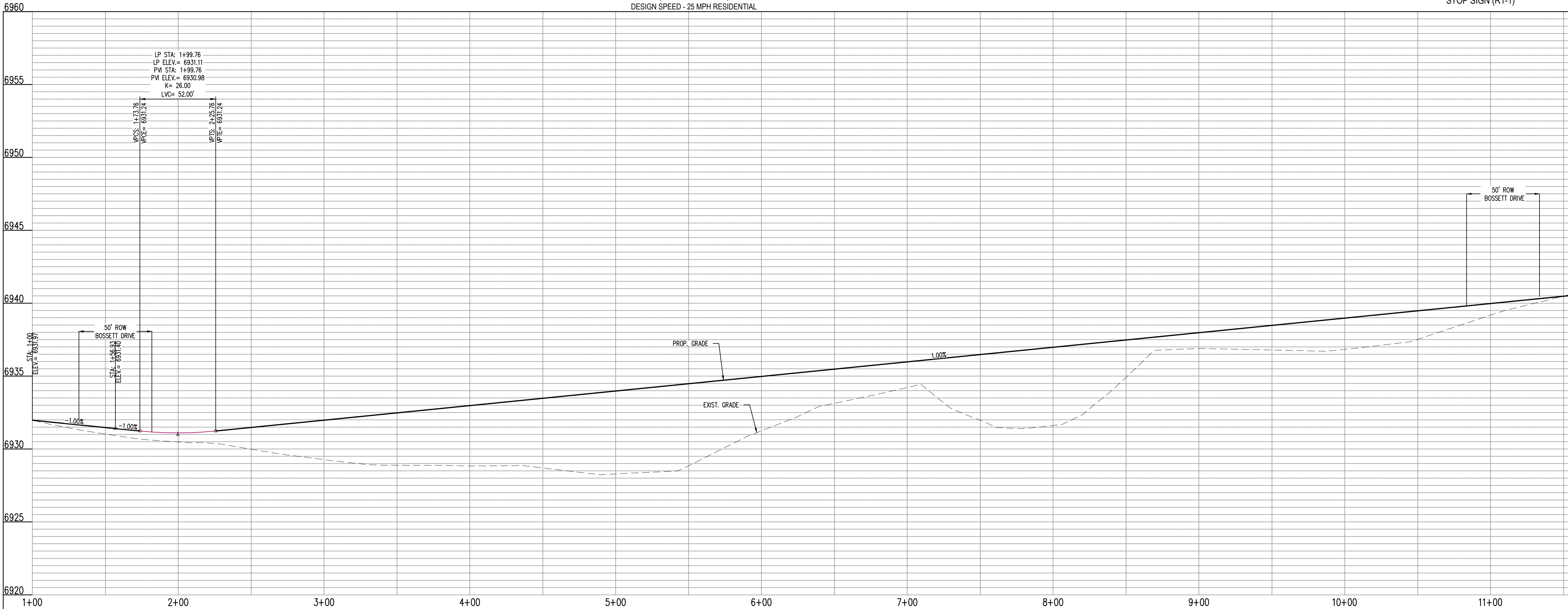
KEY NOTE: A

ROAD NAME

STREET NAME (D-3)

STOP


STOP SIGN (R1-1)



#	Date	Issue / Description	Init.
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

ROAD NAME



KEY NOTE: A

ROAD NAME

STREET NAME (D-3)

STOP SIGN (R1-1)

SILVER GRASS DRIVE

AVENA ROAD (RD LOCAL)

BENT GRASS MEADOWS DRIVE

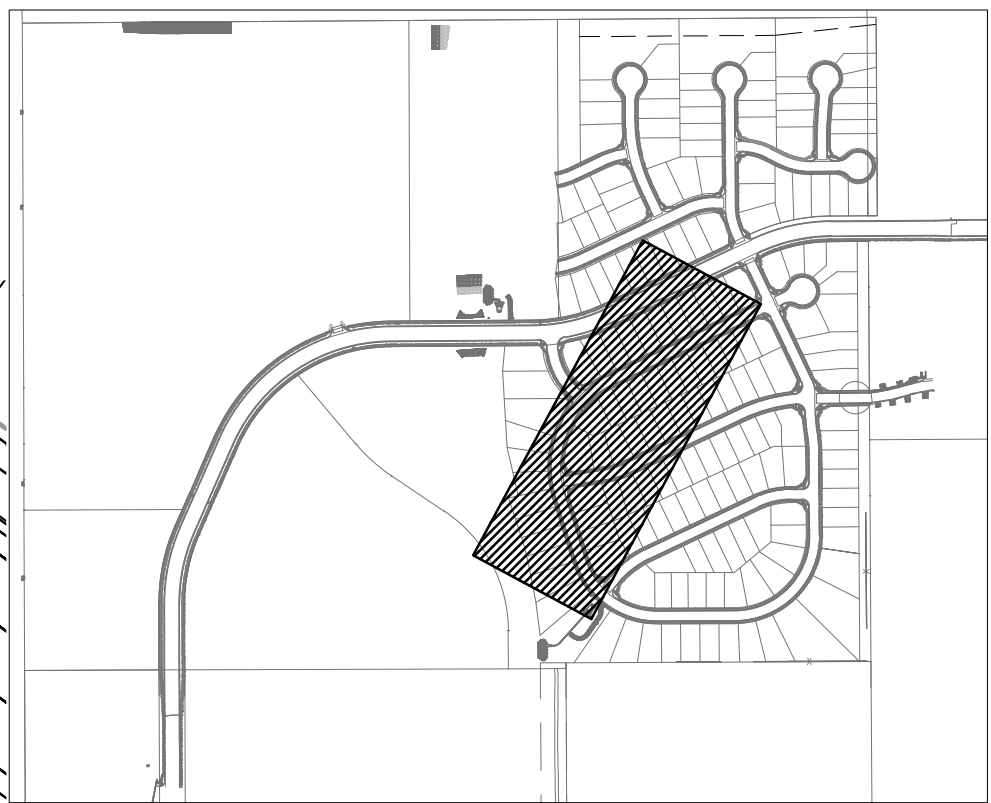
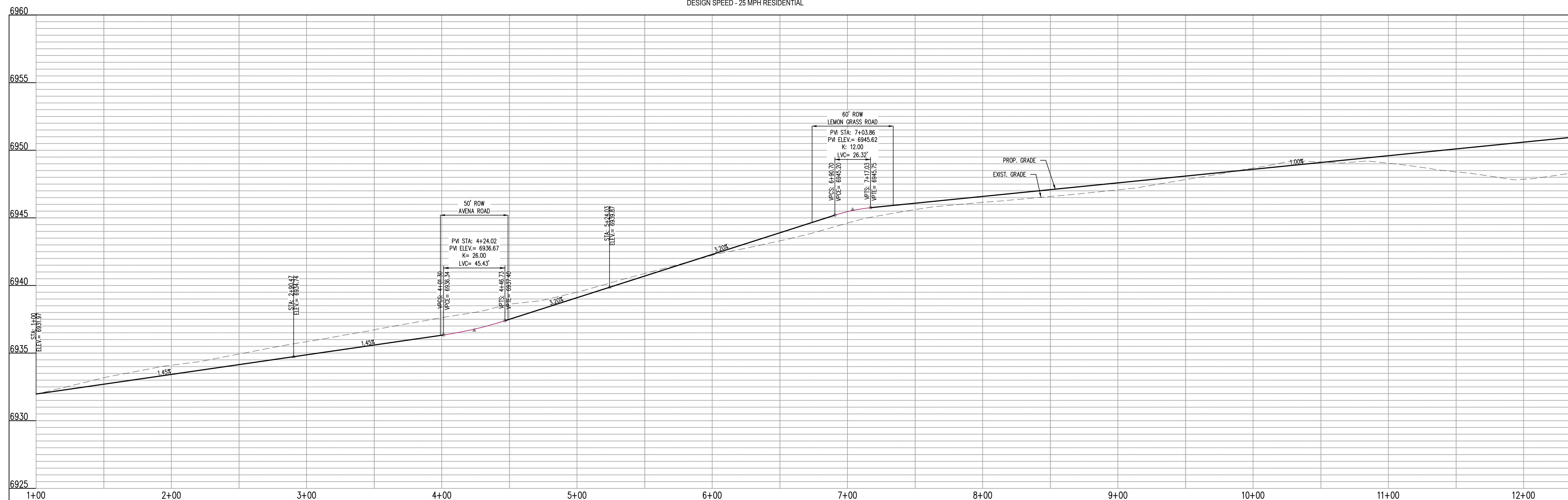
Stationing and Elevation Data:

- STA: 1+71.01, 16.17' L ELEV = 6932.61
- STA: 1+71.01, 16.17' R ELEV = 6932.61
- STA: 1+73.63, 38.31' L ELEV = 6931.11
- STA: 1+73.63, 38.31' R ELEV = 6931.11
- STA: 1+87.56, 16.17' R ELEV = 6930.74
- STA: 1+87.56, 16.17' L ELEV = 6930.74
- STA: 1+90.03, 22.58' L ELEV = 6930.80
- STA: 1+90.03, 22.58' R ELEV = 6930.80
- STA: 1+10.64, 16.17' L ELEV = 6931.47
- STA: 1+10.64, 16.17' R ELEV = 6931.47
- STA: 1+28.73, 23.53' L ELEV = 6931.34
- STA: 1+28.73, 23.53' R ELEV = 6931.34
- STA: 1+34.88, 40.93' L ELEV = 6931.40
- STA: 1+34.88, 40.93' R ELEV = 6931.40
- STA: 3+81.62, 16.17' R ELEV = 6935.66
- STA: 3+81.62, 16.17' L ELEV = 6935.66
- STA: 4+05.41, 39.11' R ELEV = 6936.56
- STA: 4+05.41, 39.11' L ELEV = 6936.56
- STA: 4+42.62, 39.11' R ELEV = 6937.29
- STA: 4+42.62, 39.11' L ELEV = 6937.29
- STA: 4+49.32, 22.90' R ELEV = 6937.83
- STA: 4+49.32, 22.90' L ELEV = 6937.83
- STA: 4+66.36, 16.17' R ELEV = 6937.83
- STA: 4+66.36, 16.17' L ELEV = 6937.83
- STA: 6+42.80, 21.76' L ELEV = 6944.58
- STA: 6+42.80, 21.76' R ELEV = 6944.58
- STA: 6+49.96, 16.17' L ELEV = 6944.14
- STA: 6+49.96, 16.17' R ELEV = 6944.14
- STA: 6+88.50, 35.29' L ELEV = 6945.06
- STA: 6+88.50, 35.29' R ELEV = 6945.06
- STA: 7+19.23, 35.29' L ELEV = 6945.50
- STA: 7+19.23, 35.29' R ELEV = 6945.50
- STA: 7+24.83, 21.76' L ELEV = 6945.42
- STA: 7+24.83, 21.76' R ELEV = 6945.42
- STA: 7+37.76, 16.17' L ELEV = 6945.56
- STA: 7+37.76, 16.17' R ELEV = 6945.56
- STA: 8+10.81, 16.17' R ELEV = 6946.29
- STA: 8+10.81, 16.17' L ELEV = 6946.29

Other notes and dimensions include:

- PROP. 5' ATTACHED S/W (TYP.)
- 6' CROSS PAN
- PED. RAMP
- R275
- R325
- R375
- R425
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- R525
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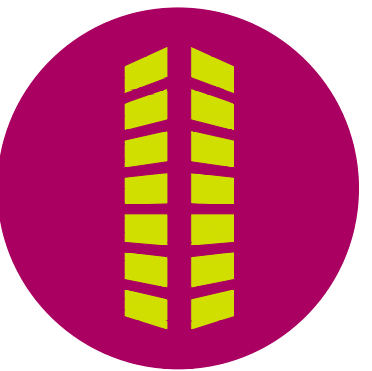
DESIGN SPEED - 25 MPH RESIDENTIAL



SCALE: 1"=600'

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719.900.7220
GallowayUS.com

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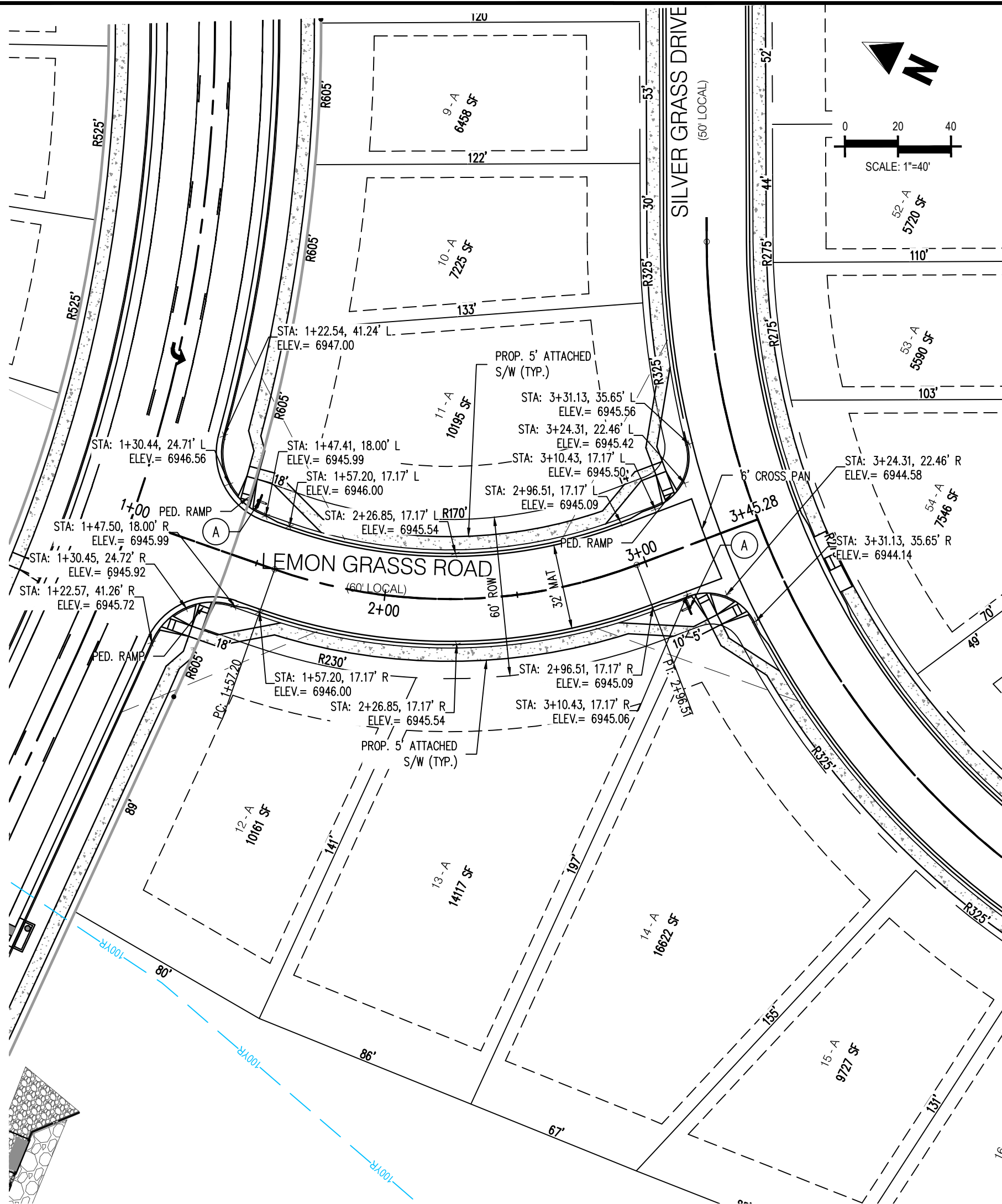
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

[illegible]SILVER GRASS DRIVE
STREET IMPROVEMENT PLAN

Sheet 12 of 43

Challenger Homes Inc/CO, El Paso County-CLH000014 20-Bent Grass/CAD0000000 El Paso County/CLH14 20_Feath-Barn-Costg&P.dwg - Caleb Johnson - 11/4/2019

C:\Users\jgallaway\OneDrive\Documents\Bent Grass Meadows Drive\Bent Grass Meadows Drive.dwg, 11/14/2019, 11:40:29 AM

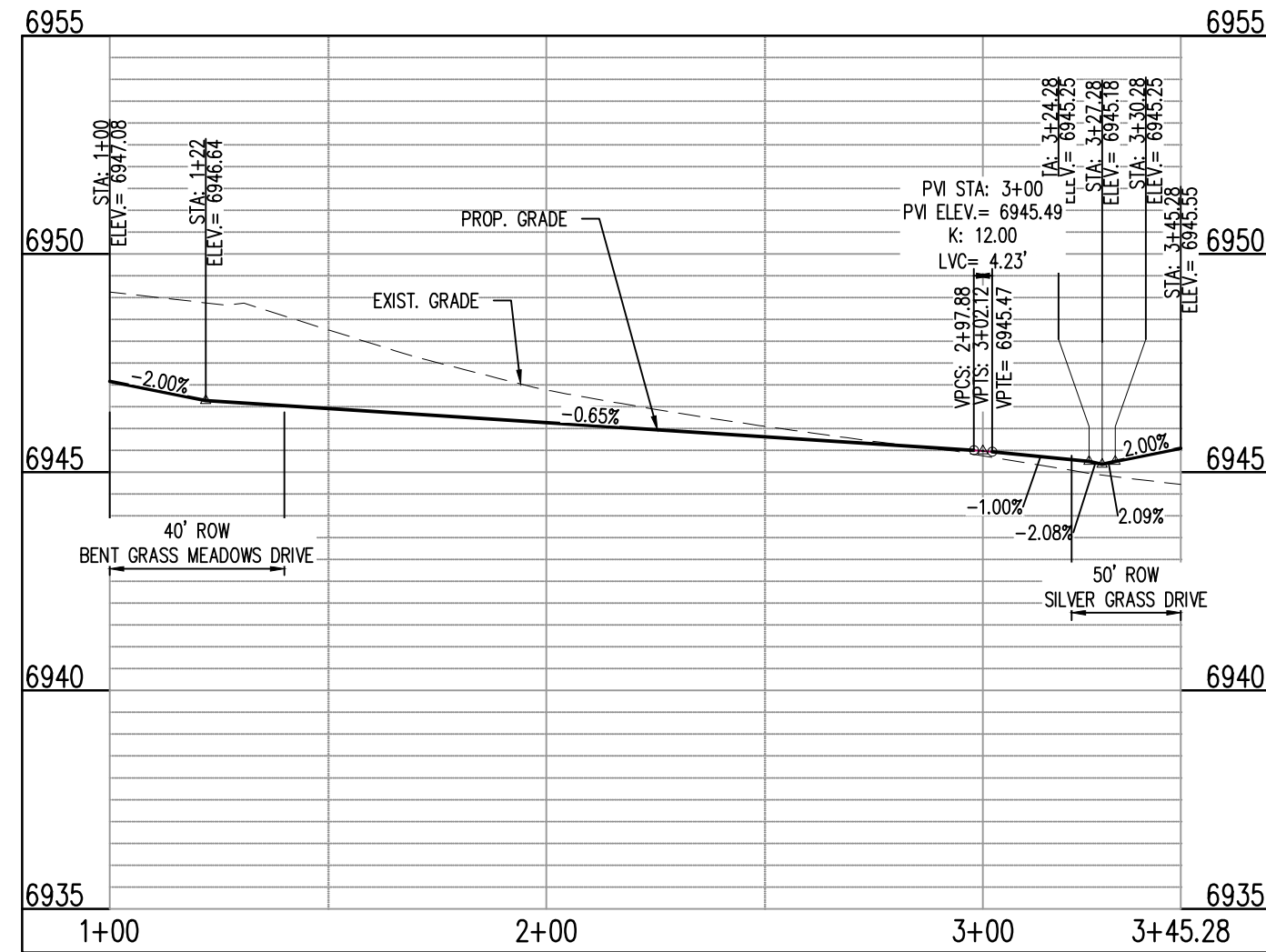
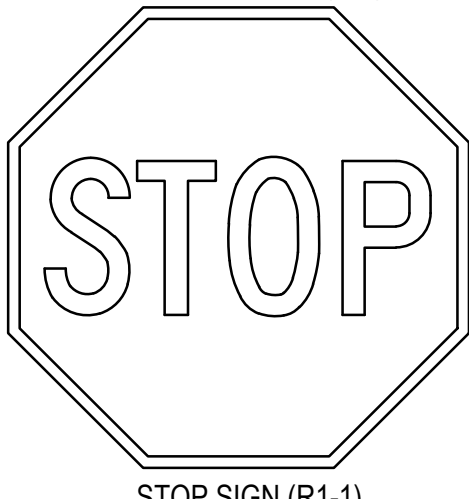


LEMON GRASS ROAD (PUBLIC)
(60' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL

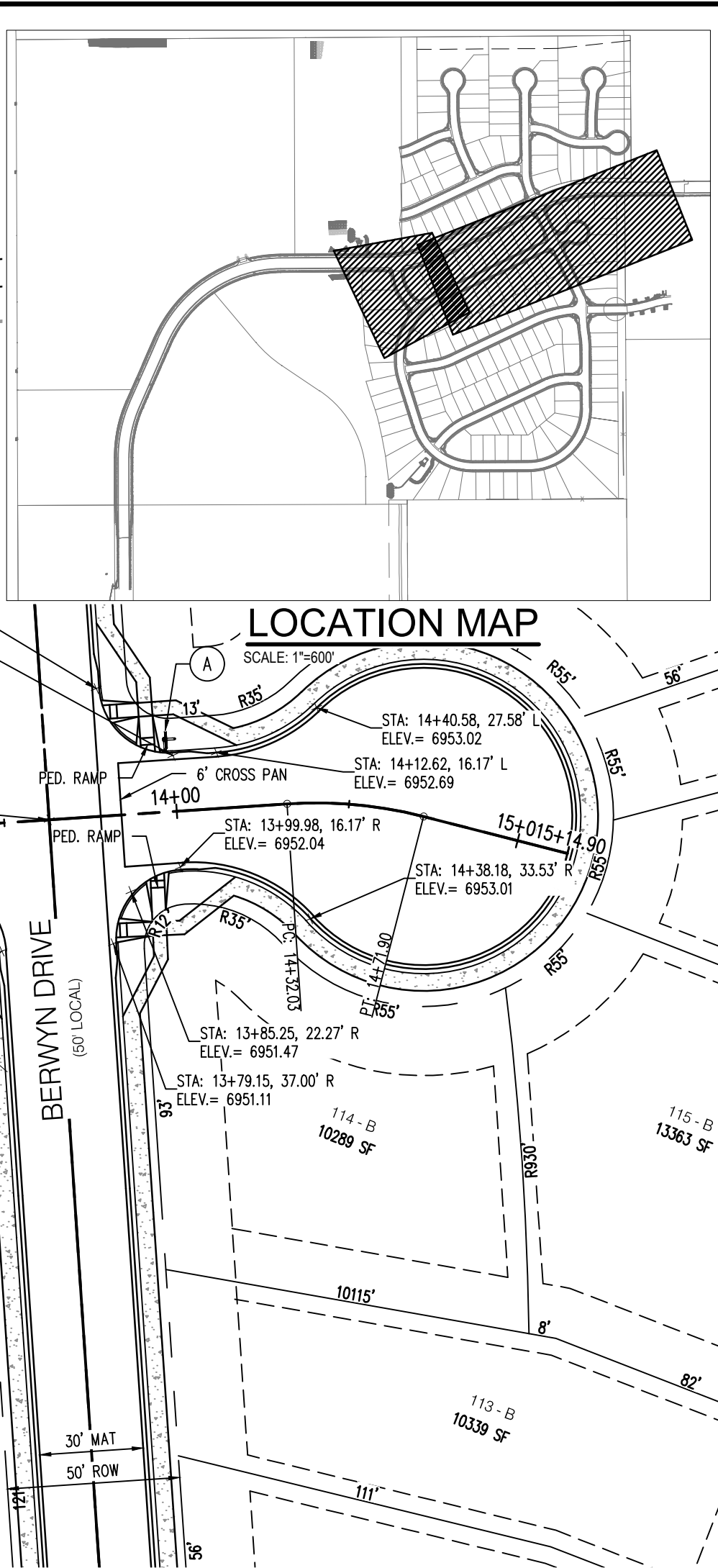
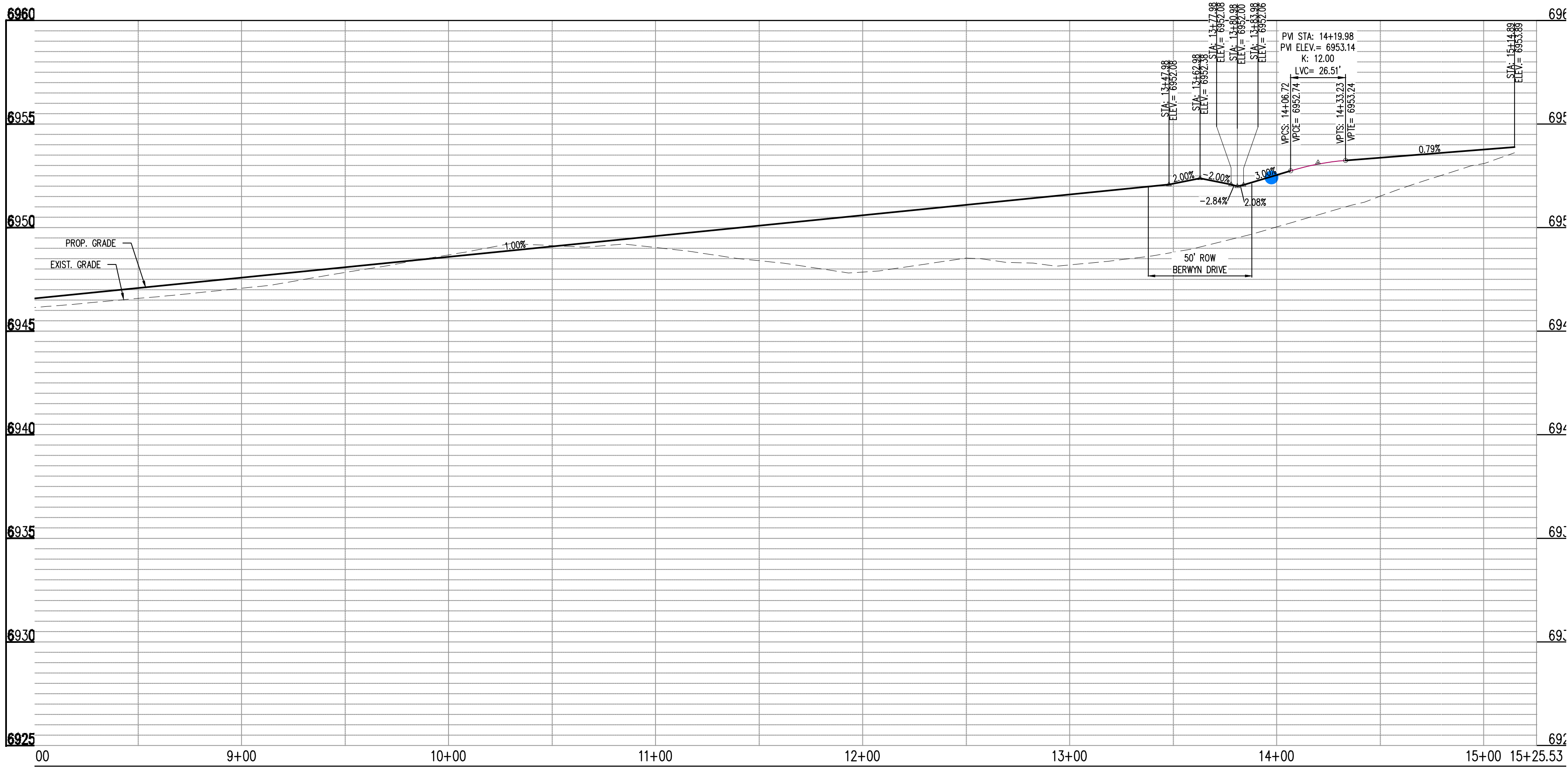
KEY NOTE: A

ROAD NAME

STREET NAME (D-3)



SILVER GRASS DRIVE (PUBLIC)
(50' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL



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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

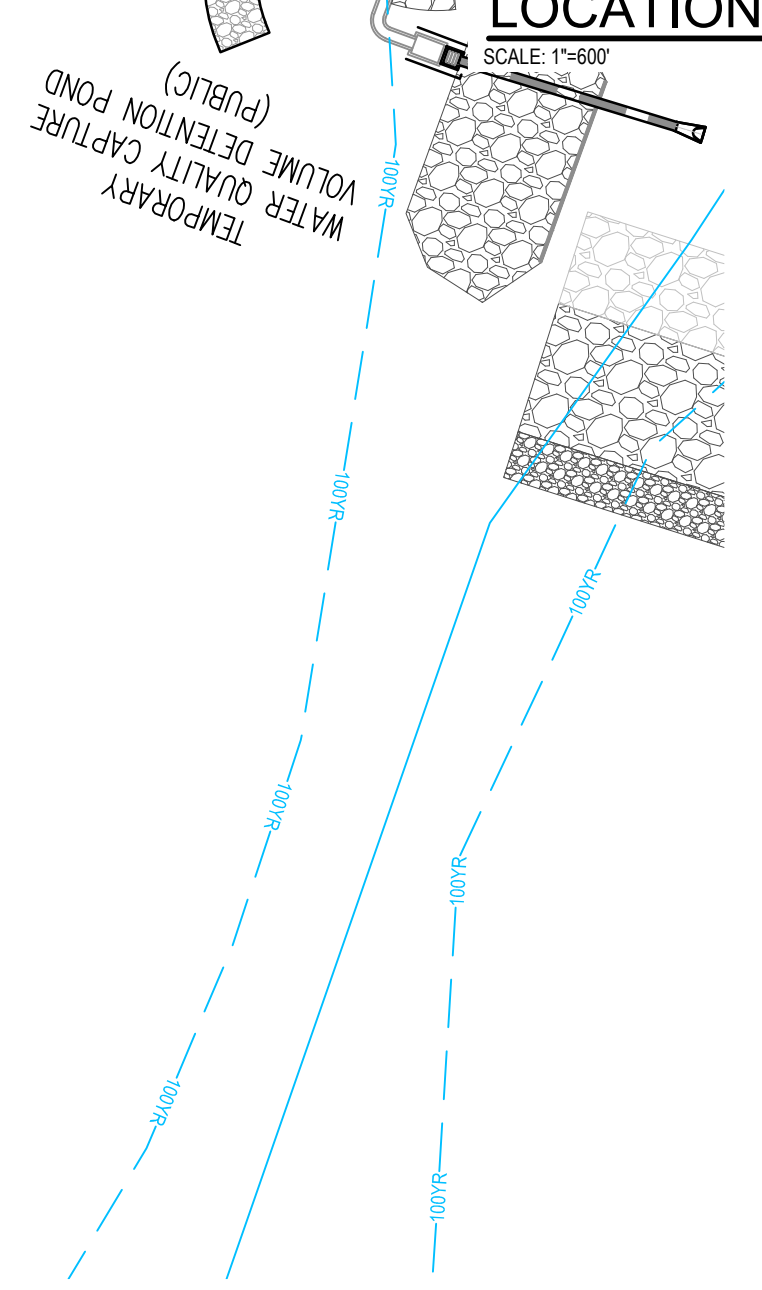
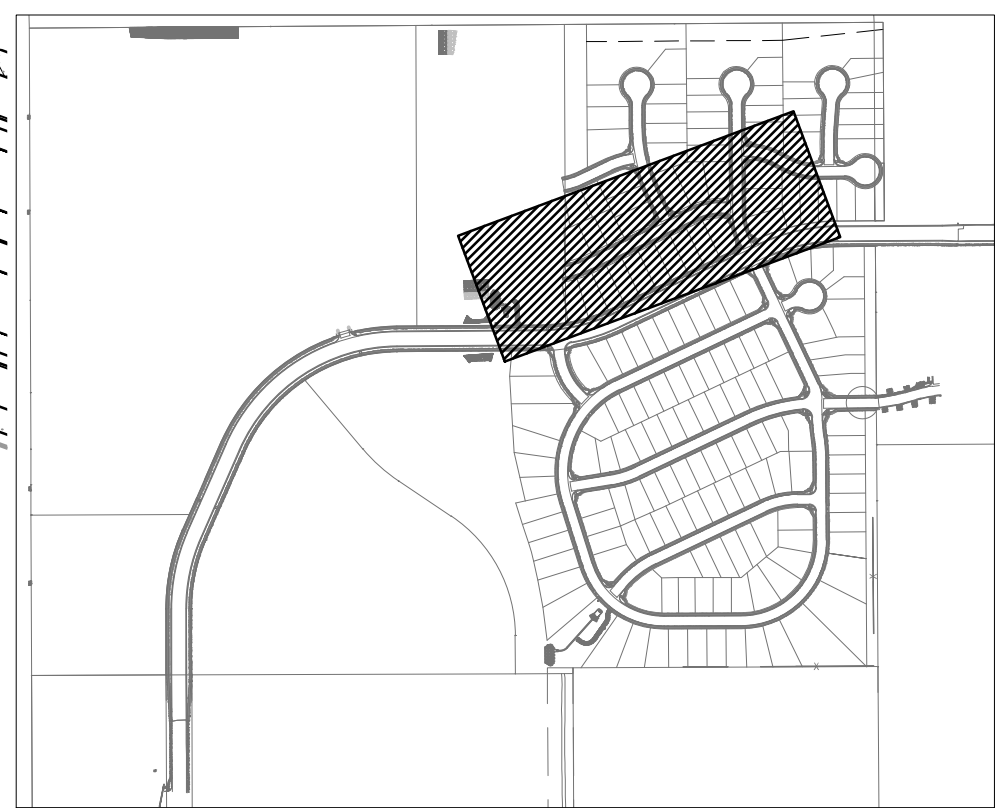
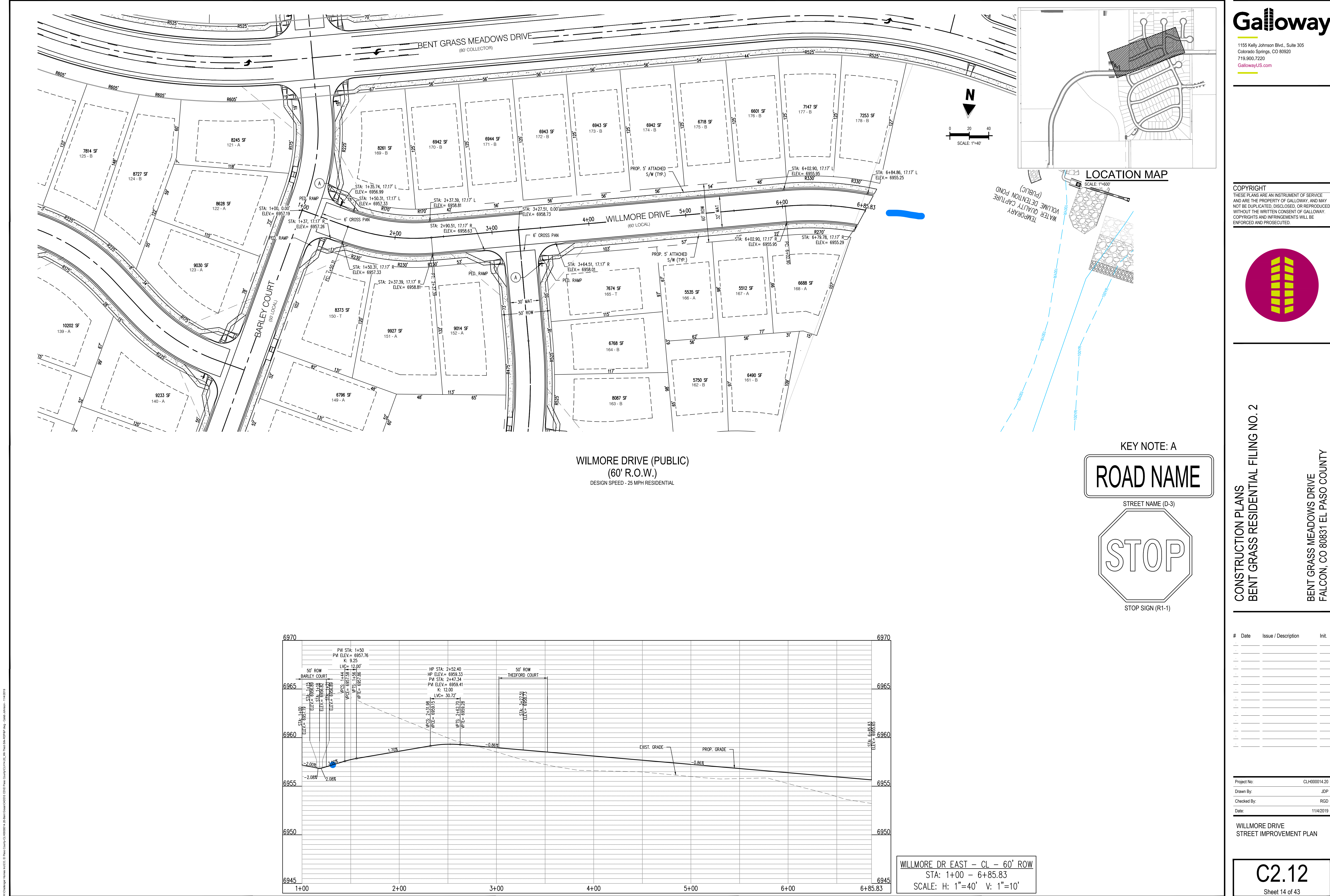
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Project No: CLH000014.20
Drawn By: JDP
Checked By: RGD
Date: 11/14/2019

SILVER GRASS DRIVE &
LEMON GRASS ROAD
STREET IMPROVEMENT PLAN

C2.11

Sheet 13 of 43



WILMORE DRIVE (PUBLIC)
(60' R.O.W.)
DESIGN SPEED - 25 MPH RESIDENTIAL

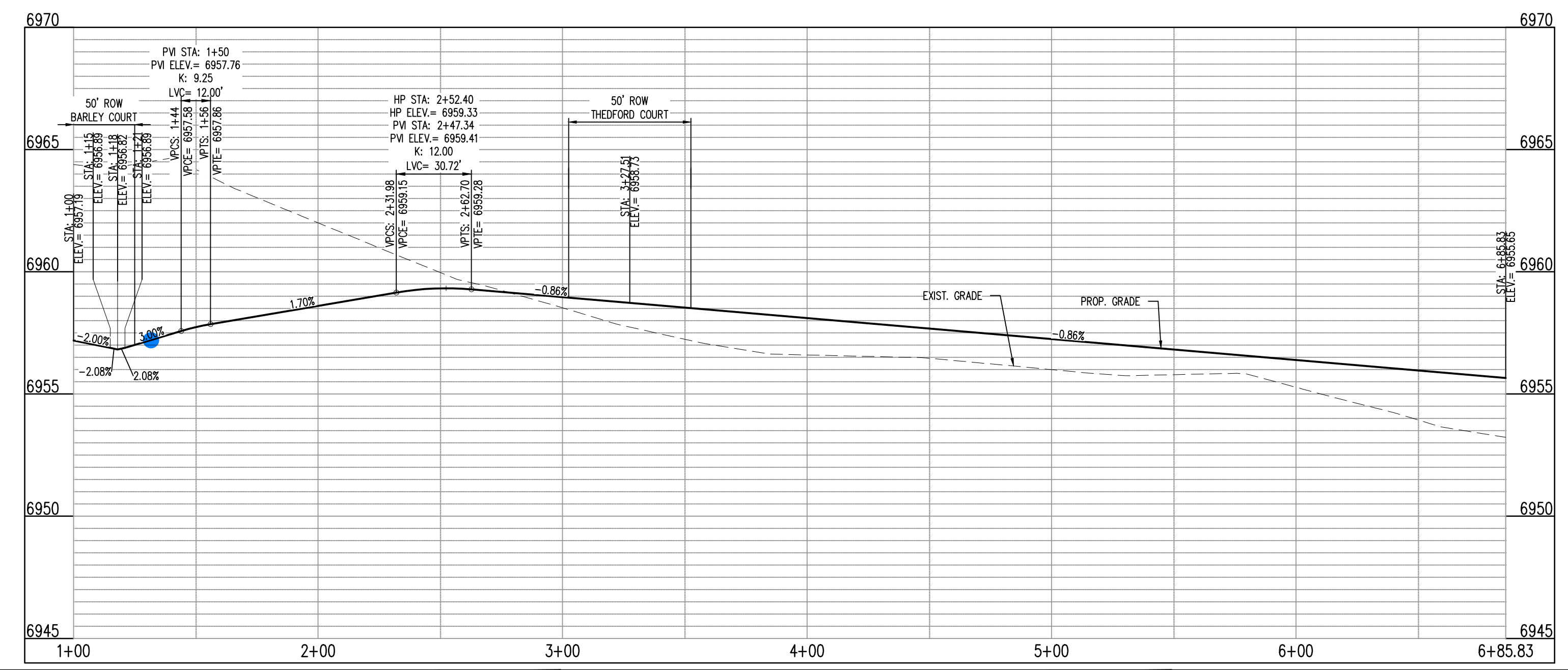
KEY NOTE: A

ROAD NAME

STREET NAME (D-3)

STOP

STOP SIGN (R1-1)



WILMORE DR EAST - CL - 60' ROW
STA: 1+00 - 6+85.83
SCALE: H: 1"=40' V: 1"=10'

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No: CLH000014.20

Drawn By: JDP

Checked By: RGD

Date: 11/4/2019

WILMORE DRIVE
STREET IMPROVEMENT PLAN

C2.12

Sheet 14 of 43

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

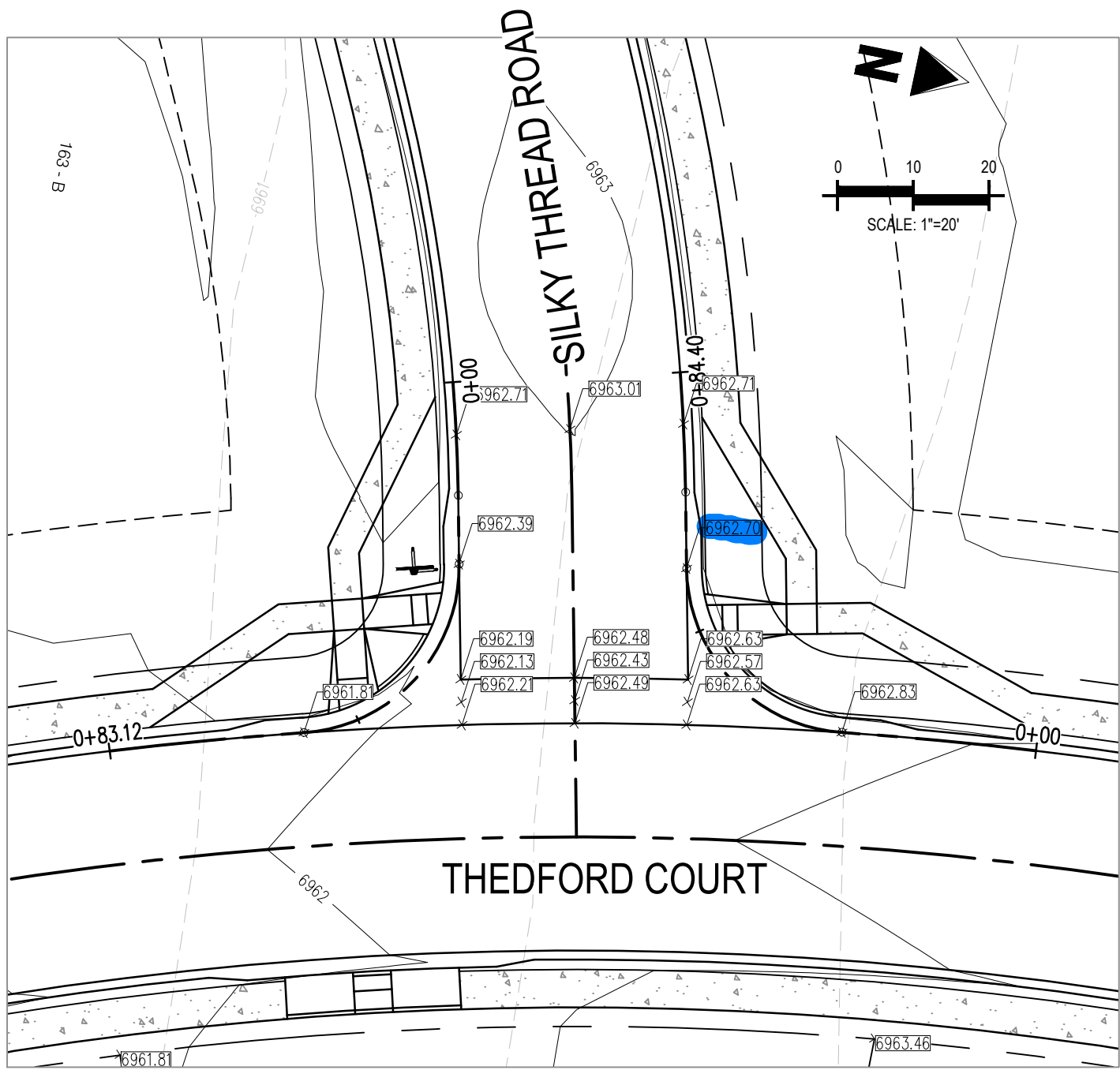
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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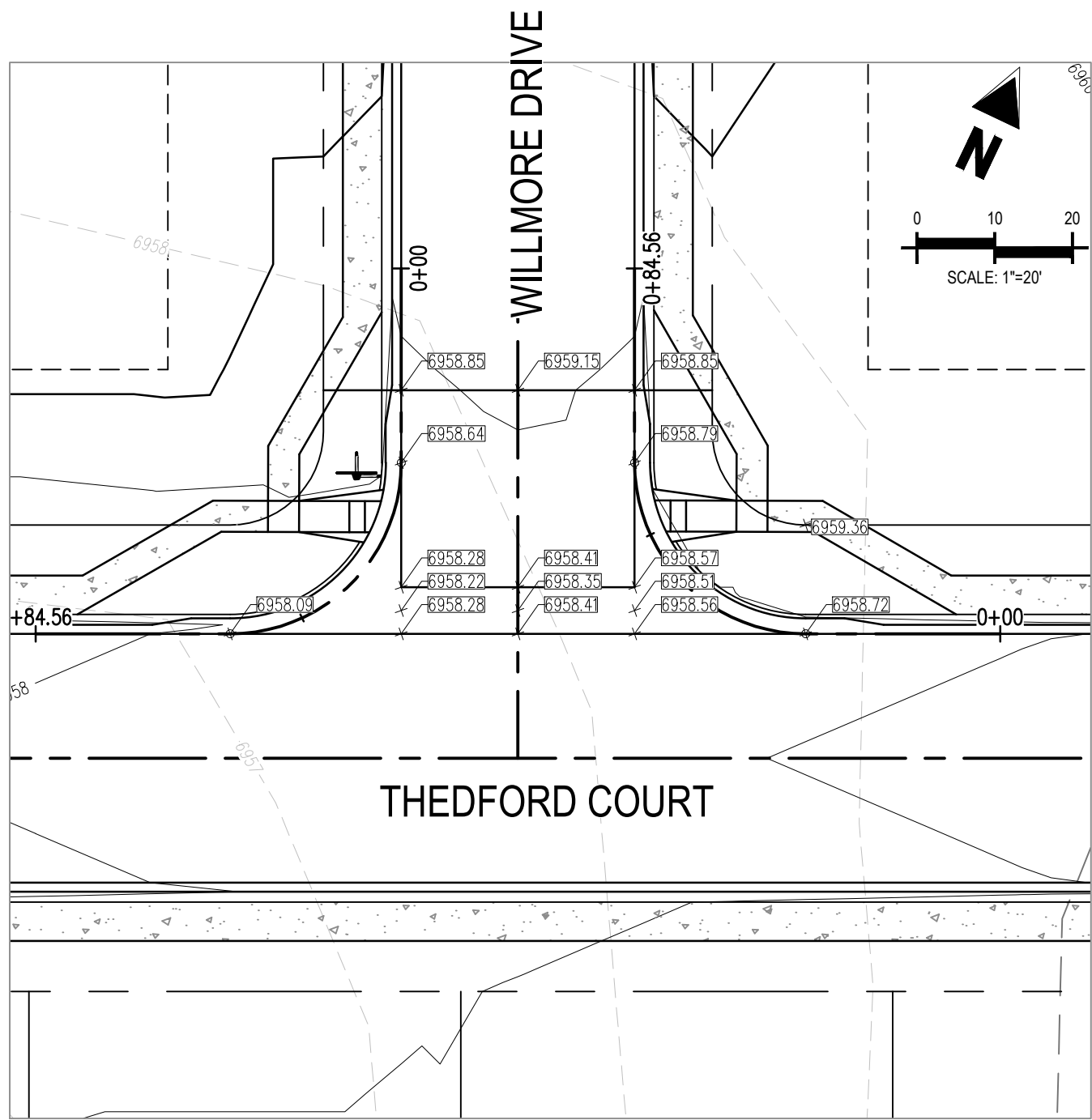
Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

CROSS PAN &
CURB RETURN PROFILES

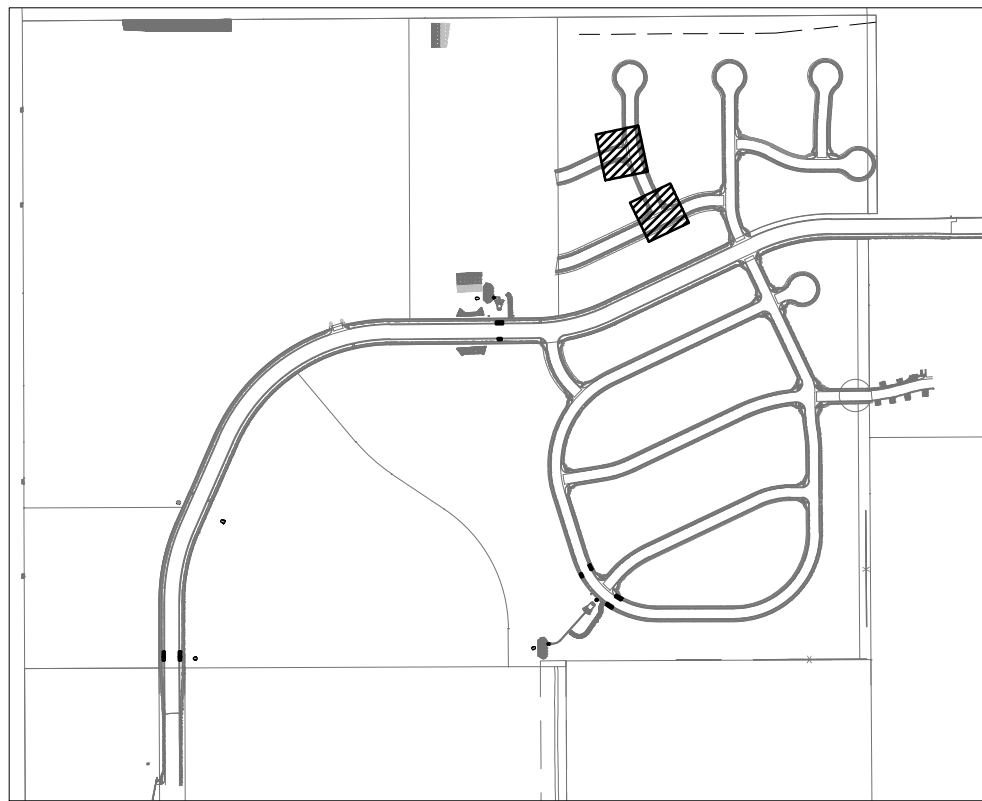
C3.01
Sheet 20 of 43



INTERSECTION OF:
THEDFORD COURT & SILKY THREAD ROAD



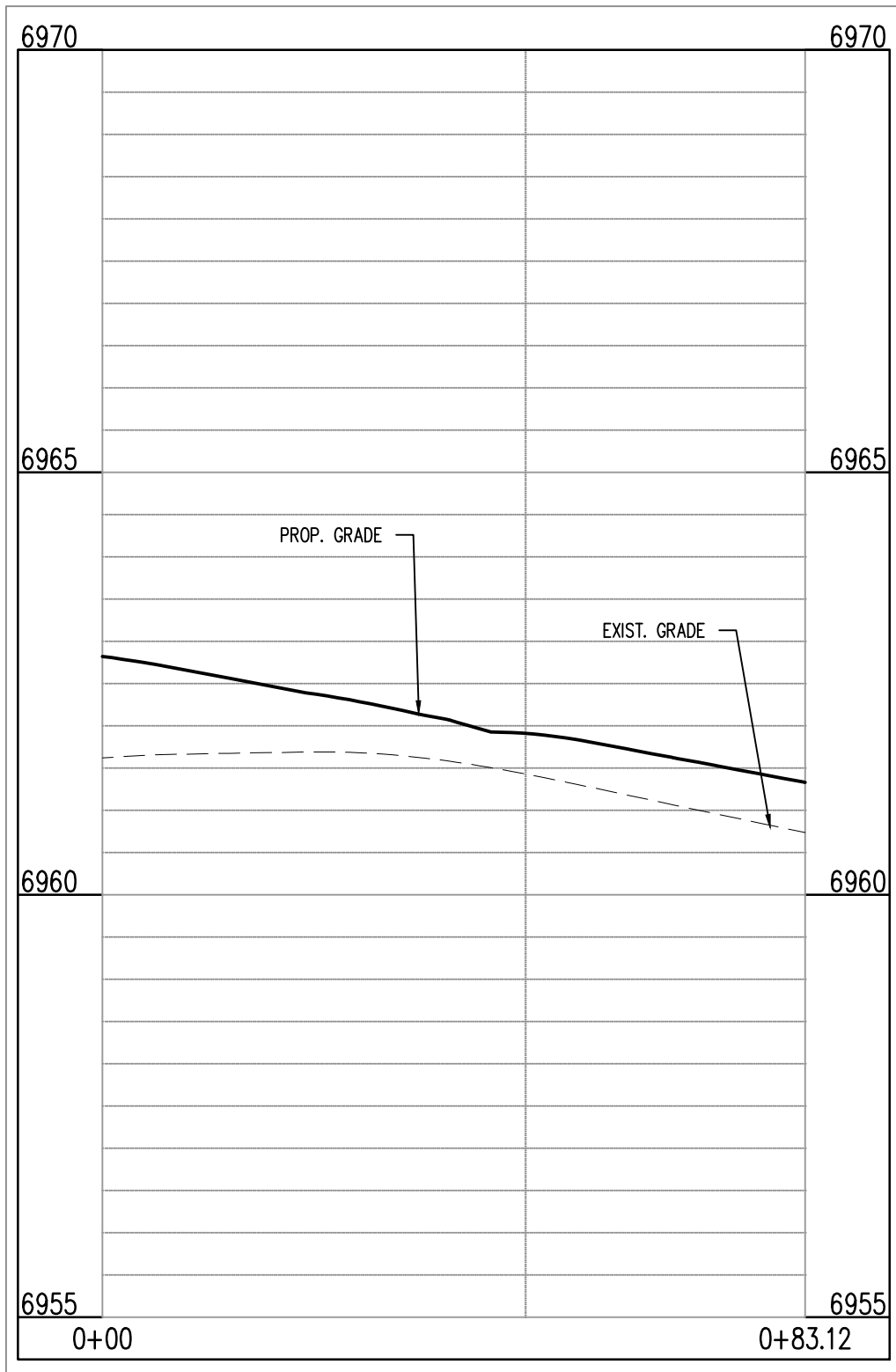
INTERSECTION OF:
WILLMORE DRIVE & THEDFORD COURT



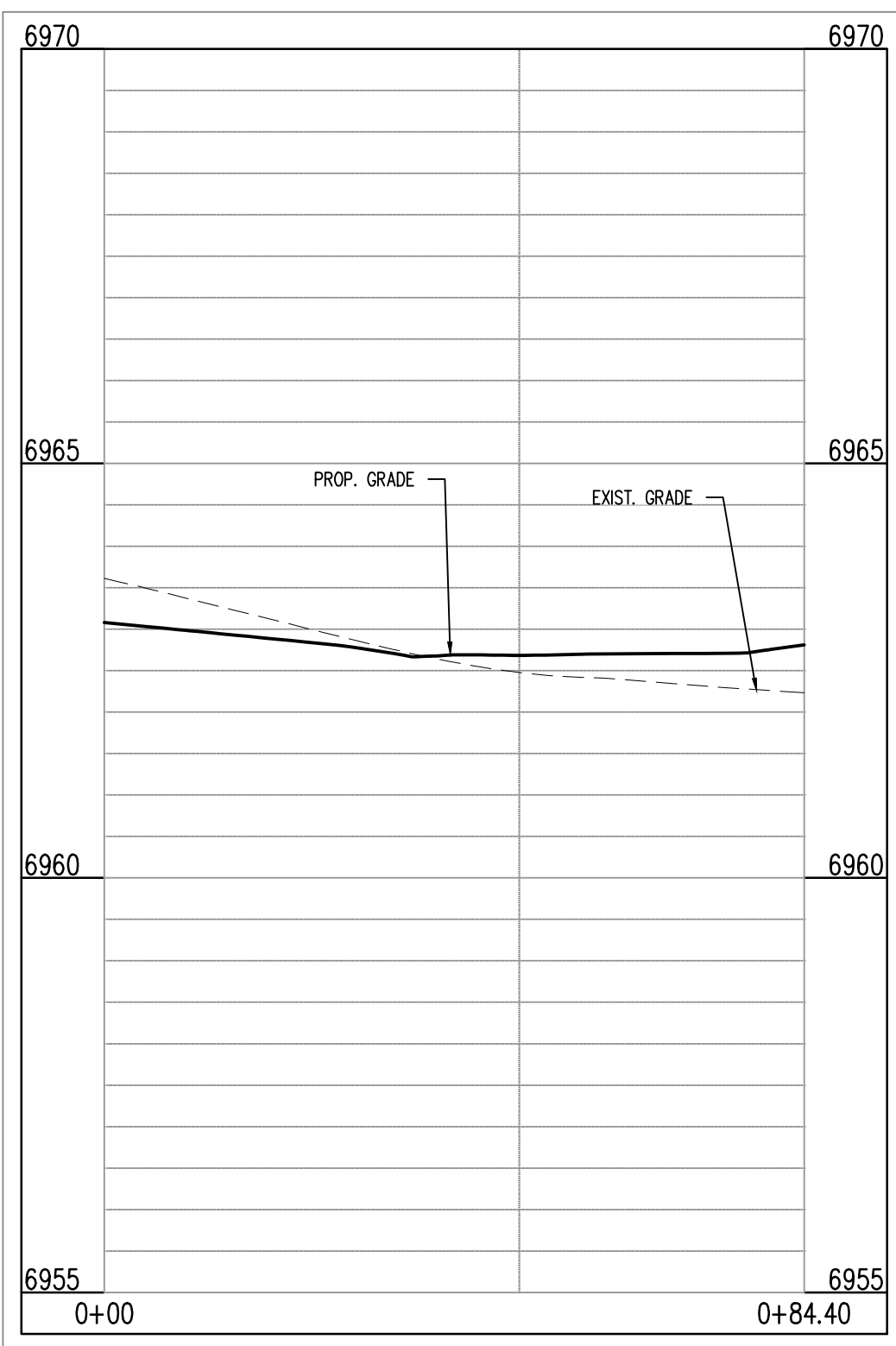
LOCATION MAP

SCALE: 1"=600'

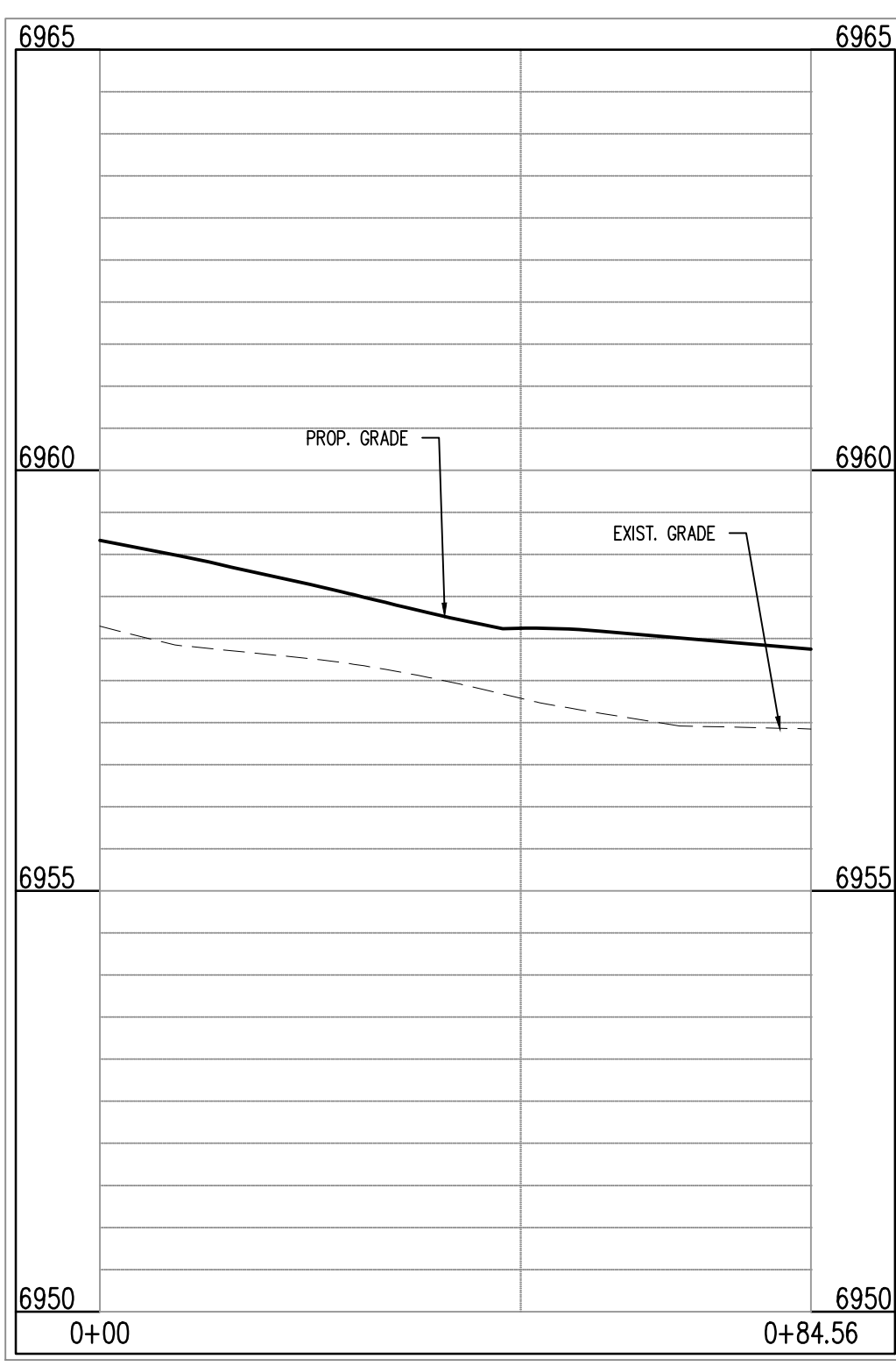
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPERTY BOUNDARY
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING FLOW
- PROPOSED FLOW
- PROPOSED SPOT ELEVATION



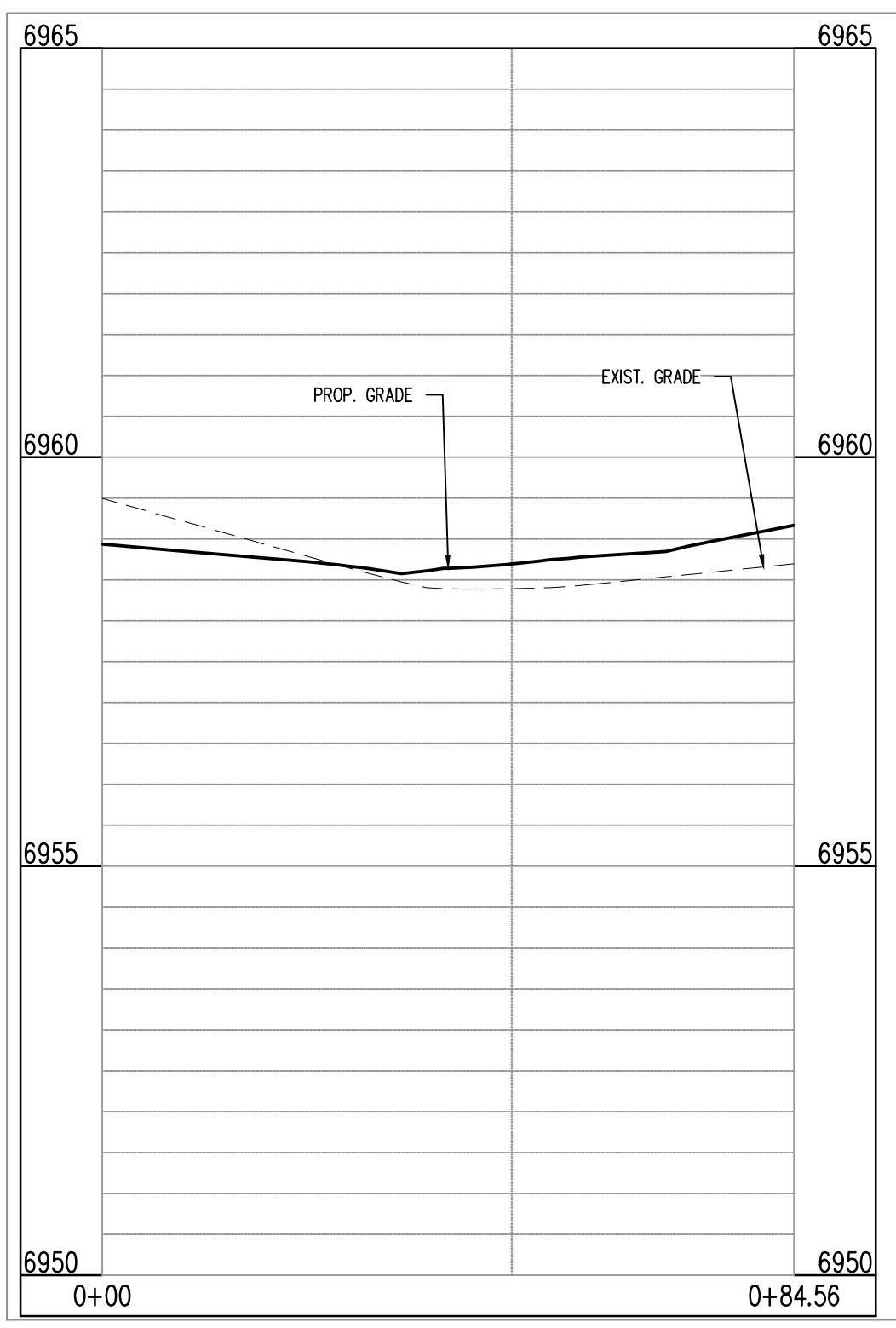
THEDFORD CT & SILK THREAD RD (SW): STA. 1+00.00 - 0+83.12
SCALE: H:1"=20', V:1"=10'



THEDFORD CT & SILK THREAD RD (NW): STA. 1+00.00 - 0+84.40
SCALE: H:1"=20', V:1"=10'



THEDFORD CT & WILLMORE DR (NW): STA. 1+00.00 - 0+84.56
SCALE: H:1"=20', V:1"=10'



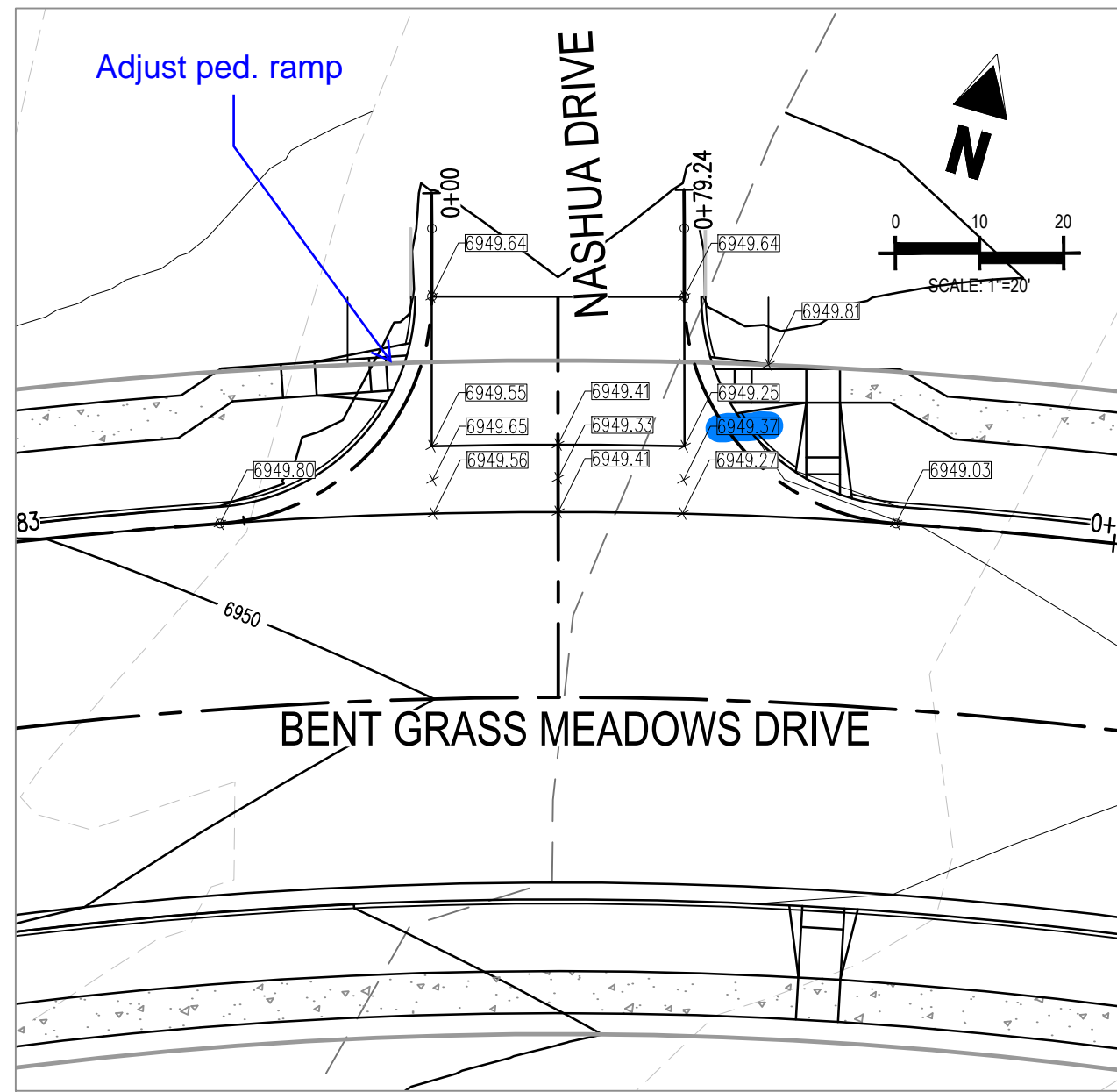
THEDFORD CT & WILLMORE DR (NE): STA. 1+00.00 - 0+84.56
SCALE: H:1"=20', V:1"=10'

CAUTION - NOTICE TO CONTRACTOR

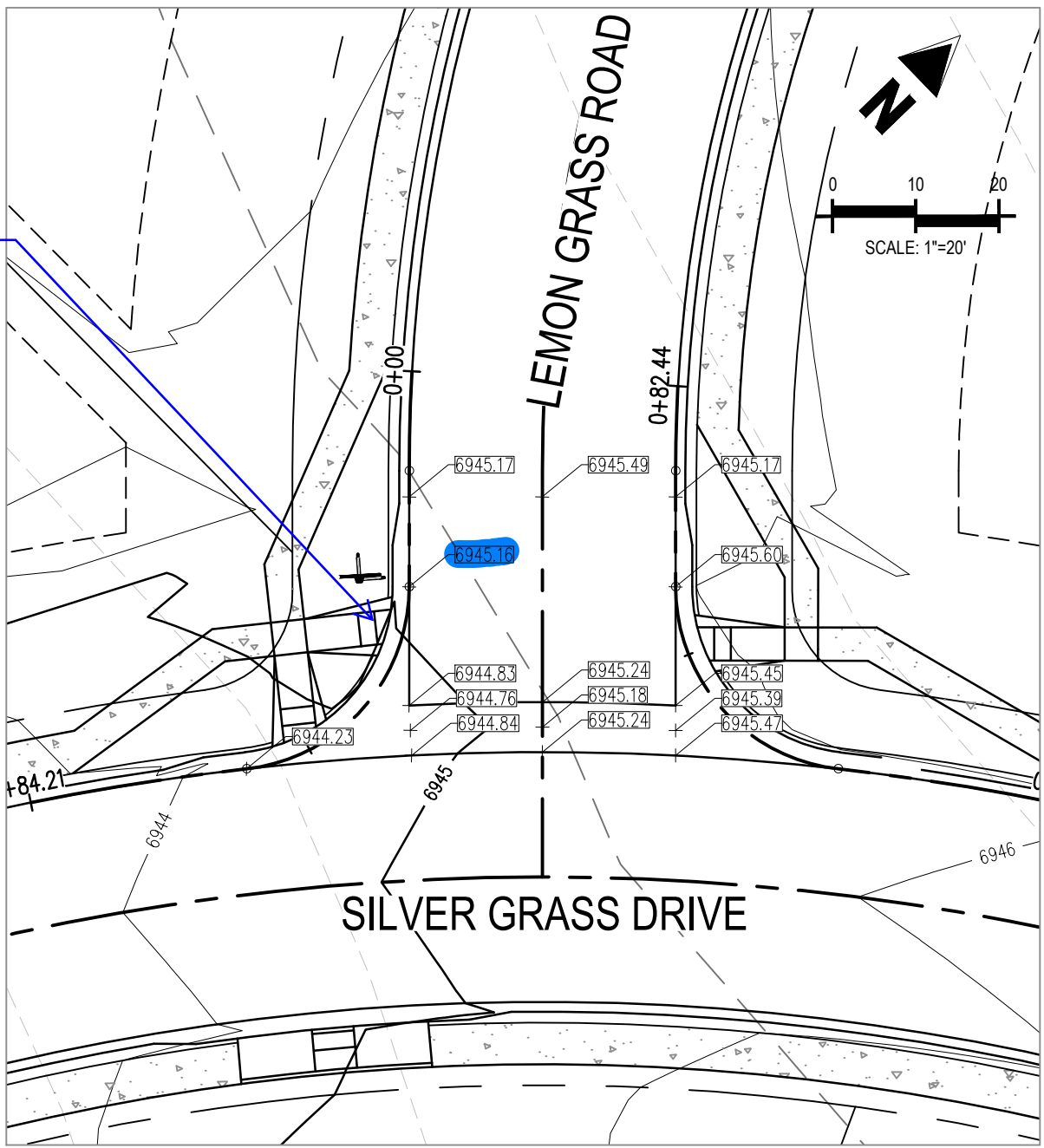
- ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
- WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



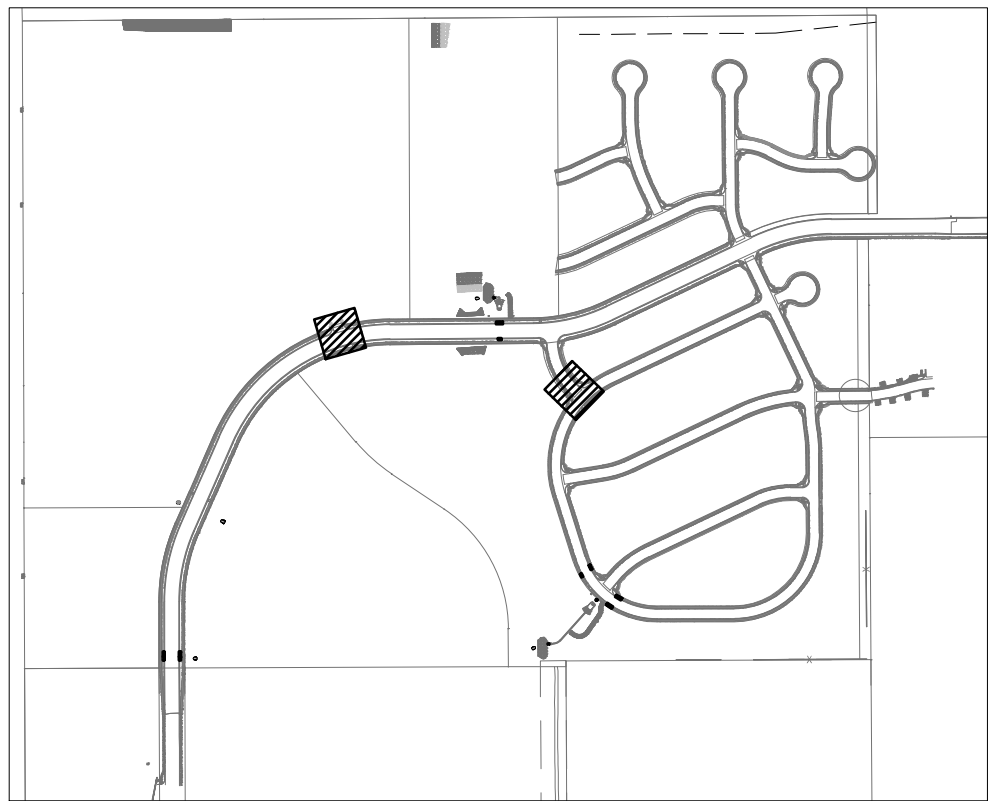
Know what's below.
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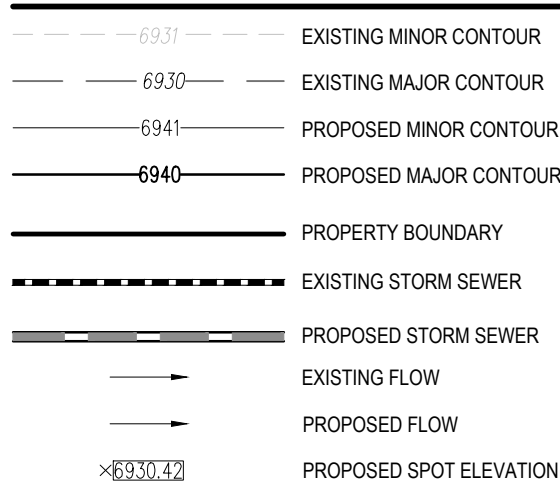
INTERSECTION OF:
BENT GRASS MEADOWS DR & NASHUA DRIVE



INTERSECTION OF:
SILVER GRASS DRIVE & LEMON GRASS ROAD

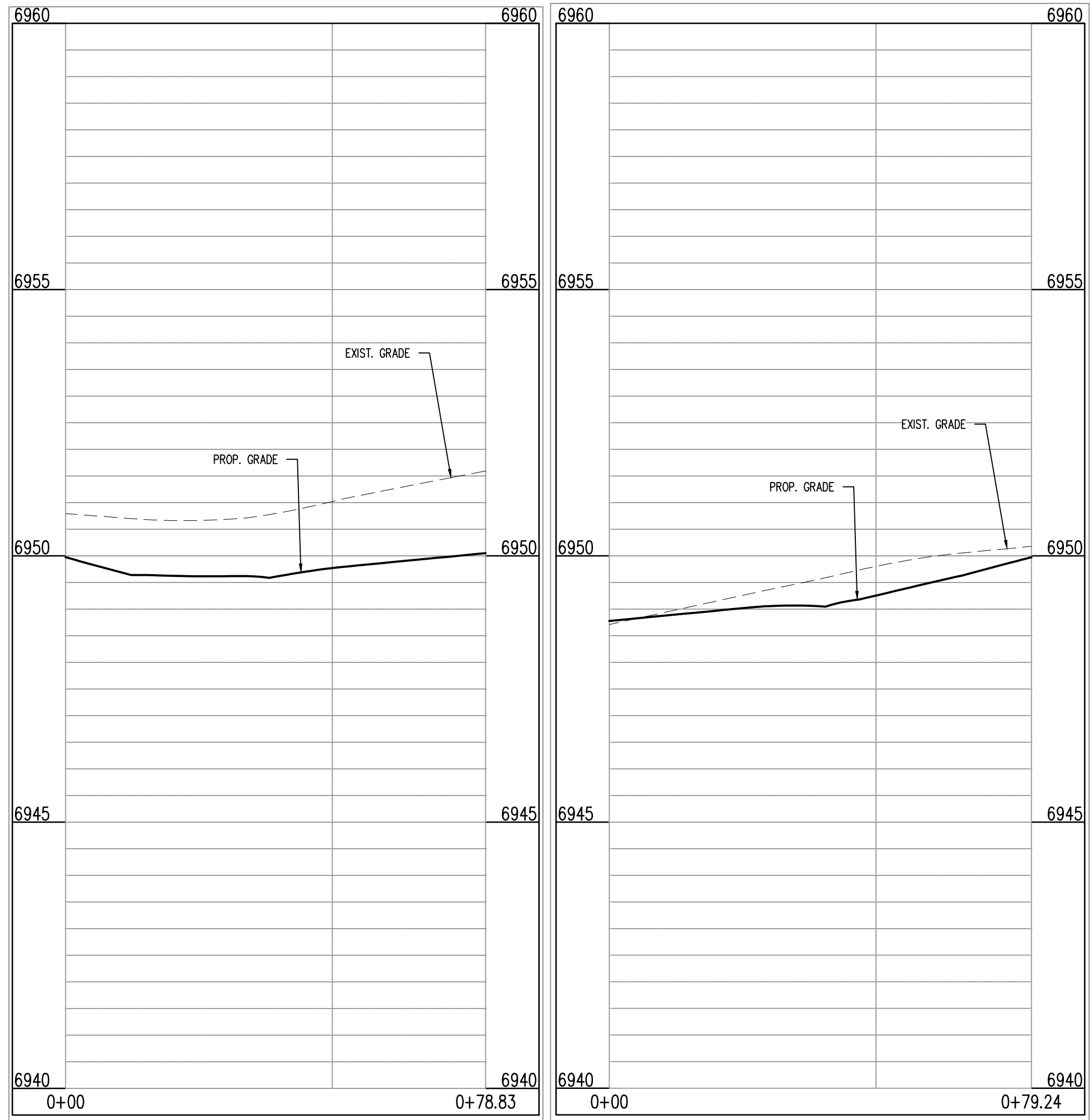


LOCATION MAP



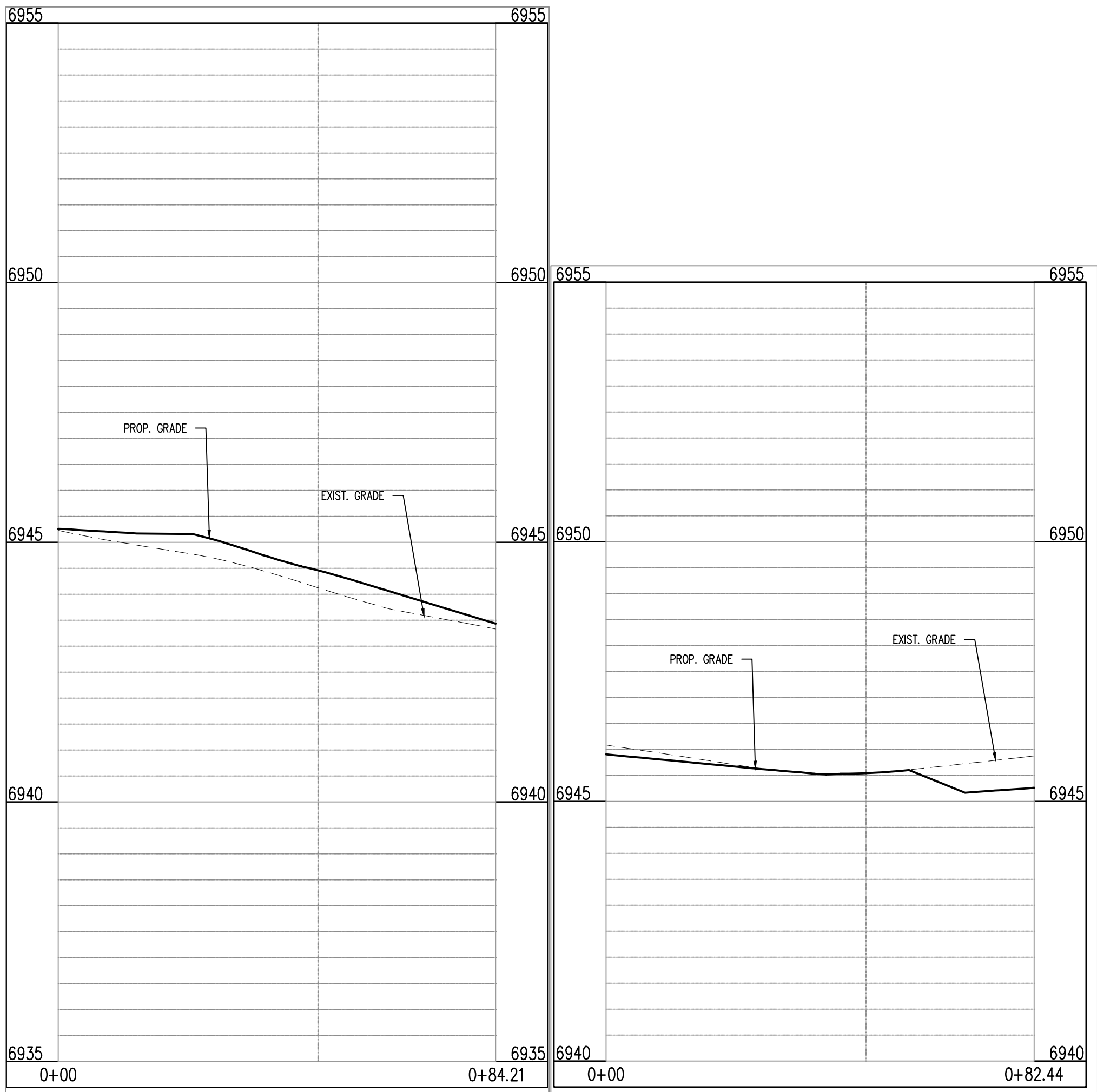
Label grades on all profiles
sheets 3.01-3.07.

Label all ped crossing
cross-slopes at stop and yield
conditions (2% max).



BENT GRASS MEADOWS DR & NASHUA DR (NW): STA. 1+00.00 – 0+78.83
SCALE: H:1"=20', V:1"=10'

BENT GRASS MEADOWS DR & NASHUA DR (NE): STA. 1+00.00 – 0+79.24
SCALE: H:1"=20', V:1"=10'



SILVER GRASS DR & LEMON GRASS RD (SW): STA. 1+00.00 – 0+84.21
SCALE: H:1"=20', V:1"=10'

SILVER GRASS DR & LEMON GRASS RD (NW): STA. 1+00.00 – 0+82.44
SCALE: H:1"=20', V:1"=10'

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

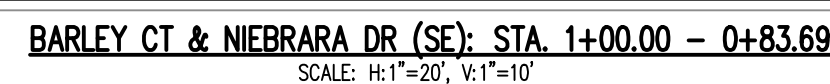
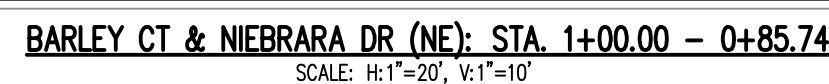
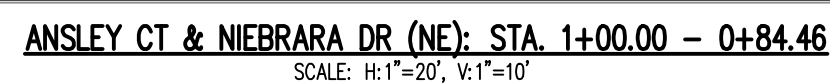
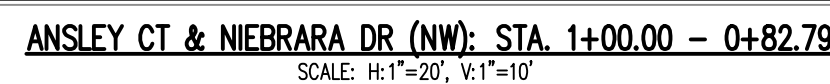
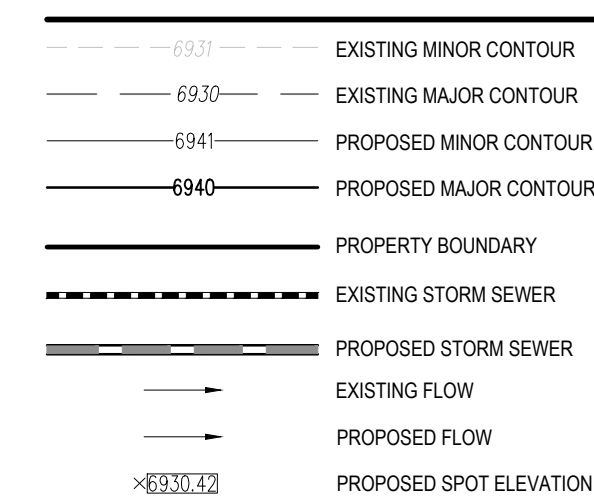
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

CROSS PAN &
CURB RETURN PROFILES

C3.02
Sheet 21 of 43



CAUTION - NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

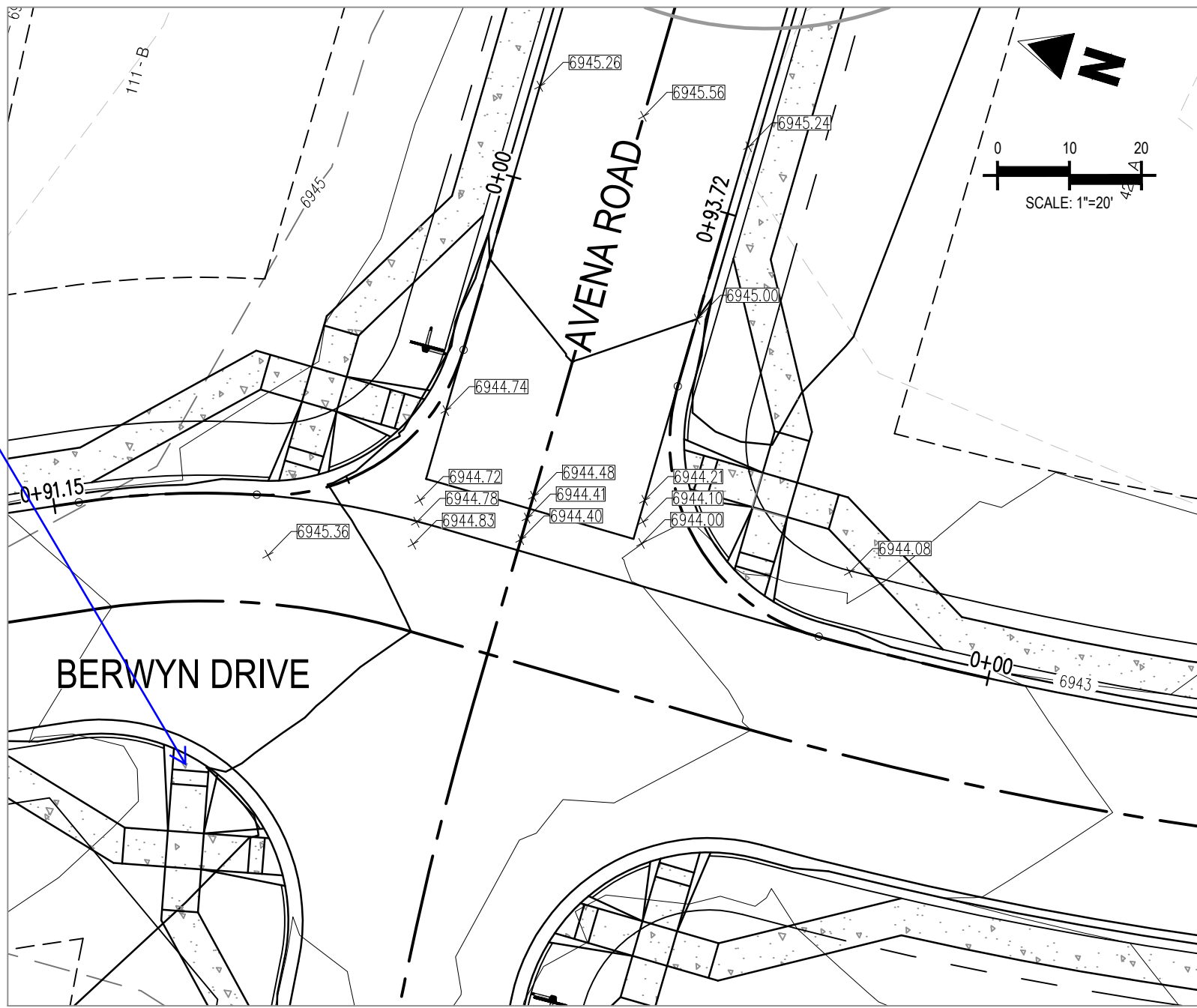
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

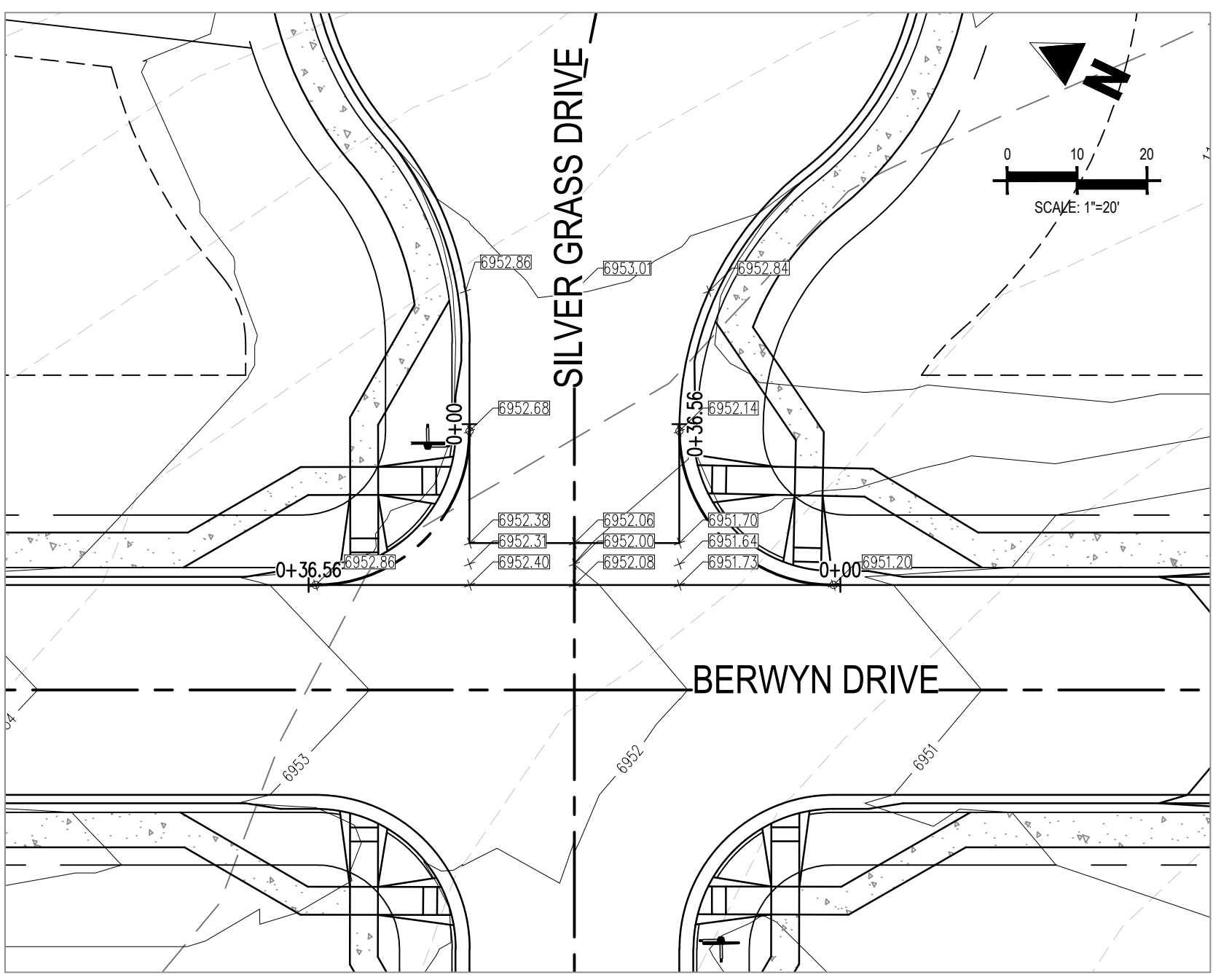
CROSS PAN & CURB RETURN PROFILES

C3.03

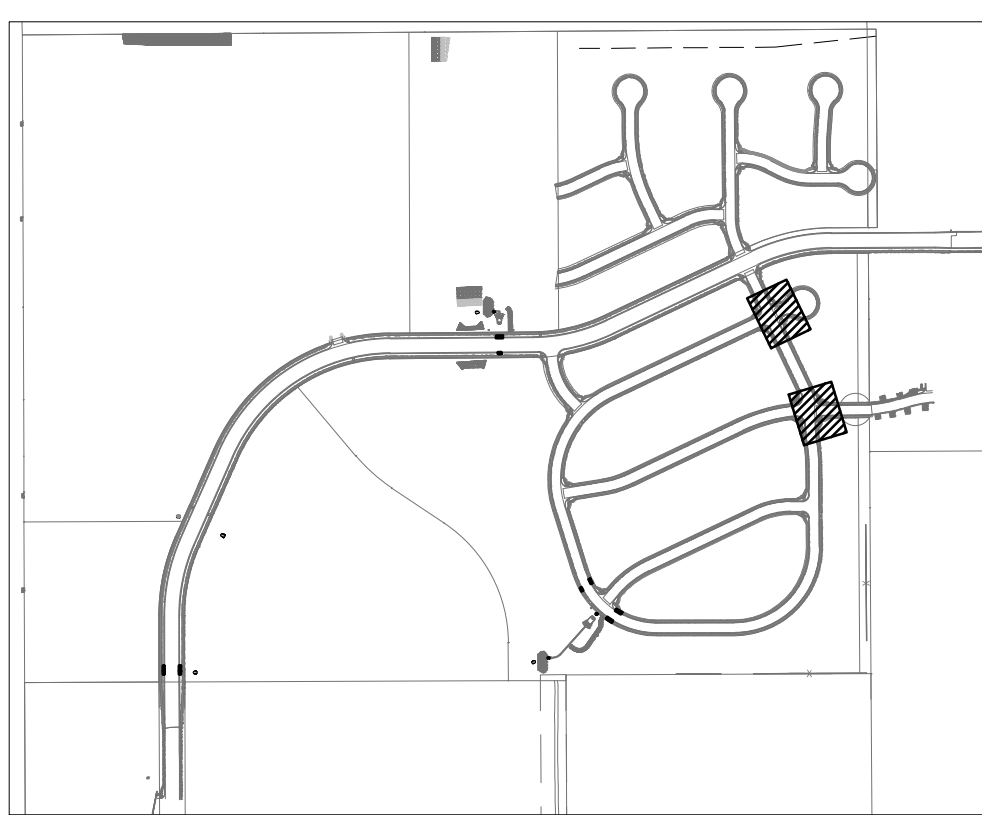
Adjust ped. ramp



INTERSECTION OF:
AVENA ROAD & BERWYN DRIVE



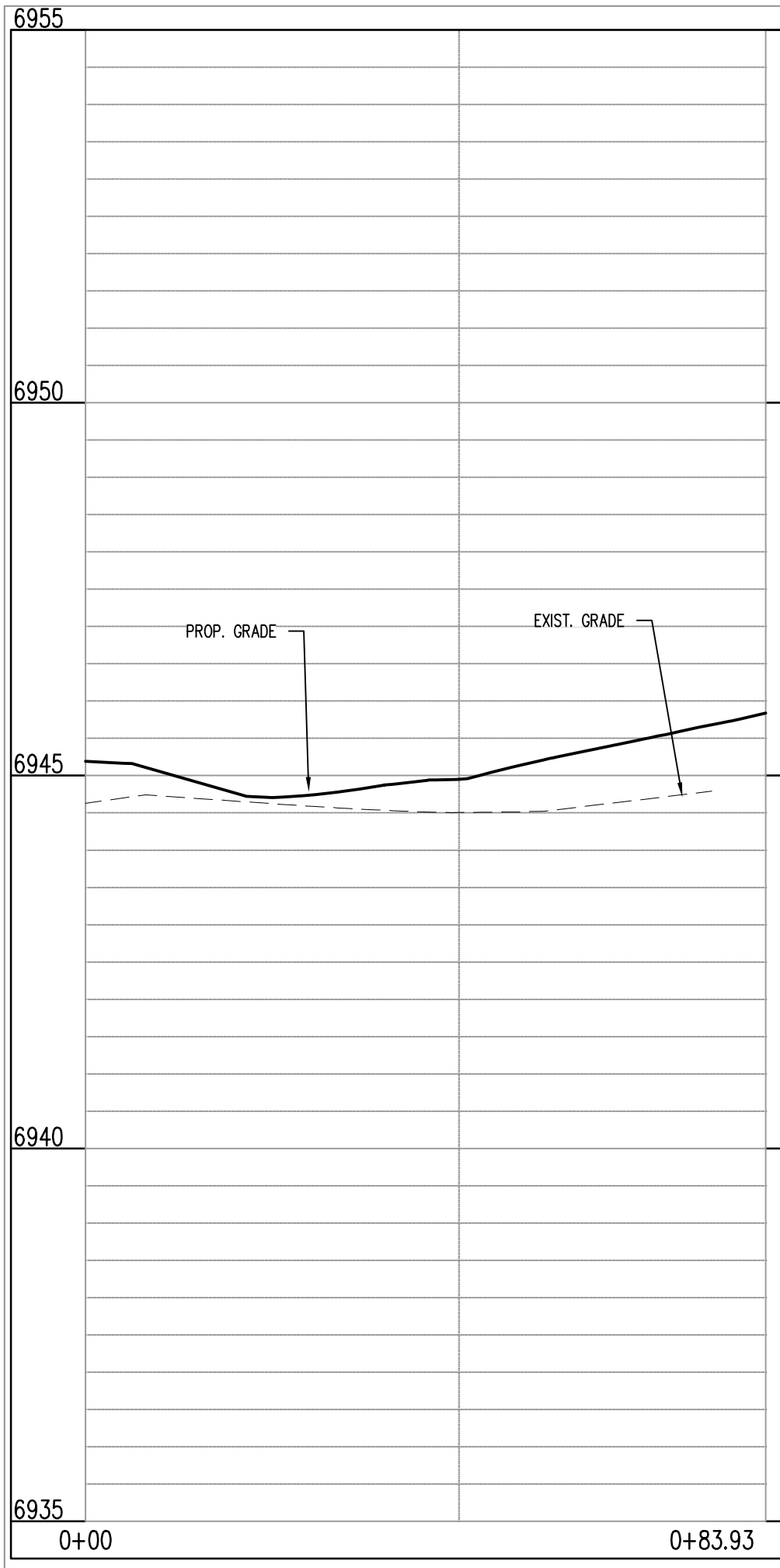
INTERSECTION OF:
SILVER GRASS DRIVE & BERWYN DRIVE



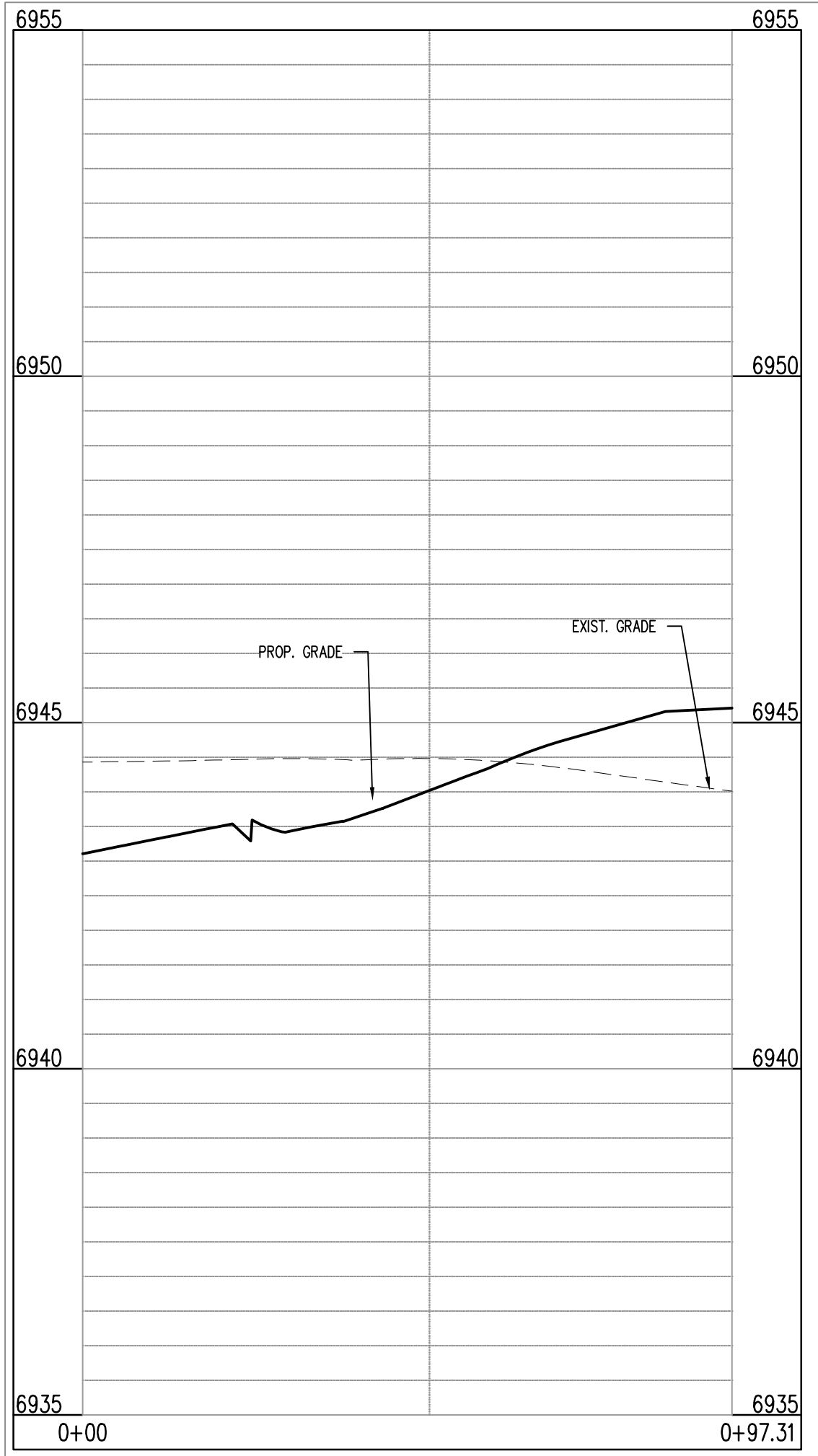
LOCATION MAP

SCALE: 1"=600'

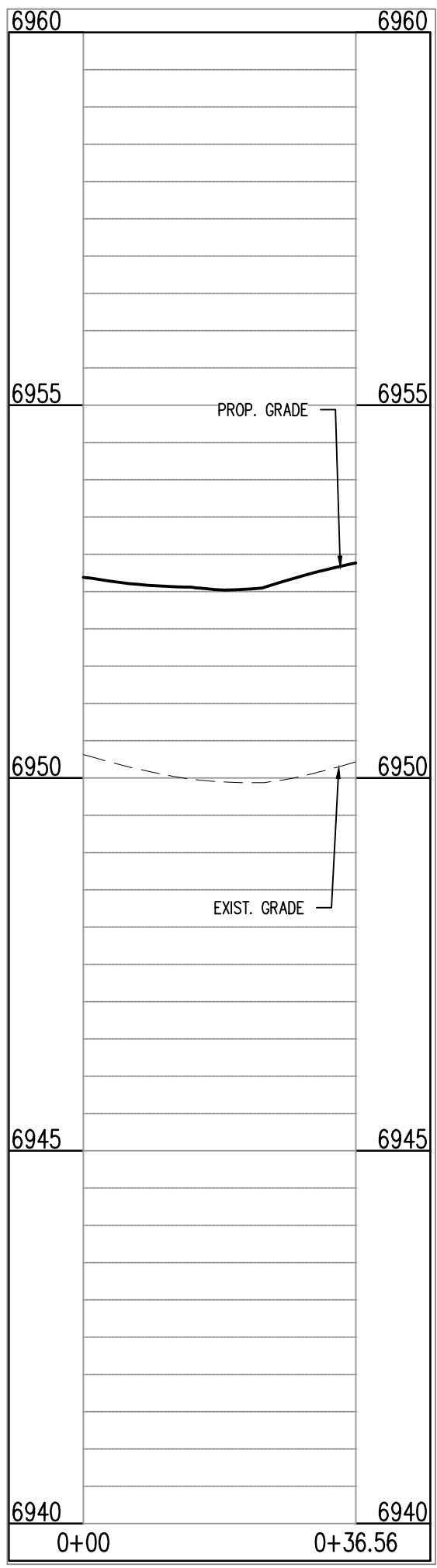
- 6931 — EXISTING MINOR CONTOUR
- 6930 — EXISTING MAJOR CONTOUR
- 6941 — PROPOSED MINOR CONTOUR
- 6940 — PROPOSED MAJOR CONTOUR
- — PROPERTY BOUNDARY
- - - - - EXISTING STORM SEWER
- — — — — PROPOSED STORM SEWER
- EXISTING FLOW
- PROPOSED FLOW
- ×6930.42 PROPOSED SPOT ELEVATION



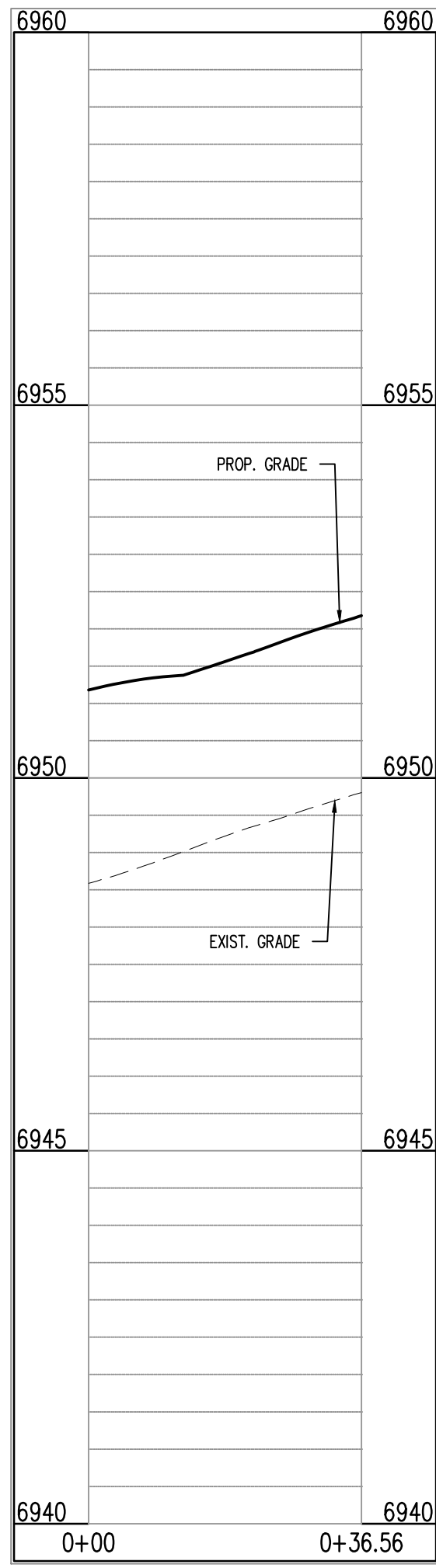
AVENA RD & BERWYN DR (NE): STA. 1+00.00 - 0+83.93
SCALE: H:1"=20', V:1"=10'



AVENA RD & BERWYN DR (SE): STA. 1+00.00 - 0+97.31
SCALE: H:1"=20', V:1"=10'



SILVER GRASS DR & BERWYN DR (NE): STA. 1+00.00 - 0+36.56
SCALE: H:1"=20', V:1"=10'



SILVER GRASS DR & BERWYN DR (SE): STA. 1+00.00 - 0+36.56
SCALE: H:1"=20', V:1"=10'

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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

CROSS PAN &
CURB RETURN PROFILES

C3.04

Sheet 23 of 43

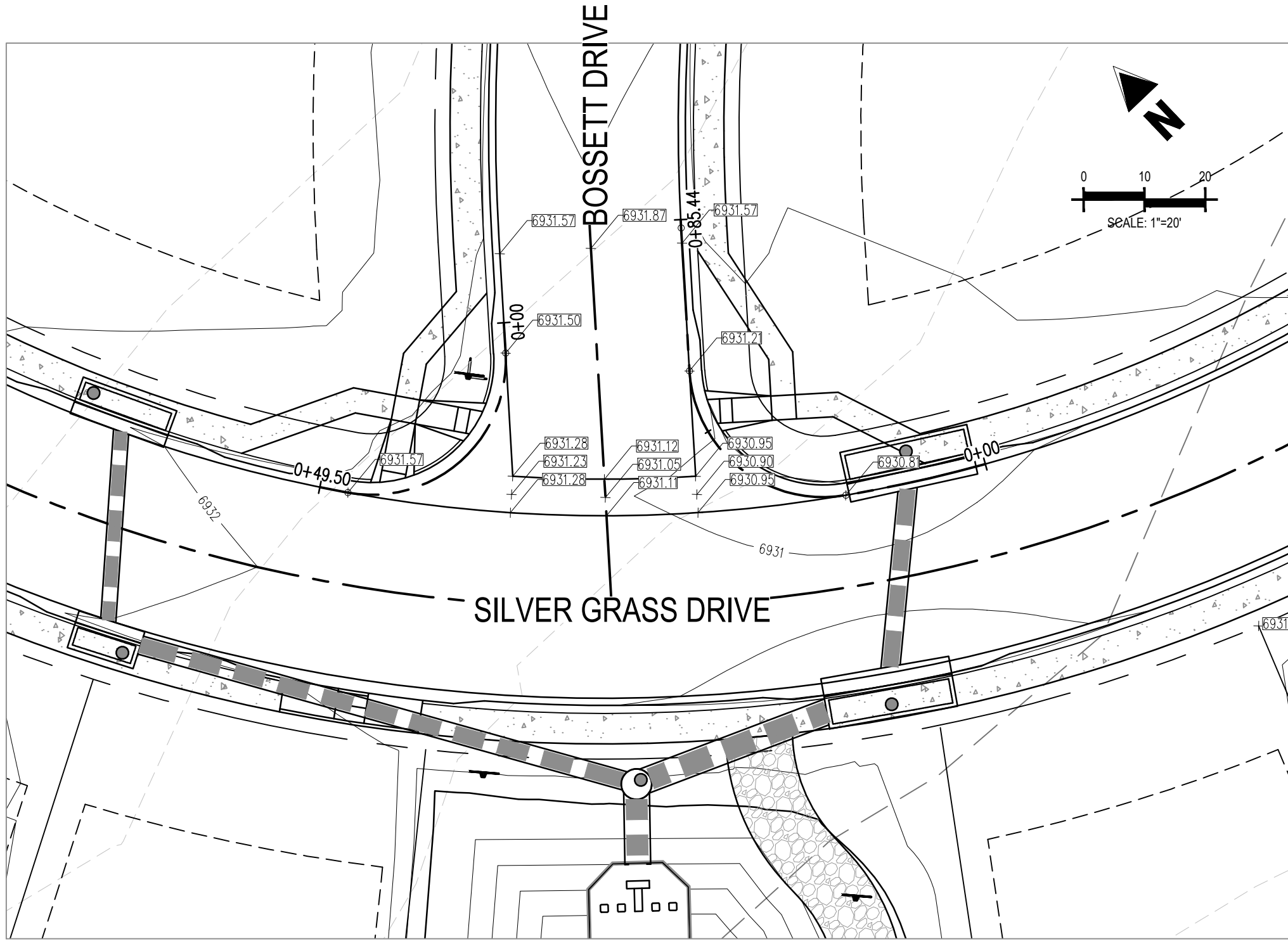
Galloway

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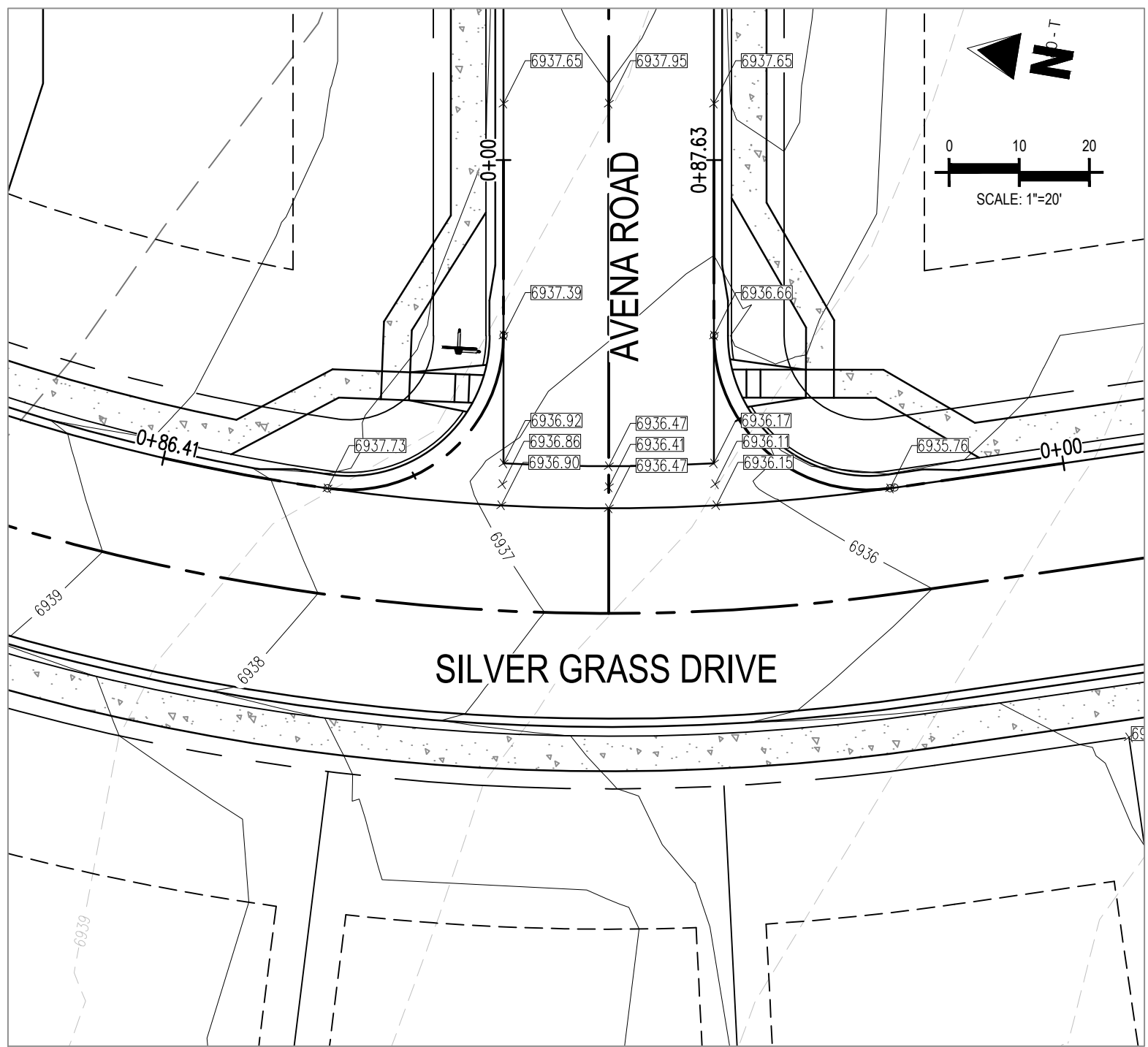


CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

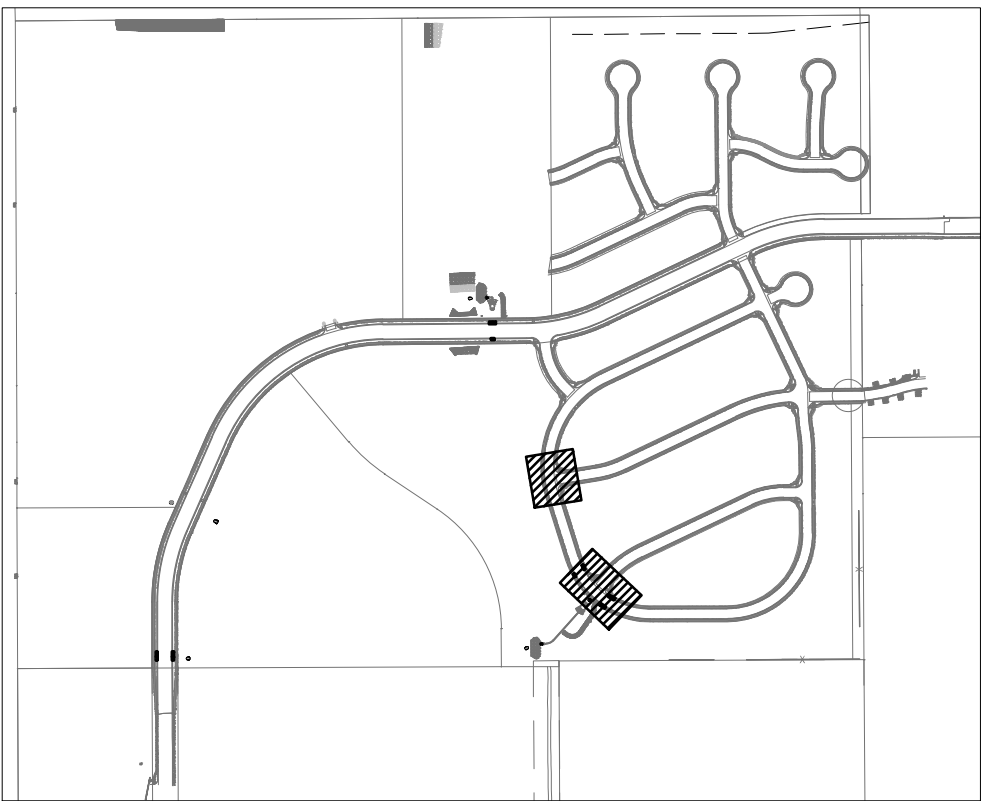
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY



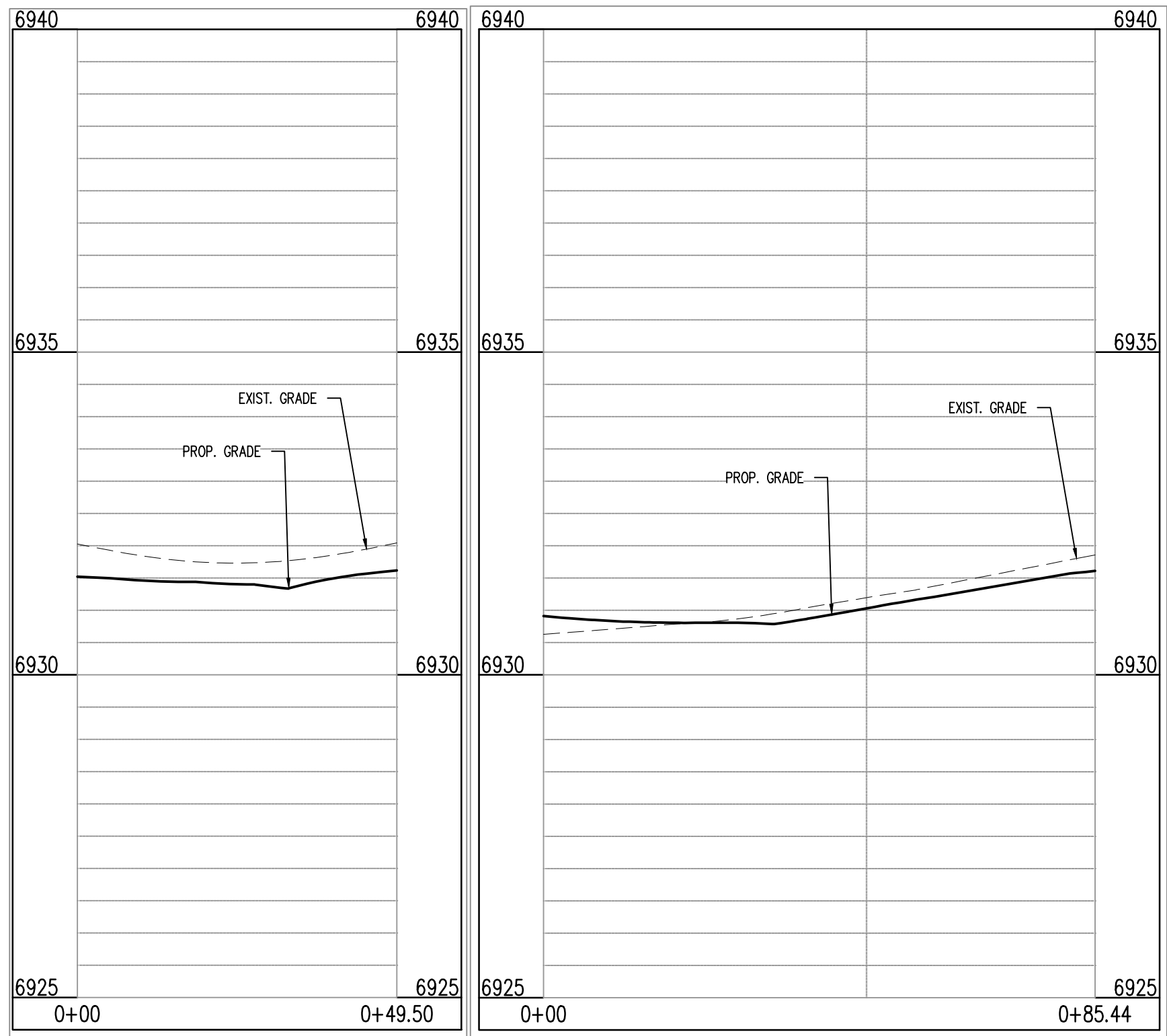
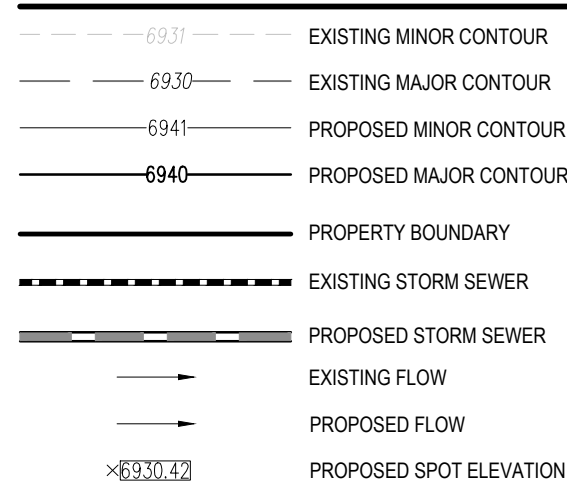
INTERSECTION OF:
BERWYN DRIVE & BOSSETT DRIVE



INTERSECTION OF:
SILVER GRASS DRIVE & AVENA ROAD

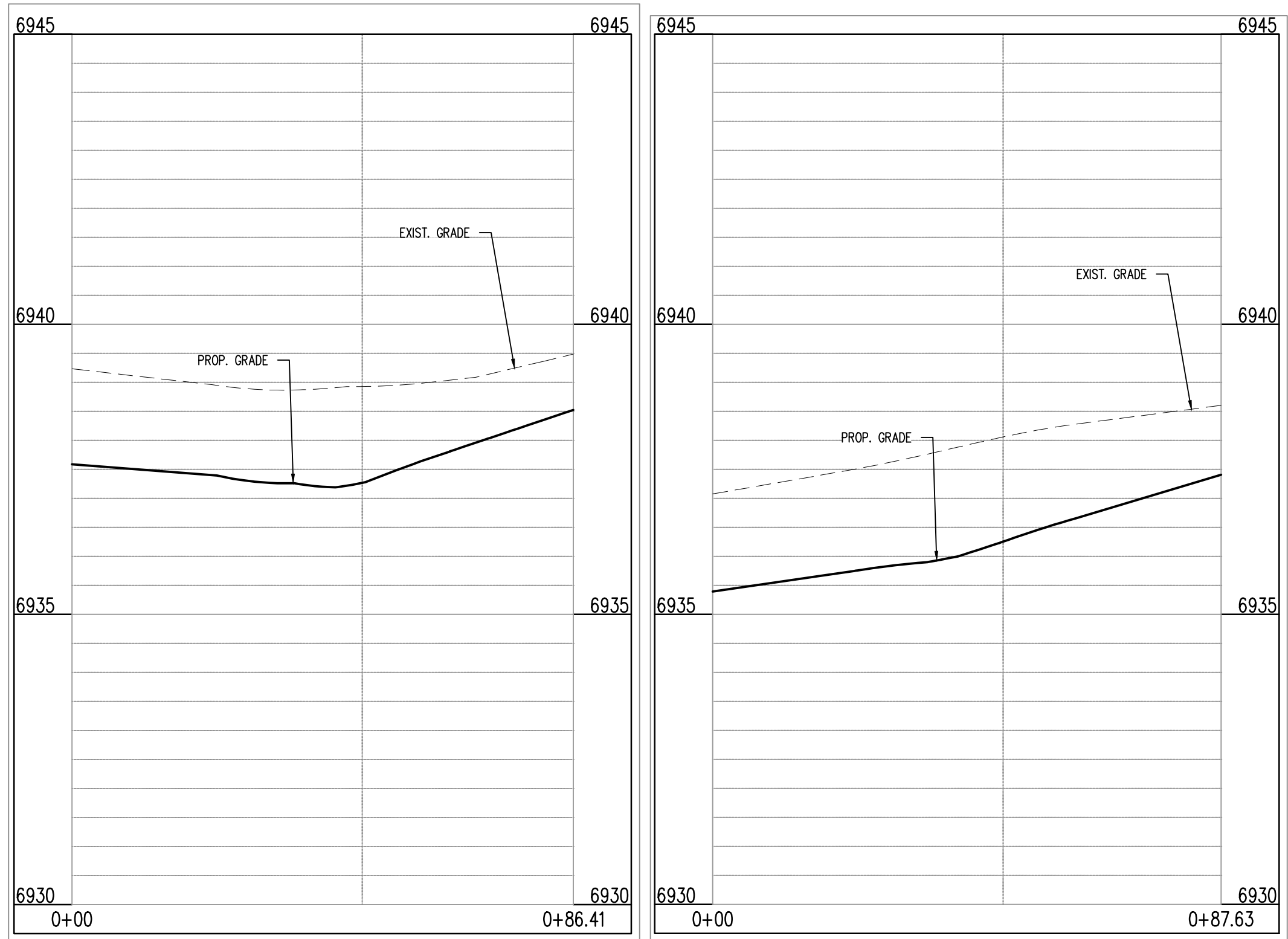


LOCATION MAP



SILVER GRASS DR & BOSSETT DR (NW): STA. 1+00.00 – 0+49.50
SCALE: H:1"=20', V:1"=10'

SILVER GRASS DR & BOSSETT DR (NE): STA. 1+00.00 – 0+85.44
SCALE: H:1"=20', V:1"=10'



SILVER GRASS DR & AVENA RD (NE): STA. 1+00.00 – 0+86.41
SCALE: H:1"=20', V:1"=10'

SILVER GRASS DR & AVENA RD (SE): STA. 1+00.00 – 0+87.63
SCALE: H:1"=20', V:1"=10'

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

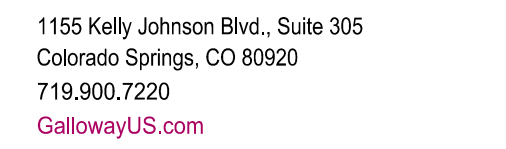
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019











CROSS PAN &
CURB RETURN PROFILES

C3.05

Sheet 24 of 43



SCALE: 1"=600'

-  69.31' EXISTING MINOR CONTOUR
 69.30' EXISTING MAJOR CONTOUR
 6941' PROPOSED MINOR CONTOUR
 6940' PROPOSED MAJOR CONTOUR
 PROPERTY BOUNDARY
 EXISTING STORM SEWER
 PROPOSED STORM SEWER
 EXISTING FLOW
 PROPOSED FLOW
 >69.30.42' PROPOSED SPOT ELEVATION



CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

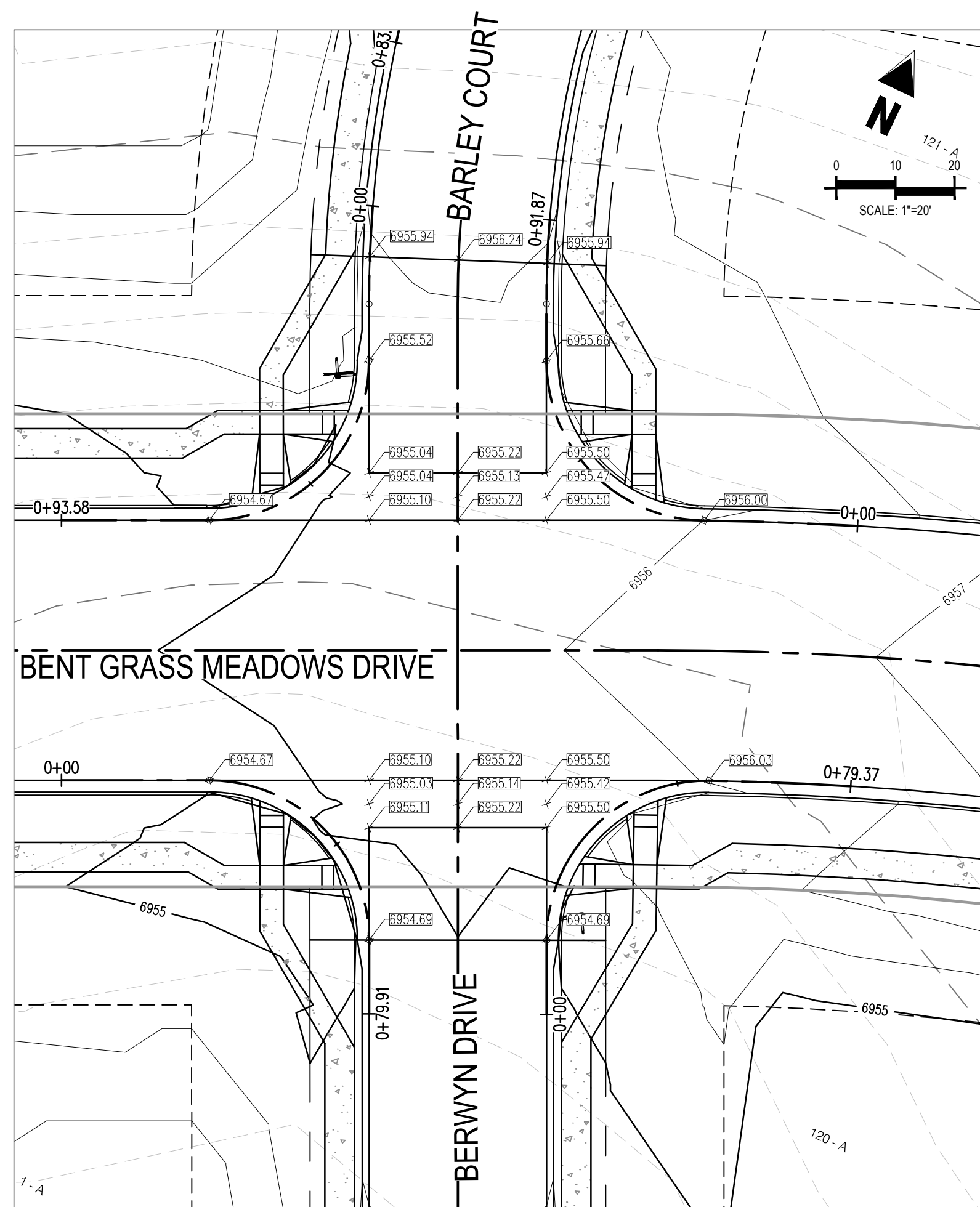
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

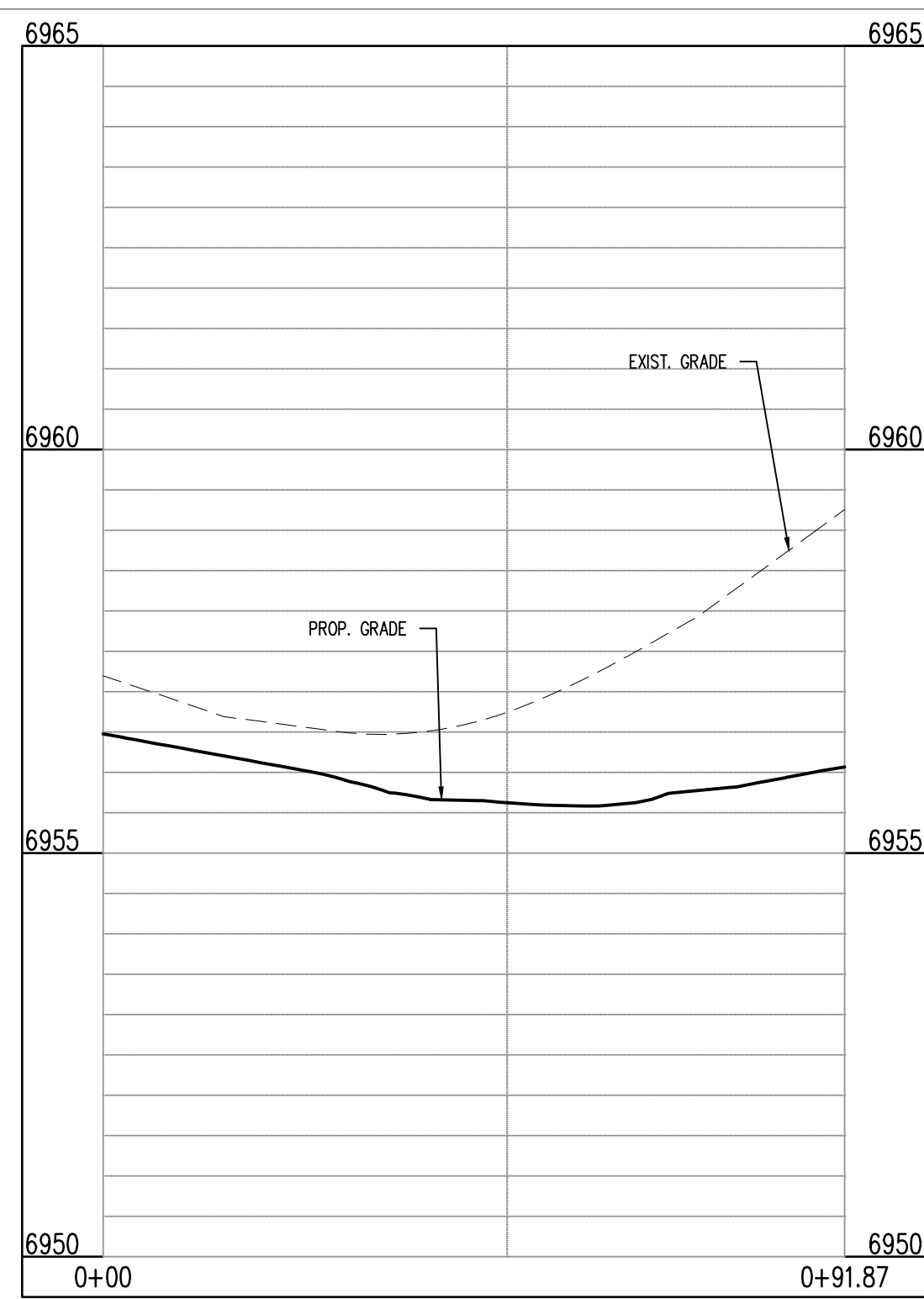
CROSS PAN & CURB RETURN PROFILES

C3.06

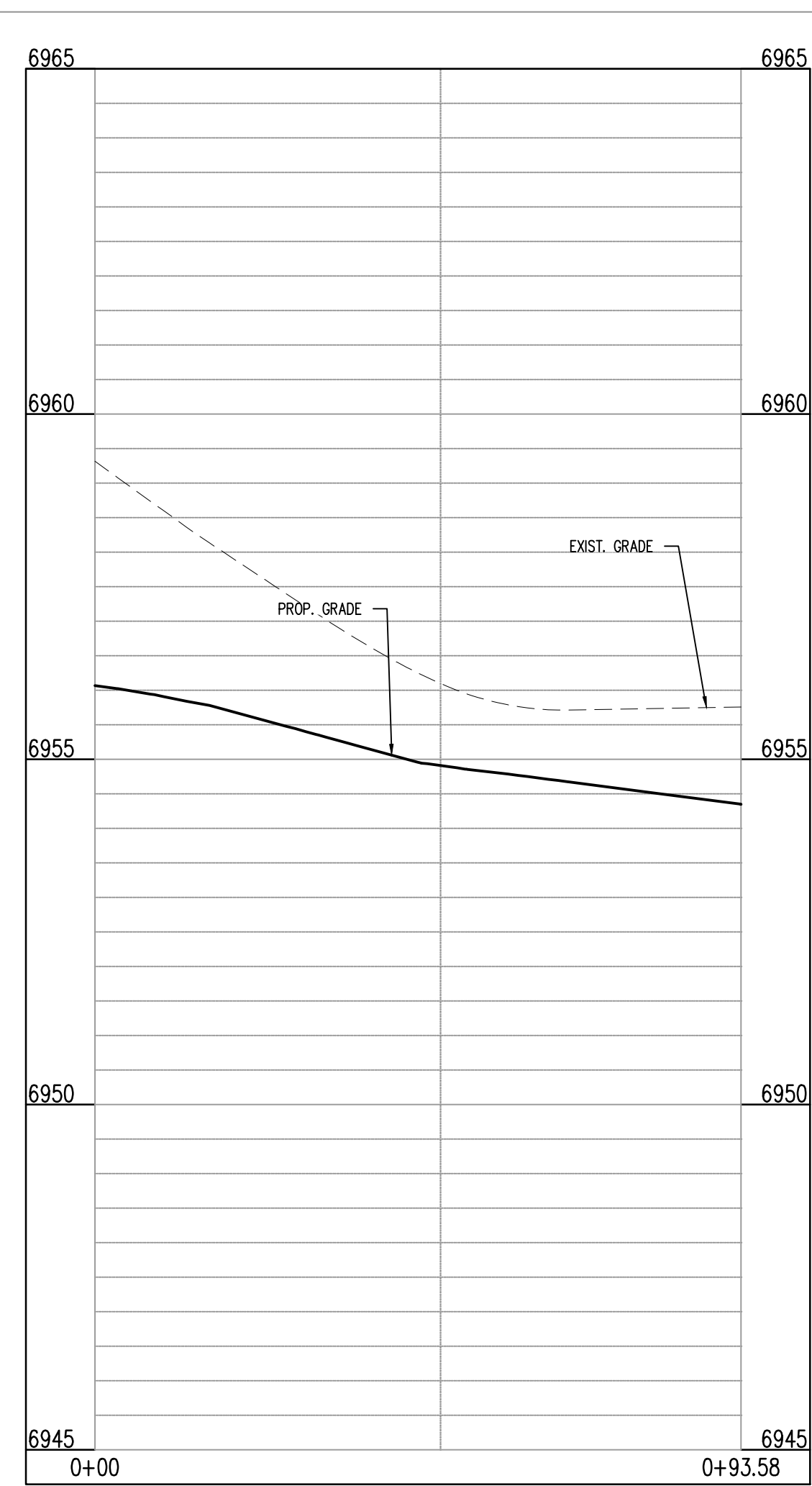
Sheet 25 of 43



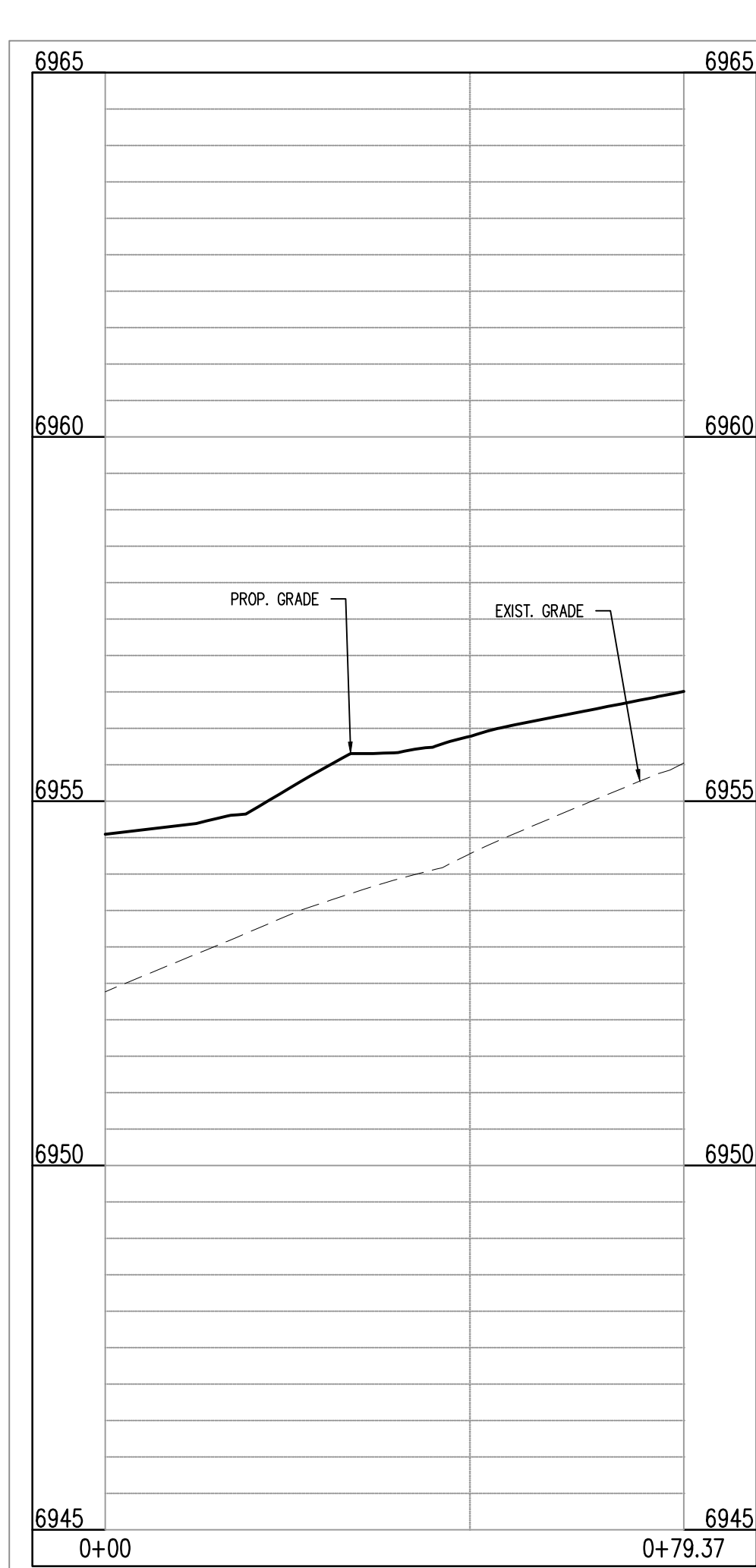
INTERSECTION OF:
BENT GRASS MEADOWS DRIVE, BARLEY COURT & BERWYN DRIVE



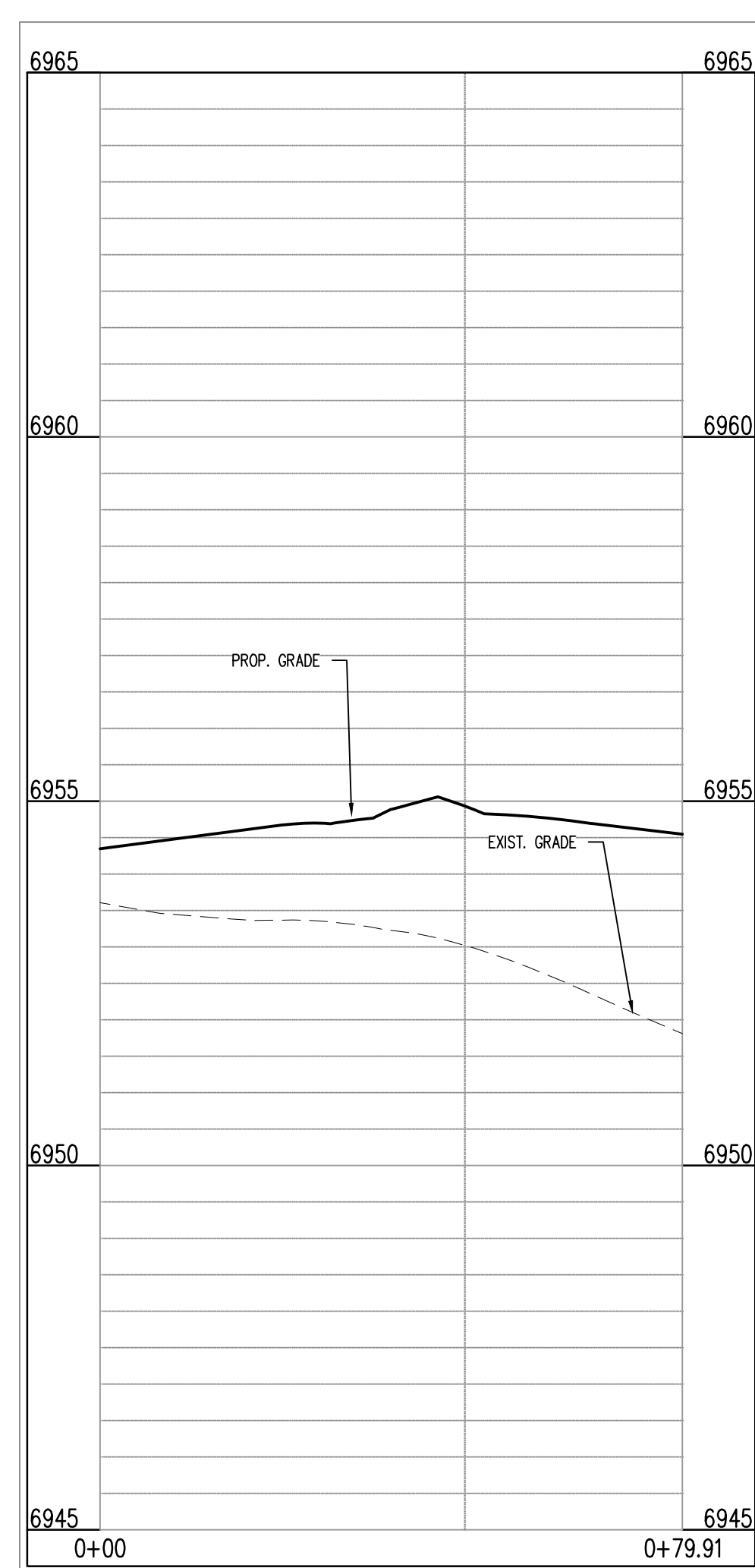
BENT GRASS MEADOWS DR & BARLEY CT (NE): STA. 1+00.00 - 0+91.87



BENT GRASS MEADOWS DR & BARLEY CT (NW): STA. 1+00.00 - 0+93.58



BENT GRASS MEADOWS DR & BERWYN DR (SE): STA. 1+00.00 - 0+79.37



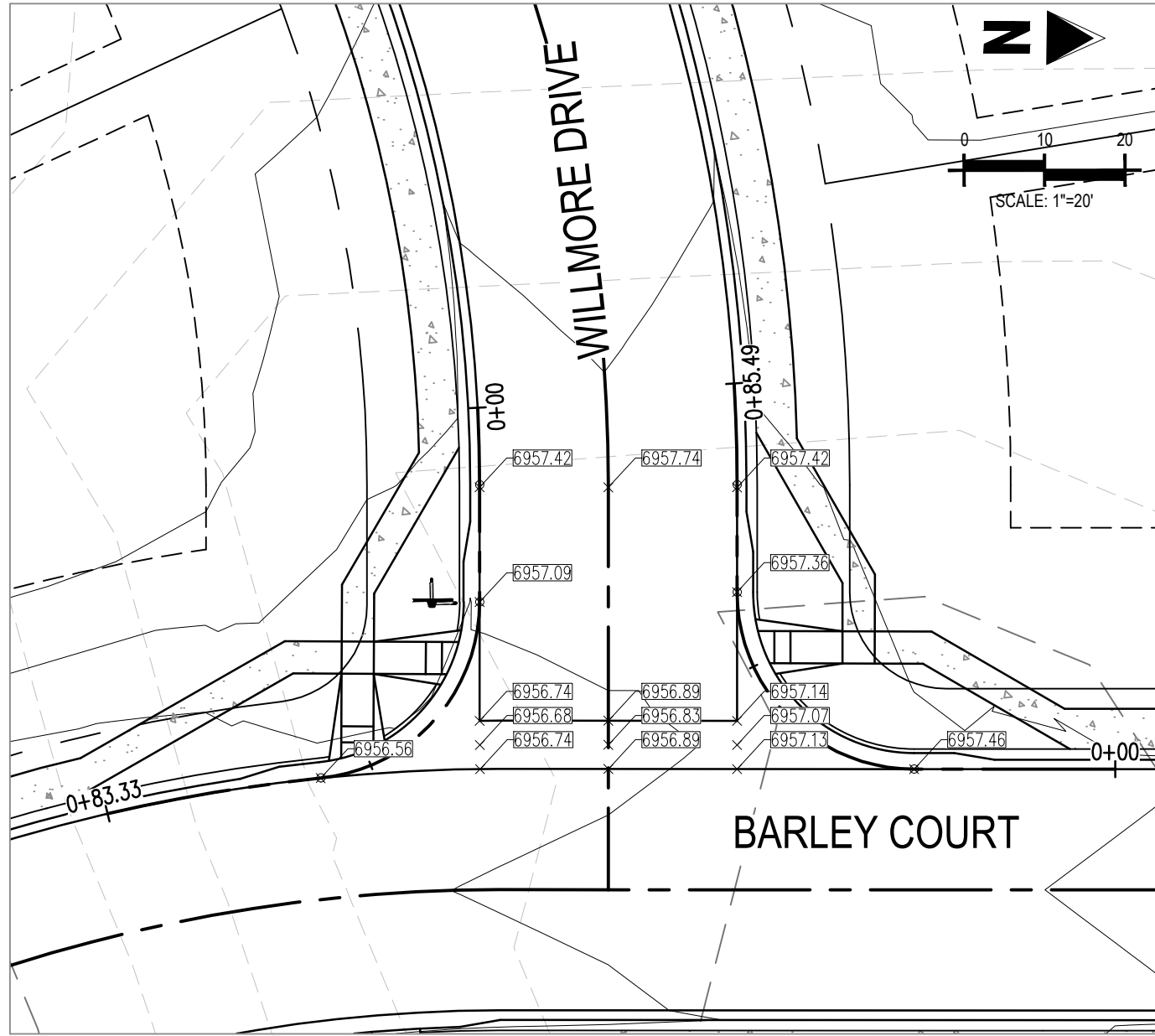
BENT GRASS MEADOWS DR & BERWYN DR (SW): STA. 1+00.00 - 0+79.91

CAUTION - NOTICE TO CONTRACTOR

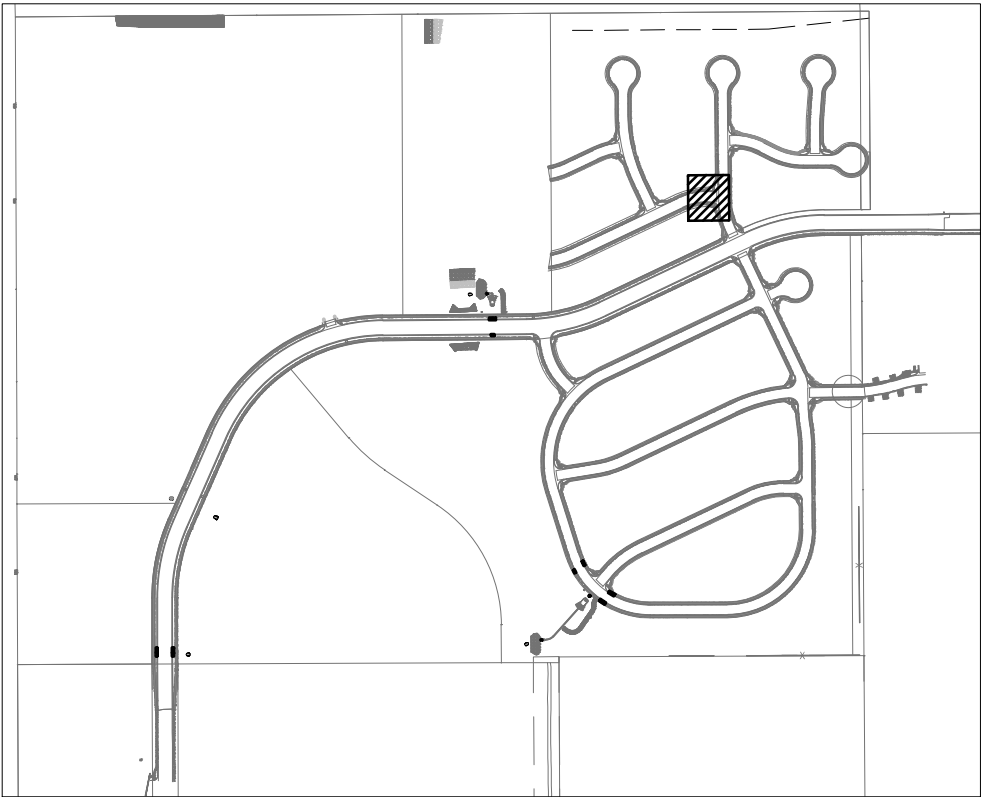
1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



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



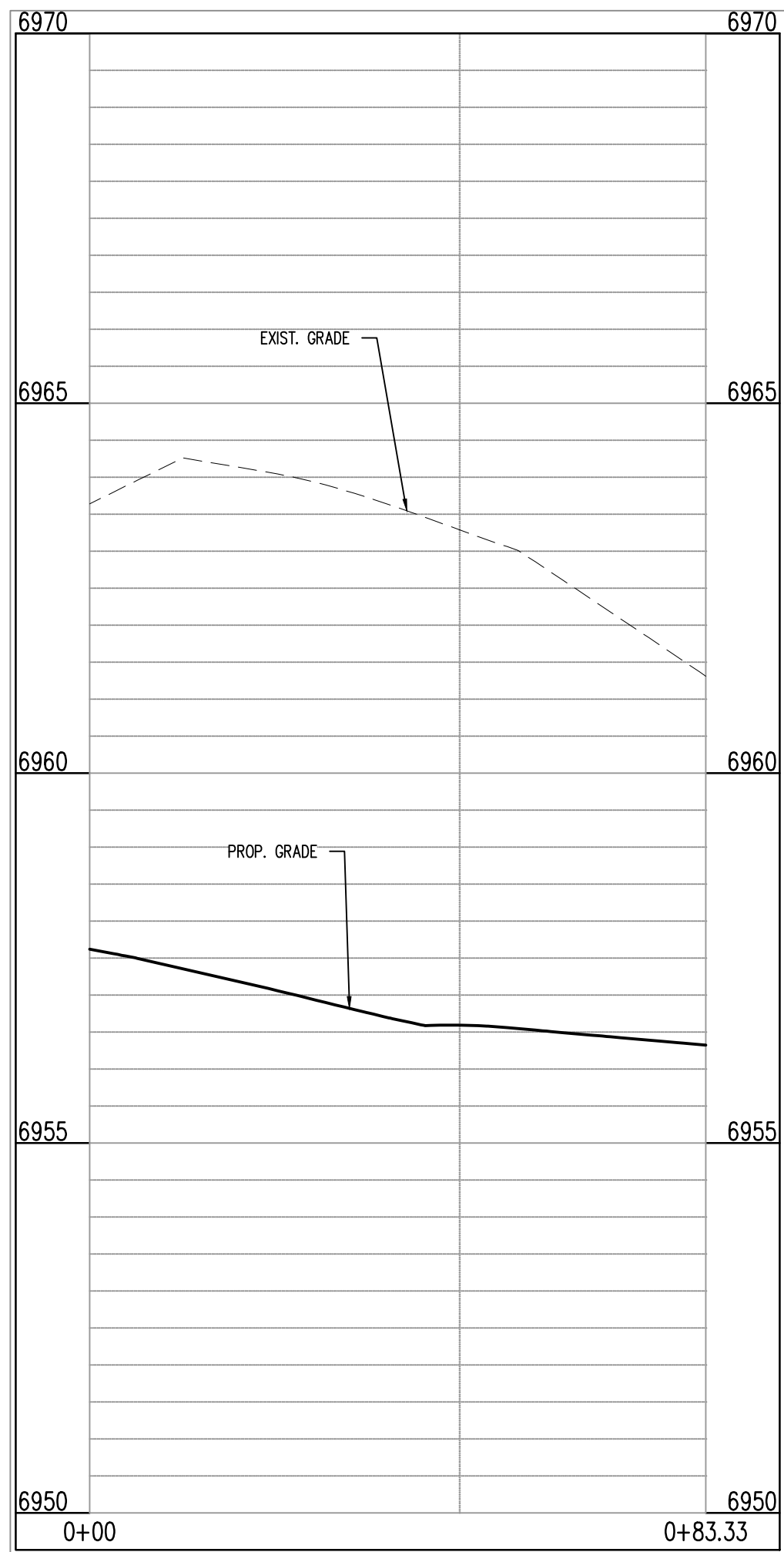
INTERSECTION OF:
WILLMORE DRIVE & BARLEY COURT



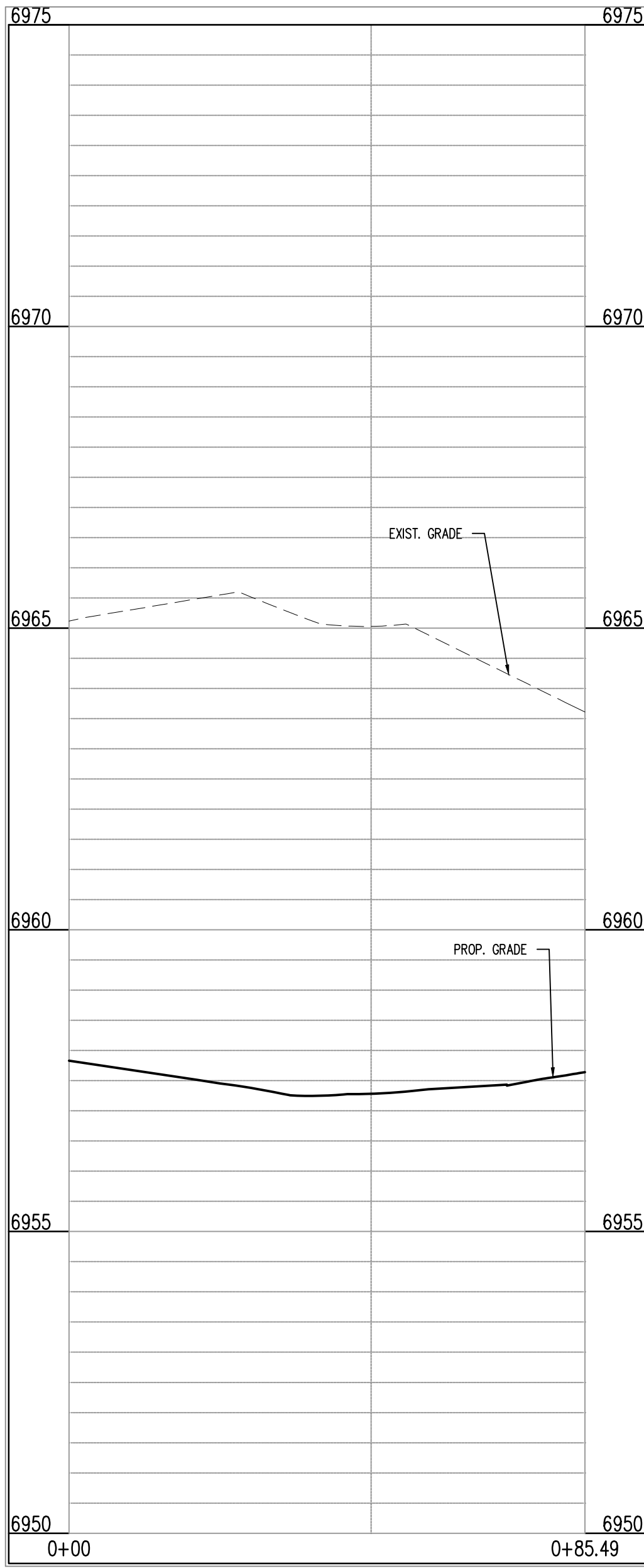
LOCATION MAP

SCALE: 1"=600'

- 69.31 EXISTING MINOR CONTOUR
- 69.30 EXISTING MAJOR CONTOUR
- 69.41 PROPOSED MINOR CONTOUR
- 69.40 PROPOSED MAJOR CONTOUR
- PROPERTY BOUNDARY
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING FLOW
- PROPOSED FLOW
- 69.30.49 PROPOSED SPOT ELEVATION



BARLEY CT & WILLMORE DR (SW): STA. 1+00.00 - 0+83.33
SCALE: H:1"=20', V:1"=10'



BARLEY CT & WILLMORE DR (NW): STA. 1+00.00 - 0+85.49
SCALE: H:1"=20', V:1"=10'

CAUTION - NOTICE TO CONTRACTOR

- ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.
- WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.



Know what's below.
Call before you dig.

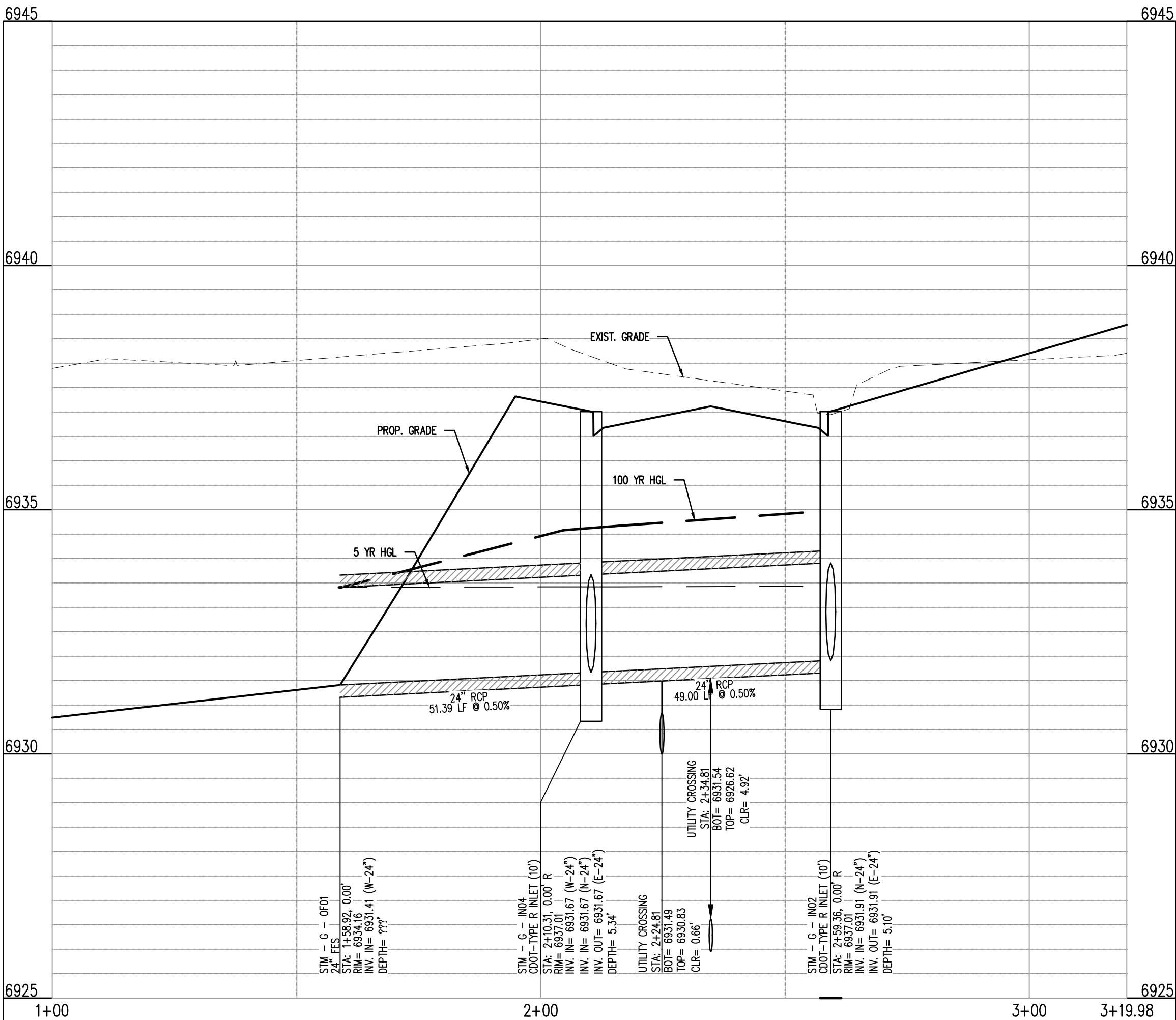
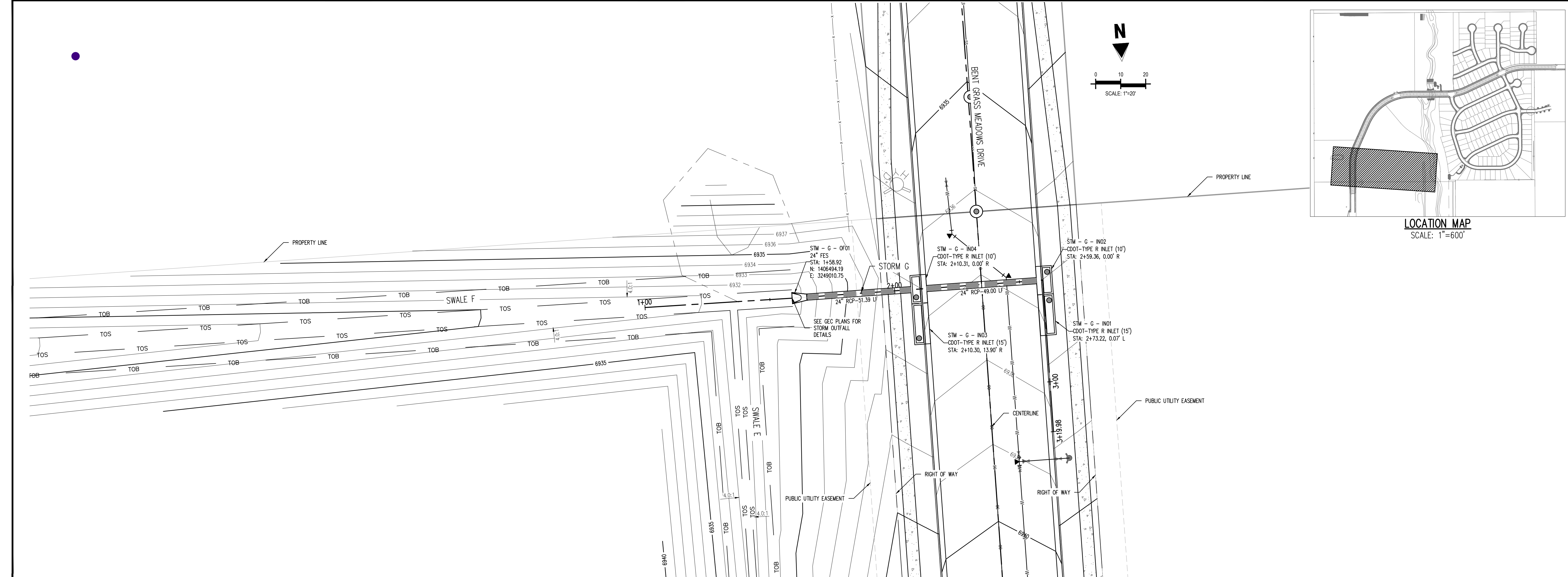
CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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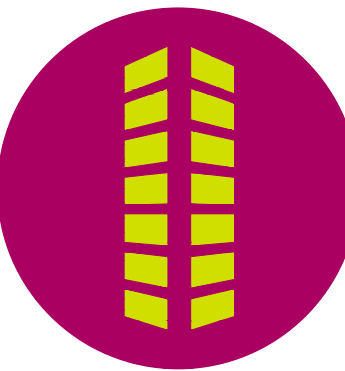
Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

CROSS PAN &
CURB RETURN PROFILES



ALIGN - STM - G
STA: 1+00 - 3+19.98
SCALE: H: 1"=20' V: 1"=10'

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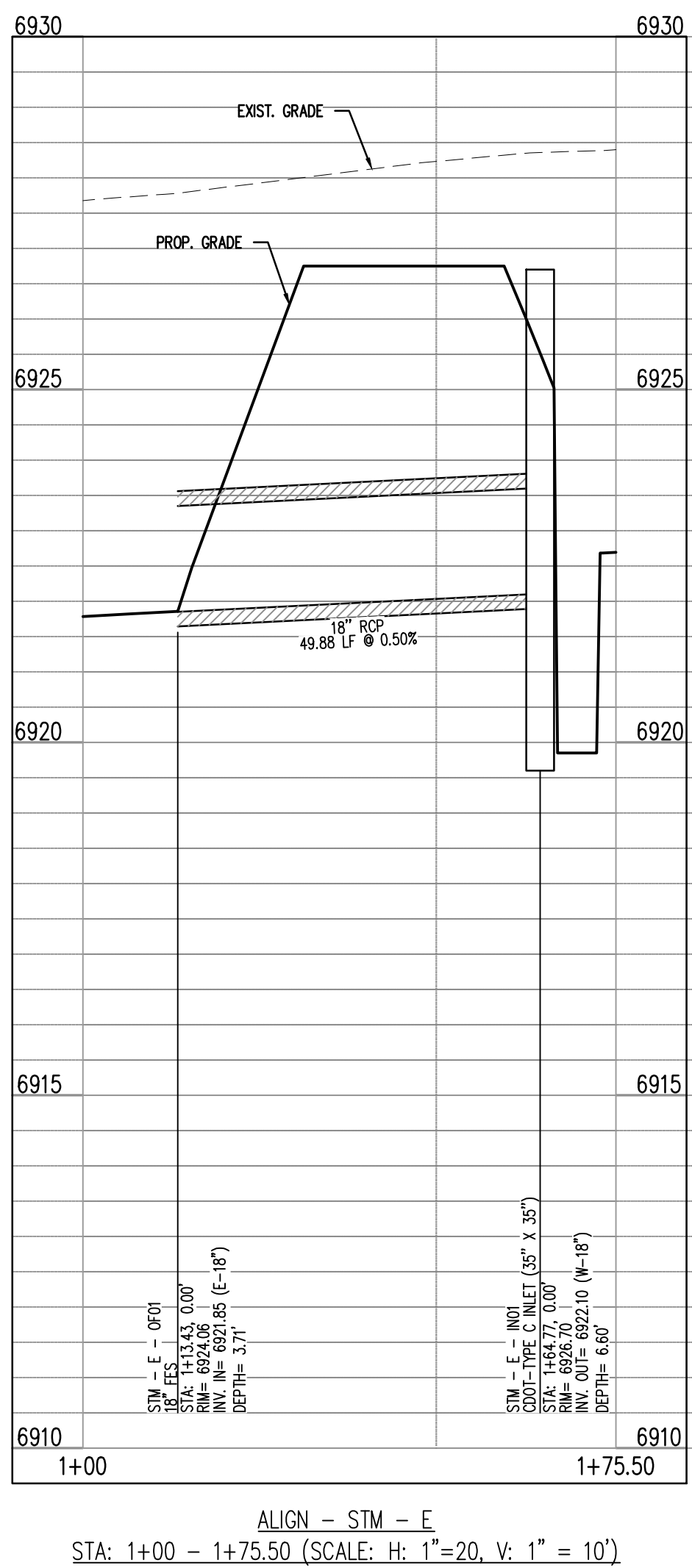
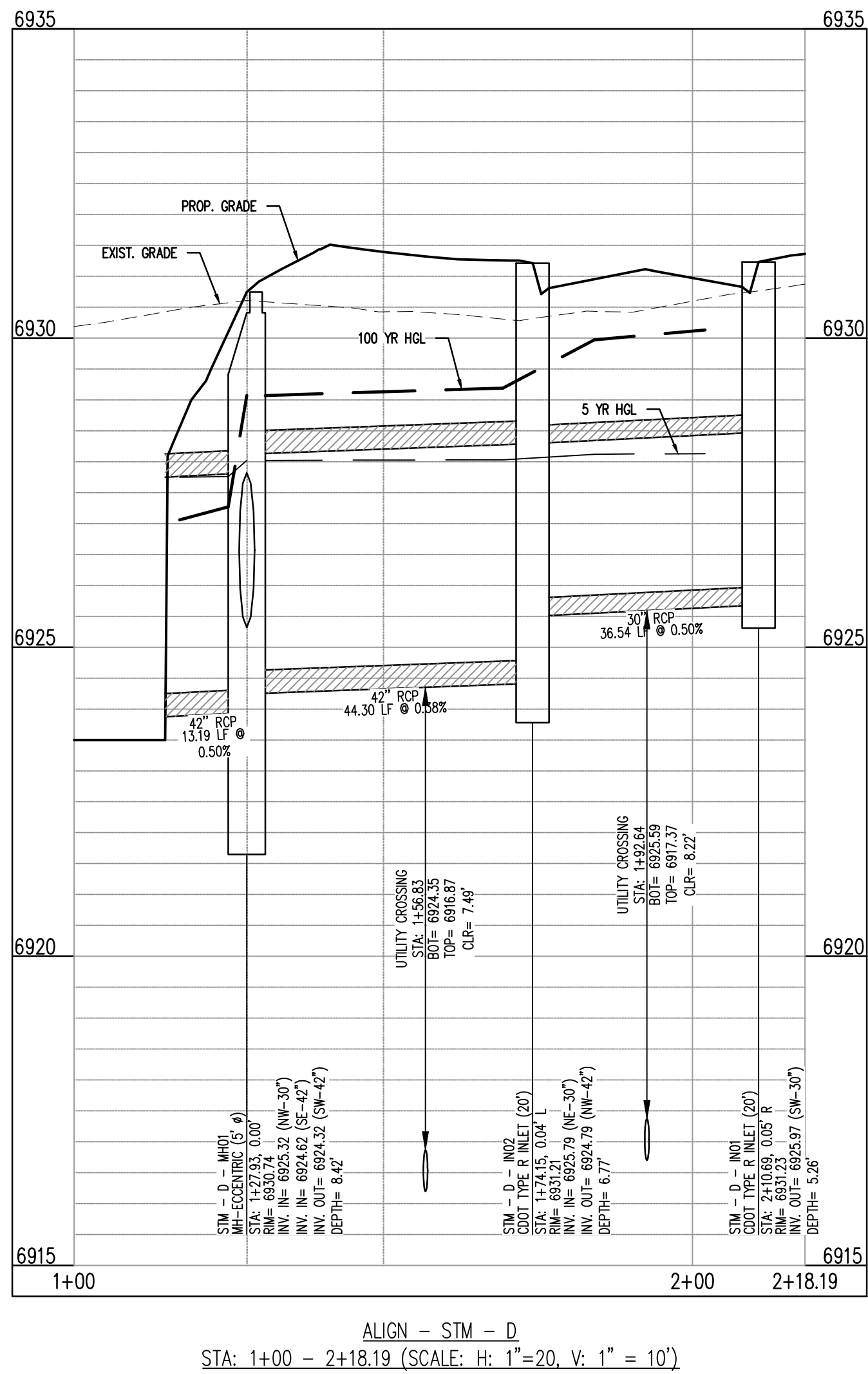
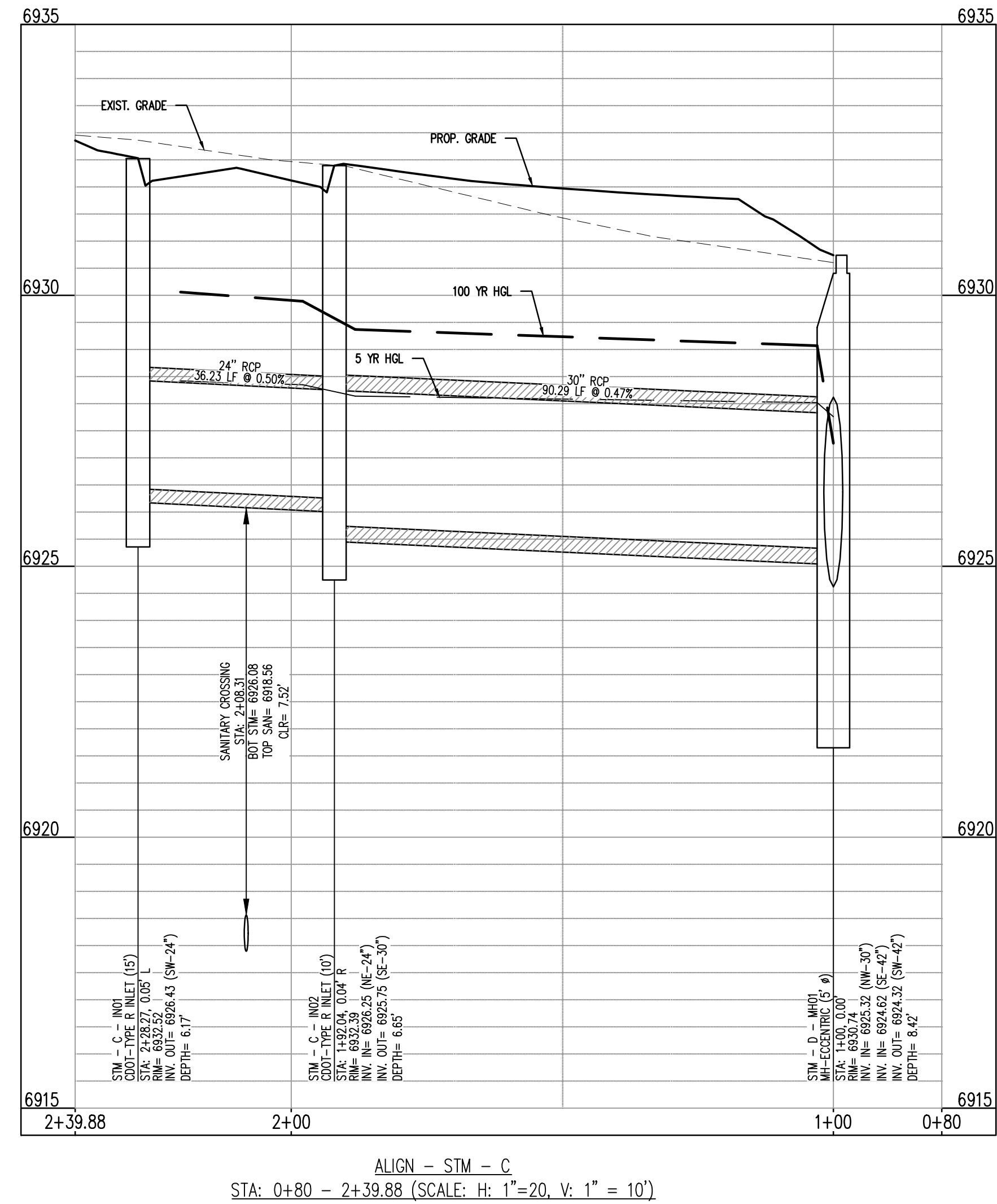
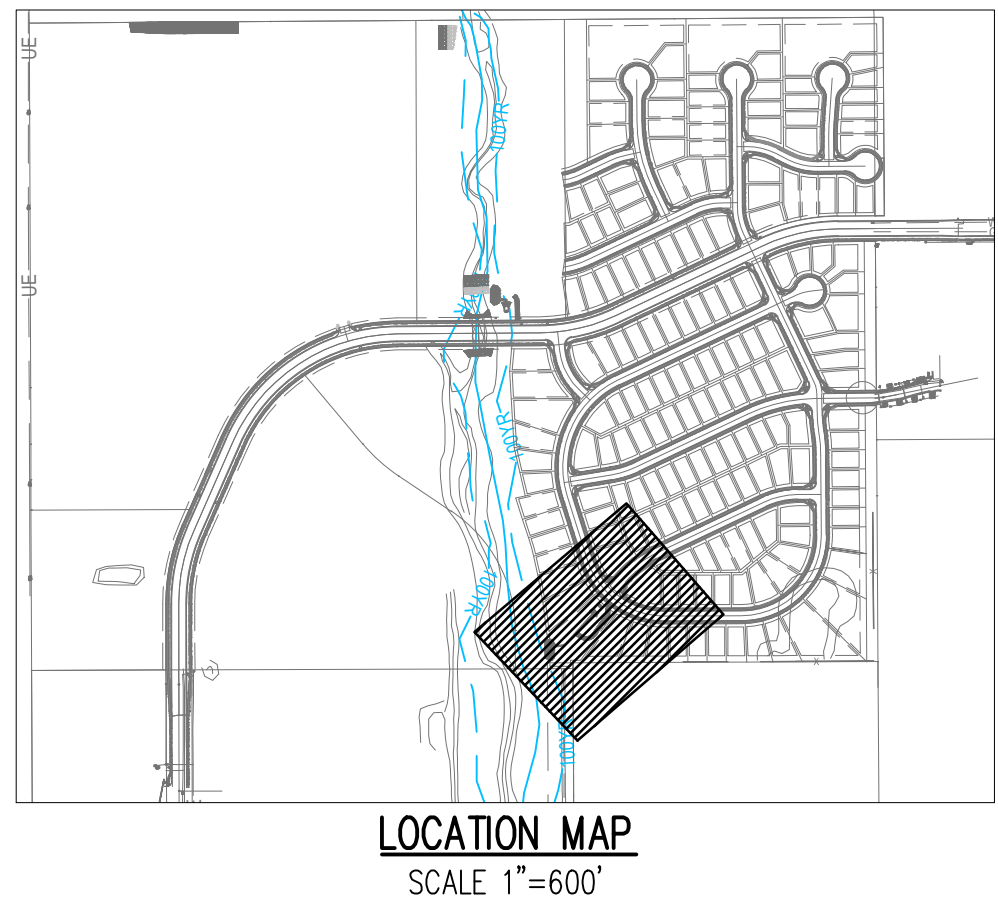
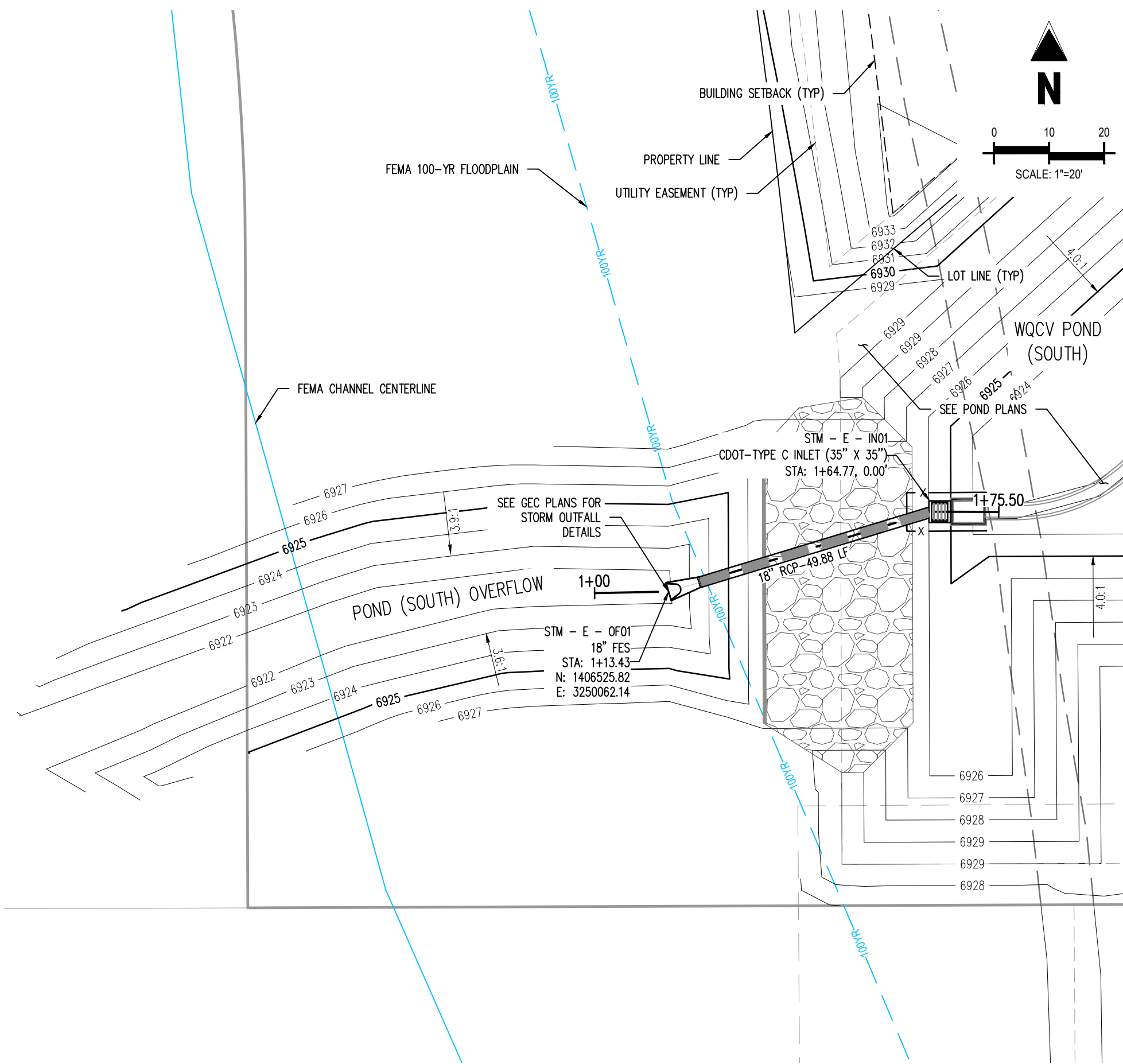
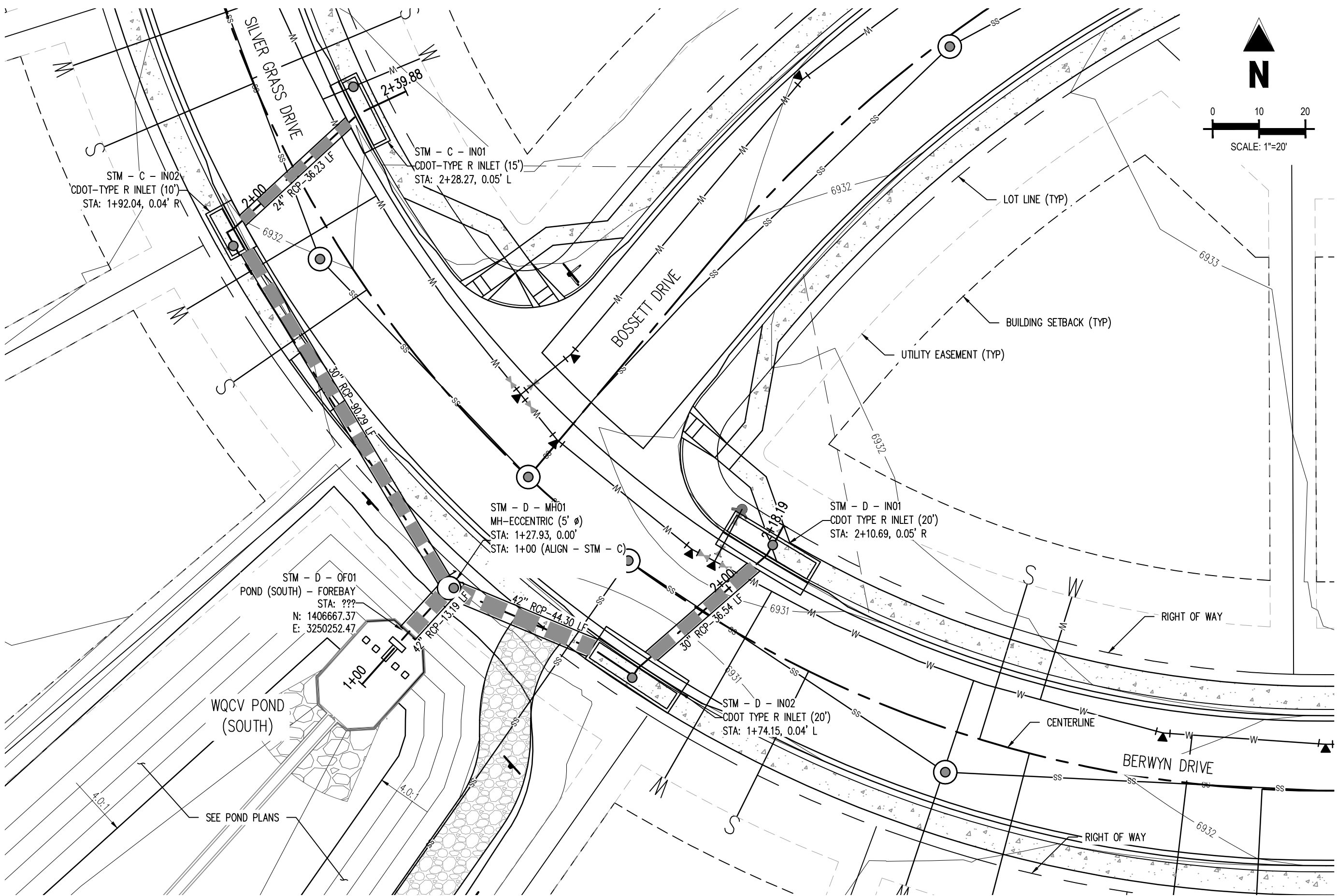
CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No: CLH000014.20
Drawn By: JDP
Checked By: RGD
Date: 11/4/2019

BENT GRASS MEADOWS DRIVE
STORM PLAN & PROFILE



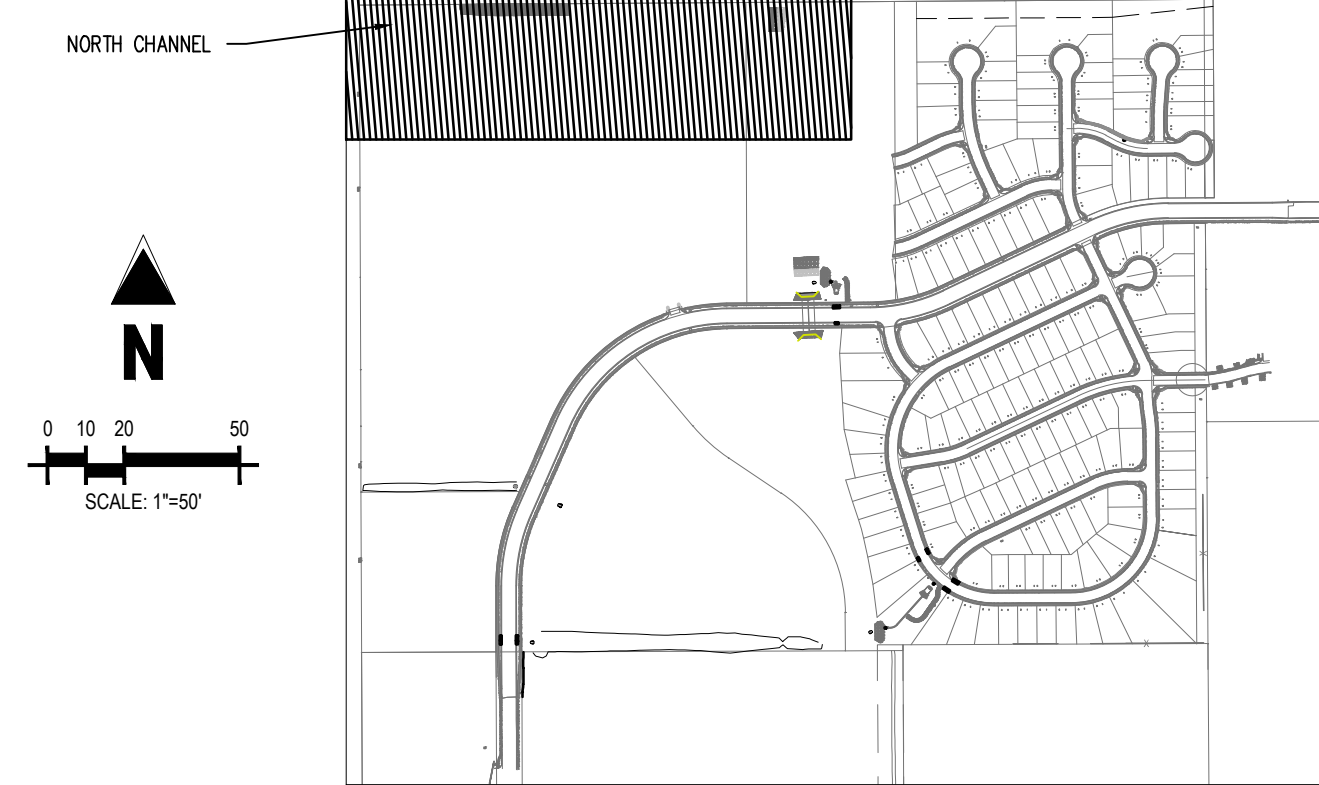
CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

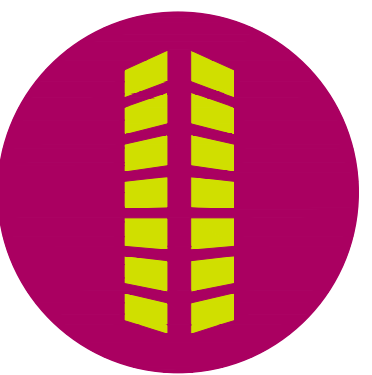
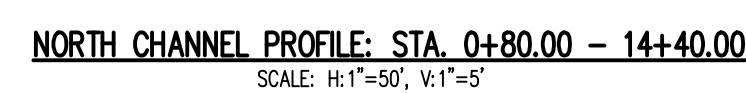
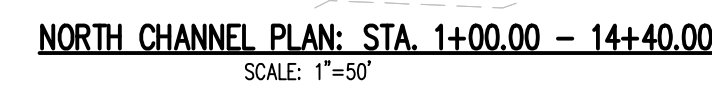
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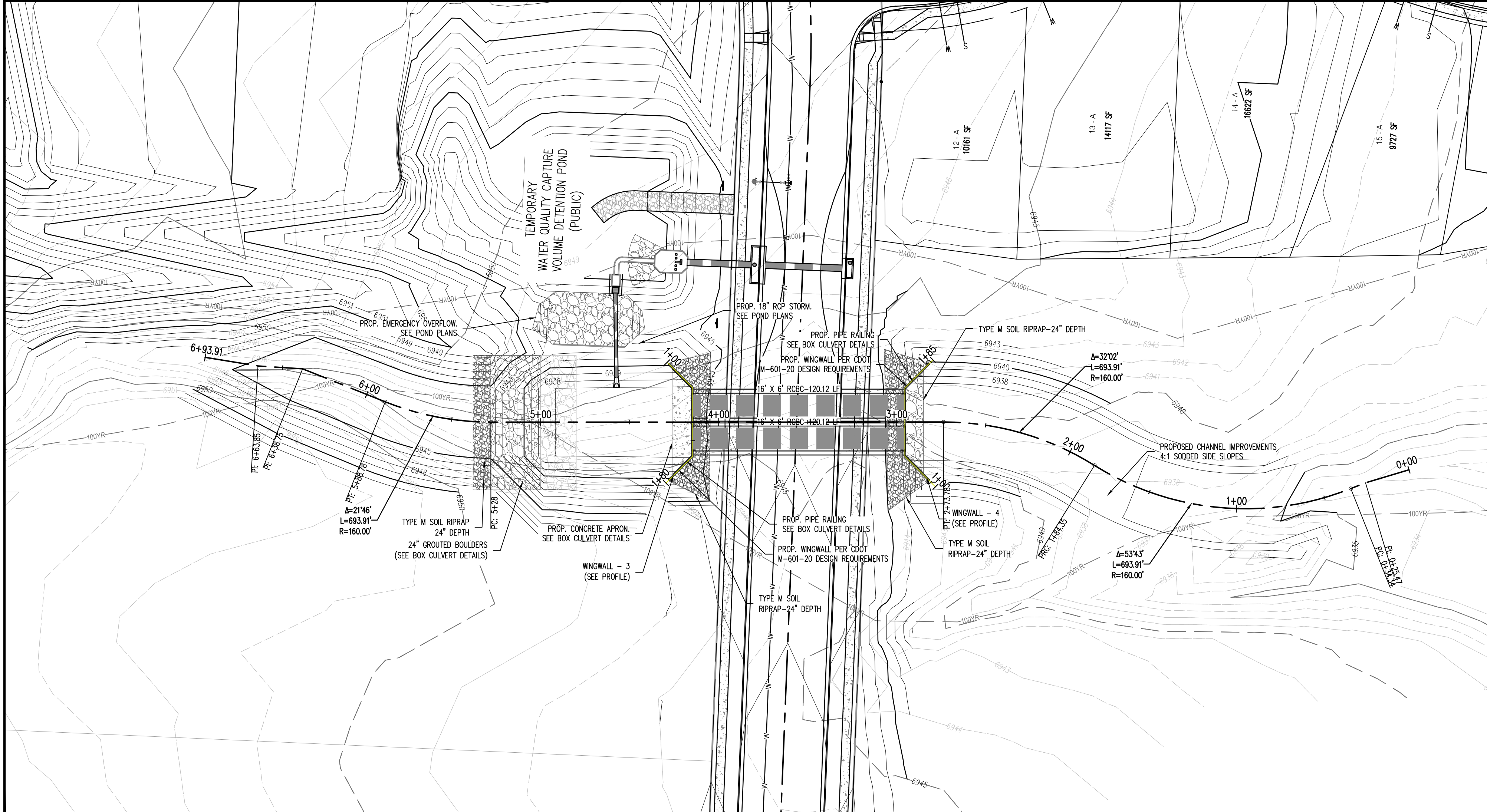
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Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

BERWYN DRIVE
STORM PLAN & PROFILE

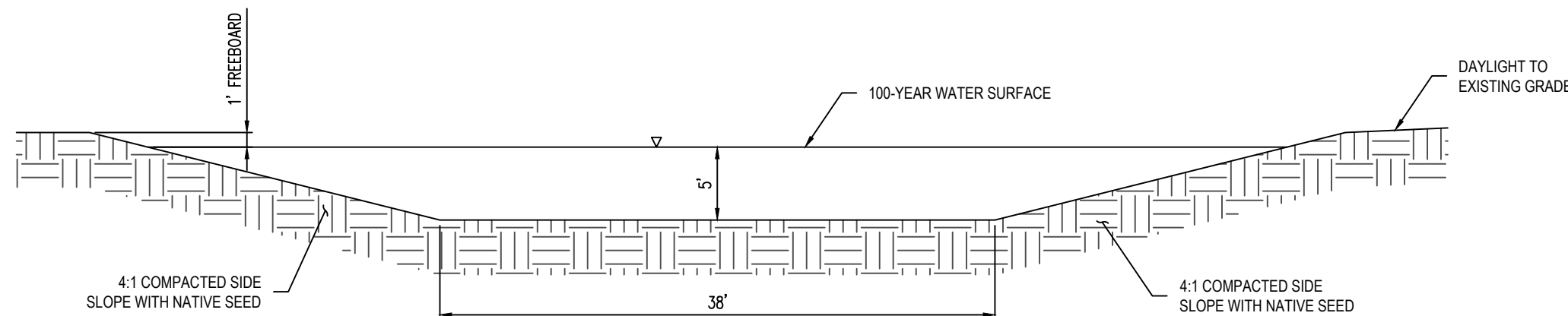


LOCATION MAP

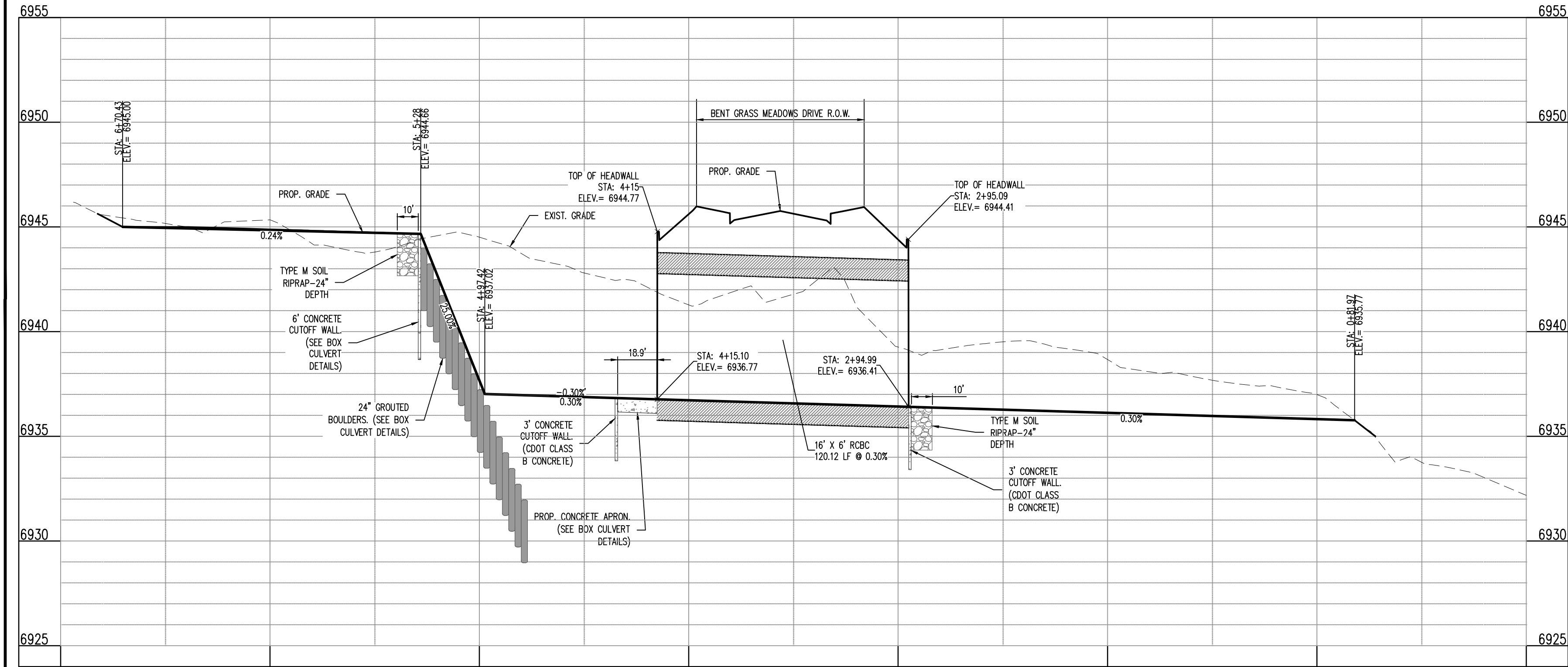
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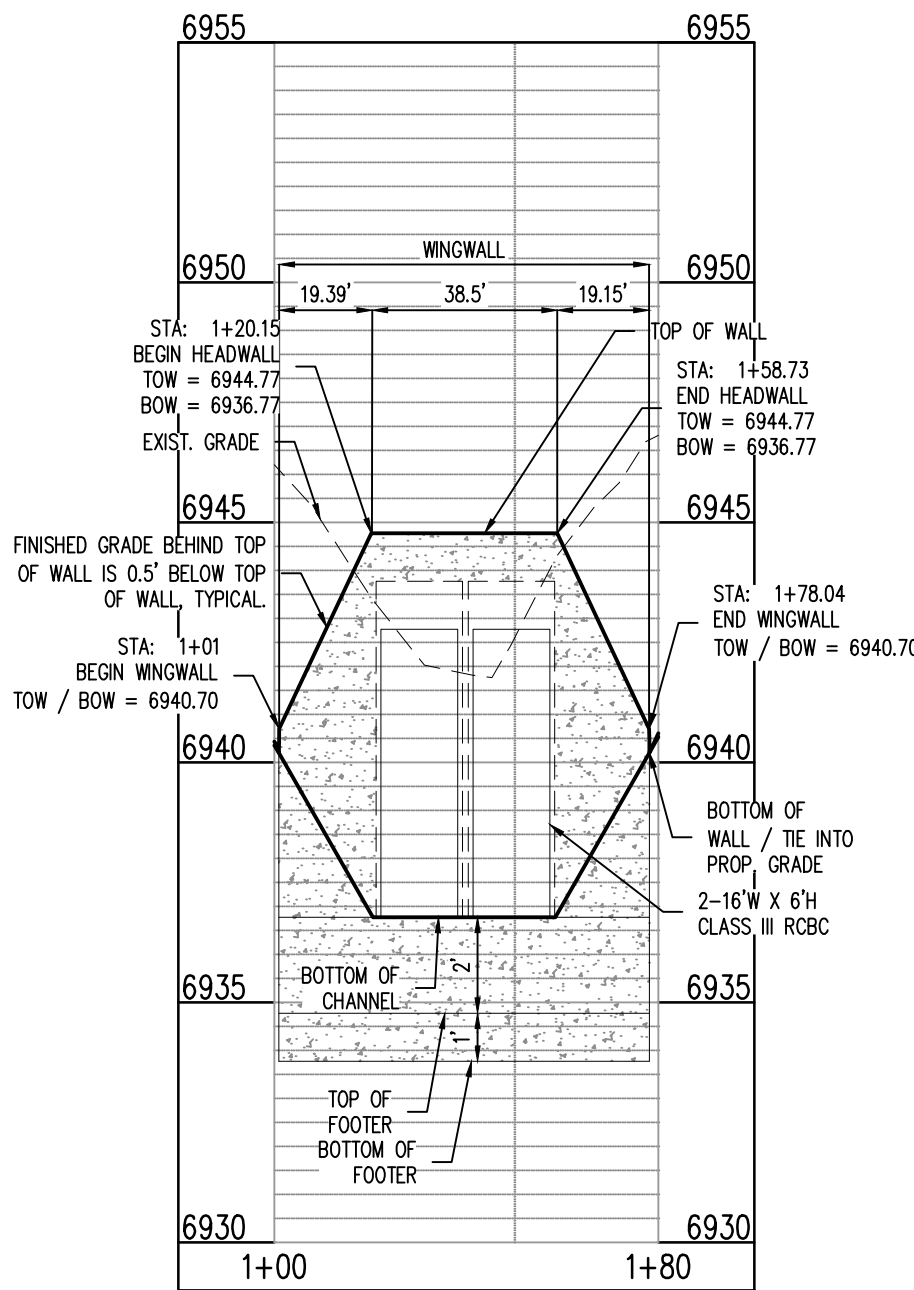
CULVERT & WINGWALL PLAN: STA. 1+00.00 - 6+75.00
SCALE: 1"=40'



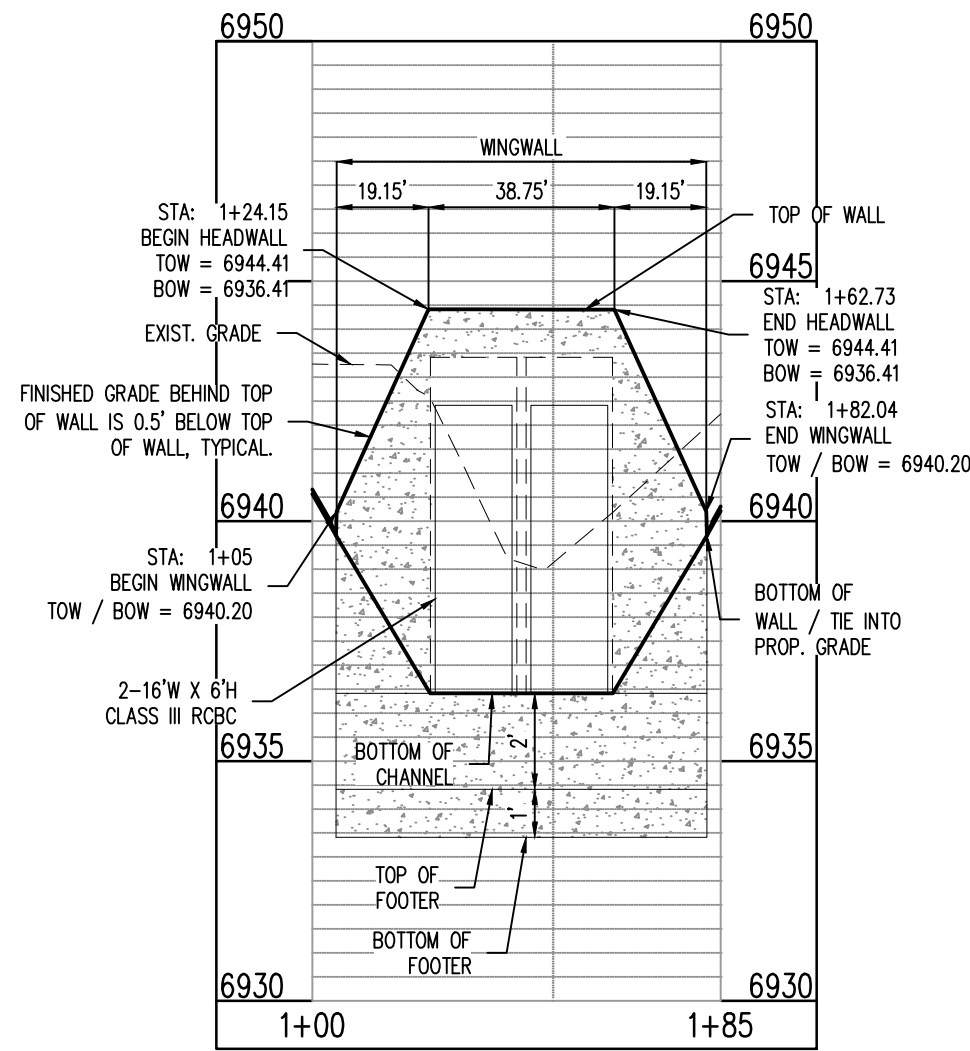
CULVERT CHANNEL TYPICAL SECTION
SCALE: 1"=10'



CULVERT & WINGWALL PROFILE: STA. 0+00.00 - 7+00.00
SCALE: H:1"=40', V:1"=4'



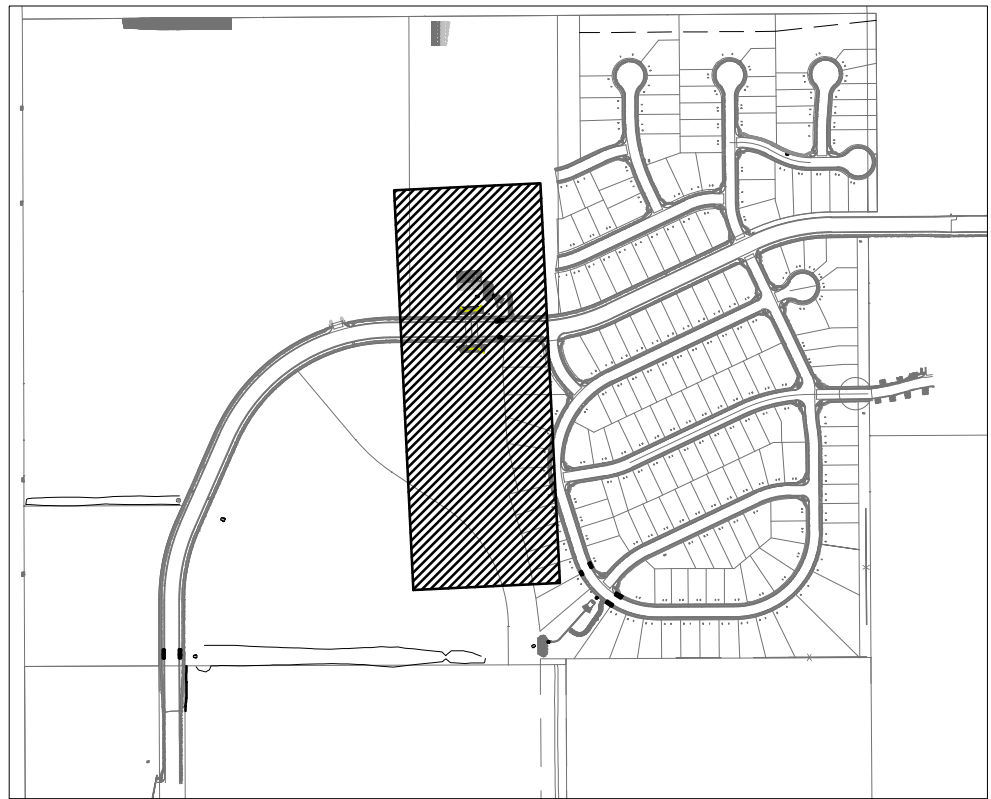
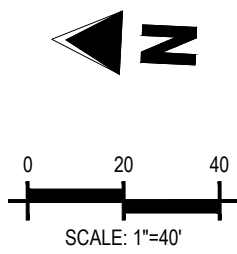
WINGWALL - 3: STA. 1+00.00 - 1+80.00
SCALE: H:1"=40', V:1"=4'



WINGWALL - 4: STA. 1+00.00 - 1+85.00
SCALE: H:1"=40', V:1"=4'

GRADING LEGEND

- 6930 EXISTING MINOR CONTOUR
- 6930 EXISTING MAJOR CONTOUR
- 6941 PROPOSED MINOR CONTOUR
- 6940 PROPOSED MAJOR CONTOUR
- PROPERTY BOUNDARY
- PROPOSED STORM SEWER



LOCATION MAP
SCALE: 1"=600'

Galloway

1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220
gallowayus.com

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

#	Date	Issue / Description	Init.
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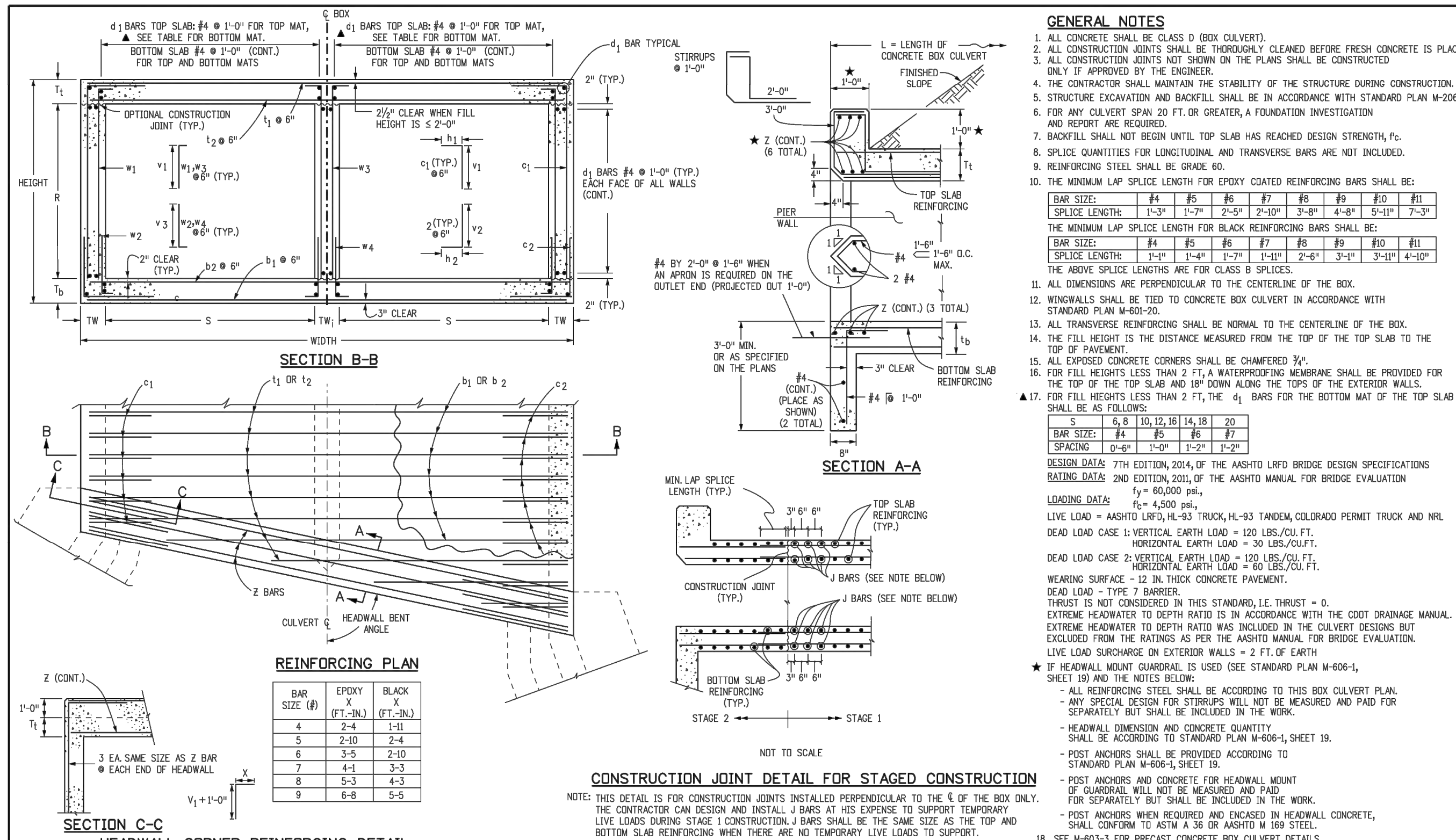
Project No: CLH000014.20
Drawn By: JDP
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Date: 11/4/2019

CULVERT & WINGWALL PLAN & PROFILE

C4.05

Sheet 31 of 43

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GENERAL NOTES

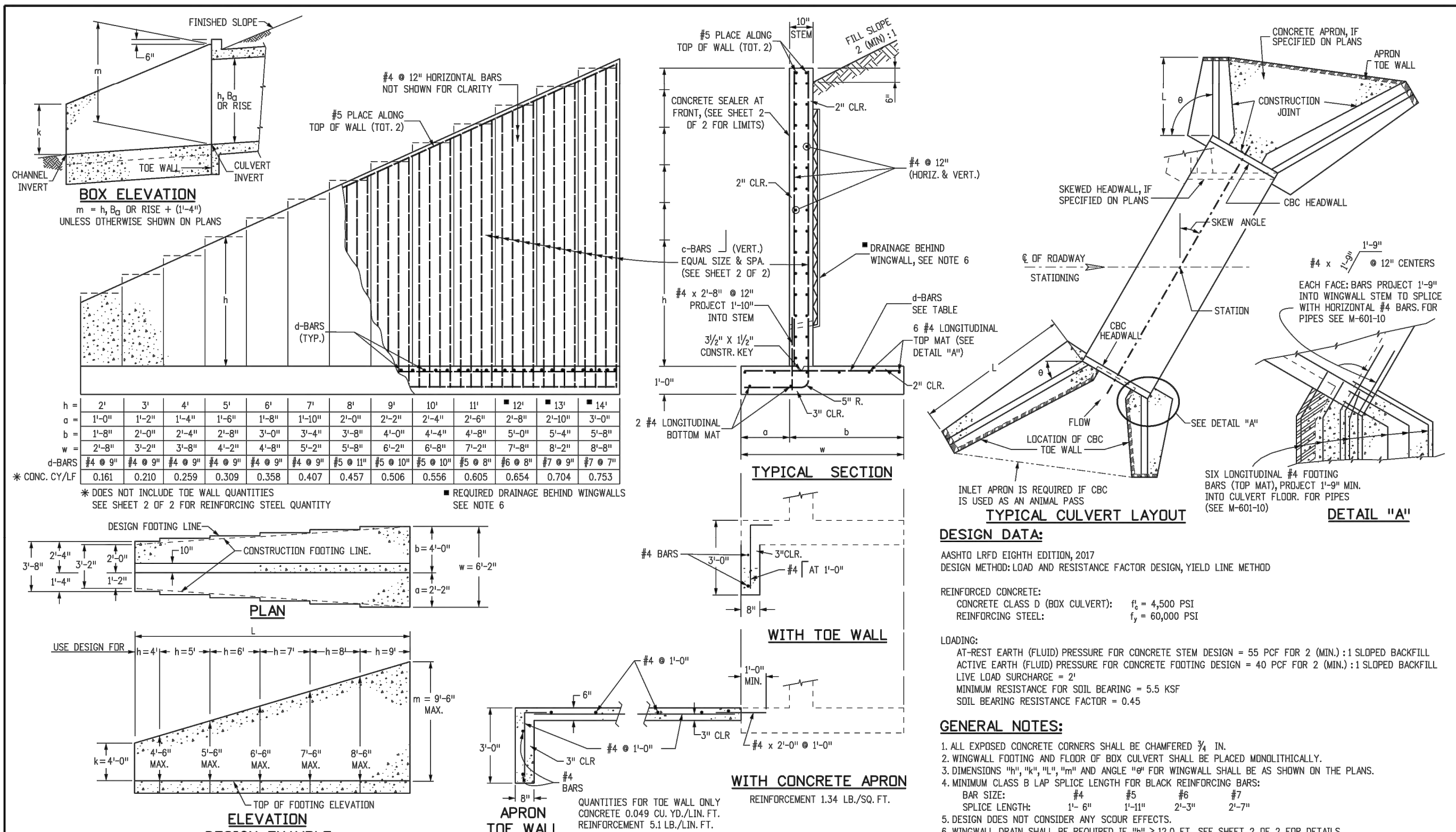
- ALL CONCRETE SHALL BE CLASS D (BOX CULVERT).
- ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED BEFORE FRESH CONCRETE IS PLACED. ONLY IF APPROVED BY THE ENGINEER.
- THE CONTRACTOR SHALL MAINTAIN THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION.
- STRUCTURE EXCAVATION AND BACKFILL SHALL BE IN ACCORDANCE WITH STANDARD PLAN M-206-L.
- FOR ANY CULVERT SPAN 20 FT. OR GREATER, A FOUNDATION INVESTIGATION AND REPORT ARE REQUIRED TO BE SUBMITTED.
- BACKFILL SHALL NOT BEGIN UNTIL TOP SLAB HAS REACHED DESIGN STRENGTH, f_c .
- SPLICE QUANTITIES FOR LONGITUDINAL AND TRANSVERSE BARS ARE NOT INCLUDED.
- REINFORCING STEEL SHALL BE GRADE 60.
- THE MINIMUM LAP SPICE LENGTH FOR EPOXY COATED REINFORCING BARS SHALL BE:

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH	1'-3"	1'-7"	2'-5"	2'-10"	3'-8"	4'-8"	5'-11"	7'-3"
- THE MINIMUM LAP SPICE LENGTH FOR BLACK REINFORCING BARS SHALL BE:

BAR SIZE	#4	#5	#6	#7	#8	#9	#10	#11
SPLICE LENGTH	1'-4"	1'-8"	2'-6"	3'-1"	3'-9"	4'-9"	6'-2"	7'-6"
- THE ABOVE SPLICE LENGTHS ARE FOR CLASS B SPLICES.
- ALL DIMENSIONS ARE PERPENDICULAR TO THE CENTERLINE OF THE BOX.
- ALL TRANSVERSE REINFORCING SHALL BE NORMAL TO THE CENTERLINE OF THE BOX.
- THE TELL HEIGHT IS THE DISTANCE MEASURED FROM THE TOP OF THE TOP SLAB TO THE TOP OF PAVEMENT.
- ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED $\frac{3}{4}$ ".
- FOR TELL HEIGHTS LESS THAN 2 FT., A WATERPROOFING MEMBRANE SHALL BE PROVIDED FOR THE TOP OF THE TOP SLAB AND 18" DOWN ALONG THE TOPS OF THE EXTERIOR WALLS.
- FOR TELL HEIGHTS LESS THAN 2 FT., THE ϕ_1 BARS FOR THE BOTTOM MAT OF THE TOP SLAB SHALL BE AS FOLLOWS:

S	6	8	10	12	14	16	20
SPACING	#4	#5	#6	#7	#8	#9	#10
	2'-4"	2'-0"	1'-10"	1'-8"	1'-6"	1'-4"	1'-2"
- DESIGN DATA: 7TH EDITION, 2014, OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS RATING DATA: 2ND EDITION, 2010, OF THE AASHTO MANUAL FOR BRIDGE EVALUATION
- LOADING DATA: $f_c = 6000$ PSI; $f_r = 4500$ PSI; LIVE LOAD = AASHTO LRFD, HL-93 TRUCK, HL-93 TRUCKS, COLORADO PERMIT TRUCK AND MRL; DEAD LOAD CASE 2: VERTICAL EARTH LOAD = 100 LBS./CU. FT.; HORIZONTAL EARTH LOAD = 40 LBS./CU. FT.; WEARING SURFACE = 12 IN. THICK CONCRETE PAVEMENT; DEAD LOAD - TYPE 7 BARBER; THRUST IS NOT CONSIDERED IN THIS STANDARD, I.E. THRUST = 0.
- EXTREME HEADWATER TO DEPTH RATIO IS IN ACCORDANCE WITH THE CULVERT DESIGN BUT EXCLUDED FROM THE RATINGS AS PER THE AASHTO MANUAL FOR BRIDGE EVALUATION.
- LIVE LOAD SURCHARGE ON EXTERIOR WALLS = 2 FT. OF EARTH
- * IF HEADWALL MOUNT GABRIEL IS USED (SEE STANDARD PLAN M-601-4, SHEET 1B) AND THE NOTES BELOW:
 - ALL REINFORCING STEEL SHALL BE ACCORDING TO THIS BOX CULVERT PLAN.
 - ANY SPECIAL DESIGN FOR STIRRUPS WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
 - HEADWALL DIMENSION AND CONCRETE QUANTITY SHALL BE ACCORDING TO STANDARD PLAN M-601-4, SHEET 1B.
 - POST ANDERS AND CONCRETE FOR EXTERIOR WALLS SHALL BE ACCORDING TO STANDARD PLAN M-601-4, SHEET 1B.
 - POST ANDERS AND CONCRETE FOR HEADWALL MOUNT GABRIEL WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.
 - POST ANDERS WHEN REQUIRED AND ENCASED IN HEADWALL CONCRETE, SHALL CONFORM TO ASTM A 36 OR AASHTO M 199 STEEL.
 - SEE M-601-3 FOR PRECAST CONCRETE BOX CULVERT DETAILS.

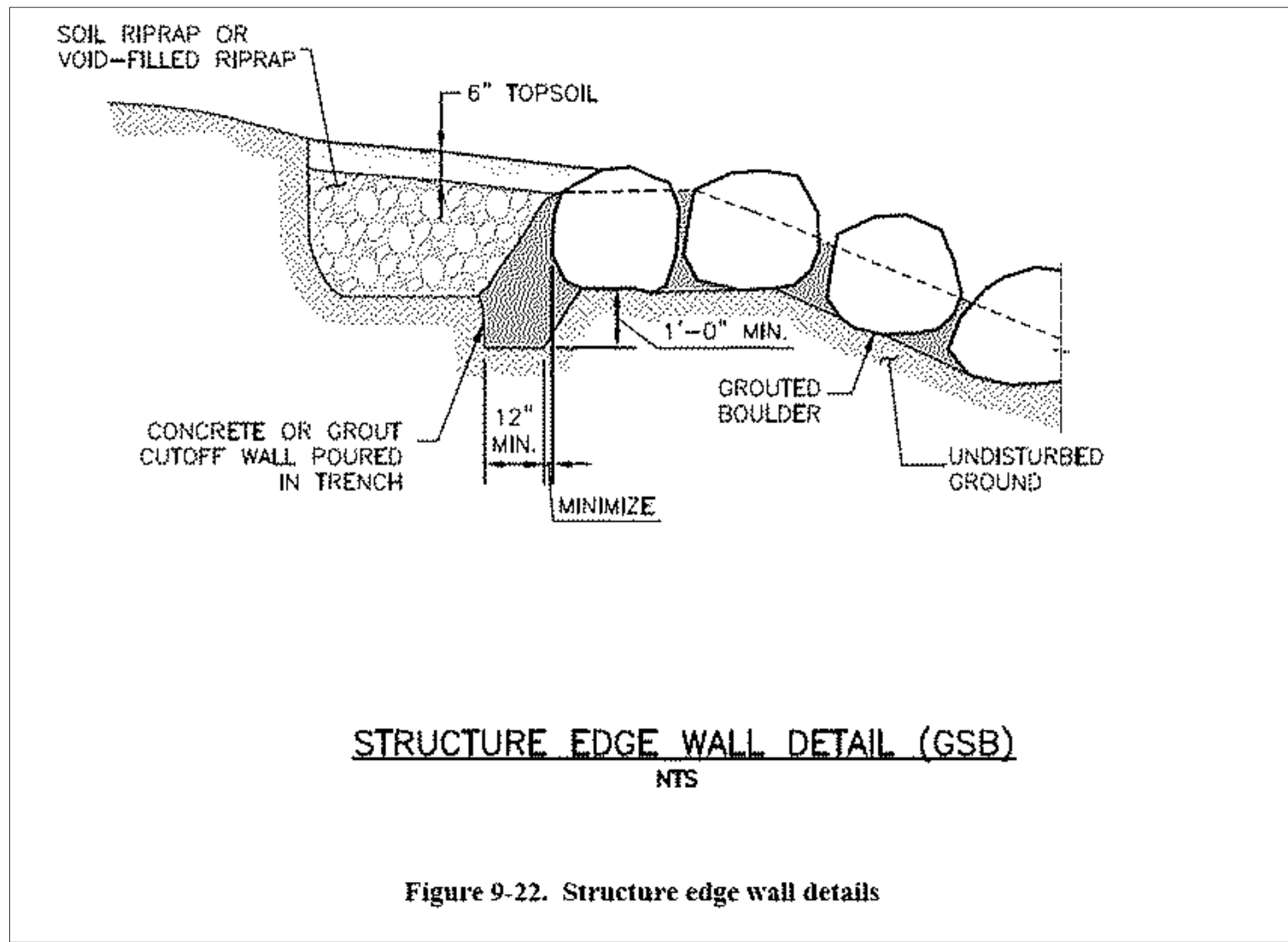
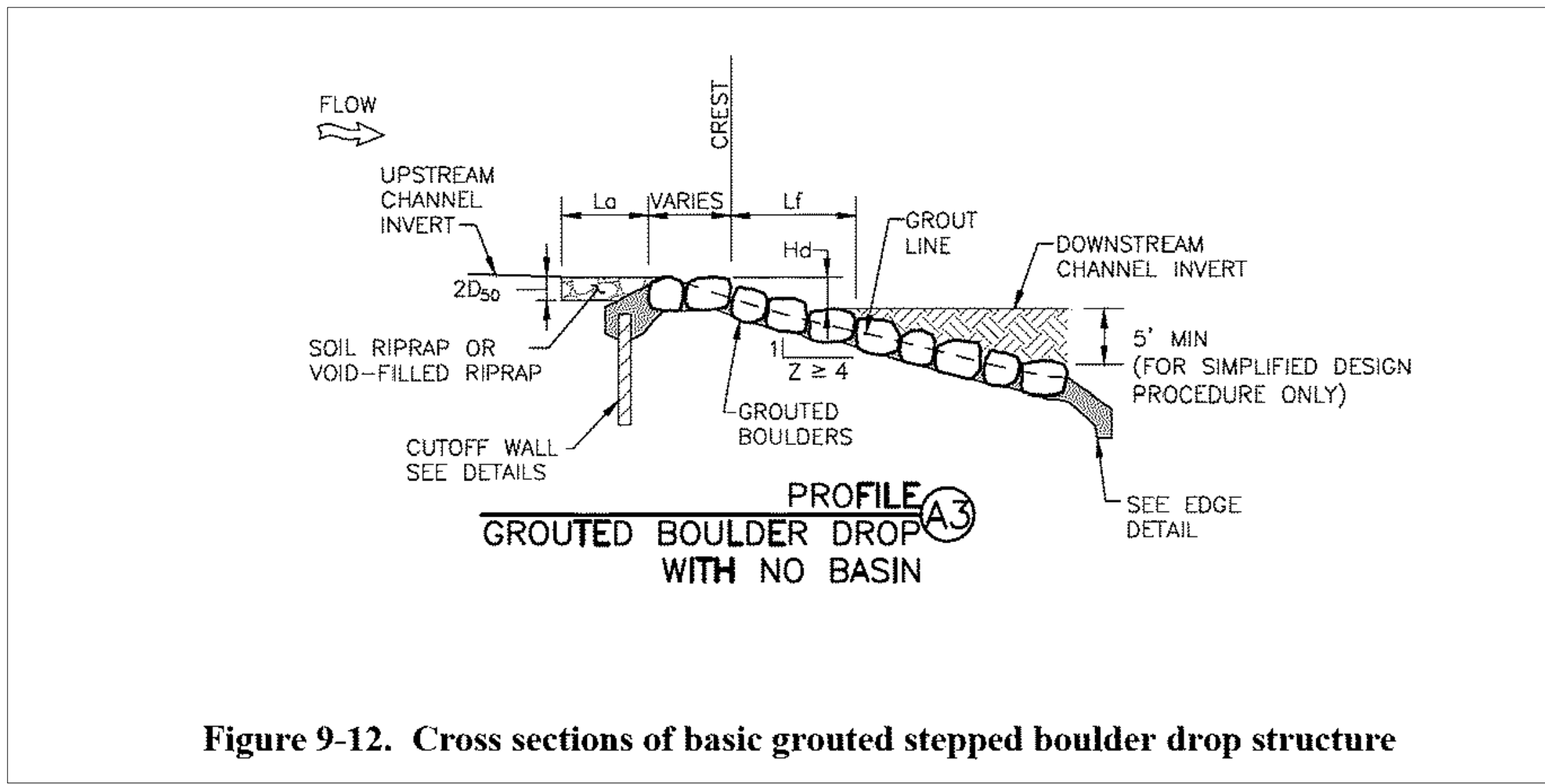
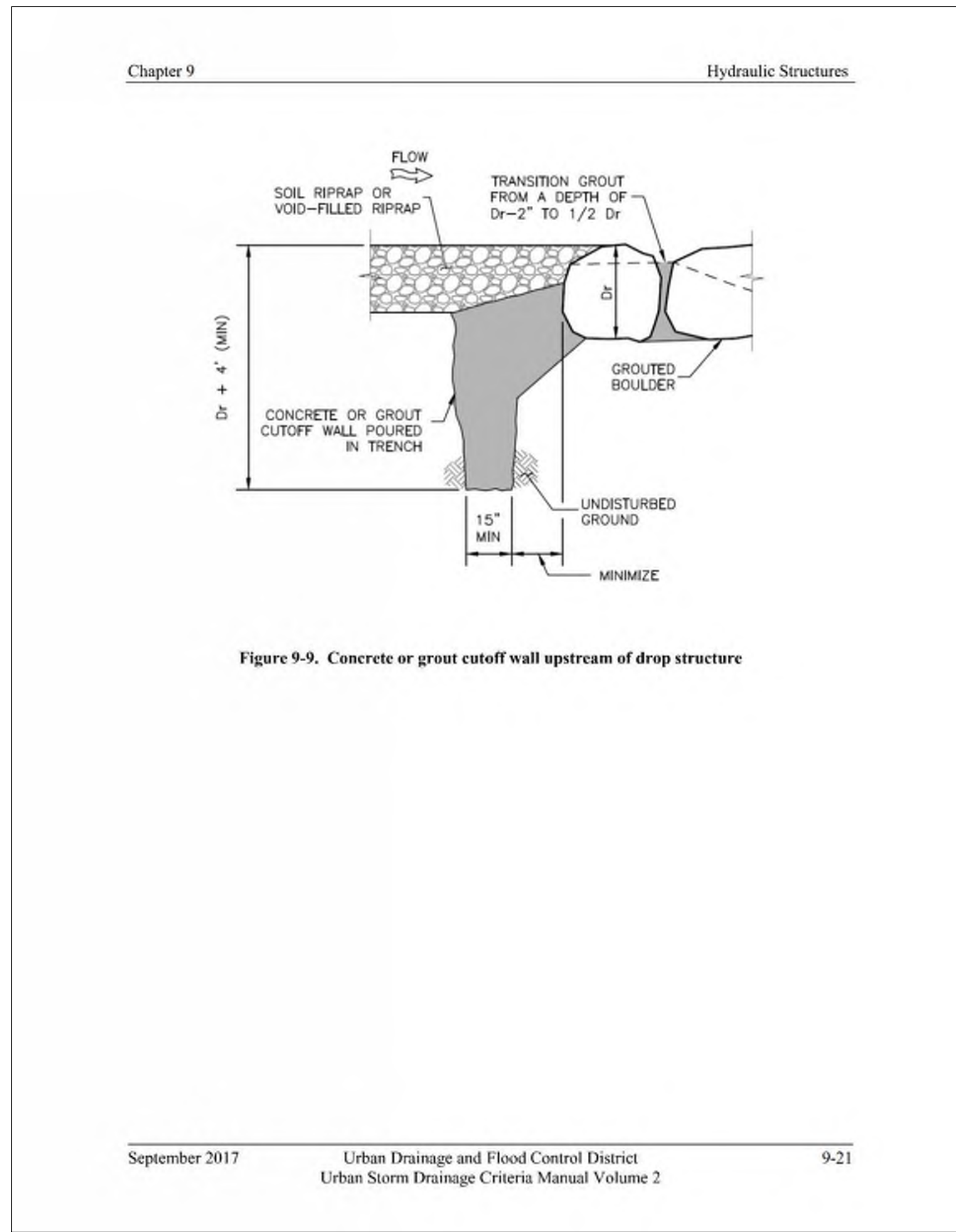
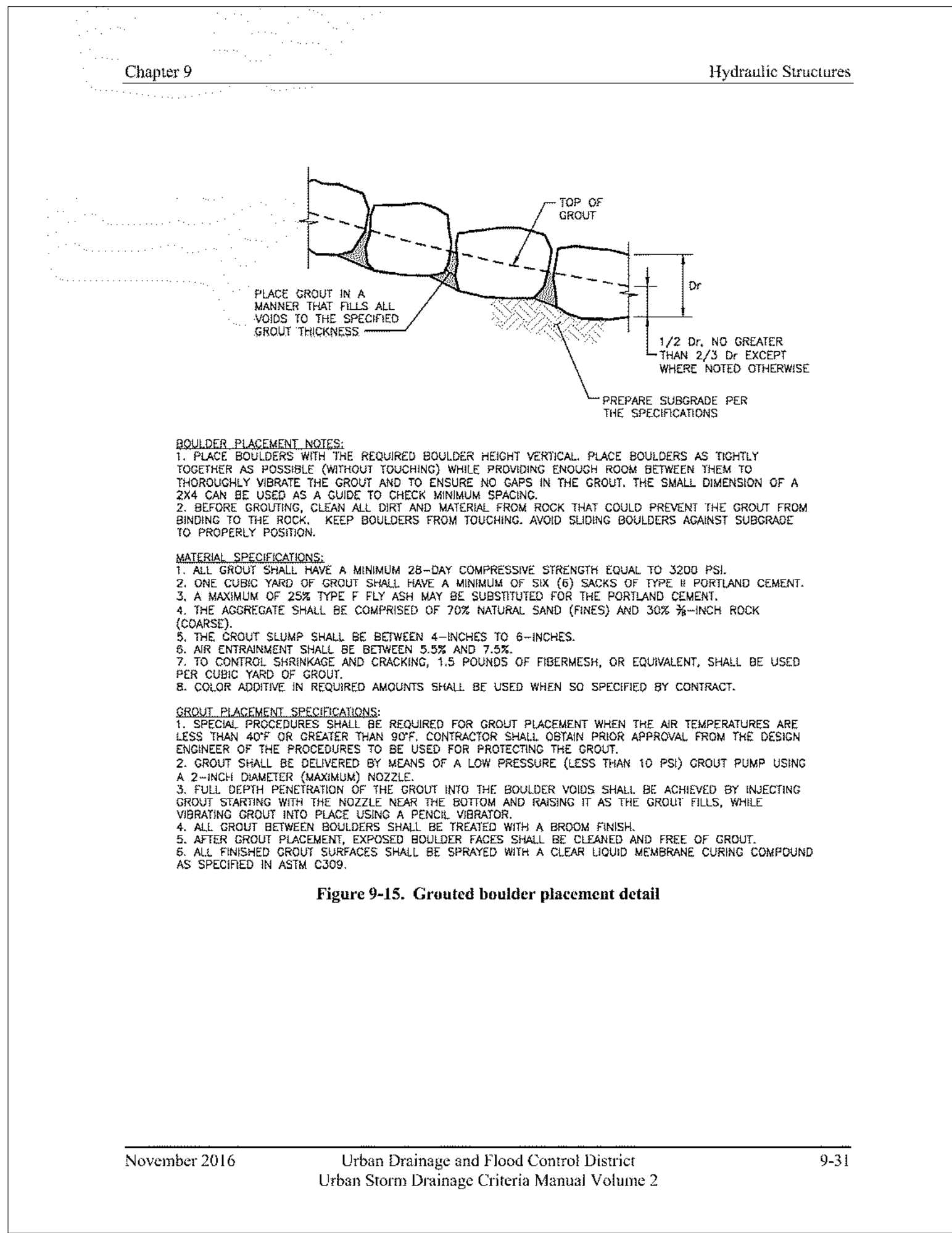
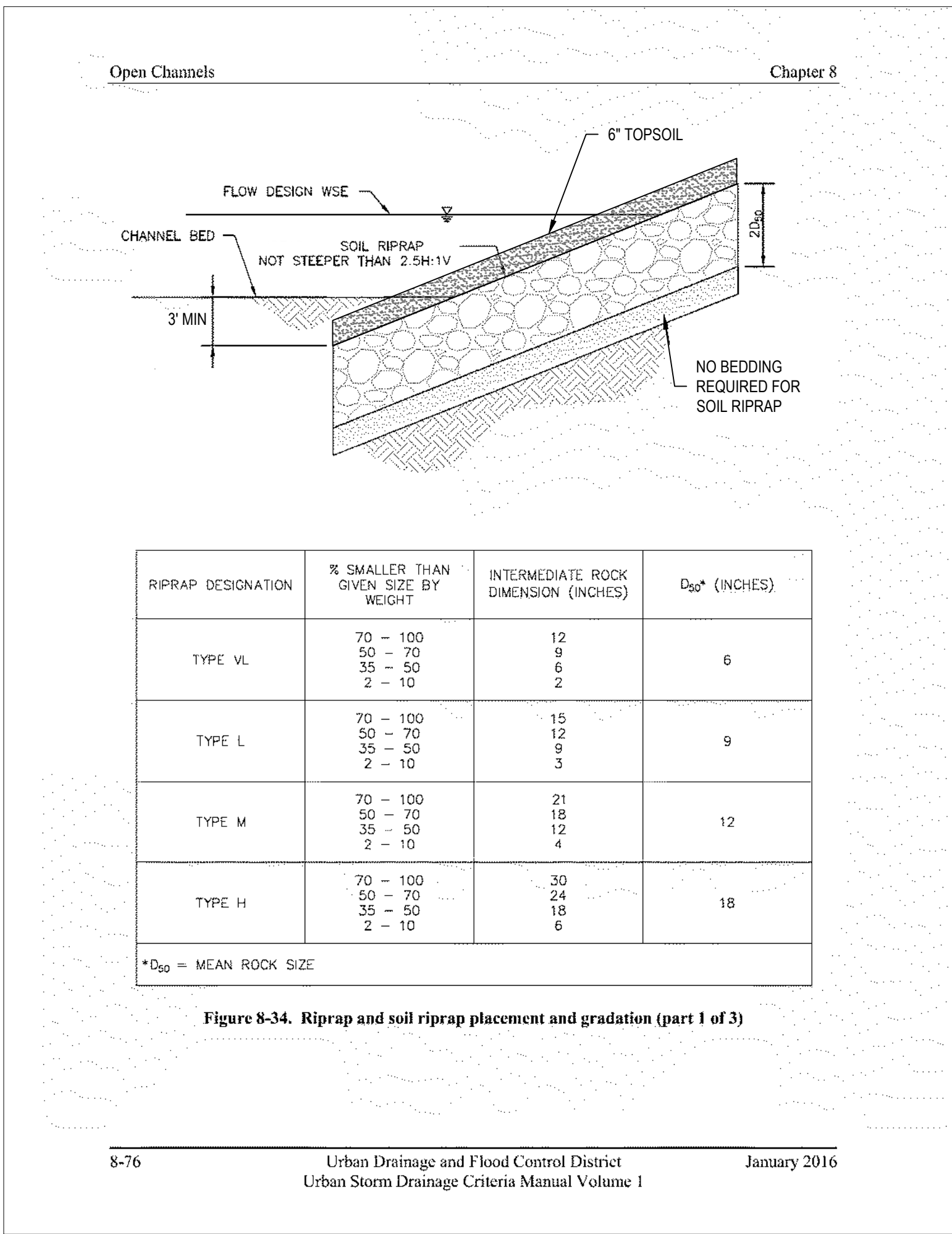
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Creation Date:	07/04/12	Initials:	DDG	Date:	08/27/13	Comments:		2829 West Howard Place											
Last Modification Date:	04/05/19	Initials:	JDG		08/01/13	LRFD Design		CDOT HQ, 3rd Floor											
Full Path:	www.cdott.gov/business/designsupport				04/05/19	Analysis Program Updates		Denver, CO 80204											
Drawing File Name:	6010200202.dgn							Phone: 303-757-9021											
CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English			FAX: 303-757-9868											
Division of Project Support				DDG/Bridge				Division of Project Support				M-601-2				Sheet No. 1 of 2			



Computer File Information				Sheet Revisions				Colorado Department of Transportation				WINGWALLS FOR PIPE OR BOX CULVERTS				STANDARD PLAN NO.			
Creation Date:	07/04/12	Initials:	HHB	Date:	08/27/13	Comments:		2829 West Howard Place											
Last Modification Date:	09/04/18	Initials:			09/04/18	LRFD Design		CDOT HQ, 3rd Floor											
Full Path:	www.cdott.gov/business/designsupport							Denver, CO 80204											
Drawing File Name:	6010200202.dgn							Phone: 303-757-9021											
CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English			FAX: 303-757-9868											
Division of Project Support				HHB				Division of Project Support				M-601-20				Sheet No. 1 of 2			

DOUBLE CONCRETE BOX CULVERT DIMENSIONS, QUANTITIES & RATING FACTORS (EXCLUDING HEADWALL & TOEWALL QUANTITIES)

BOX SIZE		FILL THICKNESS		SLAB & WALL THICKNESS (INCHES)		DIMENSIONS		QUANTITIES		RATING FACTORS	
S	R	FT	IN	FT	IN	T	W	T	W	CONCRETE	REBAR
FT	IN	FT	IN	FT	IN	T	W	T	W	CU YD	LB/FT
1	2	3	4	5	6	7	8	9	10	11	12
6	12	14	16	18	20	22	24	26	28	2.94	1.84
8	16	18	20	22	24	26	28	30	32	3.94	2.34
10	20	22	24	26	28	30	32	34	36	4.94	3.34
12	24	26	28	30	32	34	36	38	40	5.94	4.34
14	28	30	32	34	36	38	40	42	44	6.94	5.34
16	32	34	36	38	40	42	44	46	48	7.94	6.34
18	36	38	40	42	44	46	48	50	52	8.94	7.34
20	40	42	44	46	48	50	52	54	56	9.94	8.34
22	44	46	48	50	52	54	56	58	60	10.94	9.34
24	48	50	52	54	56	58	60	62	64	11.94	10.34
26	52	54	56	58	60	62	64	66	68	12.94	11.34
28	56	58	60	62	64	66	68	70	72	13.94	12.34
30	60	62	64	66	68	70	72	74	76	14.94	13.34
32	64	66	68	70	72	74	76	78	80	15.94	14.34
34	68	70	72	74	76	78	80	82	84	16.94	15.34
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236	472	474	476	478	480	482	484	486	488	117.94	116.34
238	476	478	480	48							





CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

BOX CULVERT DETAILS

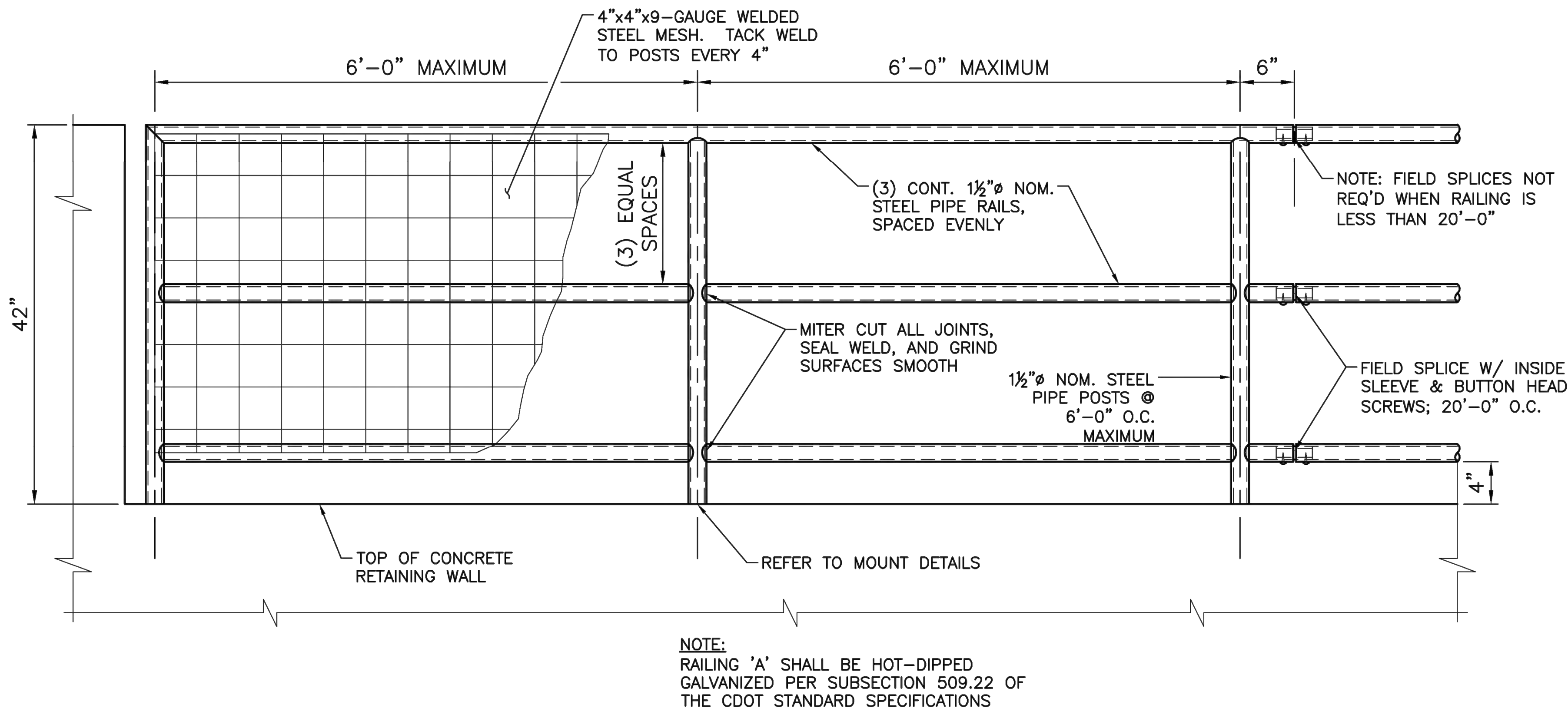
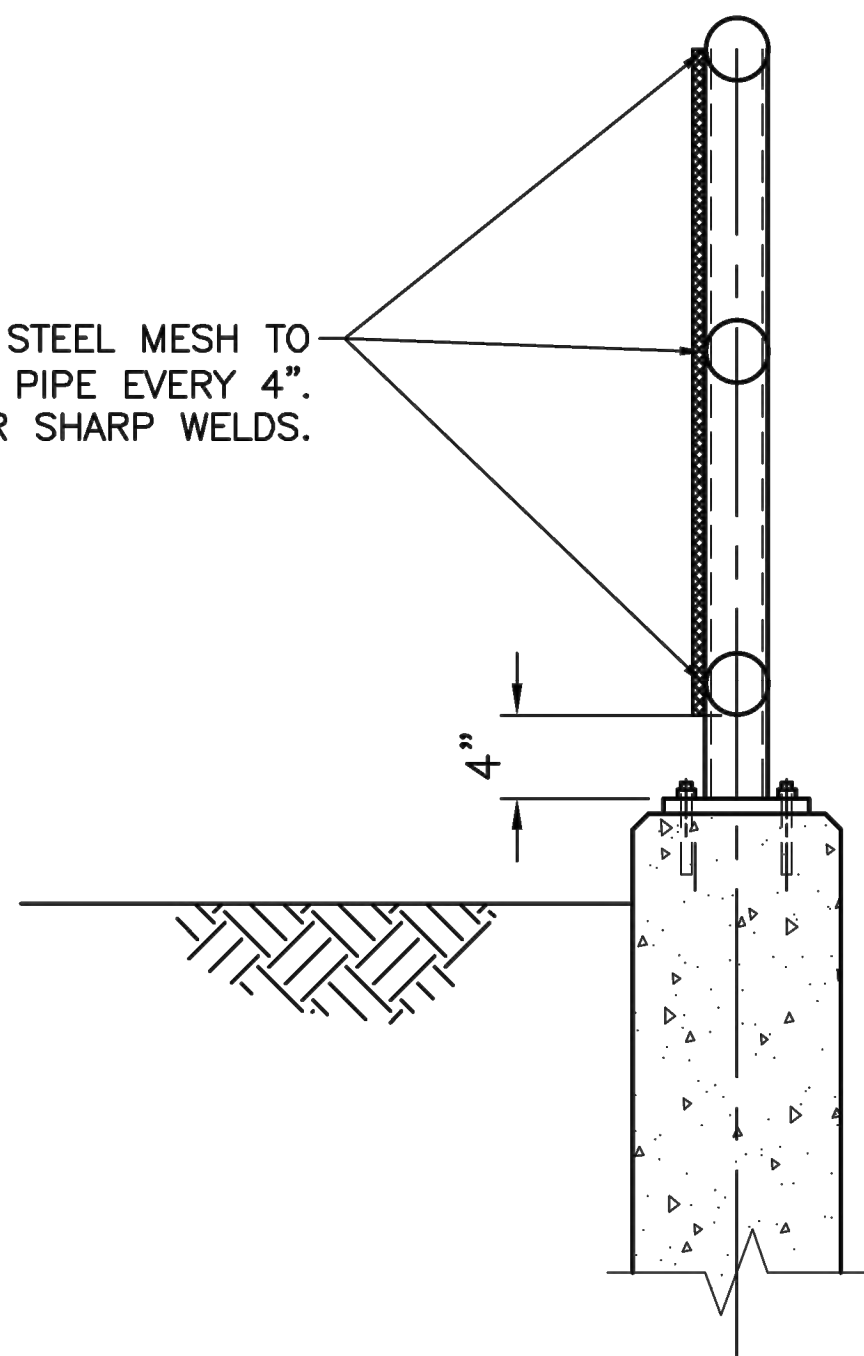
C4.08

Sheet 34 of 43

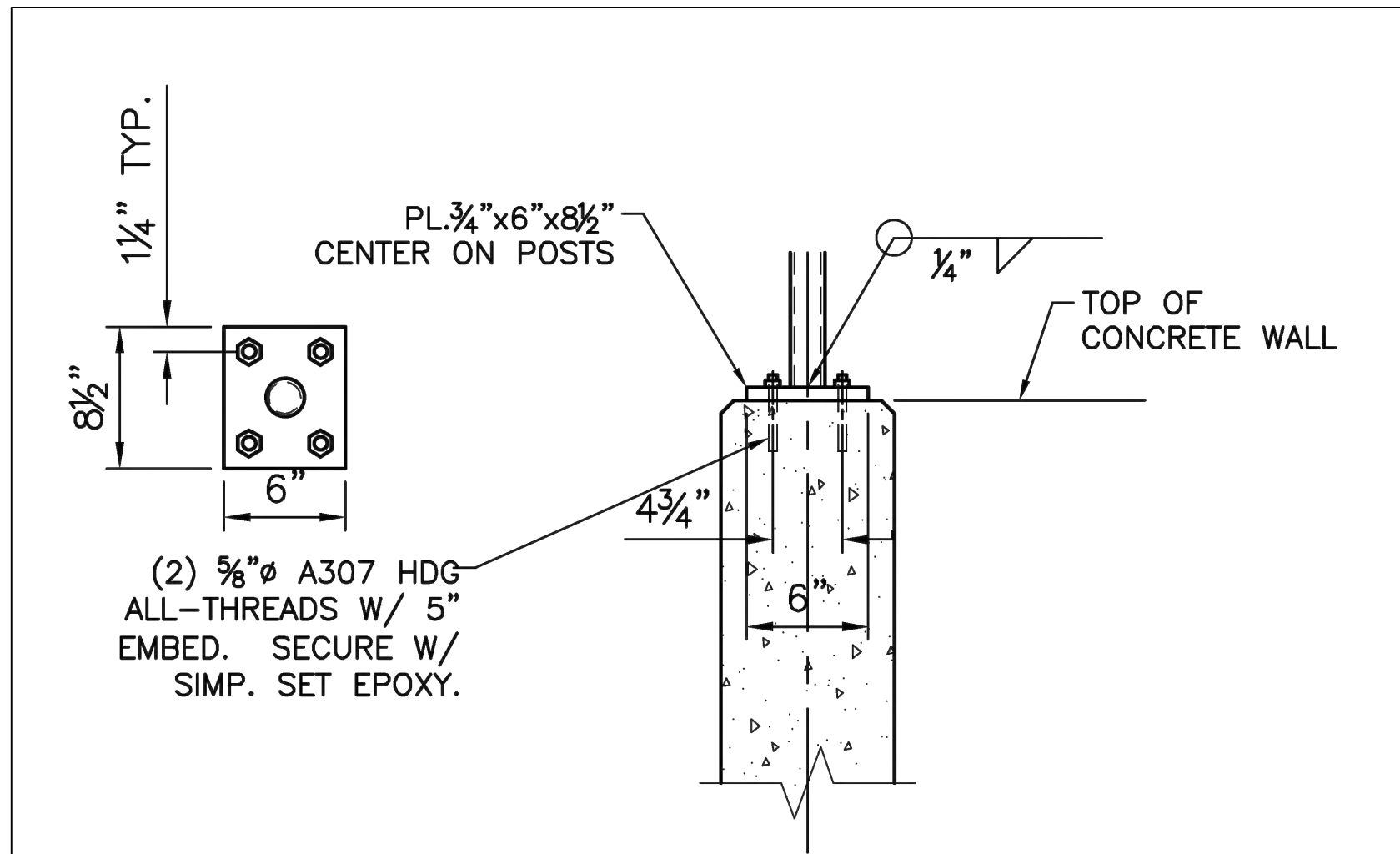
NOTES

1. ALL WORK SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE CDOT STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.
2. STEEL PIPE TO BE ASTM A53 GRADE B; WITH $F_y = 35$ KSI.
3. STEEL PLATES, CHANNELS & ANGLES TO BE ASTM A36; WITH $F_y = 36$ KSI.
4. ALL WELDING TO CONFORM TO CURRENT AWS D1.1 REQUIREMENTS.
5. COMPLETE ASSEMBLY OR SUB-ASSEMBLIES, BRACKETS, RAILING AND MISCELLANEOUS STEEL PIECES SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION.
6. STRUCTURAL BOLTS, NUTS & WASHERS SHALL BE HOT-DIP GALVANIZED.
7. EXPANSION ANCHORS TO BE HILTI KWI-K-BOLT II OR APPROVED EQUAL. INSTALL EXPANSION ANCHORS PER MANUFACTURER'S WRITTEN INSTRUCTIONS.
8. EXPANSION ANCHOR BOLTS, NUTS & WASHERS SHALL BE STAINLESS STEEL.
9. REFER TO OTHER DETAILS FOR CONCRETE REINFORCING REQUIREMENTS.
10. COORDINATE REBAR PLACEMENT IN CONCRETE TO MISS ANCHOR BOLTS & INSERTS.
11. GALVANIZED AREAS THAT ARE DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH A APPROVED COLD-GALVANIZING COMPOUND.
12. EPOXY SET ANCHORS SHALL UTILIZE HILTI HIT HY 150 CONSTRUCTION ADHESIVE AND HAS GALVANIZED OR STAINLESS STEEL THREADED RODS.
13. FIELD SPLICES SHALL BE MADE UTILIZING GALVANIZED STEEL PIPE SLEEVE INSERTS AND HOT-DIP GALVANIZED STEEL BOLTS, NUTS, AND WASHERS.
14. CROSS REFERENCE ASSOCIATED STANDARD DETAILS AS NECESSARY FOR STEEL FABRICATIONS.

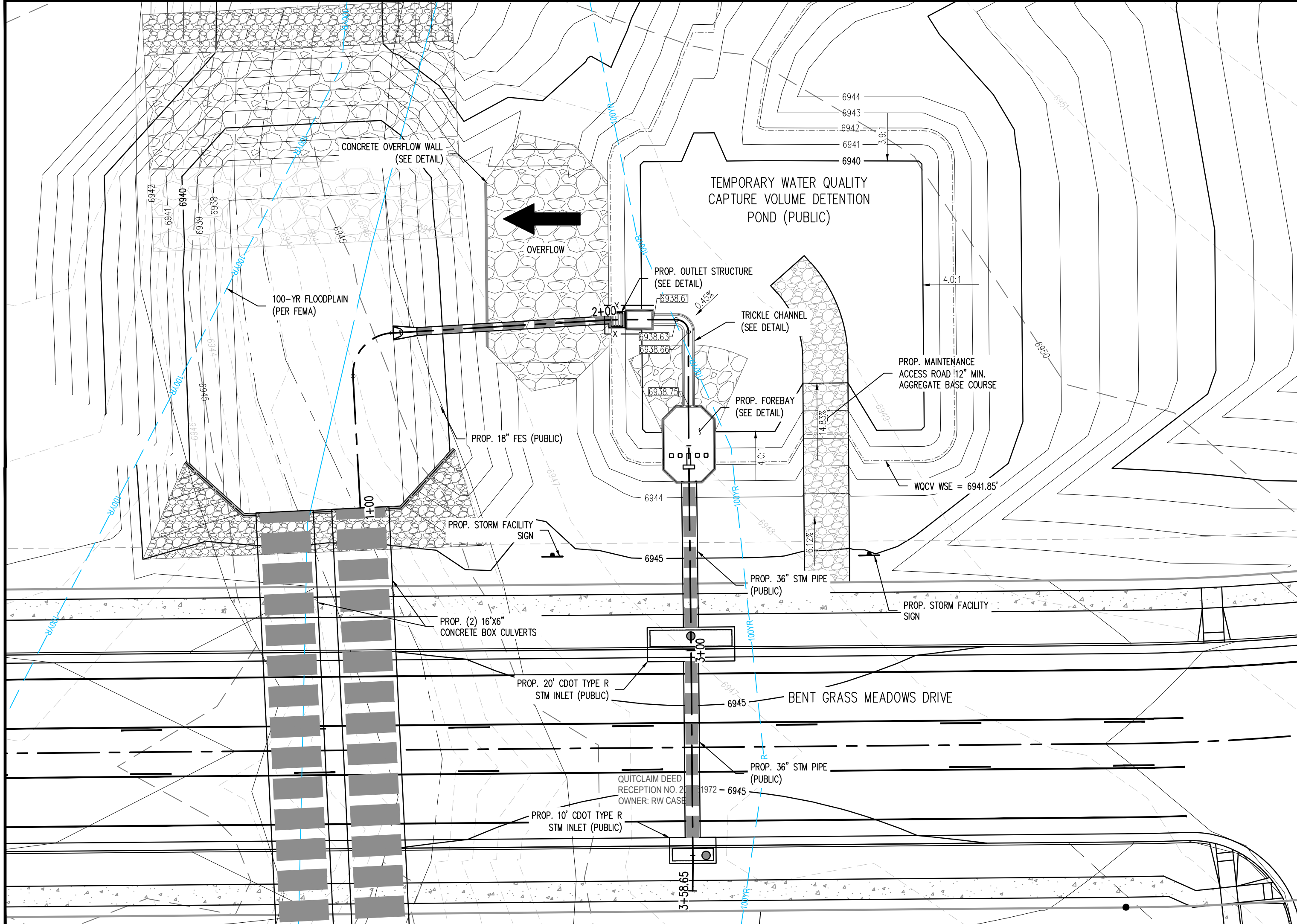
TACK WELD STEEL MESH TO
CENTER OF PIPE EVERY 4".
GRIND ROUGH OR SHARP WELDS.



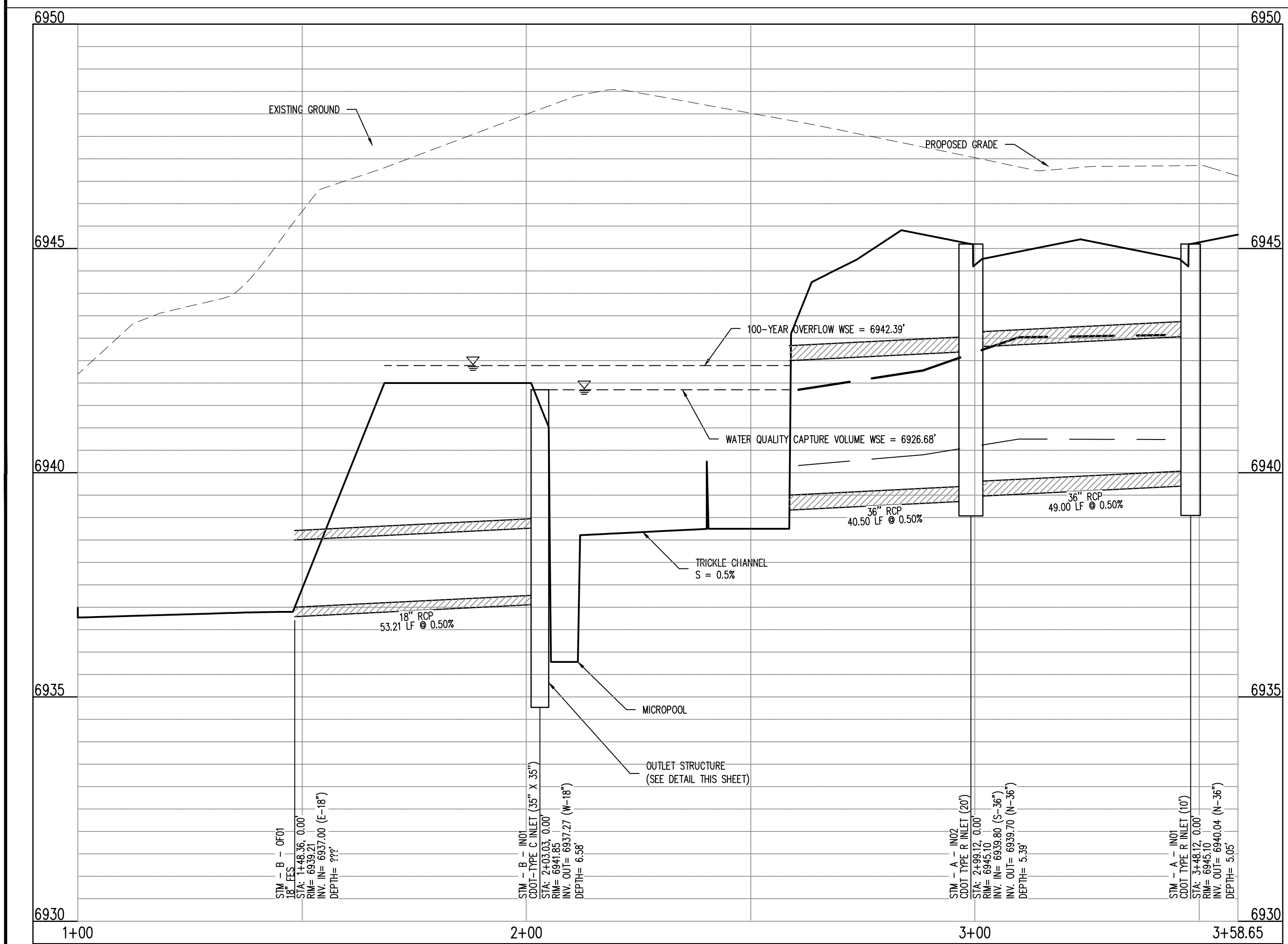
PIPE RAILING DETAIL
SCALE: NOT TO SCALE



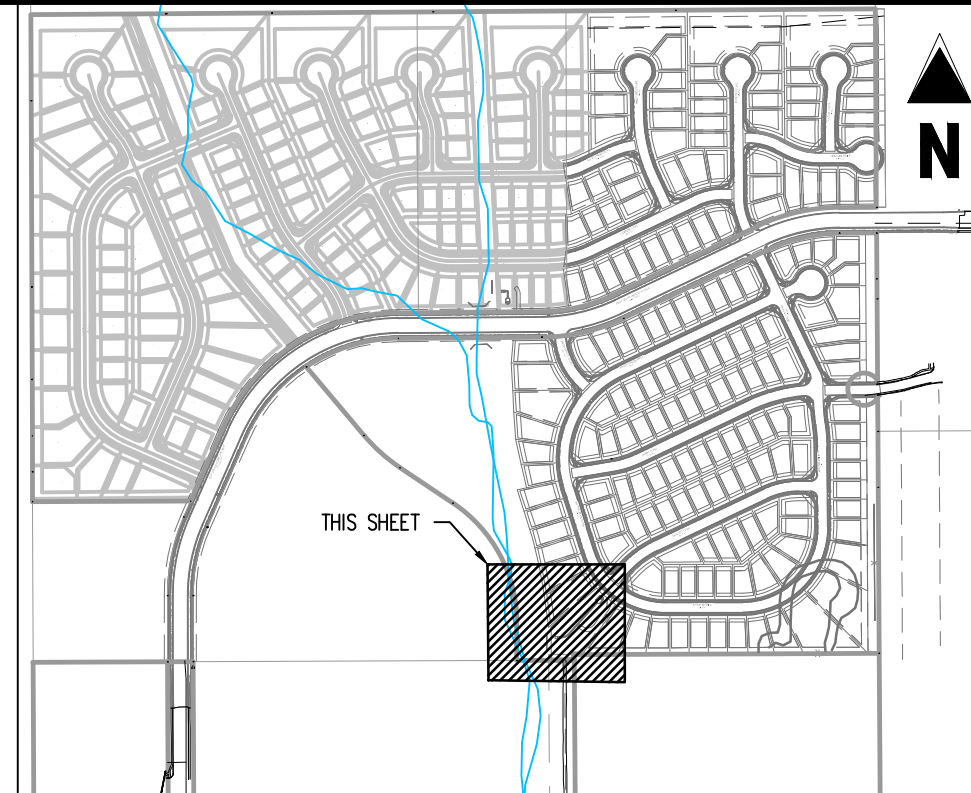
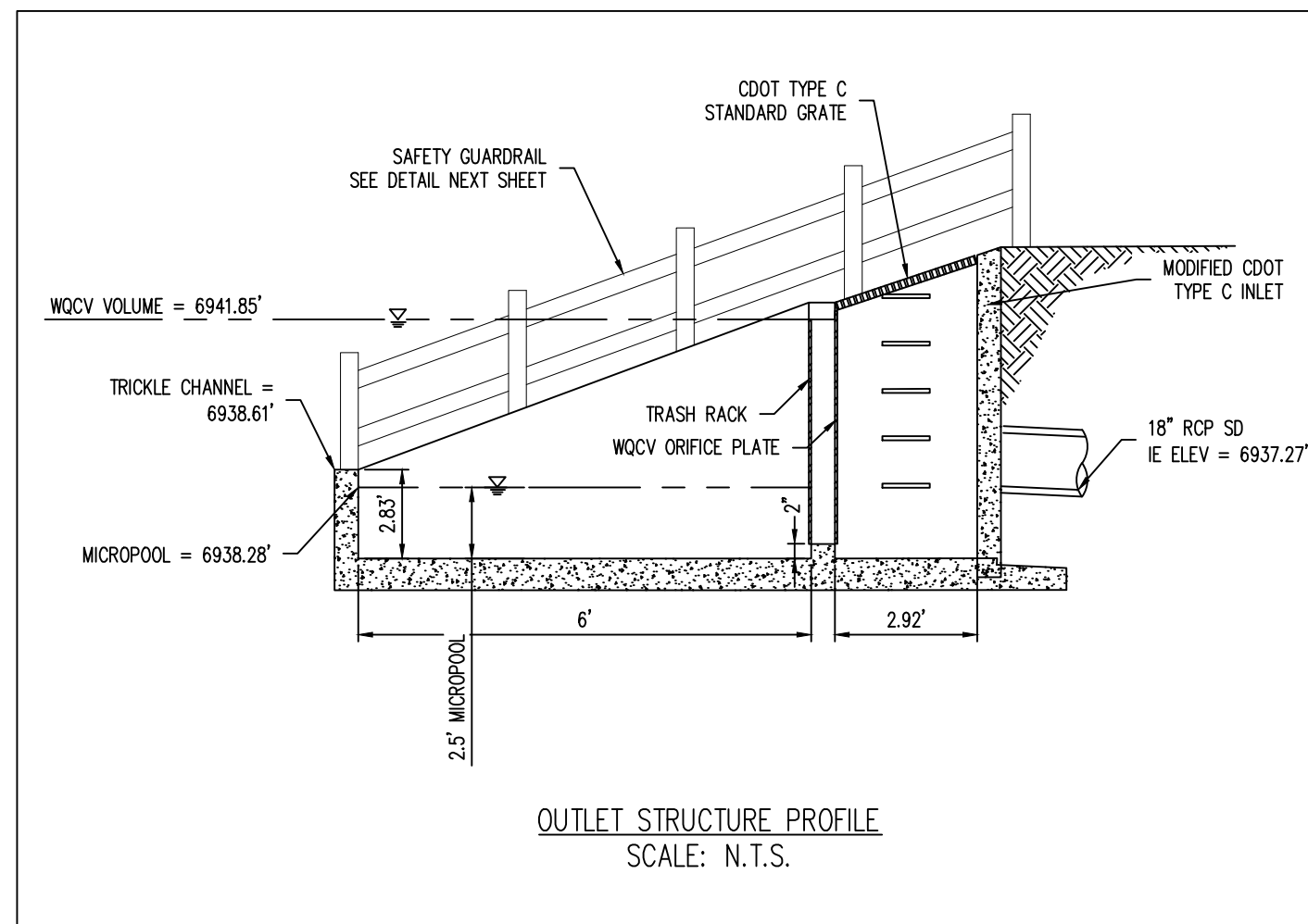
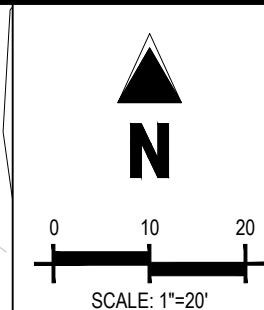
PIPE RAIL MOUNT DETAIL
SCALE: NOT TO SCALE



POND (NORTH) PLAN VIEW
SCALE: 1"=20'



POND (NORTH) PROFILE
SCALE: H: 1"=20' V: 1"=2'



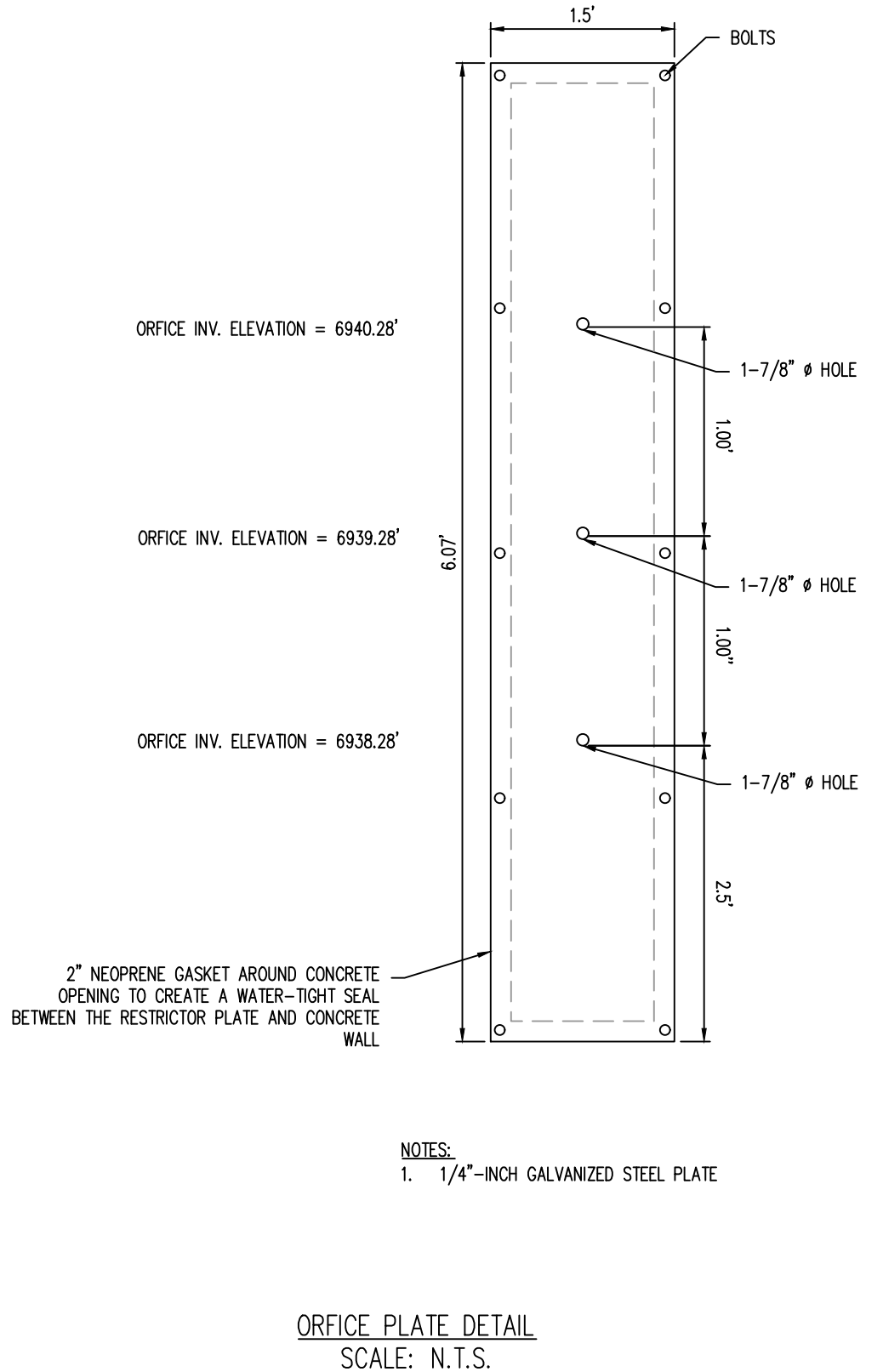
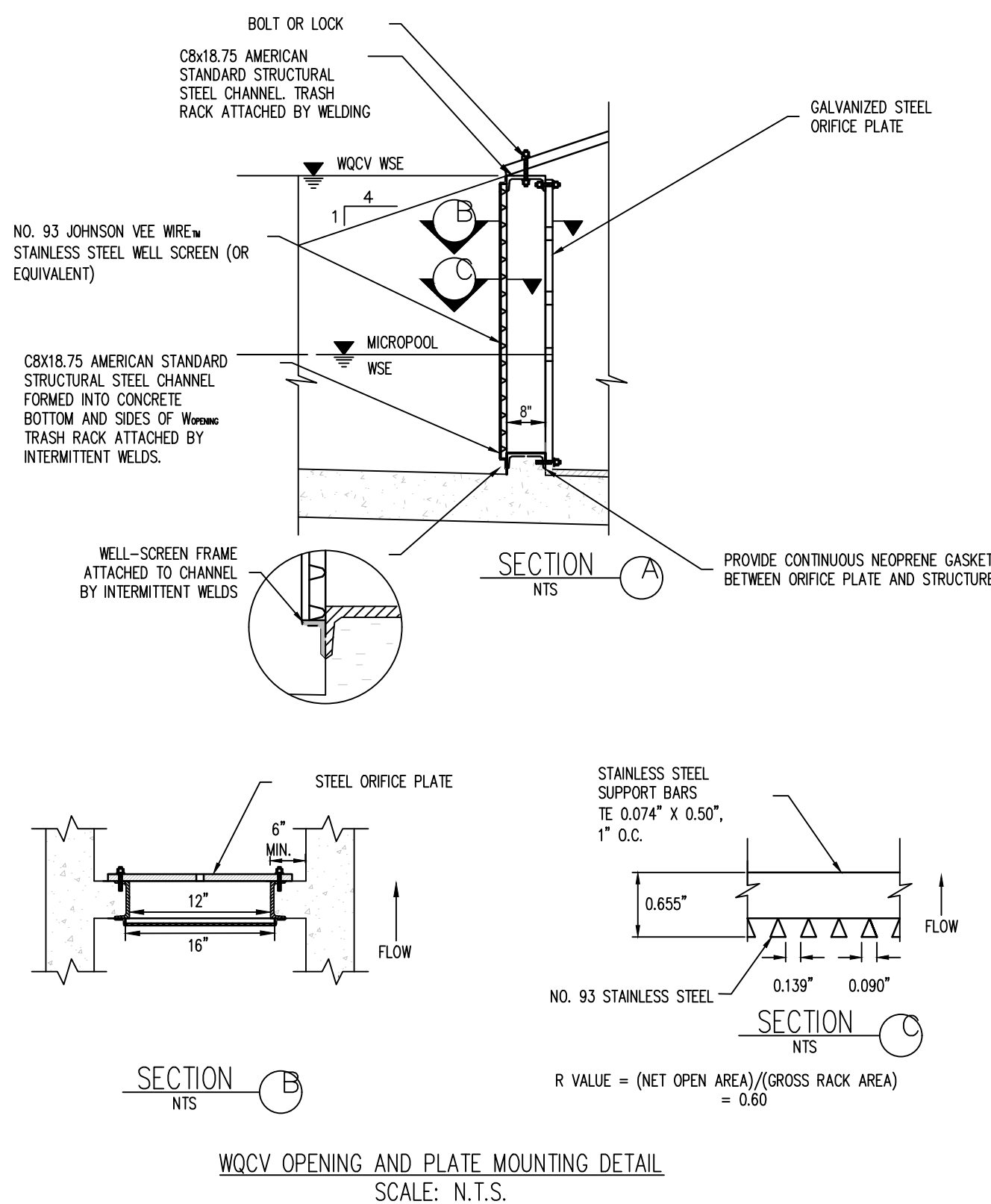
KEY MAP
SCALE: 1" = 600'

- LEGEND**
- PROPERTY LINE
 - PROPOSED EASEMENT
 - EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - PROPOSED MAJOR CONTOUR
 - PROPOSED MINOR CONTOUR
 - EXISTING STORM SEWER
 - PROPOSED STORM SEWER
 - EXISTING STORM MANHOLE
 - PROPOSED STORM MANHOLE
 - PROPOSED FLARED END SECTION (FES)
 - PROPOSED STORM INLET
 - TOP OF WALL
 - BOTTOM OF WALL
 - FINISHED GRADE ELEVATION
 - FLOW GRADE OR SLOPE

- NOTES**
- ADD 6900 TO ALL SPOT ELEVATIONS.
 - ALL STORM PIPE SHALL BE RCP OR HDPE IN ACCORDANCE WITH COUNTY STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED.

WARNING
THIS AREA IS A STORMWATER FACILITY
AND IS SUBJECT TO PERIODIC FLOODING

- DETENTION POND SIGNAGE**
- NOTES:**
- TWO SIGNS WITH THE ABOVE MESSAGE, EACH WITH A MINIMUM AREA OF 3 SQUARE FEET SHALL BE PROVIDED AROUND THE PERIMETER OF THE DETENTION POND, AS SHOWN ON THESE PLANS.
 - SIGNS SHALL BE DURABLE MATERIALS, SUCH AS METAL OR PLASTIC, USING RED LETTERING ON A WHITE BACKGROUND.

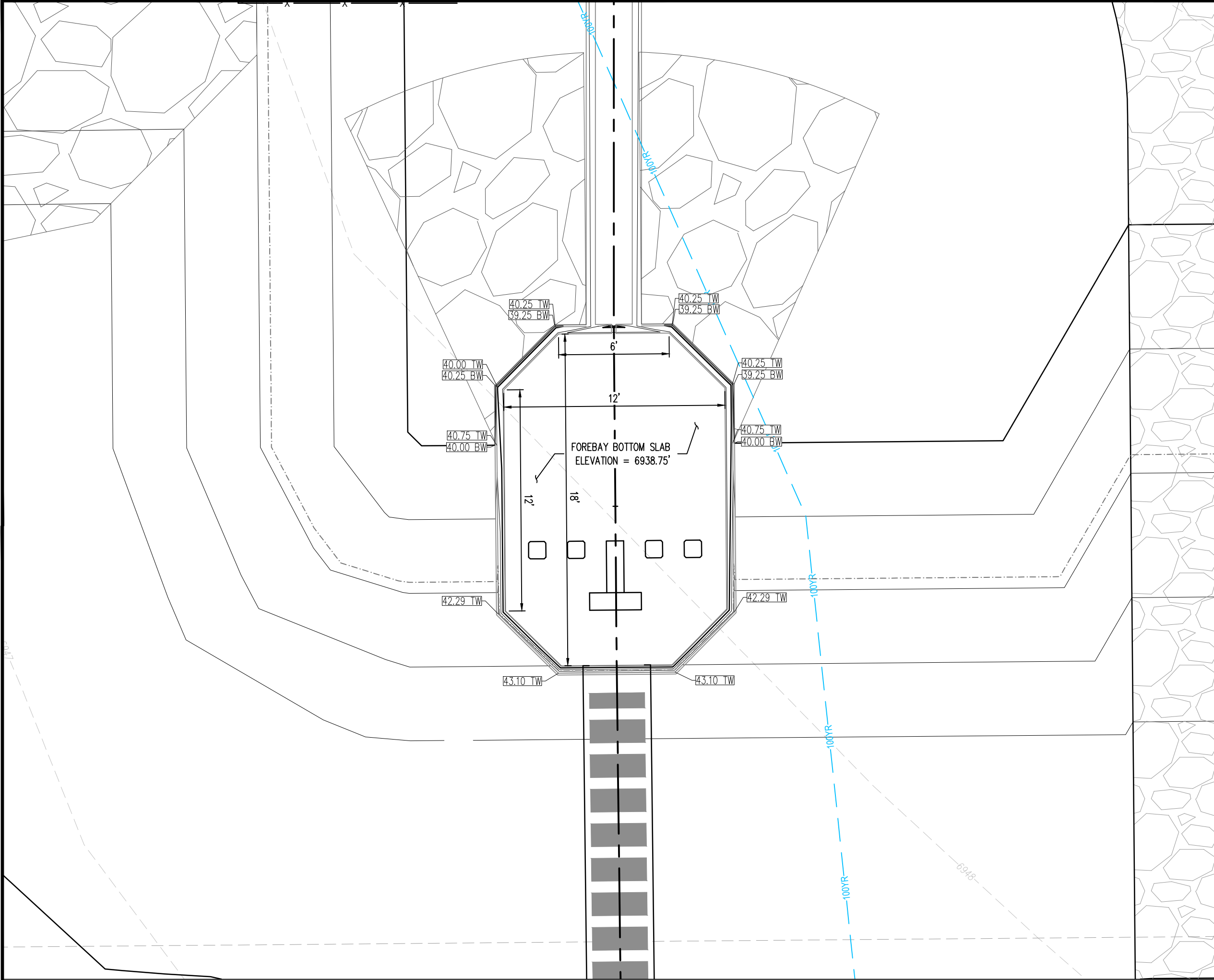


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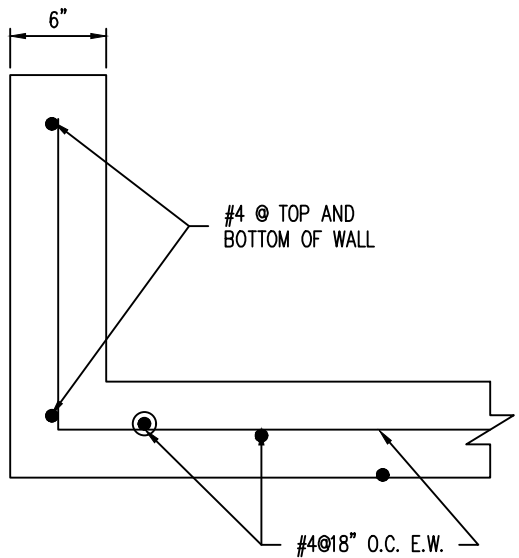


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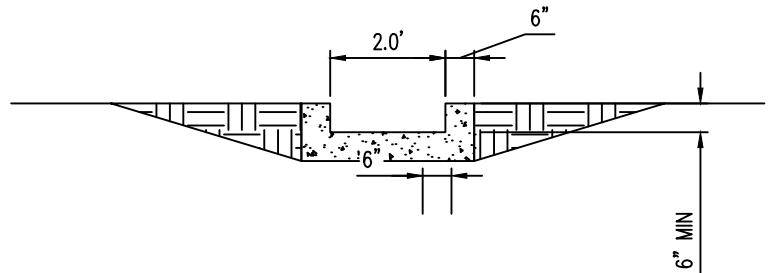
POND PLAN (NORTH)



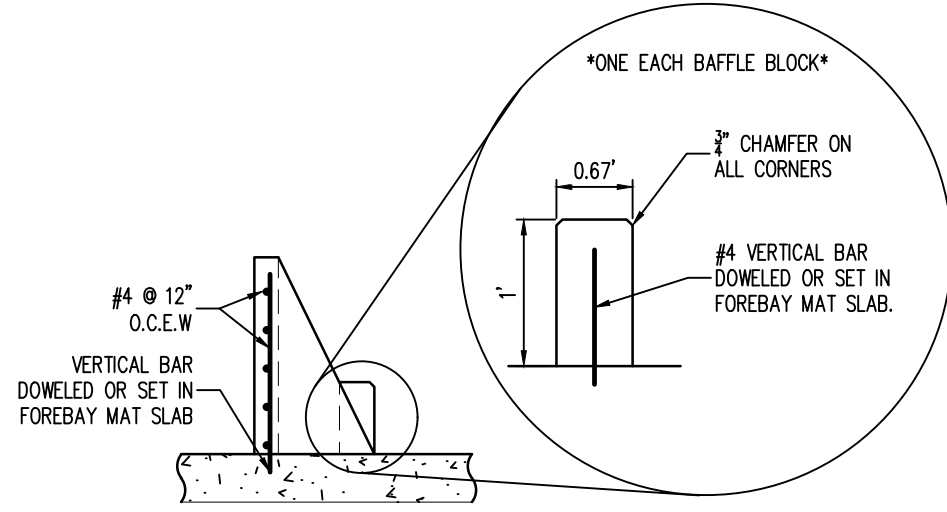
FOREBAY DETAIL
SCALE: N.T.S.



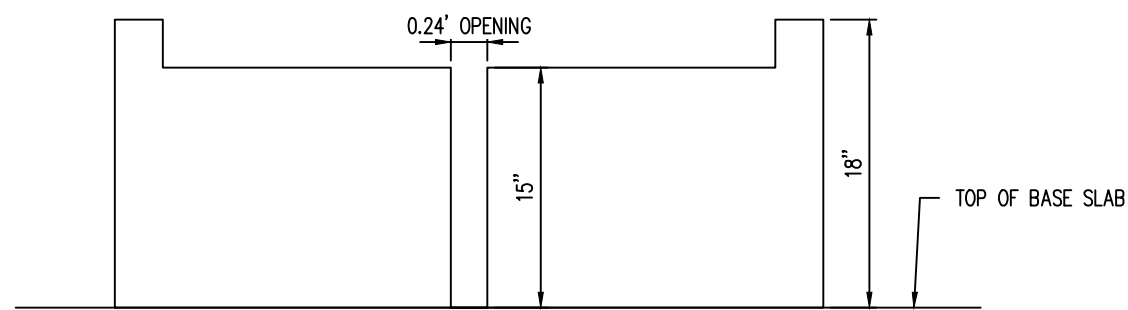
FOREBAY REINFORCING DETAIL
SCALE: N.T.S.



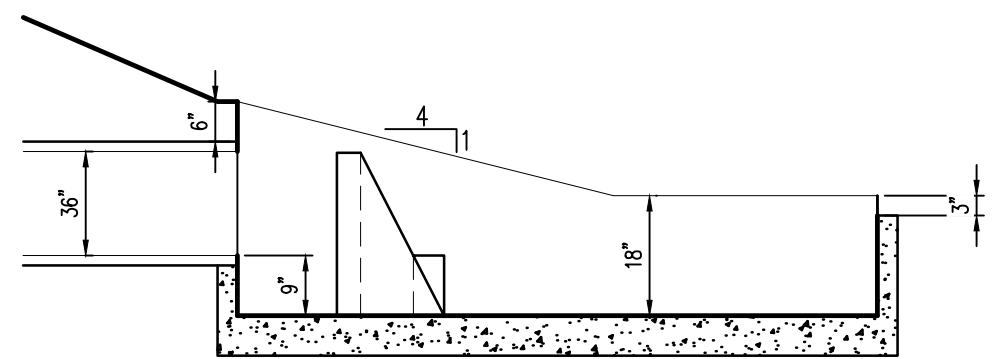
CONCRETE TRICKLE CHANNEL
SCALE: N.T.S.



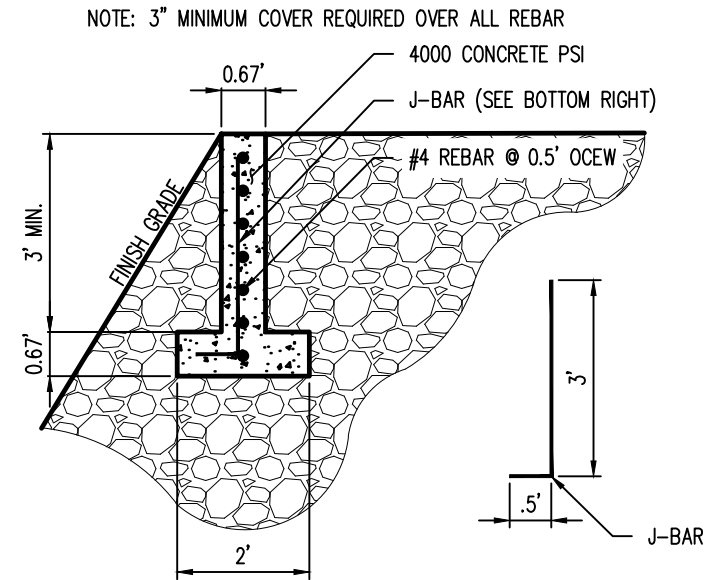
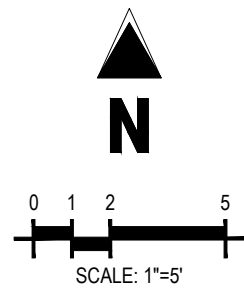
MODIFIED IMPACT STILLING BASIN - REINFORCING DETAIL
SCALE: N.T.S.



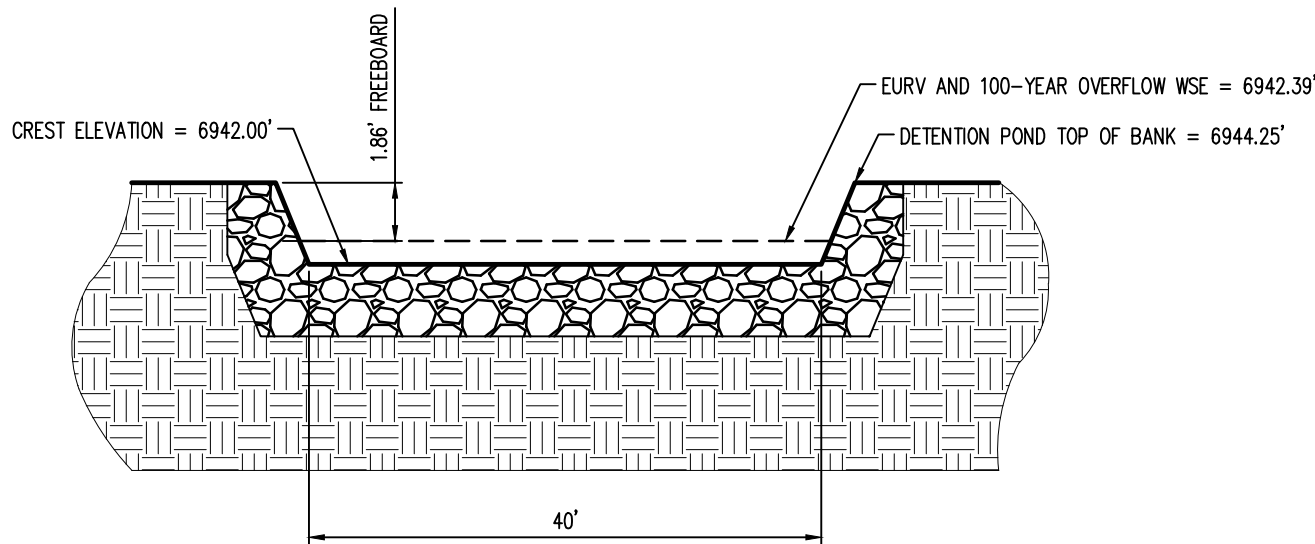
FOREBAY SLOT DETAIL
SCALE: N.T.S.



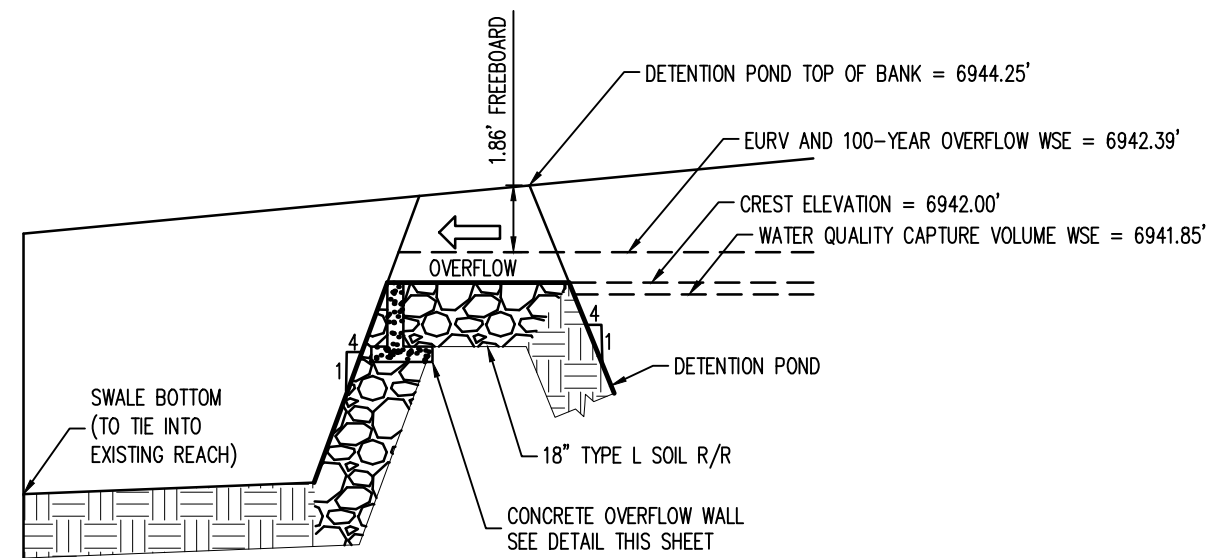
FOREBAY PROFILE
SCALE: N.T.S.



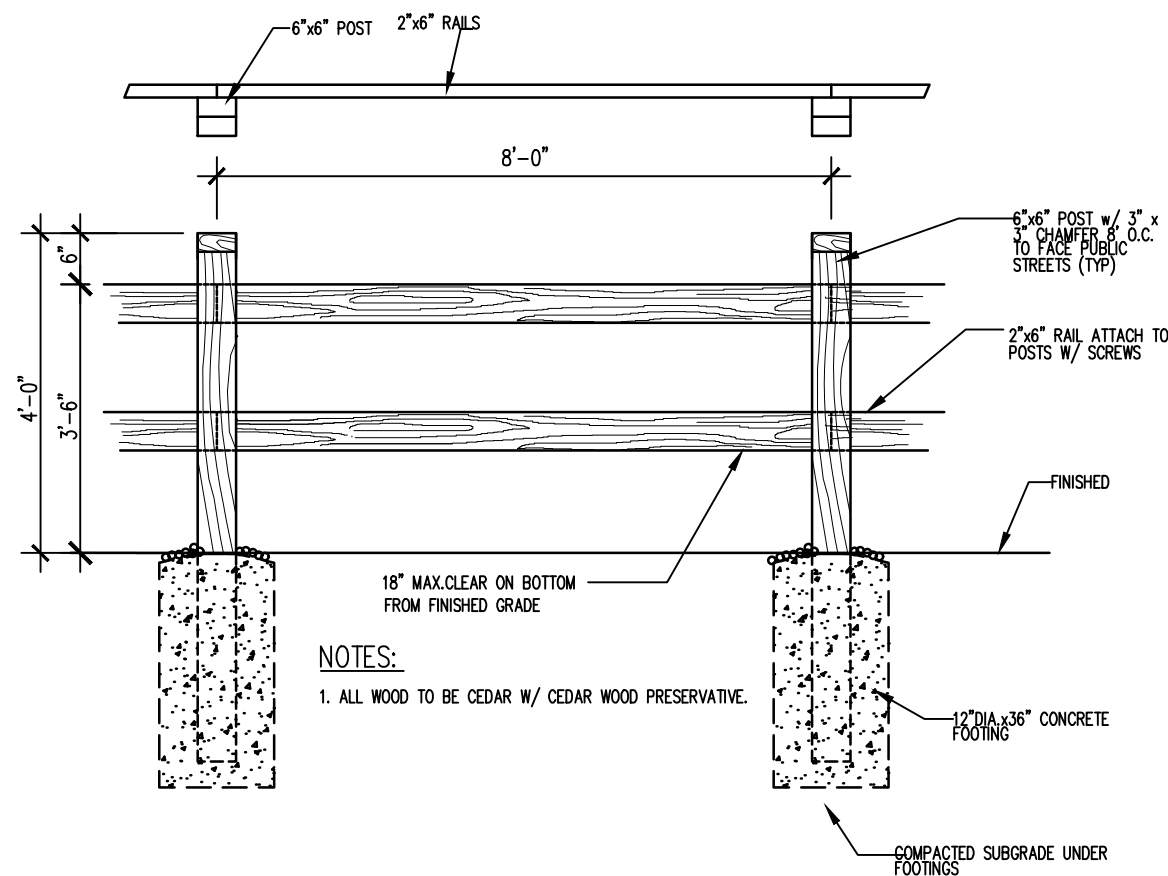
CONCRETE OVERFLOW WALL
SCALE: N.T.S.



EURV AND 100-YEAR OVERFLOW - CROSS SECTION
SCALE: N.T.S.



EURV AND 100-YEAR OVERFLOW
SCALE: N.T.S.

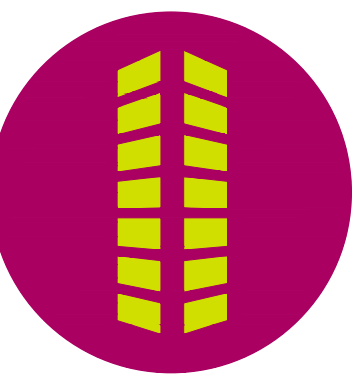


SAFETY GUARDRAIL
SCALE: N.T.S.

Galloway

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gallowayUS.com

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

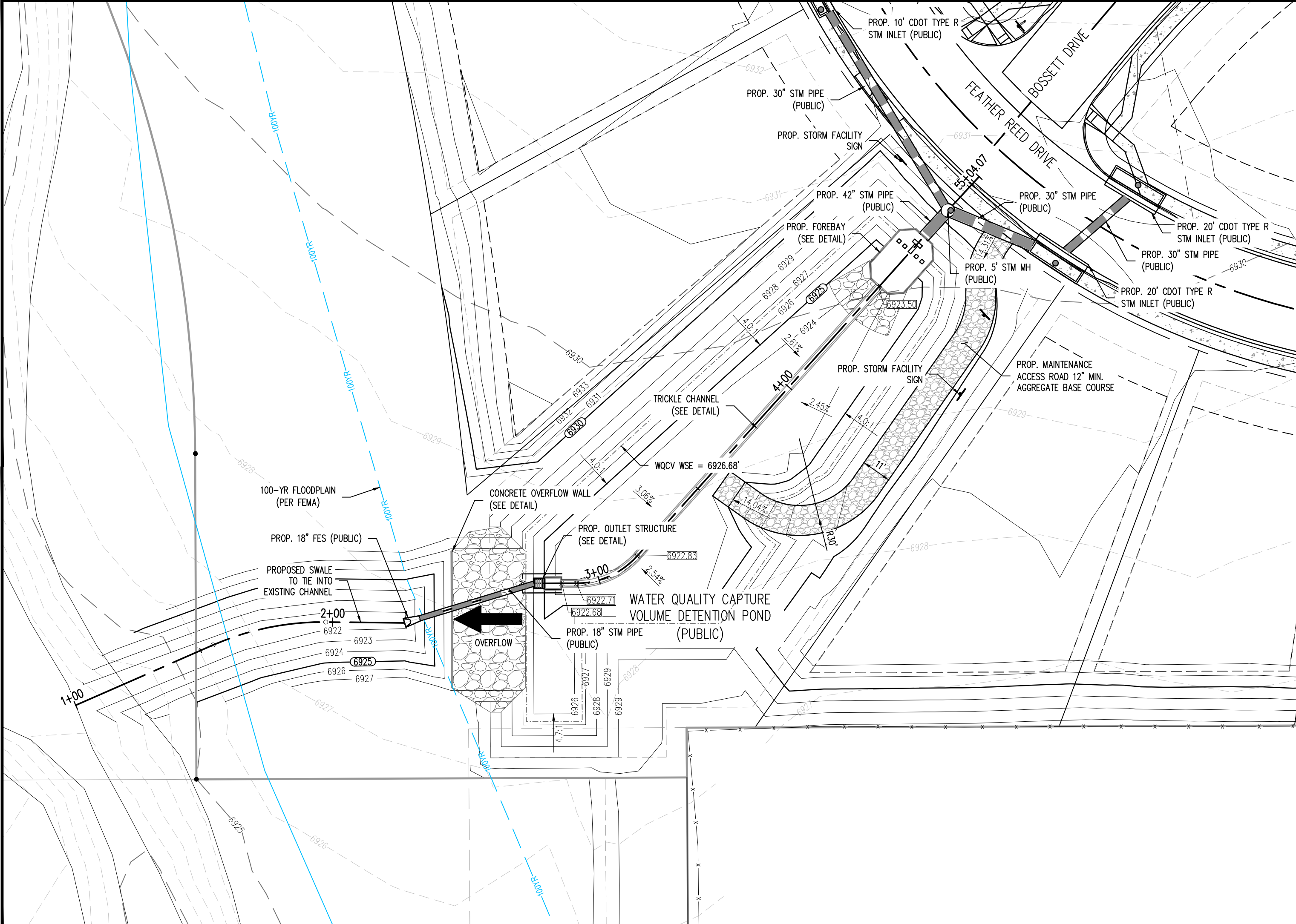
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

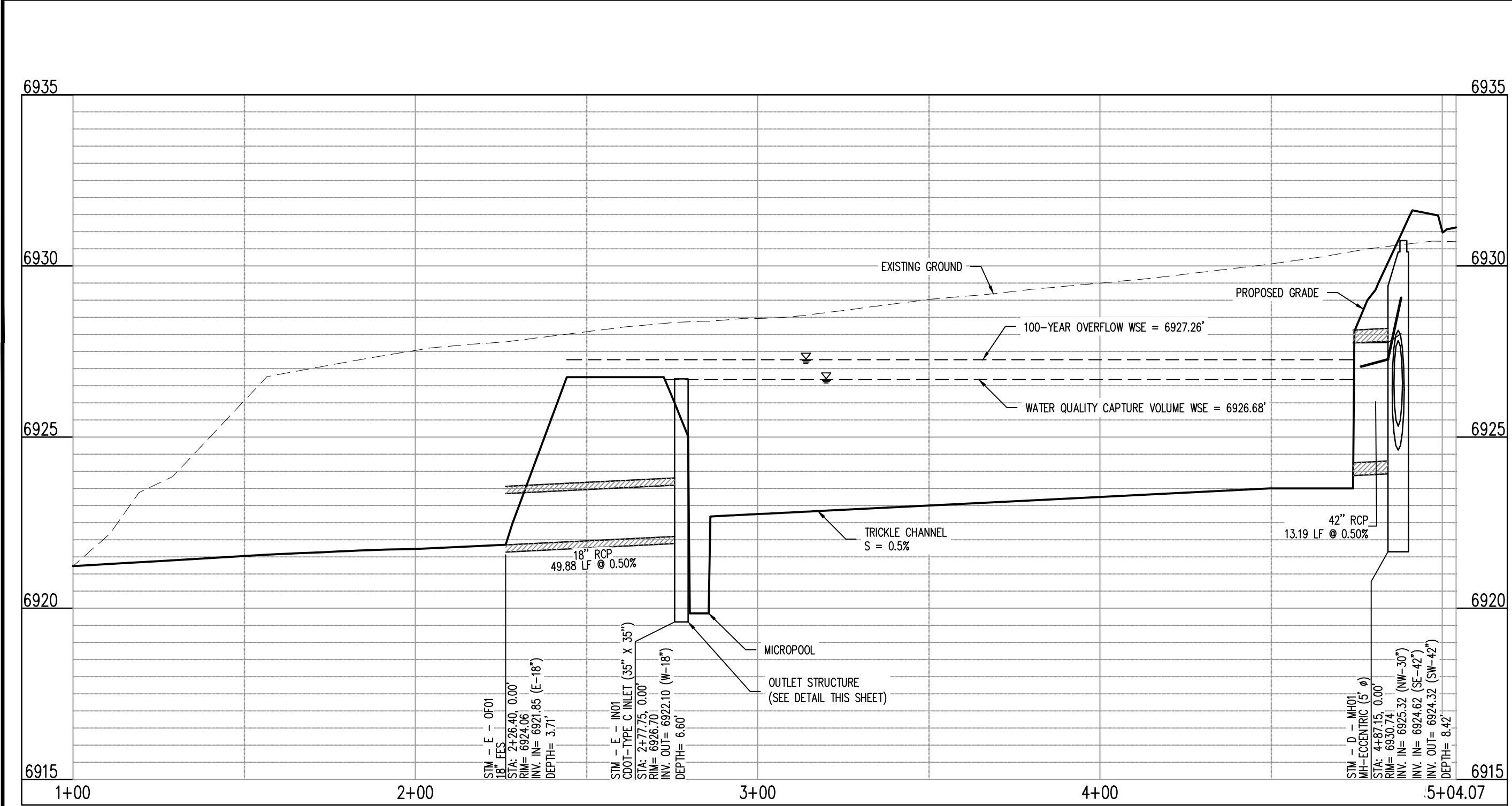
POND DETAILS (NORTH)

C5.02

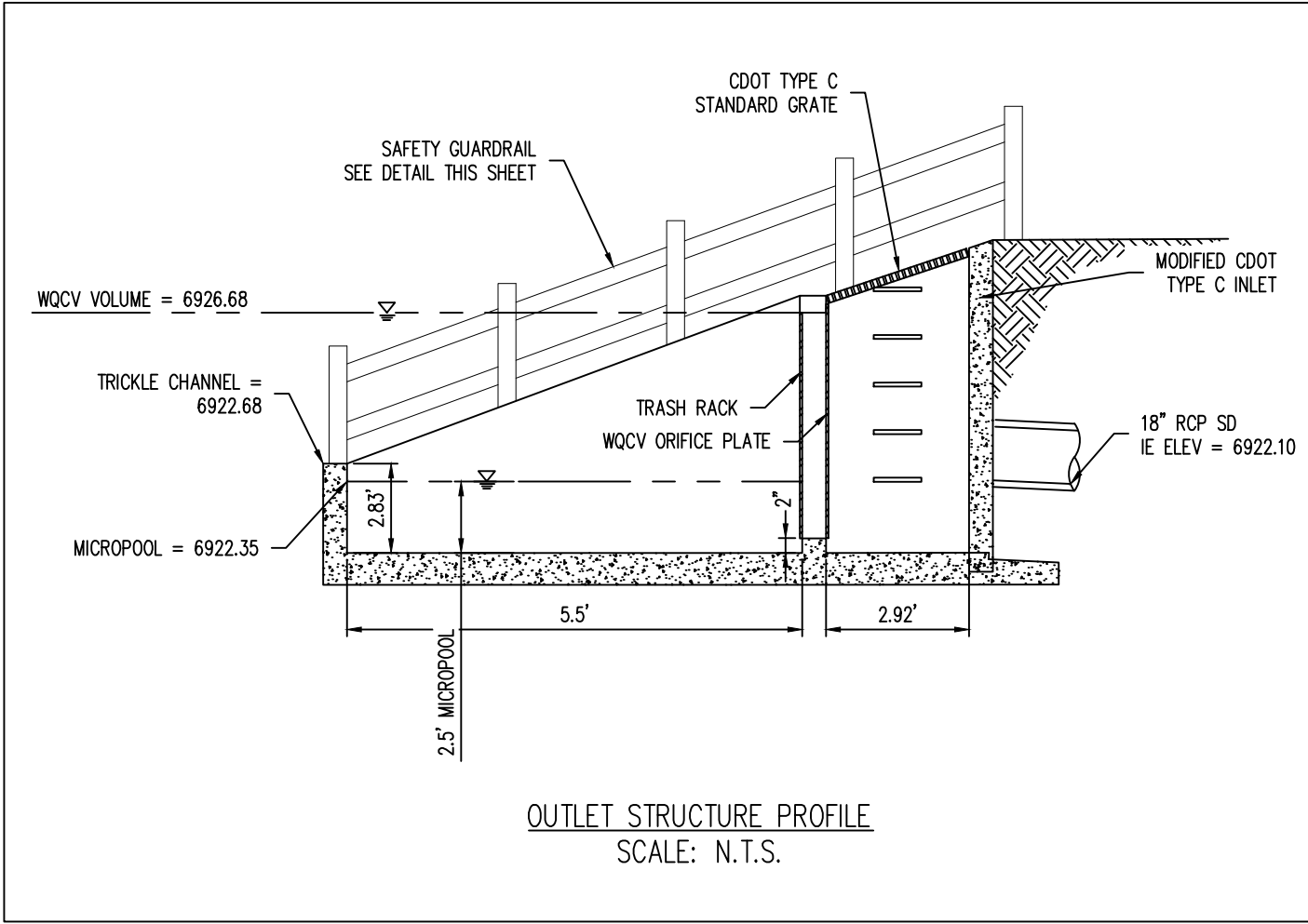
Sheet 36 of 43



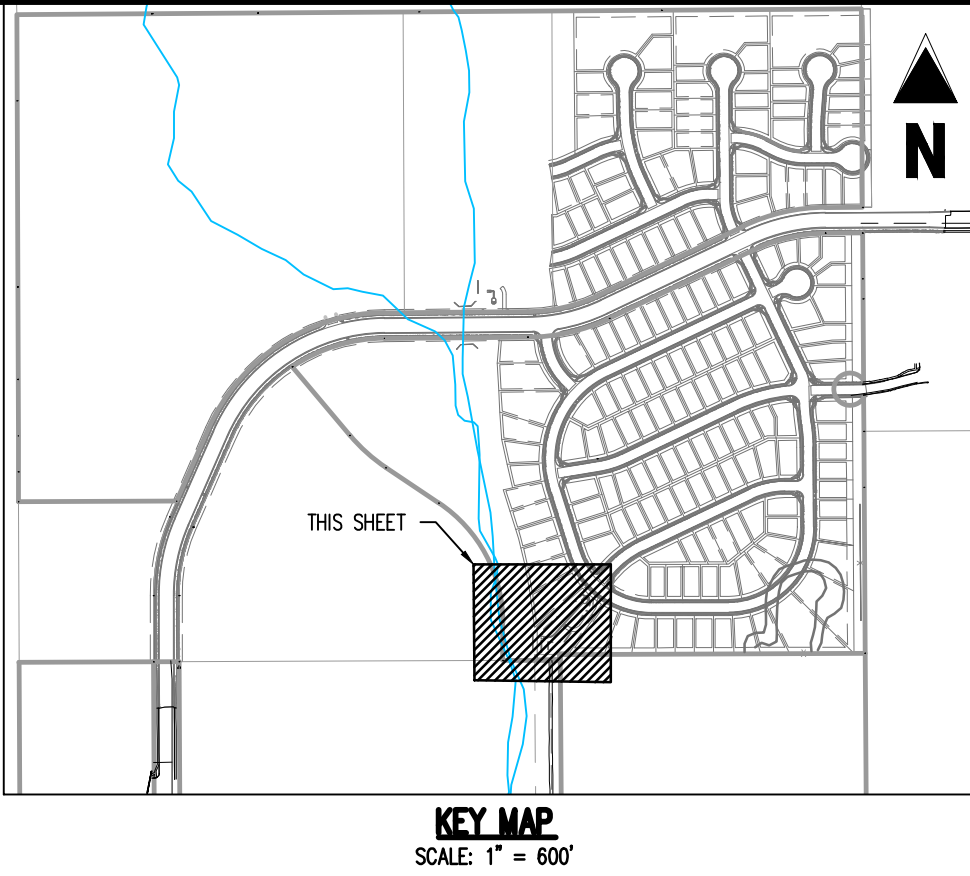
POND (SOUTH) PLAN VIEW
SCALE: 1"=30'



POND (SOUTH) PROFILE
SCALE: H: 1"=30' V: 1"=3'



OUTLET STRUCTURE PROFILE
SCALE: N.T.S.



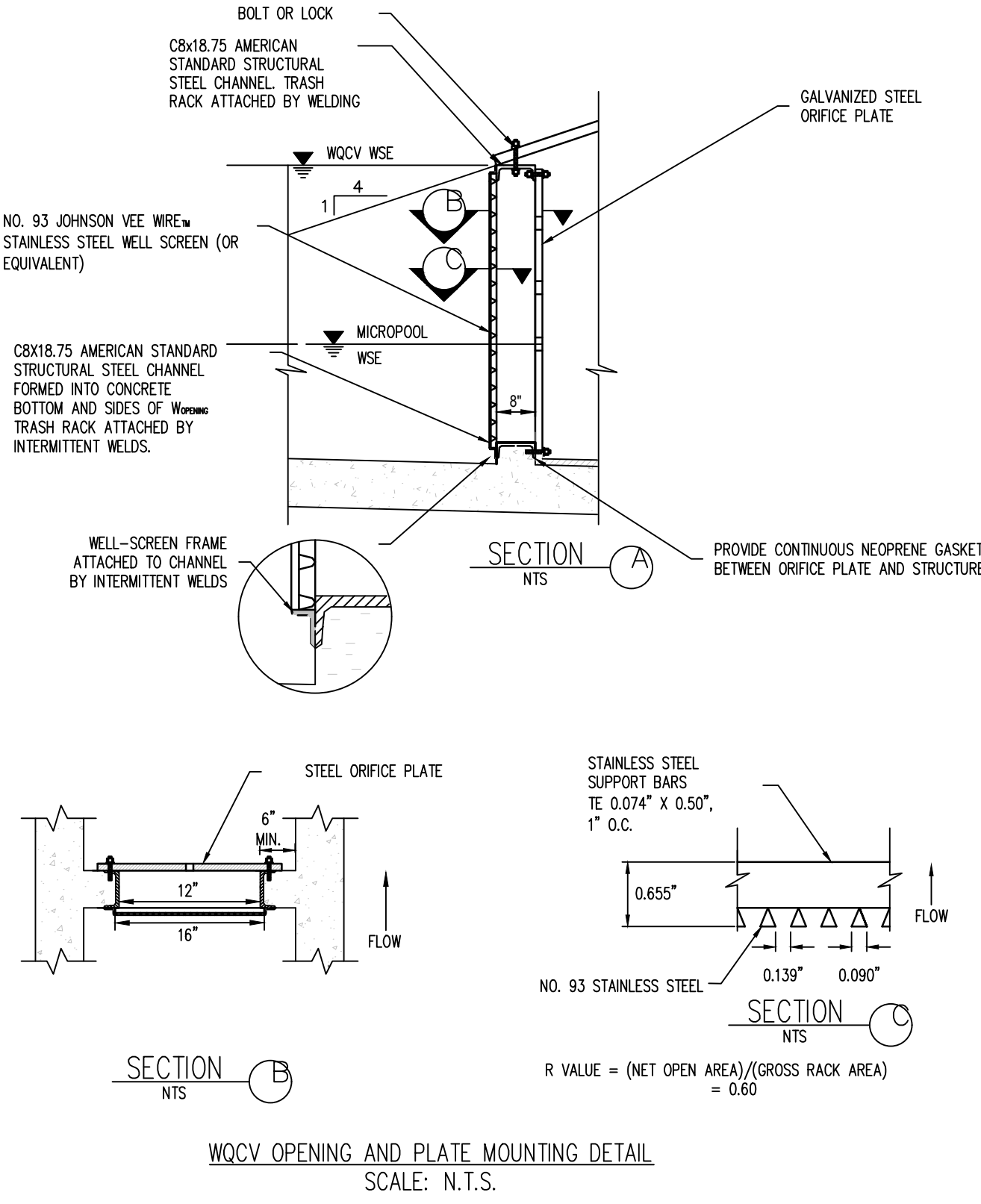
KEY MAP
SCALE: 1"=600'

- LEGEND**
- PROPERTY LINE
 - PROPOSED EASEMENT
 - EXISTING MAJOR CONTOUR
 - EXISTING MINOR CONTOUR
 - PROPOSED MAJOR CONTOUR
 - PROPOSED MINOR CONTOUR
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 - PROPOSED FLARED END SECTION (FES)
 - PROPOSED STORM INLET
 - TOP OF WALL
 - BOTTOM OF WALL
 - FINISHED GRADE ELEVATION
 - FLOW GRADE OR SLOPE

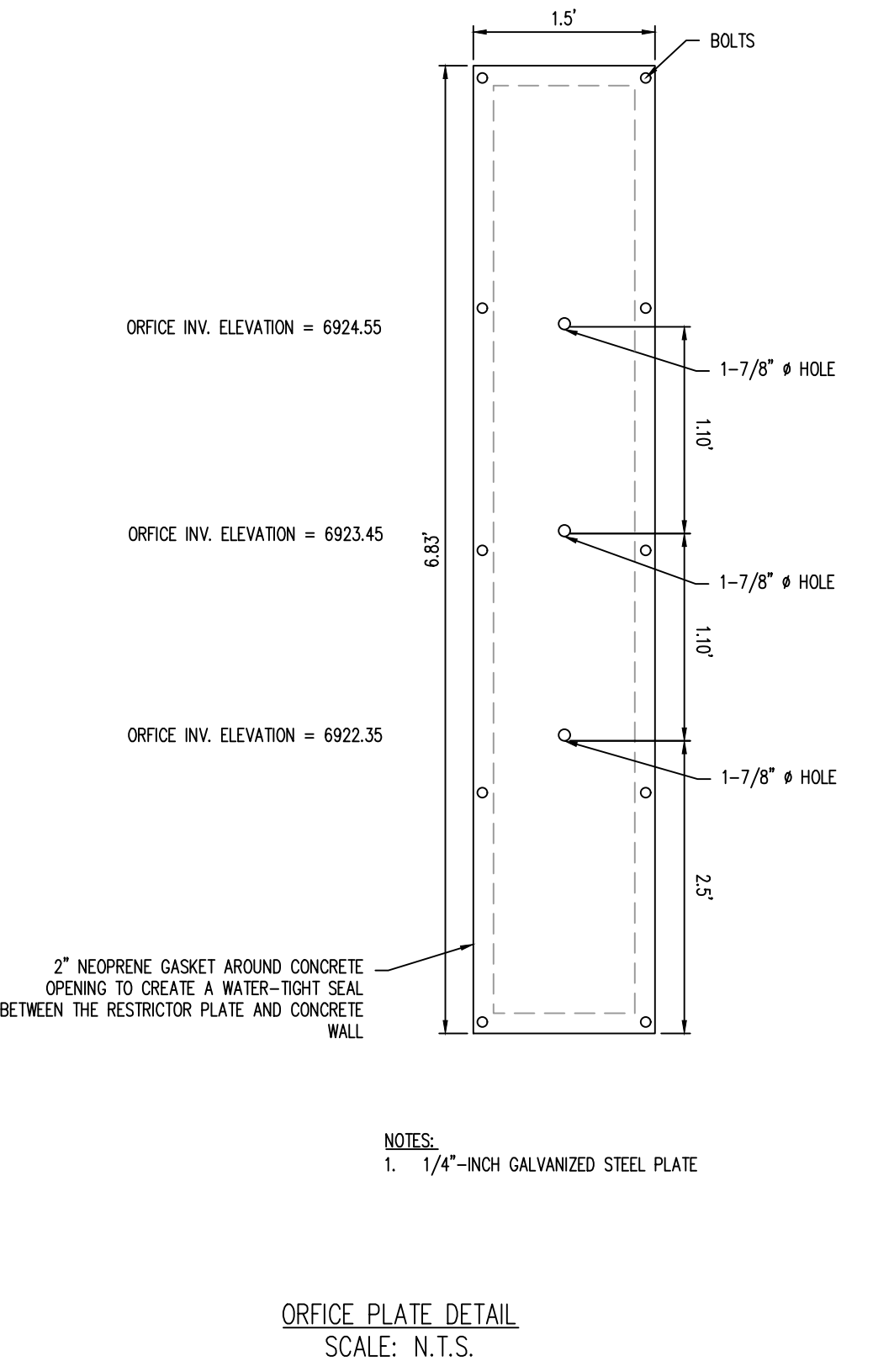
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WQCV OPENING AND PLATE MOUNTING DETAIL
SCALE: N.T.S.



ORIFICE PLATE DETAIL
SCALE: N.T.S.

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

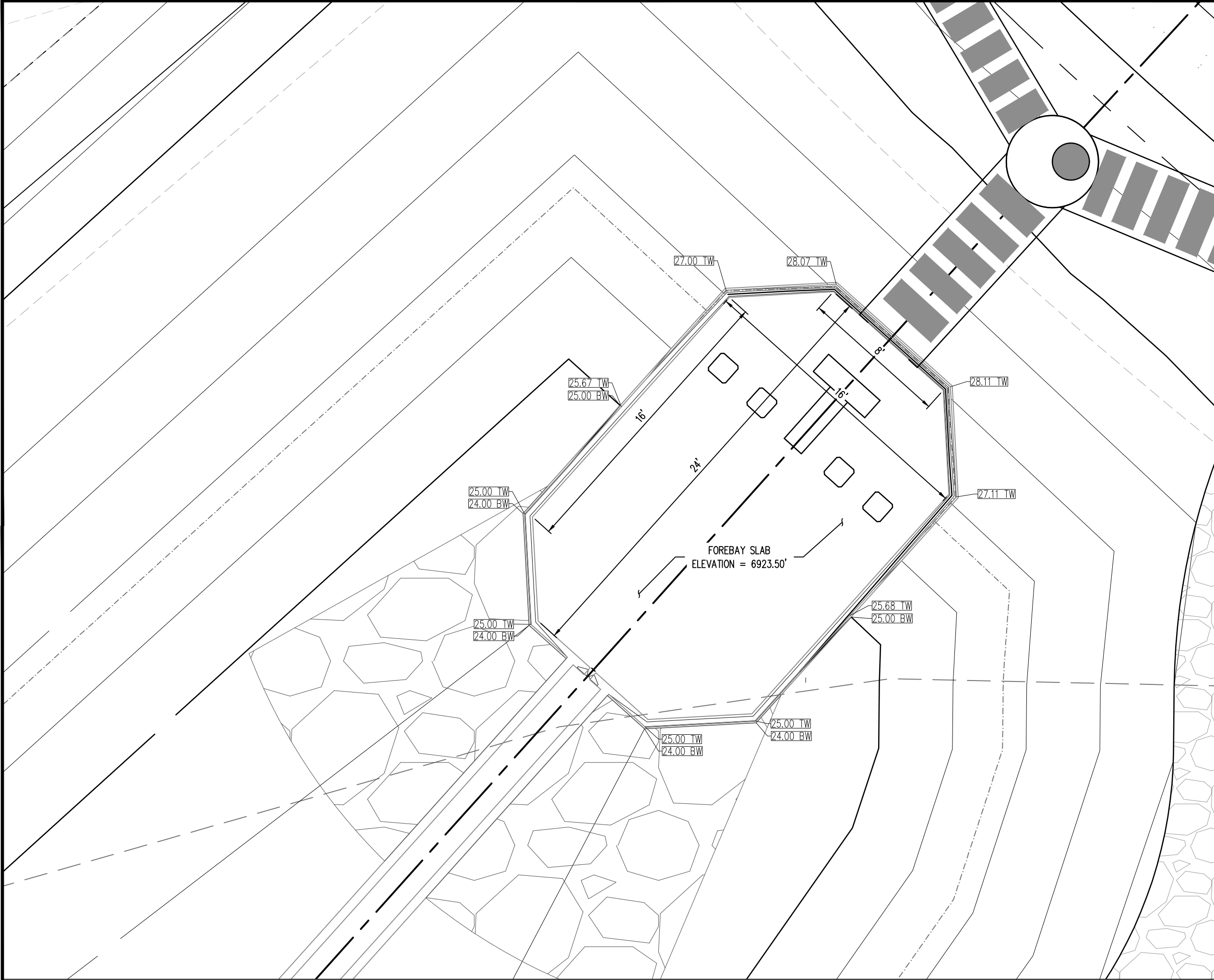
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Project No: CLH000014.20
Drawn By: JDP
Checked By: RGD
Date: 11/4/2019

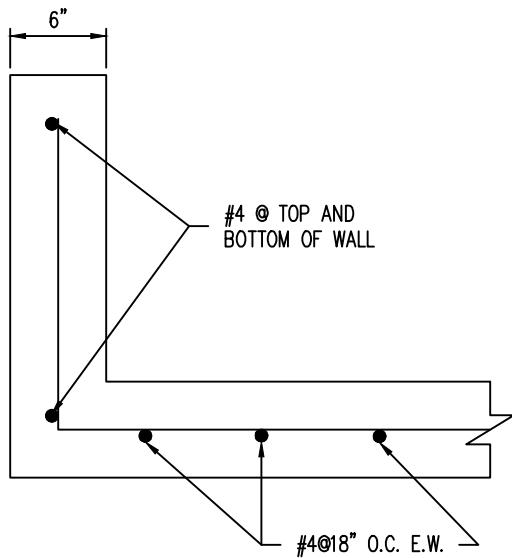
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C5.03

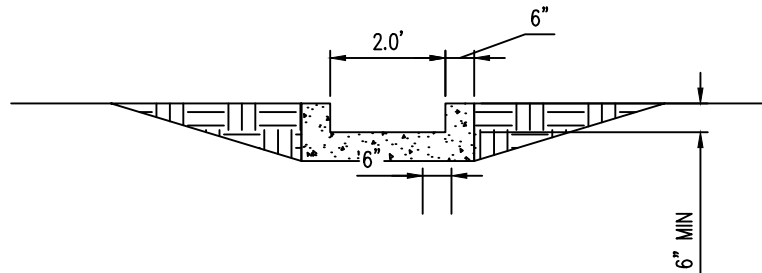
Sheet 37 of 43



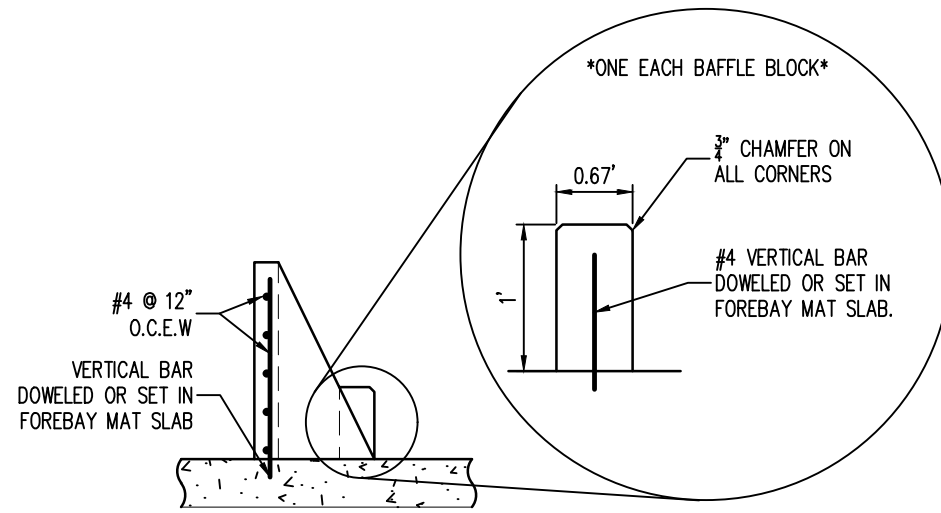
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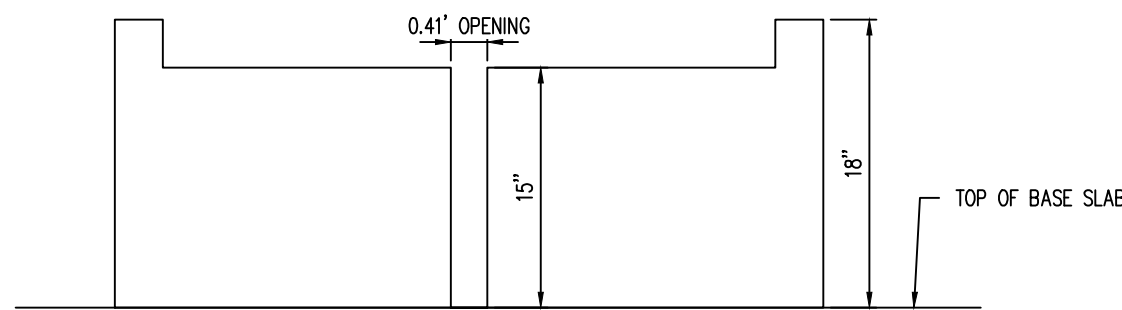
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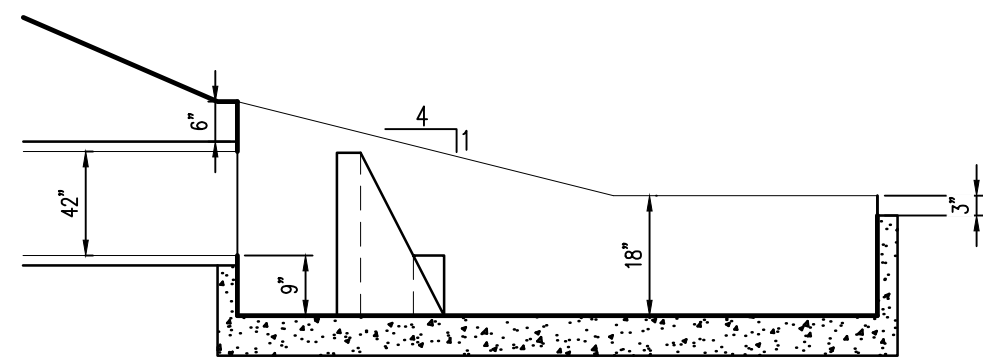
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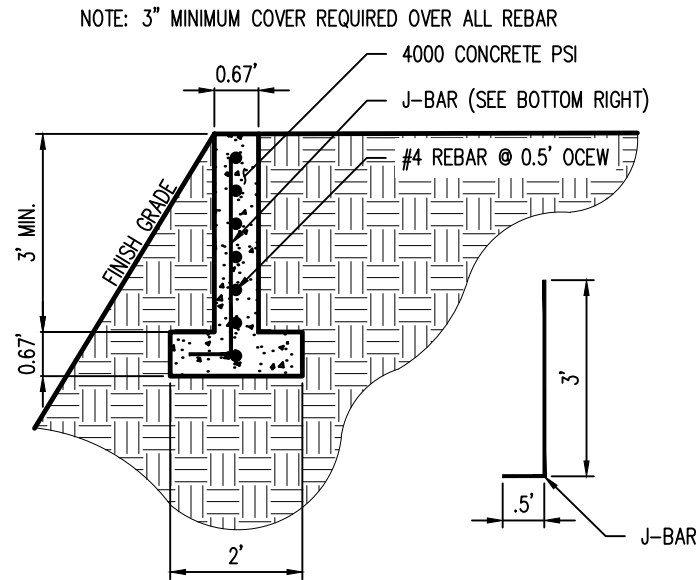
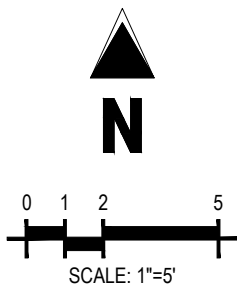
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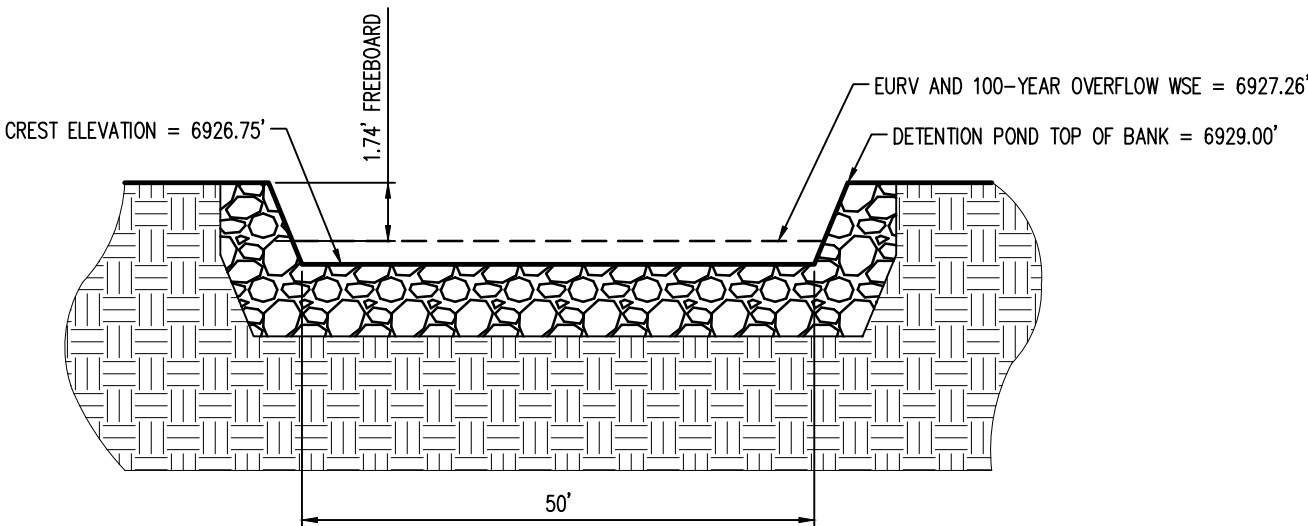
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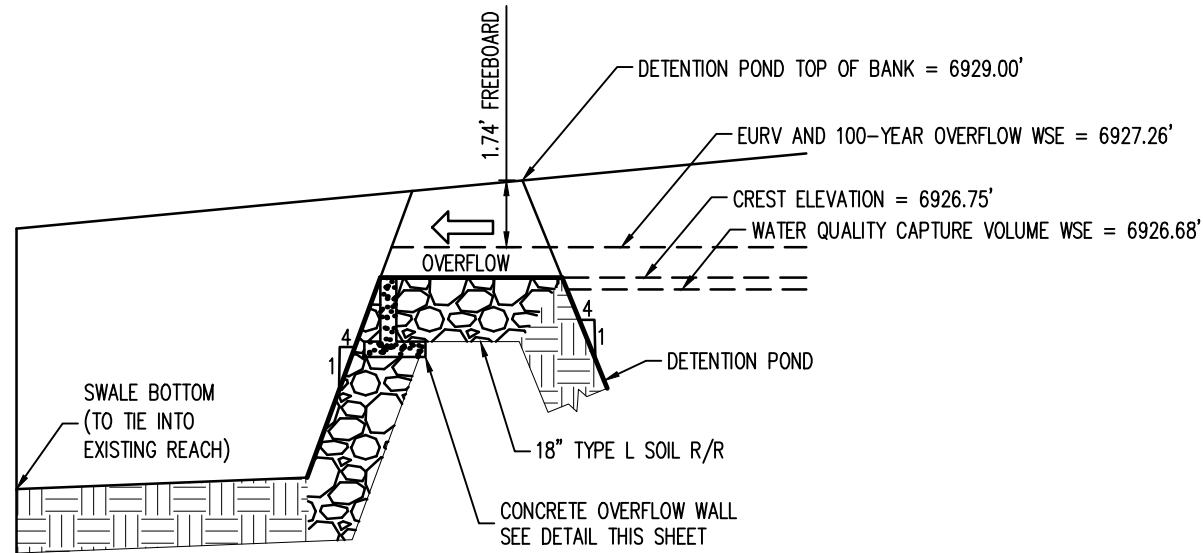
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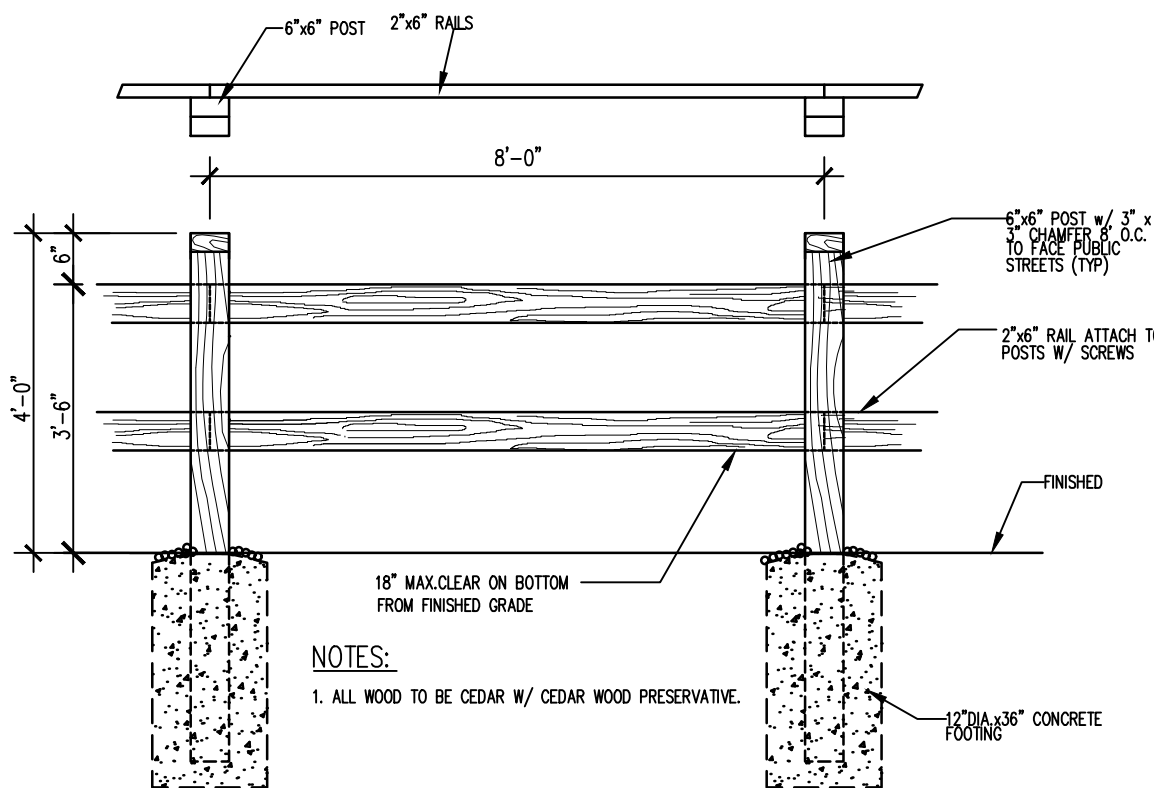
CONCRETE OVERFLOW WALL
SCALE: N.T.S.



EURV AND 100-YEAR OVERFLOW - CROSS SECTION
SCALE: N.T.S.



EURV AND 100-YEAR OVERFLOW
SCALE: N.T.S.

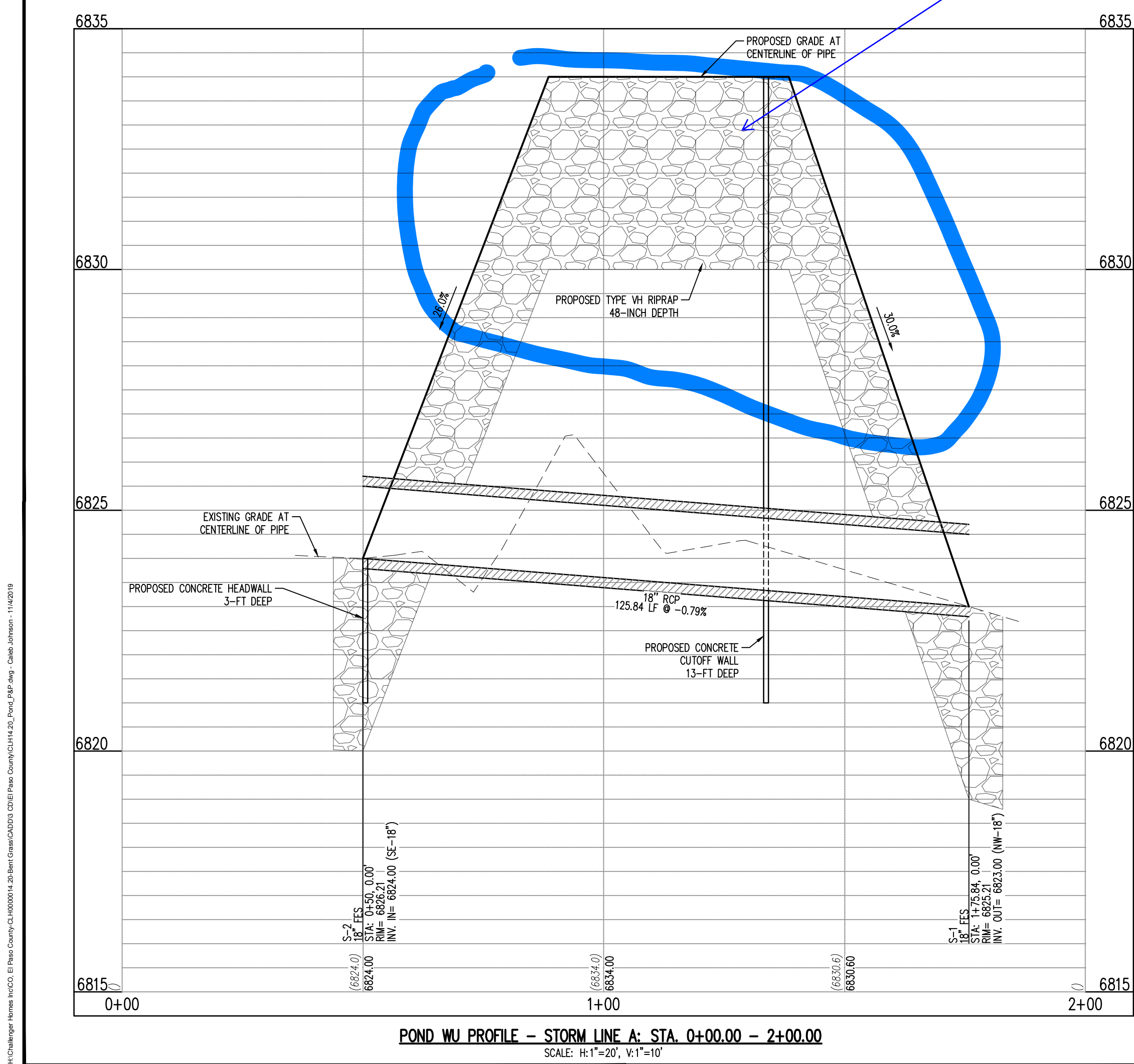
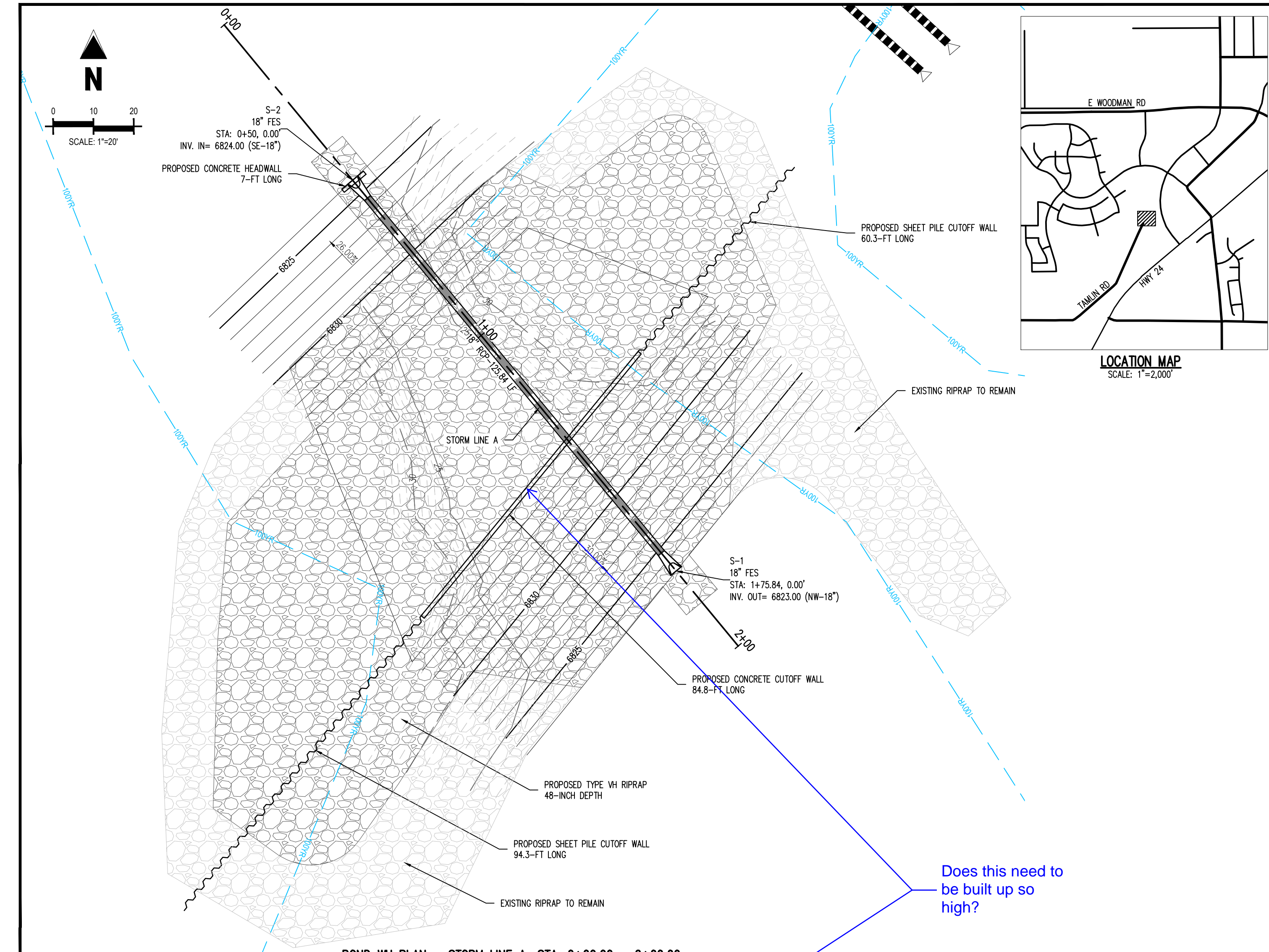


SAFETY GUARDRAIL
SCALE: N.T.S.

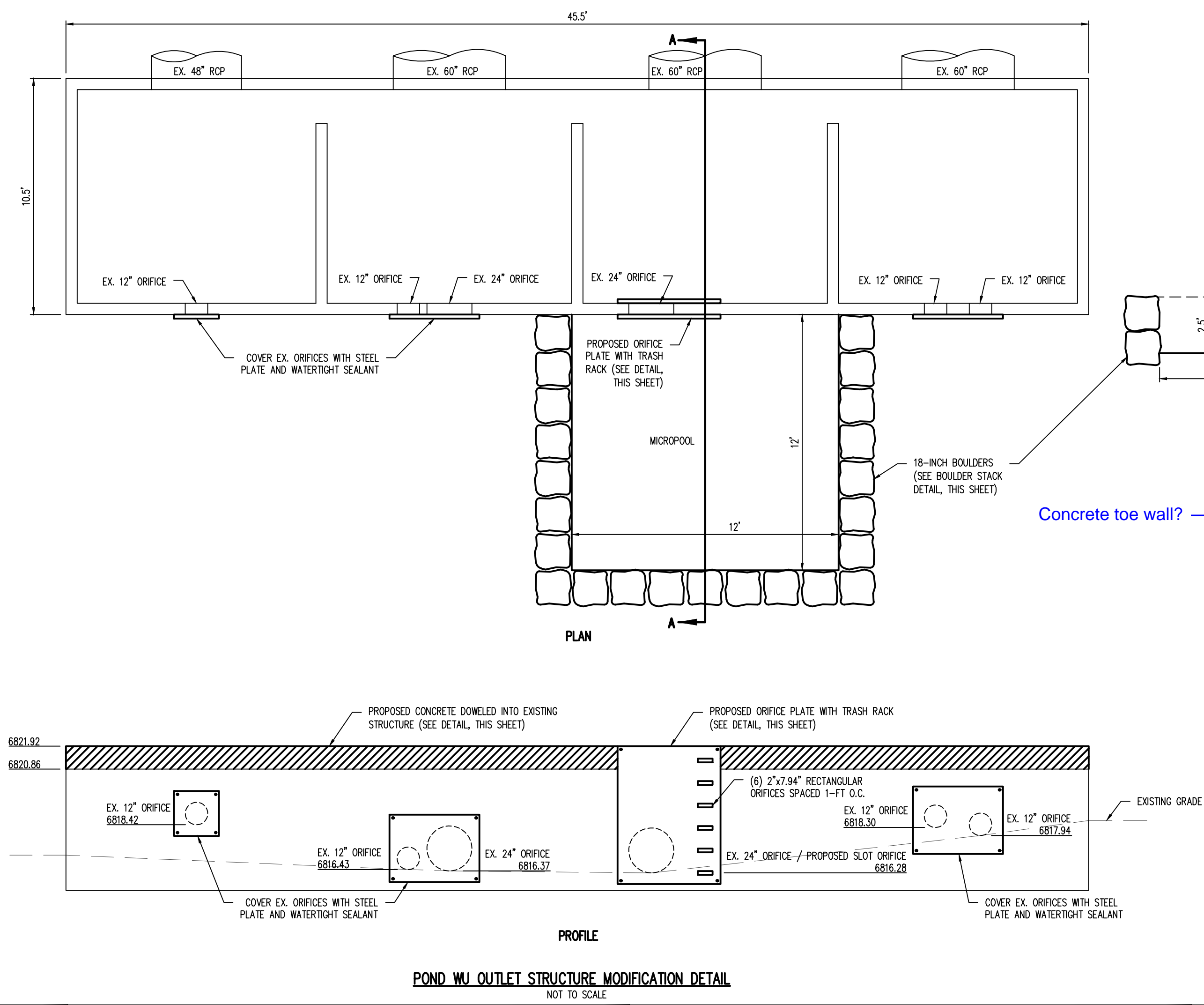


#	Date	Issue / Description	Init.
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019



Does this need to be built up so high?



HEADWALL DESIGN TABLE	
PIPE SIZE	LENGTH, MIN
18"	7'-0"
24"	8'-0"
30"	10'-0"
36"	12'-0"
42"	13'-0"
48"	17'-0"
54"	19'-0"
60"	21'-0"
66"	22'-0"
72"	24'-0"

FLARED END SECTION (FES) HEADWALL DETAIL

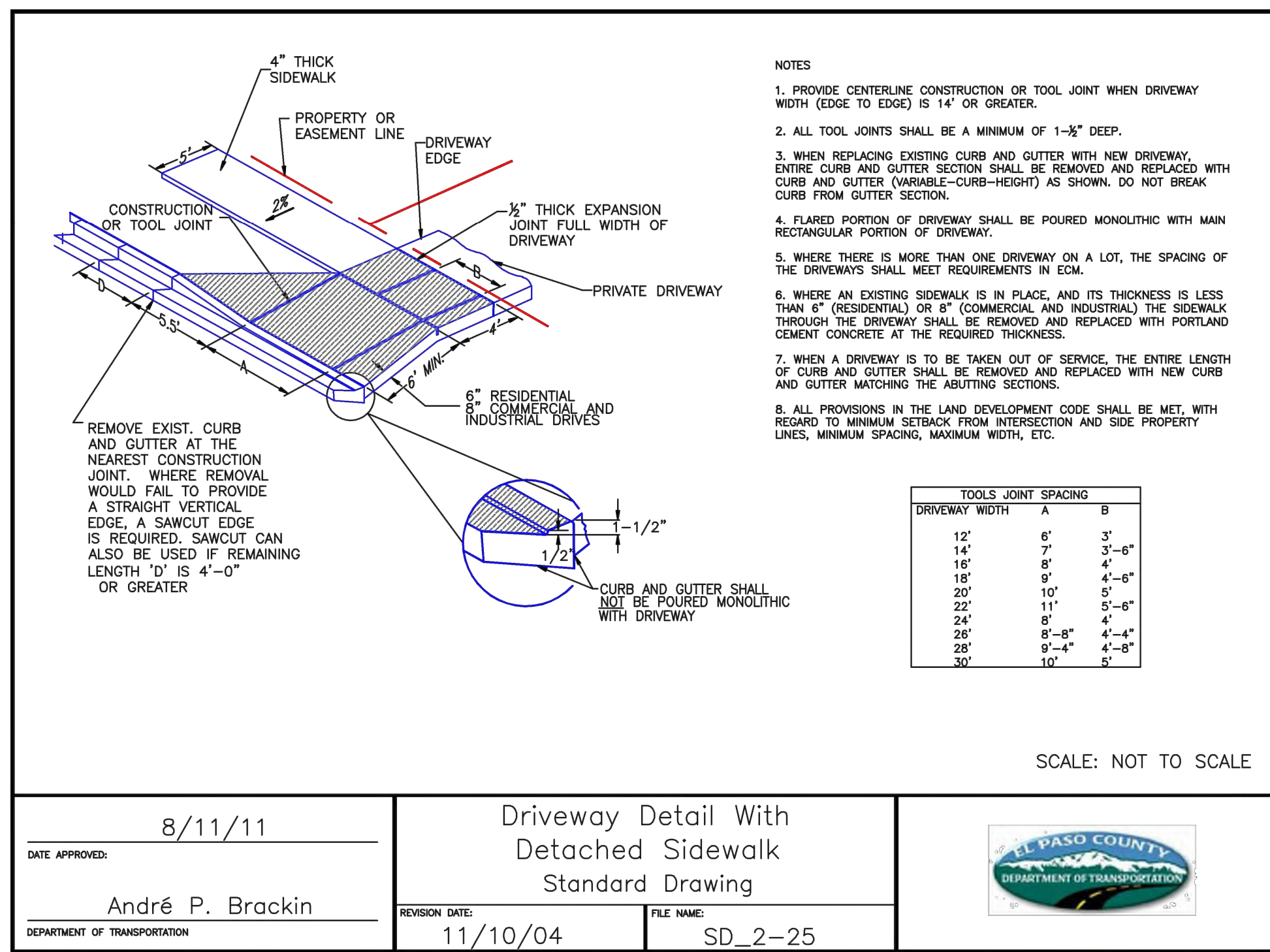
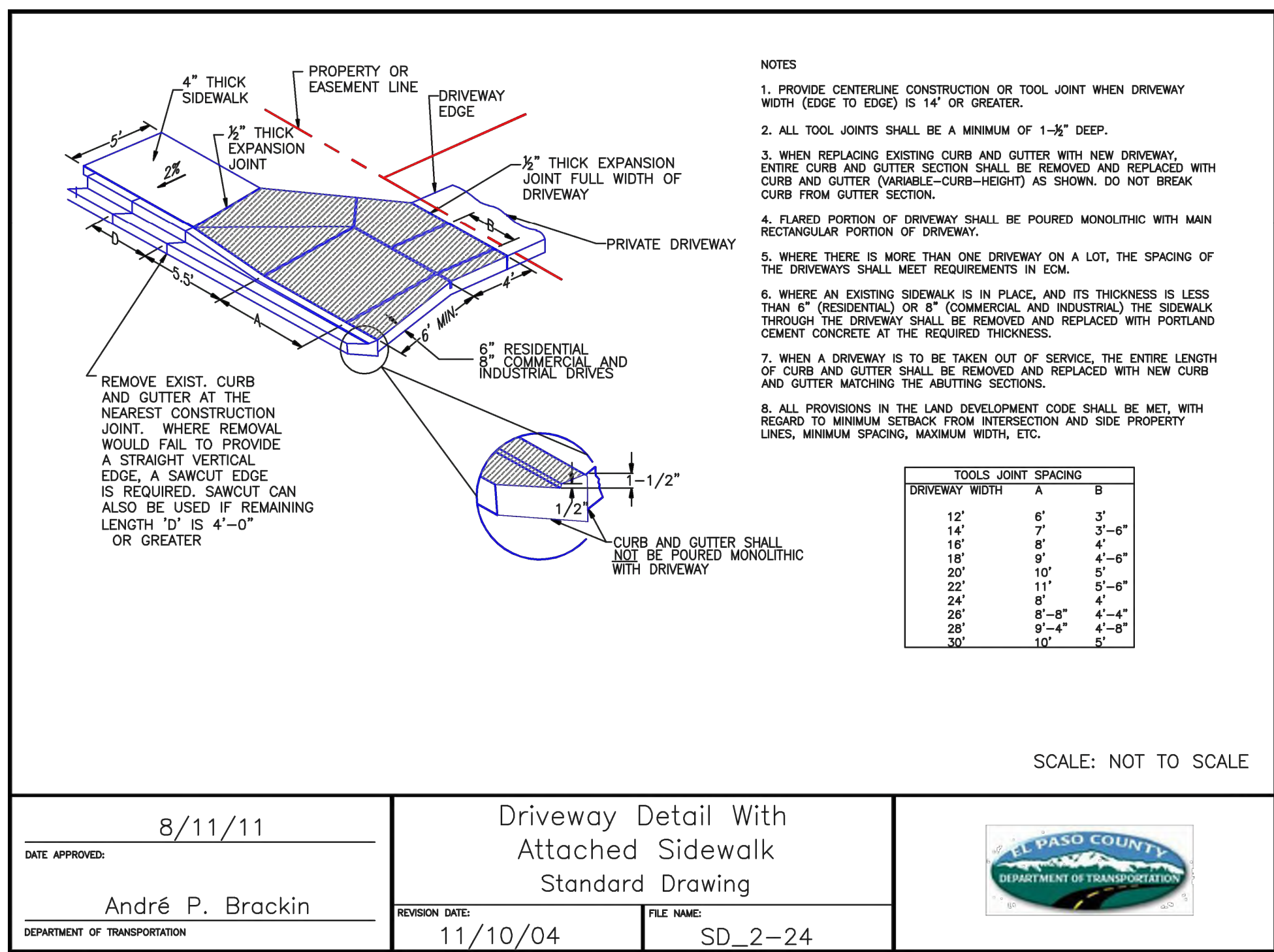
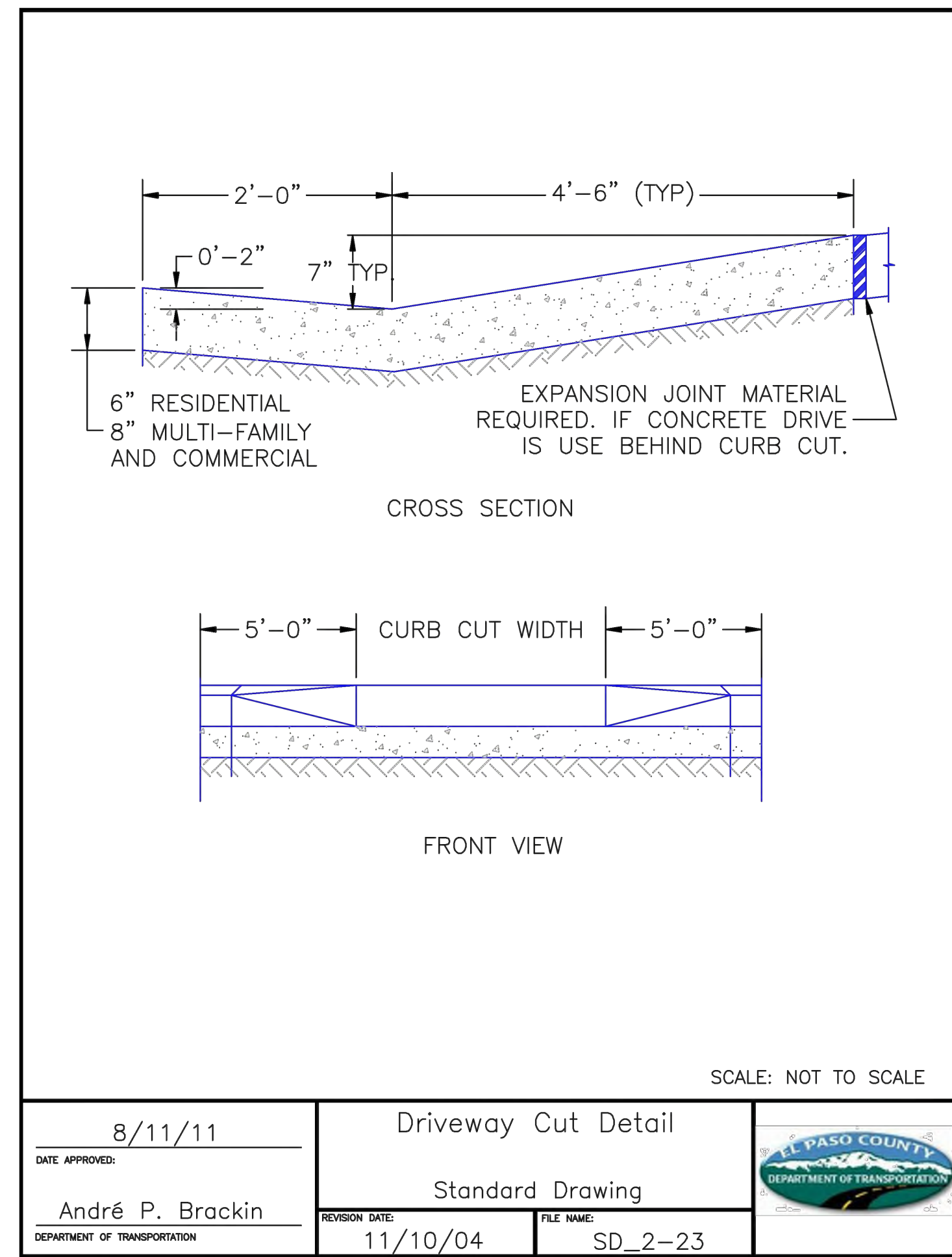
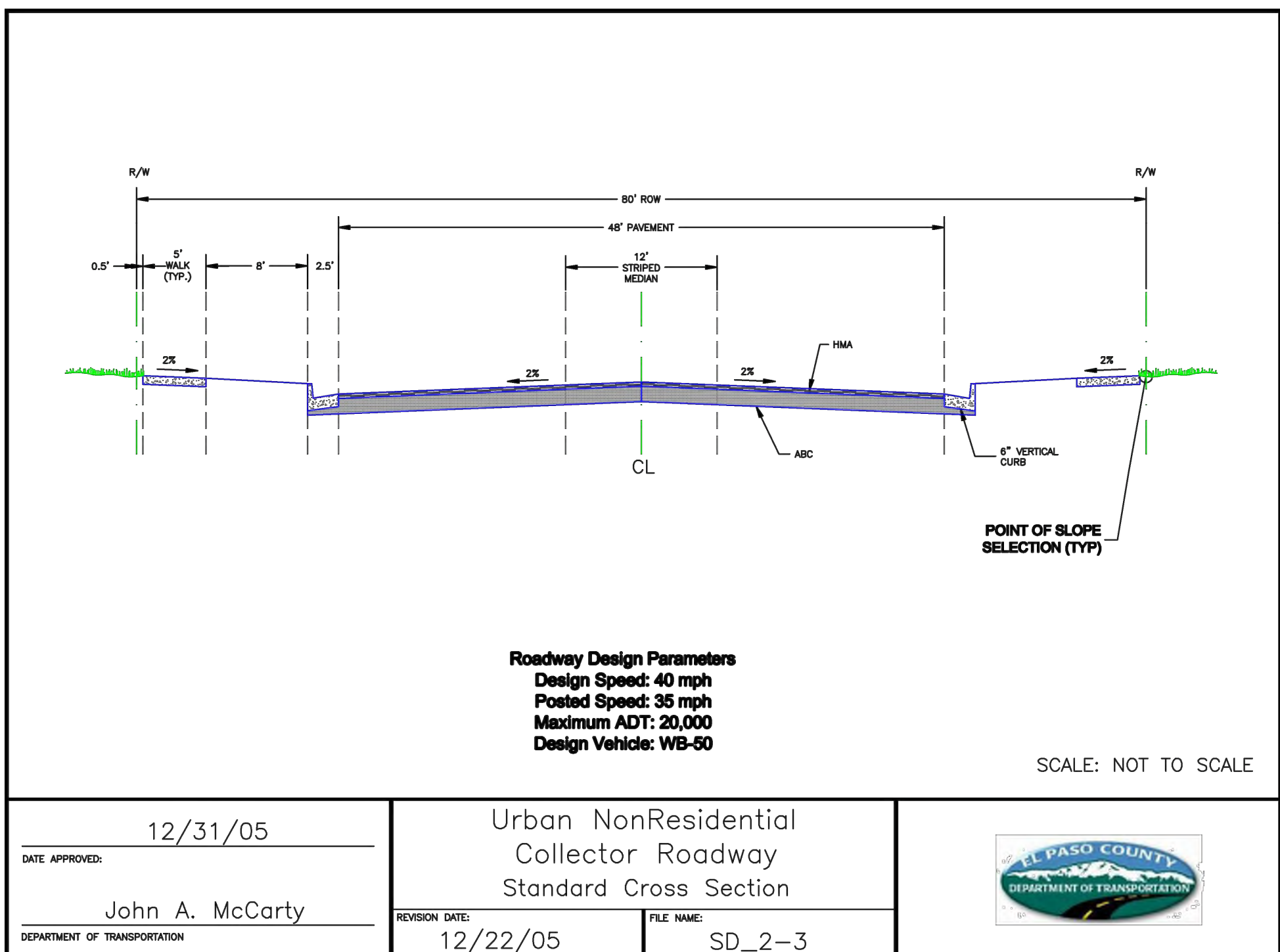
Figure 9-29. Flared end section (FES) headwall concept

GRouted Boulder Stacked Wall Edge	
ELEVATION	SECTION
ALL EXPOSED GROUT SHALL BE TROWELED AND FINISHED TO MINIMIZE VISIBILITY. WASH OFF ALL EXCESS GROUT AND CLEAN ALL VISIBLE ROCK SURFACES (SEE SPECIFICATION).	RECESS GROUT 1/3 D
PLACE BOULDERS AS CLOSELY AS POSSIBLE (TOUCHING EACH OTHER) TO MINIMIZE GROUT. Voids SHALL NOT EXCEED 4" WITHOUT CHINKING.	GRout 6" MIN. 12" MAX.
LARGE MACHINE PLACED BOULDERS	GRout SHALL EXTEND THE FULL DEPTH OF BOULDERS
TYPE VL RIPRAP MIXED WITH SOIL AT 1/3 SOIL, 2/3 ROCK	TYPE VL RIPRAP MIXED WITH SOIL AT 1/3 SOIL, 2/3 ROCK

Figure 8-36. Sample grouted boulder section



#	Date	Issue / Description	Init.
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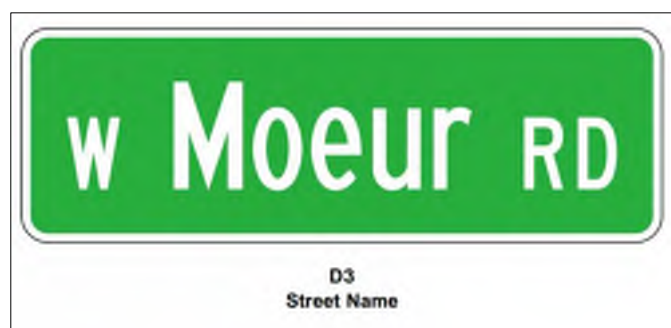
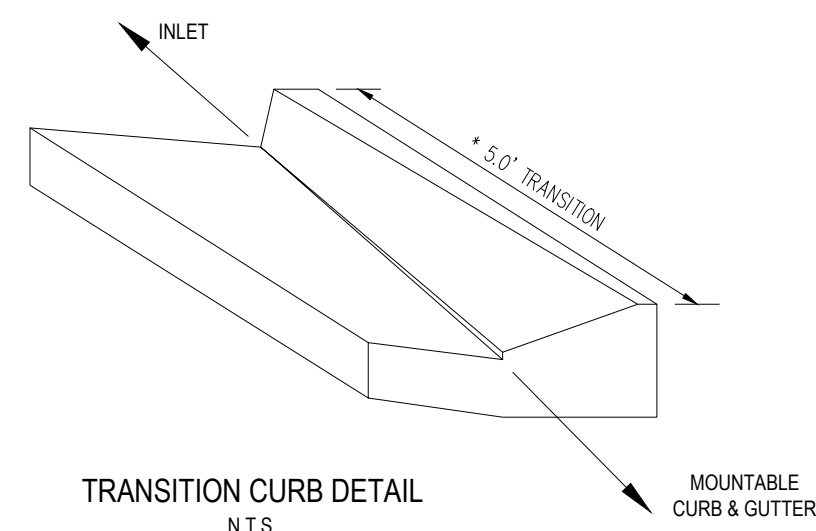
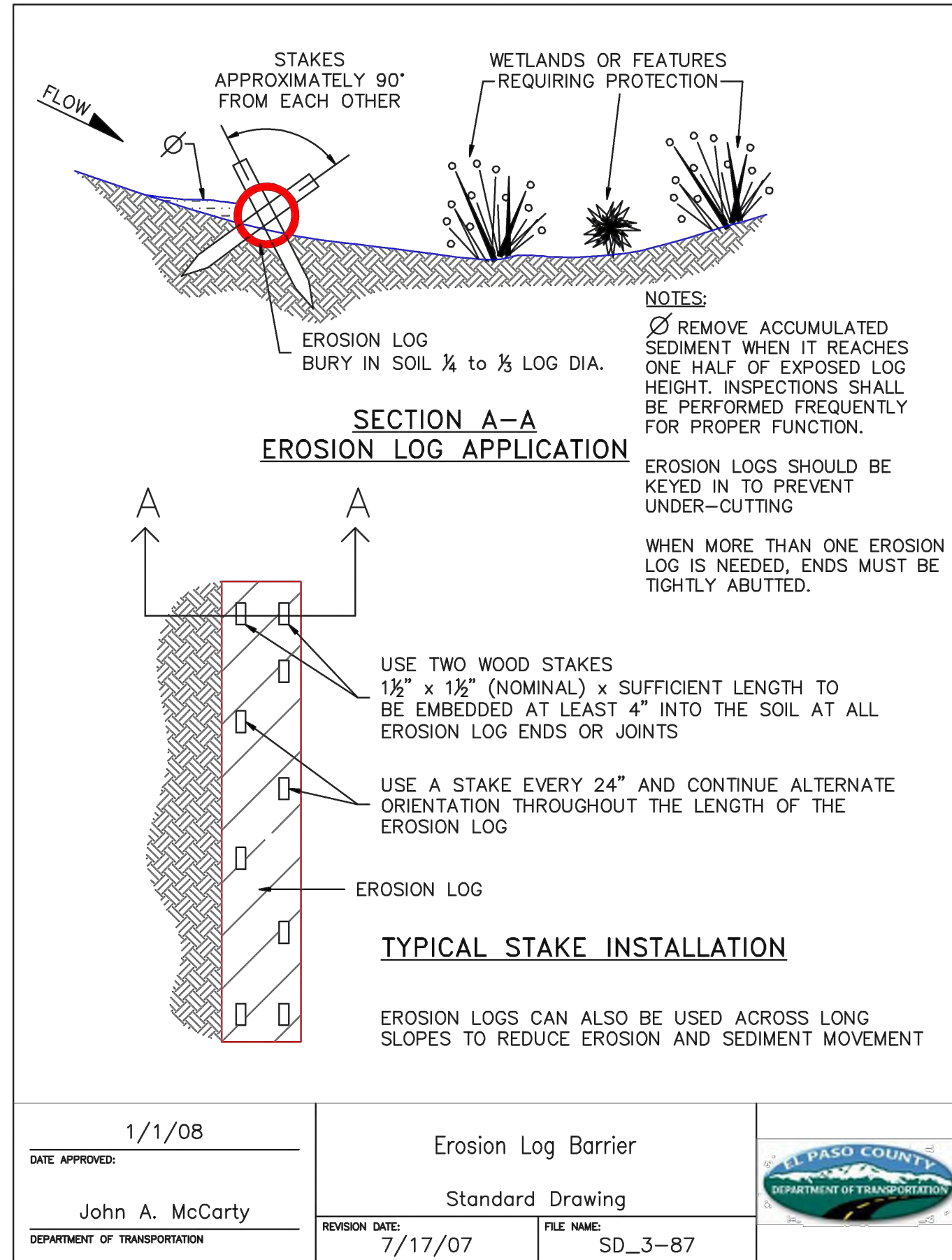
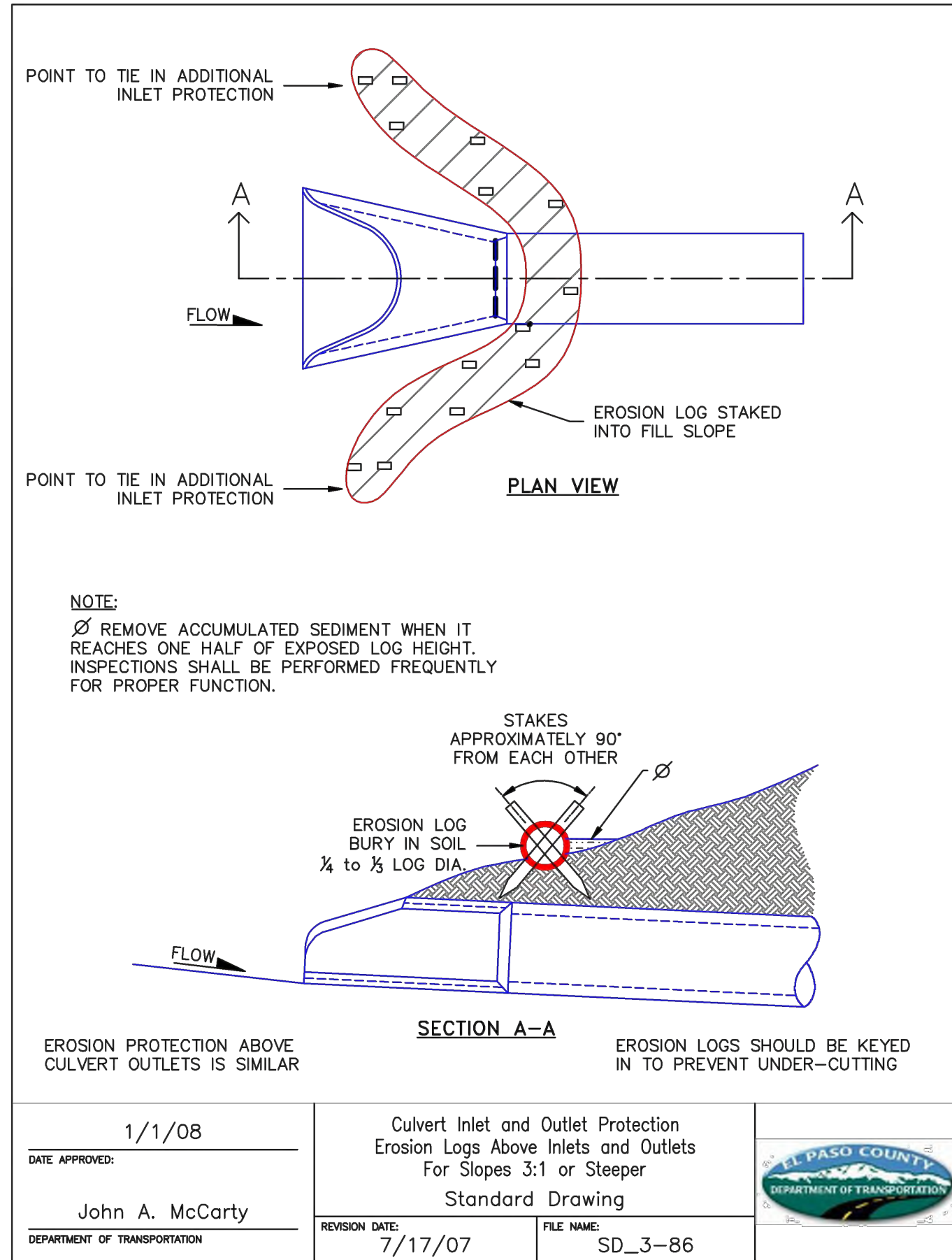




#	Date	Issue / Description	Init.
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

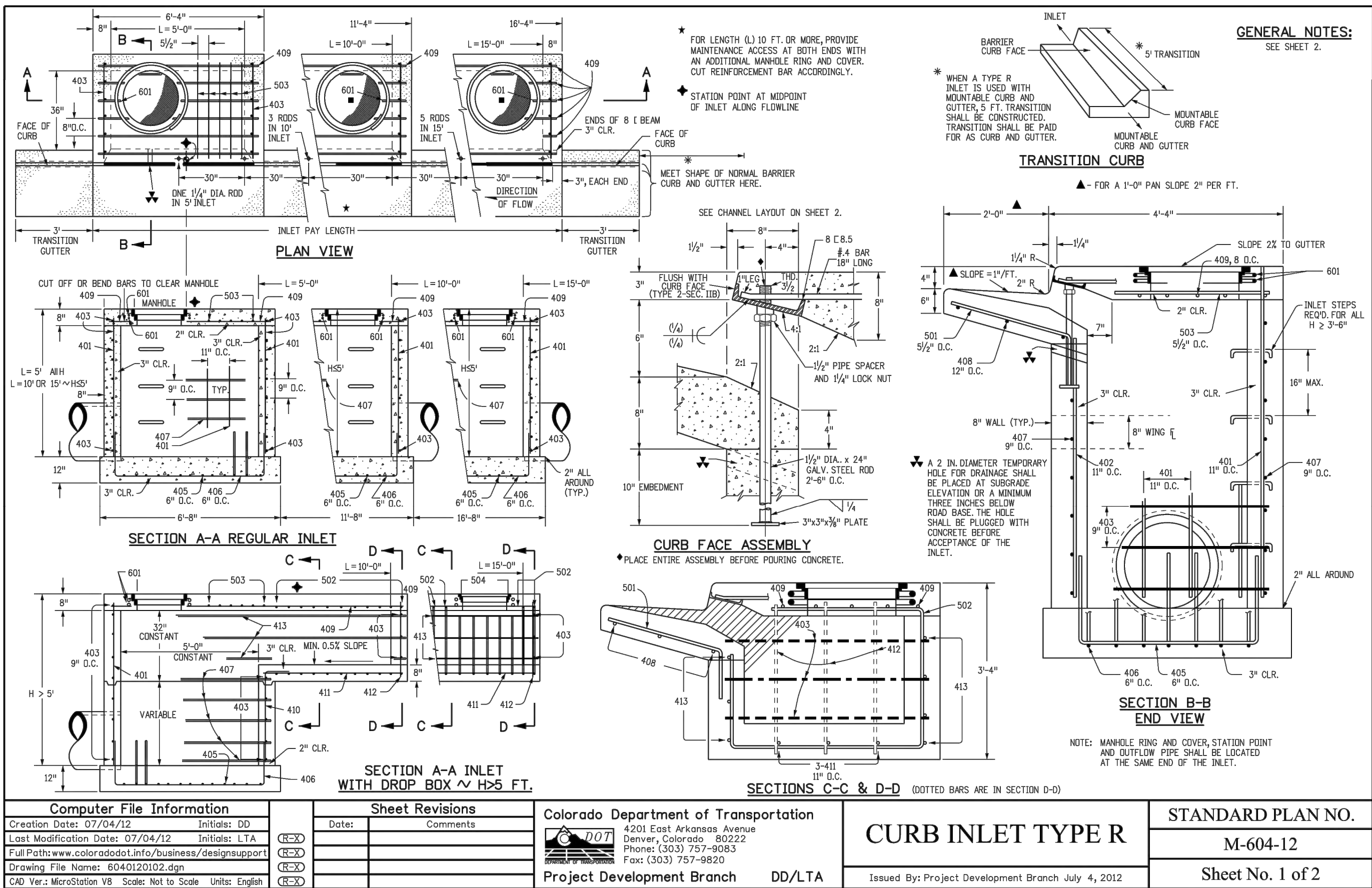
SITE DETAILS



NOTE:
ALL INTERNAL SIGNS SHALL BE 4" FONT LETTER SIZE

NOTE TO CONTRACTOR:
SIGNS AND POLES SHALL BE PER CDOT STANDARDS S-614-2, S-614-3 AND S-614-8, LATEST REVISION

ALL SIGNAGE INSTALLATION IS TO BE IN COMPLIANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

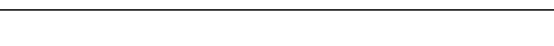
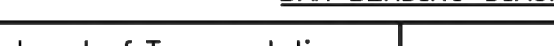
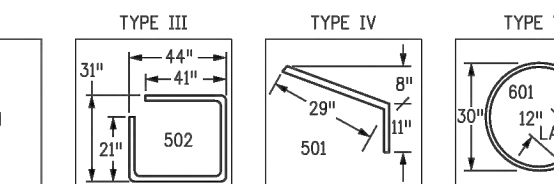
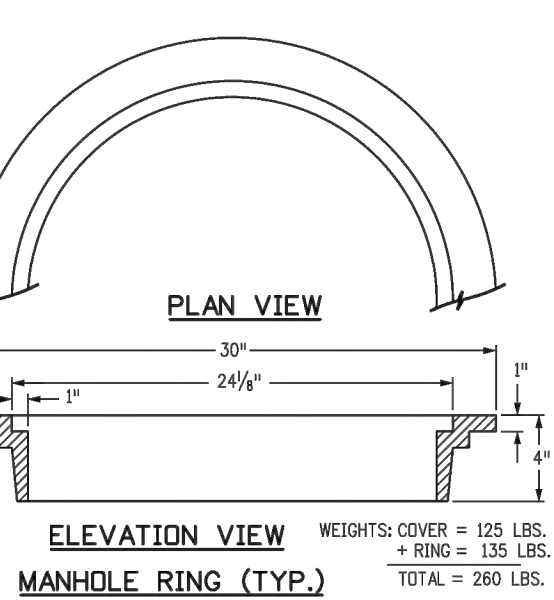
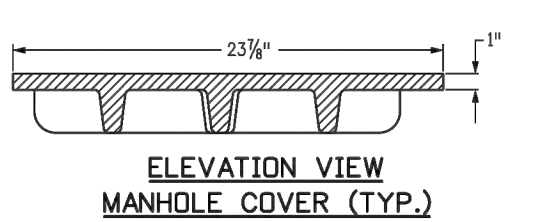
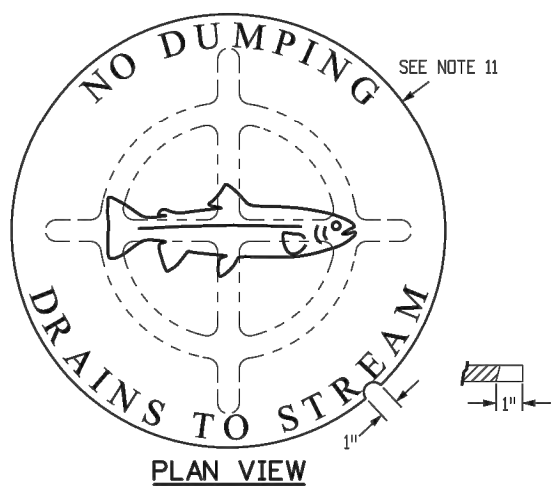




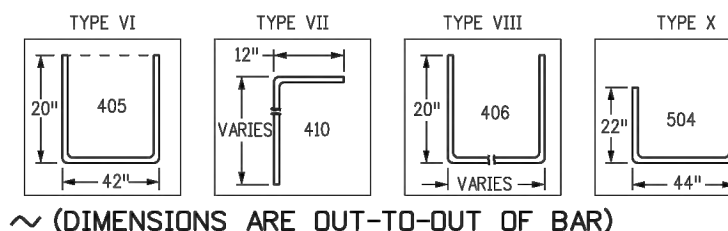
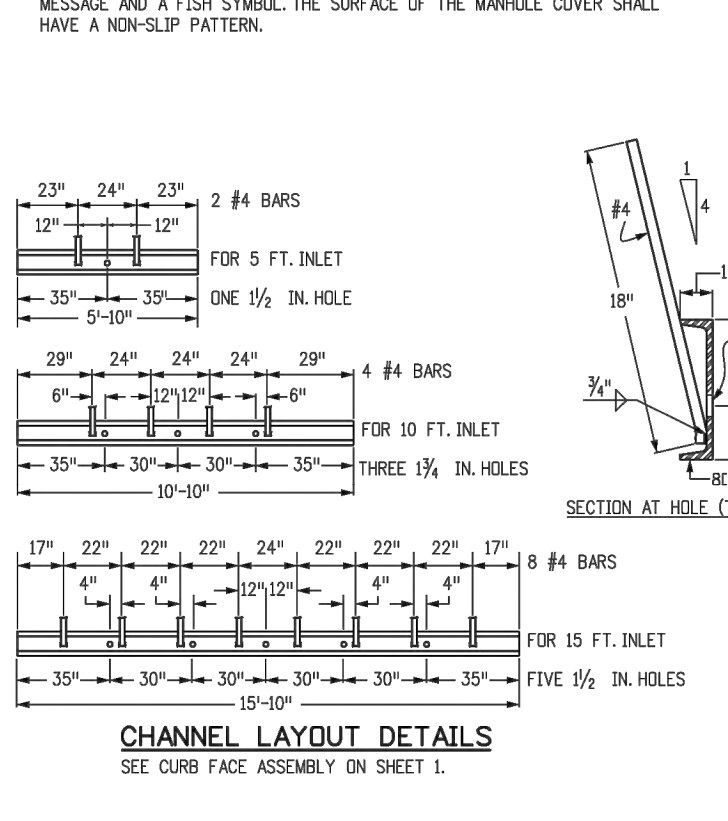
#	Date	Issue / Description	Init.

Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

MARK	BAR #	O.C. SPACING	TYPE	ALL INLETS				INLETS: H ≤ 5 FT.				INLETS: H > 5 FT.			
				L = 5 FT.		L = 10 FT.		L = 15 FT.		L = 10 FT.		L = 15 FT.			
				NO. REQ'D	LENGTH	NO. REQ'D	LENGTH	NO. REQ'D	LENGTH	NO. REQ'D	LENGTH	NO. REQ'D	LENGTH		
401	4	11"	II	15	*	21	*	26	*	11	*	11	*		
402	4	11"	II	7	*	13	*	18	*	7	*	7	*		
403	4	9"	II	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"		
404	4	6"	VI	11	6'-30"	21	6'-30"	31	6'-30"	11	6'-30"	11	6'-30"		
405	4	6"	VIII	7	13'-0"	7	13'-0"	7	18'-0"	7	6'-30"	7	6'-30"		
407	4	6"	VI	11	10'-30"	7	10'-30"	7	18'-0"	7	6'-30"	7	6'-30"		
408	4	12"	II	3	3'-0"	3	11'-0"	3	16'-0"	3	11'-0"	3	16'-0"		
409	4	6"	VI	6	5'-30"	6	10'-30"	6	15'-30"	6	10'-30"	6	15'-30"		
410	4	11"	VIII						3	3		3			
411	4	6"	II						3	5'-2"	3	10'-2"			
412	4	11"	II						3	2'-2"	3	2'-2"			
413	4	9"	II						7	10'-10"	7	10'-10"			



- GENERAL NOTES**
- CONCRETE SHALL BE CLASS B INLET MAY BE CAST-IN-PLACE OR PRECAST.
 - CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES AND SHALL BE 8 IN. THICK.
 - INLET STEPS SHALL BE IN CONFORMANCE WITH AASHTO M 199.
 - CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.
 - EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 1/4 IN. CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.
 - REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2 IN. MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE EPOXY COATED.
 - DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL.
 - MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON IN ACCORDANCE WITH SUBSECTION 712.06.
 - SINCE PIPE ENTRIES INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
 - STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
 - ALL MANHOLE COVERS SHALL BE CAST WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE AND A FISH SYMBOL. THE SURFACE OF THE MANHOLE COVER SHALL HAVE A NON-SLIP PATTERN.



BAR BENDING DIAGRAMS ~ (DIMENSIONS ARE OUT-TO-OUT OF BAR)

501	5	9/8"	II	11	3'-4"	22	3'-4"	33	3'-4"	22	3'-4"	33	3'-4"	
502	5	9/8"	III					11	11'-0"	11	11'-0"	17	11'-0"	
503	5	9/8"	II	5	3'-6"	16	3'-6"	27	3'-6"	6	3'-6"	6	3'-6"	
504	5	9/8"	IX							5	8'-4"			
601	6	2 1/8"	V			2	8'-10"	2	8'-10"	2	8'-10"	4	8'-10"	
608.5				1	5'-10"		1	10'-10"		1	10'-10"		1	10'-10"
				2 BARS, 1000		4 BARS, 1000		4 BARS, 1000		4 BARS, 1000		4 BARS, 1000		

* VARIABLE REFER TO TABLE TWO.
■ INCLUDE #4, 18 IN. BARS (SEE CHANNEL LAYOUT).

TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

H"	LENGTH	NO. REQ'D.		L = 5 FT.	NO. REQ'D.		L = 10 FT.	NO. REQ'D.		L = 15 FT.	NO. REQ'D.		L = 20 FT.
		REGULAR	DROP BOX		REGULAR	DROP BOX		REGULAR	DROP BOX		REGULAR	DROP BOX	
3'-0"	2'-0"	1'-0"	10	7	3.2	285	5.3	497	7.4	706			
3'-6"	3'-2"	2'-2"	10	7	3.4	305	5.7	528	7.9	747			
4'-0"	3'-8"	2'-8"	12	9	3.7	326	6.0	559	8.4	788			
4'-6"	4'-2"	3'-2"	12	9	3.9	334	6.4	571	8.8	803			
5'-0"	4'-8"	3'-8"	14	11	4.1	354	6.7	602	9.3	844			
5'-6"	5'-2"	4'-2"	16	13	4.4	375	7.0	667	7.4	850			
6'-0"	5'-8"	4'-8"	18	15	4.6	385	7.2	686	7.6	860			
6'-6"	6'-2"	5'-2"	18	15	4.8	402	6.4	637	7.8	880			
7'-0"	6'-8"	5'-8"	20	17	5.0	423	6.6	654	8.0	897			
7'-6"	7'-2"	6'-2"	20	17	5.3	430	6.9	664	8.3	907			
8'-0"	7'-8"	6'-8"	22	19	5.5	451	7.1	684	8.5	927			
8'-6"	8'-2"	7'-2"	24	21	5.7	471	7.3	702	8.7	944			
9'-0"	8'-8"	7'-8"	24	21	6.0	479	7.8	711	9.0	954			
9'-6"	9'-2"	8'-2"	26	23	6.2	499	7.8	732	9.2	974			
10'-0"	9'-8"	8'-8"	28	25	6.4	520	8.0	749	9.4	992			
10'-6"	10'-2"	9'-2"	28	25	6.7	527	8.3	759	9.7	1001			
11'-0"	10'-8"	9'-8"	30	27	6.9	547	8.5	779	9.9	1022			

NOTES: FOR L = 5 FT., L = 10 FT., AND L = 15 FT.
REGULAR INLETS TOTAL QUANTITIES NEEDED ARE OUTSIDE THE HEAVY BLACK LINE.
DROP BOX INLETS TOTAL QUANTITIES NEEDED ARE INSIDE THE HEAVY BLACK LINE.
STEEL WEIGHTS DO NOT INCLUDE STRUCTURAL STEEL CHANNEL.

TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"

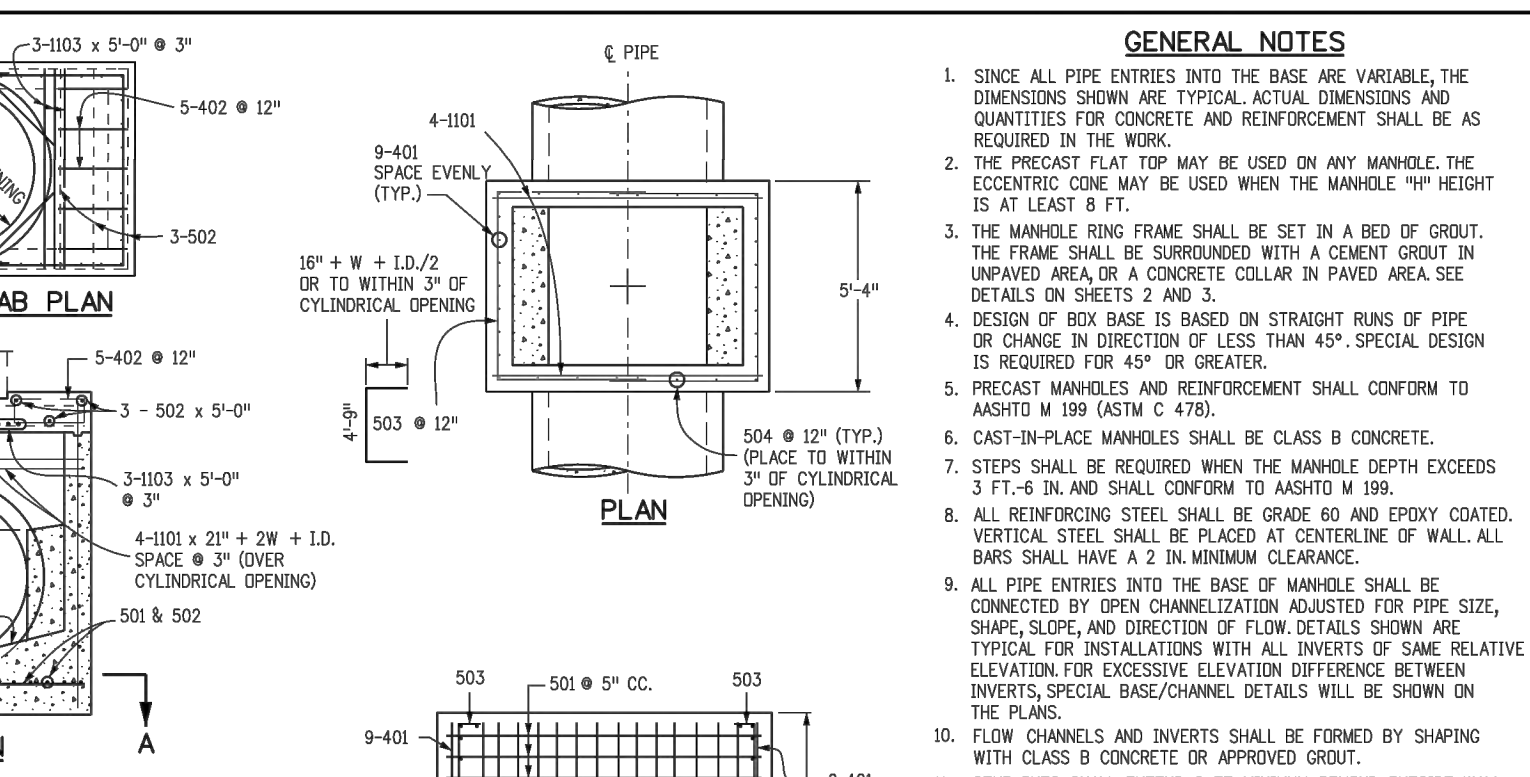
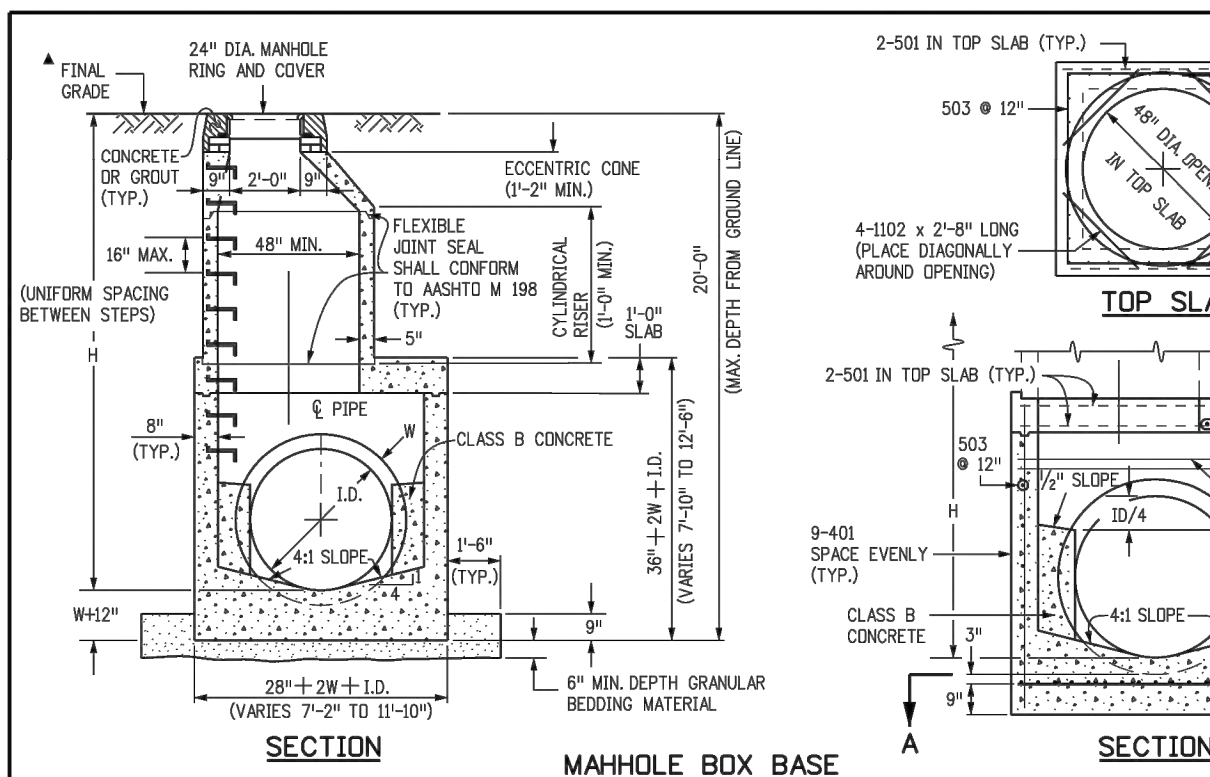
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Last Modification Date:	07/04/12	Initials:	LTA			Project Development Branch	DD/LTA		
Full Path:	www.coloradodot.info/business/designsupport								
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CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English				

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Last Modification Date:	07/04/12	Initials:	LTA			Phone: (303) 757-9083	Fax: (303) 757-9820
Full Path:	www.coloradodot.info/business/designsupport						
Drawing File Name:	M06040200203.dgn						
CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English		

CURB INLET TYPE R

M-604-12

Sheet No. 2 of 2



MARK	SIZE	TYPE	WT. W/T.	BARS	I.D.						FORMULAS
					54"	60"	66"	72"	84"	96"	
401	4	I	0.668	(NO. REQ'D.) WEIGHT	18 97.2	18 104.2	18 111.2	18 118.2	18 125.2	18 136.3	401 BAR LENGTH = 32" + 2W + I.D.
402	4	III	0.668	(NO. REQ'D.) WEIGHT	5-5/8 20.0	5-5/8 20.0	7-3/4 23.0	7-3/4 23.8	9-5/8 27.8	9-5/8 28.7	402 BAR LENGTH = I.D. + 2W
501	5	I	1.043	(NO. REQ'D.) LENGTH WEIGHT	17 35.9	17 37.4	17 38.9	17 40.4	17 41.9	17 45.2	501 BAR LENGTH = 24" + I.D. + 2W
502	5	I	1.043	(NO. REQ'D.) LENGTH WEIGHT	22 114.7	23 119.9	24 125.0	26 135.6	29 150.2	32 166.9	502 NUMBER BARS REQ'D. = 3 + (24h/I.D.2W + 4) ø 5"
503	5	II	1.043	(NO. REQ'D.) LENGTH WEIGHT	21 114.7	19 109.0	18 103.3	18 107.6	20 124.0	24 138.5	503 NUMBER BARS REQ'D. = 2 (13h/I.D.2W + 1) ø 5"
504	5	I	1.043	(NO. REQ'D.) LENGTH WEIGHT	21 114.7	23 119.9	23 125.0	23 130.1	25 140.7	25 150.2	504 NUMBER BARS REQ'D. = 2 (20h/I.D.2W + 1) ø 5"
1101	11	I	5.313	(NO. REQ'D.) LENGTH WEIGHT	4 152.4	4 156.8	4 161.2	4 165.6	4 170.0	4 183.3	1101 BAR LENGTH = 32" + 2W + I.D.
1102	11	I	5.313	(NO. REQ'D.) LENGTH WEIGHT	4 156.7	4 161.1	4 165.5	4 169.9	4 174.3	4 198.1	1102 BAR LENGTH = 24" + 2W
1103	11	I	5.313	(NO. REQ'D.) LENGTH WEIGHT	4 156.7	4 161.1	4 165.5	4 169.9	4 174.3	4 198.1	1103 BAR LENGTH = 24" + 2W
REINFORCING STEEL TOTAL					955.8	1037.5	1127.2	1204.0	1380.2	1601.8	
CONCRETE - CUBIC YARDS - TOTAL					6.0	6.8	7.3	8.0	9.5	11.1	

NOTE: QUANTITIES ARE BASED ON SAME SIZE PIPE ENTRANCES TO AND EXIT FROM BASE, AND 4" T.T. MANHOLES, TOP TO TOP OF BASE.

NOTE: QUANTITIES ARE BASED ON SAME SIZE PIPE ENTRANCE TO AND EXIT FROM BASE, AND A 4" T. MANHOLE.

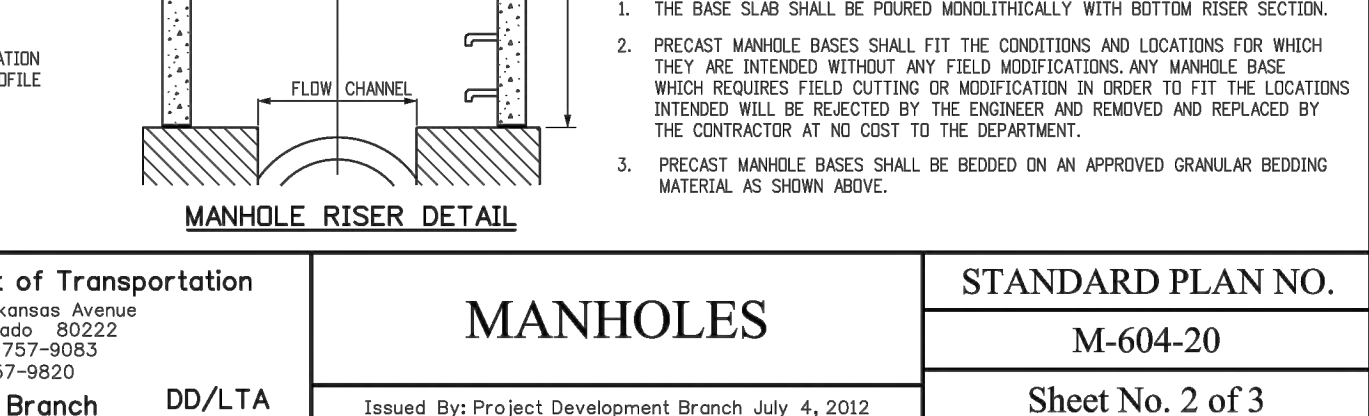
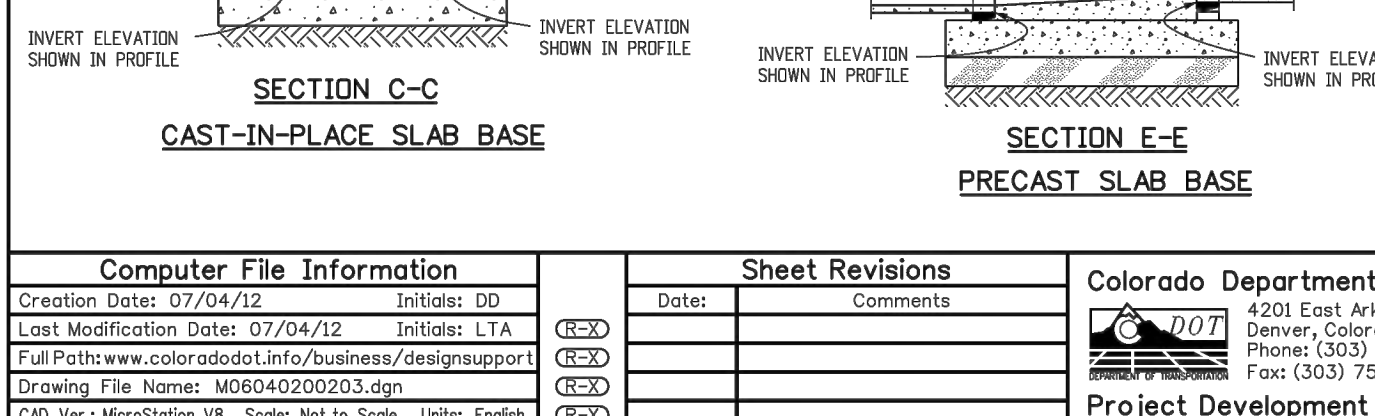
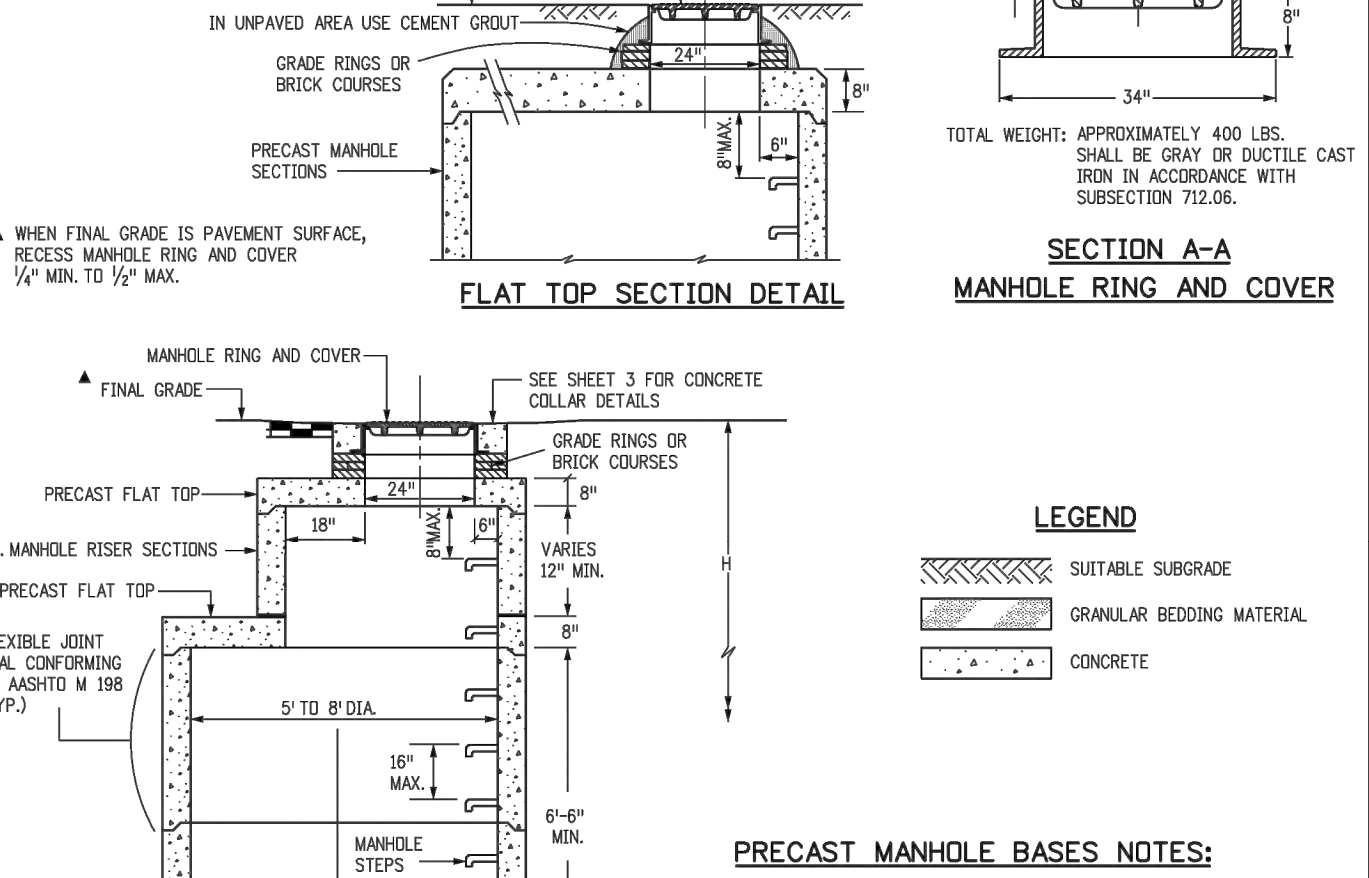
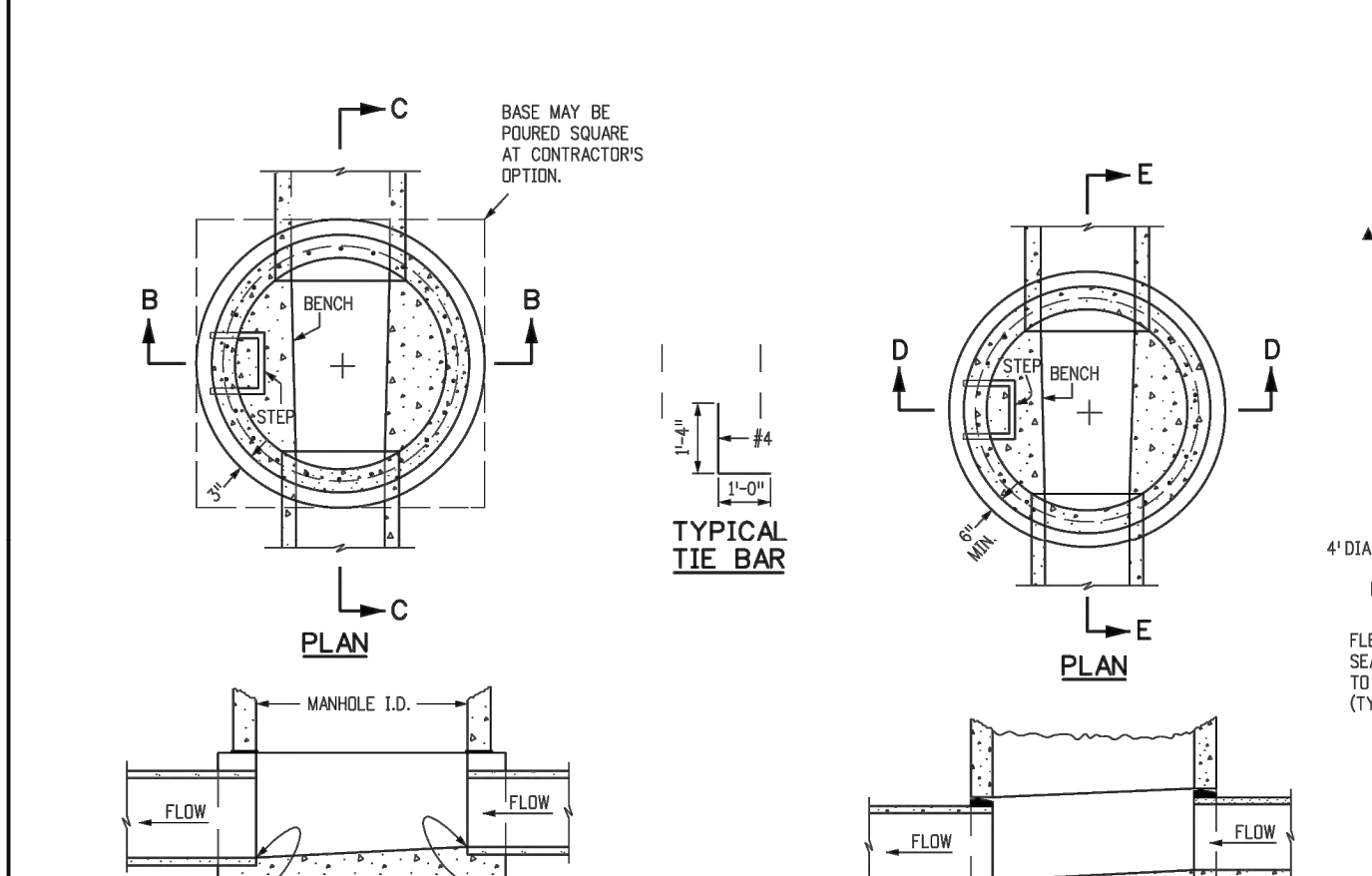
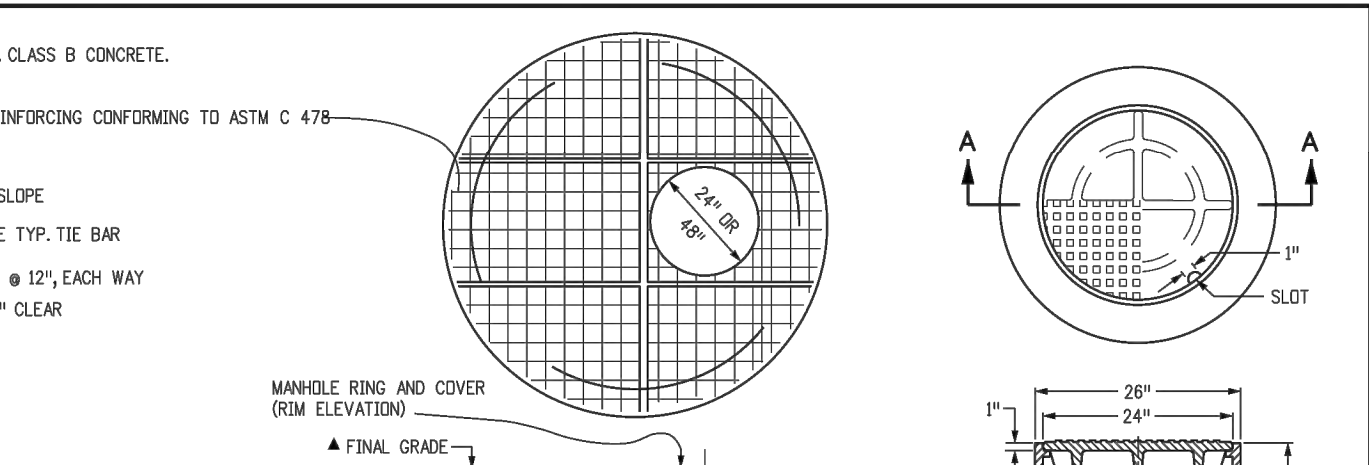
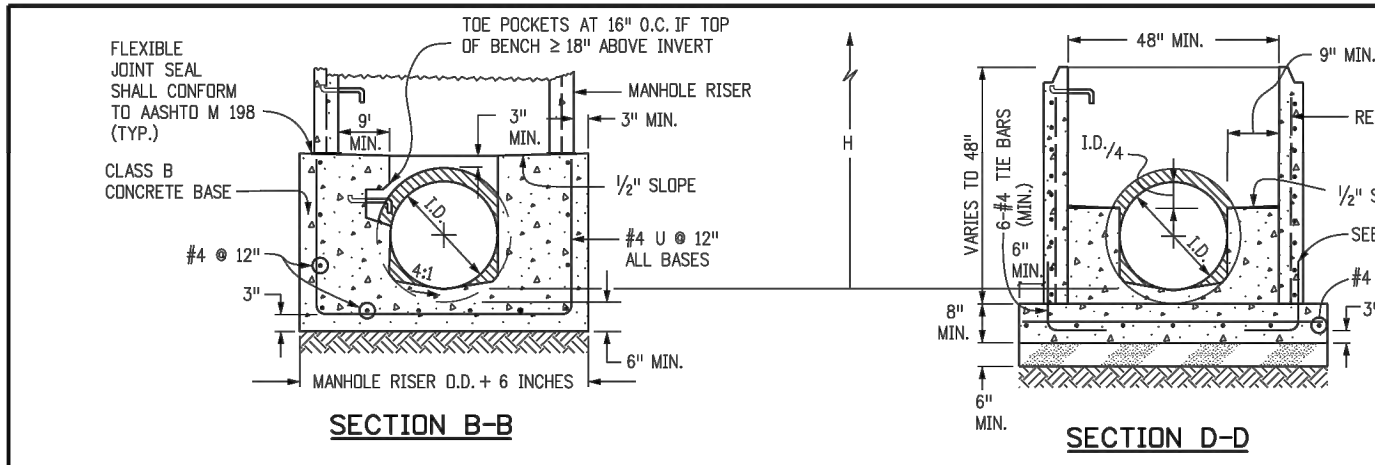
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Computer File Information		Sheet Revisions		Colorado Department of Transportation		STANDARD PLAN NO.	
Creation Date:	07/04/12	Initials:	DD	Date:	Comments	4201 East Arkansas Avenue	Denver, Colorado 80222
Last Modification Date:	07/04/12	Initials:	LTA			Phone: (303) 757-9083	Fax: (303) 757-9820
Full Path:	www.coloradodot.info/business/designsupport						
Drawing File Name:	M06040200303.dgn						
CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English		

MANHOLES

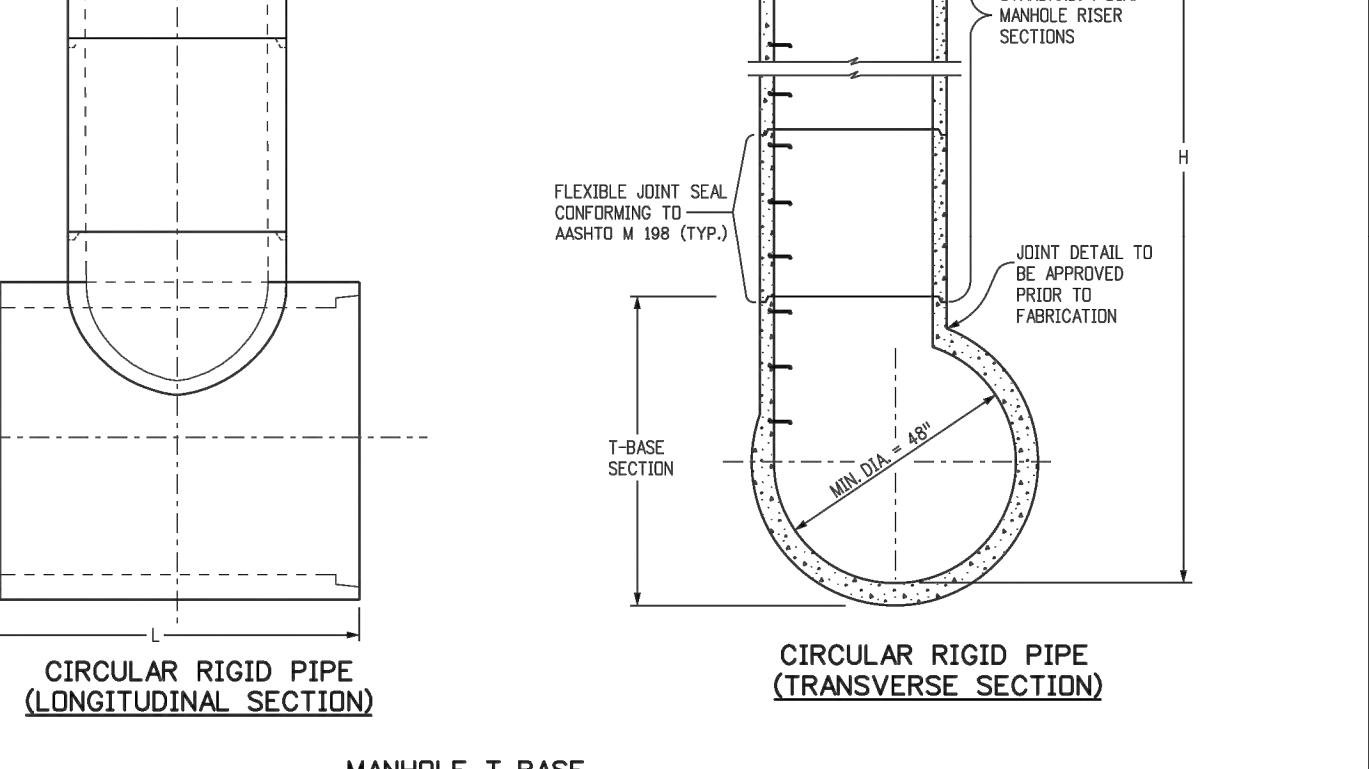
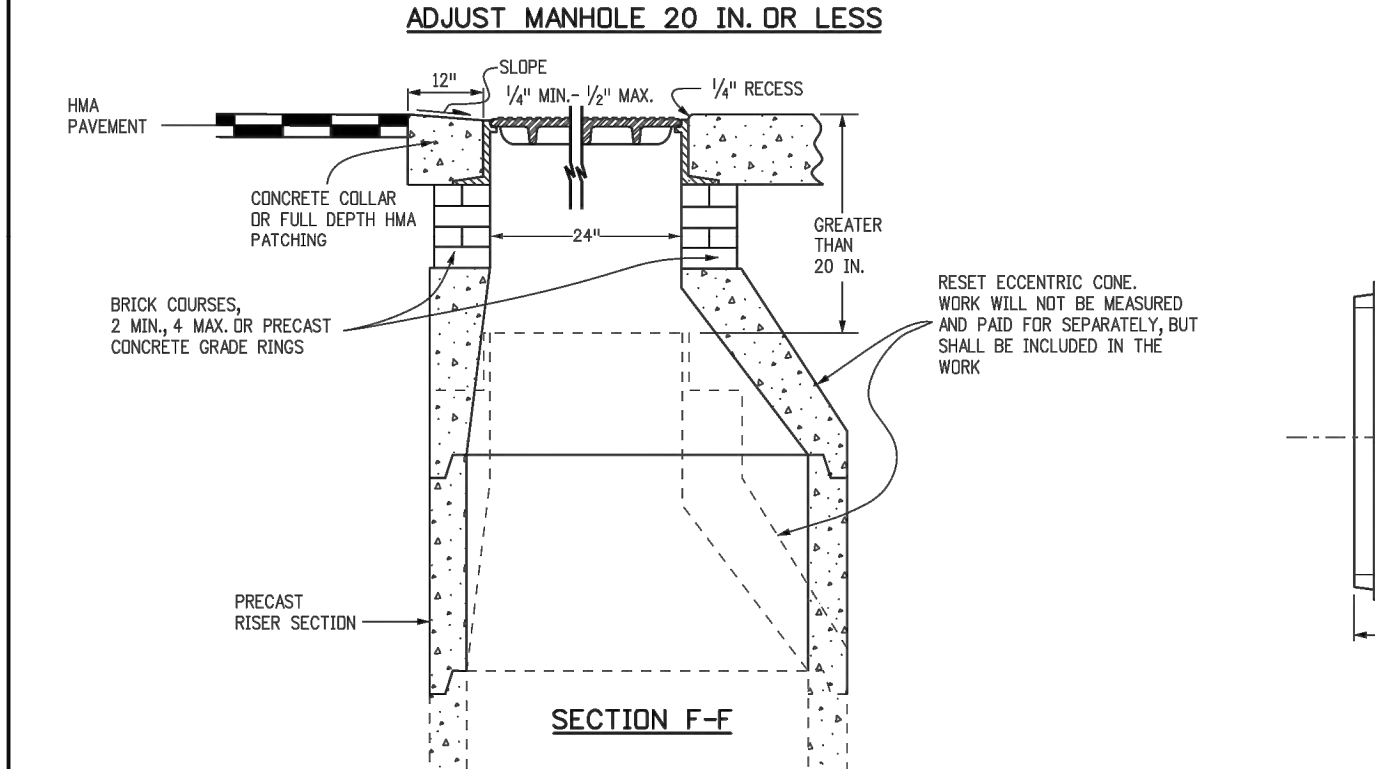
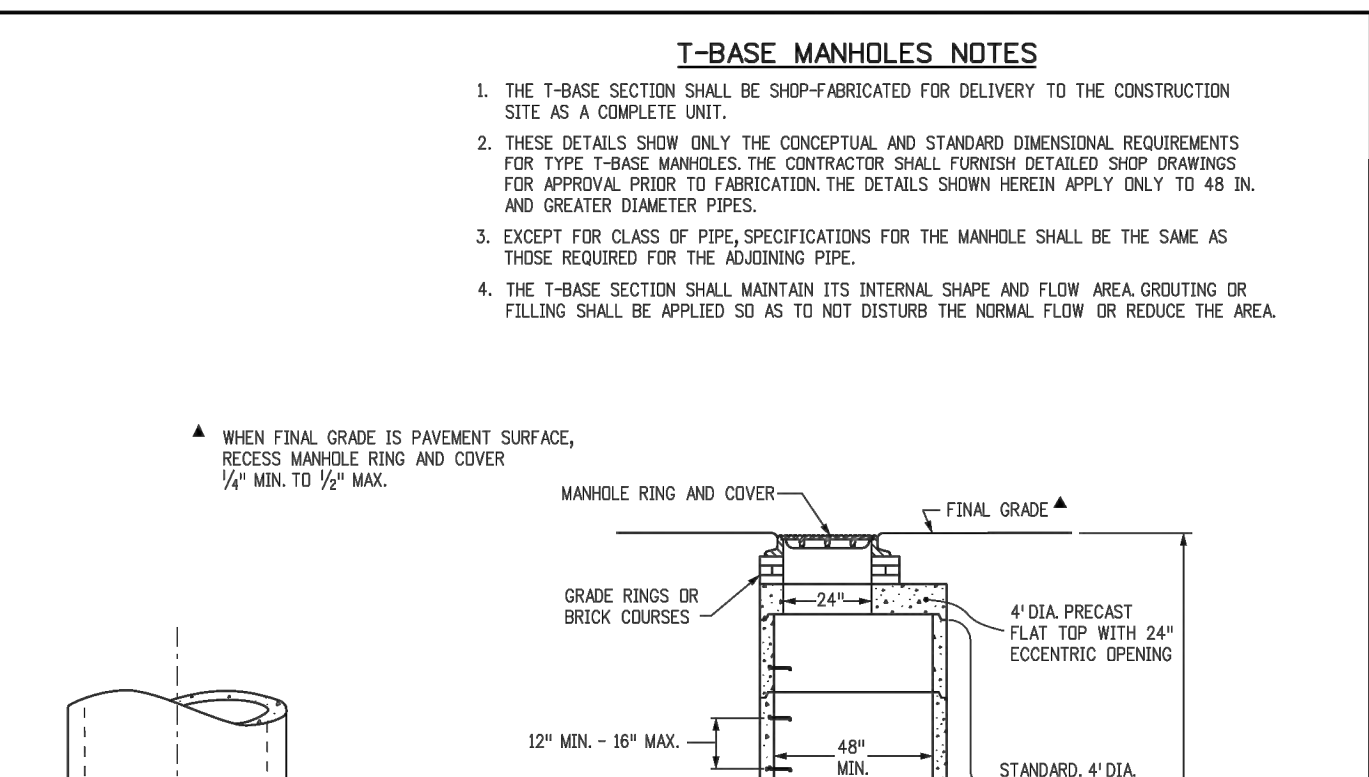
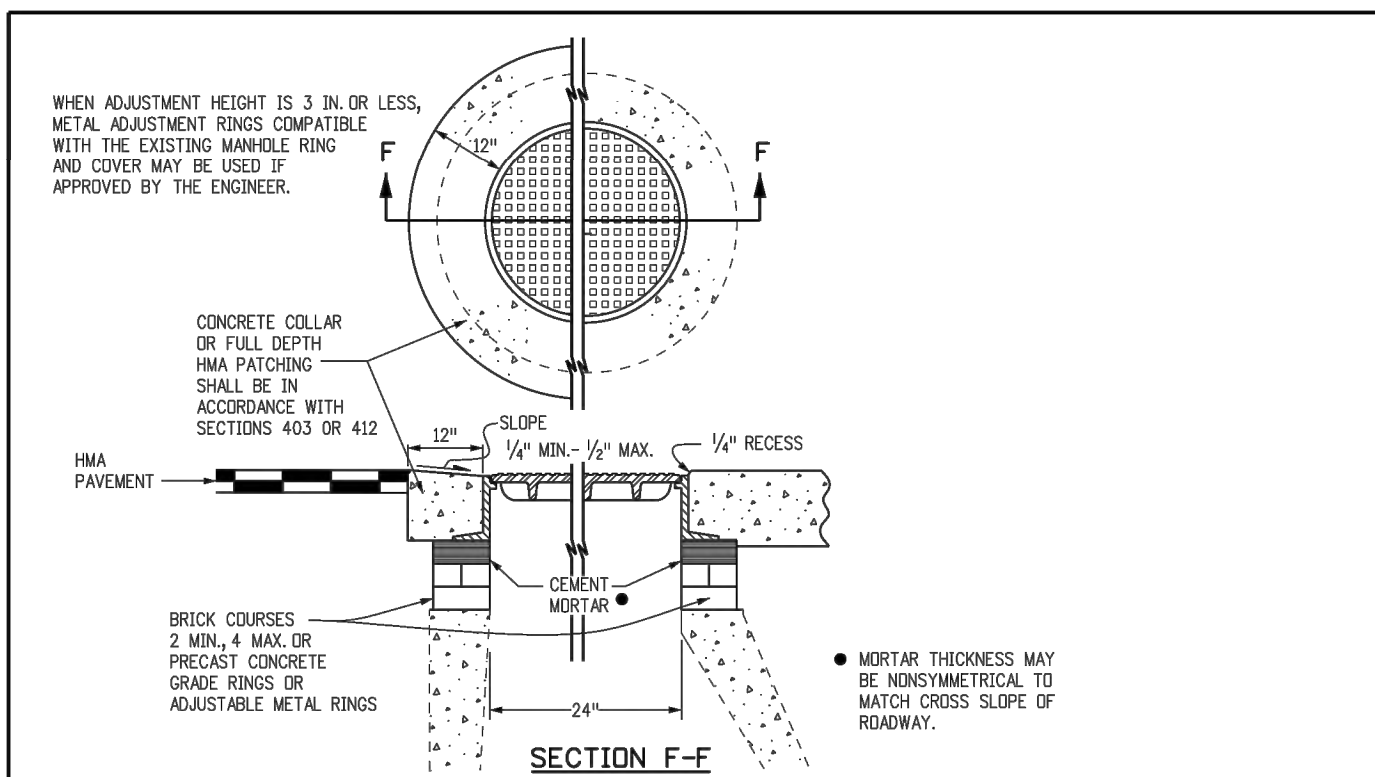
M-604-20

Sheet No. 1 of 3



Computer File Information		Sheet Revisions		Colorado Department of Transportation		STANDARD PLAN NO.	
Creation Date:	07/04/12	Initials:	DD	Date:	Comments	4201 East Arkansas Avenue	Denver, Colorado 80222
Last Modification Date:	07/04/12	Initials:	LTA			Phone: (303) 757-9083	Fax: (303) 757-9820
Full Path:	www.coloradodot.info/business/designsupport						
Drawing File Name:	M06040200203.dgn						
CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English		

Computer File Information		Sheet Revisions		Colorado Department of Transportation		STANDARD PLAN NO.	
Creation Date:	07/04/12	Initials:	DD	Date:	Comments	4201 East Arkansas Avenue	Denver, Colorado 80222
Last Modification Date:	07/04/12	Initials:	LTA			Phone: (303) 757-9083	Fax: (303) 757-9820
Full Path:	www.coloradodot.info/business/designsupport						
Drawing File Name:	M06040200303.dgn						
CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English		



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CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English		

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Full Path:	www.coloradodot.info/business/designsupport						
Drawing File Name:	M06040200303.dgn						
CAD Ver:	MicroStation V8	Scale:	Not to Scale	Units:	English		

MANHOLES

M-604-20

Sheet No. 3 of 3

BENT GRASS RESIDENTIAL FILING NO. 2

COUNTY OF EL PASO, STATE OF COLORADO

UTILITY CONSTRUCTION PLANS

AUGUST 2019

GENERAL NOTES:

1. ALL UTILITY CONSTRUCTION TO BE CONDUCTED IN CONFORMANCE WITH THE CURRENT WOODMEN HILLS METROPOLITAN DISTRICT (WMHD, THE DISTRICT) SPECIFICATIONS.
2. ALL PLANS ON THE JOB SITE SHALL BE SIGNED BY THE DISTRICT AND THE DISTRICTS ENGINEER. ANY REVISION TO THE PLANS SHALL BE SO NOTED WITH THE OLD DRAWING MARKED NOT VALID.
3. ALL STATIONING IS CENTER LINE UNLESS OTHERWISE NOTED. ALL ELEVATIONS ARE CENTER LINE UNLESS OTHERWISE NOTED.
4. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE DISTRICT. THE DISTRICT RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.
5. ALL WATER AND SEWER SERVICE LOCATIONS SHALL BE CLEARLY MARKED ON EITHER THE CURB HEAD OR THE FACE OF THE CURB, WITH AN "S" FOR SEWER AND A "W" FOR WATER.
6. DUCTILE IRON PIPES, INCLUDING FITTINGS, VALVES AND FIRE HYDRANTS, SHALL BE WRAPPED WITH POLYETHYLENE TUBING, DOUBLE BONDED AT EACH JOINT AND ELECTRICALLY ISOLATED. BONDING AND ANODE CONNECTIONS SHALL BE THOROUGHLY COATED WITH BITUMINOUS COATINGS.
7. ALL DUCTILE IRON PIPE LESS THAN 12 INCHES AND FITTINGS SHALL HAVE CATHODIC PROTECTION USING TWO NO. 6 WIRES WITH 17 LB. MAGNESIUM ANODES EVERY 400 FEET AND 9 LB. MAGNESIUM ANODES AT EACH FITTING. ALL DUCTILE IRON PIPE 12 INCHES AND GREATER AND FITTINGS SHALL HAVE CATHODIC PROTECTION USING TWO NO. 6 WIRES WITH 17 LB. MAGNESIUM ANODES EVERY 300 FEET AND 9 LB. MAGNESIUM ANODES AT EACH FITTING.
8. ALL PIPE MATERIAL, BACKFILL AND INSTALLATION SHALL CONFORM TO THE APPLICABLE SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS, COLORADO DEPARTMENT OF TRANSPORTATION, EL PASO COUNTY DEPARTMENT OF TRANSPORTATION, COLORADO SPRINGS UTILITIES AND THE GEOTECHNICAL ENGINEER.
9. COMPACTION TESTS SHALL BE 95% STANDARD PROCTOR AS DETERMINED BY ASTM D698, UNLESS OTHERWISE APPROVED BY THE DISTRICT OR HIGHER STANDARD AS IMPOSED BY ANOTHER AGENCIES HAVING RIGHT-OF-WAY JURISDICTION. THIS SHALL INCLUDE ALL VALVES, FIRE HYDRANT RUNS, WATER & SEWER SERVICE LINES AND MANHOLES. ALL REPORTS SHALL BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL.
10. THE LOCATION OF ALL EXISTING UTILITIES SHOWN ON THE DRAWINGS ARE APPROXIMATE ONLY. THE LOCATION OF ALL UTILITIES SHALL BE FIELD VERIFIED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. THE DISTRICT SHALL BE NOTIFIED OF ANY DEVIATIONS TO THE LINE AND/OR GRADE AS DEPICTED ON THE PLANS. CONTRACTOR SHALL SUBMIT TO THE DISTRICT AND THE ENGINEER OF RECORD A REPORT OF THE FIELD VERIFIED INFORMATION PRIOR TO THE START OF CONSTRUCTION.
11. ALL BENDS SHALL BE FIELD STAKED PRIOR TO THE START OF CONSTRUCTION.
12. BENDS, DEFLECTION & CUT PIPE LENGTHS SHALL BE USED TO HOLD HORIZONTAL ALIGNMENT OF SEWER AND WATER LINES TO NO MORE THAN 0.5' FROM THE DESIGNED ALIGNMENT. CONSTRUCTION STAKES TO BE AT 25' INTERVALS ALONG CURVES TO ASSURE LOCATION OF PIPE LINE CONSTRUCTION.
13. AT ALL LOCATIONS WHERE CAP AND STUB IS NOTED ON DRAWINGS, PROVIDE A PLUG AT THE END OF THE PIPE JOINT NEAREST THE SPECIFIED STATION. PROVIDE A REVERSE ANCHOR AT ALL WATER LINE PLUGS.
14. ALL UNUSED SALVAGED WATER UTILITY MATERIAL SHALL BE RETURNED TO THE METROPOLITAN DISTRICT AS REQUESTED.
15. AT THE CONTRACTOR'S EXPENSE, ALL UTILITY MAINS SHALL BE SUPPORTED AND PROTECTED SUCH THAT THEY SHALL FUNCTION CONTINUOUSLY DURING CONSTRUCTION OPERATIONS. SHOULD A UTILITY MAIN FAIL AS A RESULT OF THE CONTRACTOR'S OPERATION, IT SHALL BE REPLACED IMMEDIATELY BY THE CONTRACTOR AT FULL COST OF LABOR AND MATERIALS TO THE CONTRACTOR/DEVELOPER.
16. PUMPING OR BYPASS OPERATIONS SHALL BE REVIEWED AND APPROVED BY BOTH THE DISTRICT AND THE DISTRICT ENGINEER PRIOR TO EXECUTION.
17. THE CONTRACTOR SHALL REPLACE OR REPAIR DAMAGE TO ALL SURFACE IMPROVEMENTS, INCLUDING BUT NOT LIMITED TO FENCES, LANDSCAPING, CURB AND GUTTER AND/OR ASPHALT THAT MAY BE CAUSED DURING CONSTRUCTION.
18. ALL CONTRACTORS WORKING ON OR NEAR A WATER OR SEWER FACILITY (TO INCLUDE SERVICE LINES) SHALL HAVE LIABILITY INSURANCE NAMING THE DISTRICT AS AN ADDITIONAL INSURED AND SHALL PROVIDE A CURRENT COPY OF WORKERS COMPENSATION INSURANCE ON FILE WITH THE DISTRICT. NO WORK CAN PROCEED WITHOUT CURRENT CERTIFICATES ON FILE AT THE DISTRICT'S OFFICE.
19. THE CONTRACTOR SHALL NOTIFY THE DISTRICT AND ALL AFFECTED UTILITY COMPANIES ADJACENT TO THE PROPOSED UTILITY CONSTRUCTION A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF CONSTRUCTION. A WEEKLY CONSTRUCTION MEETING SHALL BE REQUIRED WITH THE CONTRACTOR, DISTRICT ENGINEER AND ALL OTHER PARTIES AS DEEMED NECESSARY BY THE DISTRICT.
20. COMMENCEMENT OF CONSTRUCTION OF WATER/SEWER SYSTEMS WITHIN METROPOLITAN DISTRICT:

- A) PRIOR TO THE START OF CONSTRUCTION, A PRE-CONSTRUCTION MEETING IS REQUIRED A MINIMUM OF 48 HOURS IN ADVANCE OF COMMENCEMENT OF WORK. A REPRESENTATIVE OF THE OWNER OR DEVELOPER, A REPRESENTATIVE OF THE CONTRACTOR AND DESIGN ENGINEER ARE REQUIRED TO ATTEND. CONTACT THE DISTRICT TO SCHEDULE THE PRE-CONSTRUCTION MEETING. NO PRE-CONSTRUCTION MEETING CAN BE SCHEDULED PRIOR TO FOUR (4) SIGNED/APPROVED PLAN SETS ARE RECEIVED BY THE DISTRICT.
- B) THE CONTRACTOR IS REQUIRED TO NOTIFY THE DISTRICT A MINIMUM OF 48 HOURS AND A MAXIMUM OF 2 WEEKS PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR SHALL ALSO NOTIFY AFFECTED UTILITY COMPANIES AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION ADJACENT TO THE KNOWN UTILITY LINES.

21. TESTING OF FACILITIES:

- A) THE CONTRACTOR SHALL NOTIFY THE DISTRICT A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF ANY TESTING.

- B) ALL SECTIONS OF WATER LINE ARE TO MEET THE FOLLOWING PRESSURE TESTING REQUIREMENTS
 - TEST 100 % OF ALL LINES
 - MUST PASS PRESSURE TEST TO 200 PSI FOR TWO HOURS (UNLESS OTHERWISE APPROVED ON THE PLANS).

- C) ALL SANITARY SEWER FACILITIES ARE TO MEET THE FOLLOWING TESTING REQUIREMENTS
 - ALL LINES SHALL BE JET CLEANED PRIOR TO VACUUM OR PRESSURE TESTING
 - ALL MANHOLES SHALL BE VACUUM TESTED WITH DISTRICT STAFF PRESENT PRIOR TO CCTV INSPECTION.
 - SEWER MAINS TO BE PRESSURE TEST PRIOR TO CCTV INSPECTION
 - ALL LINES SHALL BE CCTV INSPECTED AND VIDEO SHALL TO BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL.

22. PRELIMINARY ACCEPTANCE SHALL BE DEFINED AS THE POINT IN TIME THAT THE DISTRICT ACCEPTS THE FACILITY FOR USE. ALL SURFACE IMPROVEMENTS AND RESTORATION SHALL BE COMPLETED WITHIN 30 DAYS OF COMMENCEMENT. SHOULD THE CONTRACTOR FAIL TO COMPLETE ALL SURFACE IMPROVEMENTS AND RESTORATION WITHIN 30 DAYS OF COMMENCEMENT OF SERVICE, THE DISTRICT, AT THEIR DISCRETION, MAY ELECT TO COMPLETE THE IMPROVEMENTS AT THE CONTRACTORS COST.

23. FINAL ACCEPTANCE BY THE DISTRICT OF ANY LINE OR SYSTEM SHALL NOT OCCUR UNTIL COMPLETION OF FINAL ASPHALT LAYERS AND/OR FINAL COMPLETION AND/OR RESTORATION OF ALL SURFACE IMPROVEMENTS. THE WARRANTY PERIOD FOR ALL FACILITIES PRIOR TO FINAL ACCEPTANCE SHALL BE 24 MONTHS COMMENCING AFTER PRELIMINARY ACCEPTANCE.

24. ACCEPTANCE:

- A) THE DISTRICT MAY GIVE PRELIMINARY ACCEPTANCE ONCE ALL OF THE TESTS ON ALL THE LINES HAVE BEEN COMPLETED AND A WALK-THRU HAS OCCURRED.
- B) A SECOND ACCEPTANCE MAY OCCUR ONCE FIRST LIFT OF ASPHALT GOES DOWN AND A SECOND WALK-THRU OF THE SYSTEM OCCURS. IF ALL FACILITIES ARE CLEAN AND ACCESSIBLE, A FINAL ACCEPTANCE MAY OCCUR (THE DISTRICT MAY REQUIRE CLEANING AND RE-VIDEO OF THE SYSTEM, DEPENDING ON THE SEVERITY OF THE CONTAMINATION).

25. ALL WATER AND SEWER MAINS, INCLUDING SERVICE LINES, SHALL HAVE "AS-BUILT" DRAWINGS PREPARED AND APPROVED PRIOR TO PRELIMINARY ACCEPTANCE BY THE DISTRICT.

26. ALL COMMERCIAL/BUSINESS DEVELOPMENTS SHALL HAVE AN EIGHT INCH (MIN.) WATER MAIN LOOPED THROUGH THE PROPOSED PROPERTY WITH GATE VALVES LOCATED WHERE THE MAIN ENTERS THE PROPERTY LINE. AN EIGHT INCH SEWER MAIN SHALL BE INSTALLED FOR SERVICE TO COMMERCIAL/BUSINESS DEVELOPMENTS, AND A MANHOLE SHALL BE LOCATED WHERE THE MAIN ENTERS THE PROPERTY. THE END OF THE MAINS SHALL BE MARKED WITH THE APPROPRIATE COLORED CARSONITE MARKER ALONG WITH TRACER WIRE.

27. AFTER REVIEW AND APPROVAL OF PLANS FOR THE EXTENSION OF LINES, FACILITIES AND/OR SERVICES, CONSTRUCTION MUST BE COMMENCED WITHIN 18 MONTHS FOR RESIDENTIAL SUBDIVISIONS AND 12 MONTHS FOR ANY COMMERCIAL INSTALLATIONS.

28. INSPECTION FEES: CALL THE DISTRICT (719-495-2500) FOR FEE SCHEDULE.

WATER SYSTEM INSTALLATION NOTES

29. ALL WATER AND FORCE MAIN PIPE SHALL BE AWWA C900 PVC, OR EQUAL, PRESSURE CLASS 200. ALL WATER AND FORCE MAIN FITTINGS SHALL HAVE MECHANICAL RESTRAINTS AND THRUST BLOCKS. ALL WATER AND FORCE MAIN PIPE SHALL HAVE A MINIMUM COVER DEPTH OF FIVE AND ONE-HALF (5.5) FEET.

30. ALL WATER VALVES ASSOCIATED WITH THE POTABLE WATER SYSTEM SHALL BE OPEN CLOCKWISE. ALL VALVES INSTALLED IN LANDSCAPED AREAS AND/OR NOT WITHIN PAVED STREETS SHALL BE MARKED WITH CARSONITE MARKERS. ALL VALVES ASSOCIATED WITH THE RAW WATER SYSTEM SHALL BE OPEN COUNTERCLOCKWISE AND MARKED WITH CARSONITE MARKERS AS APPLICABLE.

31. THE DEVELOPER OR HIS ENGINEER SHALL LOCATE ALL FIRE HYDRANTS AND SERVICE STUB OUTS FOR FUTURE DEVELOPMENT. ANY REQUIRED REALIGNMENT, (HORIZONTAL OR VERTICAL), SHALL BE AT THE EXPENSE OF THE DEVELOPER. FIRE HYDRANT LOCATION SHALL BE REVIEWED AND APPROVED BY THE APPLICABLE FIRE AUTHORITY.

32. FIRE HYDRANTS SHALL BE OPEN RIGHT WITH 7/8" X 7/8" SQUARE TAPERED ALONG WITH SERVICE CAPS. LUBRICATION TYPE: (GREASE). ACCEPTABLE BRANDS ARE AMERICAN AWK SERIES 2700 (MODERN) AND MUELLER SUPER CENTURION 250.

33. ALL MAIN LINES (PVC & DUCTILE IRON) SHALL BE INSTALLED WITH COATED #12 TRACER WIRE WITH TEST STATIONS AT INTERVALS NO GREATER THAN 500 FT (VALVE BOXES CAN BE USED AT INTERSECTIONS AND SERVICE STUBS).

34. CONTRACTOR SHALL MAKE CONNECTIONS TO EXISTING WATER LINE WITHOUT SHUTDOWN, OR ELSE NOTIFY THE DISTRICT OF ANY SERVICE SHUTDOWNS NECESSARY TO CONNECT TO EXISTING LINES.

35. IRRIGATION SERVICES SHALL HAVE A STOP AND WASTE CURB STOP VALVE INSTALLED ALONG WITH TRACER WIRE EXTENDING BACK TO THE MAIN LINE.

36. COMMENCEMENT OF USE OF WATER LINES AND/OR SYSTEMS:

- A) NO WATER FACILITY SHALL BE PLACED IN SERVICE UNTIL AFTER THE COMPLETION OF ALL PRESSURE TESTING, FLUSHING, BAC-T TESTING, COMPACTION TESTING, AND AS-BUILT DRAWINGS ARE SUBMITTED AND APPROVED BY THE DISTRICT.

- B) NO WATER FACILITY SHALL BE PLACED IN SERVICE UNTIL ALL SERVICE LINES ARE COMPLETED AND THE FIRST LIFT OF ASPHALT IS COMPLETED OVER THE LINE. IN THE CASE WHERE NO ASPHALT IS TO BE PLACED OVER THE LINE, SURFACE IMPROVEMENTS SHALL BE COMPLETED PRIOR TO USE OF THE FACILITY.

- C) ALL EASEMENTS (PLATTED OR DEEDED) ARE DEDICATED, EXECUTED BY THE DISTRICT, AND RECORDED.

WASTEWATER SYSTEM INSTALLATION NOTES

37. SANITARY SEWER LENGTHS ARE MH CENTER-MH CENTER. ALL SANITARY SEWER PIPES SHALL BE SDR 35 PVC OR EQUAL. SEWER LINES MAY NOT EXCEED 7% GRADE FOR ANY SIZE WITHOUT PRIOR APPROVAL OF THE DISTRICT. ALL NEWLY CONSTRUCTED RESIDENTIAL SANITARY SEWER TAPS SHALL USE REE-MANUFACTURED IN-LINE PVC PUSH-ON WYES. TAPPING SADDLES MAY ONLY BE USED FOR TAPPING PRE-EXISTING MAINS.

38. ALL SANITARY SEWER MANHOLES SHALL BE WRAPPED WITH RU116 - RUBR-NEK JOINT WRAP OR EQUIVALENT AND COATED.

39. COMMENCEMENT OF USE OF SEWER LINES AND/OR SYSTEMS:

- A) NO SANITARY SEWER FACILITY SHALL BE PLACED IN SERVICE UNTIL THE COMPLETION OF ALL JET CLEANING, PRESSURE TESTING, VACUUM TESTING, CCTV INSPECTION, COMPACTION TESTING, AND AS-BUILT DRAWINGS ARE SUBMITTED AND APPROVED BY THE DISTRICT.

- B) NO SANITARY SEWER FACILITY SHALL BE PLACED IN SERVICE UNTIL ALL SERVICE LINES ARE COMPLETED AND THE FIRST LIFT OF ASPHALT IS COMPLETED OVER THE LINE. IN THE CASE WHERE NO ASPHALT IS TO BE PLACED OVER THE LINE, ANY REQUIRED SURFACE IMPROVEMENTS SHALL BE COMPLETED PRIOR TO USE OF THE FACILITY.

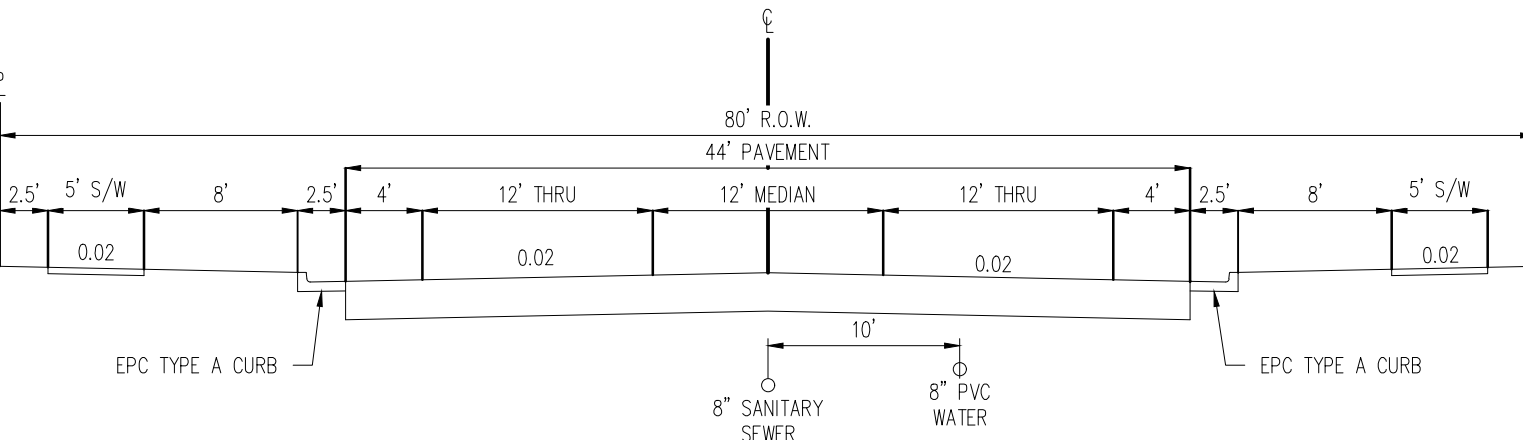
- C) ALL NECESSARY EASEMENTS (PLATTED OR DEEDED) ARE DEDICATED, EXECUTED BY THE DISTRICT, AND RECORDED.

- D) DOWNSTREAM PLUG CAN BE REMOVED ONCE FIRST LIFT OF ASPHALT IS DOWN AND THE ABOVE REQUIREMENTS ARE MET.

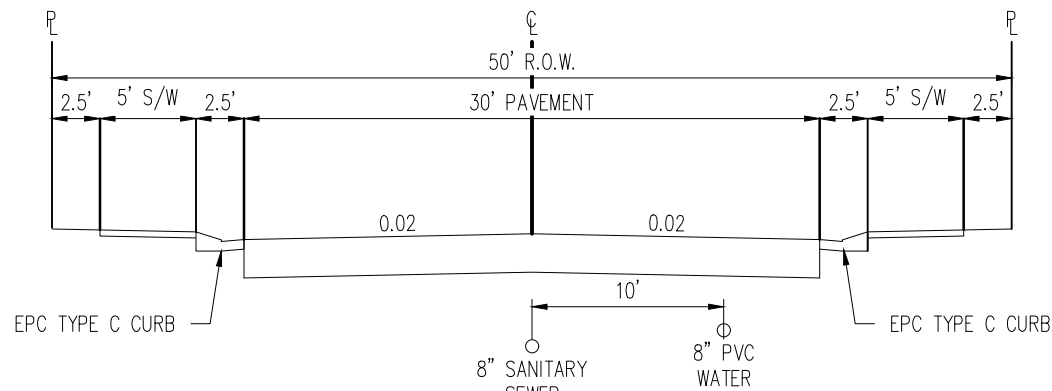
THE ABOVE GUIDELINES ARE SUBJECT TO CHANGE AT ANY TIME.



VICINITY MAP
NTS



TYPICAL STREET SECTION - BENT GRASS MEADOWS DRIVE
URBAN NON-RESIDENTIAL COLLECTOR ROADWAY
N.T.S.



TYPICAL STREET SECTION
URBAN LOCAL ROADWAY
N.T.S.

WATER AND SEWER MAIN EXTENSIONS :

ANY CHANGES OR ALTERATIONS AFFECTING THE GRADE, ALIGNMENT, ELEVATION AND/OR DEPTH OF COVER OF ANY WATER OR SEWER MAINS OR OTHER APPURTENANCE SHOWN ON THIS DRAWING SHALL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR ALL OPERATIONAL DAMAGES AND DEFECTS IN INSTALLATION AND MATERIAL FOR MAINS AND SERVICES FROM THE DATE OF APPROVAL UNTIL FINAL ACCEPTANCE IS ISSUED.

SIGNED _____ OWNER/DEVELOPER DATE _____

PRINT NAME _____

DBA _____

ADDRESS _____

FIRE AUTHORITY APPROVAL:

THE NUMBER OF FIRE HYDRANTS AND HYDRANT LOCATIONS SHOWN ON THIS WATER INSTALLATION PLAN ARE CORRECT AND ADEQUATE TO SATISFY THE FIRE PROTECTION REQUIREMENTS AS SPECIFIED BY THE FIRE DISTRICT SERVING THE PROPERTY NOTED ON THE PLANS.

FIRE PROTECTION DISTRICT _____

SIGNED _____ FIRE PROTECTION DISTRICT DATE _____

DISTRICT APPROVALS:

THE WOODMEN HILLS METROPOLITAN DISTRICT RECOGNIZES THE DESIGN ENGINEER AS HAVING RESPONSIBILITY FOR THE DESIGN AND HAS LIMITED ITS SCOPE OF REVIEW ACCORDINGLY.

WOODMEN HILLS METROPOLITAN DISTRICT
WATER DESIGN APPROVAL

DATE: _____ BY: _____

PROJECT NO. _____

IN CASE OF ERRORS OR OMISSIONS WITH THE WATER DESIGN AS SHOWN ON THIS DOCUMENT THE STANDARDS AS DEFINED IN THE RULES AND REGULATIONS FOR INSTALLATION OF WATER MAINS AND SERVICES' SHALL RULE.

APPROVAL EXPIRES 180 DAYS FROM DESIGN APPROVAL.

THE WOODMEN HILLS METROPOLITAN DISTRICT RECOGNIZES THE DESIGN ENGINEER AS HAVING RESPONSIBILITY FOR THE DESIGN AND HAS LIMITED ITS SCOPE OF REVIEW ACCORDINGLY.

WOODMEN HILLS METROPOLITAN DISTRICT
WASTEWATER DESIGN APPROVAL

DATE: _____ BY: _____

PROJECT NO. _____

IN CASE OF ERRORS OR OMISSIONS WITH THE WATER DESIGN AS SHOWN ON THIS DOCUMENT THE STANDARDS AS DEFINED IN THE RULES AND REGULATIONS FOR INSTALLATION OF WASTEWATER MAINS AND SERVICES' SHALL RULE.

APPROVAL EXPIRES 180 DAYS FROM DESIGN APPROVAL.

ENGINEERS STATEMENT:

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID DETAILS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE STATE OF COLORADO.

RONALD G. DENNIS, COLORADO P.E. NO. 0051622

DATE _____

SHEET LIST TABLE

SHEET NUMBER	SHEET TITLE	SHEET DESCRIPTION
1	COVER SHEET	C0.00
2	OVERALL UTILITY PLAN	C1.00
3	SANITARY LAYOUT PLAN	C1.01
4	SANITARY LAYOUT PLAN	C1.02
5	SANITARY LAYOUT PLAN	C1.03
6	SANITARY LAYOUT PLAN	C1.04
7	SANITARY LAYOUT PLAN	C1.05
8	WATER LAYOUT PLAN	C2.00
9	WATER LAYOUT PLAN	C2.01
10	WATER LAYOUT PLAN	C2.02
11	WATER LAYOUT PLAN	C2.03
12	AVENA ROAD SANITARY PLAN & PROFILE	C3.00
13	BOSSETT DRIVE SANITARY PLAN & PROFILE	C3.01
14	BENT GRASS MEADOWS DRIVE SANITARY PLAN & PROFILE	C3.02
15	BENT GRASS MEADOWS DRIVE SANITARY PLAN & PROFILE	C3.03
16	BENT GRASS MEADOWS DRIVE SANITARY PLAN & PROFILE	C3.04
17	BARLEY COURT SANITARY PLAN & PROFILE	C3.05
18	NEBRARA DRIVE & ANSLEY COURT SANITARY PLAN & PROFILE	C3.06
19	BERWYN DRIVE SANITARY PLAN & PROFILE	C3.07
20	BERWYN DRIVE SANITARY PLAN & PROFILE	C3.08
21	FEATHER REED DRIVE SANITARY PLAN & PROFILE	C3.09
22	FEATHER REED DRIVE & CORDGRASS ROAD SANITARY PLAN & PROFILE	C3.10
23	WILMORE DRIVE SANITARY PLAN & PROFILE	C3.11
24	THEODOR COURT & SILKY THREAD ROAD SANITARY PLAN & PROFILE	C3.12
25	RIGHT OF WAY CONNECTION SANITARY PLAN & PROFILE	C3.13
26	RIGHT OF WAY CONNECTION SANITARY PLAN & PROFILE	C3.14
27	UTILITY DETAILS	C4.00
28	UTILITY DETAILS	C4.01
29	UTILITY DETAILS	C4.02
30	UTILITY DETAILS	C4.03
31	UTILITY DETAILS	C4.04

SEE BENT GRASS RESIDENTIAL FILING NO. 2 CONSTRUCTION PLANS FOR PUBLIC AND PRIVATE IMPROVEMENTS
SEE BENT GRASS RESIDENTIAL FILING NO. 2 DEC PLANS FOR GRADING AND EROSION CONTROL CONSTRUCTION DOCUMENTS

LIST OF CONTACTS

APPLICANT/DEVELOPER

CHALLENGER HOMES, INC.
13570 NORTHGATE ESTATES DR.
COLORADO SPRINGS, CO 80921
TEL: (719) 588-5100
CONTACT: JIM BYERS
EMAIL: JIMBY@CHALLENGERHOMES.COM

ENGINEER

GALLOWAY & COMPANY, INC.
1155 KELLY JOHNSON BLVD., SUITE 305
COLORADO SPRINGS, COLORADO 80920
TEL: (719) 900-7220
CONTACT: GRANT DENNIS, P.E.
EMAIL: GRANTDENNIS@GALLOWAYUS.COM

EL PASO COUNTY

EL PASO COUNTY, PLANNING & COMMUNITY DEVELOPMENT
2880 INTERNATIONAL CIRCLE, SUITE 110
COLORADO SPRINGS, COLORADO 80910
TEL: (719) 520-6300

SURVEYOR

GALLOWAY & COMPANY, INC.
1155 KELLY JOHNSON BLVD., SUITE 305
COLORADO SPRINGS, COLORADO 80920
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CONTACT: LYLE BOSSGGER
EMAIL: LYLEBOSSGGER@GALLOWAYUS.COM

UTILITY REVIEW - WATER/WASTEWATER

WOODMEN HILLS METRO DISTRICT
8046 EASTONVILLE ROAD
FALCON, COLORADO 80831
TEL: (719) 495-2500
CONTACT: JERRY JACOBSON
EMAIL: JERRY@WMHD.ORG

UTILITY REVIEW - GAS

CITY OF COLORADO SPRINGS
1521 HANCOCK EXPY #4801
COLORADO SPRINGS, COLORADO 80903
TEL: (719) 568-8287
CONTACT: RYNE SOLBERG
EMAIL: RSOLBERG@CSJ.ORG

ELECTRIC

MOUNTAIN VIEW ELECTRIC
11140 E WOODMEN RD
FALCON, COLORADO 80831
TEL: (719) 495-2283

FIRE DISTRICT

FALCON FIRE PROTECTION DISTRICT
7030 OLD MERIDIAN ROAD
PETYON, COLORADO 80831
TEL: (719) 495-4050
EMAIL: FALCONFIRE@FALCONPREP.ORG

CAUTION - NOTICE TO CONTRACTOR

1. ALL UTILITY LOCATIONS SHOWN ARE BASED ON MAPS PROVIDED BY THE APPROPRIATE UTILITY COMPANY AND FIELD SURFACE EVIDENCE AT THE TIME OF SURVEY AND IS TO BE CONSIDERED AN APPROXIMATE LOCATION ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE FIELD LOCATION OF ALL UTILITIES, PUBLIC OR PRIVATE, WHETHER SHOWN ON THE PLANS OR NOT, PRIOR TO CONSTRUCTION. REPORT ANY DISCREPANCIES TO THE ENGINEER PRIOR TO CONSTRUCTION.



Know what's below.
Call before you dig.

2. WHERE A PROPOSED UTILITY CROSSES AN EXISTING UTILITY, IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF SUCH EXISTING UTILITY, EITHER THROUGH POT-HOULING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.

Galloway

1155 Kelly Johnson Blvd., Suite 305
Colorado Springs, CO 80920
719.900.7220
GallowayUS.com

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

COVER SHEET

C0.00

Sheet 1 of 31

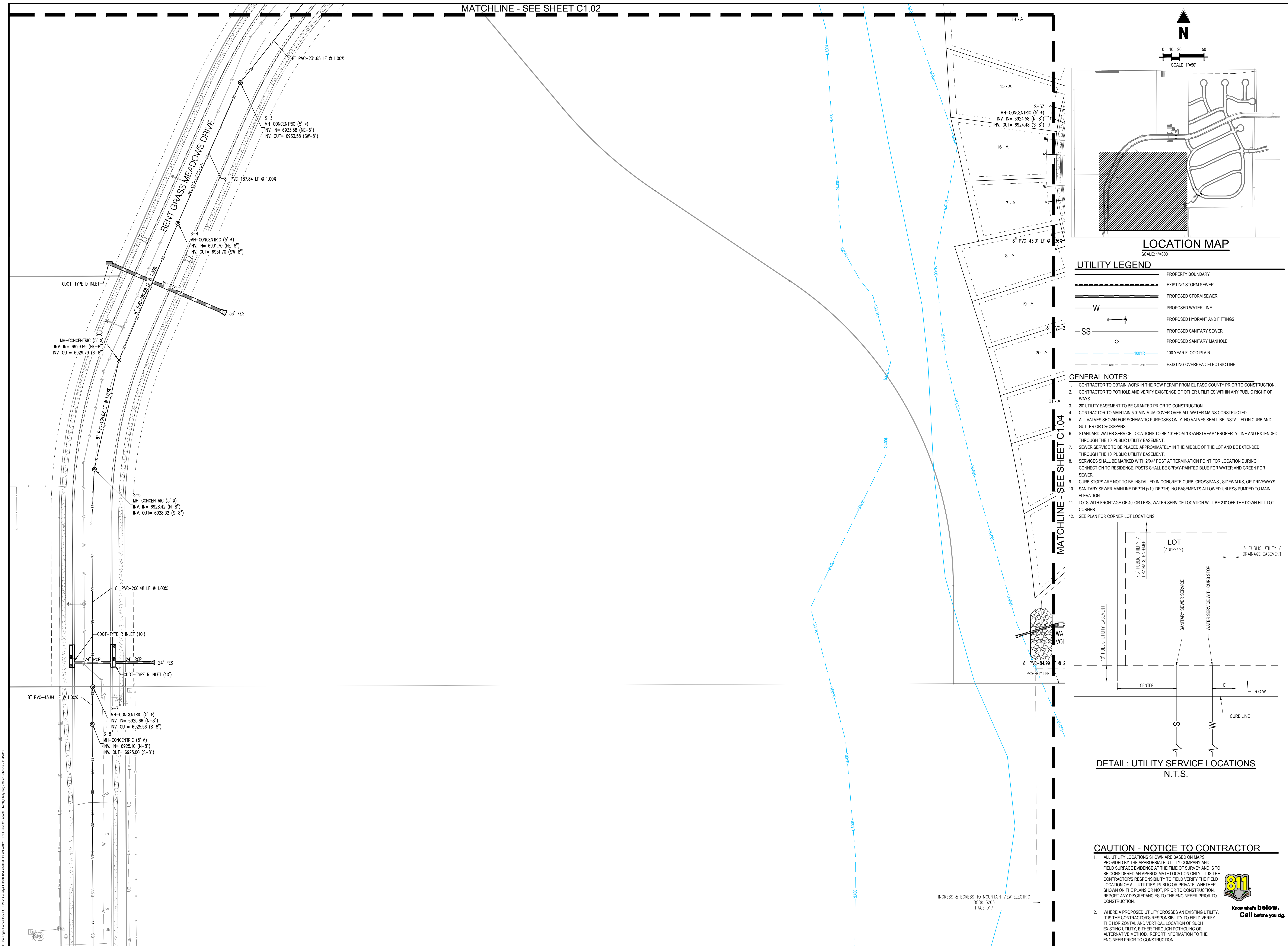
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

SANITARY LAYOUT PLAN

C1.01

Sheet 3 of 31



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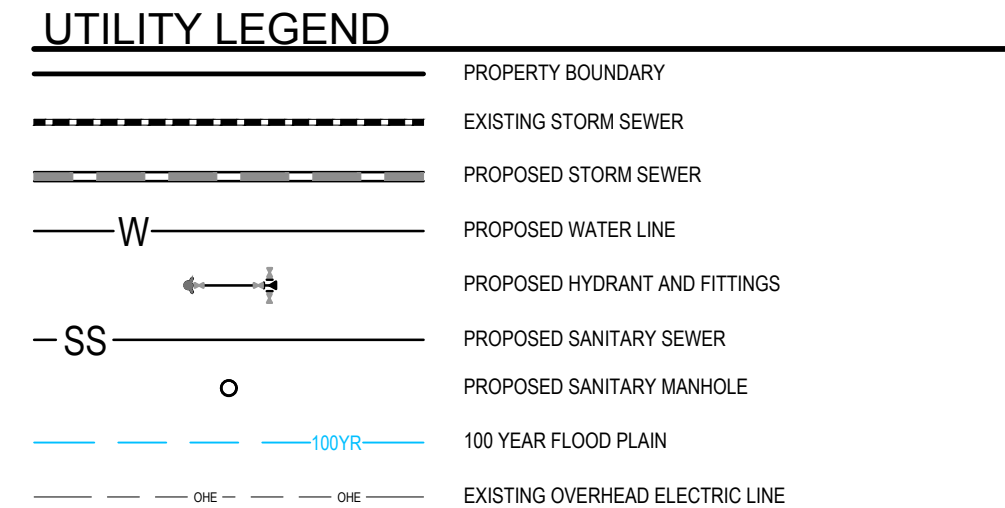
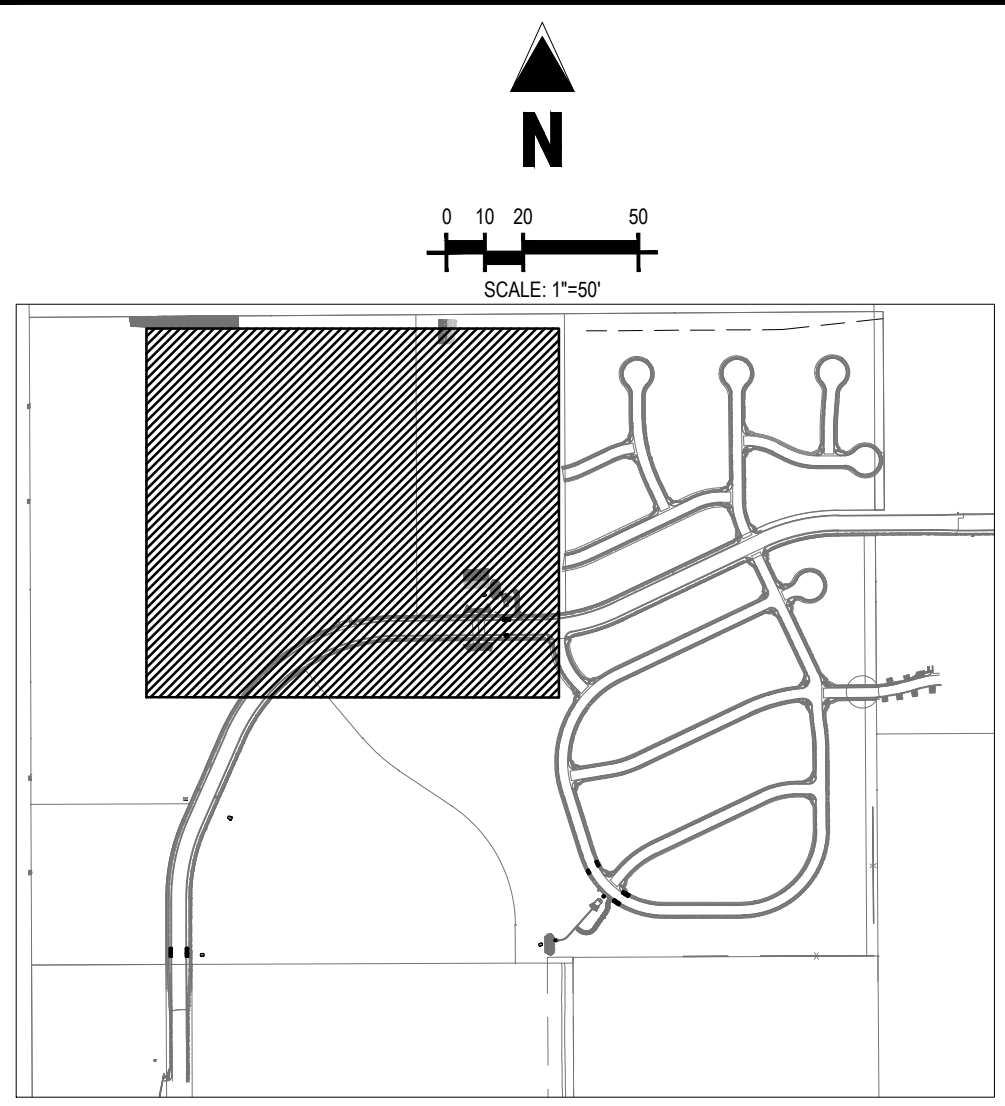
S-2
MH-CENTRIC (5' 6")
INV. IN= 6935.00 (N-6")
INV. OUT= 6935.90 (SW-8")

S-1
MH-CENTRIC (5' 6")
INV. IN= 6938.31 (SW-8")

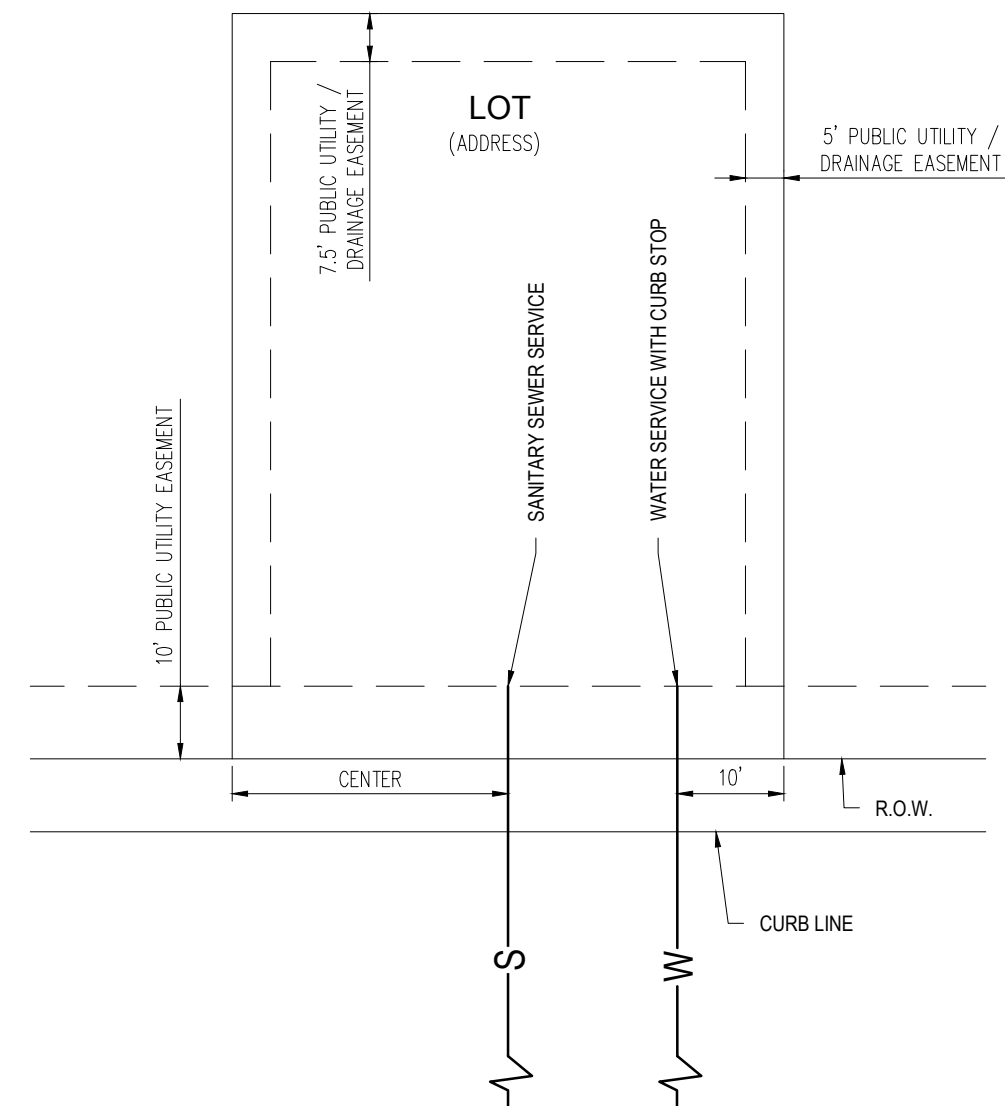
S-61
MH-CENTRIC (5' 6")
INV. IN= 6931.81 (N-6")
INV. OUT= 6931.81 (SE-8")

MATCHLINE - SEE SHEET C1.01

MATCHLINE - SEE SHEET C1.03



- GENERAL NOTES:**
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 - SEE PLAN FOR CORNER LOT LOCATIONS.



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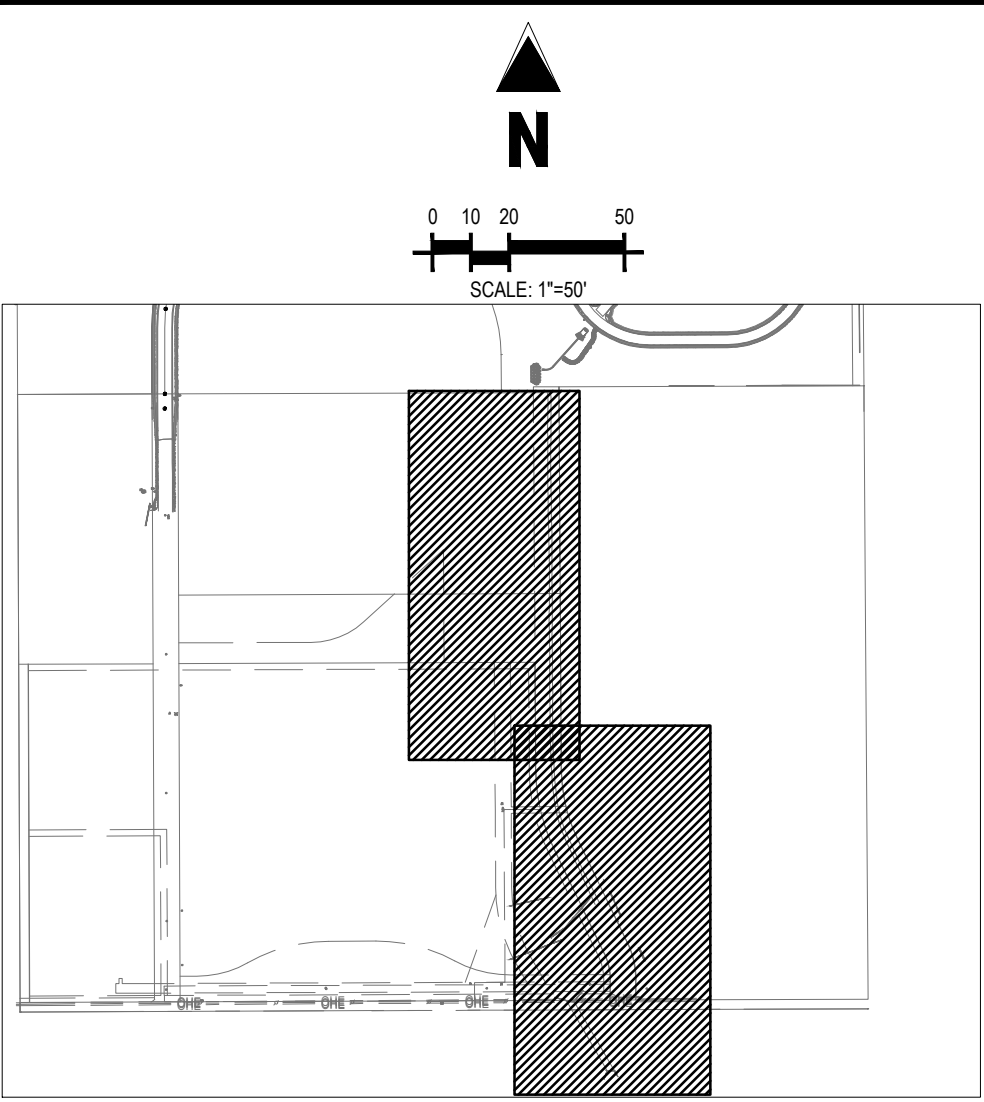
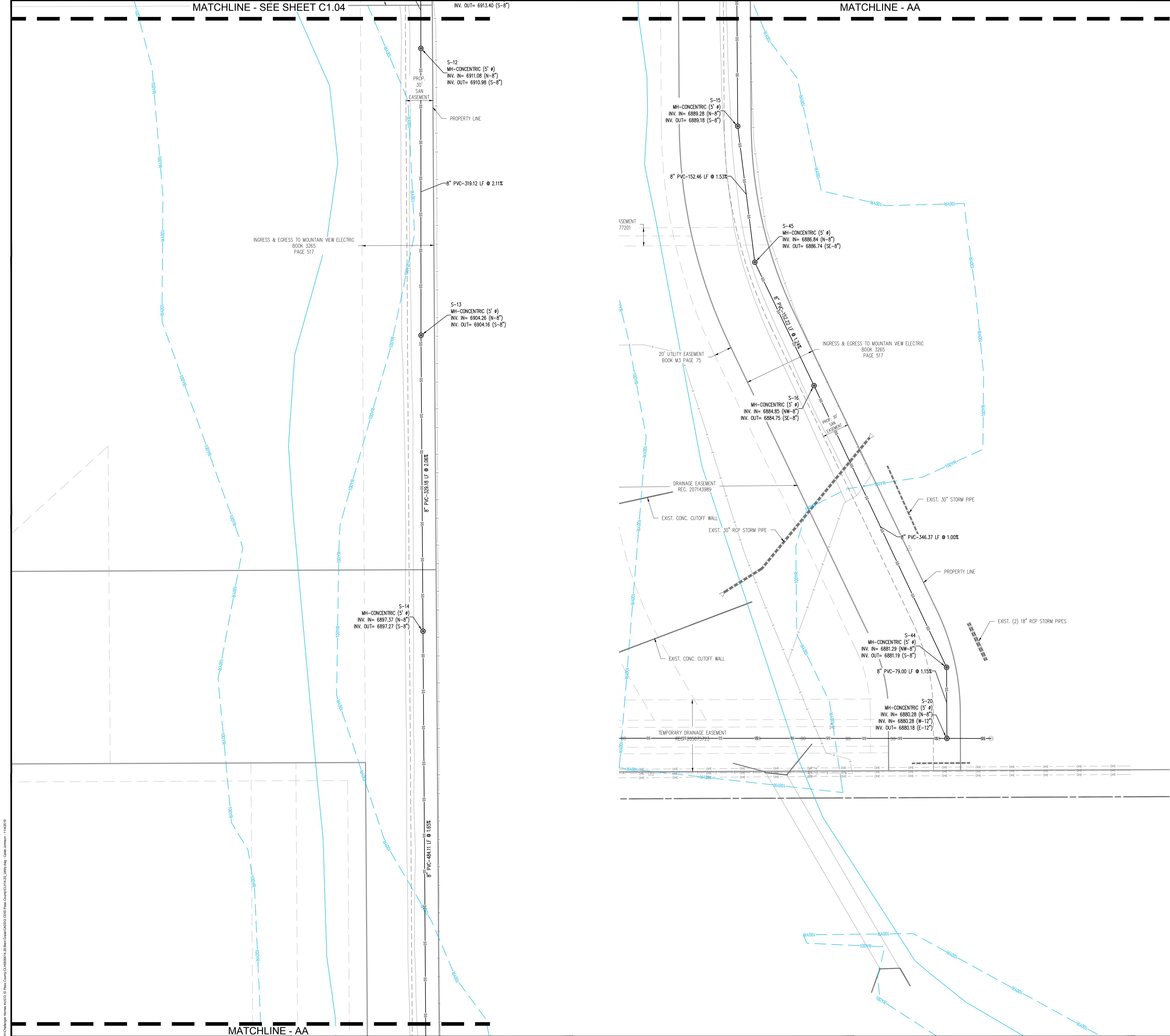
CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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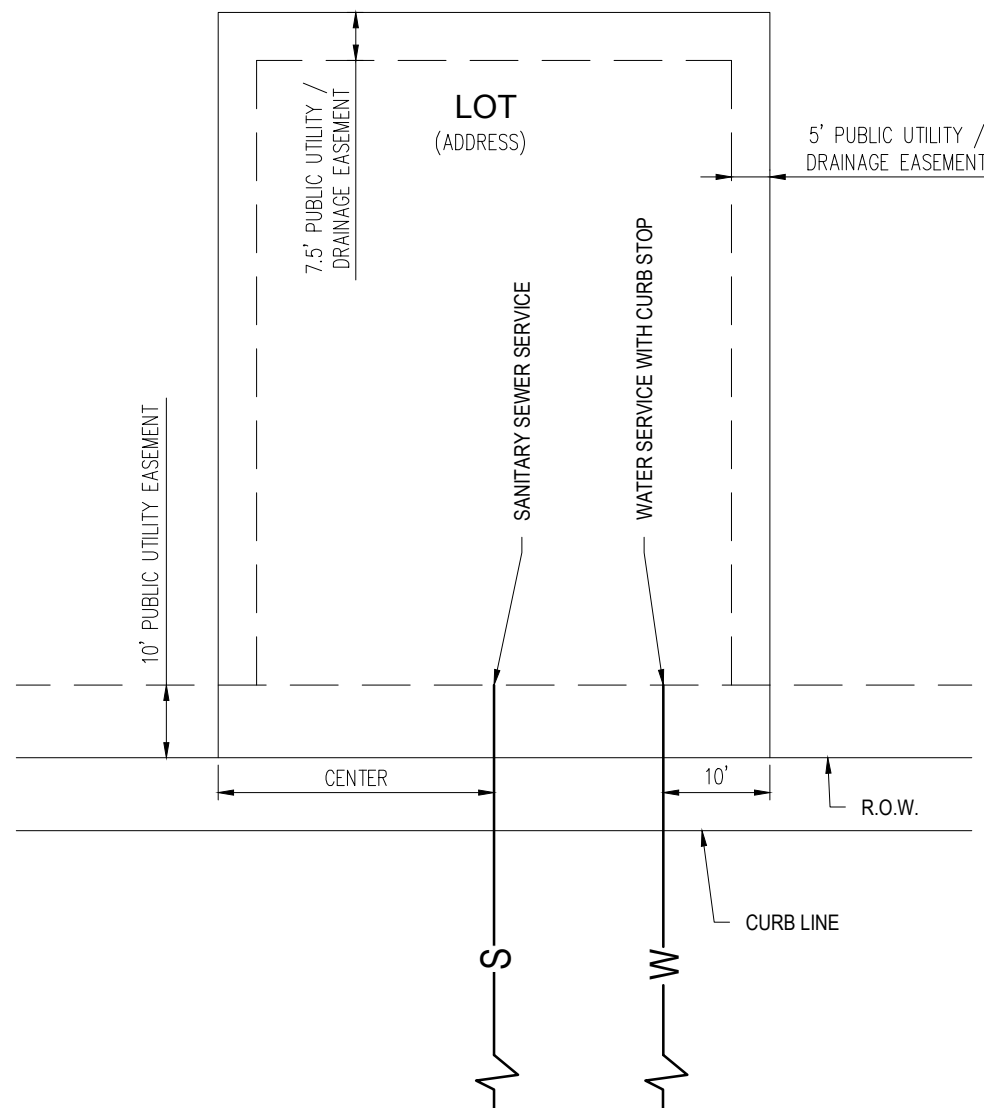
Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

SANITARY LAYOUT PLAN



UTILITY LEGEND	
	PROPERTY BOUNDARY
	EXISTING STORM SEWER
	PROPOSED STORM SEWER
	PROPOSED WATER LINE
	PROPOSED HYDRANT AND FITTINGS
	PROPOSED SANITARY SEWER
	PROPOSED SANITARY MANHOLE
	100 YEAR FLOOD PLAIN
	EXISTING OVERHEAD ELECTRIC LINE
	EXISTING FENCE

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DETAIL: UTILITY SERVICE LOCATIONS
N.T.S.

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811
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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No: CLH000014.20

Drawn By: JDP

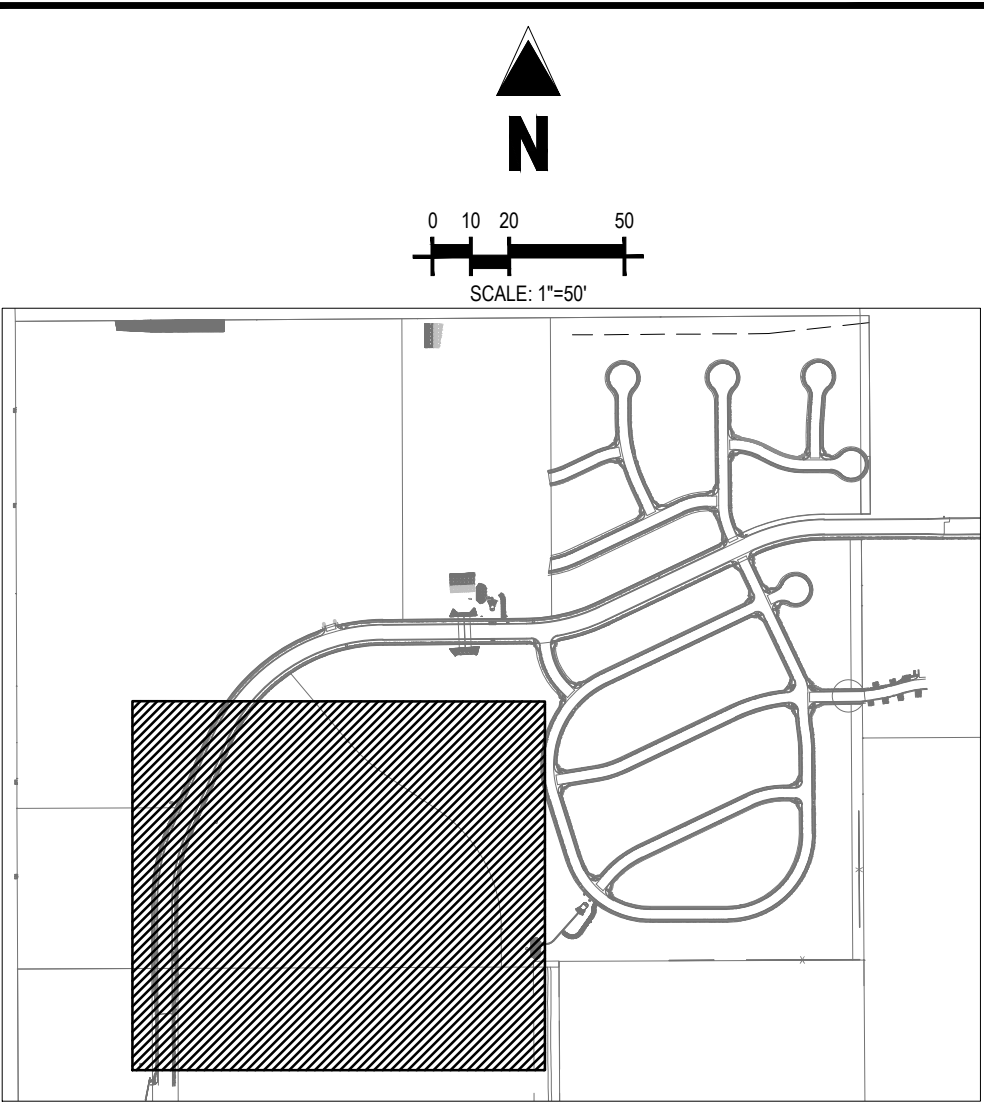
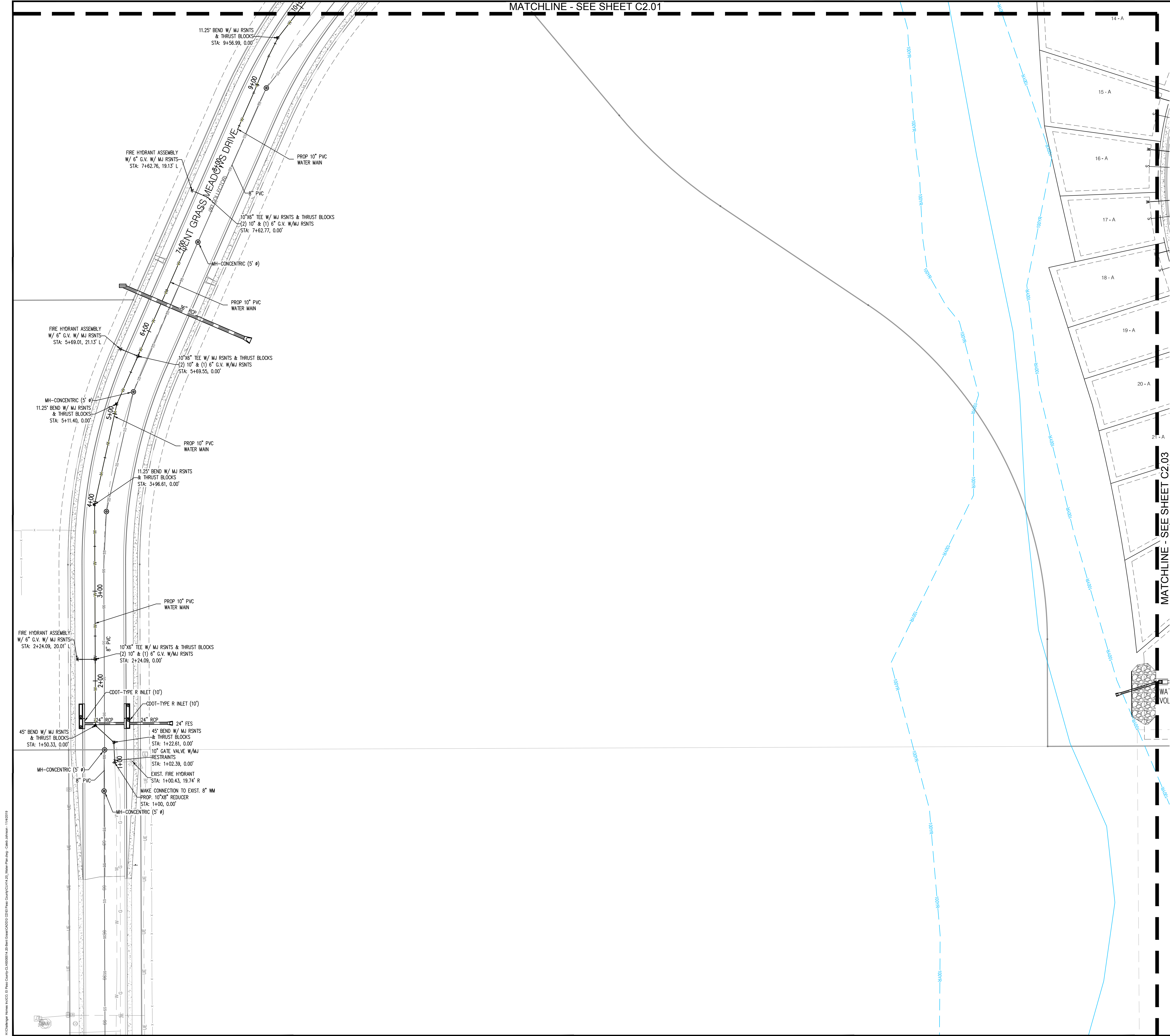
Checked By: RGD

Date: 11/4/2019

SANITARY LAYOUT PLAN

C1.05

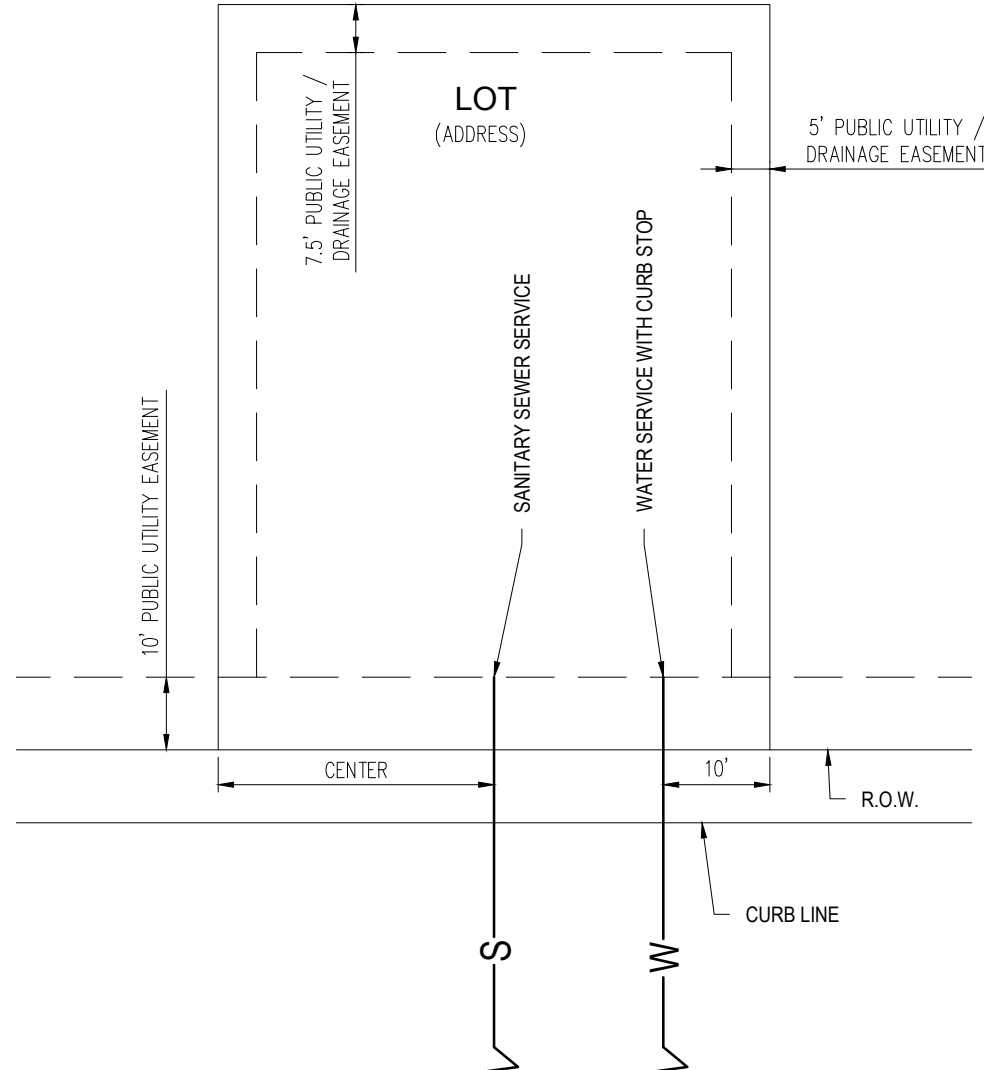
Sheet 7 of 31



UTILITY LEGEND

---	PROPERTY BOUNDARY
- - - -	EXISTING STORM SEWER
- - - -	PROPOSED STORM SEWER
W	PROPOSED WATER LINE
+	PROPOSED HYDRANT AND FITTINGS
-SS	PROPOSED SANITARY SEWER
o	PROPOSED SANITARY MANHOLE
---	100 YEAR FLOOD PLAIN
---	EXISTING OVERHEAD ELECTRIC LINE

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DETAIL: UTILITY SERVICE LOCATIONS
N.T.S.

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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No:	CLH000014.20
Drawn By:	JDP
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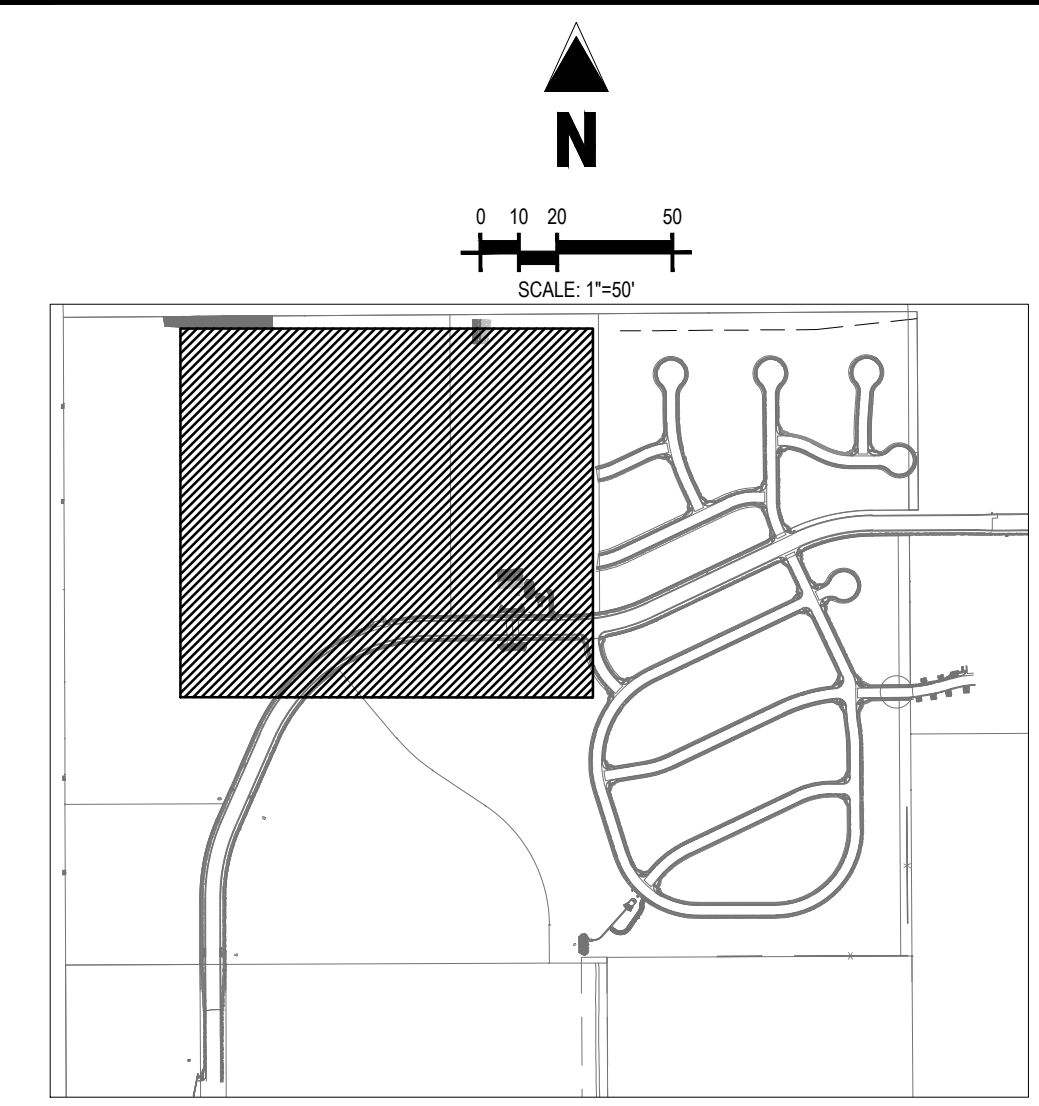
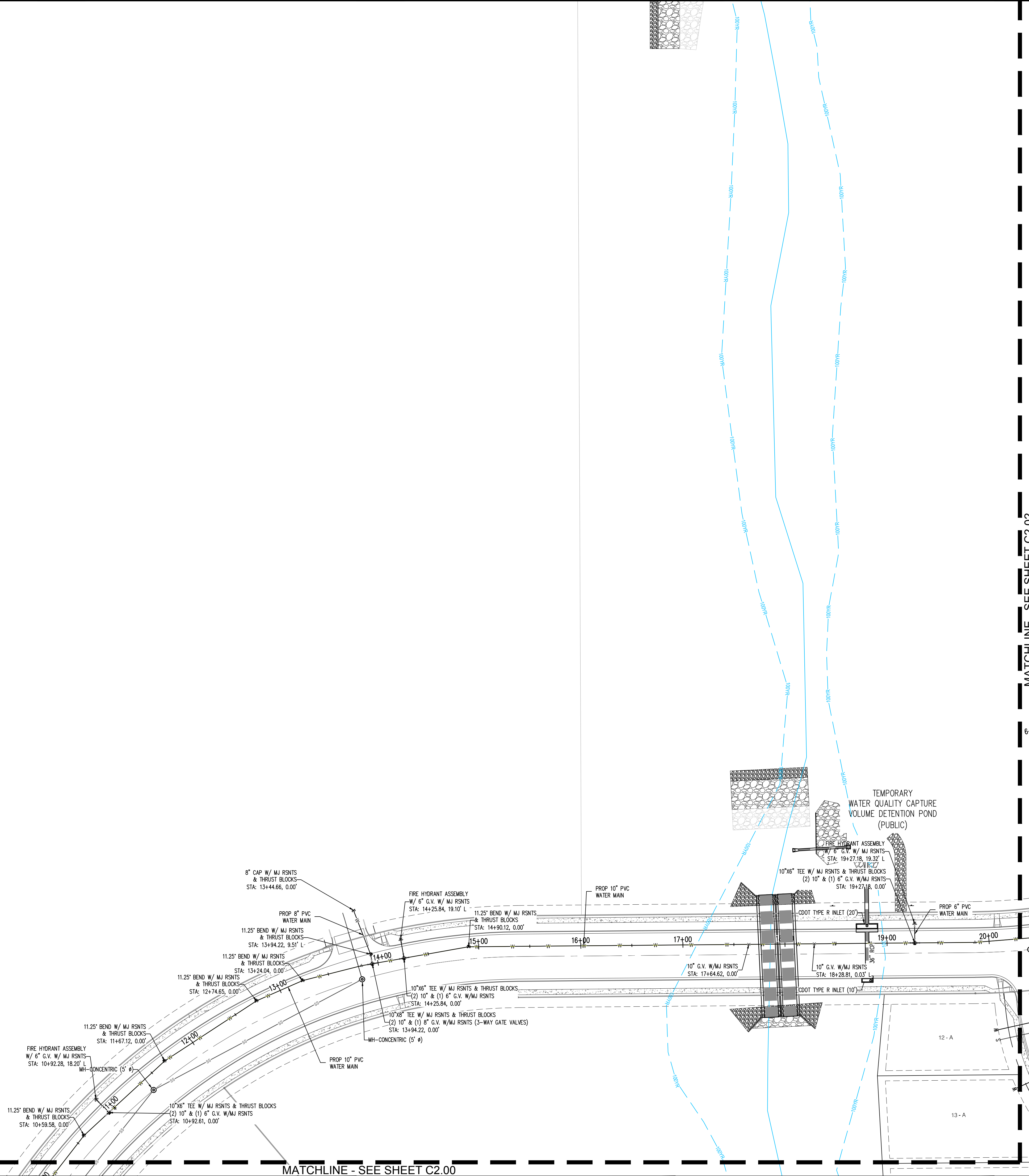
WATER LAYOUT PLAN

Know what's below.
Call before you dig.

C2.00

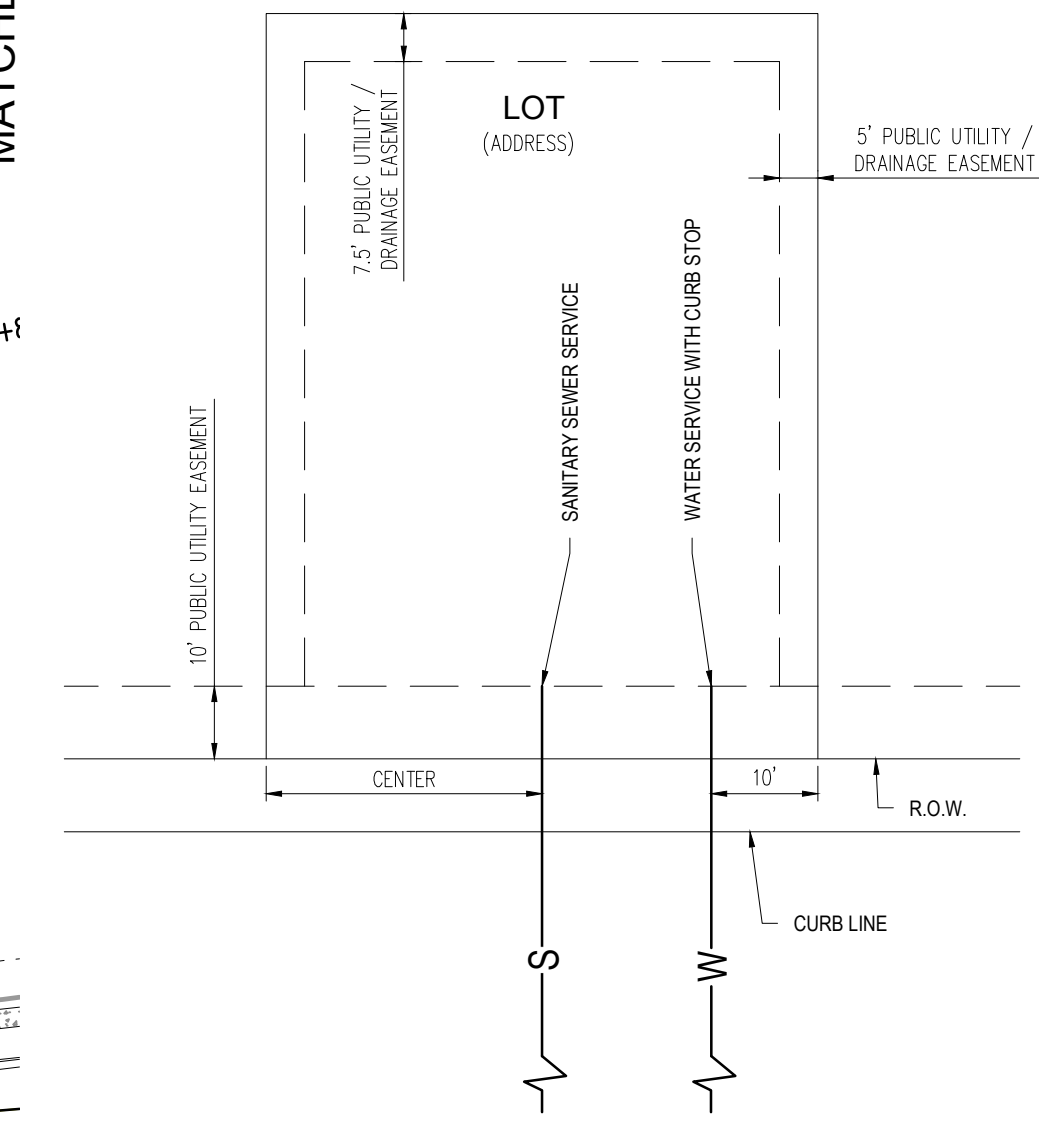
Sheet 8 of 31

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UTILITY LEGEND	
	PROPERTY BOUNDARY
	EXISTING STORM SEWER
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	PROPOSED WATER LINE
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	PROPOSED SANITARY SEWER
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DETAIL: UTILITY SERVICE LOCATIONS
N.T.S.



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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No: CLH000014.20

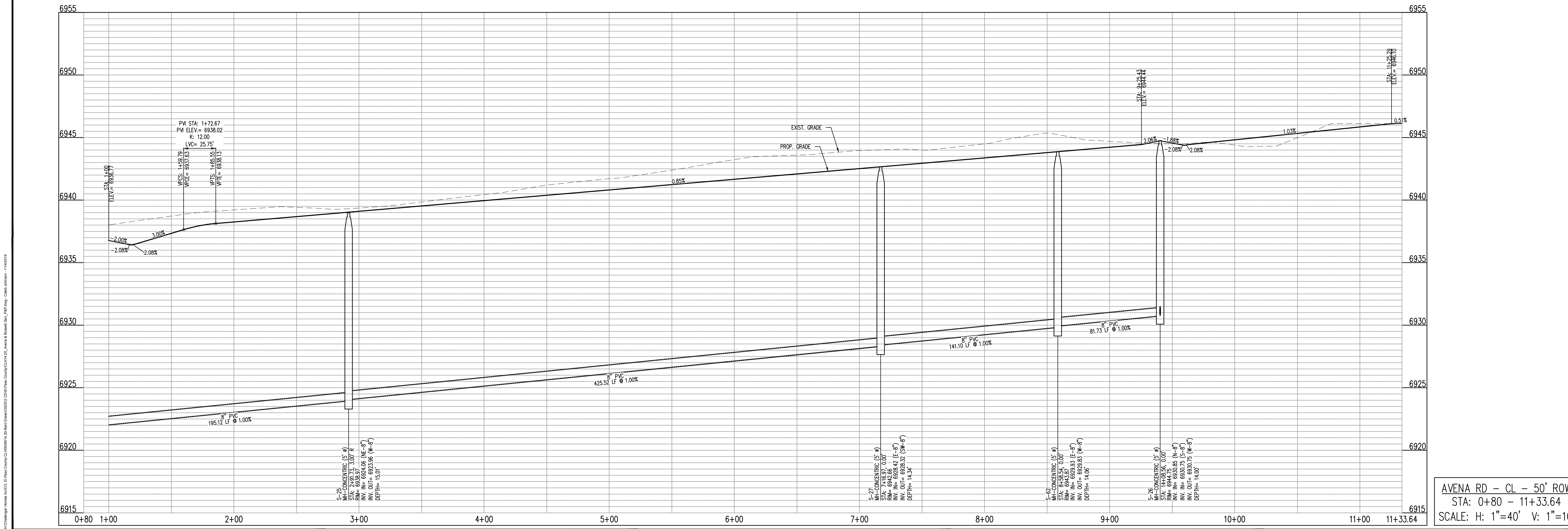
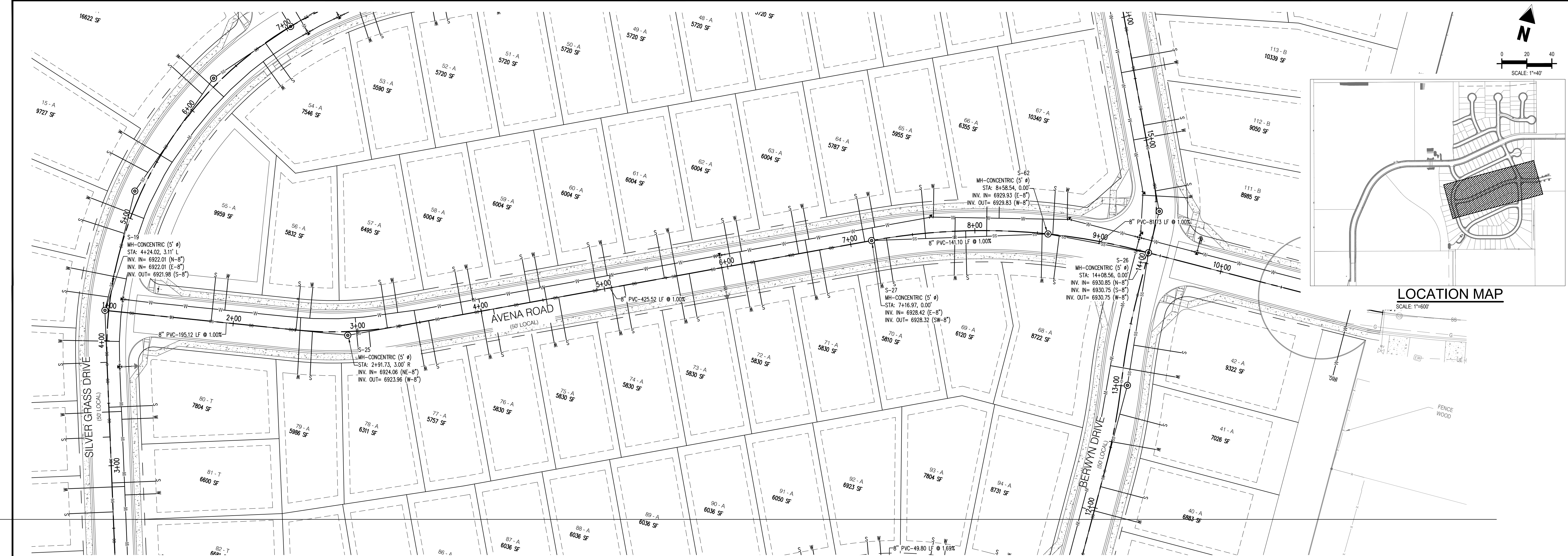
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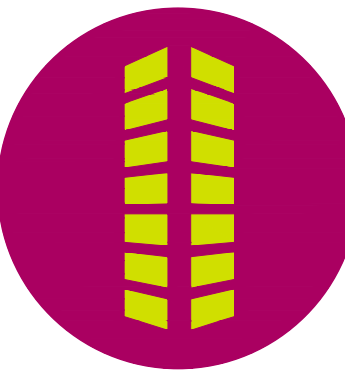
Date: 11/4/2019

WATER LAYOUT PLAN

C2.01
Sheet 9 of 31



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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

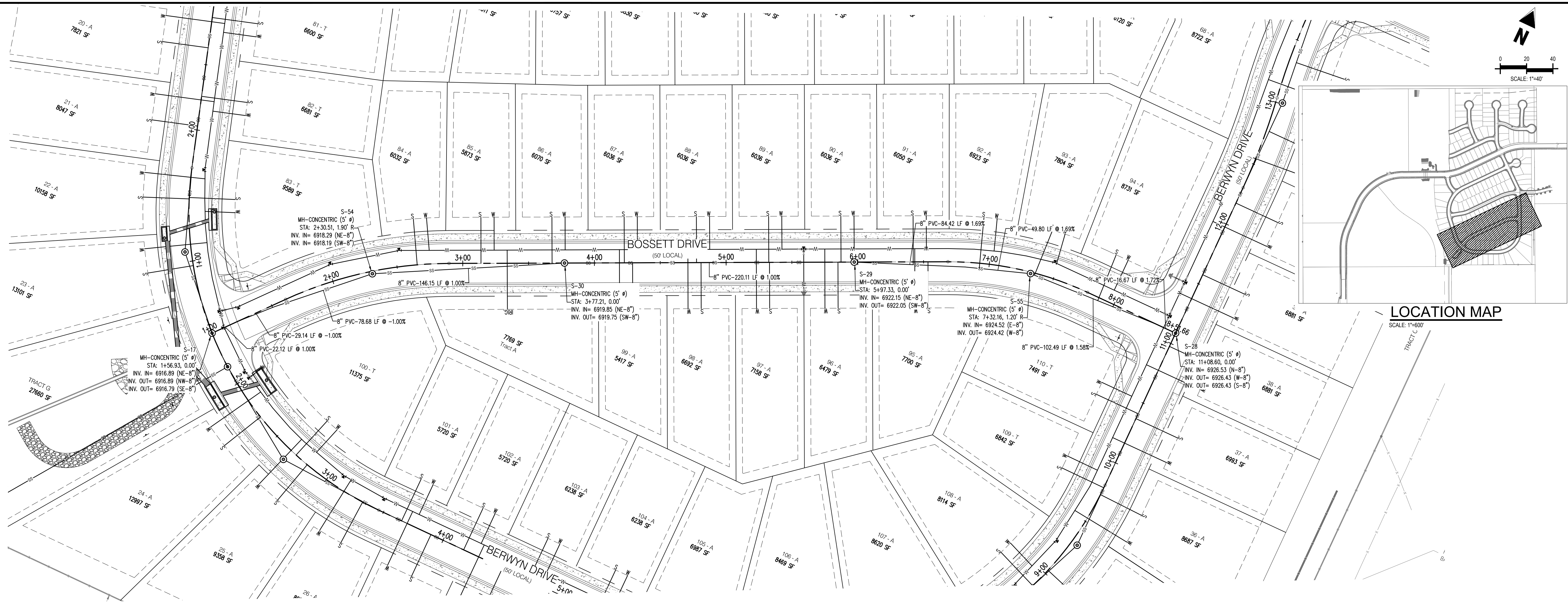
BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

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Project No: CLH000014.20
Drawn By: JDP
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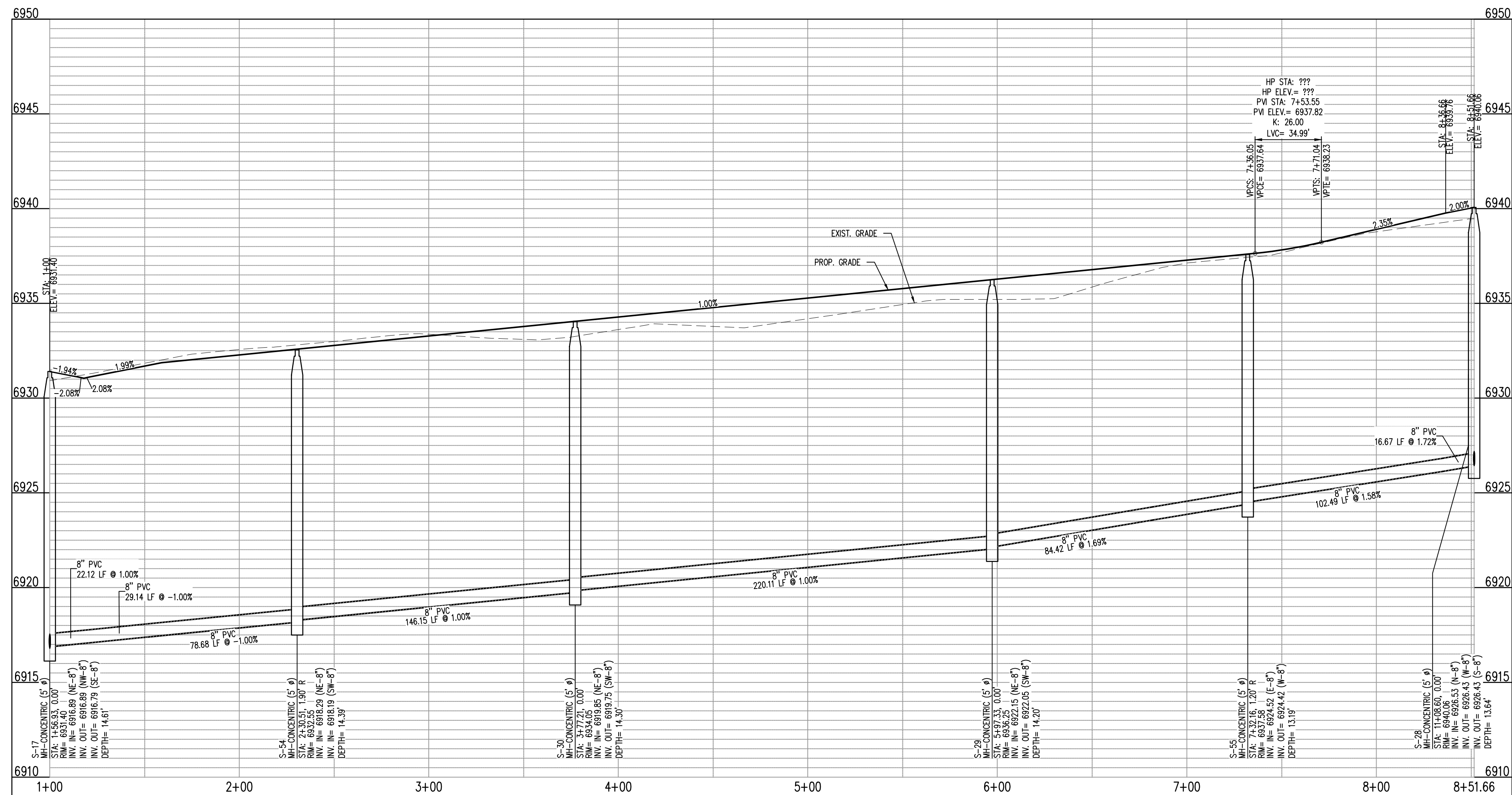
AVENA ROAD
SANITARY PLAN & PROFILE

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LOCATION MAP

SCALE: 1"=600'



BOSSETT DR - CL - 50' ROW
STA: 1+00 - 8+51.66
SCALE: H: 1"=40' V: 1"=10'

CONSTRUCTION PLANS

BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
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BOSSETT DRIVE
SANITARY PLAN & PROFILE

C3.01

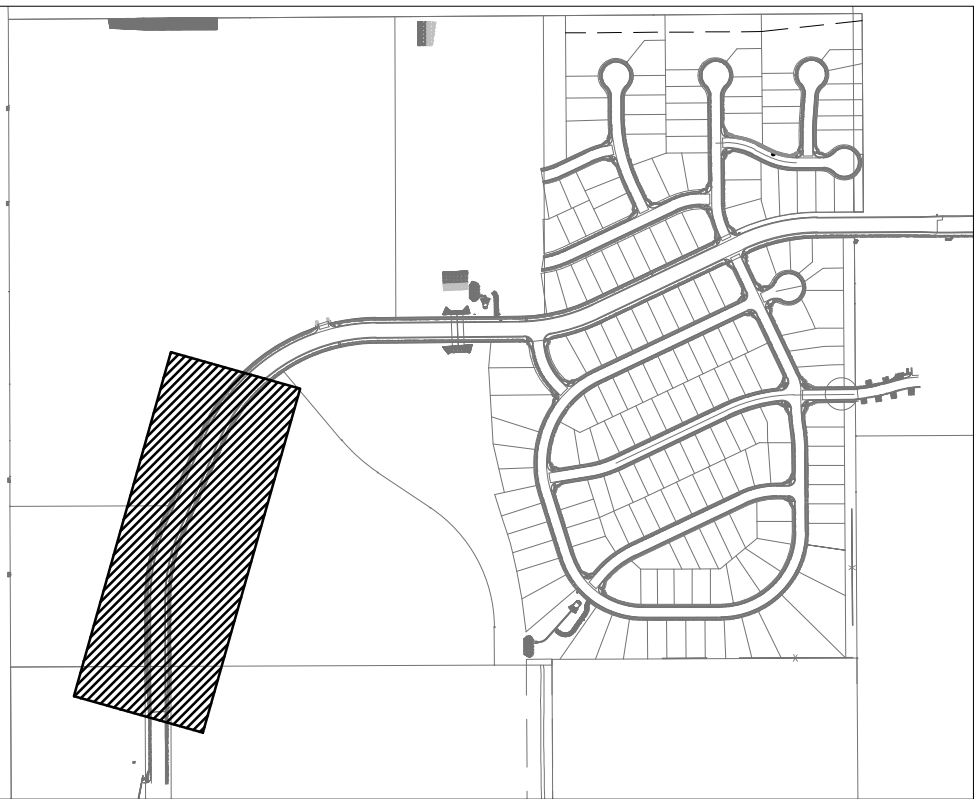
Sheet 13 of 31

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BENT GRASS MEADOWS DRIVE
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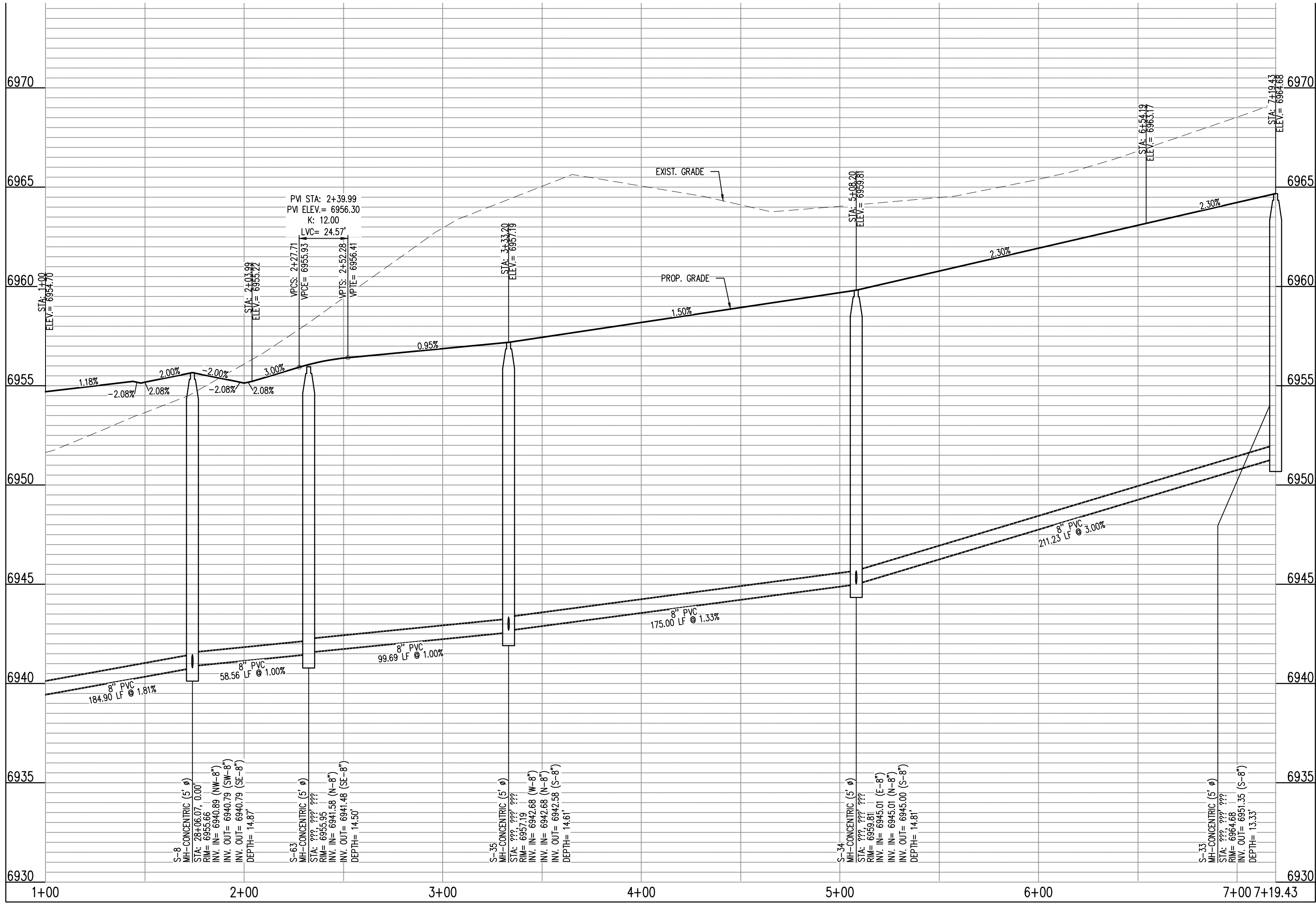
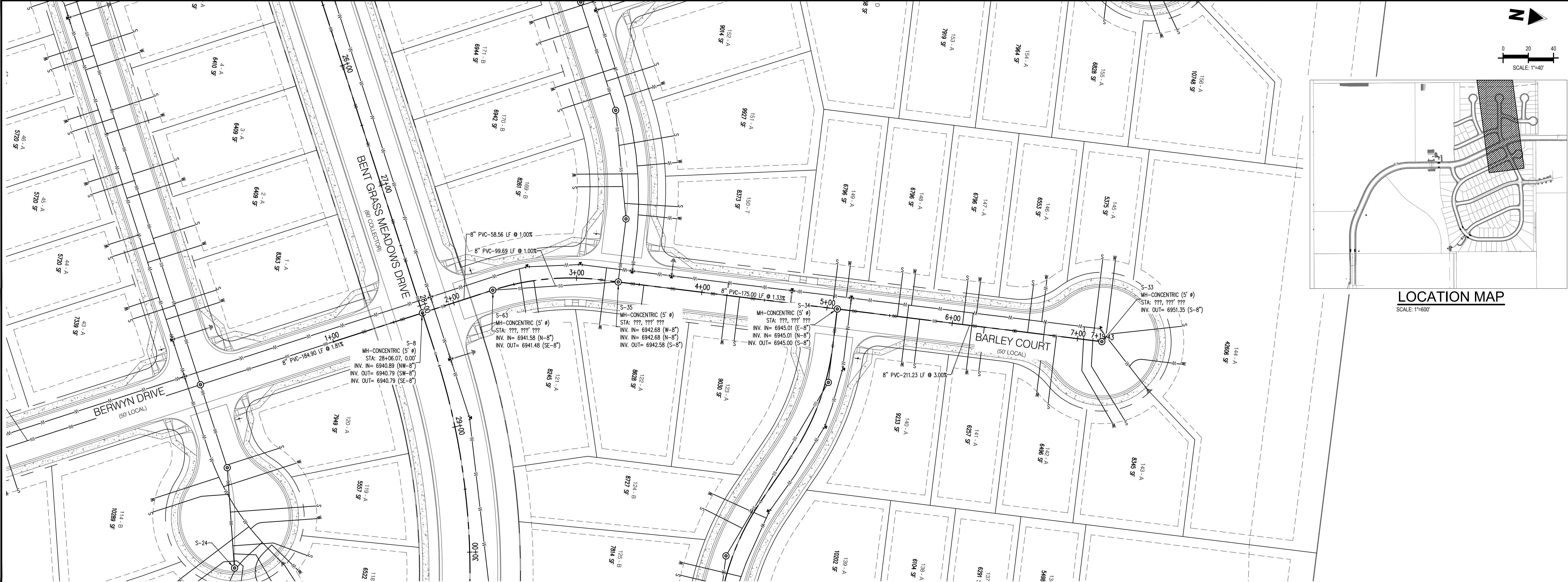
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

BENT GRASS MEADOWS DRIVE
SANITARY PLAN & PROFILE

C3.02

Sheet 14 of 31

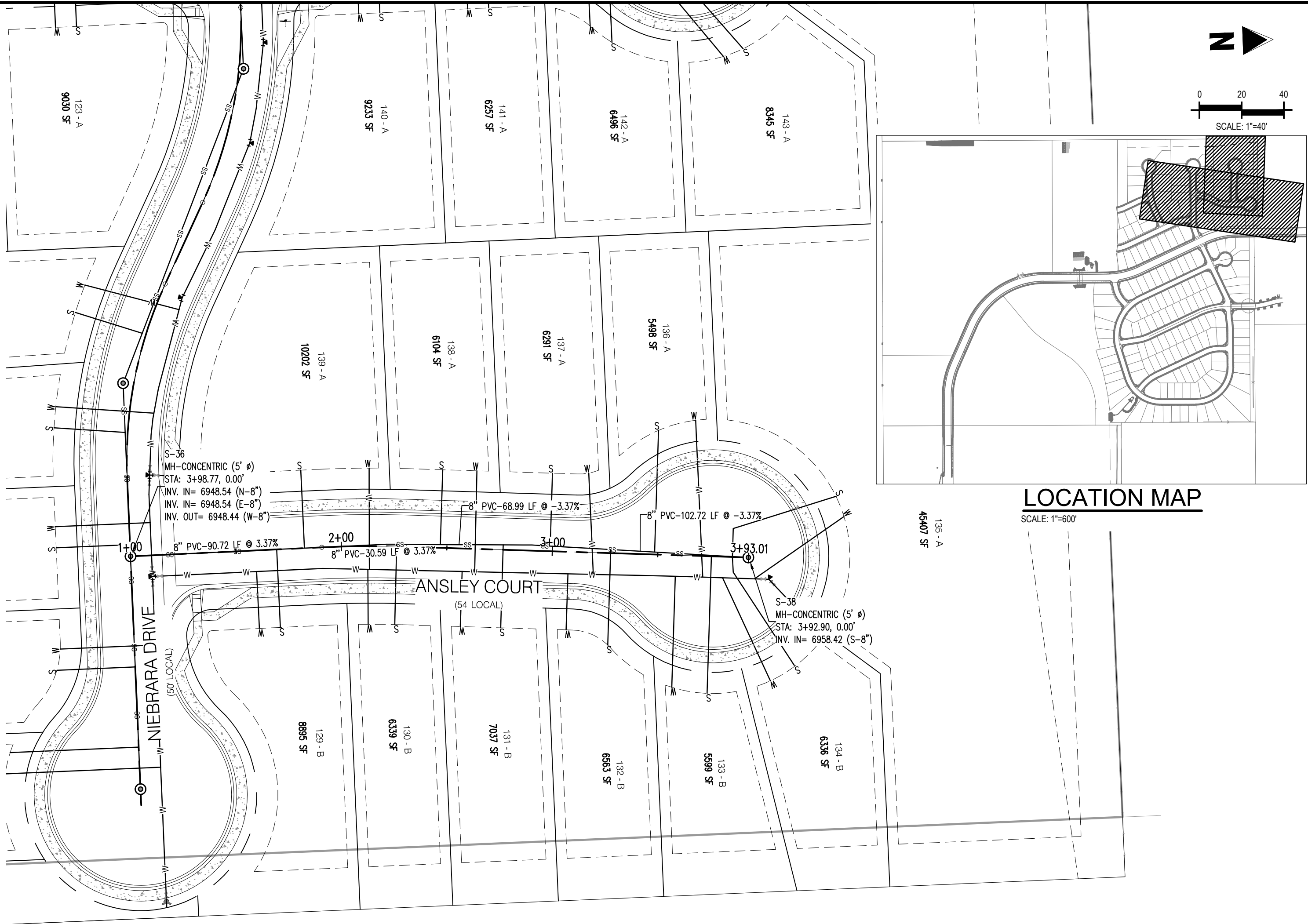
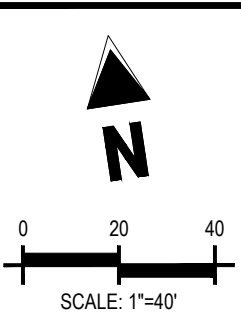
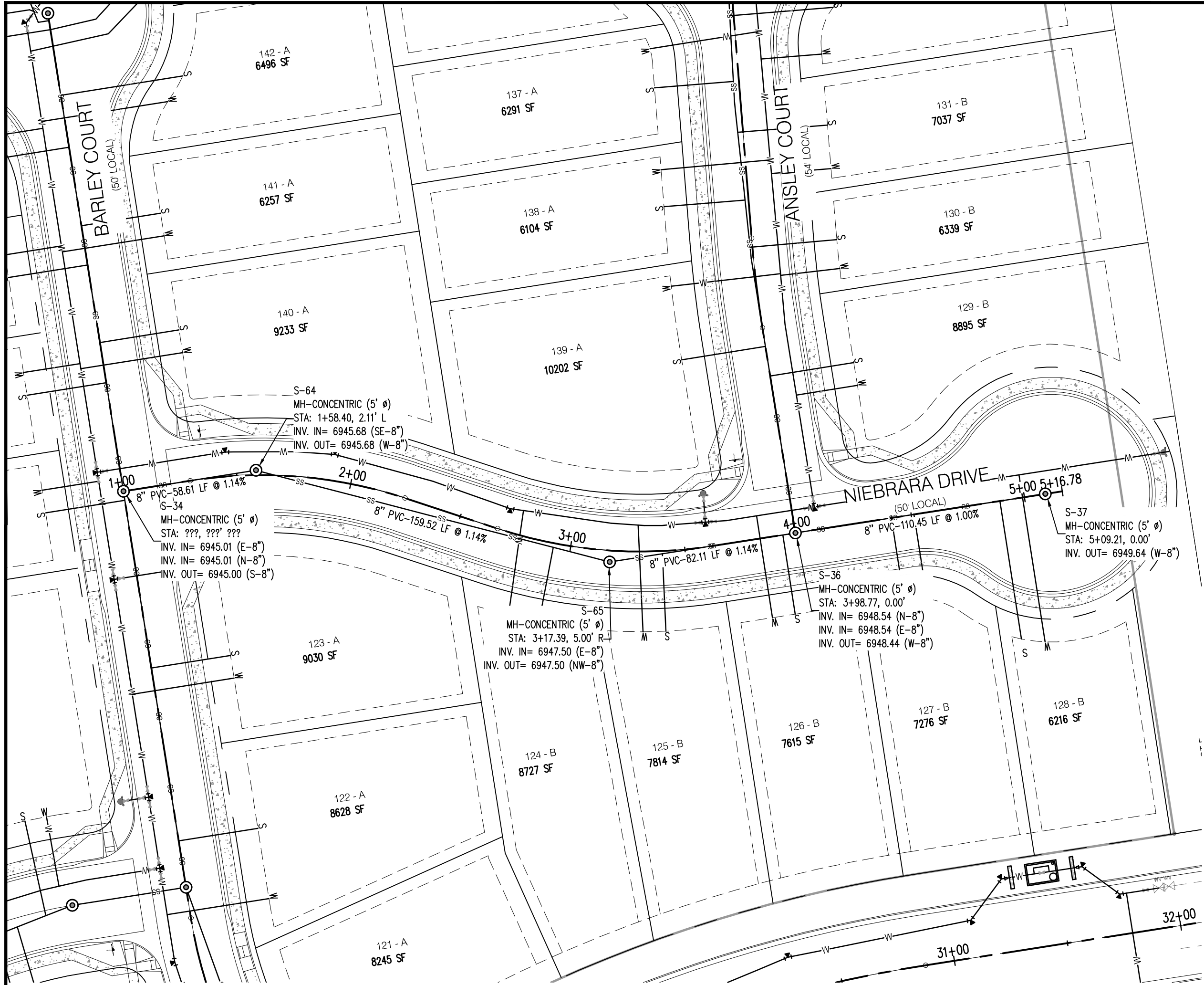


BARLEY COURT - CL - 50' ROW
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SCALE: H: 1"=40' V: 1"=10'



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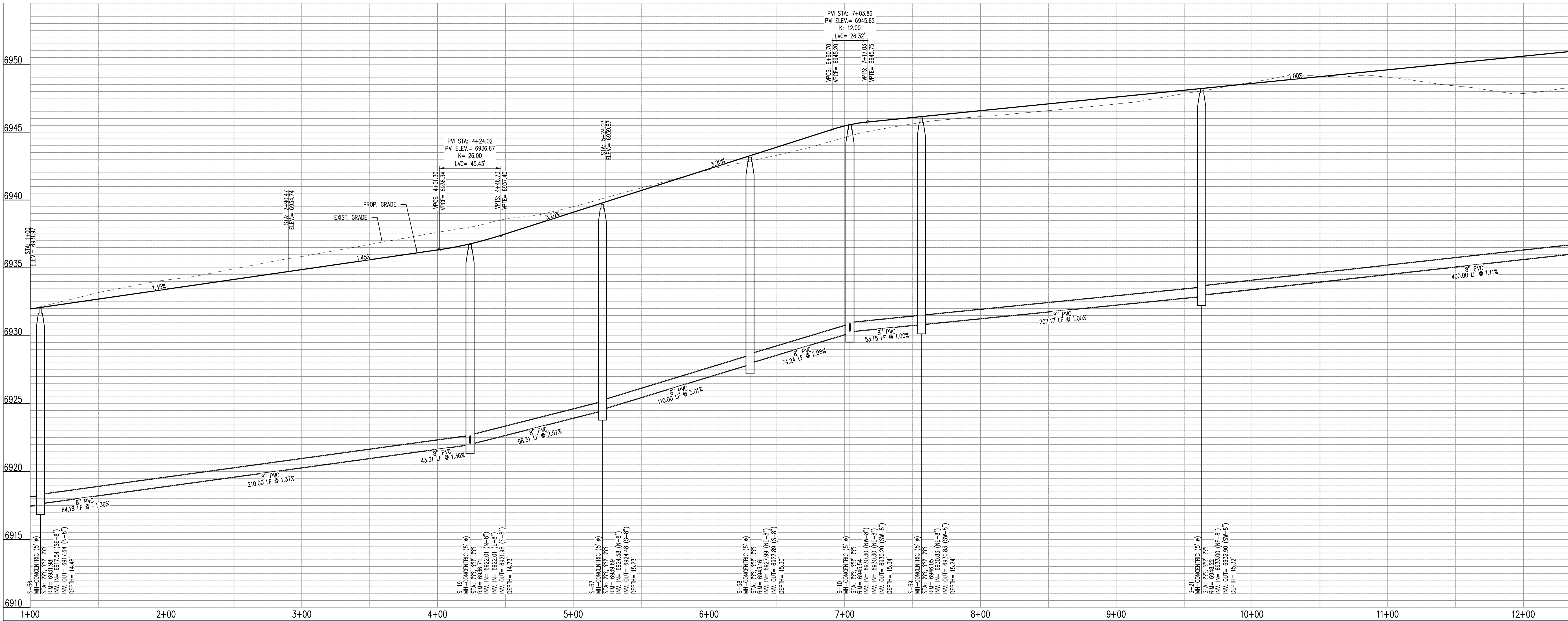
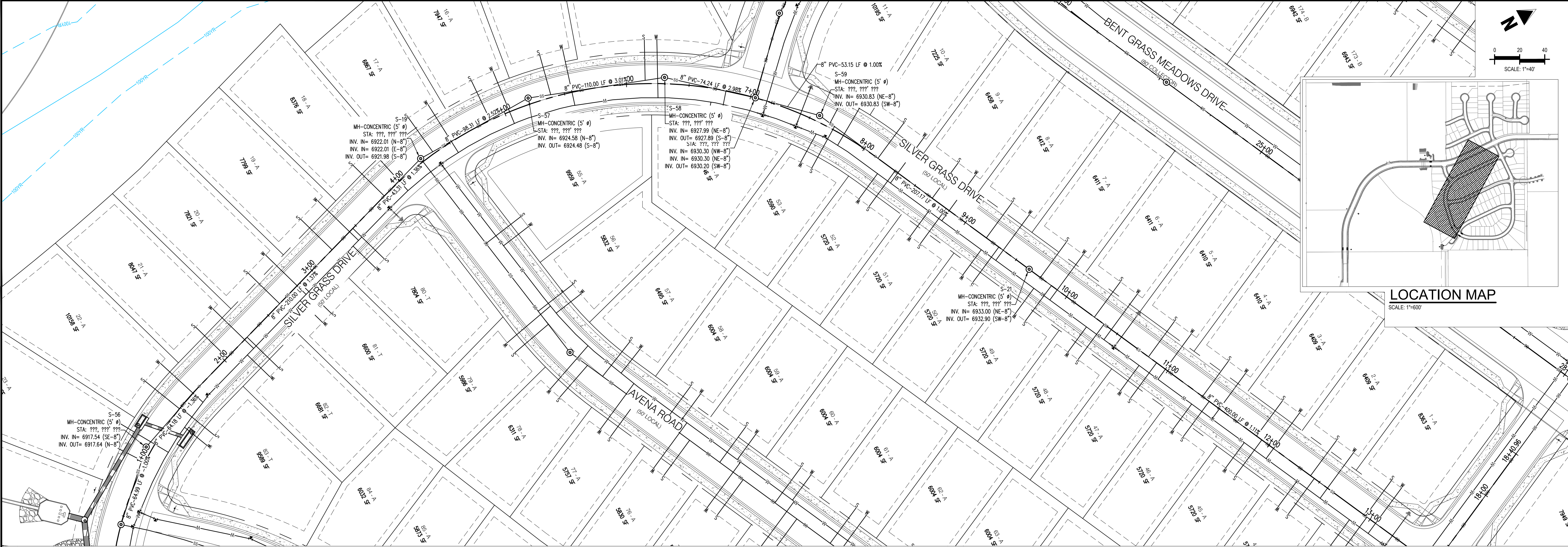
LOCATION MAP
SCALE: 1"=600'



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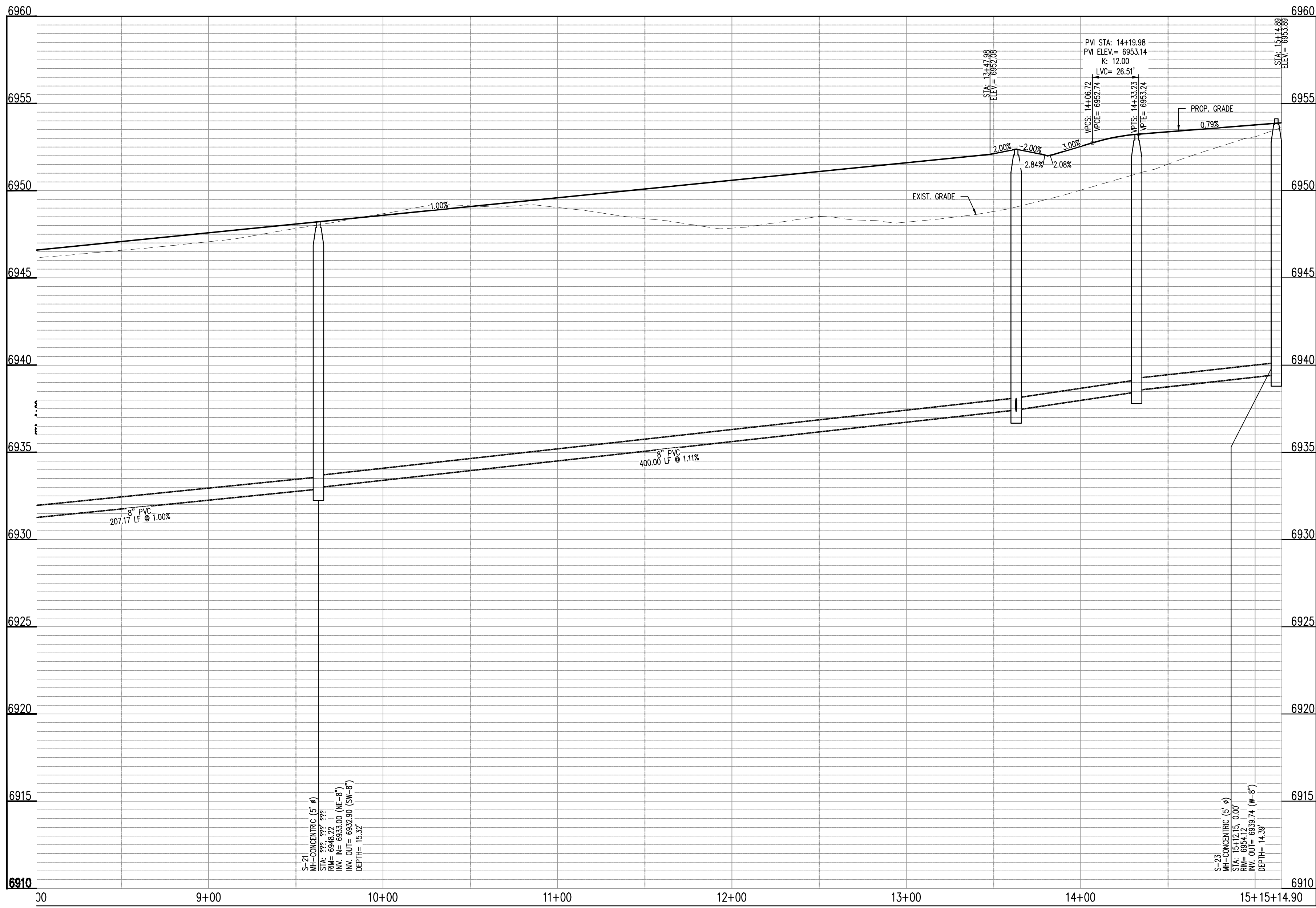
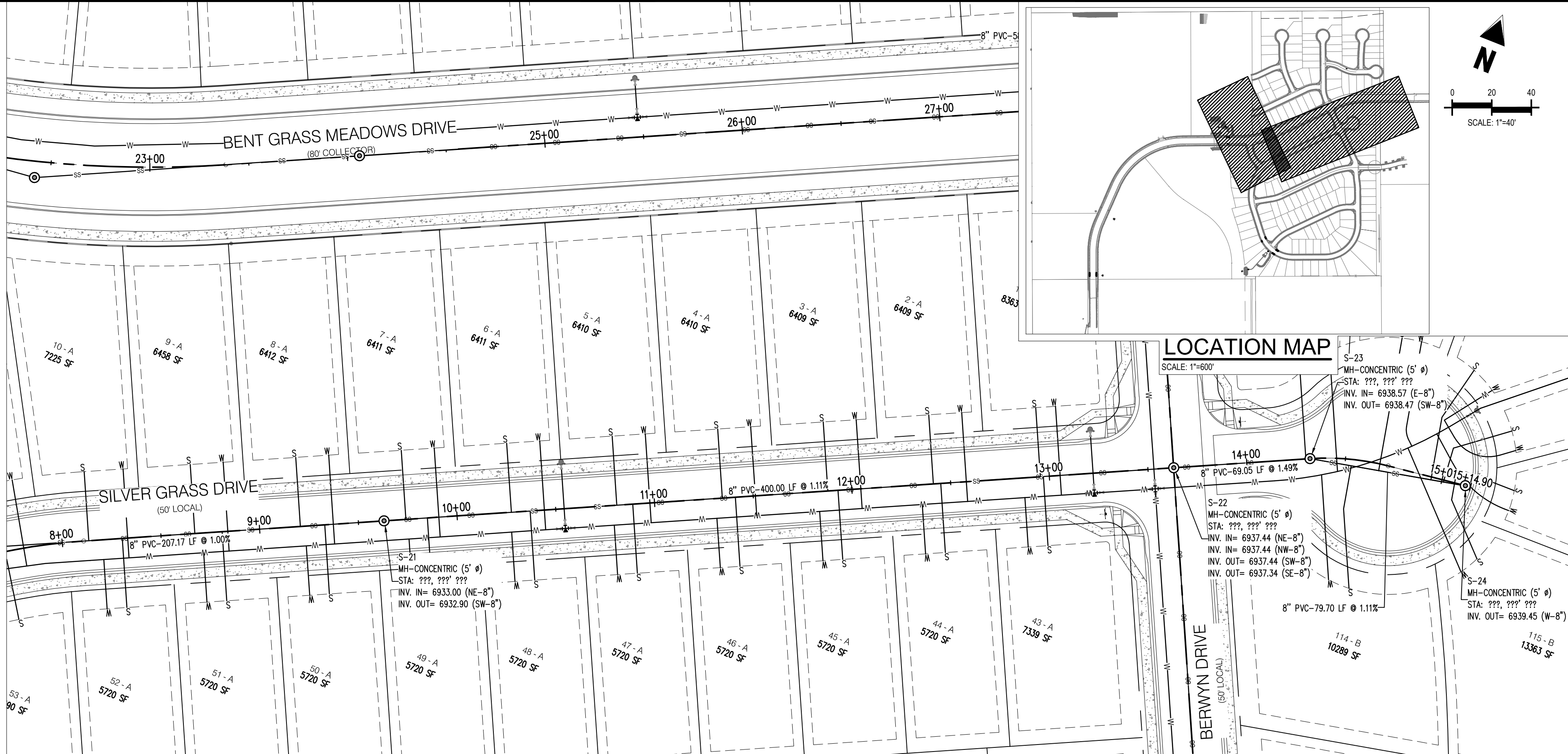
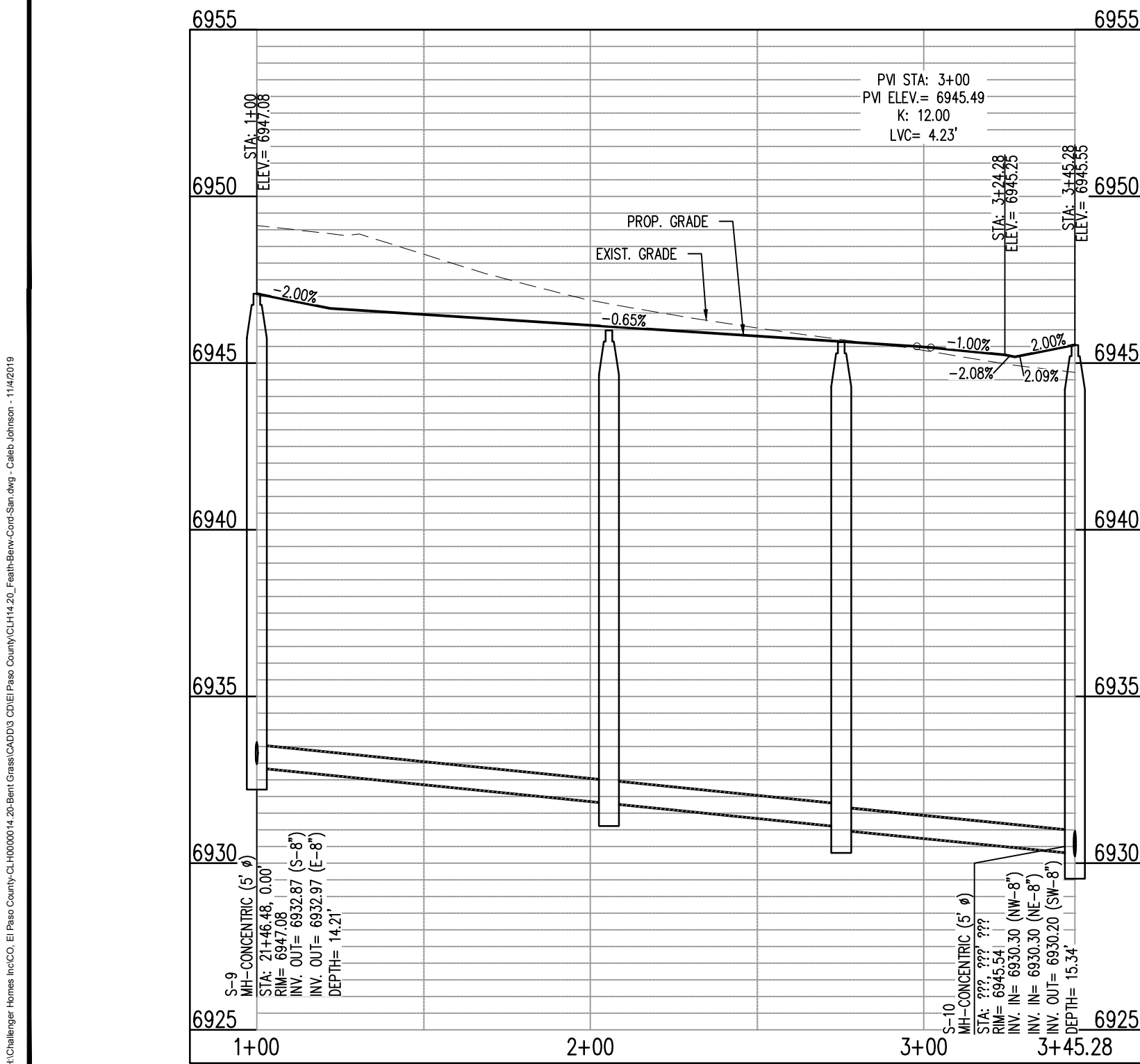
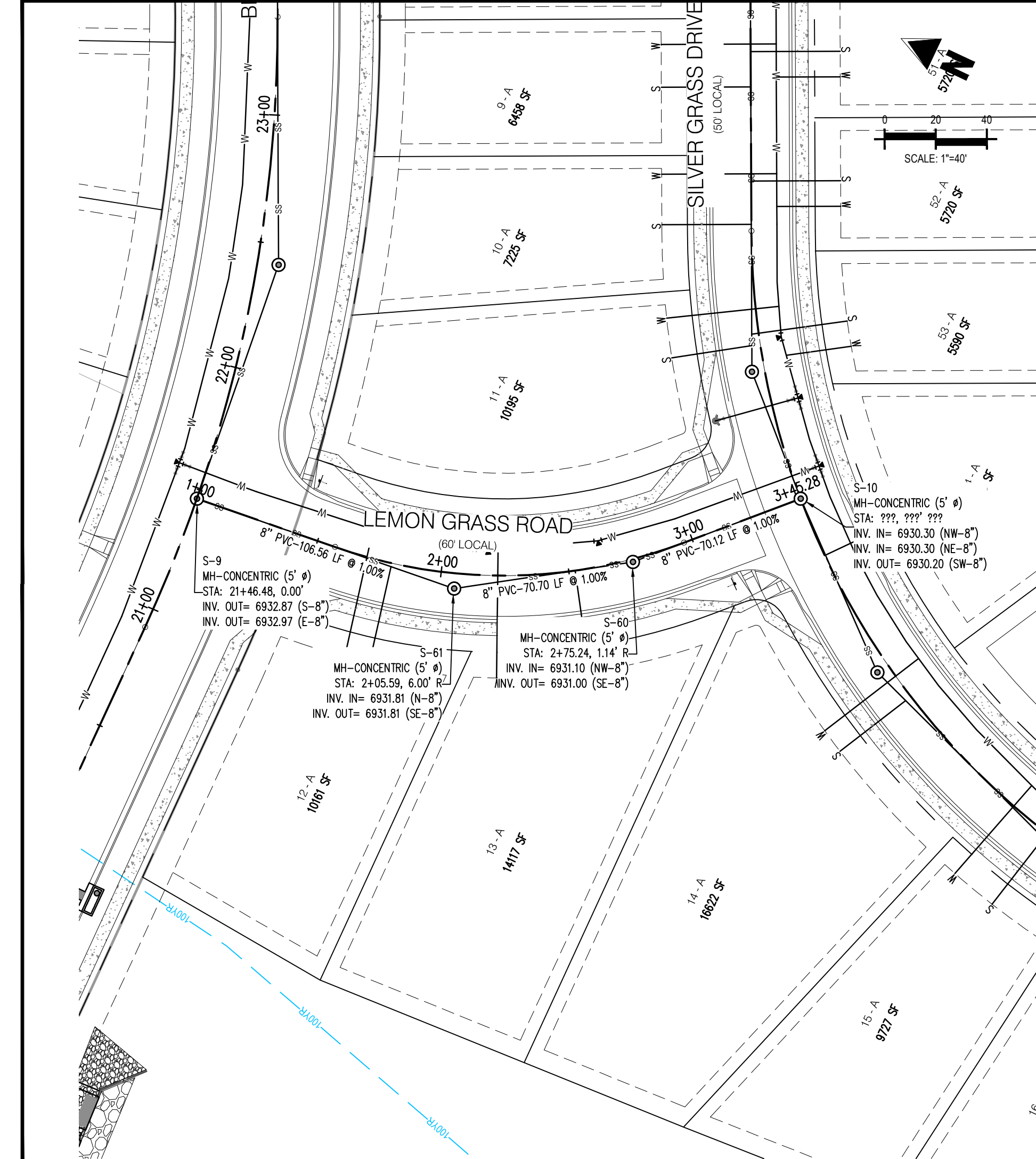
Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

NIEBRARA DRIVE &
ANSLEY COURT
SANITARY PLAN & PROFILE



#	Date	Issue / Description	Init.
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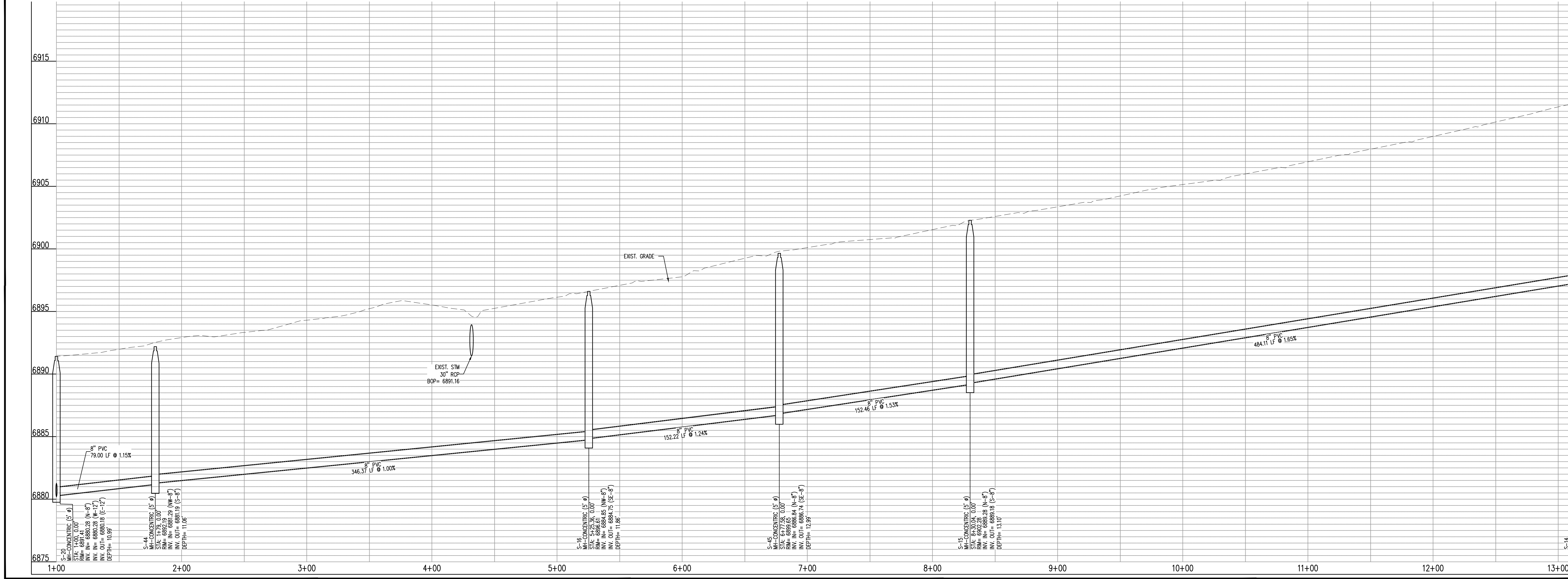
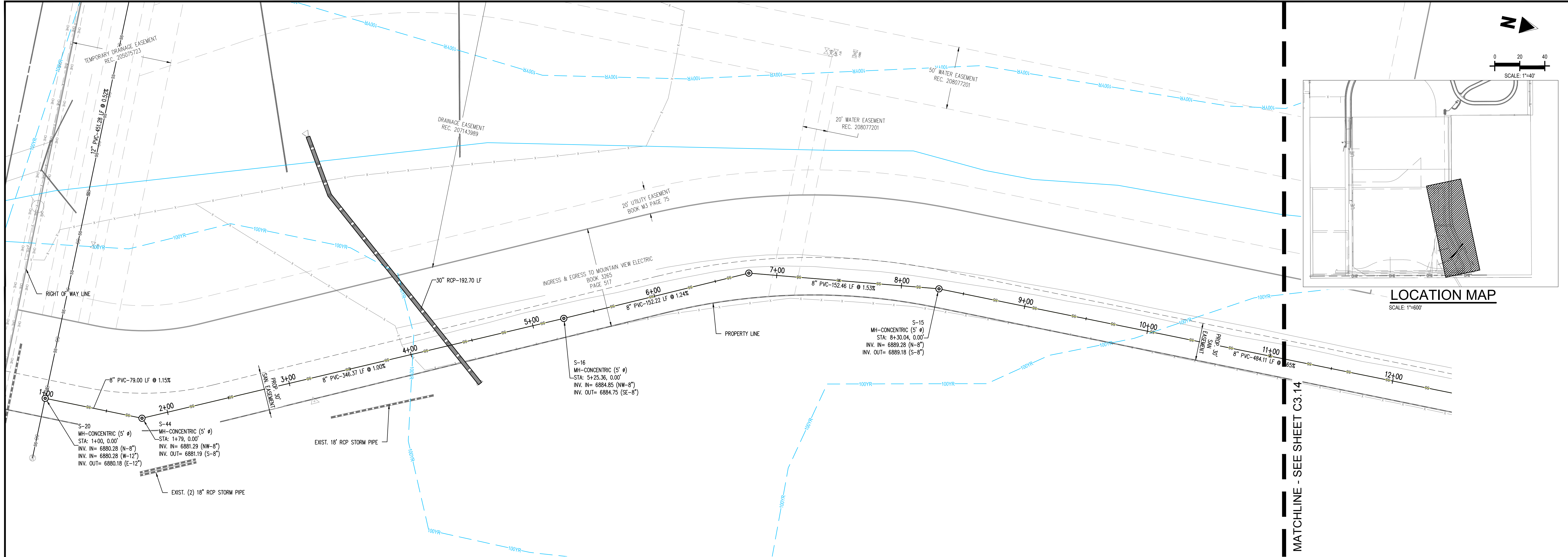
Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019



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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

SILVER GRASS DRIVE &
LEMON GRASS ROAD
SANITARY PLAN & PROFILE



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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

RIGHT OF WAY CONNECTION
SANITARY PLAN & PROFILE



CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

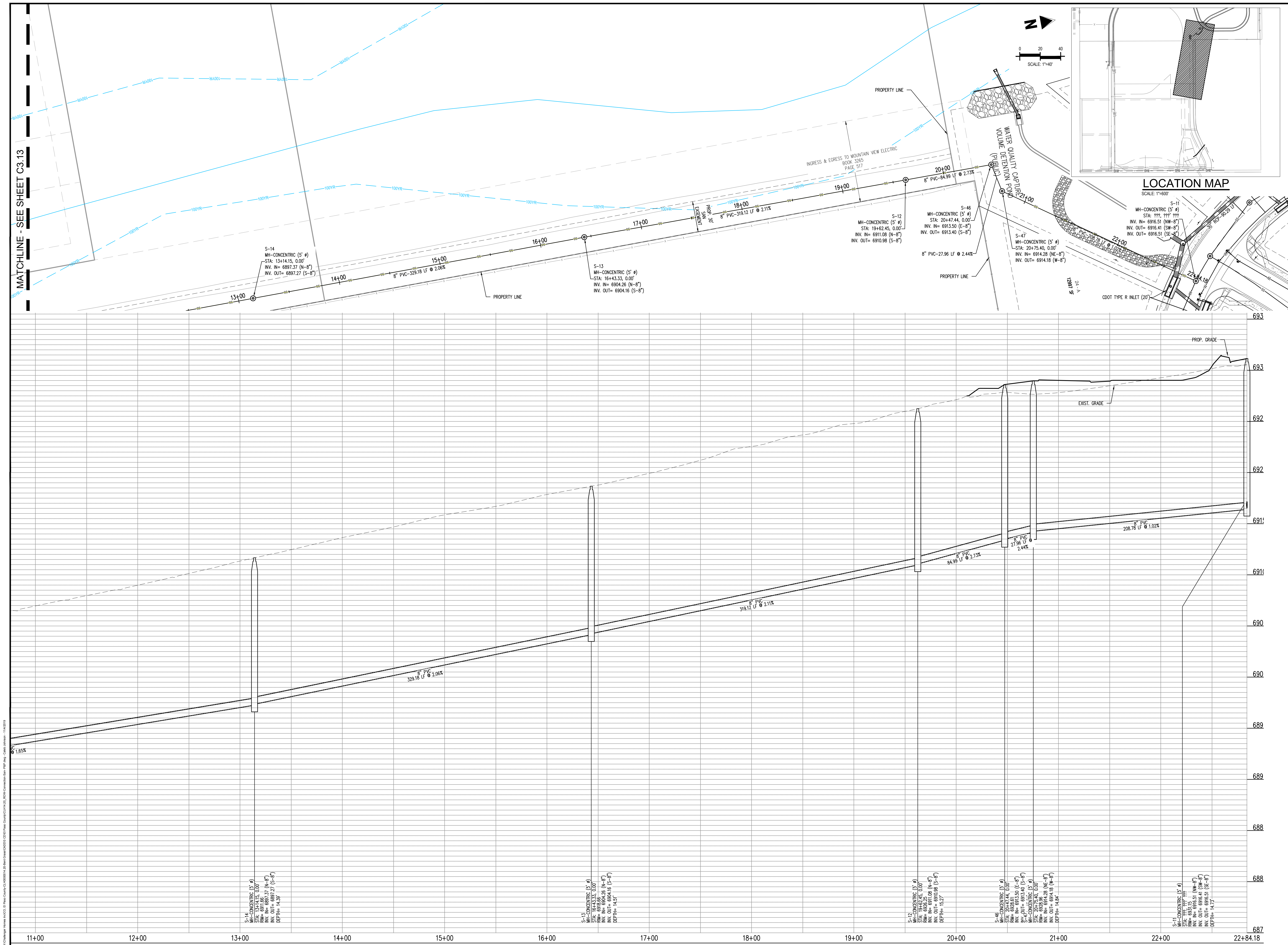
[illegible]

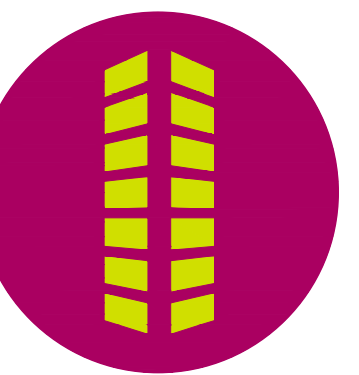
Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

RIGHT OF WAY CONNECTION
SANITARY PLAN & PROFILE

C3.14

Sheet 26 of 31

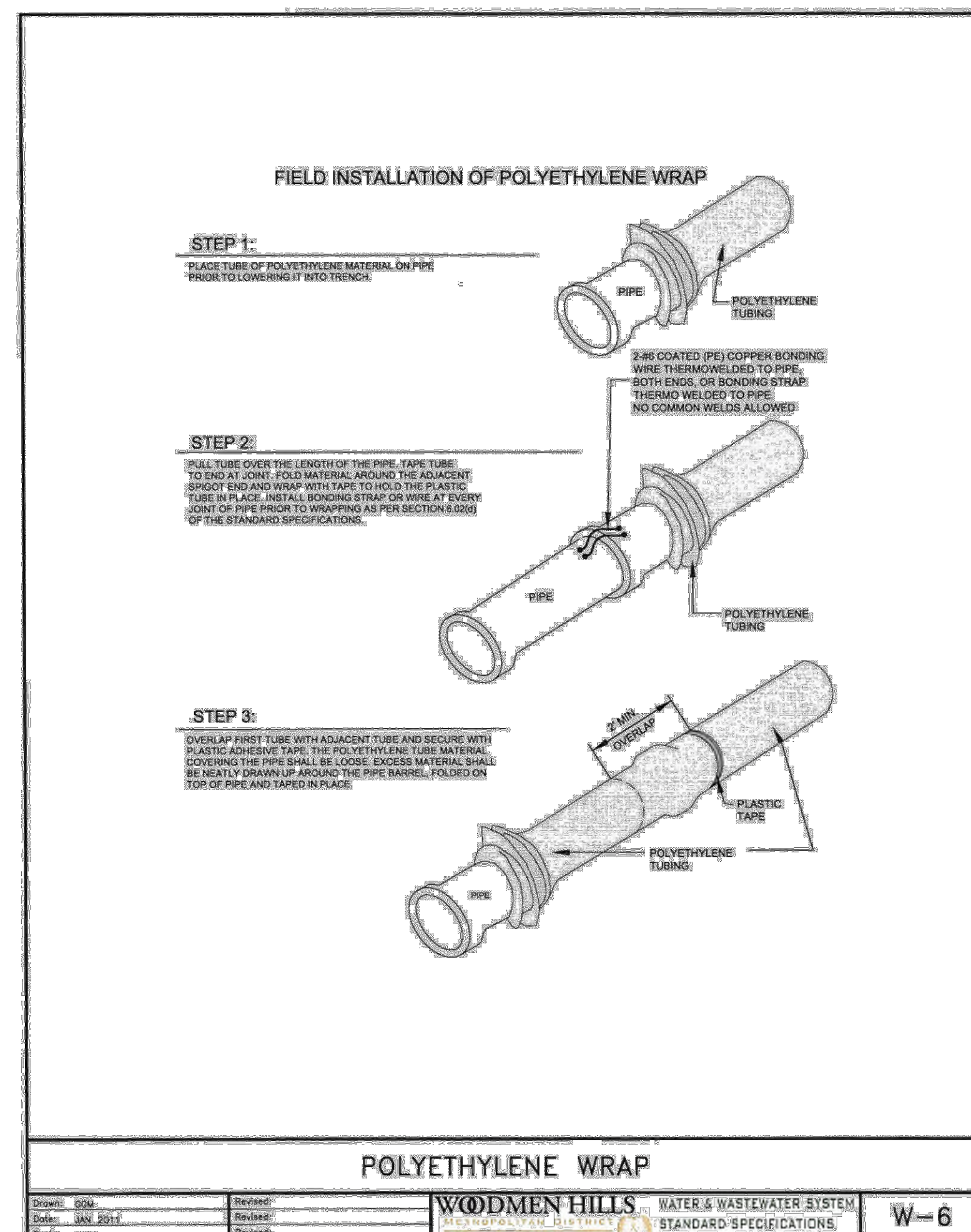
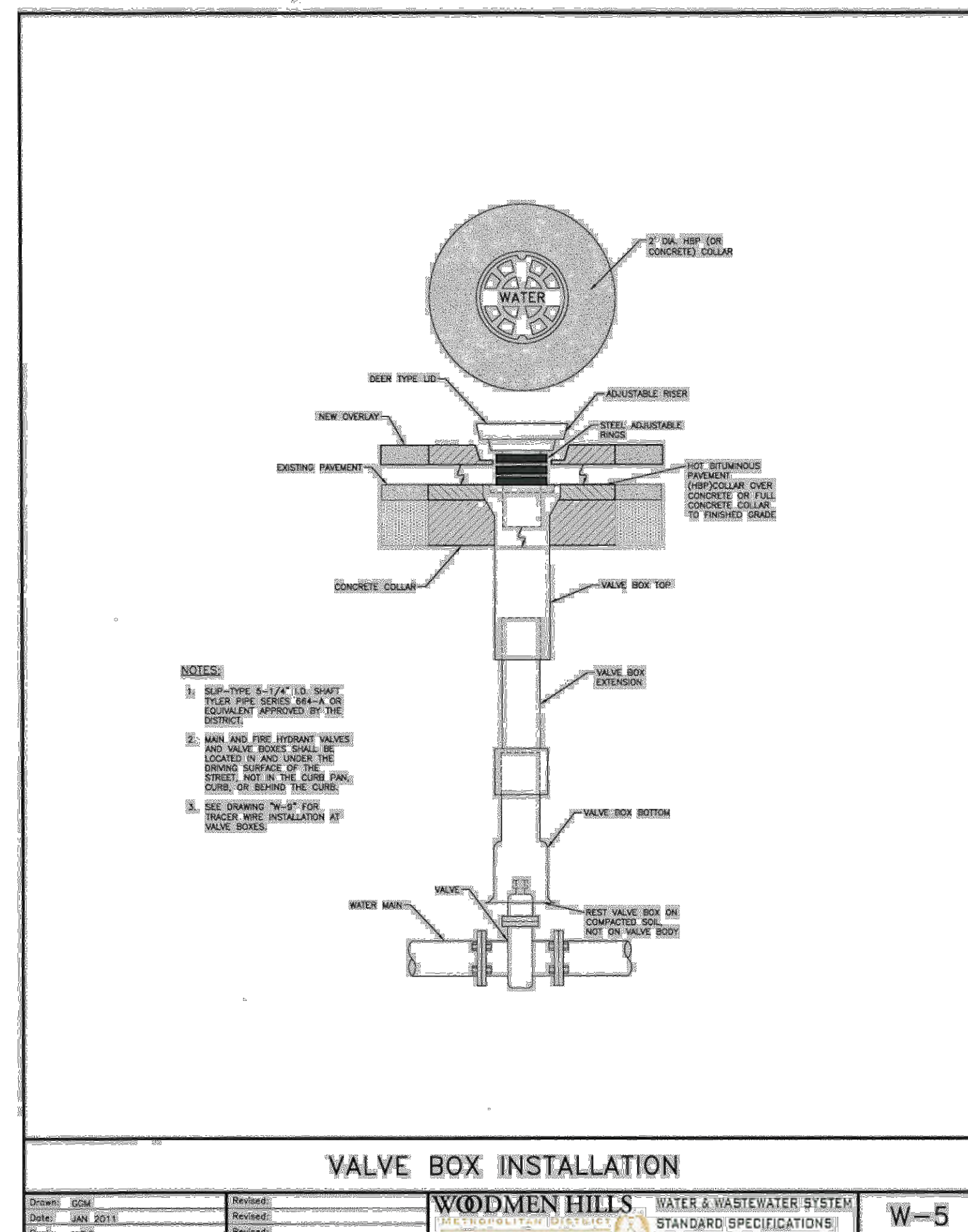
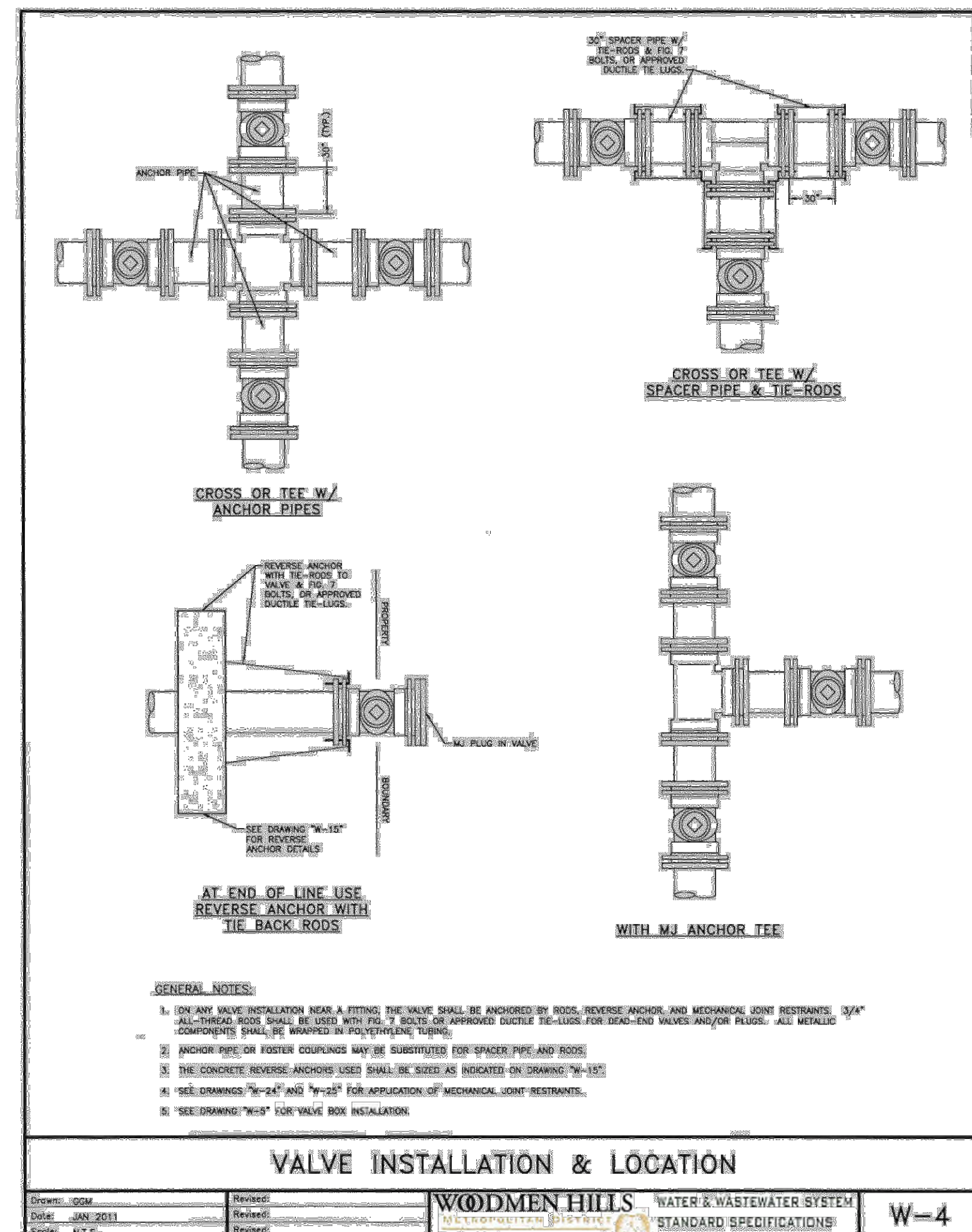


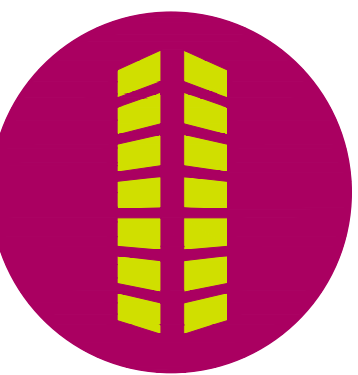
[illegible]

Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

UTILITY DETAILS

C4.00





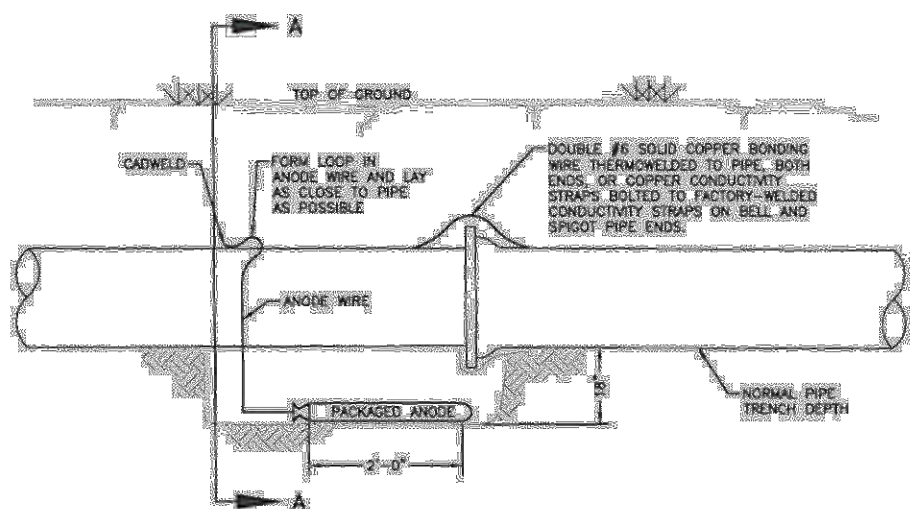
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

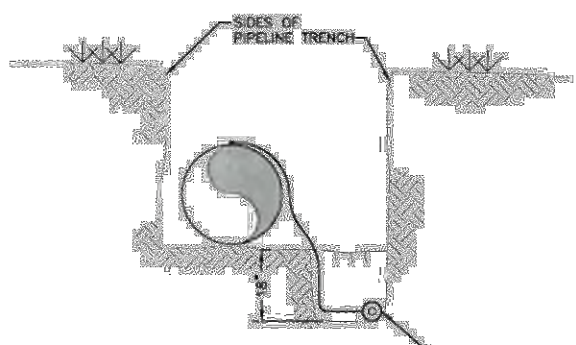
UTILITY DETAILS

C4.01

Sheet 28 of 31



ELEVATION

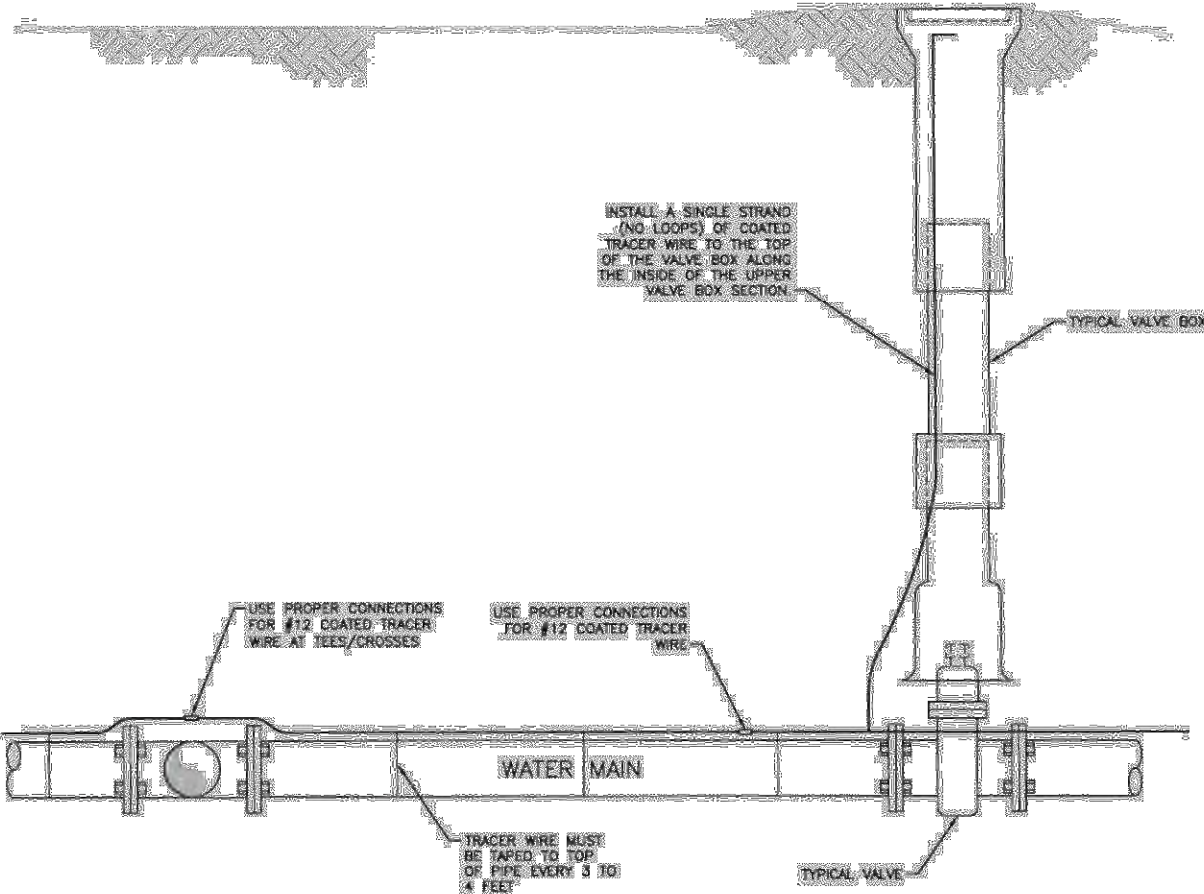


SECTION A-A

- NOTES:
1. CABLED CONNECTION TO BE PRIMED AND COATED CAREFULLY. PACKAGED ANODE SHOULD BE COVERED WITH FINE-SAND CONTAINING NO ROCKS OR DIRT CLUMPS, TAMPERS.
 2. WHEN ANODES ARE REQUIRED WITH METAL FITTINGS AND DISCONTINUITIES TOGETHER WITH PIPE, THE ANODES SHALL BE PLACED AND ATTACHED TO THE METAL IN SAME MANNER AS SHOWN ON THIS DRAWING. BUT ANODES CAN BE USED ON METAL FITTINGS 1/2" AND LESS IN DIAMETER AND 17/16" ANODES FOR METAL FITTINGS GREATER THAN 1/2" DIAMETER WHEN USING PVC PIPE.
 3. PACKAGED ANODE TO BE WETTED AND COVERED WITH SOIL PRIOR TO BACKFILLING.

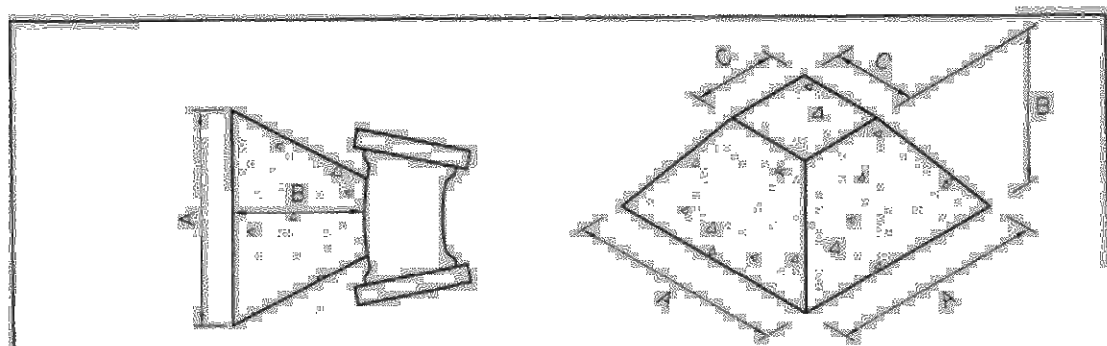
BONDING JOINT & ANODE INSTALLATION

Drawn: GDM	Revised:	WOODMEN HILLS WATER & WASTEWATER SYSTEM	W-7
Date: JAN 2011	Revised:	STANDARD SPECIFICATIONS	
Scale: N.T.S.	Revised:		



TRACER WIRE INSTALLATION DETAILS

Drawn: GDM	Revised:	WOODMEN HILLS WATER & WASTEWATER SYSTEM	W-9
Date: JAN 2011	Revised:	STANDARD SPECIFICATIONS	
Scale: N.T.S.	Revised:		



NOTE: USE THE FOLLOWING VALUES FOR 10\"/>

VAL. (40)	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"	4 1/2"	5"	5 1/2"	6"	6 1/2"	7"	7 1/2"	8"	8 1/2"	9"	9 1/2"	10"	10 1/2"	11"	11 1/2"	12"	12 1/2"	13"	13 1/2"	14"	14 1/2"	15"	15 1/2"	16"	16 1/2"	17"	17 1/2"	18"	18 1/2"	19"	19 1/2"	20"	20 1/2"	21"	21 1/2"	22"	22 1/2"	23"	23 1/2"	24"	24 1/2"	25"	25 1/2"	26"	26 1/2"	27"	27 1/2"	28"	28 1/2"	29"	29 1/2"	30"	30 1/2"	31"	31 1/2"	32"	32 1/2"	33"	33 1/2"	34"	34 1/2"	35"	35 1/2"	36"	36 1/2"	37"	37 1/2"	38"	38 1/2"	39"	39 1/2"	40"	40 1/2"	41"	41 1/2"	42"	42 1/2"	43"	43 1/2"	44"	44 1/2"	45"	45 1/2"	46"	46 1/2"	47"	47 1/2"	48"	48 1/2"	49"	49 1/2"	50"	50 1/2"	51"	51 1/2"	52"	52 1/2"	53"	53 1/2"	54"	54 1/2"	55"	55 1/2"	56"	56 1/2"	57"	57 1/2"	58"	58 1/2"	59"	59 1/2"	60"	60 1/2"	61"	61 1/2"	62"	62 1/2"	63"	63 1/2"	64"	64 1/2"	65"	65 1/2"	66"	66 1/2"	67"	67 1/2"	68"	68 1/2"	69"	69 1/2"	70"	70 1/2"	71"	71 1/2"	72"	72 1/2"	73"	73 1/2"	74"	74 1/2"	75"	75 1/2"	76"	76 1/2"	77"	77 1/2"	78"	78 1/2"	79"	79 1/2"	80"	80 1/2"	81"	81 1/2"	82"	82 1/2"	83"	83 1/2"	84"	84 1/2"	85"	85 1/2"	86"	86 1/2"	87"	87 1/2"	88"	88 1/2"	89"	89 1/2"	90"	90 1/2"	91"	91 1/2"	92"	92 1/2"	93"	93 1/2"	94"	94 1/2"	95"	95 1/2"	96"	96 1/2"	97"	97 1/2"	98"	98 1/2"	99"	99 1/2"	100"	100 1/2"	101"	101 1/2"	102"	102 1/2"	103"	103 1/2"	104"	104 1/2"	105"	105 1/2"	106"	106 1/2"	107"	107 1/2"	108"	108 1/2"	109"	109 1/2"	110"	110 1/2"	111"	111 1/2"	112"	112 1/2"	113"	113 1/2"	114"	114 1/2"	115"	115 1/2"	116"	116 1/2"	117"	117 1/2"	118"	118 1/2"	119"	119 1/2"	120"	120 1/2"	121"	121 1/2"	122"	122 1/2"	123"	123 1/2"	124"	124 1/2"	125"	125 1/2"	126"	126 1/2"	127"	127 1/2"	128"	128 1/2"	129"	129 1/2"	130"	130 1/2"	131"	131 1/2"	132"	132 1/2"	133"	133 1/2"	134"	134 1/2"	135"	135 1/2"	136"	136 1/2"	137"	137 1/2"	138"	138 1/2"	139"	139 1/2"	140"	140 1/2"	141"	141 1/2"	142"	142 1/2"	143"	143 1/2"	144"	144 1/2"	145"	145 1/2"	146"	146 1/2"	147"	147 1/2"	148"	148 1/2"	149"	149 1/2"	150"	150 1/2"	151"	151 1/2"	152"	152 1/2"	153"	153 1/2"	154"	154 1/2"	155"	155 1/2"	156"	156 1/2"	157"	157 1/2"	158"	158 1/2"	159"	159 1/2"	160"	160 1/2"	161"	161 1/2"	162"	162 1/2"	163"	163 1/2"	164"	164 1/2"	165"	165 1/2"	166"	166 1/2"	167"	167 1/2"	168"	168 1/2"	169"	169 1/2"	170"	170 1/2"	171"	171 1/2"	172"	172 1/2"	173"	173 1/2"	174"	174 1/2"	175"	175 1/2"	176"	176 1/2"	177"	177 1/2"	178"	178 1/2"	179"	179 1/2"	180"	180 1/2"	181"	181 1/2"	182"	182 1/2"	183"	183 1/2"	184"	184 1/2"	185"	185 1/2"	186"	186 1/2"	187"	187 1/2"	188"	188 1/2"	189"	189 1/2"	190"	190 1/2"	191"	191 1/2"	192"	192 1/2"	193"	193 1/2"	194"	194 1/2"	195"	195 1/2"	196"	196 1/2"	197"	197 1/2"	198"	198 1/2"	199"	199 1/2"	200"	200 1/2"	201"	201 1/2"	202"	202 1/2"	203"	203 1/2"	204"	204 1/2"	205"	205 1/2"	206"	206 1/2"	207"	207 1/2"	208"	208 1/2"	209"	209 1/2"	210"	210 1/2"	211"	211 1/2"	212"	212 1/2"	213"	213 1/2"	214"	214 1/2"	215"	215 1/2"	216"	216 1/2"	217"	217 1/2"	218"	218 1/2"	219"	219 1/2"	220"	220 1/2"	221"	221 1/2"	222"	222 1/2"	223"	223 1/2"	224"	224 1/2"	225"	225 1/2"	226"	226 1/2"	227"	227 1/2"	228"	228 1/2"	229"	229 1/2"	230"	230 1/2"	231"	231 1/2"	232"	232 1/2"	233"	233 1/2"	234"	234 1/2"	235"	235 1/2"	236"	236 1/2"	237"	237 1/2"	238"	238 1/2"	239"	239 1/2"	240"	240 1/2"	241"	241 1/2"	242"	242 1/2"	243"	243 1/2"	244"	244 1/2"	245"	245 1/2"	246"	246 1/2"	247"	247 1/2"	248"	248 1/2"	249"	249 1/2"	250"	250 1/2"	251"	251 1/2"	252"	252 1/2"	253"	253 1/2"	254"	254 1/2"	255"	255 1/2"	256"	256 1/2"	257"	257 1/2"	258"	258 1/2"	259"	259 1/2"	260"	260 1/2"	261"	261 1/2"	262"	262 1/2"	263"	263 1/2"	264"	264 1/2"	265"	265 1/2"	266"	266 1/2"	267"	267 1/2"	268"	268 1/2"	269"	269 1/2"	270"	270 1/2"	271"	271 1/2"	272"	272 1/2"	273"	273 1/2"	274"	274 1/2"	275"	275 1/2"	276"	276 1/2"	277"	277 1/2"	278"	278 1/2"	279"	279 1/2"	280"	280 1/2"	281"	281 1/2"	282"	282 1/2"	283"	283 1/2"	284"	284 1/2"	285"	285 1/2"	286"	286 1/2"	287"	287 1/2"	288"	288 1/2"	289"	289 1/2"	290"	290 1/2"	291"	291 1/2"	292"	292 1/2"	293"	293 1/2"	294"	294 1/2"	295"	295 1/2"	296"	296 1/2"	297"	297 1/2"	298"	298 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1/2"	370"	370 1/2"	371"	371 1/2"	372"	372 1/2"	373"	373 1/2"	374"	374 1/2"	375"	375 1/2"	376"	376 1/2"	377"	377 1/2"	378"	378 1/2"	379"	379 1/2"	380"	380 1/2"	381"	381 1/2"	382"	382 1/2"	383"	383 1/2"	384"	384 1/2"	385"	385 1/2"	386"	386 1/2"	387"	387 1/2"	388"	388 1/2"	389"	389 1/2"	390"	390 1/2"	391"	391 1/2"	392"	392 1/2"	393"	393 1/2"	394"	394 1/2"	395"	395 1/2"	396"	396 1/2"	397"	397 1/2"	398"	398 1/2"	399"	399 1/2"	400"	400 1/2"	401"	401 1/2"	402"	402 1/2"	403"	403 1/2"	404"	404 1/2"	405"	405 1/2"	406"	406 1/2"	407"	407 1/2"	408"	408 1/2"	409"	409 1/2"	410"	410 1/2"	411"	411 1/2"	412"	412 1/2"	413"	413 1/2"	414"	414 1/2"	415"	415 1/2"	416"	416 1/2"	417"	417 1/2"	418"	418 1/2"	419"	419 1/2"	420"	420 1/2"	421"	421 1/2"	422"	422 1/2"	423"	423 1/2"	424"	424 1/2"	425"	425 1/2"	426"	426 1/2"	427"	427 1/2"	428"	428 1/2"	429"	429 1/2"	430"	430 1/2"	431"	431 1/2"	432"	432 1/2"	433"	433 1/2"	434"	434 1/2"	435"	435 1/2"	436"	436 1/2"	437"	437 1/2"	438"	438 1/2"	439"	439 1/2"	440"	440 1/2"	441"	441 1/2"	442"	442 1/2"	443"	443 1/2"	444"	444 1/2"	445"	445 1/2"	446"	446 1/2"	447"	447 1/2"	448"	448 1/2"	449"	449 1/2"	450"	450 1/2"	451"	451 1/2"	452"	452 1/2"	453"	453 1/2"	454"	454 1/2"	455"	455 1/2"	456"	456 1/2"	457"	457 1/2"	458"	458 1/2"	459"	459 1/2"	460"	460 1/2"	461"	461 1/2"	462"	462 1/2"	463"	463 1/2"	464"	464 1/2"	465"	465 1/2"	466"	466 1/2"	467"	467 1/2"	468"	468 1/2"	469"	469 1/2"	470"	470 1/2"	471"	471 1/2"	472"	472 1/2"	473"	473 1/2"	474"	474 1/2"	475"	475 1/2"	476"	476 1/2"	477"	477 1/2"	478"	478 1/2"	479"	479 1/2"	480"	480 1/2"	481"	481 1/2"	482"	482 1/2"	483"	483 1/2"	484"	484 1/2"	485"	485 1/2"	486"	486 1/2"	487"	487 1/2"	488"	488 1/2"	489"	489 1/2"	490"	490 1/2"	491"	491 1/2"	492"	492 1/2"	493"	493 1/2"	494"	494 1/2"	495"	495 1/2"	496"	496 1/2"	497"	497 1/2"	498"	498 1/2"	499"	499 1/2"	500"	500 1/2"	501"	501 1/2"	502"	502 1/2"	503"	503 1/2"	504"	504 1/2"	505"	505 1/2"	506"	506 1/2"	507"	507 1/2"	508"	508 1/2"	509"	509 1/2"	510"	510 1/2"	511"	511 1/2"	512"	512 1/2"	513"	513 1/2"	514"	514 1/2"	515"	515 1/2"	516"	516 1/2"	517"	517 1/2"	518"	518 1/2"	519"	519 1/2"	520"	520 1/2"	521"	521 1/2"	522"	522 1/2"	523"	523 1/2"	524"	524 1/2"	525"	525 1/2"	526"	526 1/2"	527"	527 1/2"	528"	528 1/2"	529"	529 1/2"	530"	530 1/2"	531"	531 1/2"	532"	532 1/2"	533"	533 1/2"	534"	534 1/2"	535"	535 1/2"	536"	536 1/2"	537"	537 1/2"	538"	538 1/2"	539"	539 1/2"	540"	540 1/2"	541"	541 1/2"	542"	542 1/2"	543"	543 1/2"	544"	544 1/2"	545"	545 1/2"	546"	546 1/2"	547"	547 1/2"	548"	548 1/2"	549"	549 1/2"	550"	550 1/2"	551"	551 1/2"	552"	552 1/2"	553"	553 1/2"	554"	554 1/2"	555"	555 1/2"	556"	556 1/2"	557"	557 1/2"	558"	558 1/2"	559"	559 1/2"	560"	560 1/2"	561"	561 1/2"	562"	562 1/2"	563"	563 1/2"	564"	564 1/2"	565"	565 1/2"	566"	566 1/2"	567"	567 1/2"	568"	568 1/2"	569"	569 1/2"	570"	570 1/2"	571"	571 1/2"	572"	572 1/2"	573"	573 1/2"	574"	574 1/2"	575"	575 1/2"	576"	576 1/2"	577"	577 1/2"	578"	578 1/2"	579"	579 1/2"	580"	580 1/2"	581"	581 1/2"	582"	582 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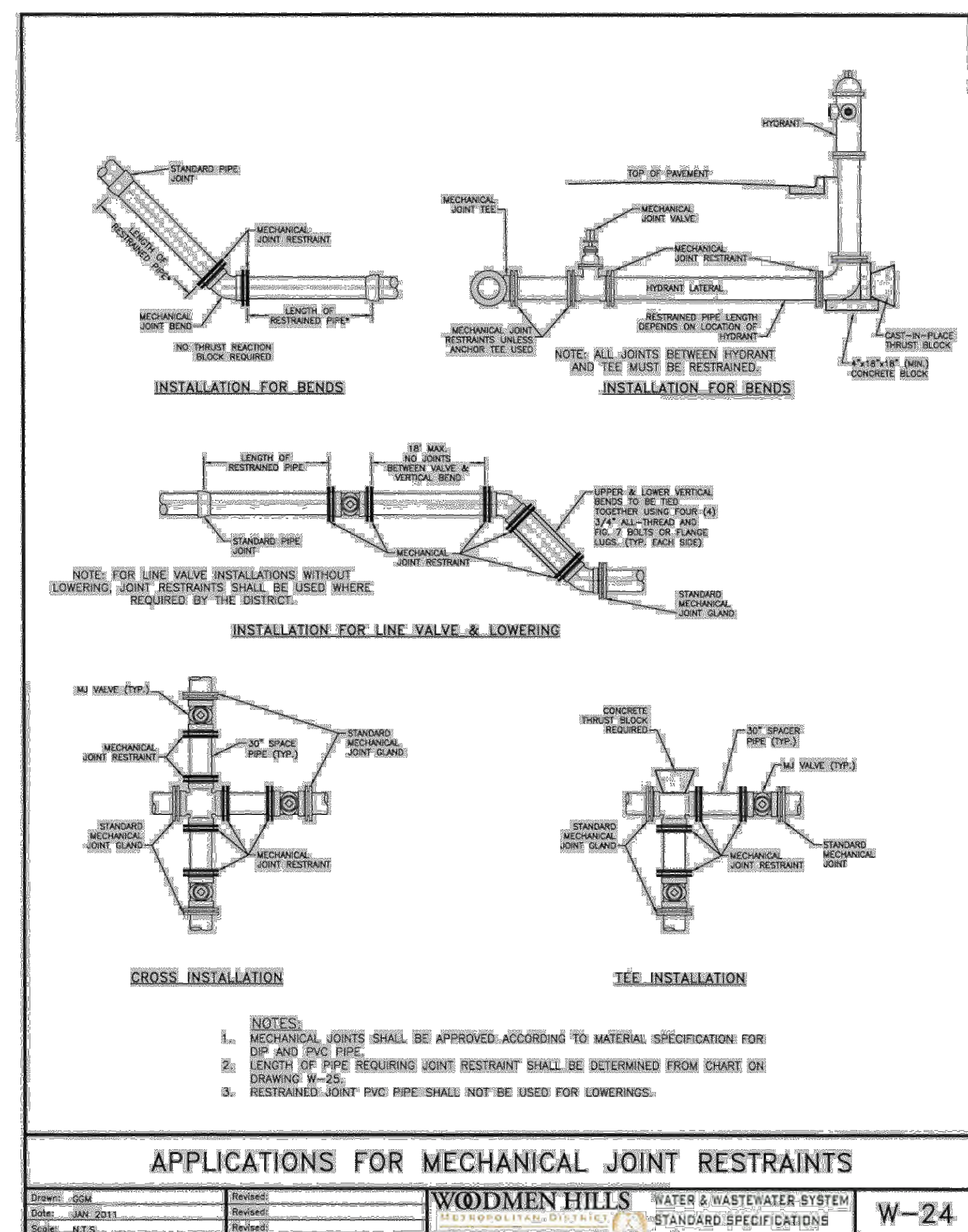
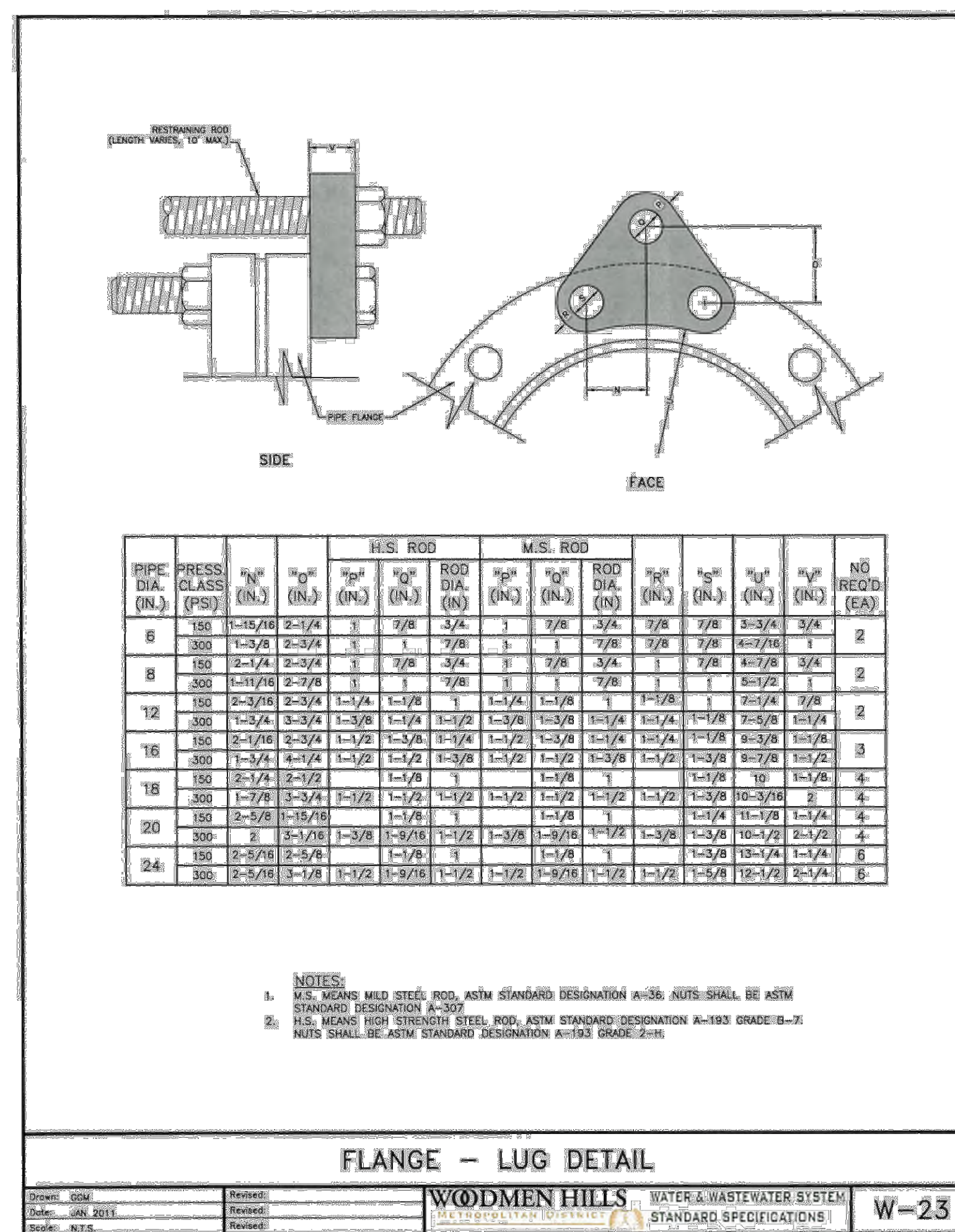
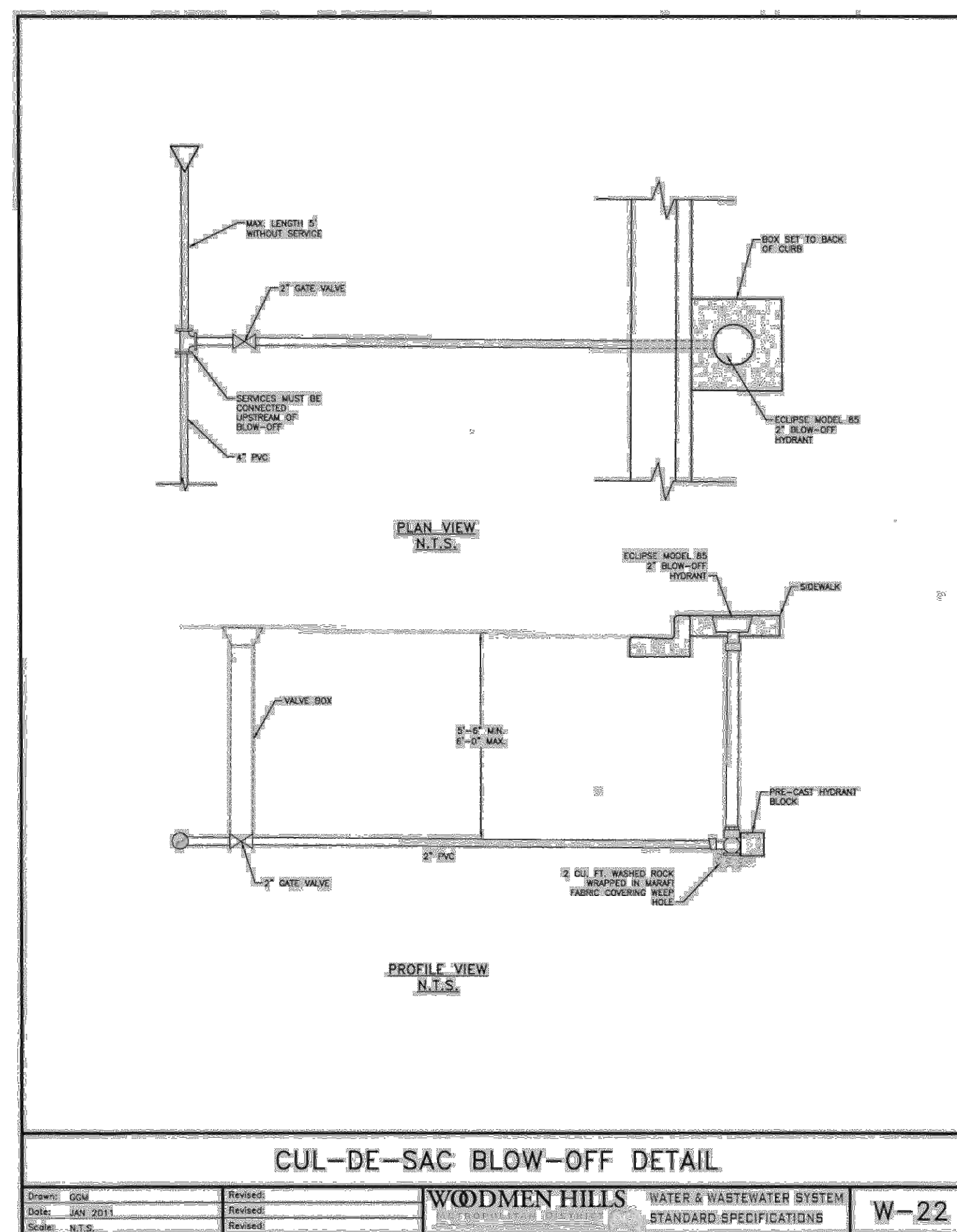
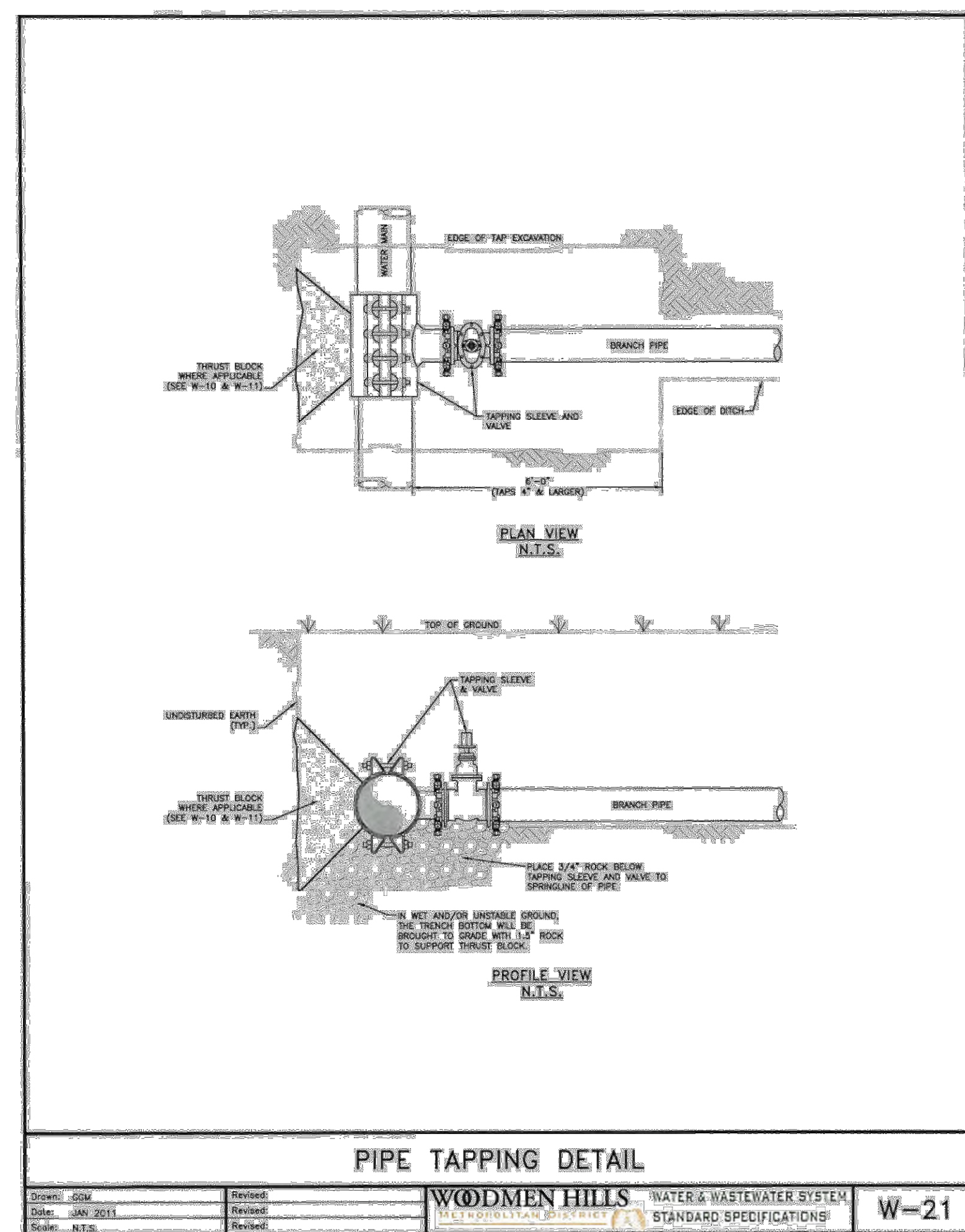
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

UTILITY DETAILS

C4.02

Sheet 29 of 31



RESTRAINED M.J. PIPE LENGTH (FT)

6-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR FLUG	12	18	24
45° BEND	5	8	10
22-1/2° BEND	2	4	5
11-1/4° BEND	1	2	2

16-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR FLUG	20	43	58
45° BEND	12	18	24
22-1/2° BEND	6	8	12
11-1/4° BEND	3	4	6

8-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR FLUG	18	24	32
45° BEND	7	10	13
22-1/2° BEND	3	5	6
11-1/4° BEND	2	2	3

18-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR FLUG	32	48	64
45° BEND	14	20	27
22-1/2° BEND	7	10	13
11-1/4° BEND	3	5	7

12-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR FLUG	24	34	45
45° BEND	9	14	19
22-1/2° BEND	5	7	9
11-1/4° BEND	2	3	4

20-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR FLUG	40	52	70
45° BEND	15	22	29
22-1/2° BEND	7	10	14
11-1/4° BEND	3	5	7

24-INCH DUCTILE IRON AND PVC

TYPE OF FITTING	STATIC PRESSURE (PSI)		
	<100	100-150	150-200
90° BEND, TEE, VALVE OR FLUG	41	61	81
45° BEND	17	25	34
22-1/2° BEND	8	12	16
11-1/4° BEND	4	6	8

NOTES:

1. PRESSURES GREATER THAN 200 PSI REQUIRE SPECIAL DESIGN APPROVED BY THE DISTRICT.
2. LENGTH IS BASED ON MINIMUM 5'-0" OF GROUND COVER AND SOIL COMPACTED ACCORDING TO SECTION 515.5 OF THESE SPECIFICATIONS.
3. APPROVED METHODS OF RESTRAINED PIPE BEYOND INITIAL FITTING SHALL BE:
 - A. FOR DUCTILE IRON, 1100 SERIES MEGALUG BY EBAA IRON OR EQUAL ON MECHANICAL JOINT PIPE OR DOUBLE 1100 SERIES MEGALUG BY EBAA IRON OR EQUAL ON PUSH ON JOINT PIPE.
 - B. FOR PVC PIPE, SERIES 1500 OR SERIES 2800 RESTRAINTS BY EBAA IRON OR EQUAL.

RESTRAINED M.J PIPE LENGTH DATA

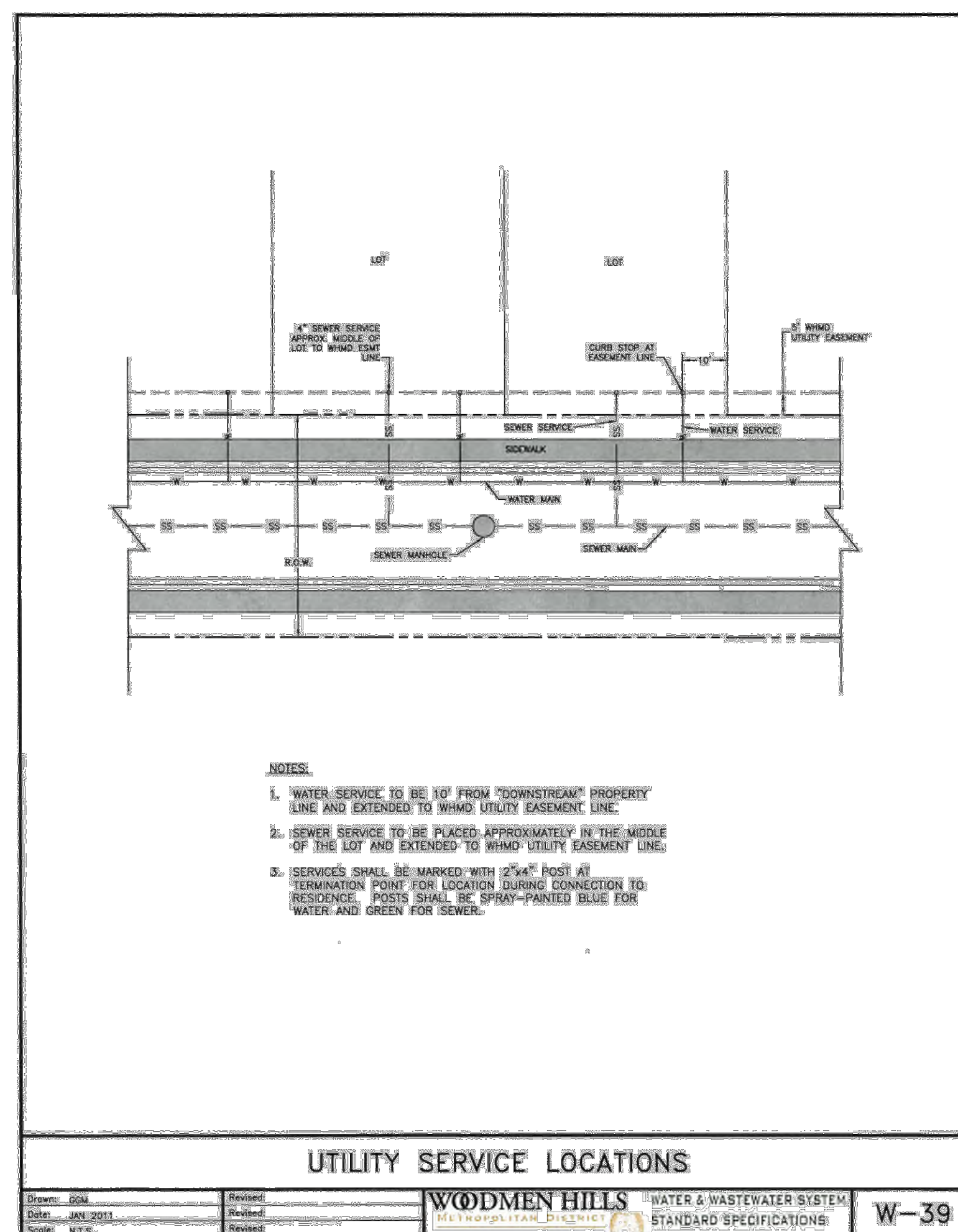
Drawn: GCM
 Date: JAN 2013
 Scale: N/A

Revised:
 Revised:
 Rechecked:

WOODMEN HILLS
 METROPOLITAN DISTRICT

WATER & WASTEWATER SYSTEM
 STANDARD SPECIFICATIONS

W-25



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CONSTRUCTION PLANS
BENT GRASS RESIDENTIAL FILING NO. 2

BENT GRASS MEADOWS DRIVE
FALCON, CO 80831 EL PASO COUNTY

#	Date	Issue / Description	Init.
1			
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Project No: CLH000014.20
Drawn By: JDP
Checked By: RGD
Date: 11/4/2019

UTILITY DETAILS

CLASS "A"
(CONCRETE CRADLE)
L.F.=2.8

CLASS "B"
(GRANULAR BASE)
L.F.=1.9

CLASS "C"
(SHAPED BOTTOM)
L.F.=1.5

CLASS "D"
(FLAT BOTTOM)
L.F.=1.1

NOTES:
1. FOR ROCK OR OTHER INCOMPRESSIBLE MATERIALS THE TRENCH SHALL BE OVEREXCAVATED A MINIMUM OF 8" AND REFILLED WITH GRANULAR BEDDING MATERIAL AS DEFINED BY CLASS "B" BEDDING.
2. L.F. IS LOAD FACTOR
3. CLASS "D" BEDDING WILL NOT BE ACCEPTABLE UNDER ANY CONDITION.
4. MINIMUM DENSITY FOR CAREFULLY COMPACTED SELECT BACKFILL SHALL BE 95% OF STD. PROCTOR DENSITY OR AS SPECIFIED FOR THE TRENCH BACKFILL, WHICHEVER IS GREATER.

PIPE BEDDING

Drawn: GDM
Date: JAN 2011
Scale: N.T.S.

Revised:
Date:
Scale:

WOODMEN HILLS WATER & WASTEWATER SYSTEM
METROPOLITAN DISTRICT STANDARD SPECIFICATIONS WW-1

BOTTOM OF TRENCH WIDTH		
PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	1'-5"	3'-9"
6"	1'-7"	3'-11"
8"	1'-9"	4'-1"
12"	2'-1"	4'-5"
15"	2'-6"	4'-9"
18"	2'-10"	5'-2"
24"	3'-2"	5'-6"

ALL PIPE EMBEDMENT SHALL BE IMPORTED CLASS B BEDDING UNLESS OTHERWISE DIRECTED.
ANY OVER EXCAVATED TRENCH SHALL BE REFILLED AND THOROUGHLY COMPACTED UNDER THE DIRECTION OF THE DISTRICT.
UNDER NO CIRCUMSTANCES WILL PIPE BE LAID IN A PROPOSED FILL AREA PRIOR TO IT BEING COMPLETELY FILLED. THE FILL WILL BE PLACED FIRST TO PROPOSED GRADE AND COMPACTED AS REQUIRED. A TRENCH THEN WILL BE EXCAVATED AND THE PIPE INSTALLED IN THE USUAL MANNER.

TYPICAL TRENCH CROSS SECTION

Drawn: GDM
Date: JAN 2011
Scale: N.T.S.

Revised:
Date:
Scale:

WOODMEN HILLS WATER & WASTEWATER SYSTEM
METROPOLITAN DISTRICT STANDARD SPECIFICATIONS WW-2

1. MANHOLE BARREL MINIMUM DIAMETER SHALL CONFORM TO TABLE

2. SHAPING FOR SMOOTH MANHOLE INVERTS MUST BE DONE BY FORMING/SHAPING CONCRETE BASE

3. PRECAST SECTIONS TO CONFORM TO ASTM C-478

4. STUB-OUTS SHALL EXTEND A MINIMUM OF 6" PAST MANHOLE O.D. AND BE SATISFACTORILY PLUGGED

5. CONCRETE MANHOLES MAY BE FOUND IN PLACE ONLY WITH PRIOR DESIGN AND INSPECTION APPROVAL

6. ALL MORTAR GROUT SHALL BE MIXED WITH THE TYPE-V CEMENT

7. APPLY COAL TAR EPOXY DAMP-PROOFING TO ALL EXTERIOR CONCRETE SURFACES

8. CENTER POINT IN BASE POUR BELOW PIPE O.D. AT 1"

9. ALL EXTERIOR JOINTS SHALL RECEIVE BUTYL RUBBER JOINT WRAP REFER TO SPECIFICATIONS

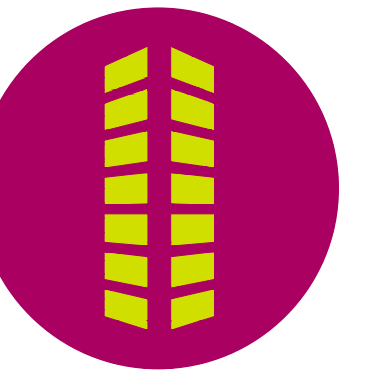
PIPE I.D.	MANHOLE I.D.	WALL
8" TO 15"	4'-0"	8"
18" TO 30"	5'-0"	8"
36" TO 54"	6'-0"	8"
60" & LARGER	SPECIAL DESIGN	8"

PRECAST MANHOLE

Drawn: GDM
Date: JAN 2011
Scale: N.T.S.

Revised:
Date:
Scale:

WOODMEN HILLS WATER & WASTEWATER SYSTEM
METROPOLITAN DISTRICT STANDARD SPECIFICATIONS WW-3

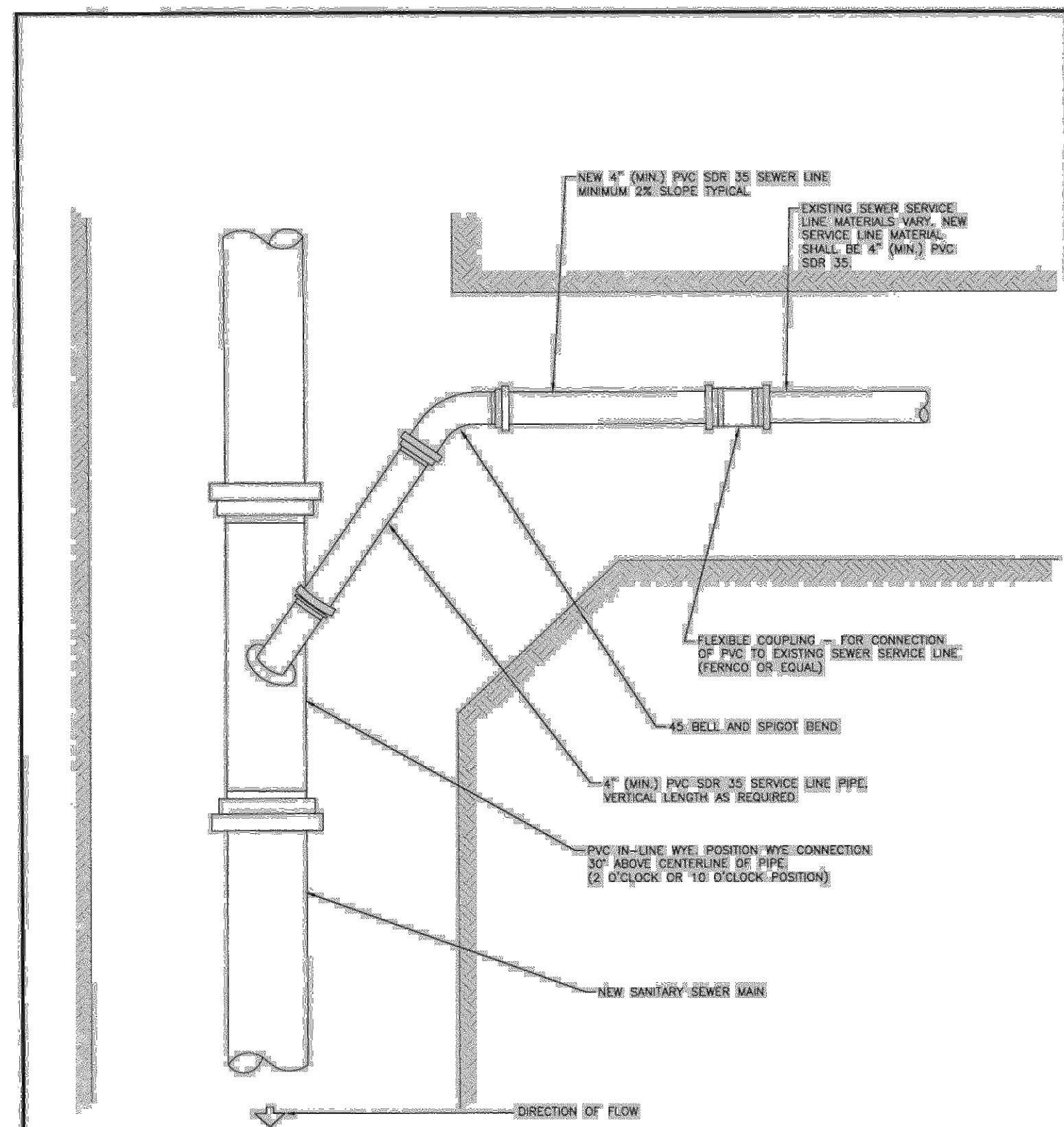
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Project No:	CLH000014.20
Drawn By:	JDP
Checked By:	RGD
Date:	11/4/2019

UTILITY DETAILS

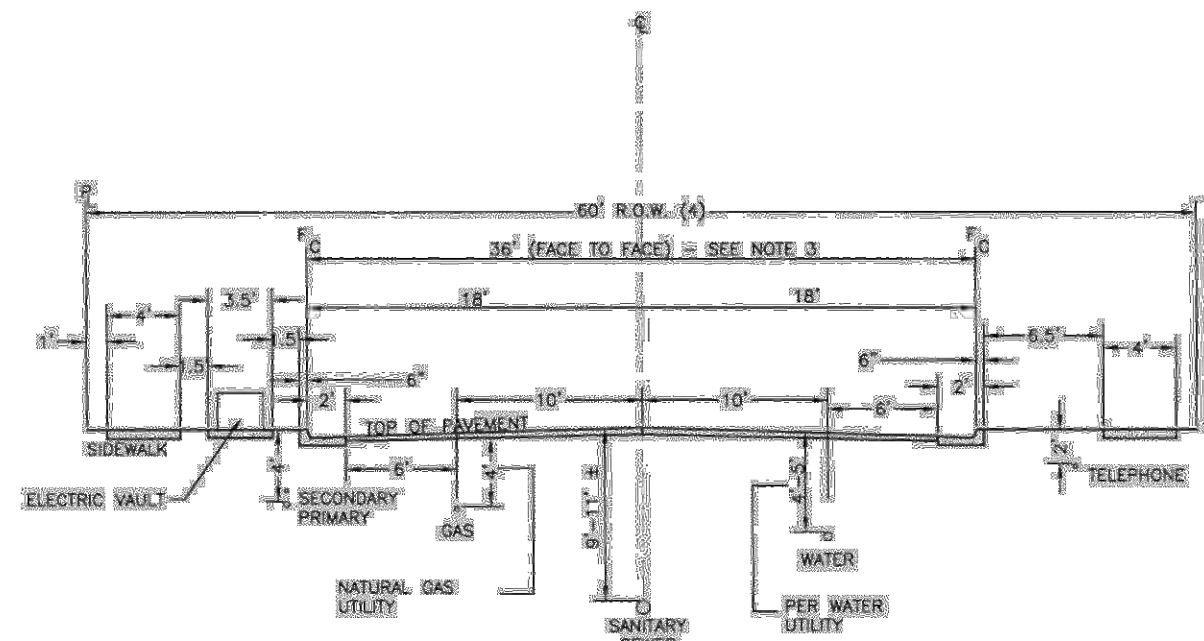
C4.04

Sheet 31 of 31



SANITARY SEWER SERVICE CONNECTION

Drawn: GOM	Revised:	 WOODMEN HILLS METROPOLITAN DISTRICT WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	 WW-7
Date: JAN 2011	Revised:		
Scale: N.T.S.	Revised:		

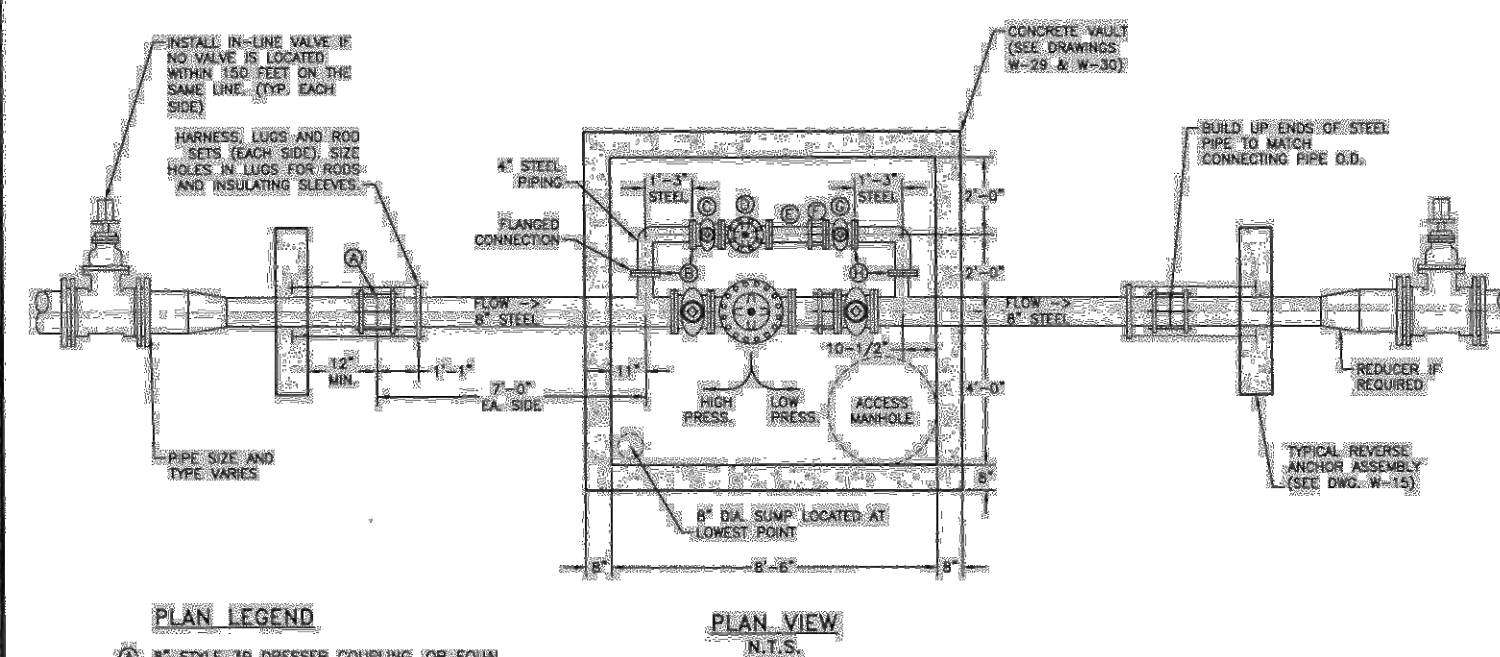


**TYPICAL CROSS SECTION
UTILITIES LOCATION**

- GENERAL NOTES**
1. STORM SEWERS SHALL MAINTAIN A 10'-CLEAR SEPARATION FROM WATER;
 2. ELECTRIC CONDUITS SHALL BE ON THE OPPOSITE SIDE OF THE STREET FROM WATER;
 3. FOR 40' WIDE STREET SECTIONS, MAINTAIN WATER 10 FEET FROM SANITARY SEWER AT STREET CENTERLINE;
 4. FOR 50' WIDE RIGHT-OF-WAY (ROW), A 5'-FOOT-WIDE SIDEWALK AND UTILITY EASEMENTS ARE REQUIRED ADJACENT TO THE STREET ROW. FIVE (5) FOOT-WIDE ATTACHED SIDEWALK IS USED WITH ELECTRIC UTILITIES BEHIND WALK IN EASEMENT.

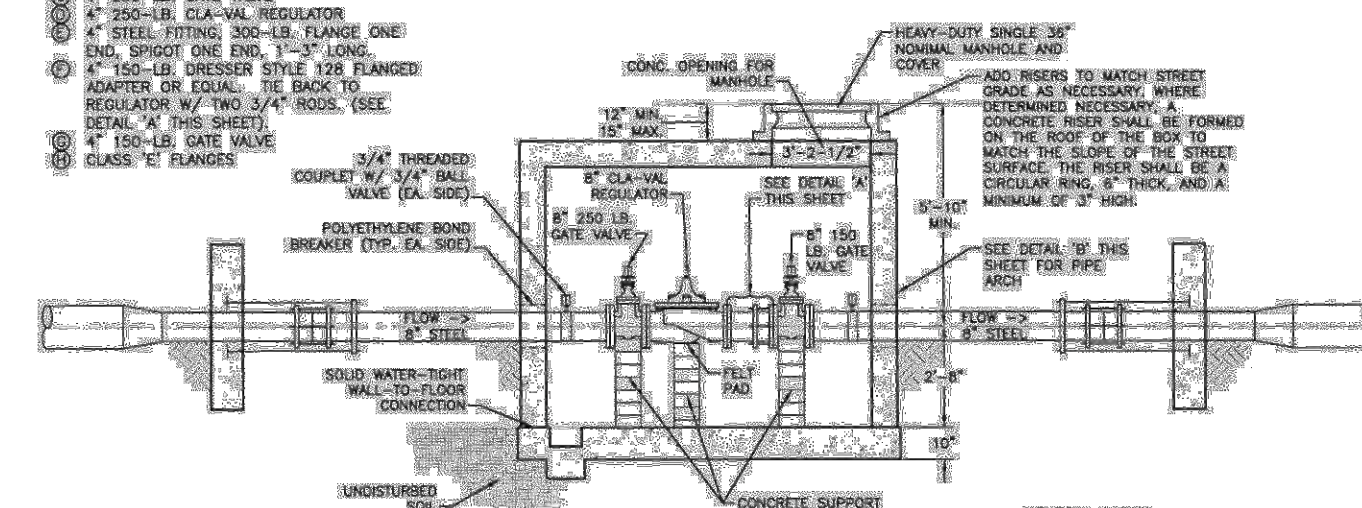
TYPICAL UTILITY LOCATIONS

Drawn: JGM	Revised:		WATER & WASTEWATER SYSTEM	
Date: JAN 2011	Revised:		STANDARD SPECIFICATIONS	
Scale: N.T.S.	Revised:			

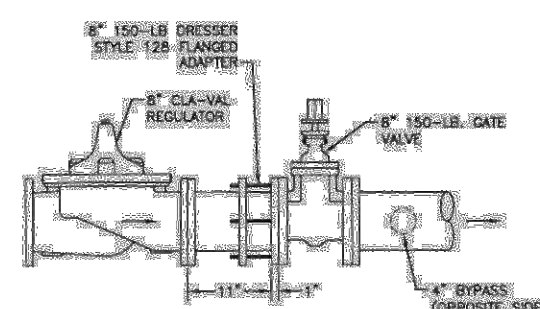


PLAN VI
N.T.S.

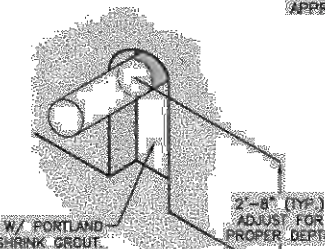
- PLAN LEGEND**
- A 8" STYLE 39 DRESS
300-LB. FLANGES
- C 4" 250-LB. GATE VALVE
4" 250-LB. CL. VALVE
- E 4" STEEL FITTING, 3
END, SPIGOT ONE END
- F 4" 150-LB. DRESS
ADAPTER OR EQUAL
REGULATOR W/ TWO
DETAL "A" THIS SHE
- G 4" 150-LB. GATE VALVE
- H CLASS "E" FLANGES



PROFILE VIEW
N.T.S.



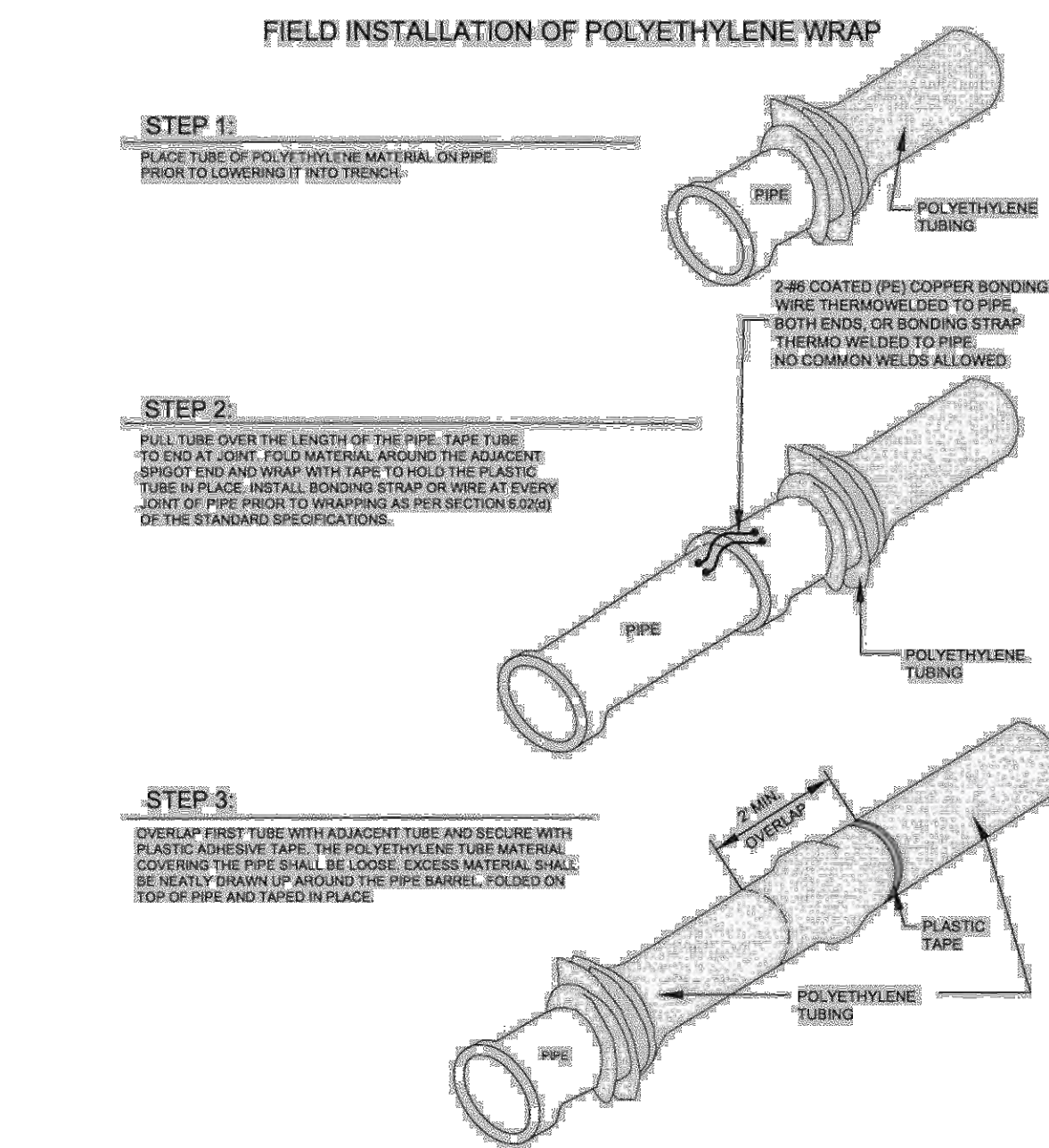
DETAIL 'A' - FLANGED ADAPTOR
N.T.S.



'B' - PIPE ARCH
N.T.S.

8" SIZE PRESSURE REGULATOR STATION

Drawn: GDM	Revised:	 WOODMEN HILLS METROPOLITAN DISTRICT	WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	W-27
Date: JAN 2013	Revised:			
Checked: MDM	Revised:			



POLYETHYLENE PIPE WRAP

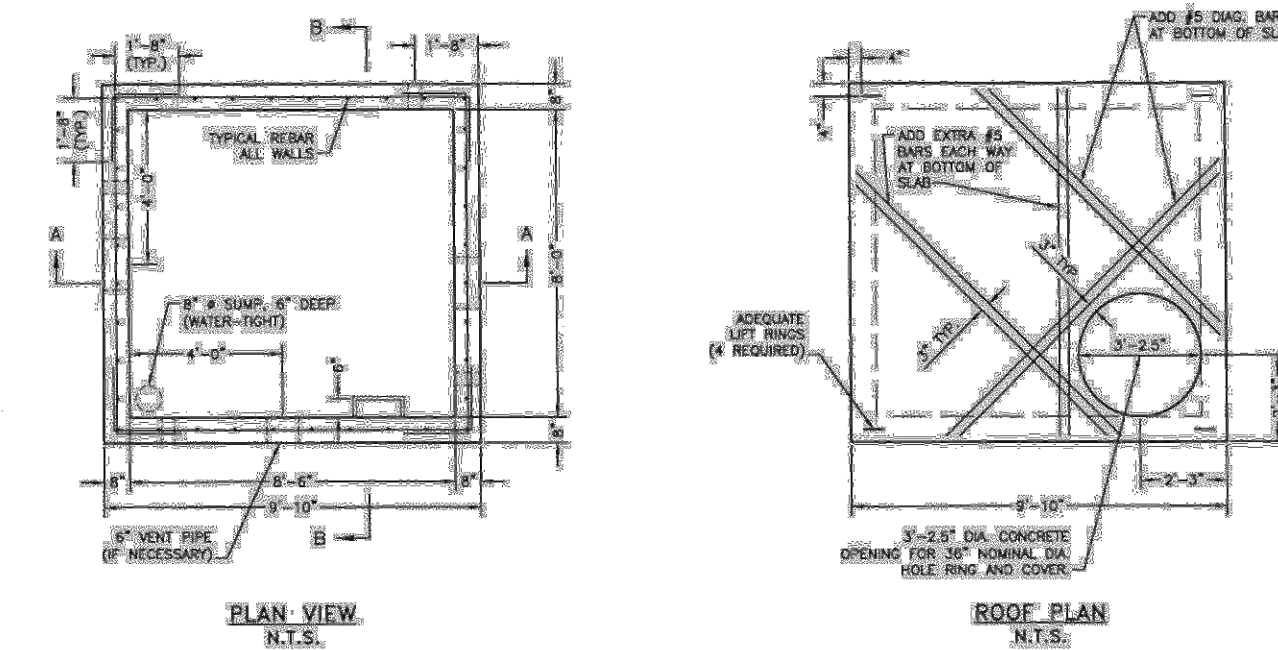
Drawn: GSW
Date: JAN 2011
Scale: N/A

Revised:
Revised:
Revised:

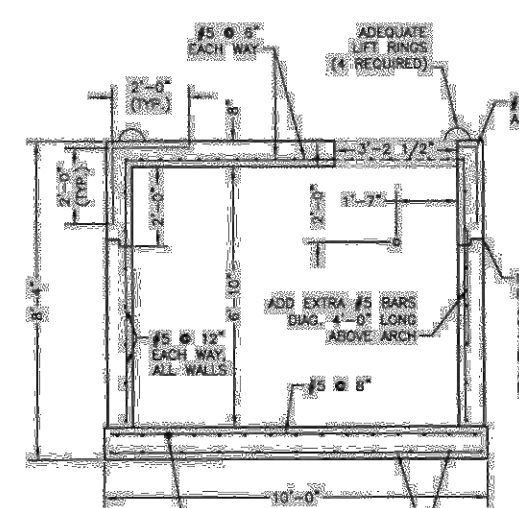
WOODMEN HILLS
ULTRAFILTRATION DIEMTIC

WATER & WASTEWATER SYSTEM
STANDARD SPECIFICATIONS

WW-12

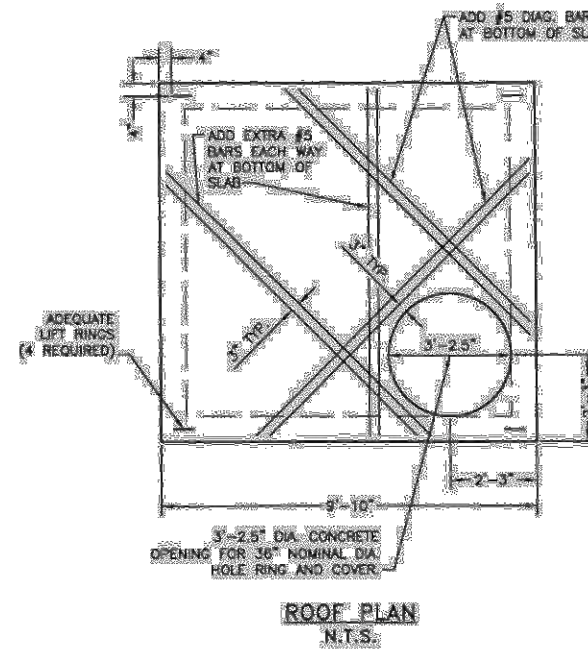


PLAN - VIEW
N.T.S.

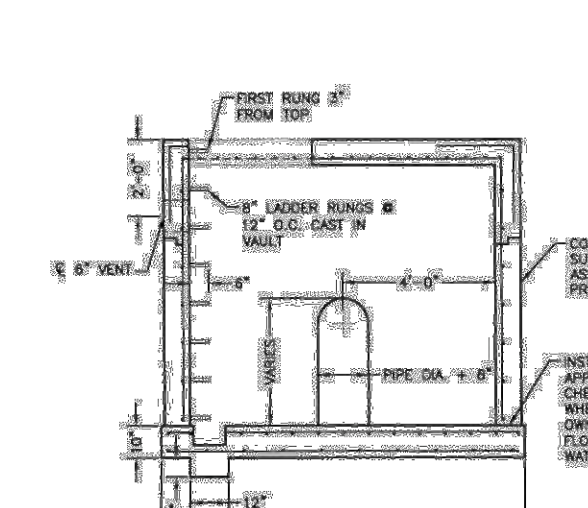


SECTION A-1
N.T.S.

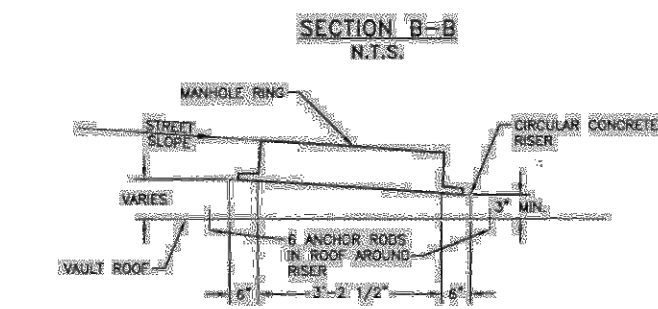
- NOTES:**
1. ALL CONCRETE WORK SHALL COMPLY WITH DISTRICT STANDARD SPECIFICATIONS AND LATEST A.C.I.-318 CODE.
 2. MINIMUM CONCRETE CLEARANCES FOR REBAR:
 - a. 3" WHERE FOURED AGAINST EARTH
 - b. 2" WHERE FORMED AND THEN EXPOSED TO GROUND OR WEATHER FOR #4 OR LARGER, 1.5" FOR #5, AND SMALLER.
 - c. 3" WHERE EXPOSED TO INTERIOR SURFACES.
 3. ALL VAULTS SHALL BE CONSTRUCTED TO MEET HS20-44 TRAFFIC LOADING CONDITIONS AND 300 PSF SURCHARGE LOAD.



ROOF PLAN
N.T.S.



SECTION B-E
N.T.S.



CONCRETE RISER FOR MANHOLE
N.T.S.

STAND. CONC. VAULT FOR VALVE INSTALLATION (PRECAST)

Drawn: GCM	Revised:	WOODMEN HILLS WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	W-29
Dated: JAN 2011	Revised:		
Drawn: anm	Revised:		