HORIZONTAL CONTROL
MODIFIED COORDINATE SYSTEM - SEE SHEETS IN DRAWINGS

VERTICAL DATUM
NAVD88

GRANDVIEW RESERVE DUAL FORCE MAINS CONSTRUCTION DOCUMENTS

AND EROSION CONTROL PLANS
COUNTY OF EL PASO, STATE OF COLORADO

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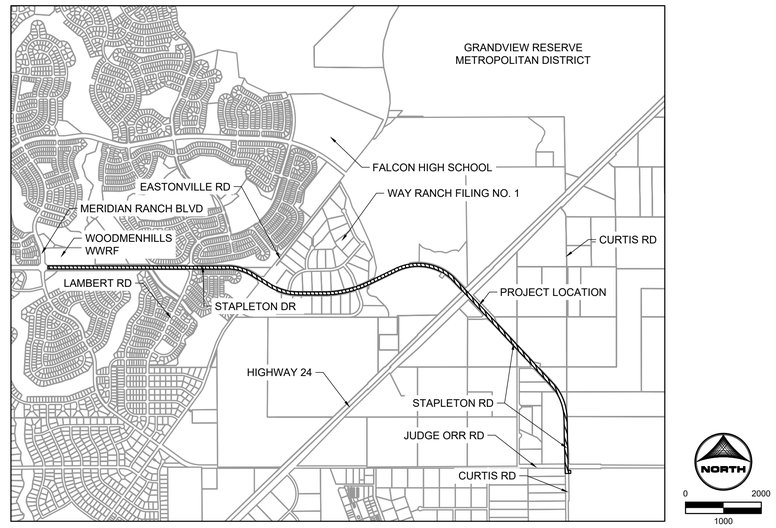
LOCATION MAP



VICINITY MAP
1"=2000'

PROJECT CONTACTS:

OWNER/DEVELOPER
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EMAIL: RHILLEN@DRHORTON.COM AND
BAREID1@DRHORTON.COM

APPLICANT
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GREENWOOD VILLAGE, CO 80111
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EMAIL: GPANZA@HRGREEN.COM

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GEOTECHNICAL ENGINEER
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ADDRESS: 5170 MARK DABLING BLVD
COLORADO SPRINGS, CO 80918
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ATTN: JEFF JONES
EMAIL: COLORADOSPRINGS@CTLTHOMPSON.COM

TRAFFIC ENGINEER
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EMAIL: LSC@LSCTRANS.COM

SURVEYOR
EDWARD-JAMES SURVEYING, INC.
926 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
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ATTN: JONATHAN W. TESSIN
EMAIL: JTESSIN@EJSURVEYING.COM

UTILITY CONTACTS

WATER
GRANDVIEW RESERVE METROPOLITAN DISTRICT
1272 KELLY JOHNSON BLVD. SUITE 100
COLORADO SPRINGS, CO 80921
TELE: (719 499-8416
ATTN: PAUL HOWARD
EMAIL: PAULINFINITY1@MSN.COM

WASTEWATER / WATER
WOODMEN HILLS METRO DISTRICT
8046 EASTONVILLE ROAD
FALCON, CO 80831
TELE: (719) 495-2500
CONTACT: CODY RITTER
EMAIL: CODY@WHMD.ORG

ELECTRIC / FIBER
MOUNTAIN VIEW ELECTRIC ASSOCIATION
11140 E. WOODMEN RD.
FALCON, CO 80831
TELE: (800) 388-9881
ATTN: GINA PERRY
EMAIL: GINA.P@MVEA.COOP

NATURAL GAS
BLACK HILLS ENERGY
198 COUNTY LINE RD.
PALMER LAKE, CO 80133
TELE: (719) 332-5856
ATTN: BOB SWATEK
EMAIL: BOB.SWATEK@BLACKHILLSCORP.COM

FIRE
FALCON FIRE PROTECTION DISTRICT
7030 OLD MERIDIAN RD.
FALCON, CO 80831
TELE: (719) 495-4050
ATTN: TRENT HARWIG
EMAIL: THARWIG@FALCONFIREPD.ORG

COMMUNICATIONS
CENTURY LINK
ZAYO
USWEST

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 ECM 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.

JOSHUA PALMER, P.E. DATE
COUNTY ENGINEER / ECM ADMINISTRATOR

ENGINEER'S STATEMENT (FOR GEC PLAN WITHIN CONSTRUCTION DRAWING SET):

THESE DETAILED PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECTION AND SUPERVISION. SAID PLANS AND SPECIFICATIONS HAVE BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR DETAILED ROADWAY, DRAINAGE, GRADING AND EROSION CONTROL PLANS AND SPECIFICATIONS, AND SAID PLANS AND SPECIFICATIONS ARE IN CONFORMITY WITH APPLICABLE MASTER DRAINAGE PLANS AND MASTER TRANSPORTATION PLANS. SAID PLANS AND SPECIFICATIONS MEET THE PURPOSES FOR WHICH THE PARTICULAR ROADWAY AND DRAINAGE FACILITIES ARE DESIGNED AND ARE CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARATION OF THESE DETAILED PLANS AND SPECIFICATIONS.

GREG PANZA, P.E. #37081 DATE
FOR AND ON BEHALF OF HR GREEN, INC.

OWNER'S STATEMENT (FOR GEC PLAN WITHIN CONSTRUCTION DRAWING SET):

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

OWNER'S SIGNATURE DATE

ENGINEERS STATEMENT:

THE 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.

GREG PANZA, P.E. #37081 DATE
FOR AND ON BEHALF OF HR GREEN, INC. DATE

SEWER MAIN EXTENSIONS:

ANY CHANGES OR ALTERATIONS AFFECTING THE GRADE, ALIGNMENT, ELEVATIONS 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_____ DATE_____

PRINT NAME_____

DBA_____

ADDRESS_____

_____

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
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.

HRGreen

1975 RESEARCH PARKWAY, SUITE 230 | COLORADO SPRINGS, CO 80920
Phone: 719.300.4140 | Toll Free: 800.728.7805 | Fax: 713.965.0044 | HRGreen.com

CDPHE DESIGN REVIEW
DOCUMENT SUBMITTAL
NOT FOR CONSTRUCTION

PCD #PPR2421

DRAWN BY: JMM JOB DATE: 9/4/2024
APPROVED: GP JOB NUMBER: 201662.07
CAD DATE: 1/7/2025
CAD FILE: \\hrgreen.com\HRG\Data\2020\201662.07\CAD\Dwgs\C\Force_Main\Fm_Cover

BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
HR GREEN - COLORADO SPRINGS
1975 RESEARCH PARKWAY | SUITE 230
COLORADO SPRINGS CO 80920
PHONE: 719.300.4140
FAX: 713.965.0044

GRANDVIEW RESERVE M.D. -
DUAL FORCE MAINS
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

CONSTRUCTION DOCUMENTS

COVER SHEET

SHEET
G000

WOODMEN HILLS METROPOLITAN DISTRICT STANDARD NOTES: (SOME NOTES MAY NOT BE APPLICABLE TO PROJECT)

1. ALL UTILITY CONSTRUCTION TO BE CONDUCTED IN CONFORMANCE WITH THE CURRENT WOODMEN HILLS METROPOLITAN DISTRICT (WHMD, THE DISTRICT) SPECIFICATIONS.

2. ALL PLANS ON THE JOB SITE SHALL BE SIGNED BY THE DISTRICT AND THE DISTRICT'S ENGINEER. ANY REVISION TO THE PLANS SHALL BE SO NOTED WITH THE OLD DRAWING MARKED 'NOT VALID.'

3. ALL STATIONING IS CENTERLINE UNLESS OTHERWISE NOTED. ALL ELEVATIONS ARE CENTERLINE UNLESS OTHERWISE NOTED. 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.

4. ALL OVER-LOT GRADING MUST BE COMPLETED TO WITHIN ONE (1) FOOT OF FINAL GRADE PRIOR TO INSTALLATION OF WATER AND WASTEWATER INFRASTRUCTURE.

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 TWELVE INCHES (12") AND FITTINGS SHALL HAVE CATHODIC PROTECTION USING TWO (2) NO. 6 WIRES WITH 17 LB. MAGNESIUM ANODES EVERY 400 FEET AND 9 LB. MAGNESIUM ANODES AT EACH FITTING. ALL DUCTILE IRON PIPE TWELVE INCHES (12") AND GREATER AND FITTINGS SHALL HAVE CATHODIC PROTECTION USING TWO (2) 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 DISTRICT, 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, AND 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 TWENTY-FIVE FEET (25') INTERVALS ALONG CURVES TO ENSURE LOCATION OF PIPELINE 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 OR BY THE DISTRICT 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 DISTRICTS' 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 PRECONSTRUCTION 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 PRECONSTRUCTION MEETING. NO PRECONSTRUCTION MEETING CAN BE SCHEDULED BEFORE 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.

22. 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 TESTED PRIOR TO CCTV INSPECTION.
        - ALL LINES SHALL BE CCTV INSPECTED AND VIDEO SHALL TO BE SUBMITTED TO THE DISTRICT FOR REVIEW AND APPROVAL.

23. 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 CONTRACTOR'S COST.

24. 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.

25. ACCEPTANCE

    a) THE DISTRICT MAY GIVE PRELIMINARY ACCEPTANCE ONCE ALL OF THE TESTS ON ALL THE LINES HAVE BEEN COMPLETED AND A WALK-THROUGH HAS OCCURRED.
    b) A SECOND ACCEPTANCE MAY OCCUR ONCE THE FIRST LIFT OF ASPHALT GOES DOWN AND A SECOND WALK-THROUGH 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).

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

27. 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.

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

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

WATER SYSTEM INSTALLATION NOTES

30. ALL WATER AND FORCE MAIN PIPE SHALL BE AWWA C900 PVC, OR APPROVED 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.

31. 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.

32. 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.

33. FIRE HYDRANTS SHALL BE OPEN RIGHT WITH 7/8" X 7/8" SQUARE TAPERED ALONG WITH SERVICE CAPS. LUBRICATION TYPE: GREASE. ACCEPTABLE BRAND IS KENNEDY GUARDIAN (K81D, K81A, AND K81AM). EACH FIRE HYDRANT LOCATION SHALL ALSO BE USED AS TEST STATION.

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

35. 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.

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

37. 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, AND 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

38. SANITARY SEWER LENGTHS ARE MH CENTER – MH CENTER. ALL SANITARY SEWER PIPES SHALL BE SDR 35 PVC OR APPROVED 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 PRE-MANUFACTURED, INLINE PVC PUSH-ON WYES. SINGLE SADDLE TAP ALLOWED ON EXISTING MAINS. MULTIPLE SADDLE TAPS ON EXISTING MAINS MUST BE APPROVED BY THE DISTRICT ON A CASE BY CASE BASIS

39. ALL SANITARY SEWER MANHOLES SHALL BE WRAPPED WITH RU116 - RUBR-NEK JOINT WRAP, OR APPROVED EQUAL, AND COATED.

40. ALL SEWER LINES MUST BE BEDDED WITH SQUEEGEE OR ¾" CRUSHED ROCK.

41. 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, AND 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 THE FIRST LIFT OF ASPHALT IS DOWN AND THE ABOVE REQUIREMENTS ARE MET.

THE ABOVE GUIDELINES ARE SUBJECT TO CHANGE AT ANY TIME.

UTILITY NOTES

1. CONTRACTOR TO OBTAIN WORK IN THE ROW PERMIT FROM EL PASO COUNTY PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO POTHOLE AND VERIFY EXISTENCE OF OTHER UTILITIES WITHIN ANY PUBLIC RIGHT OF WAYS AND WITHIN EASEMENTS WHERE PROPOSED UTILITY IS LOCATED.
3. CONTRACTOR TO MAINTAIN 5.5' MINIMUM COVER ALL OVER WATER MAINS CONSTRUCTED.
4. ALL VALVES SHOWN FOR SCHEMATIC PURPOSES ONLY. NO VALVES SHALL BE INSTALLED IN CURB AND GUTTER OR CROSS PANS.
5. STANDARD WATER SERVICES LOCATIONS TO BE 10' FROM THE DOWNSTREAM PROPERTY LINE AND EXTENDED 10' TO THE UTILITY EASEMENT.
6. STANDARD WASTEWATER SERVICES TO BE IN A COMMON TRENCH WITH STANDARD WATER SERVICES. SHALL BE LOCATION A MINIMUM OF 30" FROM CENTER OF PIPE. SEE WOODMEN HILLS METRO DISTRICT STANDARD SPECIFICATIONS DETAIL W-13.
7. STANDARD SERVICES SHALL BE MARKED WITH 2"X4" POST AT TERMINATION POINT FOR LOCATION DURING CONNECTION TO RESIDENCE. POSTS SHALL BE SPRAY-PAINTED BLUE FOR WATER AND GREEN FOR SEWER.
8. CURB STOPS ARE NOT TO BE INSTALLED IN CONCRETE CURB, CROSS PANS, SIDEWALKS, OR DRIVEWAYS.
9. SEE PLANS FOR THE LOCATION OF STANDARD SERVICES ON CORNER LOTS.

CAUTION - NOTICE TO CONTRACTOR

1. CONTRACTOR IS REQUIRED TO UTILIZE THE UTILITY ONE CALL SERVICE 811 AT LEAST 48 HOURS PRIOR TO EXCAVATING ANYWHERE ON THE PROJECT.
2. 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 CONTRACTORS 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.
3. NO CLAIMS FOR ADDITIONAL COMPENSATION WILL BE ALLOWED TO THE CONTRACTOR FOR INTERFERENCE OR DELAY CAUSED BY REPAIRS FOR DAMAGED UTILITIES.
4. 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 POTHOLING OR ALTERNATIVE METHOD. REPORT INFORMATION TO THE ENGINEER PRIOR TO CONSTRUCTION.
5. CONTRACTOR SHALL PROTECT ALL EXISTING SURVEY MONUMENTATION. CONTRACTOR SHALL HAVE LICENSED SURVEYOR REPLACE ANY DAMAGED OR DISTURBED MONUMENTATION AT THEIR COST.
6. CONTRACTOR MUST COORDINATE WORK WITH UTILITY COMPANY AND CITY/WHMD/OWNER PRIOR TO BEGINNING WORK AND IS RESPONSIBLE FOR ALL MATERIALS, LABOR, REPAIRS, ECT. TO COMPLETE WORK AND RESTORE AREA TO SAME STATE PRIOR TO STARTING WORK.
7. CONTRACTOR RESPONSIBLE FOR AS-BUILT DRAWINGS, TESTS, REPORTS, AND/OR ANY OTHER CERTIFICATES OR INFORMATION AS REQUIRED FOR ACCEPTANCE OF WORK FROM CITY, UTILITY DISTRICTS OR ANY OTHER GOVERNING AGENCY.
8. SURVEYOR TO OBTAIN AUTOCAD FILE FROM ENGINEER AND VERIFY ALL HORIZONTAL CONTROL DIMENSIONING PRIOR TO CONSTRUCTION STAKING. SURVEYOR MUST VERIFY ALL BENCHMARK, BASIS OF BEARING AND DATUM INFORMATION TO ENSURE IMPROVEMENTS WILL BE AT THE SAME HORIZONTAL AND VERTICAL LOCATIONS SHOWN ON THE DESIGN CONSTRUCTION DRAWINGS. PRIOR TO CONSTRUCTION STAKING ANY DISCREPANCY MUST BE REPORTED TO OWNER AND ENGINEER PRIOR TO CONTINUATION OF ANY FURTHER STAKING OR CONSTRUCTION WORK.
9. STORM SEWERS, CULVERTS, AND DITCHES: CONTRACTOR SHALL MONITOR THE WEATHER AND MAINTAIN STORM WATER FLOW AT ALL TIMES AND SHALL SCHEDULE REMOVALS SUCH THAT WET WEATHER AND RAIN EVENTS WILL NOT CREATE DAMAGING BACKUPS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FLOW DIVERTING AND/OR BYPASS PUMPING AS NECESSARY TO FACILITATE CONSTRUCTION. THE COST FOR MAINTAINING, DIVERTING, OR PUMP STORM FLOWS SHALL BE INCIDENTAL TO THE PROJECT.
10. CONTRACTOR TO MAINTAIN A MAXIMUM CONSTRUCTION EASEMENT WIDTH OF 24 FEET.

DESIGN NOTES/SPECIFICATIONS

1. IN THE EVENT OF DISCREPANCIES, THE FOLLOWING IS THE ORDER OF PRECEDENCE FOR SPECIFICATIONS, FOLLOW WHAT IS MOST STRINGENT: HR GREEN OVER WHMD OVER CSU OVER EPC OVER CDOT.
   1.1. SPECIFICATIONS PERTAINING TO UTILITIES: WHMD, SUPPLEMENTED BY CSU.
   1.2. SPECIFICATIONS PERTAINING TO RIGHT OF WAY AND SURFACING RESTORATION: EPC, SUPPLEMENTED BY CDOT.
2. CONTRACTOR SHALL UTILIZE THE SITE ACCESS AND STAGING AREAS AS IDENTIFIED IN THE DRAWINGS OR OTHERWISE CONTRACTOR SHALL OBTAIN APPROVAL ON OTHER SITES AND ACCESSES.
3. CONTRACTOR SHALL STAY WITHIN THE CONSTRUCTION EASEMENTS AND/OR ROAD RIGHT OF WAY. DAMAGES OUTSIDE OF DESIGNATED AREAS SHALL BE REPAIRED/REMEDIED AT CONTRACTOR'S EXPENSE. ADDITIONAL AGREEMENTS OBTAINED BY THE CONTRACTOR SHALL NOT HOLD THE OWNER/ENGINEER RESPONSIBLE FOR ANY DAMAGES/GRIEVANCES.

4. REMOVALS AND REPLACEMENT
   4.1. ALL ITEMS NOTED FOR REMOVAL AND REPLACEMENT SHALL BE REPLACED IN KIND. CONTRACTOR SHALL FIELD VERIFY. CONTRACTOR SHALL COORDINATE AND CONFIRM WITH RESPECTIVE ENTITIES IF EXISTING CONDITIONS WOULD ALLOW FOR SALVAGE AND RESET.
   4.2. DAMAGED PAVEMENT FROM CONSTRUCTION ACTIVITIES SHALL BE REMEDIED TO EPC'S APPROVAL AT CONTRACTOR'S EXPENSE.
   4.3. ROADWAY REPLACEMENT/PATCHING/CONSTRUCTION SHALL COMPLY TO SPECIFICATIONS OF EPC, CDOT, OR RESPECTIVE AGENCY WITH JURISDICTION OVER THE ROAD.
   4.4. PAVEMENT/ROADWAY TYPICAL SECTIONS FOR RESTORATION - CONTRACTOR SHALL FIELD VERIFY, IF EXISTING SECTION DIFFERS FROM BELOW, MATCH EXISTING.
      4.4.1. STAPLETON RD FROM JUDGE ORR TO HWY 24: 6.5" HMA (IN MULTIPLE LIFTS NO THICKER THAN 3") OVER 12" THICK CLASS 6 BASE COURSE; MIN. 2% CROSS SLOPE FROM CROWN; 4" TOP SOIL ON SIDE SLOPES
      4.4.2. STAPLETON RD FROM HWY 24 TO EASTONVILLE RD: 8" HMA (IN MULTIPLE LIFTS NO THICKER THAN 3") OVER PREPARED SUBGRADE; MIN. 2% CROSS SLOPE FROM CROWN; MATCH EXISTING DEPTH OF TOP SOIL ON SIDE SLOPES
      4.4.3. STAPLETON DR FROM EASTONVILLE RD TO MERIDIAN RANCH BLVD: 6.5" HMA (IN MULTIPLE LIFTS NO THICKER THAN 3") OVER 12" THICK CLASS 6 BASE COURSE; MIN. 2% CROSS SLOPE FROM CROWN; 4" TOP SOIL ON SIDE SLOPES
      4.4.4. EASTONVILLE RD CROSSING: 5" HMA OVER 10" ABC CLASS 6
      4.4.5. OTHER ROAD CROSSINGS: MATCH EXISTING SECTION

5. DUAL FORCE MAIN
   5.1. FOLLOW REQUIREMENTS PER WHMD STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED IN DRAWINGS.
   5.2. ALL PIPES FOR THE PROJECT SHALL BE C900 DR14, UNLESS SPECIFIED OTHERWISE IN DRAWINGS.
   5.3. ALL FITTINGS SHALL BE DUCTILE IRON. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH FITTING.
   5.4. INSTALL BEDDING PER "TYPICAL TRENCH DETAIL" ON SHEET C701.
   5.5. INSTALL CASING PIPE PER "CASING PIPE DETAIL" ON SHEET C701.
   5.6. AT-GRADE TEST STATIONS SHALL BE CP GLEN METAL WITH LOCKING LIDS.
   5.7. CLEAN OUTS SHALL BE PER DETAIL ON SHEET CXXX.

6. PERMITS
   6.1. OWNER IS RESPONSIBLE FOR WETLAND/NATION WIDE PERMIT, ESQCP, APPROVAL FROM CDPHE, AND OBTAINING EASEMENTS
   6.2. ALL PERMITS REQUIRED FOR CONSTRUCTION, NOT PROVIDED, SHALL BE OBTAINED BY THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR PREPARATION, SUBMITTAL, FEES, AND ALL OTHER ITEMS ASSOCIATED WITH PERMITTING. THE FOLLOWING ANTICIPATED PERMIT LIST IS NOT ALL INCLUSIVE:
      6.2.1. NPDES AND DEWATERING PERMITS
      6.2.2. CDOT UTILITY CROSSING AND ROW USE PERMITS
      6.2.3. EPC ROW USE AND CONSTRUCTION PERMITS
      6.2.4. FLOODPLAIN DEVELOPMENT PERMIT

7. TRAFFIC CONTROL
   7.1. CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL PLAN, COORDINATION WITH ALL IMPACTED PARTIES (CDOT, EPC, ADJACENT LANDOWNERS, ETC) MODIFICATIONS, AND MAINTENANCE. MAINTAIN ONE LANE OF TRAFFIC AT ALL TIMES, WHERE POSSIBLE.
   7.2. CONTRACTOR SHALL CONTACT EPC 2 WEEKS BEFORE CONSTRUCTION BEGINS TO ALLOW PUBLIC NOTIFICATION OF ROAD CLOSURES. CONTRACTOR SHALL COORDINATE CLOSURE DURATION AND PROCESS WITH ALL ENTITIES INVOLVED/IMPACTED.
   7.3. CONTRACTOR SHALL COORDINATE MAILBOXES/DELIVERIES WITH THE LOCAL DELIVERIES SERVICES DURING CONSTRICTION ACTIVITIES DISTURBANCE OF MAILBOXES AND ROAD ACCESSES.

8. AS-BUILTS
   8.1. CONTRACTOR SHALL PROVIDE A THIRD PARTY INSPECTOR TO MAP IN POINTMAN THE ALIGNMENT AND DEPTH OF THE PIPE INSTALLED ACROSS THE ENTIRE WIDTH OF THE RIGHT-OF-WAY OF HWY 24.
   8.2. CONTRACTOR SHALL KEEP RECORD OF CHANGES TO DESIGN AND PROVIDE AS-BUILT DRAWING SET/CAD DRAWINGS TO OWNER.

CDPHE DESIGN REVIEW
DOCUMENT SUBMITTAL
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D.R. HORTON
EL PASO COUNTY, CO

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CONSTRUCTION DOCUMENTS
GENERAL NOTES

SHEET
G001

LEGEND

	EXISTING	PROPOSED
MATCH LINE		
PHASE LINE		
SECTION LINE		
PROPERTY LINE		
EASEMENT LINE		
ASSUMED EASEMENT		
RIGHT OF WAY		
CENTERLINE		
CHAIN LINK FENCE		
WOODEN FENCE		
ROD IRON FENCE		
GUARDRAIL		
CABLE TV	TV	TV
U.G. ELECTRIC	UE	UE
OVERHEAD ELECTRIC	OE	OE
FIBER OPTIC	FO	FO
GAS MAIN	GAS GAS	GAS GAS
SANITARY SEWER	SS	
STORM DRAIN		
TELEPHONE	UT	UT
WATER MAIN	W	W
SWALE		
TRAIL		
CURB & GUTTER		
DRAINAGE BASIN		
INDEX CONTOUR		
INTER. CONTOUR		
100-YR FLOODPLAIN		
FLOODWAY		
EDGE OF WETLANDS		

DRAINAGE

	EXISTING	PROPOSED
DRAINAGE BASIN		PROPOSED
BASIN TAG		I.D. AREA
DESIGN POINT		1
ASPHALT		
GRAVEL		
100 YR FLOOD		
PENDING 100 YR FLOOD		
WETLANDS		

STORM SEWER

	EXISTING	PROPOSED
MANHOLE	ST	D
STORM INLET		
FLARED END SECTION		
RIPRAP		

SANITARY SEWER

	EXISTING	PROPOSED
CLEAN OUT		
MANHOLE		S
PLUG		

WATER

	EXISTING	PROPOSED
FIRE HYDRANT		
FIRE DEPT. CONNECTION	FDC	FDC
GATE VALVE		
MANHOLE	W	W
METER	WM	WM
TEE		
REDUCER		

DRY UTILITIES

- ELECTRIC METER — EM
- ELECTRIC PEDESTAL — E
- ELECTRICAL CABINET — E
- ELECTRIC VAULT — EVI
- FIBER OPTIC PULL BOX — F
- FIBER OPTIC MANHOLE — FO
- FIBER OPTIC PEDESTAL — FO
- FIBER OPTIC SIGN — FO
- FIBER OPTIC VAULT — FVI
- GAS METER — GM
- GAS SIGN — G
- GAS VAULT — GV
- TELEPHONE CABINET — T
- TELEPHONE MANHOLE — TR
- TELEPHONE SIGNAL/MAST — T
- TELEPHONE SIGN — T
- TELEPHONE PEDESTAL — T
- TRANSFORMER
- LIGHT POLE
- FIBER OPTIC VAULT — FVI

MISCELLANEOUS

- SIGN
- BOLLLARD
- ACCESSIBLE PARKING

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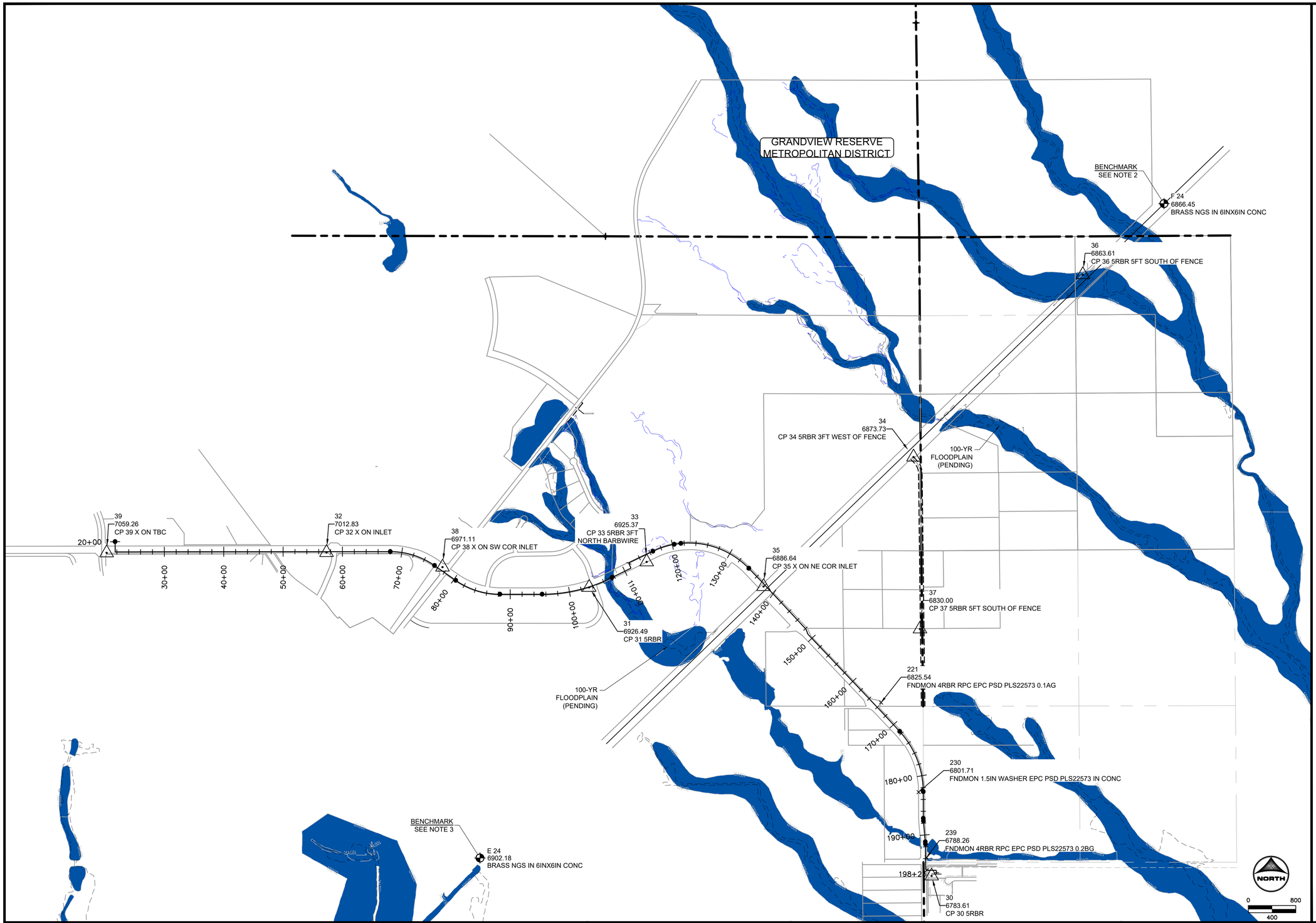
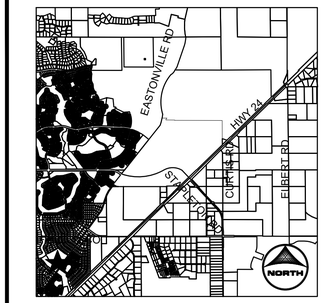
CONSTRUCTION DOCUMENTS

LEGEND

SHEET
G002





KEYMAP

PROJECT LEGEND:

- PROPERTY LINE
- SECTION LINE
- BENCHMARK
- CONTROL POINTS
- FOUND MONUMENTS
- 100 YR FLOOD PLAIN

NOTES:

1. BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, BEING MONUMENTED AT THE SOUTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, AND BEING MONUMENTED AT THE NORTHEAST CORNER BY A 3-1/4" ALUMINUM SURVEYOR'S CAP STAMPED "PS INC PLS 30087 1996", BEING APPROPRIATELY MARKED, BEING ASSUMED TO BEAR NORTH 00 DEGREES 52 MINUTES 26 SECONDS WEST, A DISTANCE OF 5290.17 FEET.
2. BENCHMARK:
   DESIGNATION = F 24
   PID = JK0240
   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1421049.58
   EASTING: 3273631.70
   ELEVATION: 6866.33
3. BENCHMARK:
   DESIGNATION = E 24
   PID = JK0239
   DESCRIPTION = DISK ON TOP OF CONCRETE MONUMENT
   CONTROL POINT COORDINATE SYSTEM: NAVD88
   NORTHING: 1410031.47
   EASTING: 3262112.16
   ELEVATION: 6902.18

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811 UNCC CALL BEFORE YOU DIG 811 OR 1-800-922-1987 Utility Notification Center of Colorado

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CONSTRUCTION DOCUMENTS

SURVEY CONTROL PLAN

SHEET
G003

GRANDVIEW

PROJECT COORDINATES

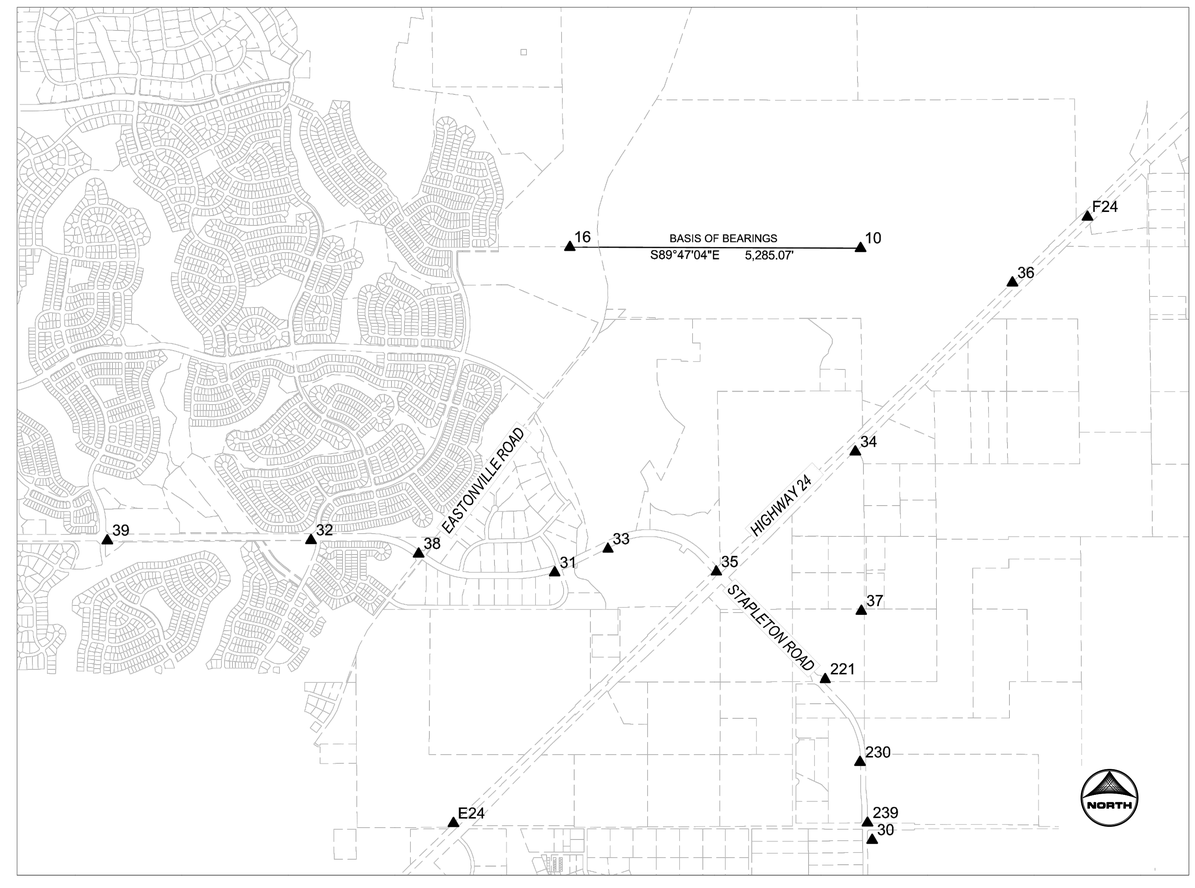
PROJECT COORDINATE NOTES:

THE PROJECT COORDINATES FOR GRANDVIEW WERE ESTABLISHED BY AN ENGINEERING AND SURVEYING CONSULTANT PRIOR TO EDWARD-JAMES SURVEYING'S (EJSI) INVOLVEMENT IN THE PROJECT. IN LATE 2005, EJSI WAS PROVIDED WITH PROJECT COORDINATES FOR SEVERAL SECTION CORNERS THROUGHOUT THE PROJECT AREA. EJSI CALIBRATED TO THE PROJECT COORDINATE SYSTEM AND BEGAN WORKING ON SEVERAL PROJECTS IN THE AREA. RECENTLY, IT HAS BEEN REQUESTED THAT A CORRELATION BETWEEN THE PROJECT COORDINATES AND STATE PLANE CENTRAL BE ESTABLISHED. IN ORDER TO ACCOMPLISH THIS, EJSI SURVEYED THE LOCATION OF TWO NGS MONUMENTS (E24 AND F24) USING THE PROJECT CALIBRATION. BELOW ARE THE STEPS REQUIRED TO CONVERT PROJECT COORDINATE TO STATE PLANE CENTRAL COORDINATES.

TO GET FROM STATE PLANE COORDINATES TO PROJECT COORDINATES, COMPLETE THE FOLLOWING STEPS:

1. SCALE THE STATE PLANE COORDINATES BY 1.0003921722 USING THE STATE PLANE COORDINATE FOR E24 AS THE POINT OF ORIGIN.
2. TRANSLATE THE SCALED COORDINATE FROM THE STATE PLANE COORDINATE FOR E24 TO THE PROJECT COORDINATE FOR E24.
3. ROTATE THE SCALED AND TRANSLATED COORDINATE HOLDING THE PROJECT COORDINATE FOR E24 AND ROTATING CLOCKWISE BY 0°00'26".

	CO STATE PLANE CENTRAL COORDINATES		GRANDVIEW PROJECT COORDINATES		NAVD 88			
POINT NO.	NORTHING	EASTING	NORTHING	EASTING	ELEVATION	DESCRIPTION	LATITUDE	LONGITUDE
E 24	1409946.25	3261914.04	1410031.47	3262112.16	6,902.18	NGS E 24 (PID JK0239) - 3-1/4" BRASS DISK IN CONCRETE MONUMENT	N38°57'19.11389"	W104°34'44.20466"
F 24	1420961.49	3273427.68	1421049.58	3273631.70	6,866.33	NGS F 24 (PID JK0240) - 3-1/4" BRASS DISK IN CONCRETE MONUMENT	N38°59'06.81100"	W104°32'16.97772"
10	1420391.37	3269307.86	1420479.76	3269510.19	6,920.40	NORTHEAST CORNER SECTION 28 (3-1/4" AL CAP "PS INC LS 30087 1996")		
16	1420410.59	3264024.90	1420499.65	3264225.16	7,011.44	NORTHWEST CORNER SECTION 28 (3-1/4" AL CAP "PS INC LS 30087 1996")		
30	1409644.75	3269516.52	1409728.89	3269717.58	6,783.61	CP 30 NO. 5 REBAR		
31	1414500.64	3263750.88	1414587.41	3263950.29	6,926.49	CP 31 NO. 5 REBAR		
32	1415086.52	3259329.87	1415174.09	3259527.63	7,012.83	CP 32 "X" ON INLET		
33	1414929.81	3264719.53	1415016.64	3264919.38	6,925.37	CP 33 NO. 5 REBAR		
34	1416695.18	3269211.50	1416782.13	3269413.33	6,873.73	CP 34 NO. 5 REBAR		
35	1414515.45	3266686.82	1414601.86	3266887.39	6,886.64	CP 35 "X" ON NE CORNER OF INLET		
36	1419764.51	3272060.60	1419852.30	3272263.94	6,863.61	CP 36 NO. 5 REBAR		
37	1413802.62	3269320.13	1413888.42	3269521.64	6,830.00	CP 37 NO. 5 REBAR		
38	1414841.57	3261282.31	1414928.79	3261480.80	6,971.11	CP 38 "X" ON SOUTHWEST CORNER INLET		
39	1415081.32	3255628.10	1415169.35	3255824.40	7,059.26	CP 39 "X" ON TBC		
221	1412563.13	3268665.62	1412648.52	3268866.71	6,825.54	NO. 4 REBAR AND RED PLASTIC CAP "EPC PSD PLS22573"		
230	1411056.50	3269297.63	1411141.23	3269498.78	6,801.71	NAIL AND 1-1/2" WASHER IN CONCRETE "EPC PSD PLS 22573"		
239	1409955.40	3269433.32	1410039.67	3269634.39	6,788.26	NO. 4 REBAR AND RED PLASTIC CAP "EPC PSD PLS 22573"		



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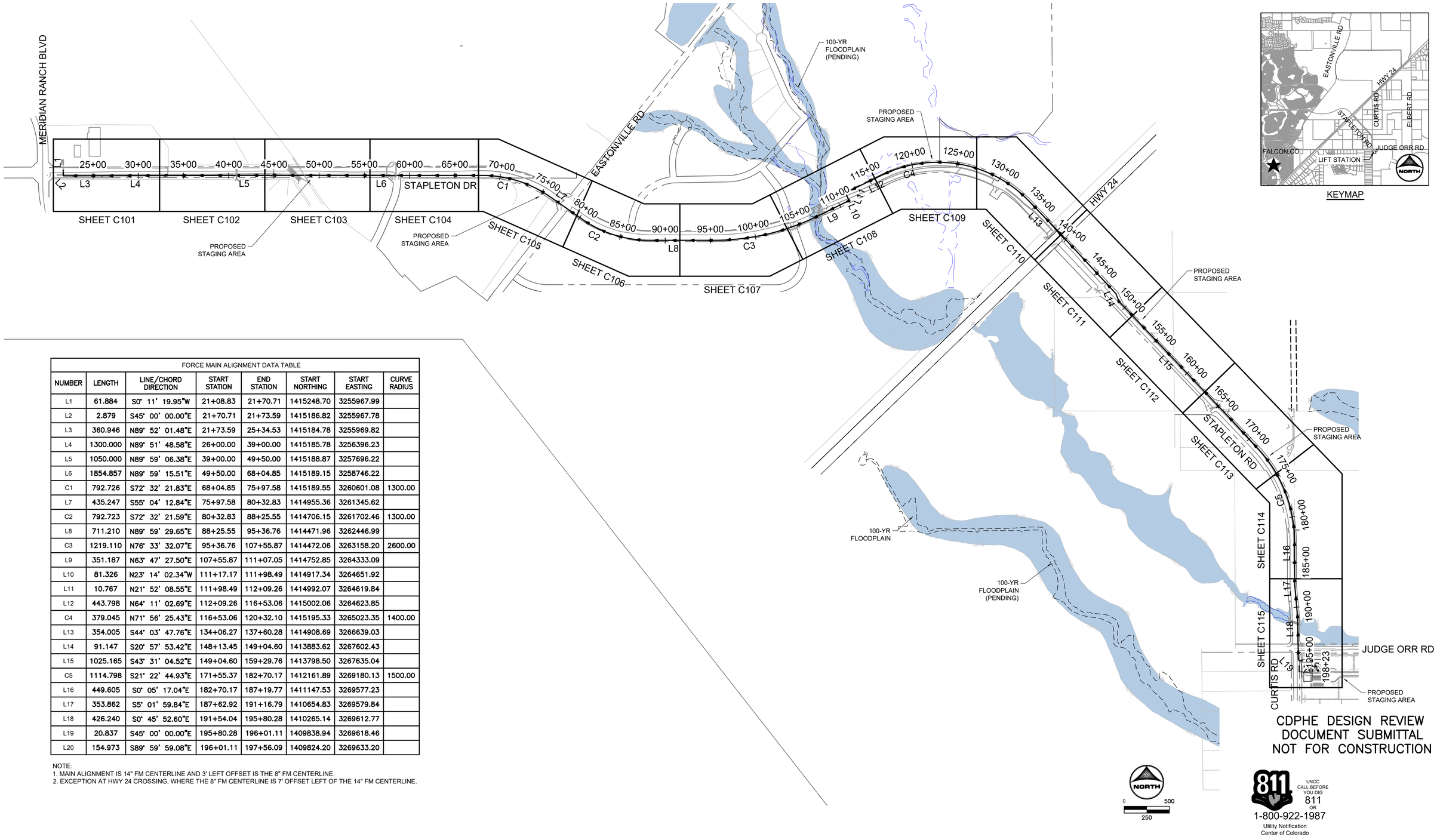
CONSTRUCTION DOCUMENTS
SURVEY COORDINATES

SHEET
G004



FORCE MAIN ALIGNMENT DATA TABLE							
NUMBER	LENGTH	LINE/CHORD DIRECTION	START STATION	END STATION	START NORTHING	START EASTING	CURVE RADIUS
L1	61.884	S0° 11' 19.95"W	21+08.83	21+70.71	1415248.70	3255967.99	
L2	2.879	S45° 00' 00.00"E	21+70.71	21+73.59	1415186.82	3255967.78	
L3	360.946	N89° 52' 01.48"E	21+73.59	25+34.53	1415184.78	3255969.82	
L4	1300.000	N89° 51' 48.58"E	26+00.00	39+00.00	1415185.78	3256396.23	
L5	1050.000	N89° 59' 06.38"E	39+00.00	49+50.00	1415188.87	3257696.22	
L6	1854.857	N89° 59' 15.51"E	49+50.00	68+04.85	1415189.15	3258746.22	
C1	792.726	S72° 32' 21.83"E	68+04.85	75+97.58	1415189.55	3260601.08	1300.00
L7	435.247	S55° 04' 12.84"E	75+97.58	80+32.83	1414955.36	3261345.62	
C2	792.723	S72° 32' 21.59"E	80+32.83	88+25.55	1414706.15	3261702.46	1300.00
L8	711.210	N89° 59' 29.65"E	88+25.55	95+36.76	1414471.96	3262446.99	
C3	1219.110	N76° 33' 32.07"E	95+36.76	107+55.87	1414472.06	3263158.20	2600.00
L9	351.187	N63° 47' 27.50"E	107+55.87	111+07.05	1414752.85	3264333.09	
L10	81.326	N23° 14' 02.34"W	111+17.17	111+98.49	1414917.34	3264651.92	
L11	10.767	N21° 52' 08.55"E	111+98.49	112+09.26	1414992.07	3264619.84	
L12	443.798	N64° 11' 02.69"E	112+09.26	116+53.06	1415002.06	3264623.85	
C4	379.045	N71° 56' 25.43"E	116+53.06	120+32.10	1415195.33	3265023.35	1400.00
L13	354.005	S44° 03' 47.76"E	134+06.27	137+60.28	1414908.69	3266639.03	
L14	91.147	S20° 57' 53.42"E	148+13.45	149+04.60	1413883.62	3267602.43	
L15	1025.165	S43° 31' 04.52"E	149+04.60	159+29.76	1413798.50	3267635.04	
C5	1114.798	S21° 22' 44.93"E	171+55.37	182+70.17	1412161.89	3269180.13	1500.00
L16	449.605	S0° 05' 17.04"E	182+70.17	187+19.77	1411147.53	3269577.23	
L17	353.862	S5° 01' 59.84"E	187+62.92	191+16.79	1410654.83	3269579.84	
L18	426.240	S0° 45' 52.60"E	191+54.04	195+80.28	1410265.14	3269612.77	
L19	20.837	S45° 00' 00.00"E	195+80.28	196+01.11	1409838.94	3269618.46	
L20	154.973	S89° 59' 59.08"E	196+01.11	197+56.09	1409824.20	3269633.20	

NOTE:
1. MAIN ALIGNMENT IS 14" FM CENTERLINE AND 3' LEFT OFFSET IS THE 8" FM CENTERLINE.
2. EXCEPTION AT HWY 24 CROSSING, WHERE THE 8" FM CENTERLINE IS 7' OFFSET LEFT OF THE 14" FM CENTERLINE.

HR GREEN Xrefs: XV-Row; XV-Utlt; xgl-1-dh01-FM; XC-Lift-Station; XC-Electricol; XC-Driveway; XC-Utlt; P&P_Key; XC-Dsgn; XC-Initoll-EC; 01-DC-Align-Fm; 01-DC-San-Fm; XV-Dsgn; XV-Fema; XV-Site Control

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APPROVED: GP JOB NUMBER: 201662.07
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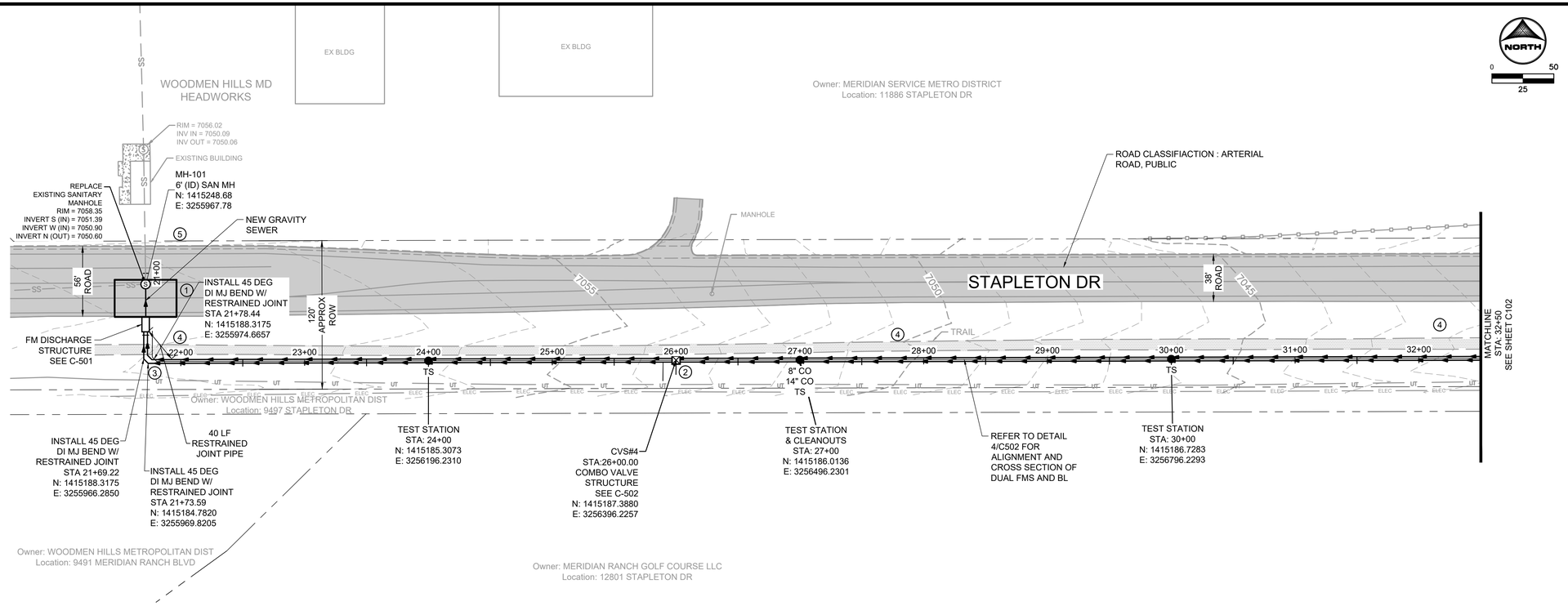
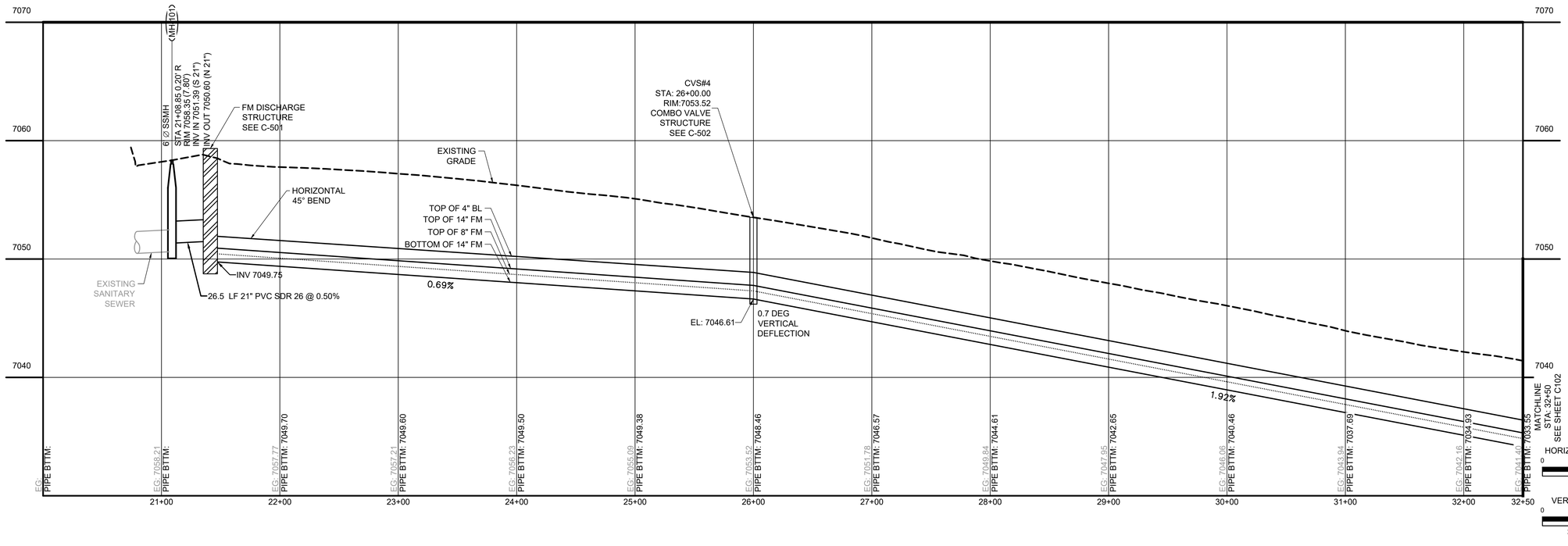
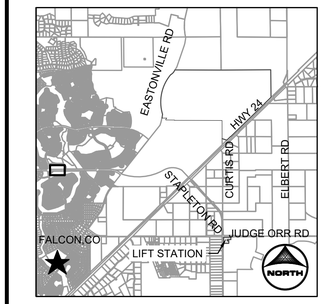
CONSTRUCTION DOCUMENTS

OVERALL SITE PLAN & HORIZONTAL ALIGNMENT DATA

SHEET
C100







KEYMAP

GENERAL NOTES:

1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. REMOVE AND REPLACE ASPHALT PAVEMENT AND PAVEMENT MARKINGS.
2. INSTALL WARNING TAPE 1 FT ABOVE VENT PIPE EXTENSION FROM COMBO VALVE VAULT TO WHERE VENT PIPE DAYLIGHTS.
3. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH DUCTILE IRON FITTING.
4. RESTORE GRAVEL TRAIL AND SURFACE TO ORIGINAL CONDITION.
5. CAUTION – WATER MAIN WITHIN THIS AREA. EXACT LOCATION UNKNOWN.

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COLORADO LICENSED GREGORY L. PANZA 37081 PROFESSIONAL ENGINEER

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FAX: 713.965.0044

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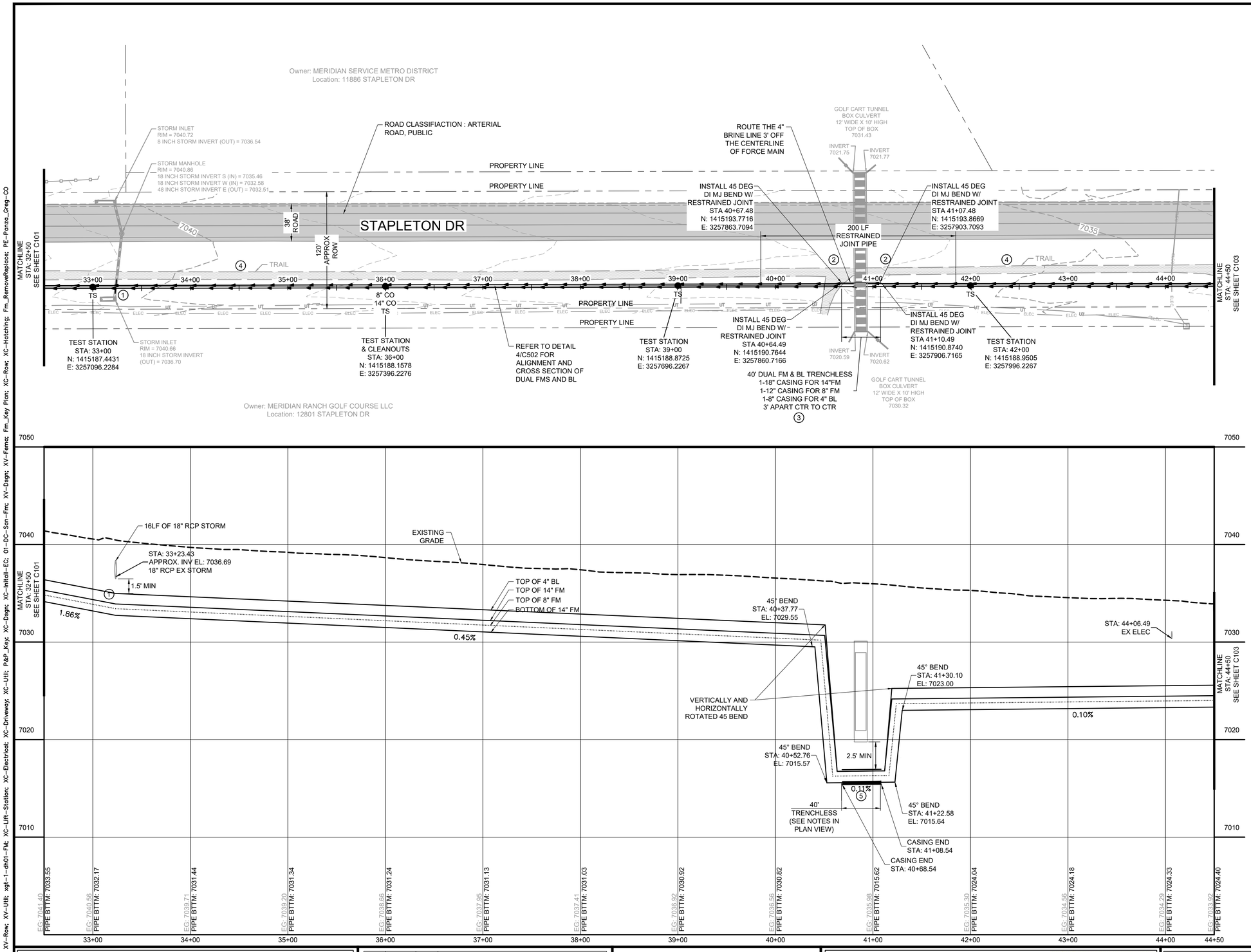
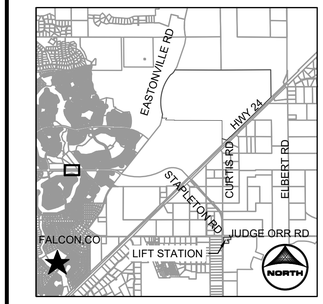
CONSTRUCTION DOCUMENTS

FORCE MAIN PLAN AND PROFILE

SHEET
C101

HR GREEN Xrefs: XV-Row; XV-Util; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Util; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-San-Fm; XV-Dsgn; XV-Fence; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Greg-CO





KEYMAP

GENERAL NOTES:

1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. PROTECT IN-PLACE OR REMOVE AND REINSTALL 16 LF OF 18" RCP STORM PIPE AND JUNCTION BOX.
2. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH DUCTILE IRON FITTING.
3. STEEL CASING PIPES WITH CATHODIC PROTECTION, SEE MIN WALL THICKNESS PER CASING PIPE DETAIL ON C502. CARRIER PIPES SHALL BE RESTRAINED JOINT WITHIN THE CASING PIPES.
4. RESTORE GRAVEL TRAIL AND SURFACE TO ORIGINAL CONDITION.
5. FOR 14" FM PROVIDE 18" CASING, FOR 8" FM PROVIDE 12" CASING, AND FOR 4" BL PROVIDE 8" CASING. 18" CASING IS THE ONLY CASING SHOWN IN THE PROFILE FOR CLARITY WITHIN THE PROFILE VIEW.

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HORIZONTAL 0 25 50

VERTICAL 0 2.5 5

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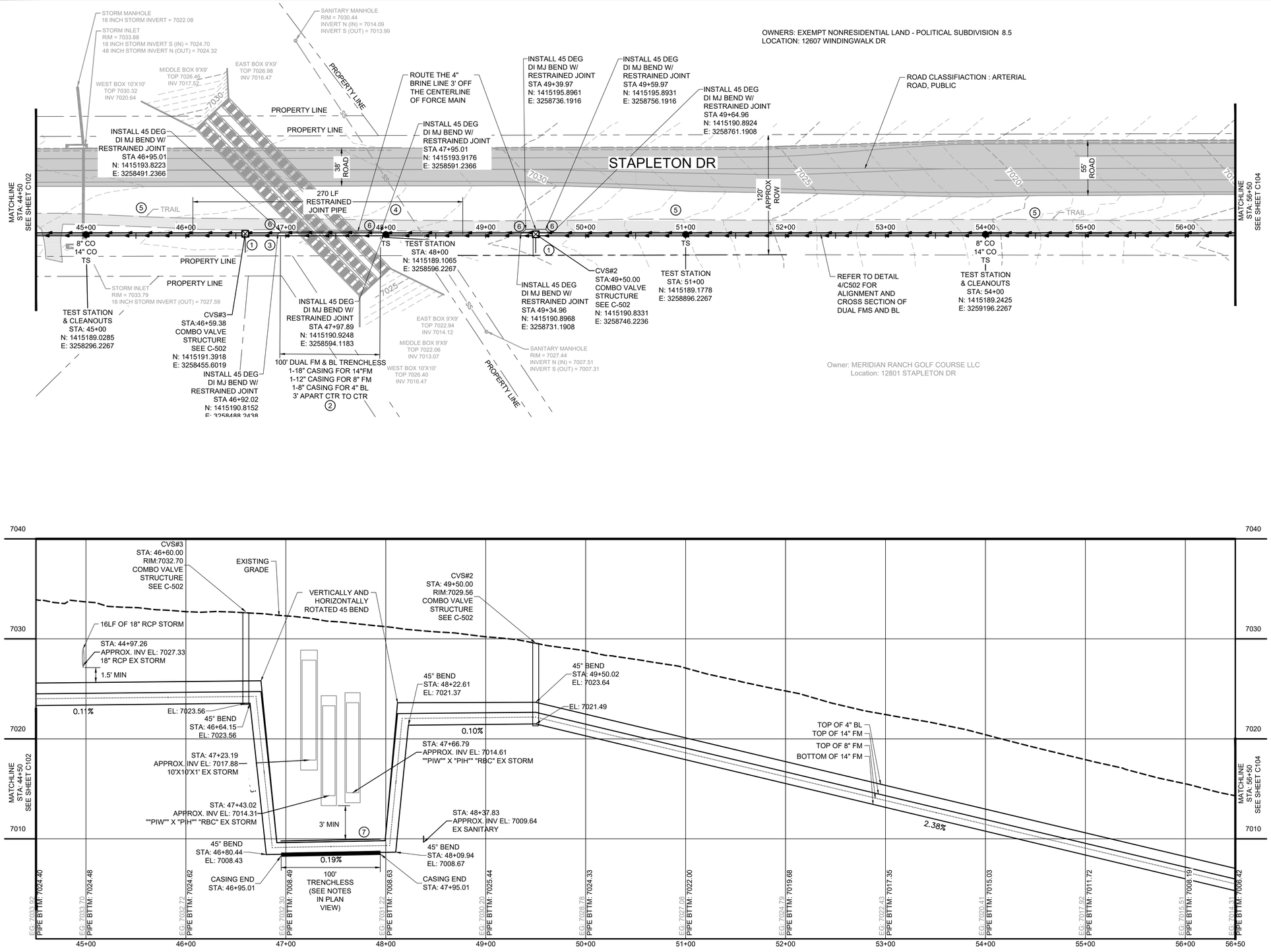
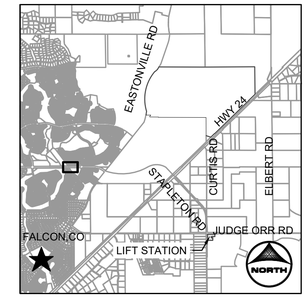
FORCE MAIN PLAN AND PROFILE

SHEET C102

HR GREEN Xrefs: XV-Row; XV-Utb; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Utb; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-Sam-Fm; XV-Dsgn; XV-Fence; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO





KEYMAP

GENERAL NOTES:

1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. INSTALL WARNING TAPE 1 FT ABOVE VENT PIPE EXTENSION FROM COMBO VALVE VAULT TO WHERE VENT PIPE DAYLIGHTS.
2. STEEL CASING PIPES WITH CATHODIC PROTECTION, SEE MIN WALL THICKNESS PER CASING PIPE DETAIL ON C502. CARRIER PIPES SHALL BE RESTRAINED JOINT WITHIN THE CASING PIPES.
3. CAUTION – FIBER OPTIC WITHIN THIS AREA. EXACT LOCATION UNKNOWN.
4. CAUTION – WATER MAIN WITHIN THIS AREA. EXACT LOCATION UNKNOWN.
5. RESTORE GRAVEL TRAIL AND SURFACE TO ORIGINAL CONDITION.
6. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH DUCTILE IRON FITTING.
7. FOR 14" FM PROVIDE 18" CASING, FOR 8" FM PROVIDE 12" CASING, AND FOR 4" BL PROVIDE 8" CASING. 18" CASING IS THE ONLY CASING SHOWN IN THE PROFILE FOR CLARITY WITHIN THE PROFILE VIEW.

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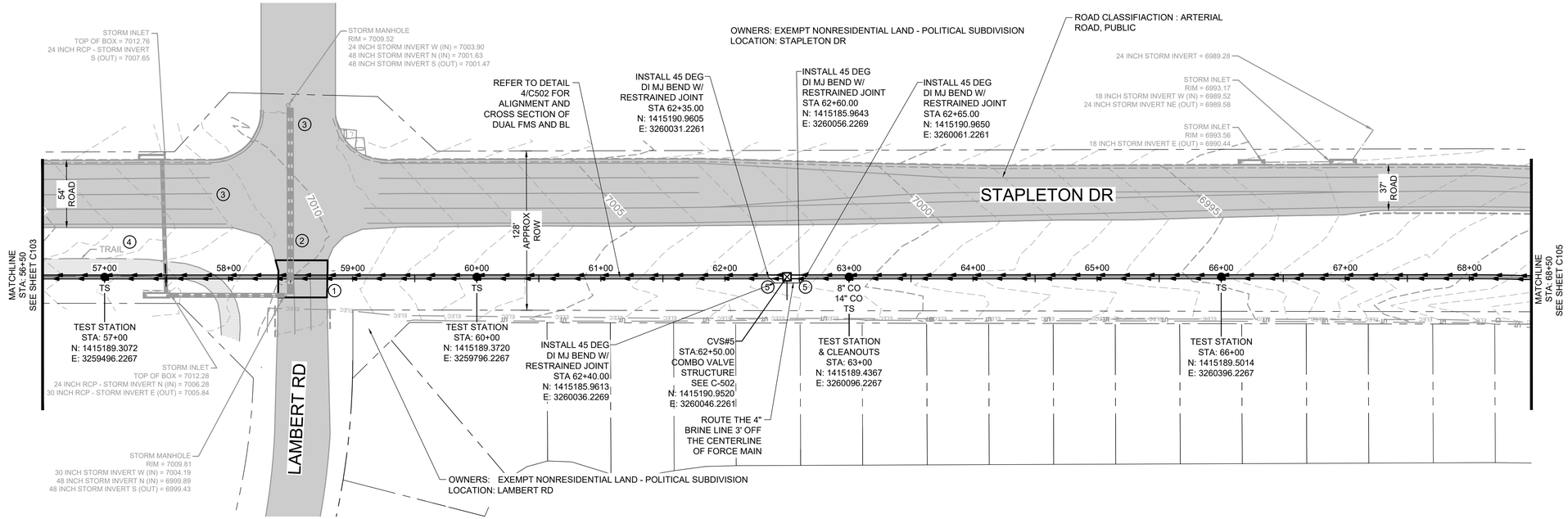
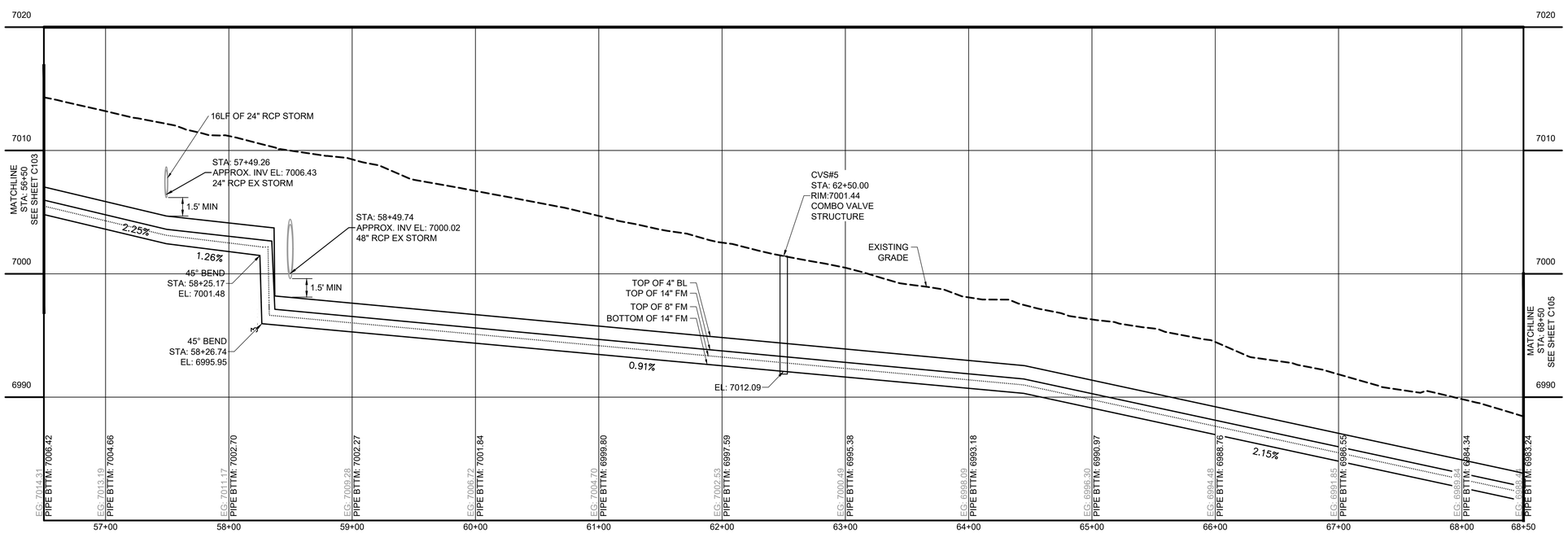
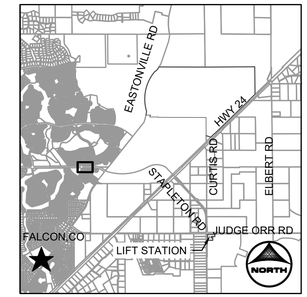
SHEET C103

HR GREEN Xrefs: XV-Row; XV-Utlt; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Utlt; P&P_Key; XC-Dsgn; XC-Install-EC; 01-DC-San-Fm; XV-Dsgn; XV-Fence; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO







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GENERAL NOTES:

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2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. REMOVE AND REPLACE ASPHALT PAVEMENT AND PAVEMENT MARKINGS.
2. CAUTION – FIBER OPTIC WITHIN THIS AREA. EXACT LOCATION UNKNOWN.
3. CAUTION - WATER MAIN WITHIN THIS AREA. EXACT LOCATION UNKNOWN.
4. RESTORE GRAVEL TRAIL AND SURFACE TO ORIGINAL CONDITION.
5. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH DUCTILE IRON FITTING.

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HORIZONTAL 0 25 50
VERTICAL 0 2.5 5

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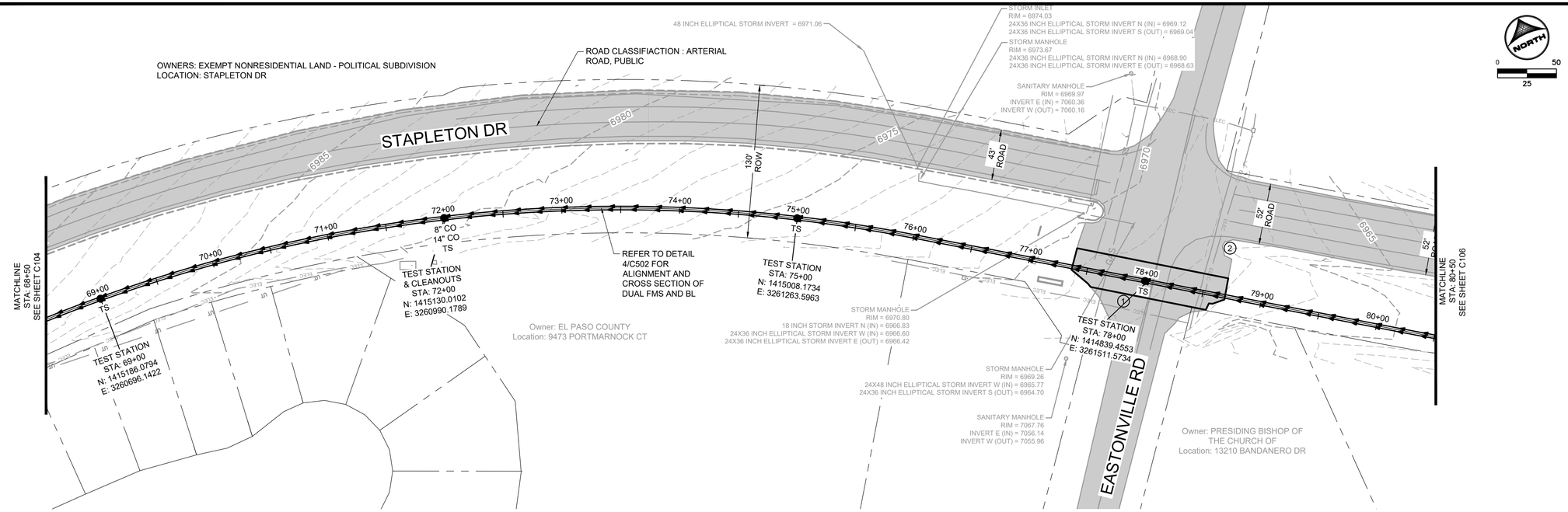
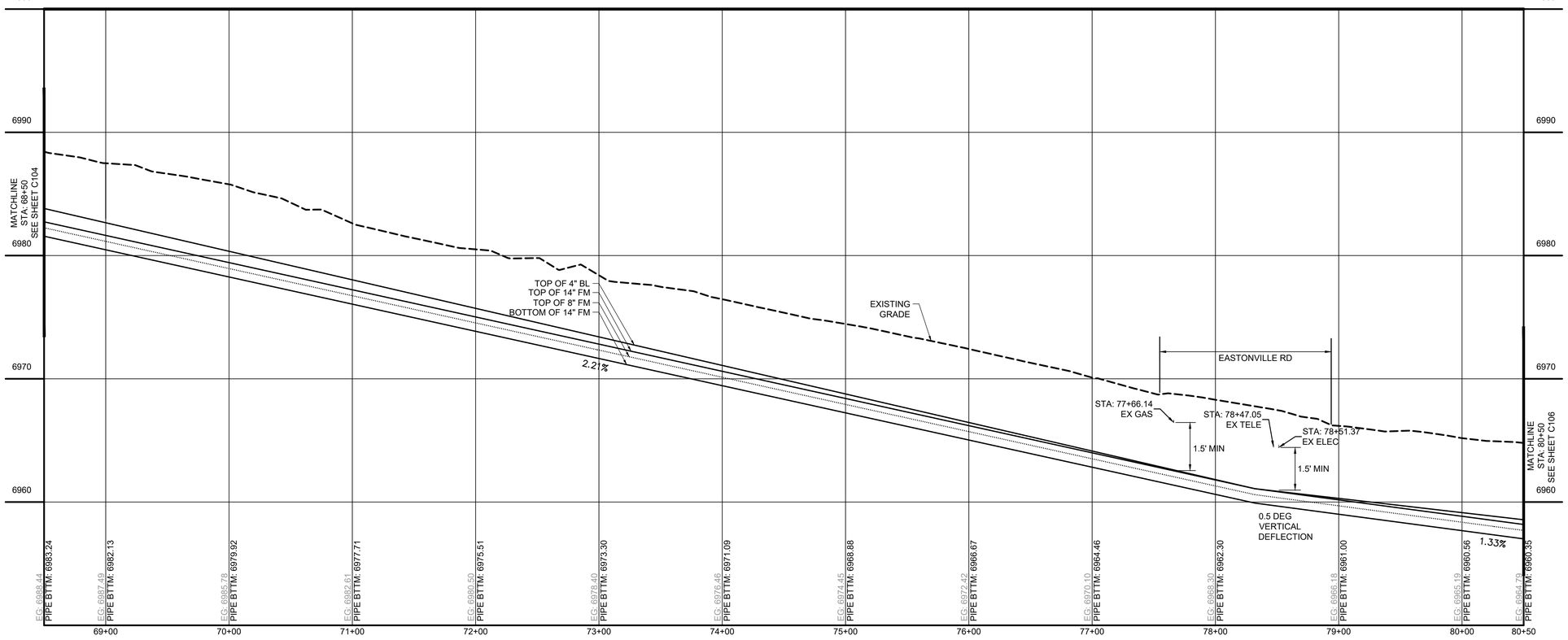
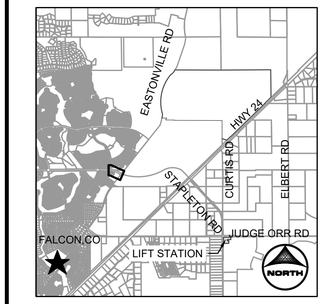
SHEET
C104

HR GREEN Xrefs: XV-Row; XV-Util; xgl-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Util; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-San-Fm; XV-Dsgn; XV-Fema; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Greg-CO







KEYMAP

GENERAL NOTES:

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KEY NOTE:

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SHEET
C105

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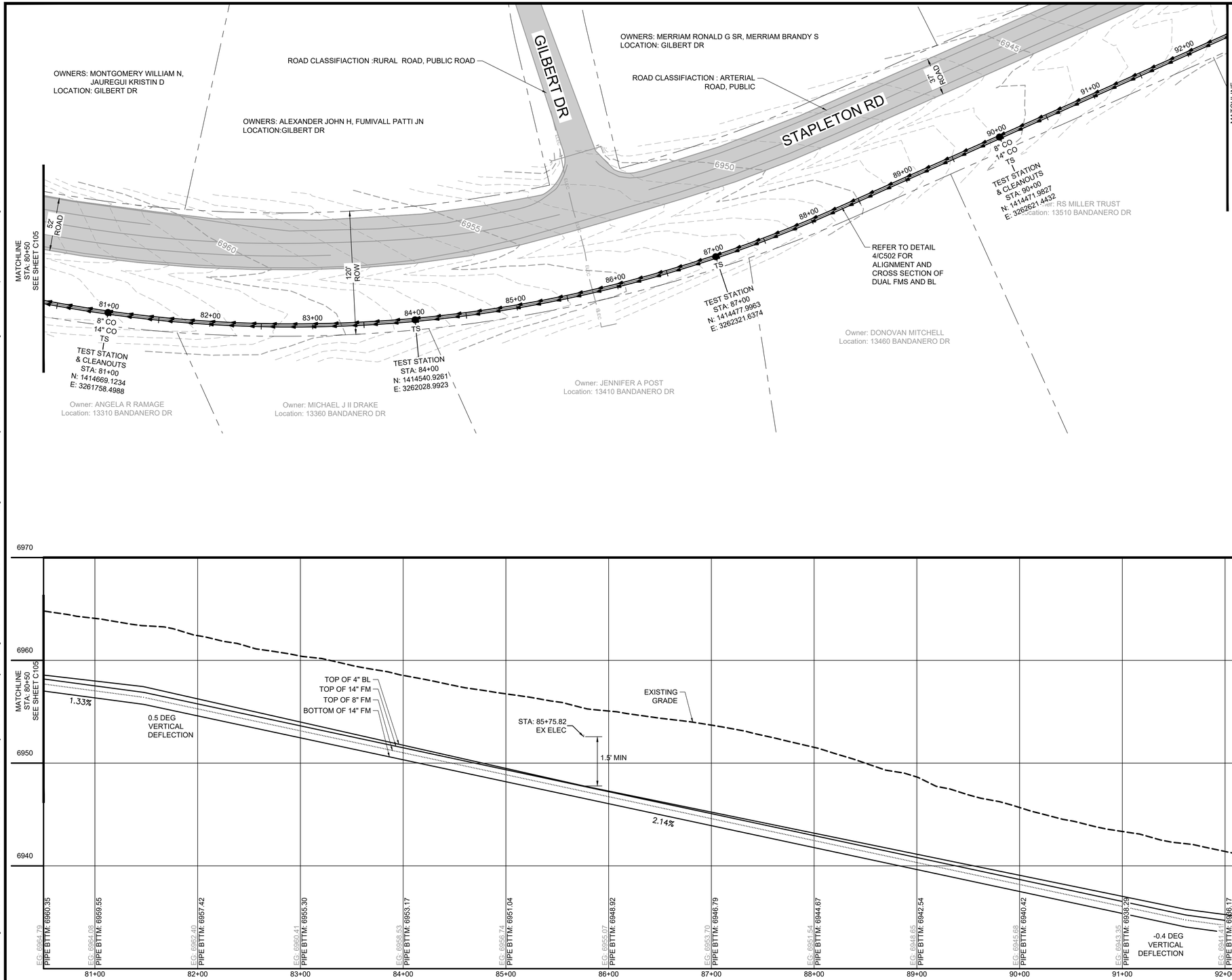

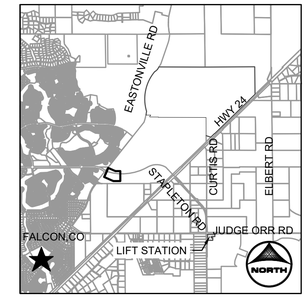

KEYMAP

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C106

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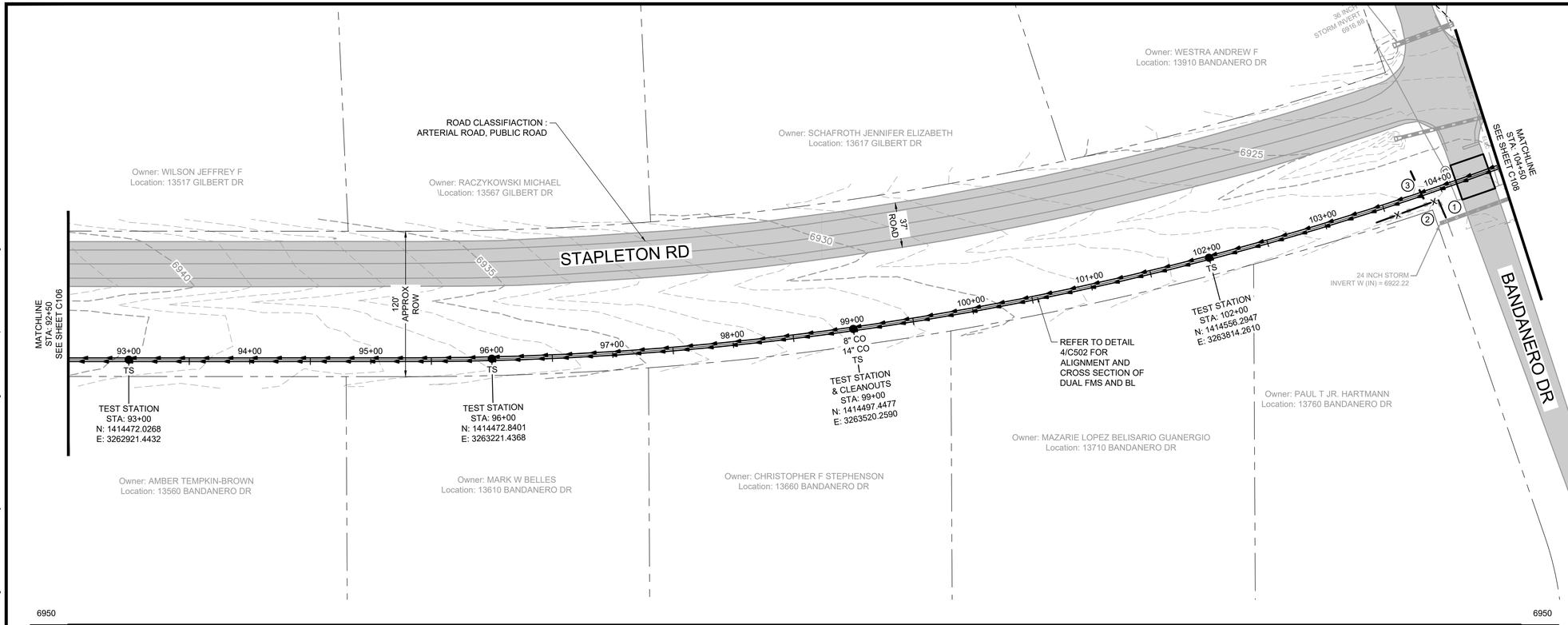

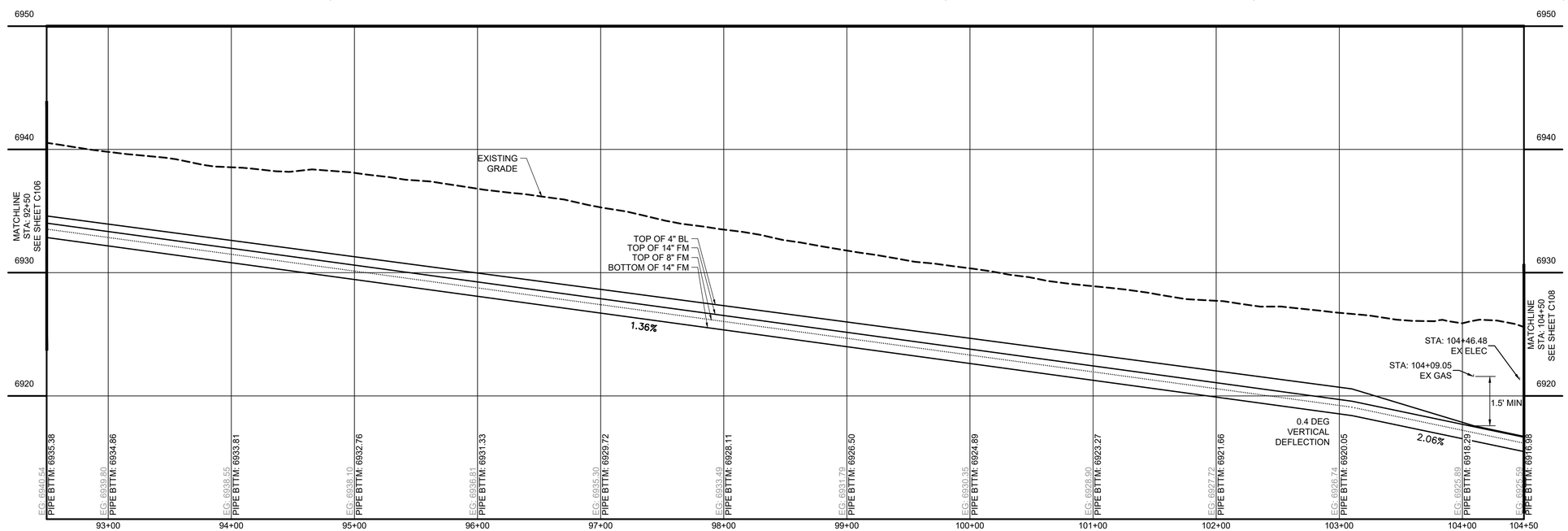

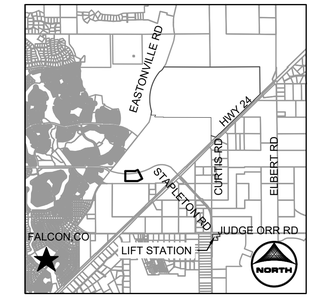

KEYMAP

GENERAL NOTES:

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2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. REMOVE AND REPLACE ASPHALT PAVEMENT.
2. PROTECT IN PLACE OR REMOVE AND REINSTALL BARBED WIRE FENCING AND STEEL POSTS.
3. PROTECT IN PLACE OR REMOVE AND REINSTALL SIGNS.
4. CAUTION – ELECTRIC WITHIN THIS AREA. EXACT LOCATION UNKNOWN.

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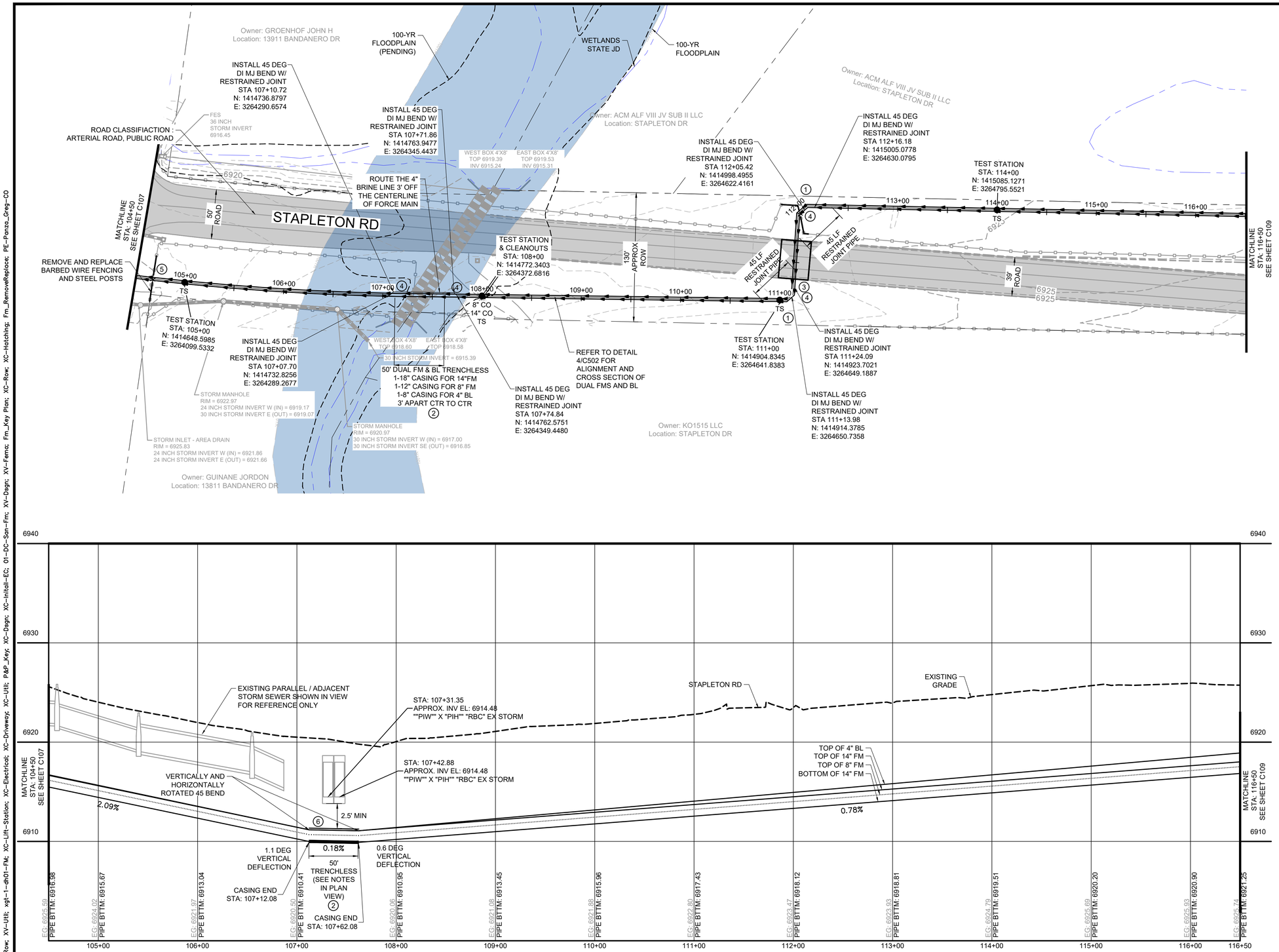
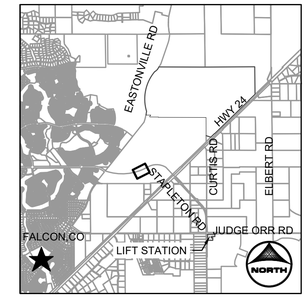
SHEET
C107

HR GREEN Xrefs: XV-Row; XV-Utl; xgl-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveways; XC-Utl; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-San-Fm; XV-Dsgn; XV-Fence; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO





KEYMAP

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1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. INSTALL WARNING TAPE 1 FT ABOVE VENT PIPE EXTENSION FROM COMBO VALVE VAULT TO WHERE VENT PIPE DAYLIGHTS.
2. STEEL CASING PIPES WITH CATHODIC PROTECTION, SEE MIN WALL THICKNESS PER CASING PIPE DETAIL ON C502. CARRIER PIPES SHALL BE RESTRAINED JOINT WITHIN THE CASING PIPES.
3. REMOVE AND REPLACE ASPHALT PAVEMENT AND PAVEMENT MARKINGS.
4. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH DUCTILE IRON FITTING.
5. REMOVE, AND REPLACE BARBWIRE FENCE.
6. FOR 14" FM PROVIDE 18" CASING, FOR 8" FM PROVIDE 12" CASING, AND FOR 4" BL PROVIDE 8" CASING. 18" CASING IS THE ONLY CASING SHOWN IN THE PROFILE FOR CLARITY WITHIN THE PROFILE VIEW.

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APPROVED: GP	JOB NUMBER: 201662.07	IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.	
CAD DATE: 1/7/2025			
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HRGreen

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1975 RESEARCH PARKWAY | SUITE 230
COLORADO SPRINGS CO 80920
PHONE: 719.300.4140
FAX: 713.965.0044

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D.R. HORTON
EL PASO COUNTY, CO

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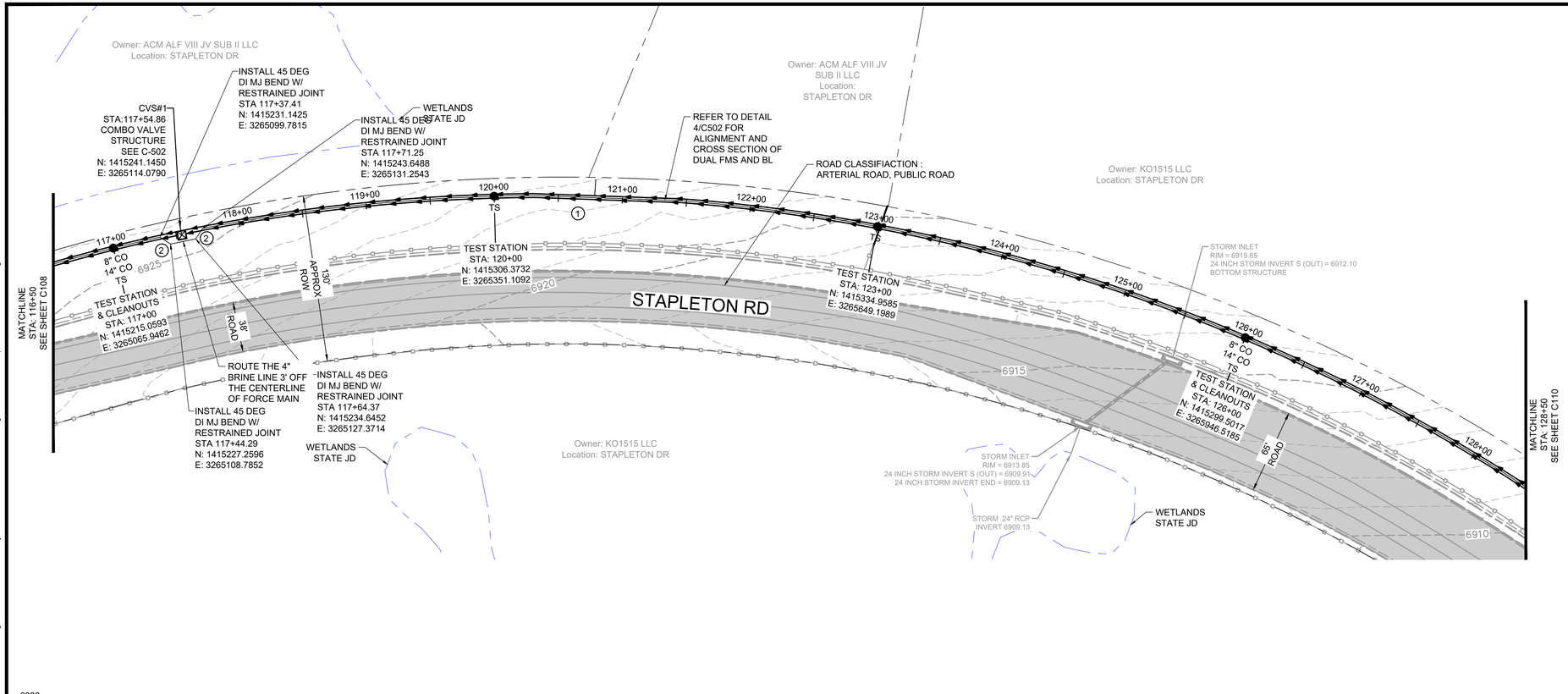
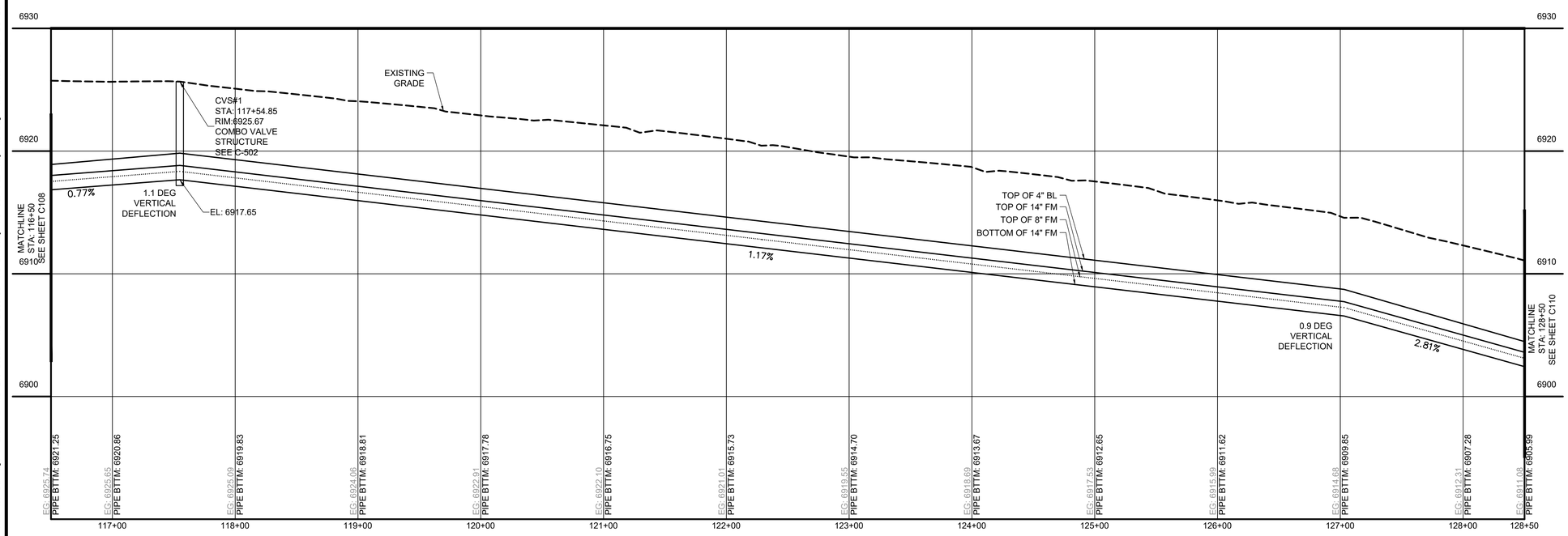
CONSTRUCTION DOCUMENTS

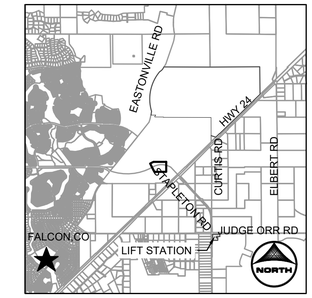
FORCE MAIN PLAN AND PROFILE

SHEET C108

HR GREEN Xrefs: XV-Row; XV-Utlt; xgl-1-dh01-FM; XC-Lift-Station; XC-Electricals; XC-Driveways; XC-Utlt; P&P_Key; XC-Dsgn; XC-Initdll-EC; 01-DC-San-Fm; XV-Dsgn; XV-Fema; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO







KEYMAP

GENERAL NOTES:

1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. INSTALL WARNING TAPE 1 FT ABOVE VENT PIPE EXTENSION FROM COMBO VALVE VAULT TO WHERE VENT PIPE DAYLIGHTS.
2. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH DUCTILE IRON FITTING.

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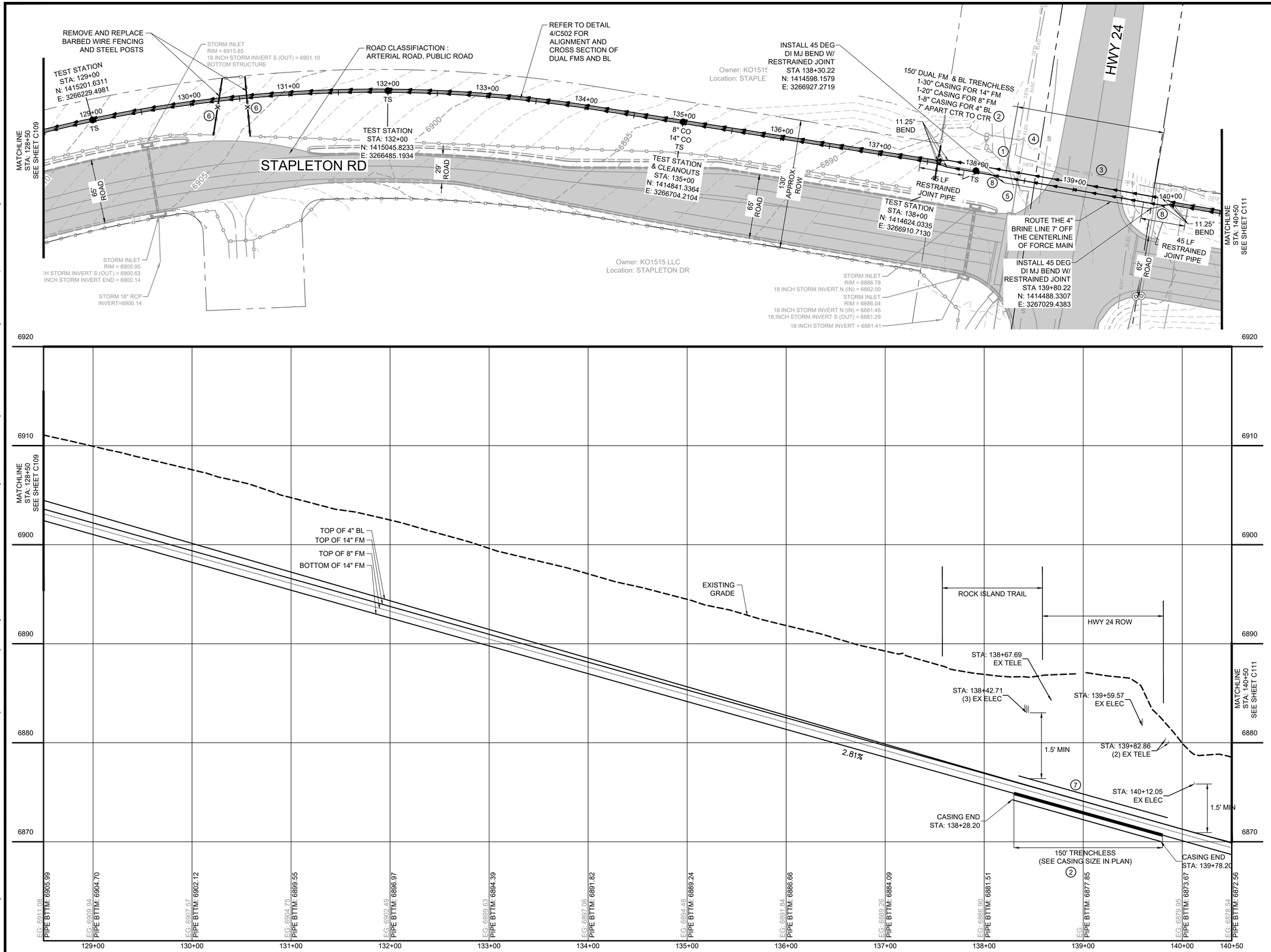
FORCE MAIN PLAN AND PROFILE

SHEET C109

HR GREEN Xrefs: XV-Row; XV-Util; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Util; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-Sen-Fm; XV-Dsgn; XV-Fence; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO



KEYMAP

GENERAL NOTES:

1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. REMOVE AND REPLACE GRAVEL.
2. STEEL CASING PIPES WITH CATHODIC PROTECTION, SEE MIN WALL THICKNESS PER CASING PIPE DETAIL ON C502. CARRIER PIPES SHALL BE RESTRAINED JOINT WITHIN THE CASING PIPES.
3. PROTECT HWY 24 FROM DAMAGE.
4. CAUTION – FIBER OPTIC WITHIN THIS AREA. EXACT LOCATION UNKNOWN.
5. CAUTION – WATER MAIN WITHIN THIS AREA. EXACT LOCATION UNKNOWN.
6. REMOVE, AND REPLACE BARBWIRE FENCE.
7. FOR 14" FM PROVIDE 30" CASING, FOR 8" FM PROVIDE 20" CASING, AND FOR 4" BL PROVIDE 8" CASING. 30" CASING IS THE ONLY CASING SHOWN IN THE PROFILE FOR CLARITY WITHIN THE PROFILE VIEW.
8. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH DUCTILE IRON FITTING

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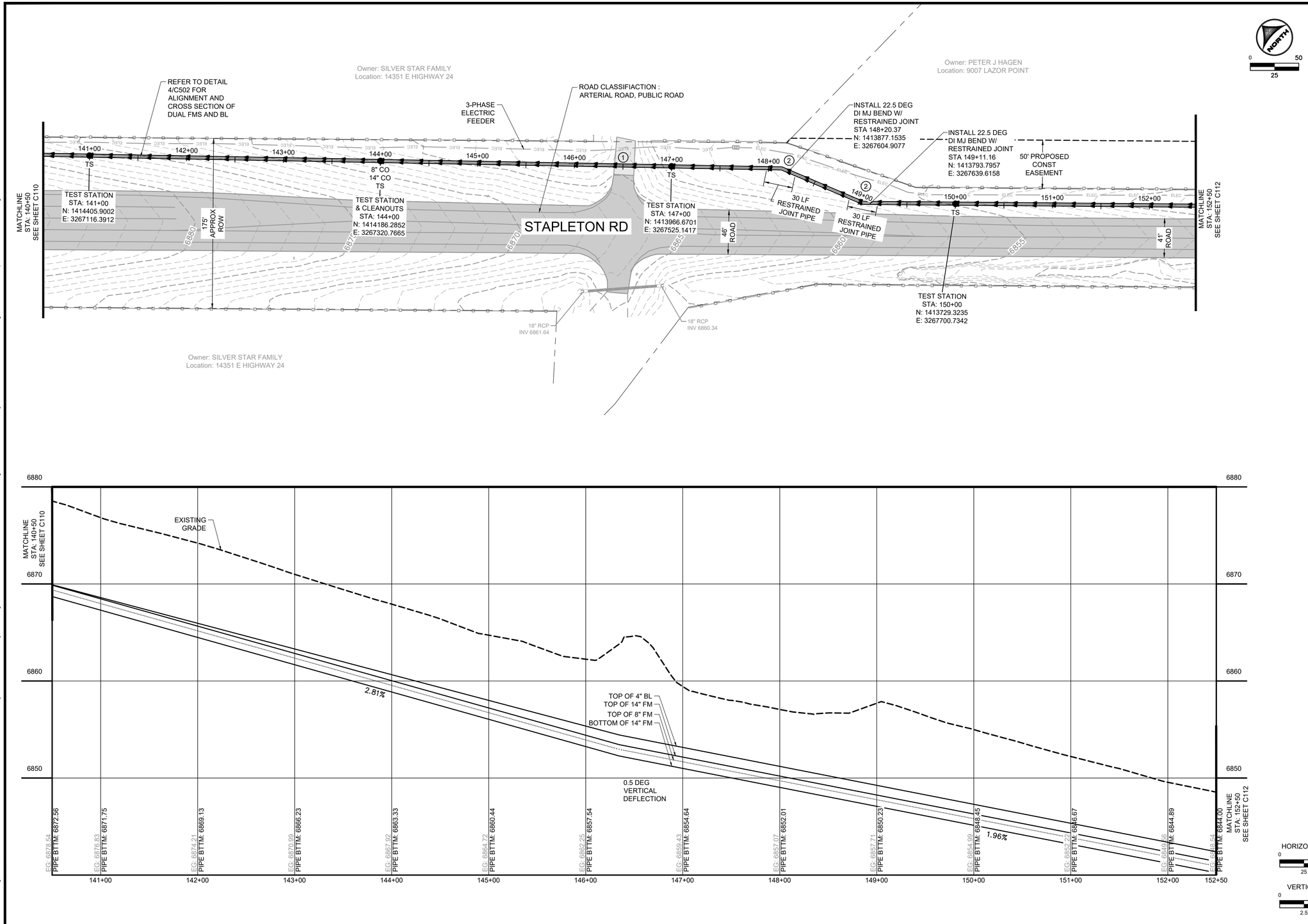
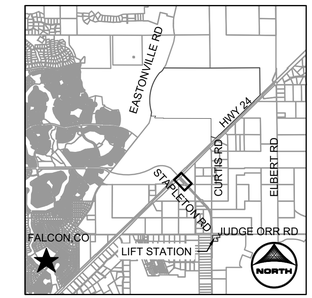
FORCE MAIN PLAN AND PROFILE

SHEET C110

HR GREEN Xrefs: XV-Row; XV-Utlt; xgt-1-dh01-Fm; XC-Lift-Station; XC-Electricol; XC-Driveway; XC-Utlt; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-Son-Fm; XV-Dsgn; XV-Fence; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO





KEYMAP

GENERAL NOTES:

1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. REMOVE AND REPLACE ASPHALT PAVEMENT AND GRAVEL SURFACING.
2. PROVIDE PE WRAP AND CATHODIC PROTECTION AT EACH DUCTILE IRON FITTING.

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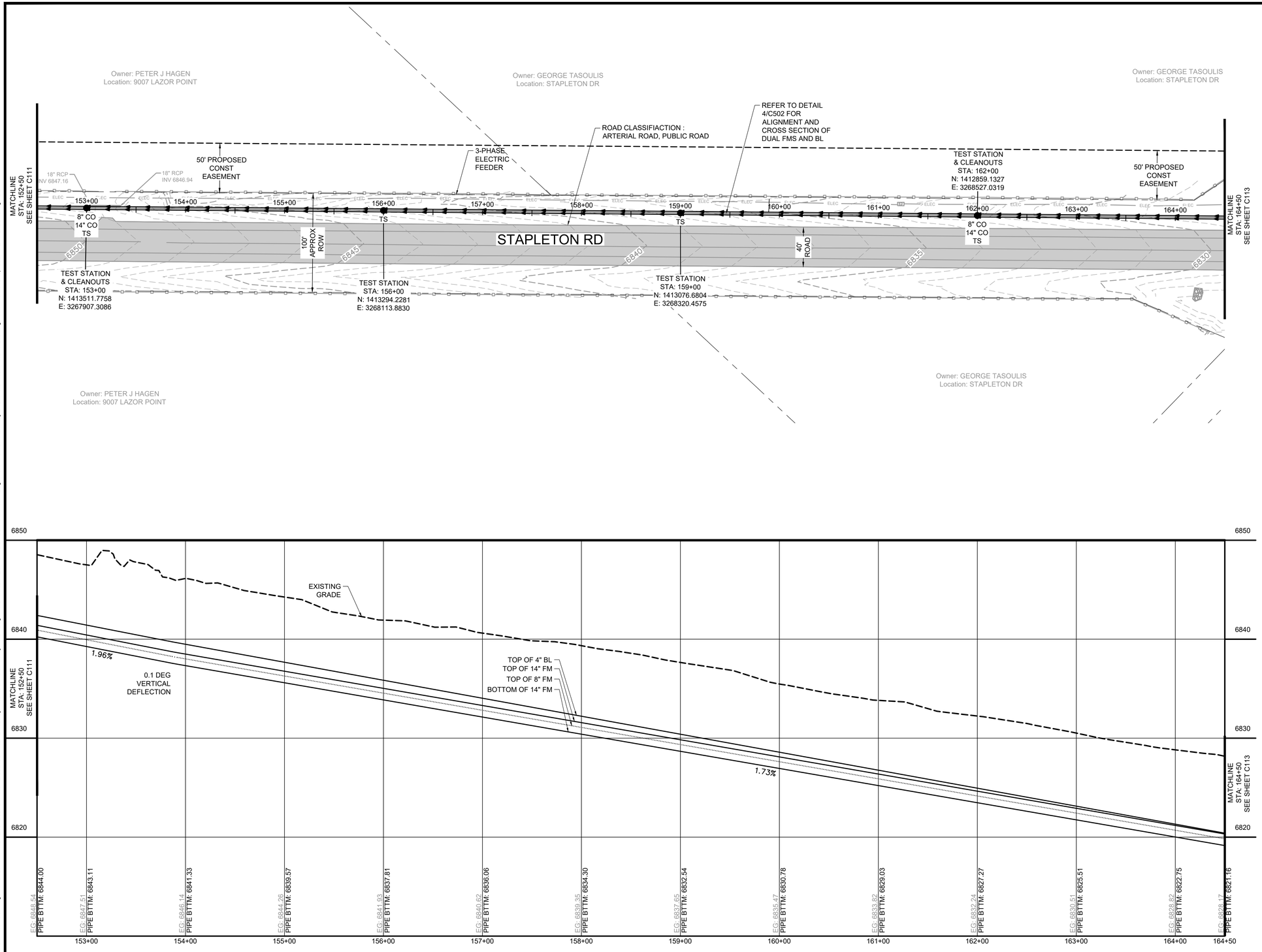
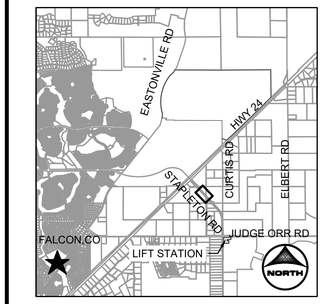
SHEET C111

HR GREEN Xrefs: XV-Row; XV-Util; xgl-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Util; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-Son-Fm; XV-Dsgn; XV-Fence; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Greg-CO





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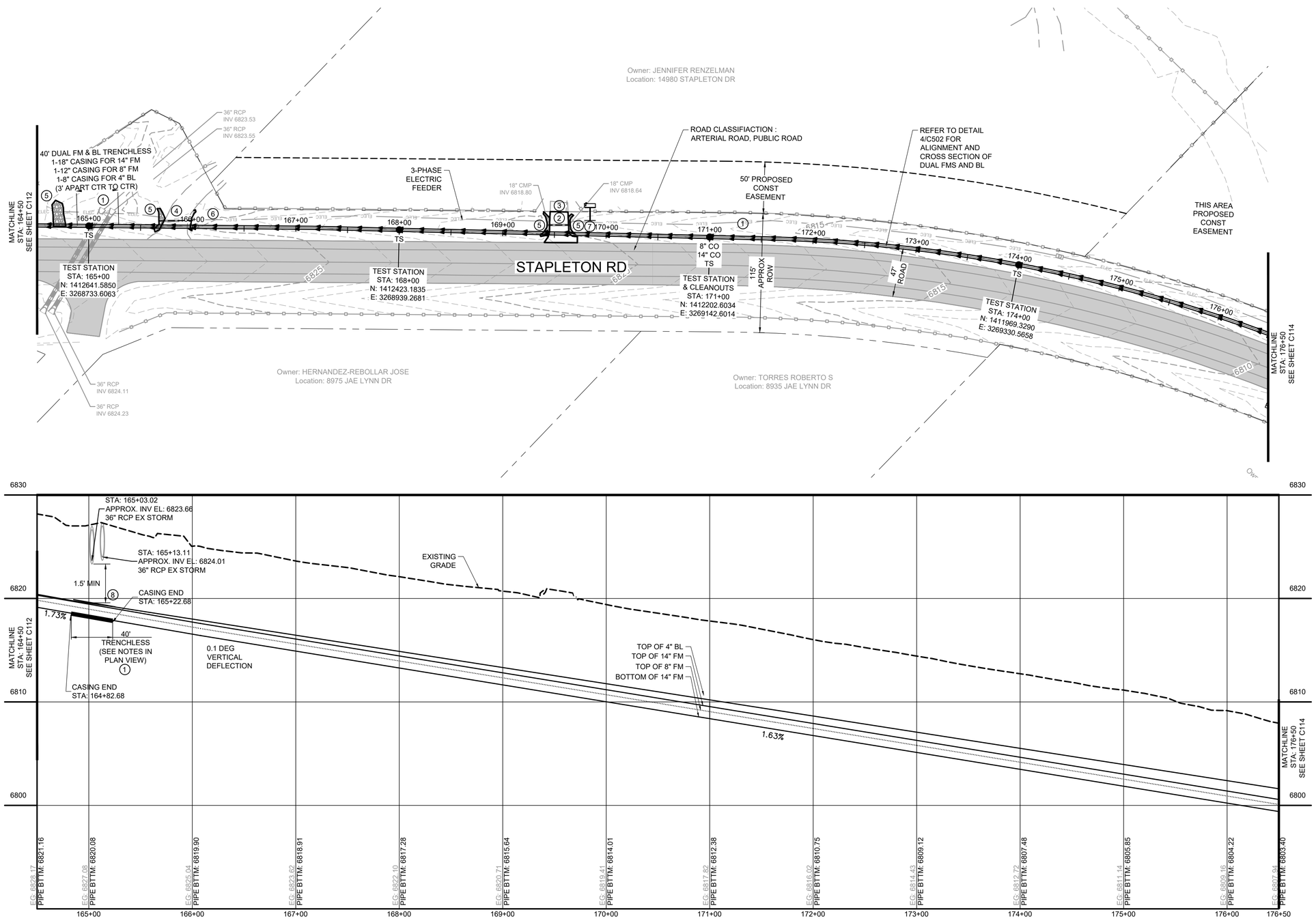
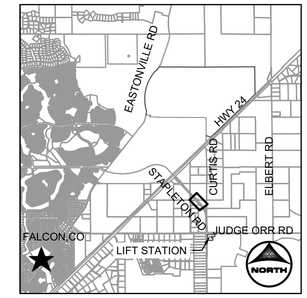
FORCE MAIN PLAN AND PROFILE

SHEET
C112

HR GREEN Xrefs: XV-Row; XV-Util; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Util; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-San-Fm; XV-Dsgn; XV-Fema; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO





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2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
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KEY NOTE:

1. STEEL CASING PIPES WITH CATHODIC PROTECTION, SEE MIN WALL THICKNESS PER CASING PIPE DETAIL ON C502. CARRIER PIPES SHALL BE RESTRAINED JOINT WITHIN THE CASING PIPES.
2. PROTECT IN PLACE OR REMOVE AND REINSTALL 24 LF OF 18" CMP CULVERT.
3. REMOVE AND REPLACE CONCRETE DRIVEWAY, SEE STANDARD DETAIL FOR DRIVEWAY APPROACH ON C701. MATCH DRIVEWAY JOINTS WITH EXISTING JOINTS.
4. REMOVE AND REPLACE GRAVEL SURFACING.
5. PROTECT IN PLACE OR REMOVE AND REINSTALL RIP RAP.
6. PROTECT IN PLACE OR REMOVE AND REINSTALL 32 LF OF 18" CMP CULVERT.
7. REMOVE, SALVAGE BLOCK MAILBOX, AND REINSTALL WITH NEW CONCRETE FOOTING.
8. FOR 14" FM PROVIDE 18" CASING, FOR 8" FM PROVIDE 12" CASING, AND FOR 4" BL PROVIDE 8" CASING. 18" CASING IS THE ONLY CASING SHOWN IN THE PROFILE FOR CLARITY WITHIN THE PROFILE VIEW.

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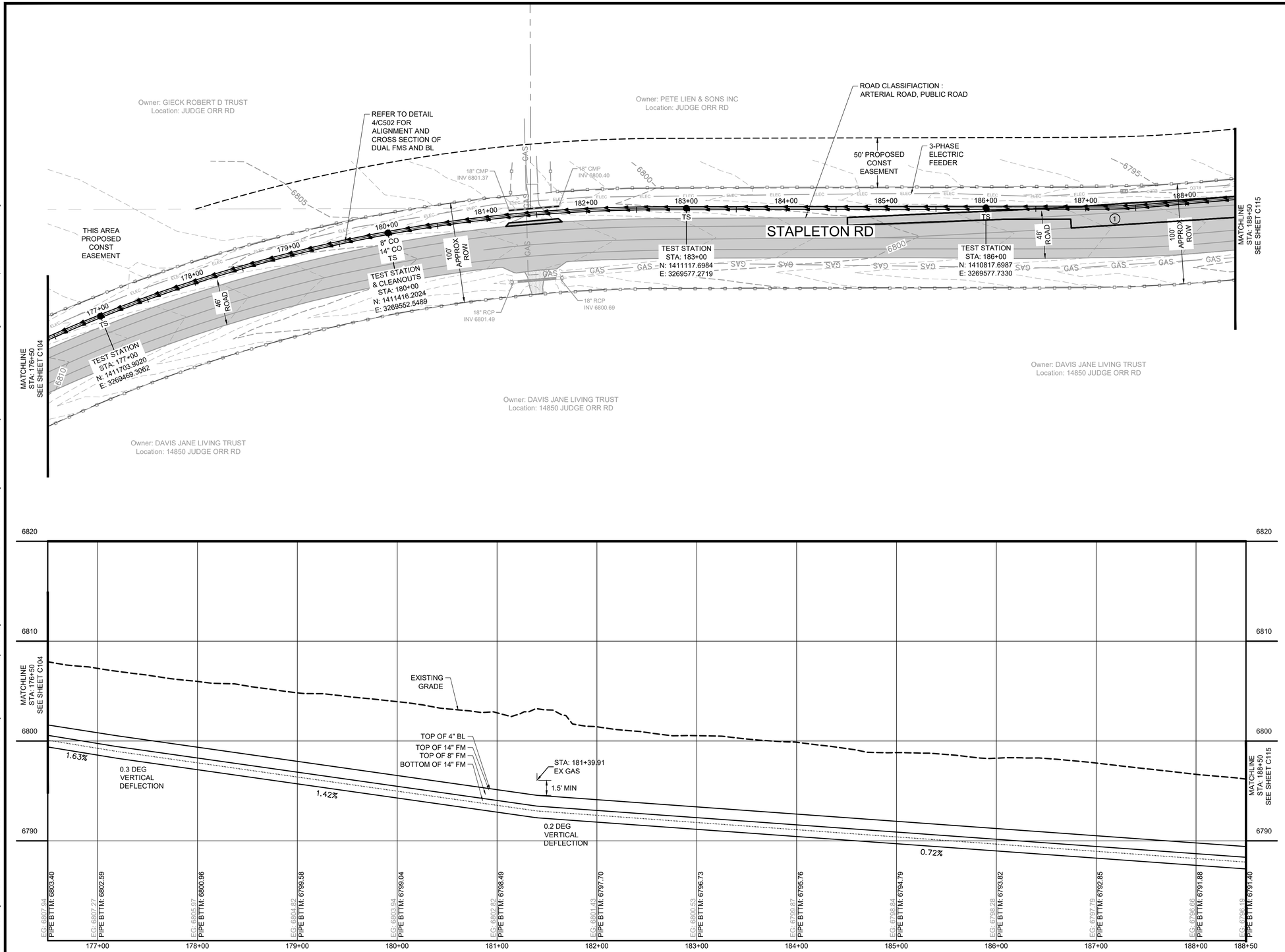
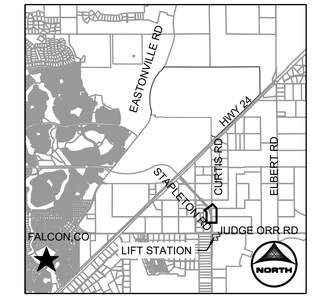
FORCE MAIN PLAN AND PROFILE

SHEET
C113

HR GREEN Xrefs: XV-Row; XV-Util; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Util; P&P_Key; XC-Dsgn; XV-Dsgn; XV-Fema; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO; XC-Initial-EC; 01-DC-San-Fm; XV-Dsgn; XV-Fm;





KEYMAP

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1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

(1) REMOVE AND REPLACE ASPHALT PAVING.

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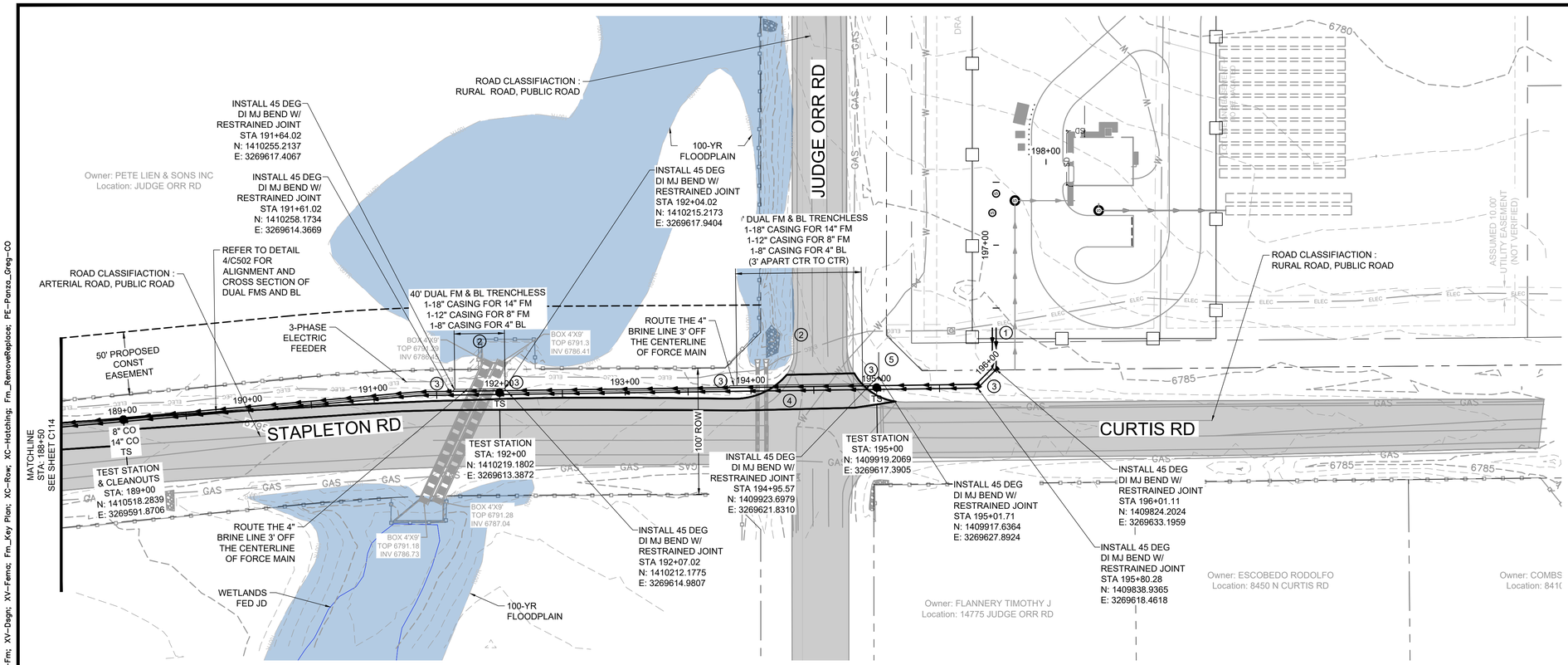
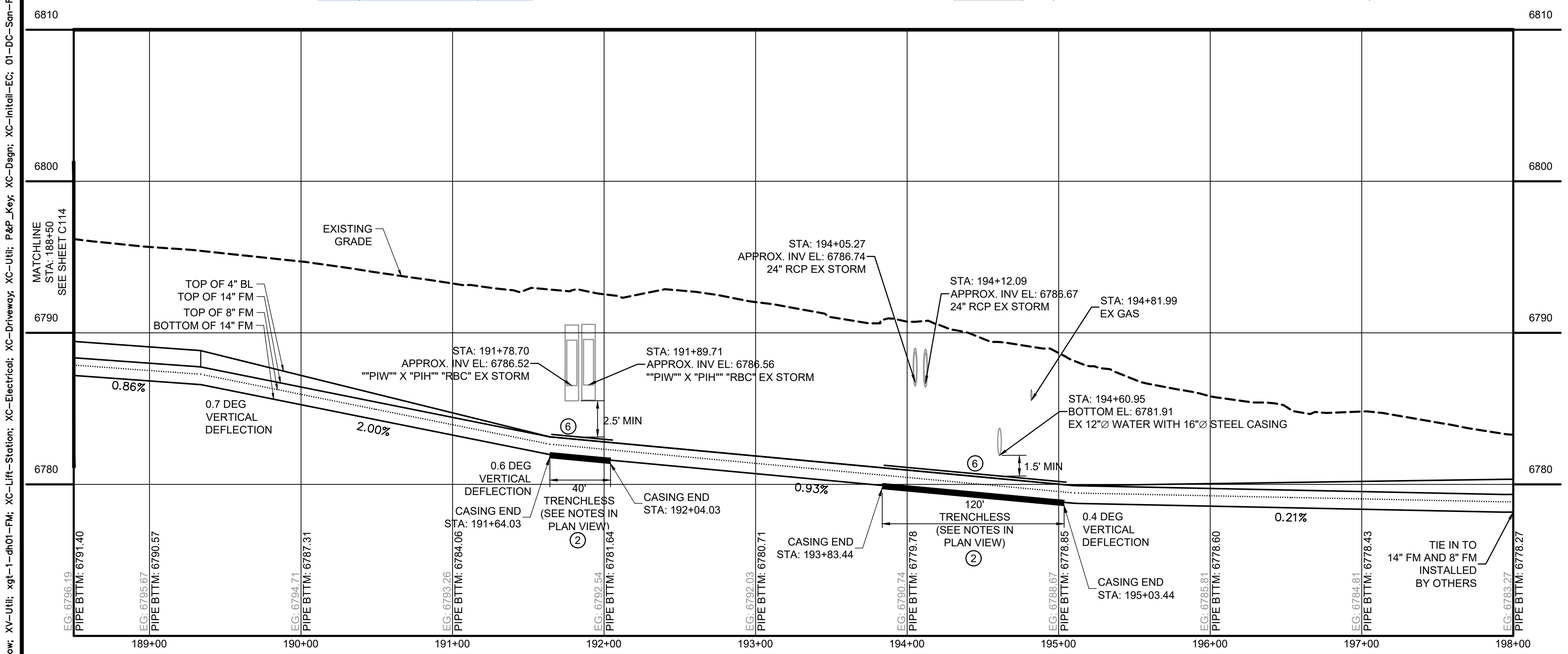
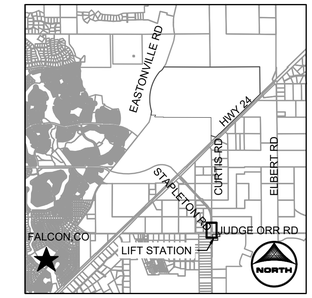
FORCE MAIN PLAN AND PROFILE

SHEET C114

HR GREEN Xrefs: XV-Row; XV-Utlt; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Utlt; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-San-Fm; XV-Dsgn; XV-Fence; Fm_Key Plan; XC-Row; XC-Hatching; Fm_RemoveReplace; PE-Panza_Grey-CO







KEYMAP

GENERAL NOTES:

1. NO UNRESTRAINED JOINTS WITHIN 15' OF FITTINGS, ALL DIRECTIONS.
2. CONTRACTOR TO SUPPORT ALL UTILITY CROSSINGS THAT ARE NOT CALLED TO BE REMOVED AND REPLACED DURING CONSTRUCTION.
3. EXISTING UTILITY ELEVATIONS SHOWN ARE APPROXIMATE.

KEY NOTE:

1. TIE INTO 14" FORCE MAIN AND 8" FORCE MAIN INSTALLED BY OTHERS. PROVIDE PVC CAPS IF CONNECTIONS ARE NOT READY TO BE MADE. SEE GRANDVIEW LIFT STATION CONSTRUCTION DOCUMENTS.
2. STEEL CASING PIPES WITH CATHODIC PROTECTION, SEE MIN WALL THICKNESS PER CASING PIPE DETAIL ON C502. CARRIER PIPES SHALL BE RESTRAINED JOINT WITHIN THE CASING PIPES.
3. PROVIDE PE WRAP AND CATHODIC PROTECTION AT FITTING.
4. REMOVE AND REPLACE ASPHALT PAVING.
5. CAUTION – FIBER OPTIC WITHIN THIS AREA. EXACT LOCATION UNKNOWN.
6. FOR 14" FM PROVIDE 18" CASING, FOR 8" FM PROVIDE 12" CASING, AND FOR 4" BL PROVIDE 8" CASING. 18" CASING IS THE ONLY CASING SHOWN IN THE PROFILE FOR CLARITY WITHIN THE PROFILE VIEW.

HORIZONTAL 0 25 50

VERTICAL 0 2.5 5

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SHEET C115

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STANDARD NOTES FOR EL PASO COUNTY GRADING AND EROSION CONTROL SHEETS:

1. 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 OFF-SITE 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 ADOPTED 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 FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.

3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP 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 ESQCP 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 COULD CONTRIBUTE POLLUTANTS TO STORMWATER, CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED 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 CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE 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.

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.

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 DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.

10. EARTH DISTURBANCES 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 SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.

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 MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).

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 SWMP. NO WASH WATER SHALL BE DISCHARGED TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.

14. DURING DEWATERING OPERATIONS OF UNCONTAMINATED GROUND WATER, SUCH WATER MAY BE DISCHARGED ON SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.

15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.

16. 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.

17. WASTE 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, CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.

18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.

19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS 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 CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ONSITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.

22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ONSITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.

23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.

24. OWNER/DEVELOPER AND THEIR AGENTS 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 OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.

26. PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.

27. A WATER SOURCE SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.

28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY _____ AND SHALL BE CONSIDERED A PART OF THESE PLANS.

29. AT LEAST TEN (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

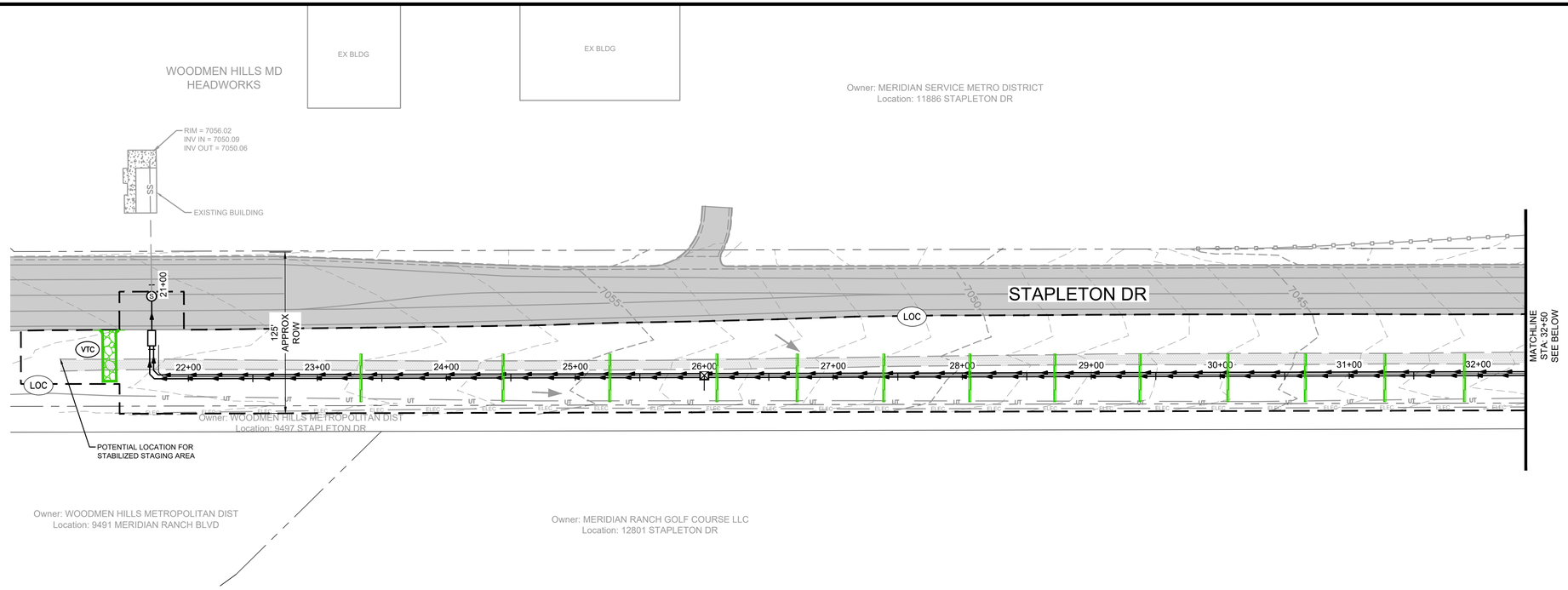
    COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
    WATER QUALITY CONTROL DIVISION
    WQCD - PERMITS
    4300 CHERRY CREEK DRIVE SOUTH
    DENVER, CO 80246-1530
    ATTN: PERMITS UNIT

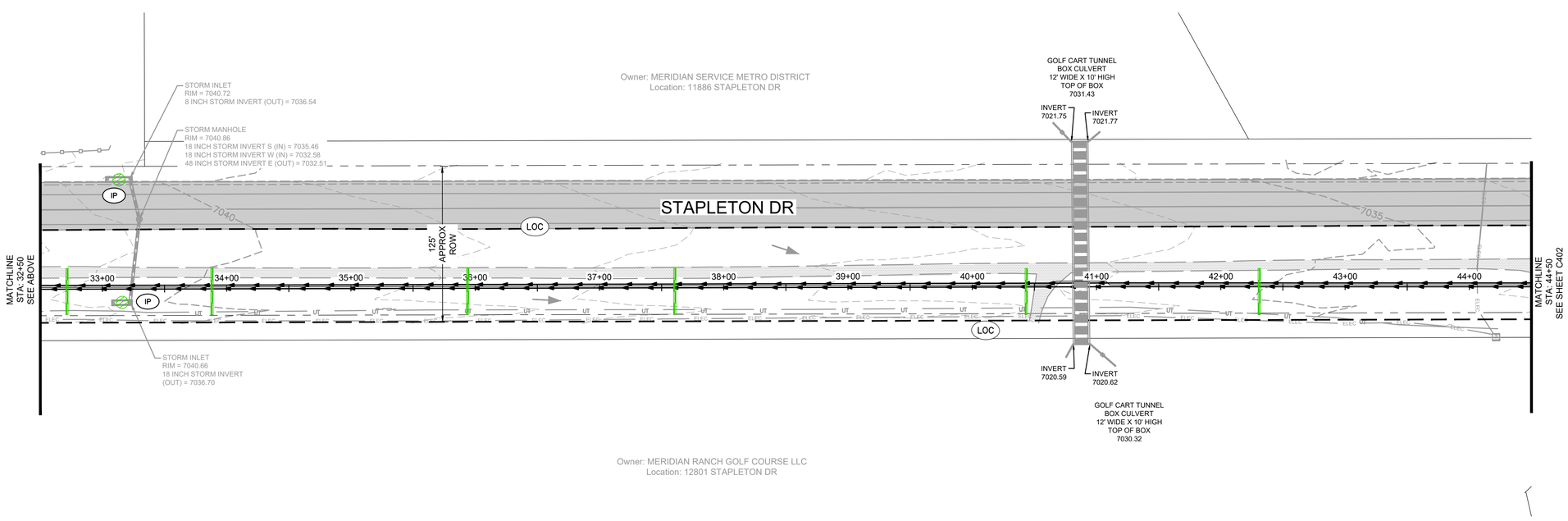
    SEND MUD MAT SPECIFICATION TO MIKAYLA HARTFORD AT MIKAYLAHARTFORD@ELPASO.COM TO ENSURE MUD MAT USE IS ACCEPTABLE IN EL PASO COUNTY.

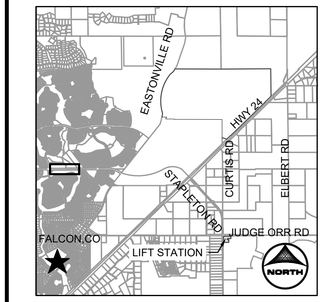
PERMANENT SEED SPECS

1. SPECIAL SEED MIX #1 - TBD SPECIAL ON PRIVATE LAND - LANDOWNER WILL WATER.
2. SEE LEGEND AND EROSION CONTROL DETAILS FOR SEED MIX/TYPE.

PRELIMINARY DESIGN
NOT FOR CONSTRUCTION







KEYMAP

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PHONE: 719.300.4140
FAX: 713.965.0044

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EL PASO COUNTY, CO

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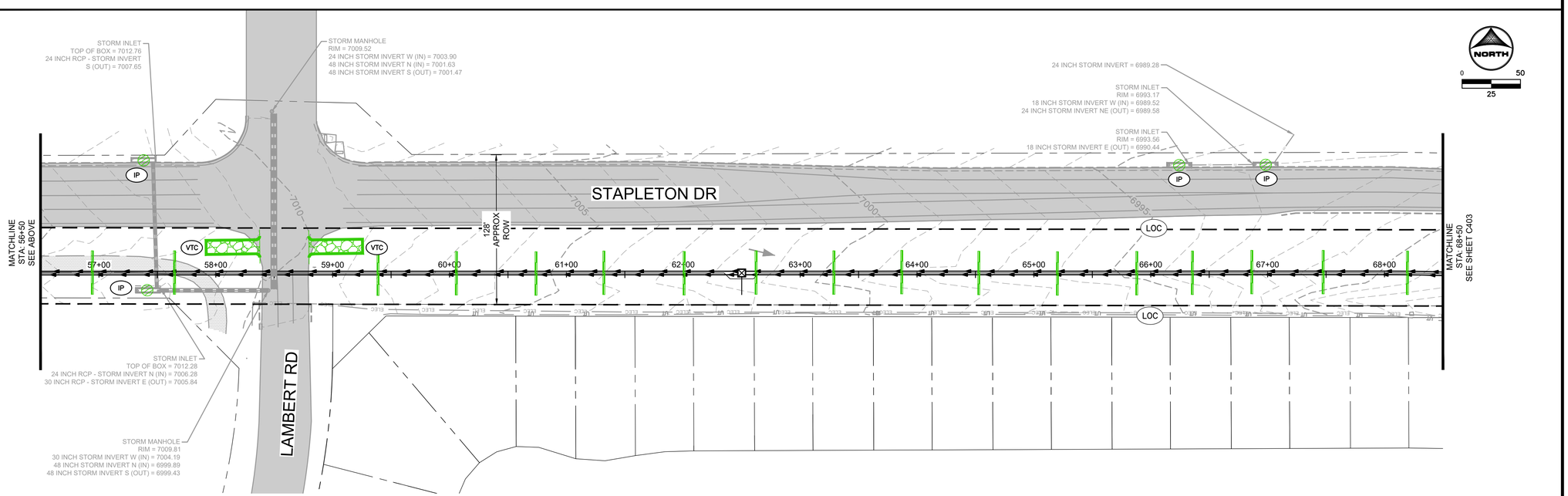
CONSTRUCTION DOCUMENTS

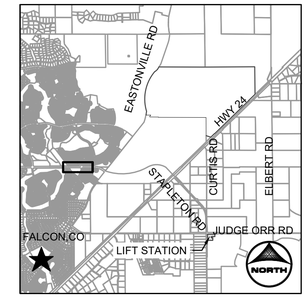
EROSION CONTROL INITIAL-INTERIM PLAN

SHEET
C401

HR GREEN Xrefs: XV-Row; XV-UtB; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-UtB; P&P_Key; XC-Dsgn; XC-Initial-ECD; 01-DC-Align-Fm; 01-DC-San-Fm; XV-Dsgn; XV-Fence; XC-Row; XC-Hatching; gec_legend; Fm_RemoveReplace; XC-Hatching-Seeding

Owner: MERIDIAN RANCH GOLF COURSE LLC
Location: 12801 STAPLETON DR





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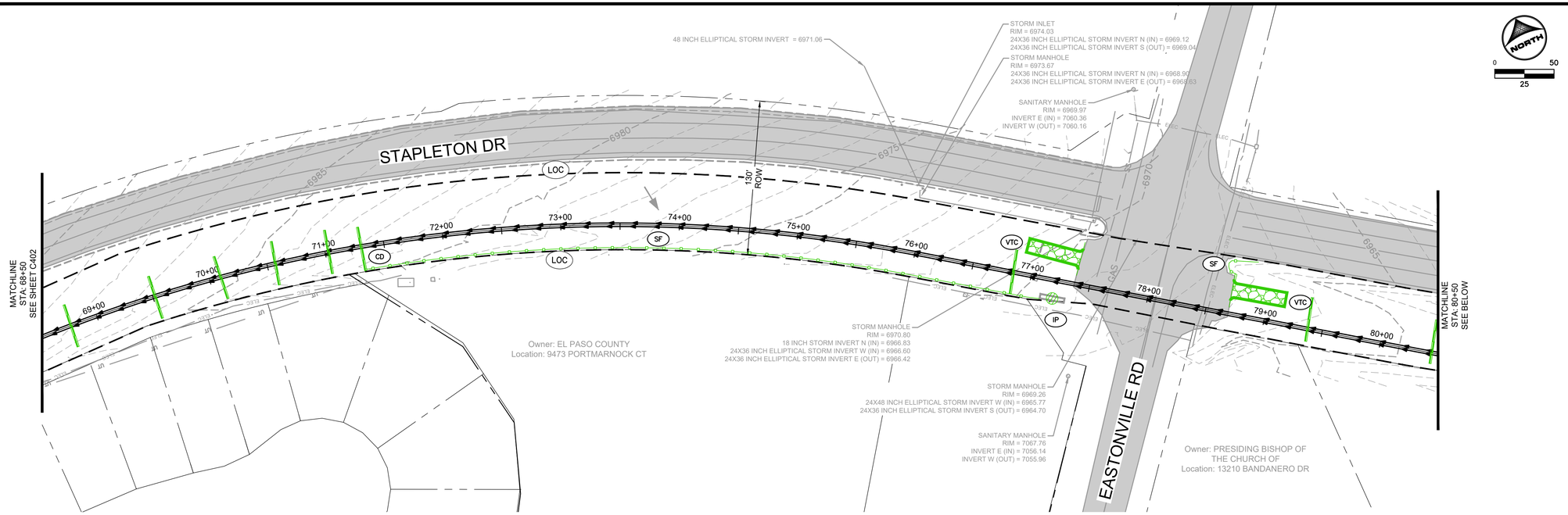

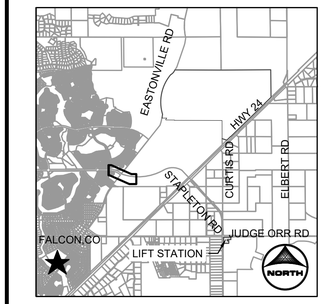

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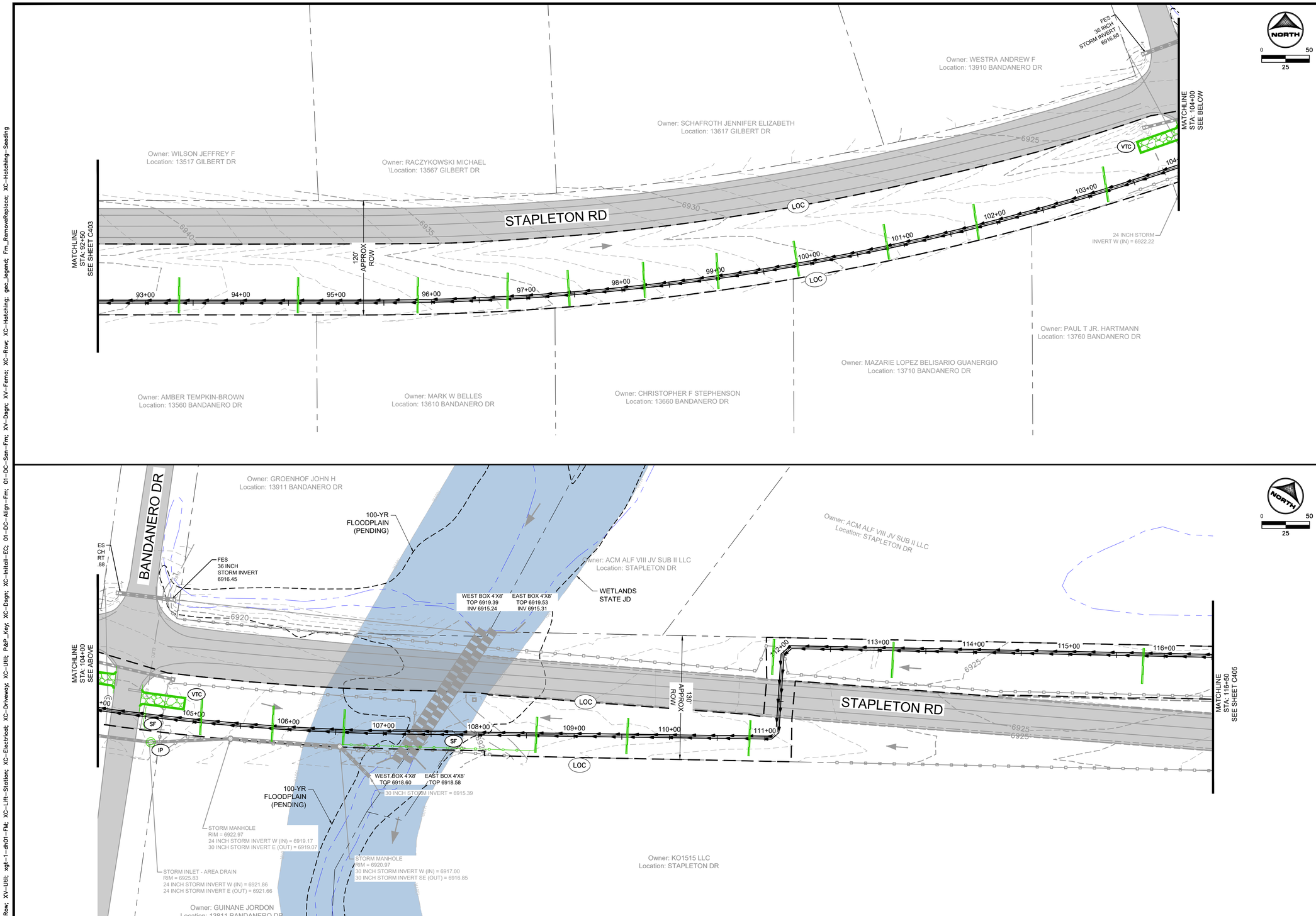

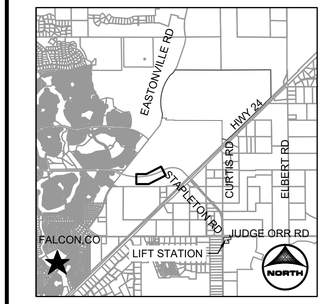

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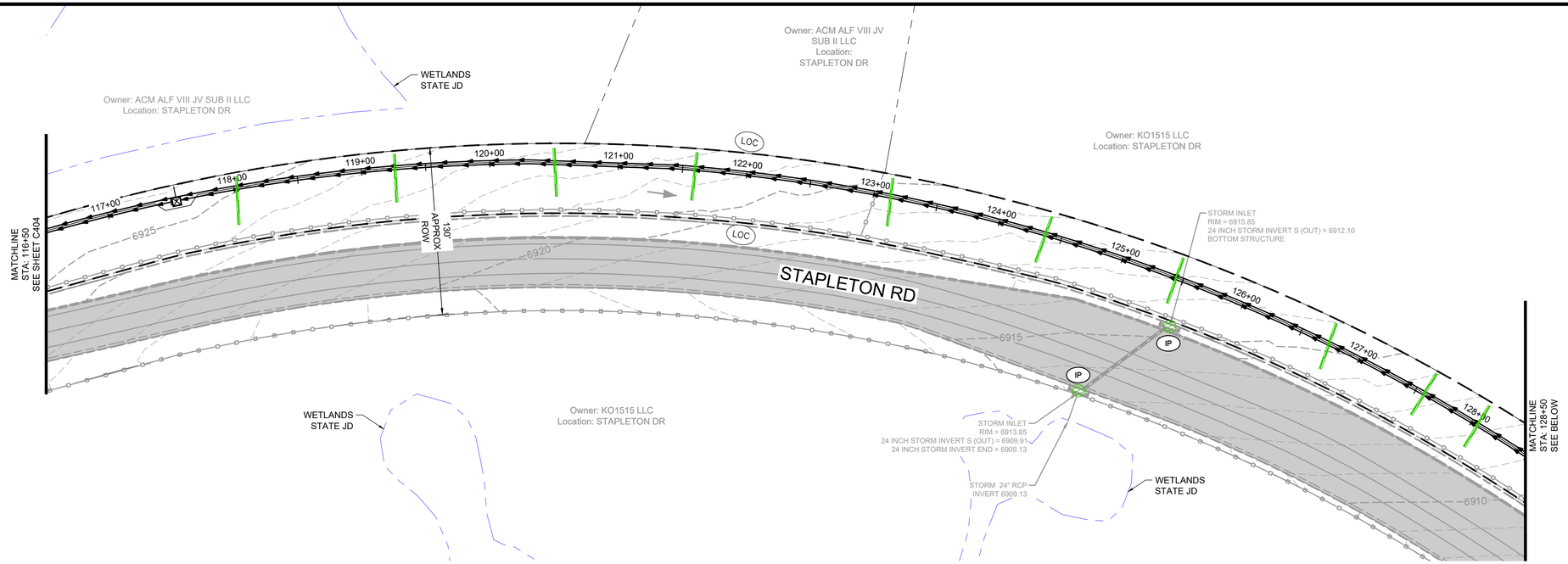

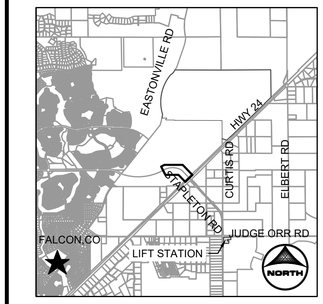

KEYMAP

GENERAL NOTE:

1. CONTRACTOR SHALL REPLACE THE AREA OF CONSTRUCTION TO THE EXISTING, PRE-CONSTRUCTION GRADE.

GEC LEGEND:

	CWA	CONCRETE WASHOUT AREA
	ED/DS	EARTH DIKE & DRAINAGE SWALE
	IP	INLET PROTECTION
	CIP	CULVERT INLET PROTECTION
	SF	SILT FENCE
	EL	EROSION CONTROL LOG
	SSA	STABILIZED STAGING AREA
	SP	STOCKPILE PROTECTION
	VTC	MUD MATS/VEHICLE TRACKING CONTROL
	LOC	LIMITS OF CONSTRUCTION/DISTURBANCE
	PSM	PERMANENT SEEDING AND MULCHING UPLAND SEED MIX
	PSM	PERMANENT SEEDING AND MULCHING WETLAND SEED MIX
	PSM	PERMANENT SEEDING AND MULCHING SPECIAL SEED MIX #1, SEE NOTES
	PT	PORTABLE TOILET
	CD	STRAW BALE CHECK DAM
	RCD	ROCK CHECK DAM
	ECB	EROSION CONTROL BLANKET
	NS	NEW SURFACING
		EX FLOW DIRECTION
		EX FLOODPLAIN

CDPHE DESIGN REVIEW DOCUMENT SUBMITTAL NOT FOR CONSTRUCTION

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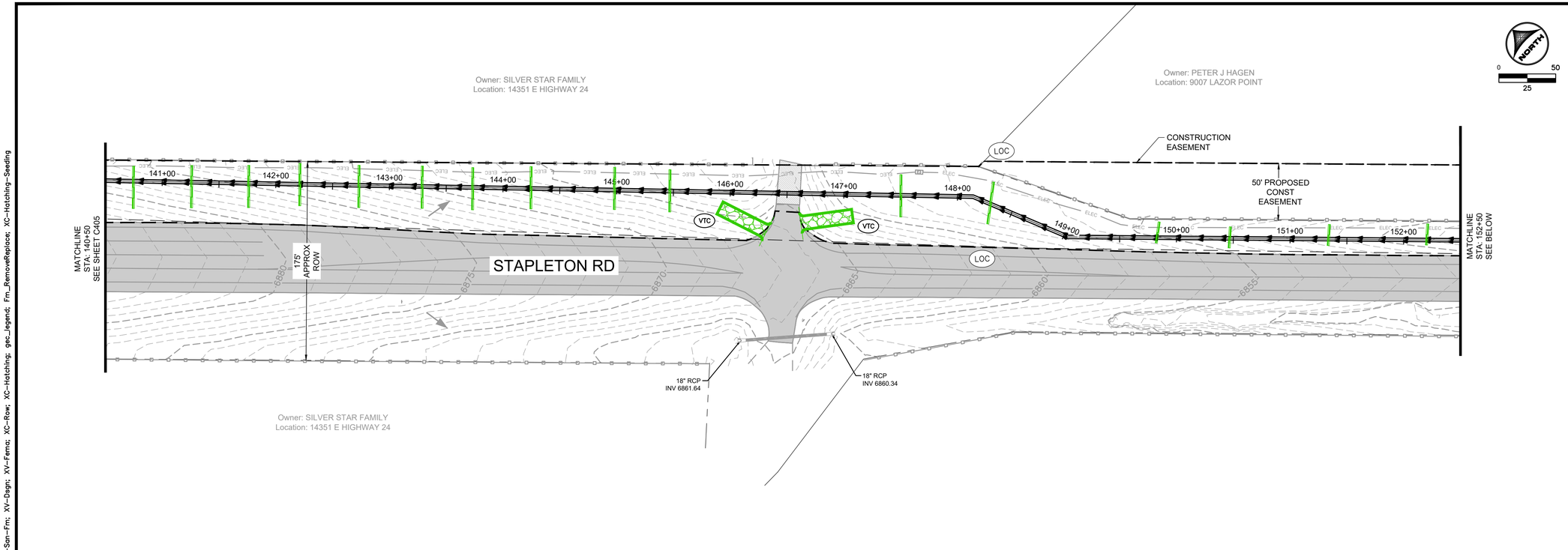
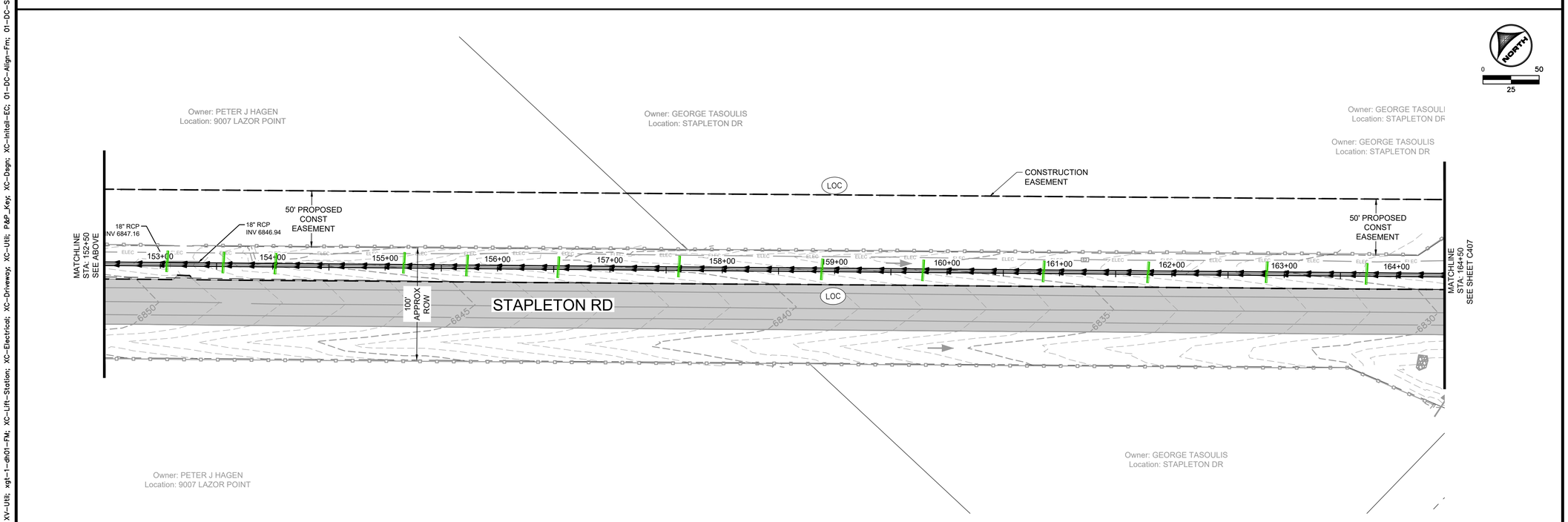
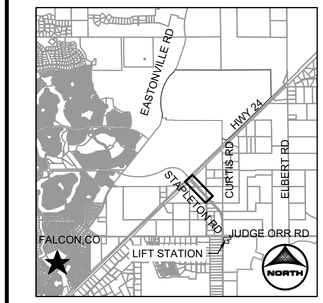
EROSION CONTROL INITIAL-INTERIM PLAN

SHEET C405

HR GREEN Xrefs: XV-Row; XV-Utlt; xgl-1-dh01-FM; XC-Lift-Station; XC-Electricals; XC-Driveway; XC-Utlt; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-Align-Fm; 01-DC-San-Fm; XV-Dsgn; XV-Fsmc; XC-Row; XC-Hatching; gec_legend; Fm_RemoveReplace; XC-Hatching-Seeding







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SHEET C406

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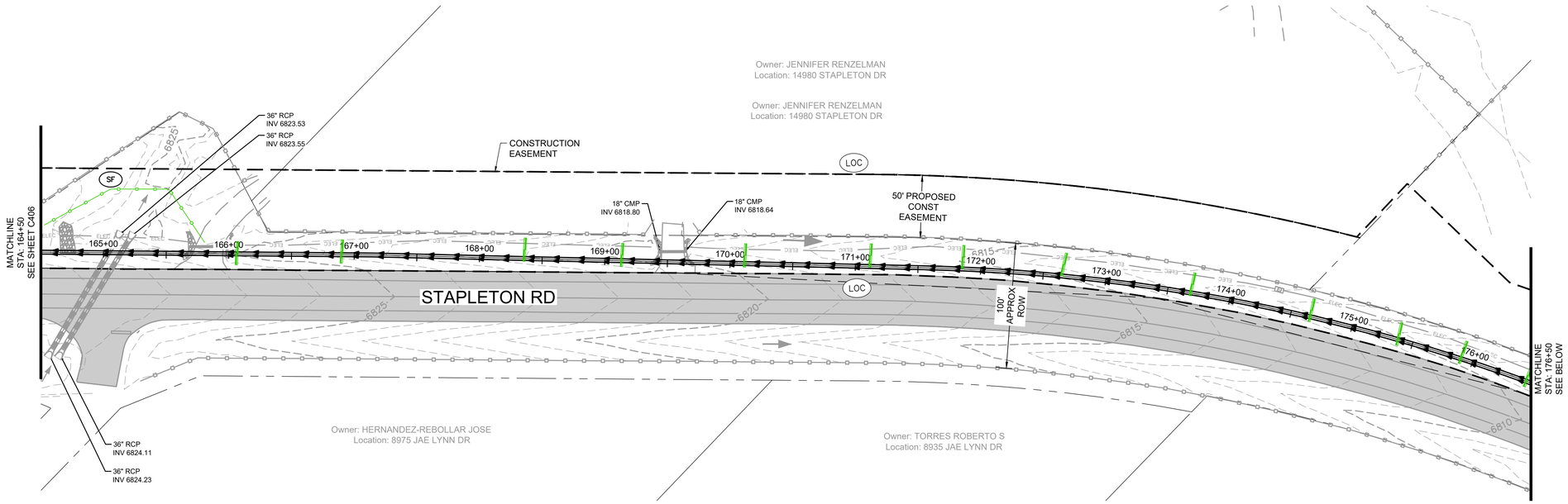

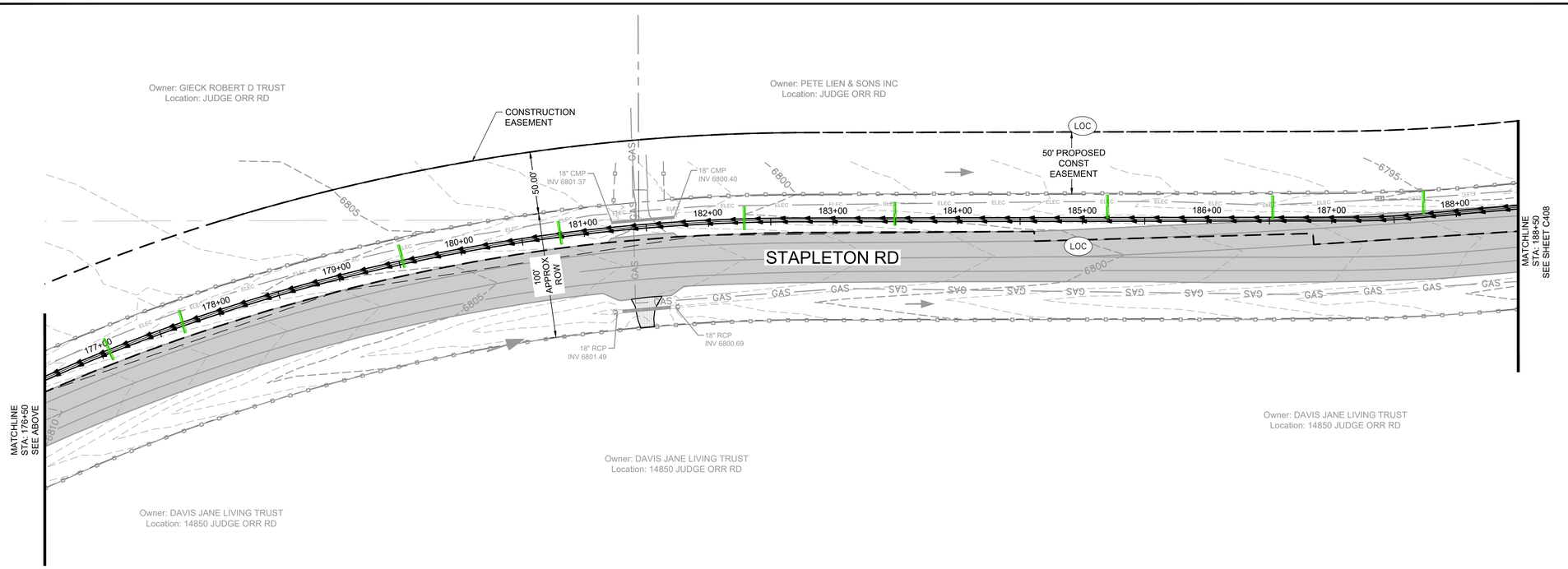

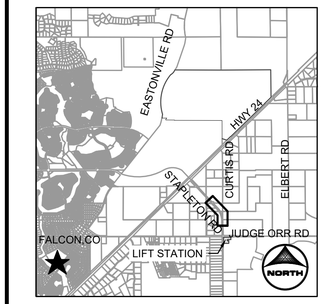

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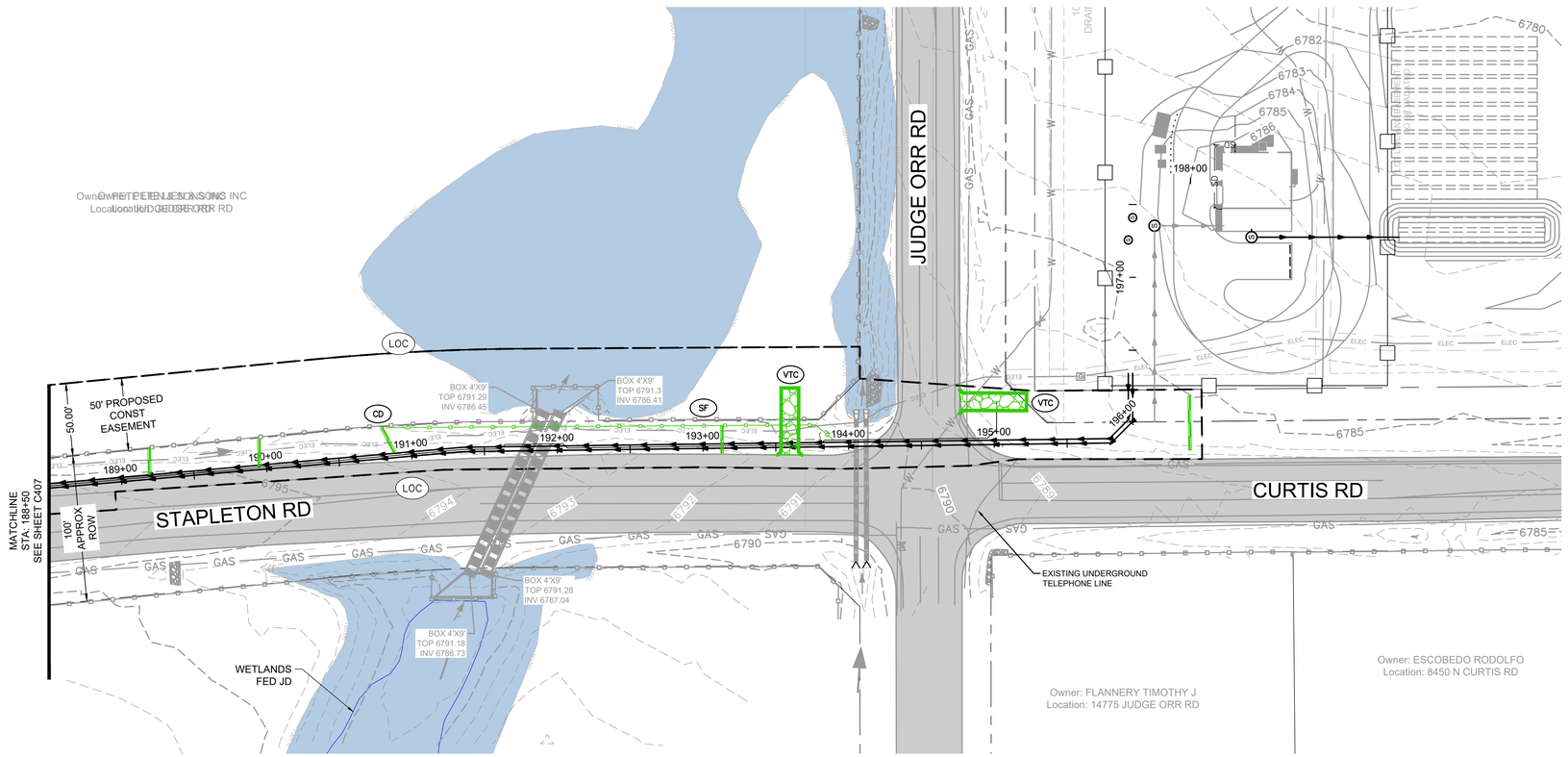
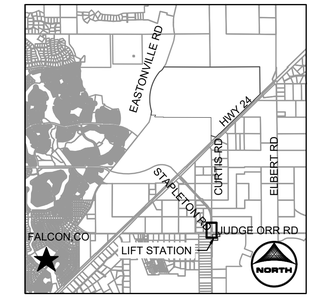
EROSION CONTROL INITIAL-INTERIM PLAN

SHEET C407

HR GREEN Xrefs: XV-Row; XV-Utlt; xgl-1-dh01-Fm; XC-Lift-Station; XC-Electricol; XC-Driveway; XC-Utlt; P&P_Key; XC-Dsgn; XC-Initoll-EC; 01-DC-Align-Fm; 01-DC-San-Fm; XV-Dsgn; XV-Fsmo; XC-Row; XC-Hatching; gec_legend; Fm_RemoveReplace; XC-Hatching-Seeding





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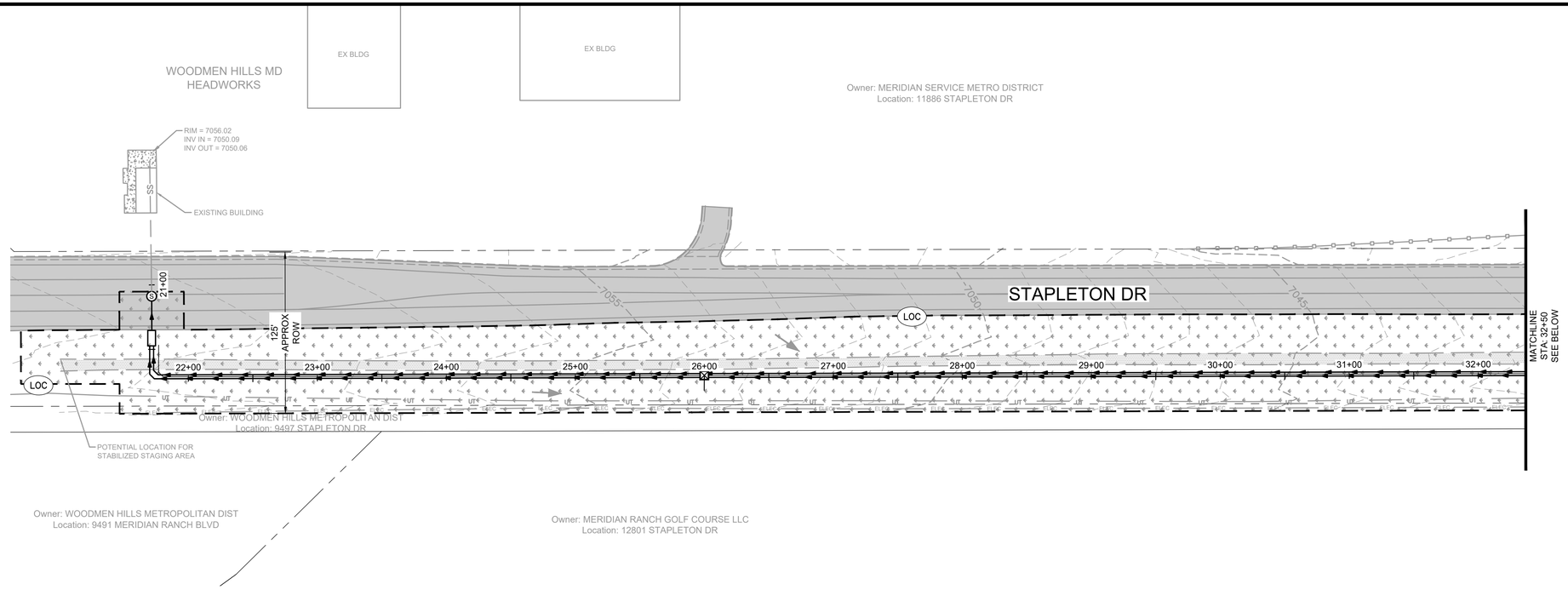
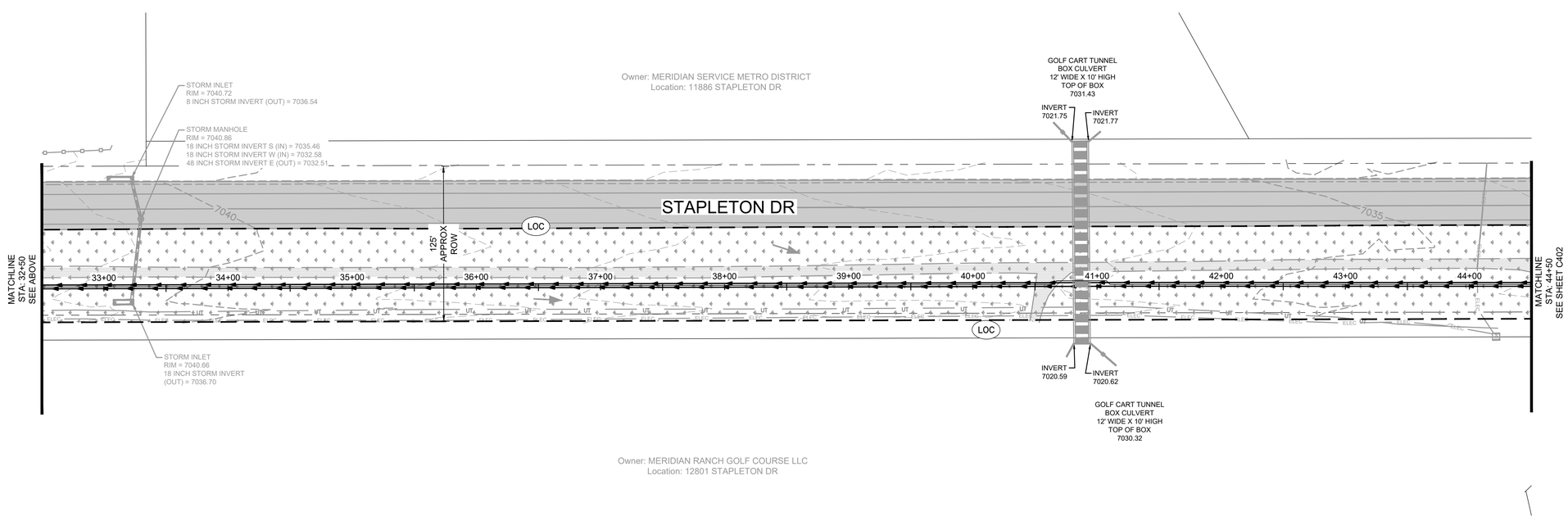
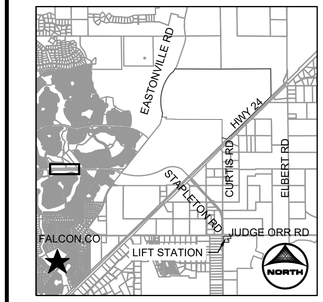
EROSION CONTROL INITIAL-INTERIM PLAN

SHEET
C408

HR GREEN Xrefs: XV-Row; XV-Util; xgt-1-dh01-FM; XC-Lift-Station; XC-Electrical; XC-Driveway; XC-Util; P&P_Key; XC-Dsgn; XC-Initial-EC; 01-DC-Align-Fm; 01-DC-San-Fm; XV-Dsgn; XV-Fsmz; XC-Row; XC-Hatching; gec_legend; Fm_RemoveReplace; XC-Hatching-Seeding







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EROSION CONTROL FINAL PLAN

SHEET
C409

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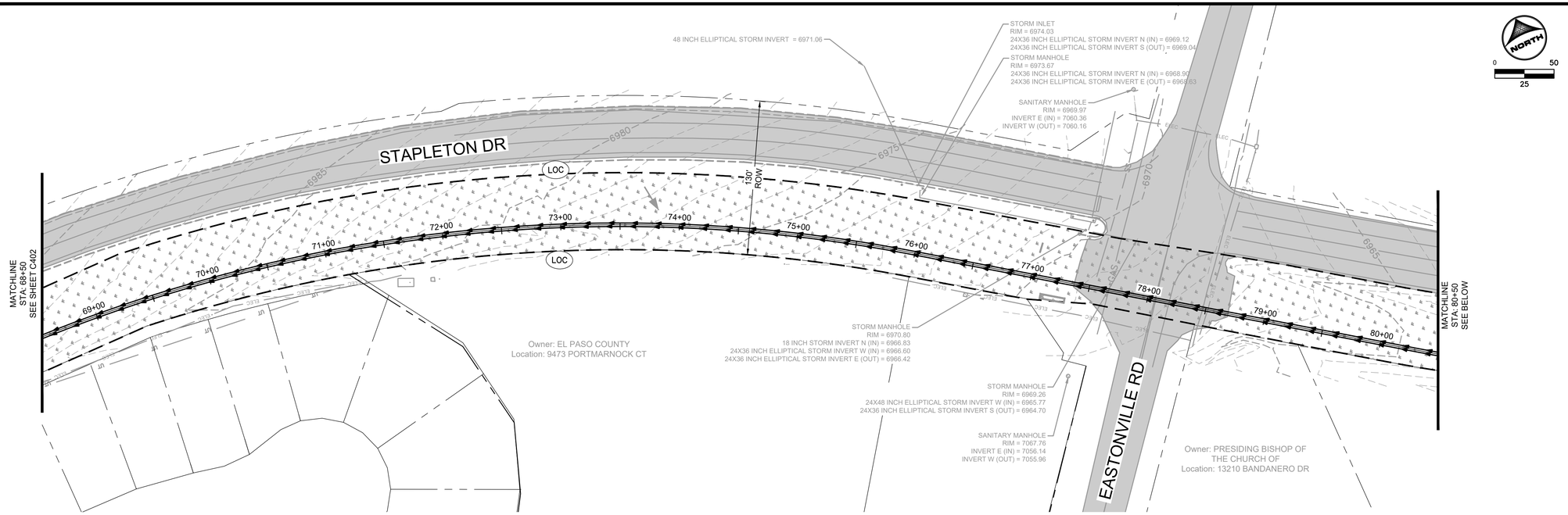

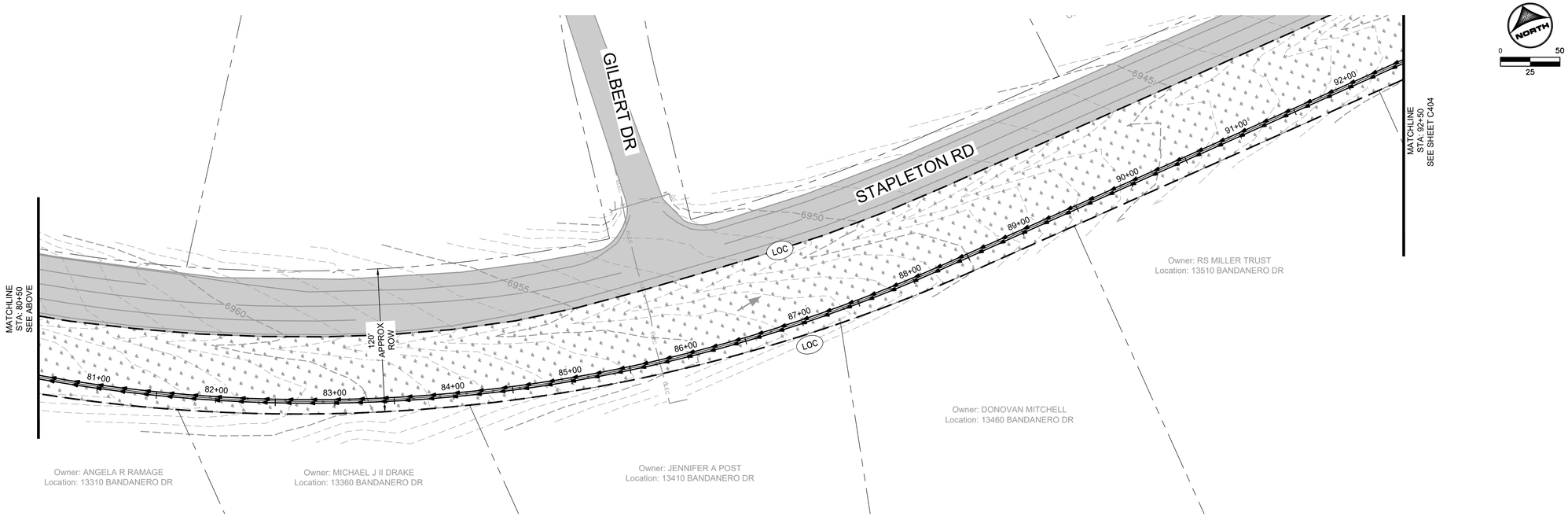

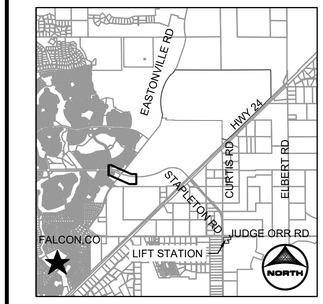

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EROSION CONTROL FINAL PLAN

SHEET
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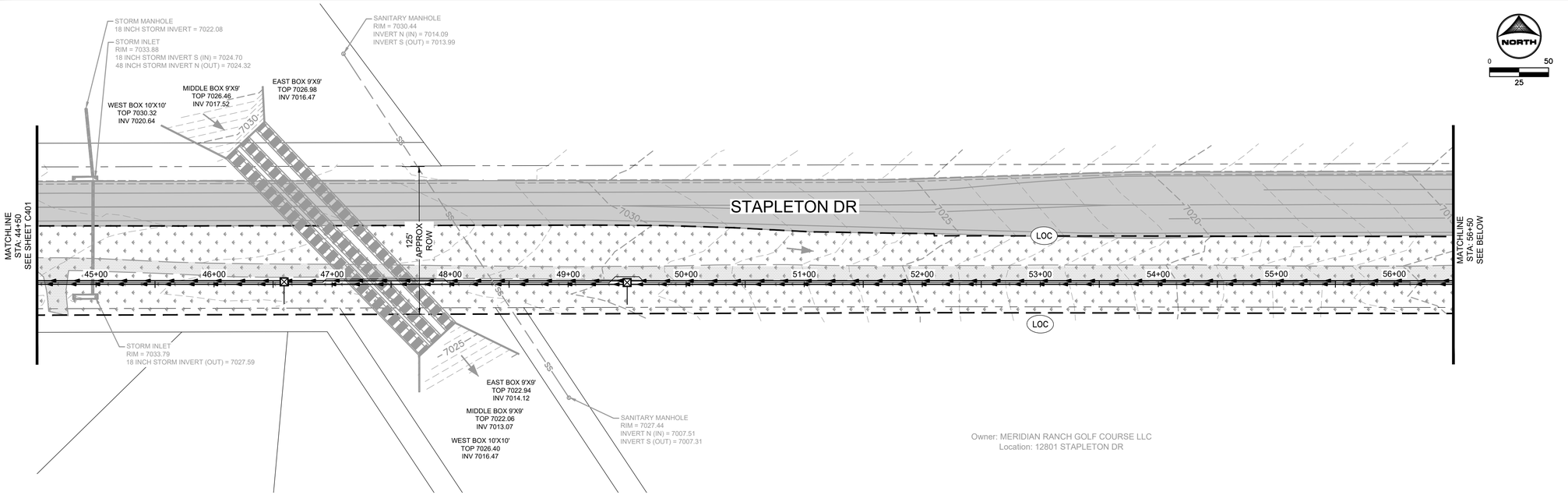

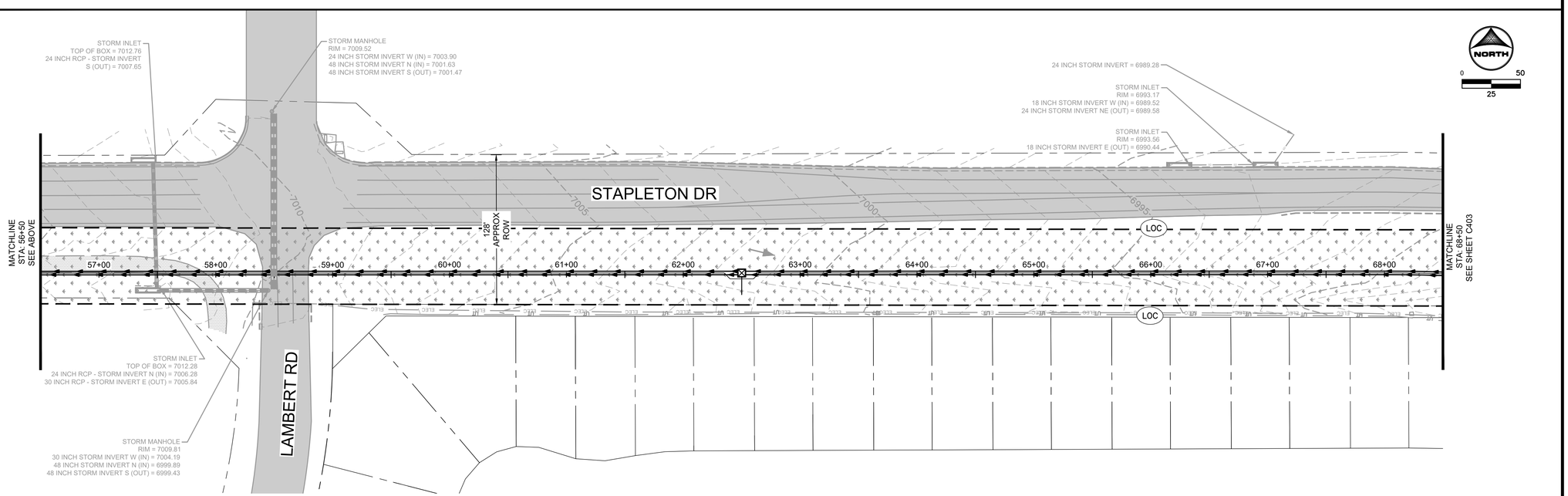

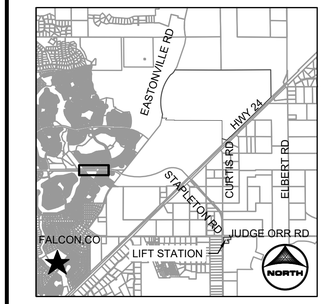

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CONSTRUCTION DOCUMENTS

EROSION CONTROL FINAL PLAN

SHEET
C411

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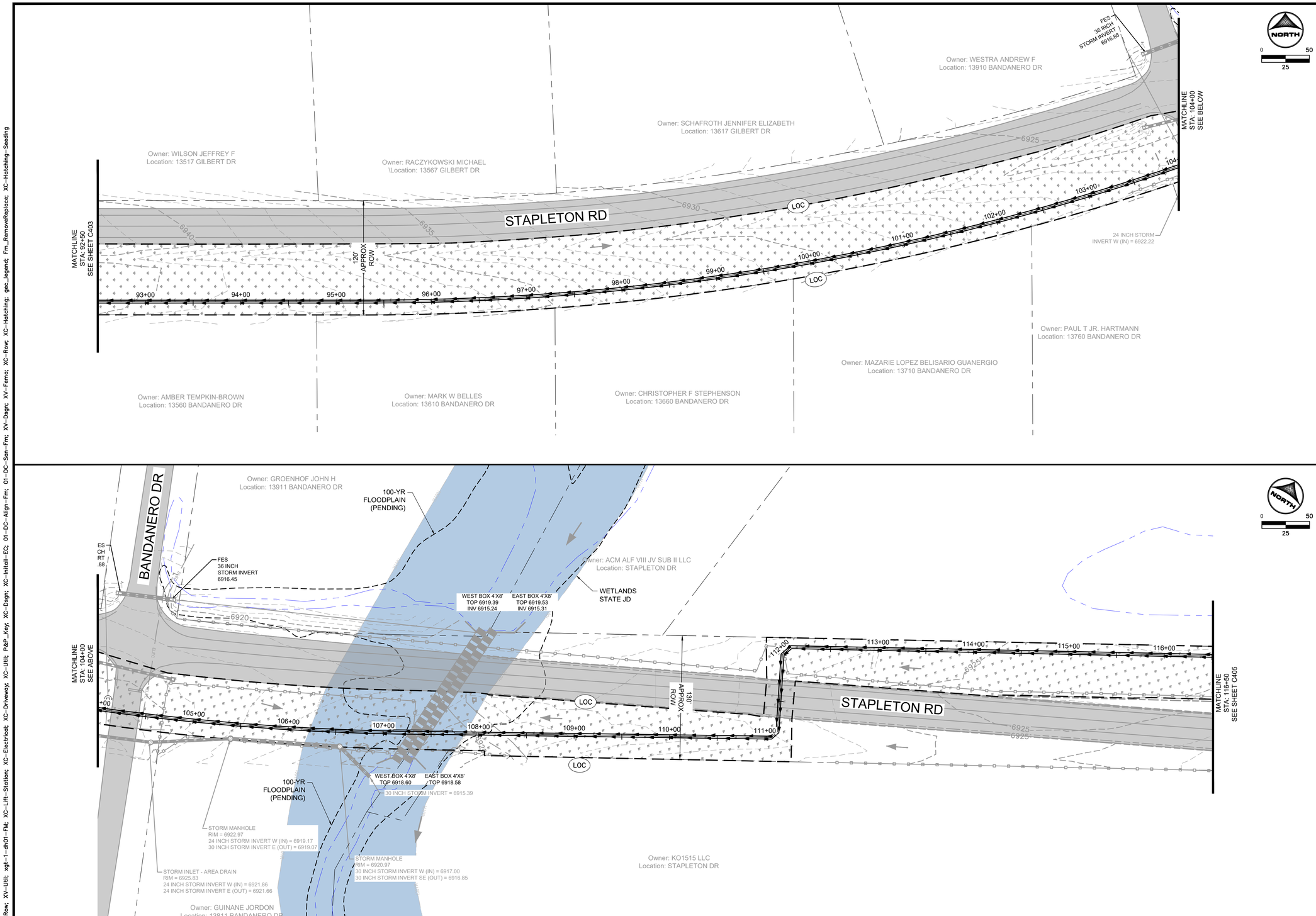

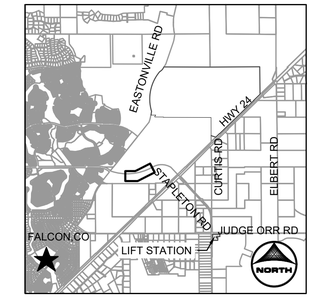

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CIP	CULVERT INLET PROTECTION
SF	SILT FENCE
EL	EROSION CONTROL LOG
SSA	STABILIZED STAGING AREA
SP	STOCKPILE PROTECTION
VTC	MUD MATS/VEHICLE TRACKING CONTROL
LOC	LIMITS OF CONSTRUCTION/DISTURBANCE
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PT	PORTABLE TOILET
CD	STRAW BALE CHECK DAM
RCD	ROCK CHECK DAM
ECB	EROSION CONTROL BLANKET
NS	NEW SURFACING
	EX FLOW DIRECTION
	EX FLOODPLAIN

CDPHE DESIGN REVIEW DOCUMENT SUBMITTAL NOT FOR CONSTRUCTION

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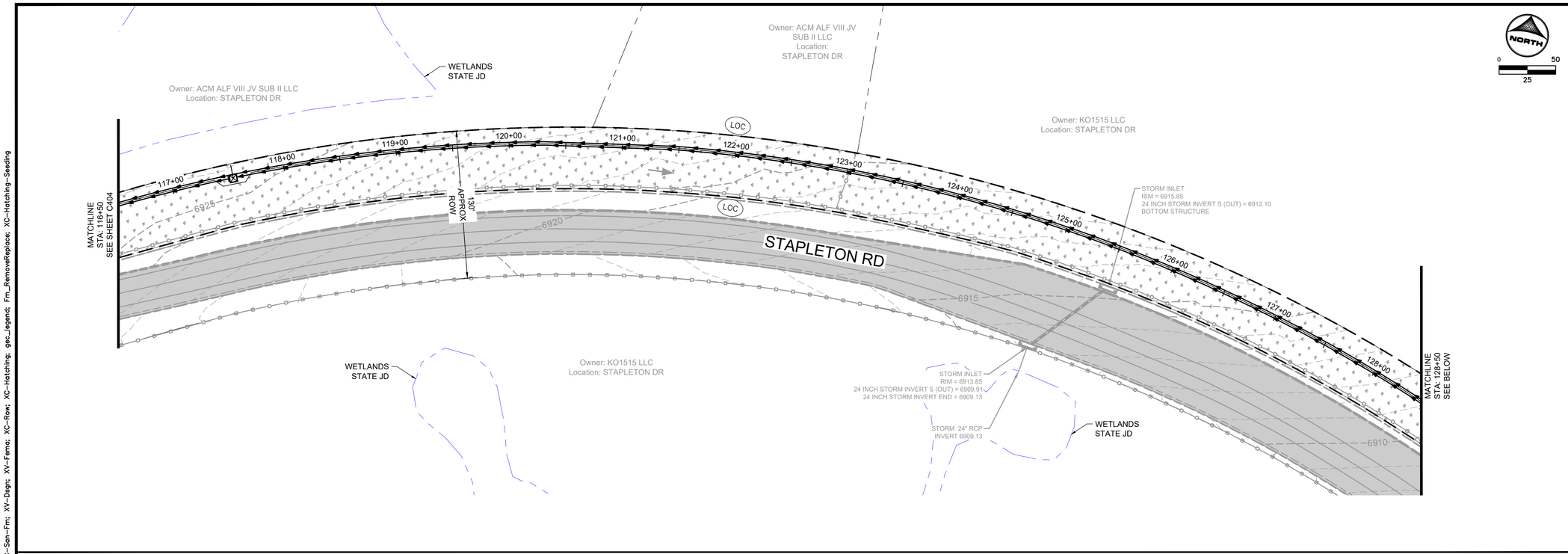

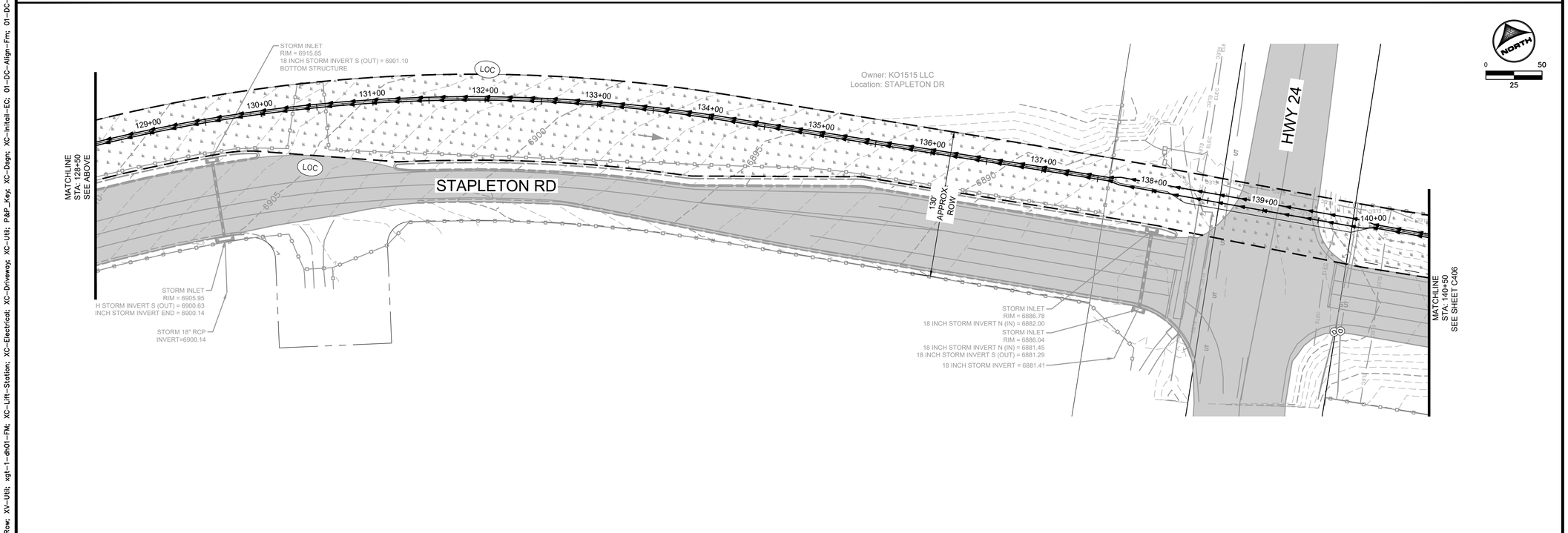

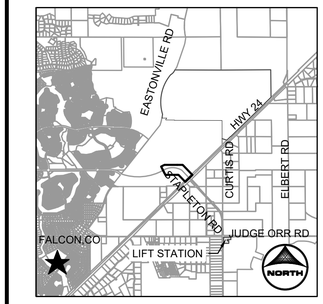

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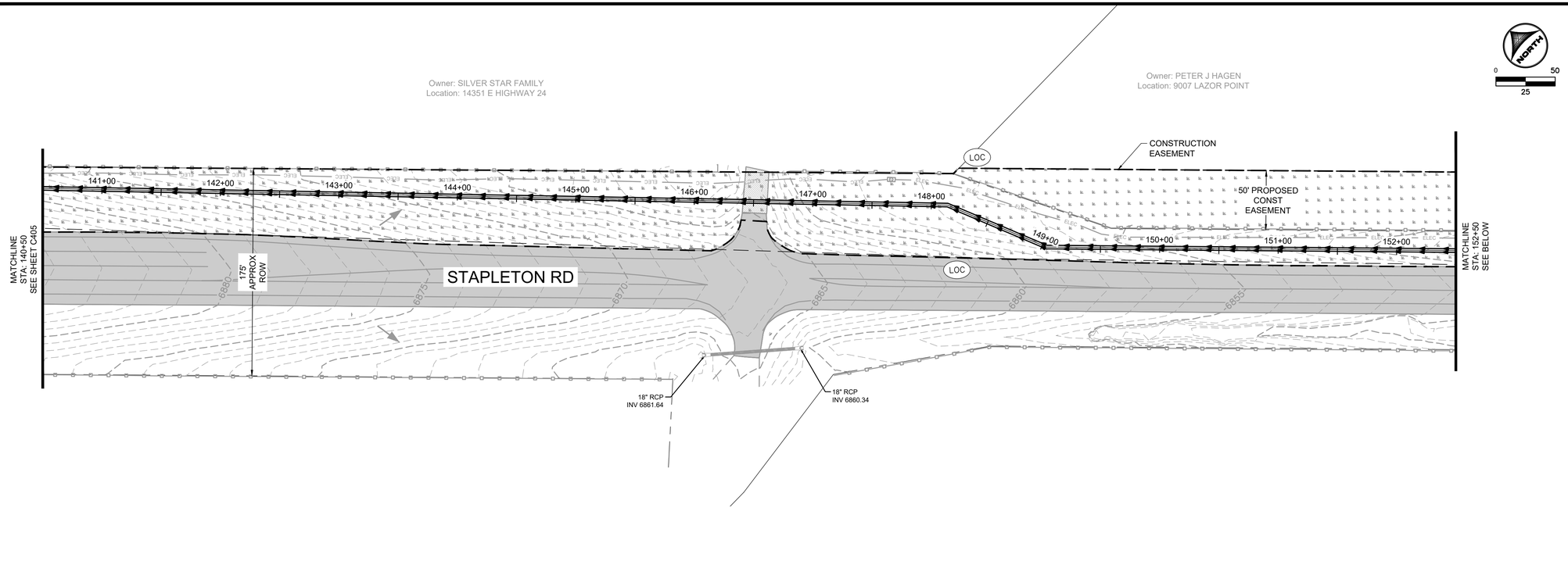

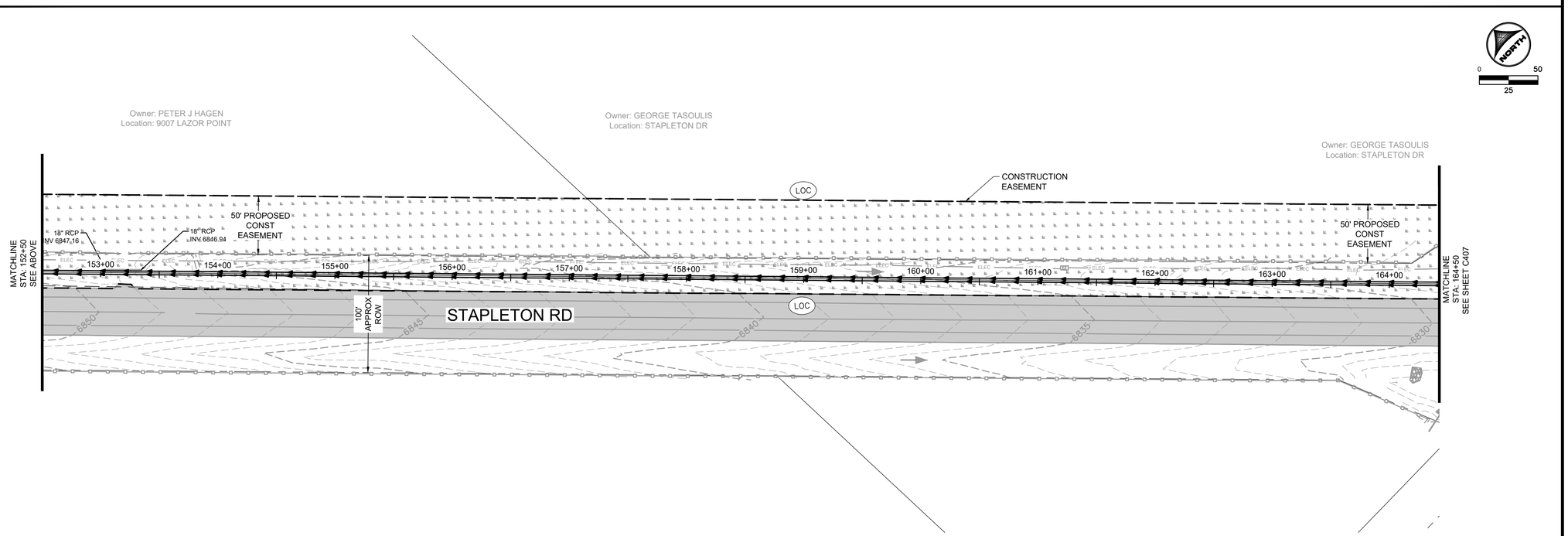

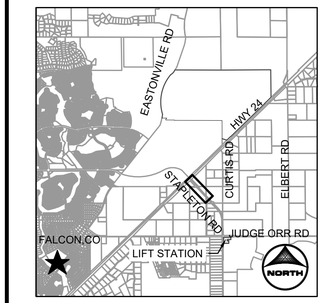

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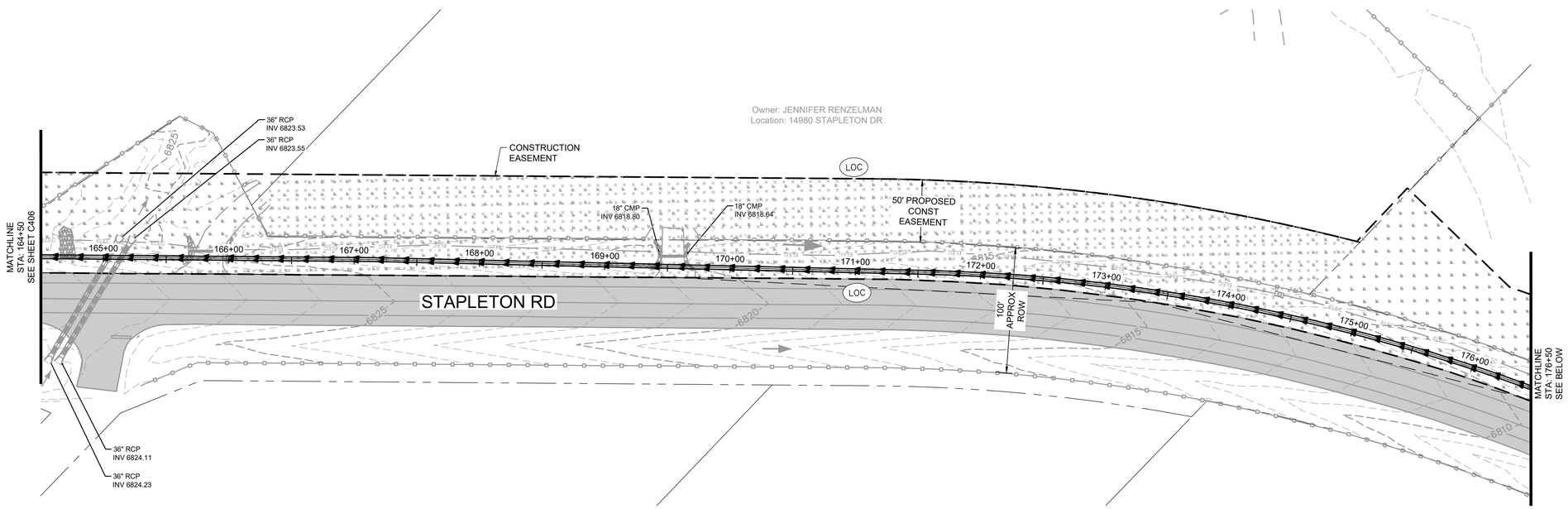

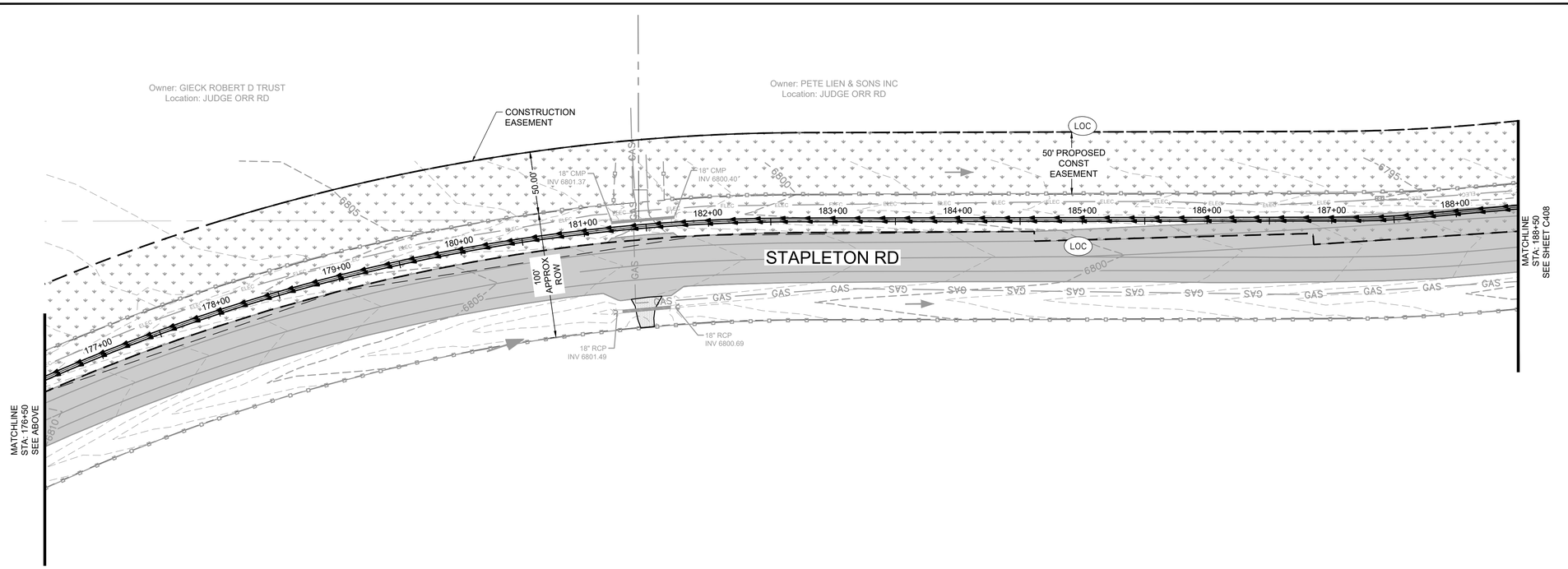

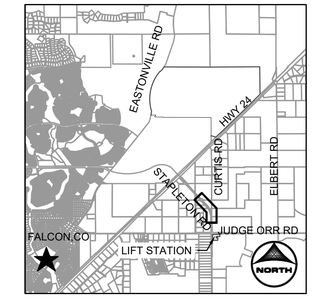

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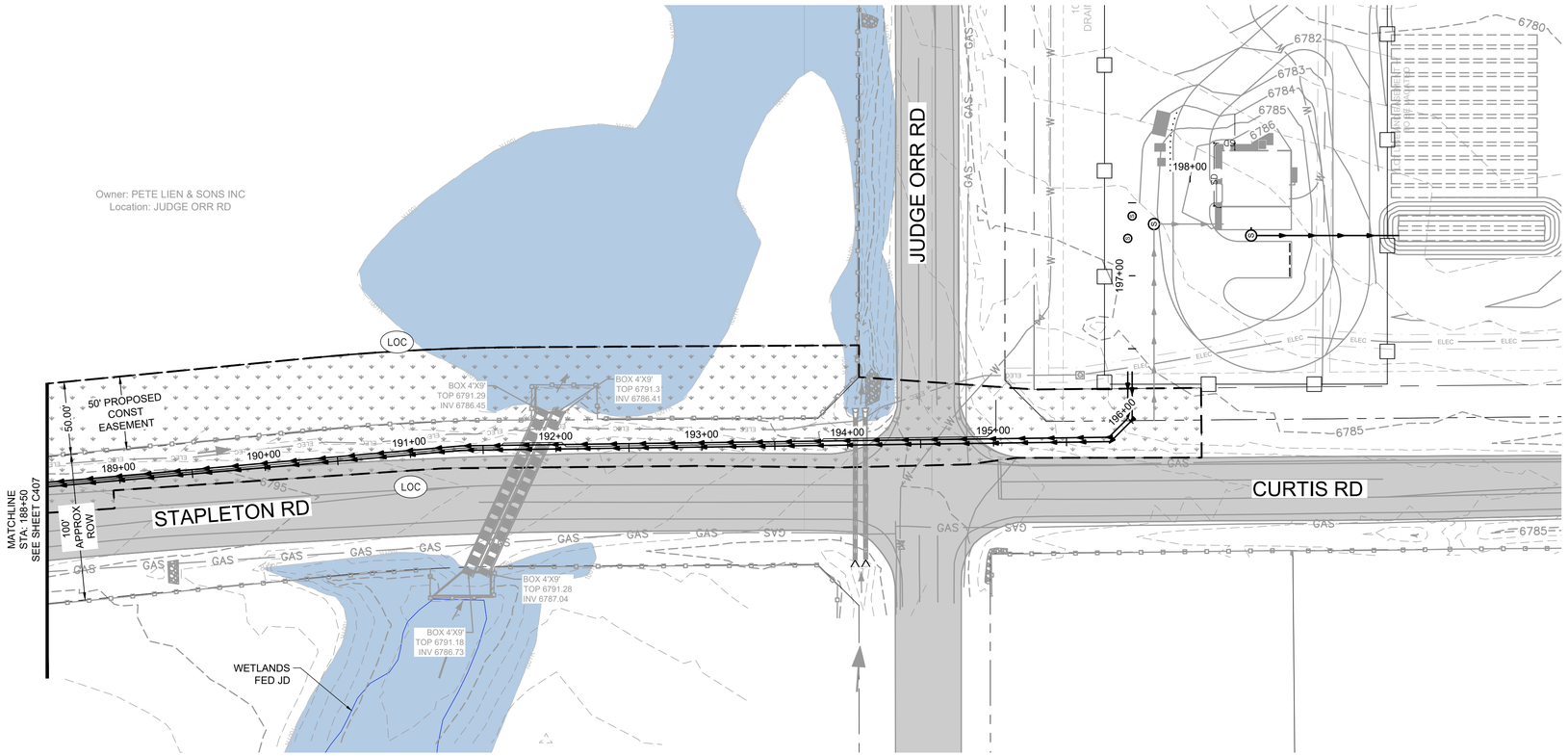

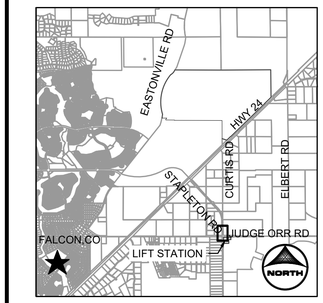

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Single Lot Access Vehicle Tracking Control Mats

Single Lot Access VTC (Mud Mats)

Description and Purpose
A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications
Use at construction sites:
- Where dirt or mud can be tracked onto public roads.
- Where a single family lot needs a temporary access point.

Limitations
- Entrances and exits require periodic cleaning and maintenance.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way
- Entrances and exits should be constructed on level ground only or sloping away from paved surfaces.

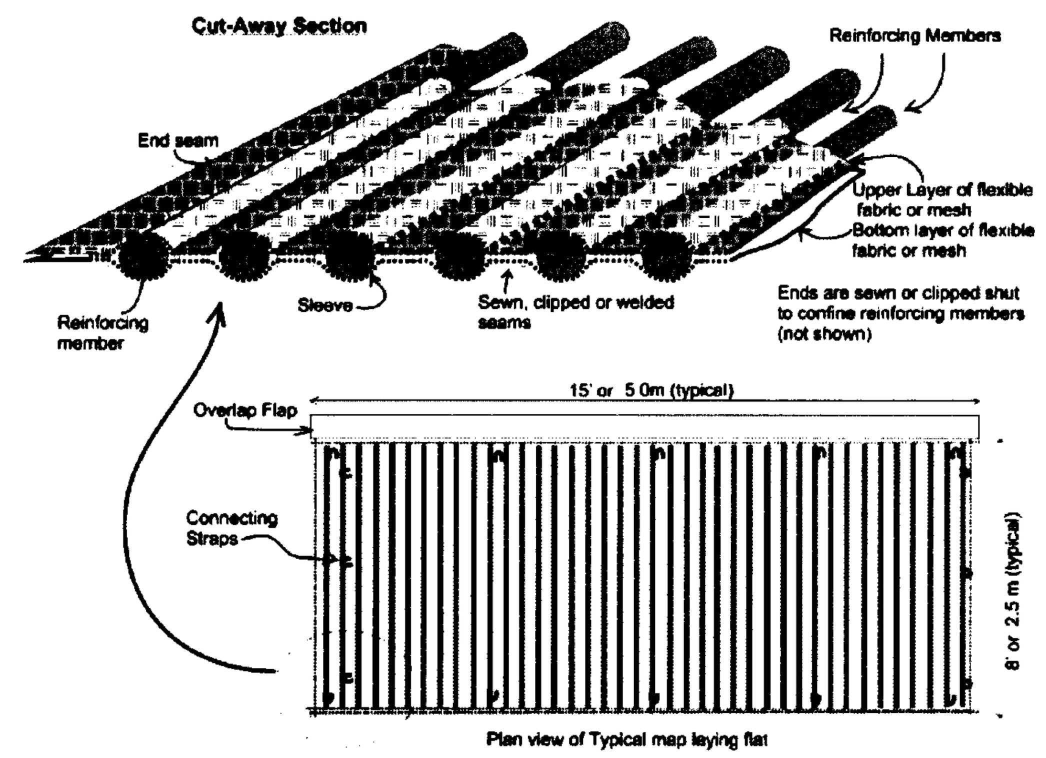
Implementation
- Construct on level ground or sloping down and away from paved surfaces where possible.
- For individual lots VTC perimeter may be reduced to minimum 8' x 15' due to space limitation. This is for access to single family lots only.)
- Limit the points of entrance/exit to the construction site.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Require that all employees, subcontractors, and suppliers to utilize the stabilized construction access when lot access is necessary.
- Educate all employees, subcontractors, and suppliers on keeping vehicles off-site whenever possible.
- Limit access to only access that is absolutely necessary.

Inspection and Maintenance
- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect in accordance with the specified inspection schedule in the site SWMP.
- Visually inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Check for damage and repair as needed.
- Remove accumulated sediment as needed.
- Reset and restake as needed.
- Remove any sediment deposited on paved roadways immediately.

Lot Access-VTC (mud mats)

AGES Mud Mat Specifications

Each mat is made up of a double layer of high strength woven fabric that is stitched in such a way to encapsulate the reinforcing members that run perpendicular to the direction of traffic. These reinforcing ribs are secured individually within each pocket. There are approx. 24-26 pockets that each holds 1 bamboo post of approx. 2" diameter. This combination of reinforcing member and confining fabric result in a portable mat that can be rolled up for transport and ease of deployment. AGES Mud Mats can be used in construction site access, agriculture, golf & parks, other soft or sensitive ground condition areas where vehicle access is required.

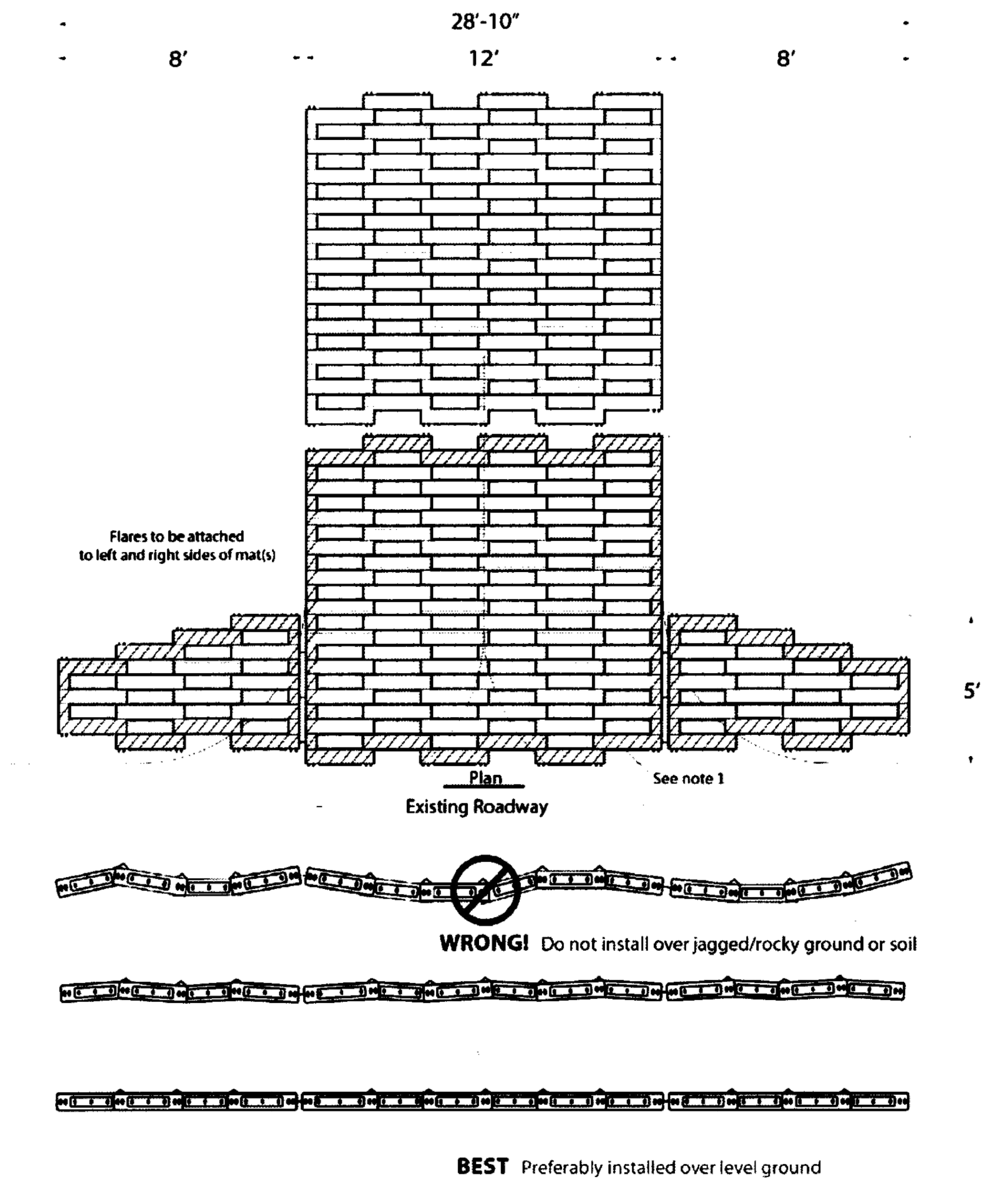


PROPERTY	TEST PROCEDURE	VALUE
Grab Tensile Strength	ASTM D4632	902.6 lbs
Apparent Breaking Elongation	ASTM D4632	25% / 18%
Trapezoid Tearing Strength	ASTM D4533	607 lbs.
Puncture Resistance	ASTM D4833	374.3 lbs
Mullen Burst	ASTM D3786	466.86 psi
Apparent Opening Size	ASTM D4751	70 US Sieve / 0.212mm
Constant Head Permittivity	ASTM D4491	20.16 gpm/ft²
Wide Width Tensile	ASTM D4595	685.7 lbs /in
Material	Woven Geotextile	100% Polypropylene

APPROXIMATE DIMENSIONS PER MAT	
Size Deployed (approx.)	15' x 8'
Shipping Size (rolled)	1.5' dia x 8.5' long
Weight (approx.)	90 lbs

"*5 carabineer clips for each mat (Side connection and end connection straps)"

Rubber Vehicle Tracking Control Pads



NOTES
1. NO PICK (ROWS)
2. INSTALL MAT RAISED TAB SIDE UP
3. EXPANDABLE AS NECESSARY

trackingpads.com
8311 Pontiac St.
Commerce City, CO 80022

Tracking Pad Details
Date: 10/28/2016 Sheet: 1 of 1

Synthetic Sediment Control Log with Tailpiece

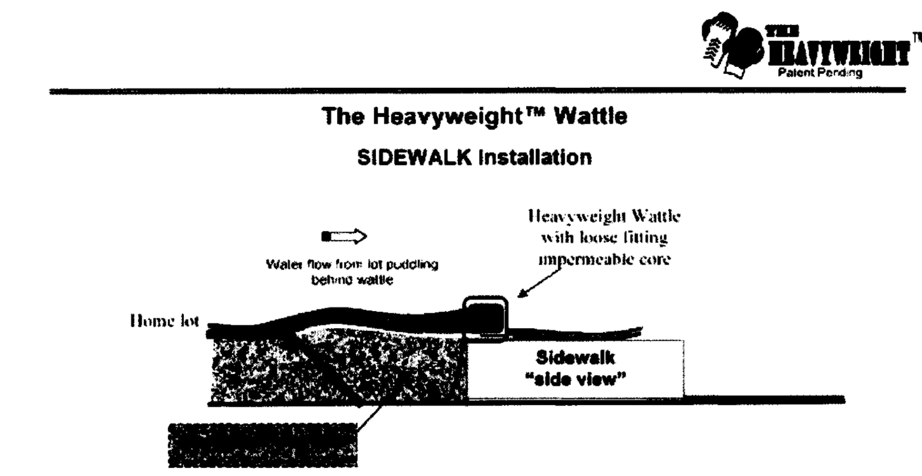
The Heavyweight Wattle

Description and Purpose
A synthetic sediment control log. Outer cover of silt filtration fabric surrounding an inner core of full rebound foam coverd by a 6 mil plastic sleeve. Designed to be used where hard surfaces contact ditrubed areas for pounding and on-site soil retention.

Suitable Applications — The Heavyweight Wattle may be suitable:
- Where hard surfaces contact soil.

Limitations
- The Heavyweight Wattle is not effective when the flap is not properly pinned and backfilled.
- The Heavyweight Wattle has a limited sediment capture zone and should only be used for lower volume sheet flows.
- The Heavyweight Wattle is not a substitute for adequate tracking pads and construction egress.

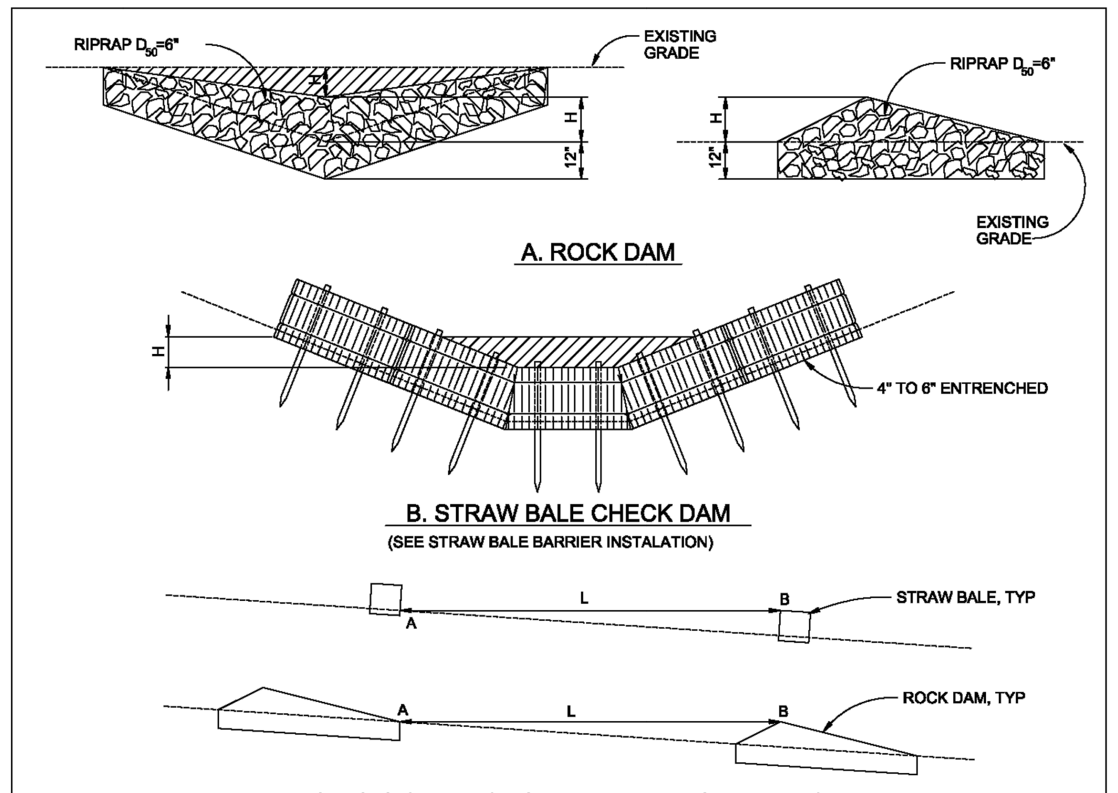
Installation



While crews remove concrete forms, install wattle immediately afterwards.

Wattle to be installed upon removal of concrete forms:
1. Lay the Heavyweight wattle directly on top of sidewalk, dropping tail of wattle behind sidewalk area.
2. Connect wattle together to form a continuous barrier.
3. Pin tail section into soil with fasteners behind sidewalk approximately every three feet.
4. Overlap the connection points and use two fasteners in this area.
5. Back-fill area behind sidewalk.
6. Site in compliance.

Fastener Recommendation: *Use 60d nails or The Heavyweight wattle pins*



CHECK DAM
NTS

CHECK DAM NOTES

INSTALLATION REQUIREMENTS

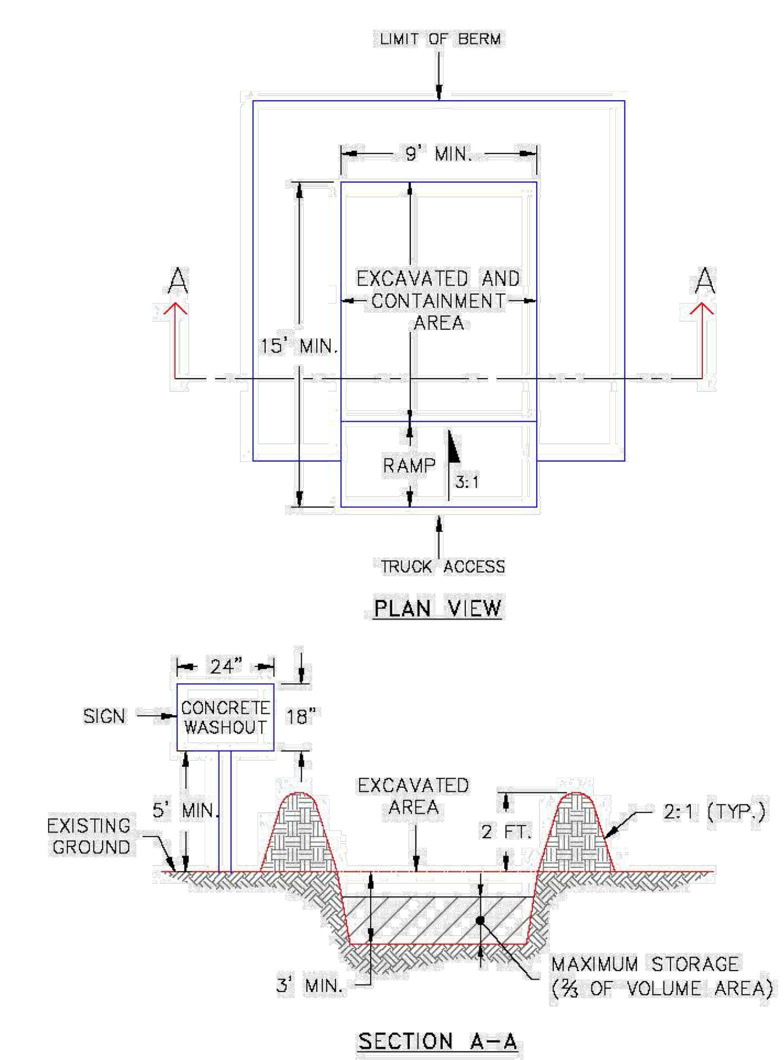
1. STRAW BALES USED AS CHECK DAMS ARE TO MEET THE REQUIREMENTS STATED IN FIGURE SBB-2.
2. THE "H" DIMENSION SHALL BE SELECTED TO PROVIDE WEIR FLOW CONVEYANCE FOR 2-YEAR FLOW OR GREATER.

MAINTENANCE REQUIREMENTS

1. REGULAR INSPECTIONS ARE TO BE MADE OF ALL CHECK DAMS, ESPECIALLY AFTER STORM EVENTS.
2. REPLACE STONE AS NECESSARY TO MAINTAIN THE CORRECT HEIGHT OF THE DAM.
3. ACCUMULATED SEDIMENT AND DEBRIS IS TO BE REMOVED FROM BEHIND THE DAMS AFTER EACH STORM OR WHEN 1/2 OF THE ORIGINAL HEIGHT OF THE DAM IS REACHED.
3. CHECK DAMS ARE TO REMAIN IN PLACE AND OPERATIONAL UNTIL THE DRAINAGE AREA AND CHANNEL ARE PERMANENTLY STABILIZED.
4. WHEN CHECK DAMS ARE REMOVED THE CHANNEL LINING OR VEGETATION IS TO BE RESTORED.

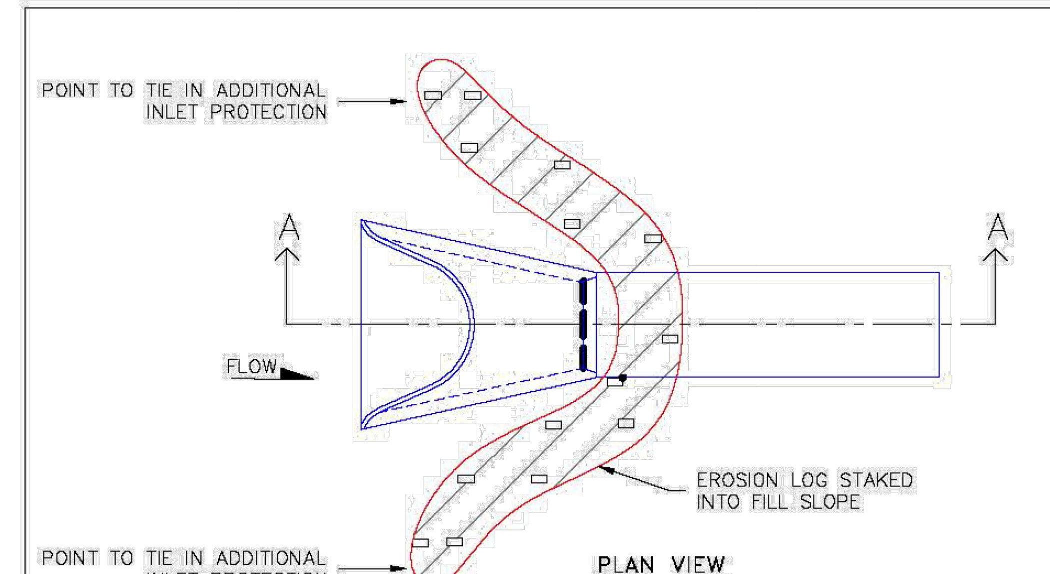
City of Colorado Springs
Stormwater Quality

Figure CD-1
Check Dam
Construction Detail and Maintenance Requirements

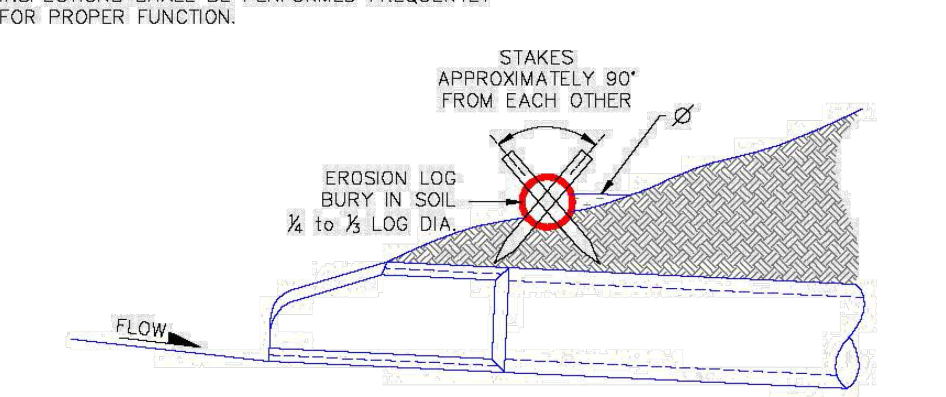


NOTES:
1. SIGN MATERIAL, EXCAVATION, AND RESTORATION ARE INCLUDED IN THE COST OF THE CONCRETE WASHOUT STRUCTURE.
2. EROSION BALES MAY BE USED AS AN ALTERNATIVE FOR THE BERM.

1/1/08
DATE APPROVED:
John A. McCarty
DEPARTMENT OF TRANSPORTATION
Concrete Washout Structure
Standard Drawing
REVISION DATE: 7/17/07
FILE NAME: SD_3-84
EL PASO COUNTY DEPARTMENT OF TRANSPORTATION



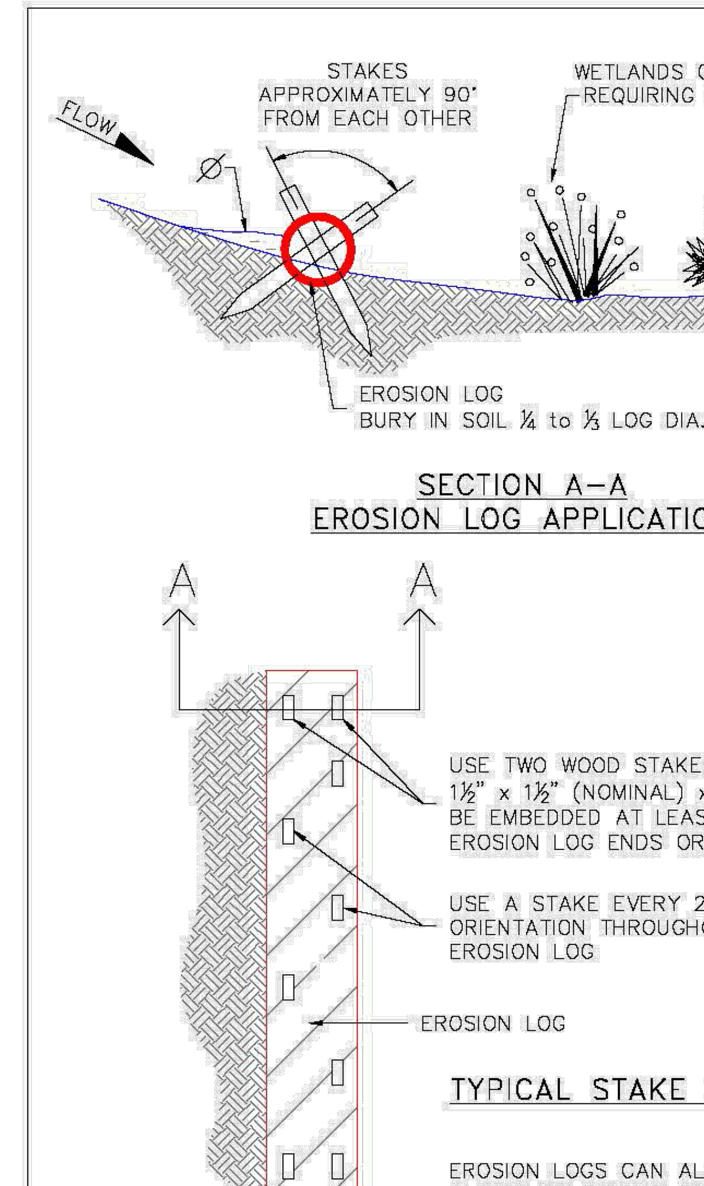
NOTE:
Ø REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE HALF OF EXPOSED LOG HEIGHT. INSPECTIONS SHALL BE PERFORMED FREQUENTLY FOR PROPER FUNCTION.



EROSION PROTECTION ABOVE CULVERT OUTLETS IS SIMILAR

EROSION LOGS SHOULD BE KEYED IN TO PREVENT UNDER–CUTTING

1/1/08
DATE APPROVED:
John A. McCarty
DEPARTMENT OF TRANSPORTATION
Culvert Inlet and Outlet Protection
Erosion Logs Above Inlets and Outlets
For Slopes 3:1 or Steeper
Standard Drawing
REVISION DATE: 7/17/07
FILE NAME: SD_3-86
EL PASO COUNTY DEPARTMENT OF TRANSPORTATION



NOTES:
Ø REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES ONE HALF OF EXPOSED LOG HEIGHT. INSPECTIONS SHALL BE PERFORMED FREQUENTLY FOR PROPER FUNCTION.

EROSION LOGS SHOULD BE KEYED IN TO PREVENT UNDER–CUTTING

WHEN MORE THAN ONE EROSION LOG IS NEEDED, ENDS MUST BE TIGHTLY ABUTTED.

EROSION LOGS CAN ALSO BE USED ACROSS LONG SLOPES TO REDUCE EROSION AND SEDIMENT MOVEMENT

1/1/08
DATE APPROVED:
John A. McCarty
DEPARTMENT OF TRANSPORTATION
Erosion Log Barrier
Standard Drawing
REVISION DATE: 7/17/07
FILE NAME: SD_3-87
EL PASO COUNTY DEPARTMENT OF TRANSPORTATION

DRAWN BY:	JMM	JOB DATE:	9/6/2024
APPROVED:	GP	JOB NUMBER:	201662.07
CAD DATE:	1/7/2025		
CAD FILE:	\\hrgreen.com\HRG\Data\2020\201662.07\CAD\Dwgs\C\Force_Main\Fr_GESC_Details		

BAR IS ONE INCH ON OFFICIAL DRAWINGS.
0 — 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
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1975 RESEARCH PARKWAY | SUITE 230
COLORADO SPRINGS CO 80920
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FAX: 713.965.0044

GRANDVIEW RESERVE M.D. -
DUAL FORCE MAINS
D.R. HORTON
EL PASO COUNTY, CO

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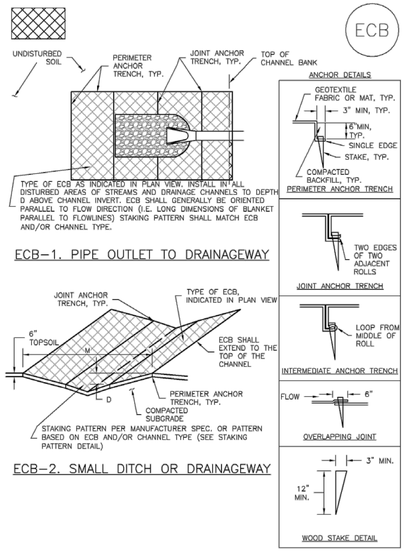
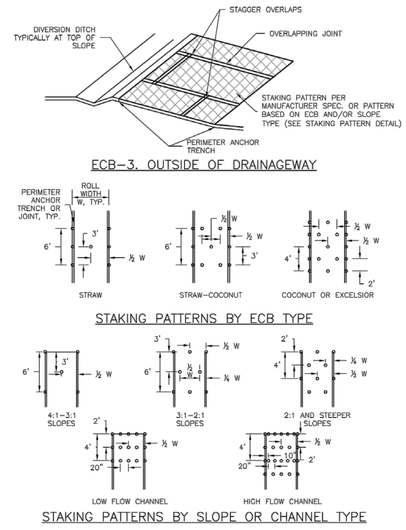
CONSTRUCTION DOCUMENTS
EROSION CONTROL DETAILS

SHEET
C417





EROSION CONTROL BLANKET INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF ECB.
   –TYPE OF ECB (STRAW, STRAW–COCONUT, COCONUT, OR EXCELSIOR).
   –AREA, A, IN SQUARE YARDS OF EACH TYPE OF ECB.

2. 100% NATURAL AND BIODEGRADABLE MATERIALS ARE PREFERRED FOR RECPs, ALTHOUGH SOME JURISDICTIONS MAY ALLOW OTHER MATERIALS IN SOME APPLICATIONS.

3. IN AREAS WHERE ECBs ARE SHOWN ON THE PLANS, THE PERMITTEE SHALL PLACE TOPSOIL AND PERFORM FINAL GRADING, SURFACE PREPARATION, AND SEEDING AND MULCHING. SUBGRADE SHALL BE SMOOTH AND MOIST PRIOR TO ECB INSTALLATION AND THE ECB SHALL BE IN FULL CONTACT WITH SUBGRADE. NO GAPS OR VOIDS SHALL EXIST UNDER THE BLANKET.

4. PERIMETER ANCHOR TRENCH SHALL BE USED ALONG THE OUTSIDE PERIMETER OF ALL BLANKET AREAS.

5. JOINT ANCHOR TRENCH SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER (LONGITUDINALLY AND TRANSVERSELY) FOR ALL ECBs EXCEPT STRAW WHICH MAY USE AN OVERLAPPING JOINT.

6. INTERMEDIATE ANCHOR TRENCH SHALL BE USED AT SPACING OF ONE–HALF ROLL LENGTH FOR COCONUT AND EXCELSIOR ECBs.

7. OVERLAPPING JOINT DETAIL SHALL BE USED TO JOIN ROLLS OF ECBs TOGETHER FOR ECBs ON SLOPES.

8. MATERIAL SPECIFICATIONS OF ECBs SHALL CONFORM TO TABLE ECB–1.

9. ANY AREAS OF SEEDING AND MULCHING DISTURBED IN THE PROCESS OF INSTALLING ECBS SHALL BE RESEEDED AND MULCHED.

10. DETAILS ON DESIGN PLANS FOR MAJOR DRAINAGEWAY STABILIZATION WILL GOVERN IF DIFFERENT FROM THOSE SHOWN HERE.

TABLE ECB–1. ECB MATERIAL SPECIFICATIONS

TYPE	COCONUT CONTENT	STRAW CONTENT	EXCELSIOR CONTENT	RECOMMENDED NETTING**
STRAW*	–	100%	–	DOUBLE/ NATURAL
STRAW–COCONUT	30% MIN	70% MAX	–	DOUBLE/ NATURAL
COCONUT	100%	–	–	DOUBLE/ NATURAL
EXCELSIOR	–	–	100%	DOUBLE/ NATURAL

*STRAW ECBs MAY ONLY BE USED OUTSIDE OF STREAMS AND DRAINAGE CHANNEL.
**ALTERNATE NETTING MAY BE ACCEPTABLE IN SOME JURISDICTIONS

EROSION CONTROL BLANKET MAINTENANCE NOTES

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

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

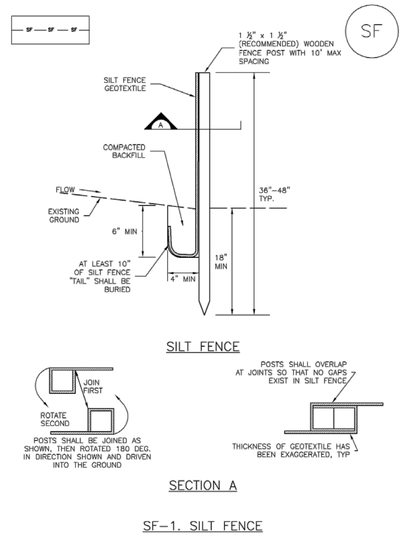
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.

4. ECBs SHALL BE LEFT IN PLACE TO EVENTUALLY BIODEGRADE, UNLESS REQUESTED TO BE REMOVED BY THE LOCAL JURISDICTION.

5. ANY ECB PULLED OUT, TORN, OR OTHERWISE DAMAGED SHALL BE REPAIRED OR REINSTALLED. ANY SUBGRADE AREAS BELOW THE GEOTEXTILE THAT HAVE ERODED TO CREATED A VOID UNDER THE BLANKET, OR THAT REMAIN DEVOID OF GRASS SHALL BE REPAIRED, RESEEDED AND MULCHED AND THE ECB REINSTALLED.

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

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



SILT FENCE INSTALLATION NOTES

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

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

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

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

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

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

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

SILT FENCE MAINTENANCE NOTES

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

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

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

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

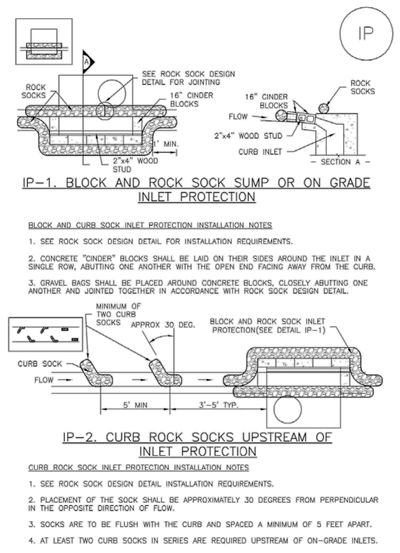
5. REPAIR OR REPLACE SILT FENCE WHEN THERE ARE SIGNS OF WEAR, SUCH AS SAGGING, TEARING, OR COLLAPSE.

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

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

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

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



GENERAL INLET PROTECTION INSTALLATION NOTES

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

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

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

INLET PROTECTION MAINTENANCE NOTES

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

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

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

4. SEDIMENT ACCUMULATED UPSTREAM OF INLET PROTECTION SHALL BE REMOVED AS NECESSARY TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN STORAGE VOLUME REACHES 50% OF CAPACITY, A DEPTH OF 6" WHEN SILT FENCE IS USED, OR ¼ OF THE HEIGHT FOR STRAW BALES.

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

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

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

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

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

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

DRAWN BY: JMM	JOB DATE: 9/6/2024	BAR IS ONE INCH ON OFFICIAL DRAWINGS.	
APPROVED: GP	JOB NUMBER: 201662.07	0 1"	
CAD DATE: 1/7/2025		IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.	
CAD FILE: \\hrgreen.com\HRG\Data\2020\201662.07\CAD\Dwgs\C\Force_Main\Fr_GESC_Details			

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
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COLORADO SPRINGS CO 80920
PHONE: 719.300.4140
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GRANDVIEW RESERVE M.D. -
DUAL FORCE MAINS
D.R. HORTON
EL PASO COUNTY, CO

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CONSTRUCTION DOCUMENTS

EROSION CONTROL DETAILS

SHEET
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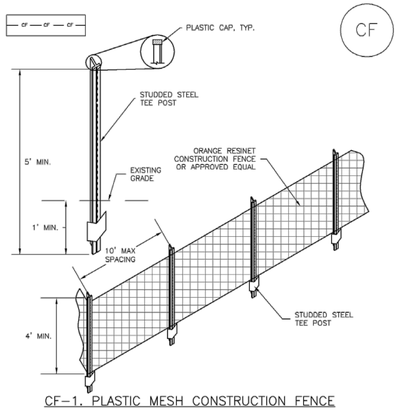

CF–1. PLASTIC MESH CONSTRUCTION FENCE

CONSTRUCTION FENCE INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF CONSTRUCTION FENCE.

2. CONSTRUCTION FENCE SHOWN SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

3. CONSTRUCTION FENCE SHALL BE COMPOSED OF ORANGE, CONTRACTOR–GRADE MATERIAL THAT IS AT LEAST 4' HIGH. METAL POSTS SHOULD HAVE A PLASTIC CAP FOR SAFETY.

4. STUDDED STEEL TEE POSTS SHALL BE UTILIZED TO SUPPORT THE CONSTRUCTION FENCE. MAXIMUM SPACING FOR STEEL TEE POSTS SHALL BE 10'.

5. CONSTRUCTION FENCE SHALL BE SECURELY FASTENED TO THE TOP, MIDDLE, AND BOTTOM OF EACH POST.

CONSTRUCTION FENCE MAINTENANCE NOTES

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

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

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

4. CONSTRUCTION FENCE SHALL BE REPAIRED OR REPLACED WHEN THERE ARE SIGNS OF DAMAGE SUCH AS RIPS OR SAGS. CONSTRUCTION FENCE IS TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

5. WHEN CONSTRUCTION FENCES ARE REMOVED, ALL DISTURBED AREAS ASSOCIATED WITH THE INSTALLATION, MAINTENANCE, AND/OR REMOVAL OF THE FENCE SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

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

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

Appendix A. Seed Mix Tables

Upland Native Seed Mixes (drill seed rates)

Table A-1. Upland area seed mix – loamy to clay soils

Common Name	Scientific Name	Growth Season	Growth Form	% Mix	Lb/ac (PLS[1])
Grasses					
Blue grama	*Bouteloua gracilis*	Warm	Sod	25	1.8
Sand dropseed	*Sporobolus cryptandrus*	Warm	Bunch	20	0.2
Sideoats grama	*Bouteloua curtipendula*	Warm	Sod	20	6.3
Western wheatgrass	*Pascopyrum smithii*	Cool	Sod	15	8.2
Buffalograss	*Bouteloua dactyloides*	Warm	Sod	10	10.7
Inland saltgrass	*Distichlis spicata*	Warm	Sod	5	0.6
Herbaceous/Wildflowers					
Pasture sage	*Artemisia frigida*			1	0.01
Blanket flower	*Gaillardia aristata*			1	0.5
Prairie coneflower	*Ratibida columnifera*			1	0.1
Purple prairieclover	*Dalea (Petalostemum) purpurea*			1	0.3
Blue flax	*Linum lewisii*			1	0.4
TOTAL PLS POUNDS/ACRE				**100**	**29.11**

[1]PLS = Pure Live Seed – If broadcast seeding, double the rate

Table A-2. Upland area seed mix – sandy soil

Common Name	Scientific Name	Growth Season	Growth Form	% Mix	Lb/ac (PLS[1])
Grasses					
Switchgrass	*Panicum virgatum*	Warm	Sod/Bunch	15	2.3
Prairie sandreed	*Calamovilfa longifolia*	Warm	Sod	10	2.2
Sideoats grama	*Bouteloua curtipendula*	Warm	Sod	10	3.1
Blue grama	*Bouteloua gracilis*	Warm	Sod	10	0.7
Indian ricegrass	*Oryzopsis hymenoides*	Cool	Bunch	10	4.3
Western wheatgrass	*Pascopyrum smithii*	Cool	Sod	10	5.5
Little bluestem	*Schizachyrium scoparium*	Warm	Bunch	10	2.3
Sand dropseed	*Sporobolus cryptandrus*	Warm	Bunch	10	0.1
Green needlegrass	*Stipa viridula*	Cool	Bunch	10	3.3
Herbaceous/Wildflowers					
Pasture sage	*Artemisia frigida*			1	0.1
Blanket flower	*Gaillardia aristata*			2	0.9
Tansy aster	*Macranthera tanacetifolia*			2	0.2
TOTAL PLS POUNDS/ACRE				**100**	**25**

[1]PLS = Pure Live Seed – If broadcast seeding, double the rate

Table A-3. Upland/transitional area seed mix – alkali soil

Common Name	Scientific Name	Growth Season	Growth Form	% Mix	Lb/ac (PLS[1])
Blue grama	*Bouteloua gracilis*	Warm	Sod	20	1.5
Sideoats grama	*Bouteloua curtipendula*	Warm	Sod	15	4.7
Slender wheatgrass	*Elymus trachycaulus*	Cool	Bunch	15	5.7
Alkali sacaton	*Sporobolus airoides*	Warm	Sod/Bunch	15	0.5
Inland saltgrass	*Distichlis spicata*	Warm	Sod	15	1.7
Western wheatgrass	*Pascopyrum smithii*	Cool	Sod	10	5.5
Sand dropseed	*Sporobolus cryptandrus*	Warm	Bunch	10	0.1
TOTAL PLS POUNDS/ACRE				**100**	**19.7**

[1]PLS = Pure Live Seed – If broadcast seeding, double the rate

Wetland Native Seed Mixes

Table A-8. Wetland seed mix – loamy to sandy soils
(Recommended for detention ponds and less eroding wetland areas.)

Common Name	Scientific Name	Growth Season	Growth Form	% Mix	Wetland Indicator*	Lb/ac (PLS[1])
Grasses and Herbaceous Species						
American Sloughgrass	*Beckmannia syzigachne*	Cool	Sod	15	OBL	0.8
Prairie cordgrass	*Spartina pectinata*	Warm	Sod	15	FACW	4.6
Switchgrass	*Panicum virgatum*	Warm	Sod/Bunch	15	FAC	2.3
Western wheatgrass	*Pascopyrum smithii*	Cool	Sod	10	FACU	5.5
Fowl mannagrass	*Glyceria striata*	Cool	Sod	10	OBL	3.3
Hardstem bulrush	*Scirpus acutus*			10	OBL	1.6
Baltic rush	*Juncus balticus*			10	OBL	0.1
Creeping spikerush	*Eleocharis palustris*			10	OBL	1.0
Wildflowers						
Blue vervain	*Verbena hastata*			2.5	FACW	0.1
Nuttall's sunflower	*Helianthus nuttallii*			2.5	FAC	0.5
TOTAL PLS POUNDS/ACRE				**100**		**19.8**

[1]PLS = Pure Live Seed – If broadcast seeding, double the rate

Table A-9. Wetland seed mix – clay and alkali soils
(Recommended for detention ponds and wetland areas.)

Common Name	Scientific Name	Growth Season	Growth Form	% Mix	Wetland Indicator*	Lb/ac (PLS[1]
Grasses and Herbaceous Species						
Alkali sacaton	*Sporobolus airoides*	Warm	Bunch	10	FAC	0.4
Inland saltgrass	*Distichlis spicata*	Warm	Sod	10	FACW	1.2
Nuttall's alkaligrass	*Puccinellia nuttalliana*	Cool	Bunch	10	OBL	0.2
Prairie cordgrass	*Spartina pectinata*	Warm	Sod	10	FACW	3.0
Slender wheatgrass	*Elymus trachycaulus spp.*	Cool	Bunch	10	FACU	3.8
Western wheatgrass	*Pascopyrum smithii*	Cool	Sod	10	FACU	5.5
Fowl mannagrass	*Glyceria striata*	Cool	Sod	10	OBL	3.3
Hardstem bulrush	*Scirpus acutus*			10	OBL	1.6
Baltic rush	*Juncus balticus*			10	OBL	0.1
Creeping spikerush	*Eleocharis palustris*			10	OBL	1.0
TOTAL PLS POUNDS/ACRE						**20.1**

[1]PLS = Pure Live Seed – If broadcast seeding, double the rate
Note: Wildflowers species not recommended for clay or alkali soils.

Wetland Indicator Key for Tables A-8 and A-9:
FAC = Facultative – Equally occurs in both wetlands and uplands.
FACU = Facultative Upland – Occurs mostly in uplands, but can occur in wetlands about 1/3 of the time.
FACW = Facultative Wetlands – Occurs mostly in wetlands, but can occur in uplands about 1/3 of the time.
OBL = Obligate Wetlands – Almost always occurs in wetlands.
UPL = Uplands – Almost always occurs in uplands.

DRAWN BY: JMM JOB DATE: 9/6/2024
APPROVED: GP JOB NUMBER: 201662.07
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BAR IS ONE INCH ON OFFICIAL DRAWINGS.
0 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
HR GREEN - COLORADO SPRINGS
1975 RESEARCH PARKWAY | SUITE 230
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GRANDVIEW RESERVE M.D. -
DUAL FORCE MAINS
D.R. HORTON
EL PASO COUNTY, CO

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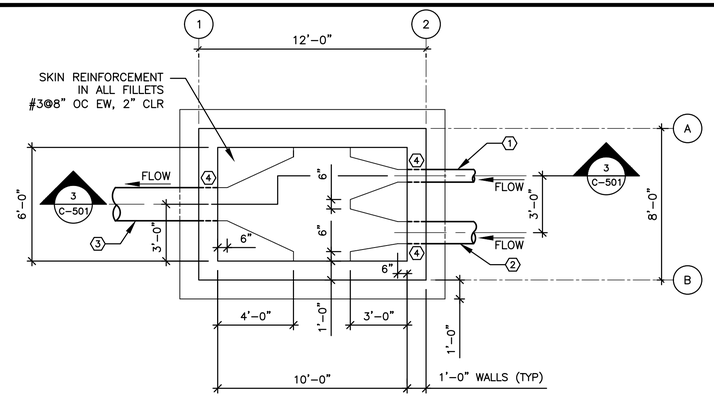
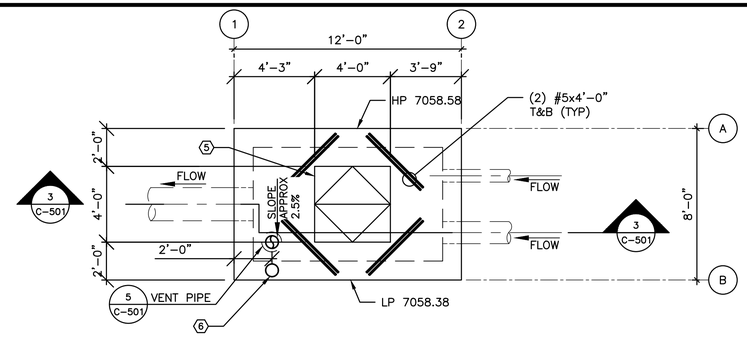
CONSTRUCTION DOCUMENTS
EROSION CONTROL DETAILS

SHEET
C419



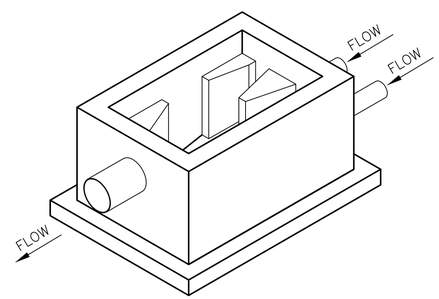
1 FORCE MAIN STILLING STRUCTURE FOUNDATION PLAN

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



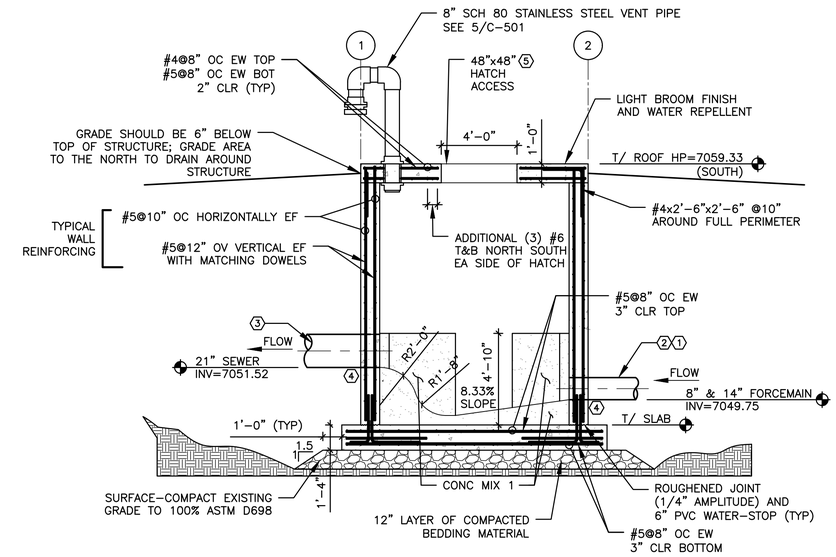
2 FORCE MAIN STILLING STRUCTURE ROOF PLAN

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



4 ISOMETRIC VIEW

NTS



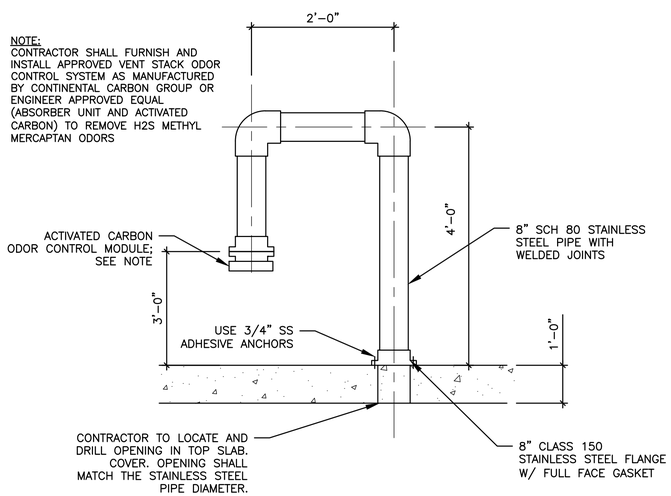
3 FORCE MAIN STILLING STRUCTURE SECTION

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

GENERAL NOTES:
1. STRUCTURE SHALL BE PRECAST FOR BEST WATERTIGHTNESS FLOW LINES/BENCHING AND FILLETS MAYBE CAST IN PLACE.
2. ALL INTERIOR SURFACES ARE TO BE LINED. SEE THIS SHEET FOR CORROSION PROTECTIVE LINING REQUIREMENTS. APPLY ALL AROUND ON ALL SURFACES FROM EFFLUENT PIPE INVERT ELEVATION TO TOP OF STRUCTURE INCLUDING UNDERSIDE OF ROOF, EXCEPT ON HATCH.
3. ALL FLOWING PIPES ARE TO BE PVC C900 DR14.
4. SEE G001 FOR ADDITIONAL GENERAL NOTES.
5. DESIGN LIVE LOAD FOR STILLING STRUCTURE ROOF: 600 PSF/HS20 WHEEL LOAD.
6. PRIOR TO BACKFILLING AND INSTALLING ROOF, PERFORM VISUAL-ONLY WATERTIGHTNESS TEST TO A MAXIMUM WATER LEVEL OF 7057.13. HOLD FOR THREE 24-HOUR DAYS AND REPAIR ANY LEAKS UNTIL EXTERIOR OF STRUCTURE REMAINS DRY.
7. SEE C101 FOR PLAN AND PROFILE.

KEY NOTES: ⬡
1. 8" ø INFLUENT PIPE
2. 14" ø INFLUENT PIPE
3. 21" ø EFFLUENT PIPE. SEE PIPE SLOPE ON C101.
4. LINKED MODULAR RUBBER WALL SEALS AND WATER STOPS ALL AROUND.
5. PROVIDE LOCKABLE FLUSH MOUNTED STAINLESS STEEL EMBEDDED FRAME WITHOUT DRAIN FOR HATCHES, CAPABLE OF SUPPORTING HS20 LOADING. ALL HARDWARE SHALL BE 316 STAINLESS STEEL. DIMENSIONS ARE INDICATED ON DRAWING. PROVIDE FALL PROTECTION GRATING IN HATCH OPENING. HALLIDAY MODEL NO. H2R4848 OR ENGINEER APPROVED EQUAL.
6. 5.5"ø HEAVY DUTY STEEL BOLLARD POST. PROVIDE 2 BOLLARDS. ULINE H-4970 OR ENGINEER APPROVED EQUAL. LOCATE ON ROOF SUCH THAT EPOXY ANCHORS ARE MIN 6" FROM EDGE OF CONCRETE.

NOTE:
CONTRACTOR SHALL FURNISH AND INSTALL APPROVED VENT STACK ODOR CONTROL SYSTEM AS MANUFACTURED BY CONTINENTAL CARBON GROUP OR ENGINEER APPROVED EQUAL (ABSORBER UNIT AND ACTIVATED CARBON) TO REMOVE H2S METHYL MERCAPTAN ODORS



5 STILLING STRUCTURE VENT PIPE

NTS

CORROSION PROTECTIVE LINING SPECIFICATIONS – EPOXY LINER

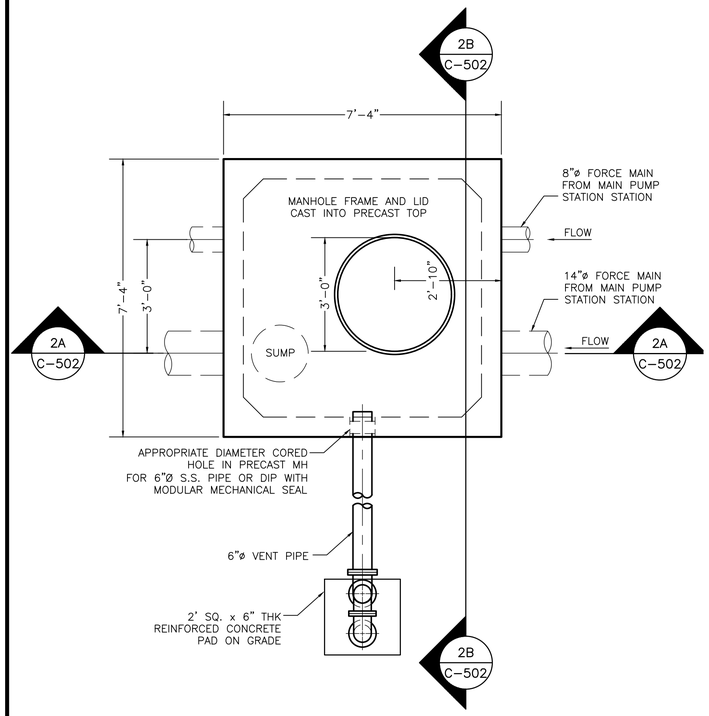
A. QUALITY ASSURANCE
- A.1. ALL COATINGS SHALL CONFORM TO OSHA REQUIREMENTS FOR ALLOWABLE EXPOSURE TO LEAD AND OTHER HAZARDOUS SUBSTANCES.
- A.2. MANUFACTURER SHALL BE A COMPANY THAT SPECIALIZES IN PRODUCING HIGH QUALITY INDUSTRIAL COATING MATERIALS.
- A.3. APPLICATOR: COMPANY THAT HAS SUCCESSFULLY COMPLETED COATING SYSTEMS APPLICATIONS SIMILAR IN MATERIAL AND EXTENT TO THOSE INDICATED. APPLICATOR SHALL BE ABLE TO SUPPLY SUITABLE EQUIPMENT TO PREPARE THE SURFACES AND APPLY THE PROTECTIVE COATING SYSTEM SPECIFIED WITHIN THIS ARTICLE.
- A.4. SINGLE SOURCE RESPONSIBILITY: PROVIDE COATING MATERIAL AND THINNERS PRODUCED BY THE SAME MANUFACTURER FOR EACH SYSTEM ON ALL SURFACES OF THE MANHOLE BENCH.
- A.5. FIELD PAINTING PRE-APPLICATION MEETING: HOLD A PRE-APPLICATION MEETING BEFORE THE START OF FIELD SURFACE PREPARATION AND COATING APPLICATION. REQUIRE ATTENDANCE OF PARTIES DIRECTLY AFFECTING WORK OF THIS SPECIAL PROVISION, INCLUDING THE ENGINEER, APPLICATOR, INSPECTOR, AND COATING MANUFACTURER'S REPRESENTATIVE. REVIEW THE SPECIFICATIONS TO INSURE EACH PARTY'S RESPONSIBILITIES ARE UNDERSTOOD. SUBJECTS TO BE DISCUSSED ARE: ENVIRONMENTAL REQUIREMENTS, PROTECTION OF SURFACES NOT SCHEDULED TO BE COATED, SURFACE PREPARATION, APPLICATION, REPAIR, FIELD QUALITY CONTROL, CLEANING, PROTECTION OF COATING SYSTEMS, COORDINATION WITH OTHER WORK AND ANY OTHER AREAS OF CONCERN EXPRESSED AT THE MEETING.
- A.6. DUST AND CONTAMINANTS: SCHEDULE COATING WORK TO AVOID EXCESSIVE DUST AND AIRBORNE CONTAMINANTS. PROTECT WORK AREAS FROM EXCESSIVE DUST AND AIRBORNE CONTAMINANTS DURING COATING APPLICATION AND CURING.

B. WARRANTY: FULL WARRANTY AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR TWO YEARS AFTER SUBSTANTIAL COMPLETION, INCLUDING ALL PARTS, LABOR, AND EXPENSES

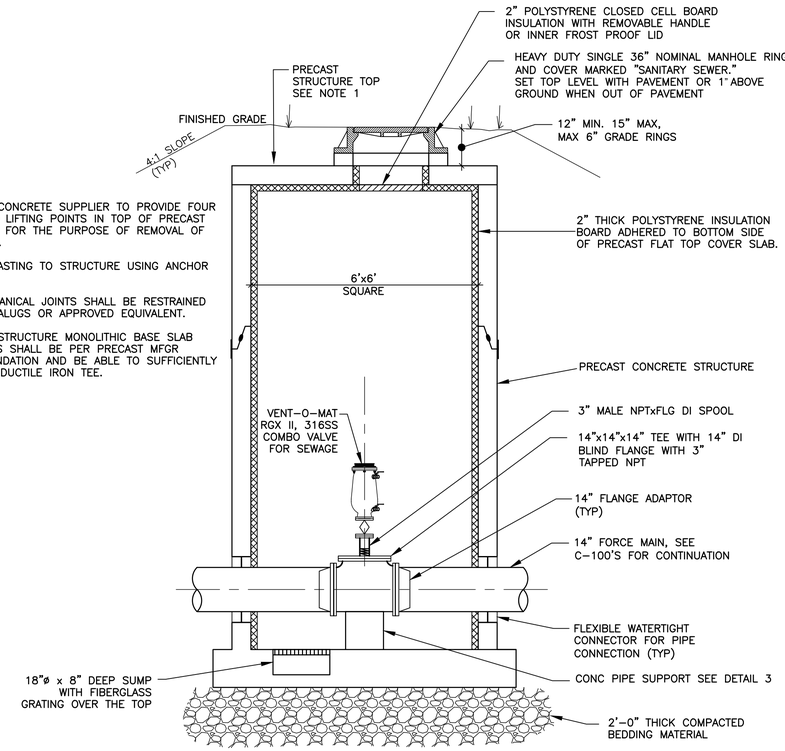
C. PRODUCTS
- C.1. MANUFACTURERS: ITW POLYMER COATINGS, MAINSTAY, RAVEN, OR SAUEREISEN
- C.2. GENERAL:
  - C.2.1. APPLICATION METHOD SHALL BE DESIGNED AND INSTALLED USING TECHNIQUE RECOMMENDED BY THE MANUFACTURER.
  - C.2.2. COLORS SHALL BE AS SELECTED BY ENGINEER
  - C.2.3. UNLESS OTHERWISE NOTED, ITW POLYMERS COATINGS PRODUCTS ARE IDENTIFIED IN THIS EPOXY LINER SYSTEM TO ESTABLISH QUALITY AND TYPE DESIRED.
  - C.2.4. SYSTEM THICKNESS OR COVERAGE RATE IS RECOMMENDED BY ITW POLYMERS COATINGS. IF OTHER MANUFACTURERS ARE USED, MANUFACTURER REQUIREMENTS SHALL BE FOLLOWED, BUT IN NO CASE SHALL THICKNESS OR COVERAGE RATE BE LESS THAN ITW POLYMERS COATINGS.
- C.3. PROPERTIES-MEET THE FOLLOWING:

PROPERTY	TEST METHOD	PERFORMANCE
COMPRESSIVE STRENGTH	ASTM C579	12,870 PSI
TENSILE STRENGTH	ASTM D638	6,690 PSI
FLEXURAL STRENGTH	ASTM D580	12,443 PSI
BOND STRENGTH	ASTM D4541	450 PSI

  - C.3.1. VOLUME OF SOLIDS: 100%
- C.4. SURFACE PREPARATION:
  - C.4.1. CONCRETE SURFACES SHALL BE ABRASIVE BLASTED IN ACCORDANCE WITH SSPC-SP13 TO PRODUCE A CLEAN AND ROUGHENED SURFACE FINISH. ALTERNATIVE SURFACE PREPARATION METHODS INCLUDE WET GRIT BLASTING, AND HIGH OR ULTRA-HIGH PRESSURE WATER JETTING.
  - C.4.2. ALL LOOSE SURFACE CONTAMINATION SHALL BE COMPLETELY REMOVED BY VACUUMING OR HIGH PRESSURE WATER WASHING. THE SUBSTRATE MUST BE VISIBLY DRY BEFORE PROCEEDING. ANY SPECIFIC AREA THAT IS NOT VISIBLY DRY OR IS EXPERIENCING WATER PENETRATION (I.E., GROUND WATER SEEPAGE) SHALL BE SURFACE-DRIED UTILIZING FORCED AIR HEATING OR DEHUMIDIFICATION UNITS. MOISTURE VAPOR TRANSMISSION SHOULD BE 3 POUNDS OR LESS PER 1000 SQUARE FEET OVER A 24 HOUR TIME PERIOD, AS CONFIRMED THROUGH A CALCIUM CHLORIDE TEST PER ASTM E-1907. QUANTITATIVE RELATIVE HUMIDITY (RH) TESTING, ASTM F-2170, SHOULD CONFIRM CONCRETE RH RESULTS BELOW 75%.
  - C.4.3. PROVIDE A SURFACE PROFILE OF ICRI CSP-3 TO ICRI CSP-5.
- C.5. SYSTEM:
  - C.5.1. CONCRETE RESURFACING: ROUGH CONCRETE, SPALLED CONCRETE OR CONCRETE SURFACES WITH VOIDS AND/OR BUG HOLES MUST BE RESURFACED IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATION.
  - C.5.2. PRIMER COAT: 1 COAT/125 TO 175 SQUARE FEET PER GALLON (SFPG) "POLYSPEC MMP PRIMER, TRANSPARENT AMBER" BY ITW POLYMERS COATINGS.
  - C.5.3. INTERMEDIATE COAT: 1 COAT/40.0 TO 60.0 DRY FILM THICKNESS (MILS/COAT) "TUFFREZ 240, GRAY" BY ITW POLYMERS COATINGS.
  - C.5.4. TOP COAT: 1 COAT/40.0 TO 60.0 DRY FILM THICKNESS (MILS/COAT) "TUFFREZ 240, GRAY" BY ITW POLYMERS COATINGS.
- C.6. THINNING AND MIXING:
  - C.6.1. EPOXY LINER MATERIALS SHALL BE MIXED WITH A POWER MIXER OF SUFFICIENT SIZE TO ENSURE COMPLETE DISPERSION OF PIGMENTS AND BLENDING OF REACTIVE COMPONENTS.
  - C.6.2. EPOXY LINER MATERIALS SHALL NOT BE THINNED UNLESS SPECIFICALLY ALLOWED BY THE MANUFACTURER'S RECOMMENDATIONS.
- C.7. EPOXY INSTALLATION
  - C.7.1. EXAMINATION:
    - C.7.1.1. EXAMINE AREAS AND CONDITIONS UNDER WHICH THE EPOXY LINER SYSTEM IS TO BE APPLIED. NOTIFY CONTRACTOR AND ENGINEER OF AREAS OR CONDITIONS THAT ARE NOT ACCEPTABLE. DO NOT BEGIN SURFACE PREPARATION OR APPLICATION UNTIL UNACCEPTABLE AREAS OR CONDITIONS HAVE BEEN CORRECTED.
    - C.7.1.2. PROTECT SURROUNDING AREAS AND SURFACES NOT SCHEDULED TO BE COATED FROM DAMAGE DURING SURFACE PREPARATION AND APPLICATION OF EPOXY LINER SYSTEM. IMMEDIATELY REMOVE EPOXY LINER SYSTEM THAT FALL ON SURROUNDING AREAS AND SURFACES NOT SCHEDULED TO BE COATED.
    - C.7.1.3. ALL EPOXY LINER MATERIALS SHALL BE MIXED AND APPLIED AT TEMPERATURES IN ACCORDANCE WITH THESE SPECIFICATIONS AND THE MANUFACTURER'S RECOMMENDATION.
      - C.7.1.3.1. EPOXY LINER MATERIALS SHALL NOT BE APPLIED IN INCLEMENT WEATHER CONDITIONS.
      - C.7.1.3.2. AMBIENT TEMPERATURES MUST BE BETWEEN 40°F AND 85°F DURING APPLICATION OF EPOXY LINER MATERIALS. RELATIVE HUMIDITY MUST BE BELOW 85%.
      - C.7.1.3.3. THE MINIMUM SUBSTRATE TEMPERATURE AT THE TIME OF APPLICATION SHALL BE 45°F. THE MAXIMUM SUBSTRATE TEMPERATURE AT THE TIME OF APPLICATION SHALL BE 100°F.
      - C.7.1.3.4. AT THE TIME OF APPLICATION, THE SUBSTRATE TEMPERATURE MUST BE AT LEAST 5°F ABOVE THE DEW POINT.
      - C.7.1.3.5. DURING APPLICATION, THE SUBSTRATE TEMPERATURE MUST BE DECLINING.
    - C.7.1.4. ADEQUATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY LIGHT UP ALL AREAS TO BE WORKED ON WITHOUT INCLUSION OF SHADOW AREAS. ADEQUATE LIGHTING SHALL BE CONSIDERED A MINIMUM OF 20 FOOT CANDLES IN ALL AREAS IN WHICH WORK OR INSPECTION PROCESSES ARE OCCURRING.
    - C.7.1.5. EPOXY LINER MATERIALS SHALL NOT BE APPLIED WINDY CONDITIONS. CONTRACTOR SHALL ENSURE WINDBLOWN MATTER IS PREVENTED FROM CONTAMINATING FRESHLY COATED SURFACES.
    - C.7.1.6. KEEP CONTAINERS CLOSED WHEN NOT IN USE TO AVOID CONTAMINATION.
    - C.7.1.7. DO NOT USE MIXED EPOXY LINER MATERIALS BEYOND POT LIFE LIMITS.
    - C.7.1.8. APPLY MULTIPLE COATS WITHIN MANUFACTURER'S RECOMMENDED RECOAT TIMEFRAME.
    - C.7.1.9. USE APPLICATION EQUIPMENT, TOOLS, PRESSURE SETTINGS, AND TECHNIQUES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
    - C.7.1.10. UNIFORMLY APPLY EPOXY LINER MATERIALS AT SPREADING RATE REQUIRED TO ACHIEVE SPECIFIED DFT.
    - C.7.1.11. APPLY EPOXY LINER MATERIALS TO BE FREE OF FILM DEFECTS THAT WOULD ADVERSELY AFFECT PERFORMANCE OF THE LINER SYSTEM.
  - C.7.2. REPAIRS:
    - C.7.2.1. DAMAGED MATERIALS: REPAIR OR REPLACE DAMAGED MATERIALS AND SURFACES NOT SCHEDULED TO BE COATED.
    - C.7.2.2. DAMAGED LINER SYSTEM: REPAIR DAMAGED EPOXY LINER MATERIALS.
      - C.7.2.2.1. REPAIRS SHALL BE MADE WITH THE EPOXY LINER SYSTEM, SURFACE PREPARATION, AND COAT THICKNESS SPECIFIED IN ARTICLE 120141A.02, A.
      - C.7.2.2.2. COMPLETE REPLACEMENT OF THE EPOXY LINER MAY BE REQUIRED BY ENGINEER IF THE DAMAGED OR UNSATISFACTORY AREA EXCEEDS 2% OF THE TOTAL COATED SURFACE AREA.
      - C.7.2.2.3. PRIOR TO ANY REPAIR WORK, THE SURFACE SHALL BE CLEANED IN ACCORDANCE WITH SSPC-SP 1.
      - C.7.2.2.4. INTACT AREAS AROUND THE DAMAGED AREA SHALL BE FEATHERED BY EITHER HAND SANDING, POWER TOOL CLEANING, OR ABRASIVE BLAST CLEANING PRIOR TO THE APPLICATION OF THE EPOXY LINER.
    - C.7.2.3. LINER SYSTEM DEFECTS: COMPLETELY REPLACE THE DEFECTIVE EPOXY LINER WITH THE EPOXY LINER SYSTEM, SURFACE PREPARATION, AND COAT THICKNESS SPECIFIED IN ARTICLE 120141A.02, A.
- C.8. TESTING EQUIPMENT AND PROCEDURES
  - C.8.1. PROVIDE ON THE PROJECT SITE, TESTING EQUIPMENT NECESSARY TO TEST THE FOLLOWING. EQUIPMENT SHALL BE IN CALIBRATION AND PROPER WORKING ORDER. EQUIPMENT SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURERS' INSTRUCTIONS OR AS DIRECTED BY THE ENGINEER. THE ENGINEER SHALL BE NOTIFIED OF TIME OF TESTING SO THAT HE MIGHT BE PRESENT TO WITNESS TESTING. KEEP A DAILY LOG OF ENVIRONMENTAL CONDITIONS, WORK SCHEDULE, AND ANY OTHER PERTINENT INFORMATION. THE LOG SHALL BE TURNED OVER TO THE ENGINEER AT THE END OF THE PROJECT TO BE INCLUDED IN THE PERMANENT RECORD. PROVIDE QUALIFIED PERSONNEL TO PERFORM THE FOLLOWING TESTING:
    - C.8.1.1. MONITORING AMBIENT TEMPERATURE.
    - C.8.1.2. DETECTING OIL OR WATER IN COMPRESSED AIR.
    - C.8.1.3. DETERMINING DEGREE OF CLEANLINESS FOR BLAST CLEANED SURFACES.
    - C.8.1.4. MEASURING NON-VISIBLE CONTAMINANTS ON CONCRETE SURFACES.
    - C.8.1.5. MEASURING CONCRETE SURFACE PROFILE.
    - C.8.1.6. MONITORING THE MIXING AND THINNING OF EPOXY LINER MATERIALS.
    - C.8.1.7. MEASURING WET FILM THICKNESS OF EPOXY LINER MATERIALS.
    - C.8.1.8. MEASURING EPOXY LINER MATERIAL ADHESION USING PORTABLE ADHESION TESTERS (DESTRUCTIVE TEST TO BE PERFORMED ONLY WHEN REQUIRED).
    - C.8.1.9. DISCONTINUITY OR HOLIDAY TESTING OF EPOXY LINER MATERIALS.
    - C.8.1.10. TESTING FOR CURE OF EPOXY LINER MATERIALS

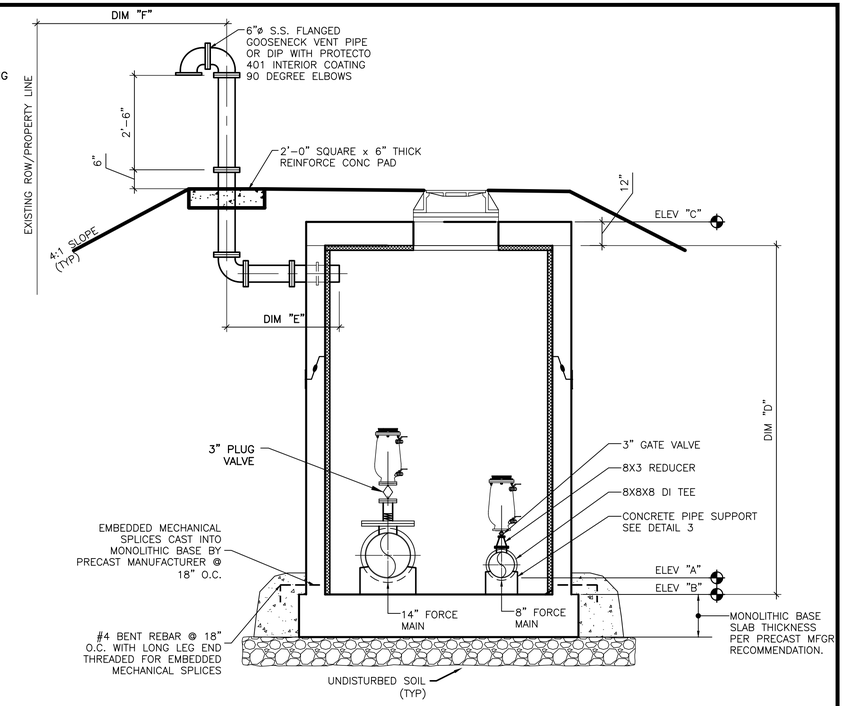


1 COMBO VALVE STRUCTURE DETAIL – SECTION 3
NTS



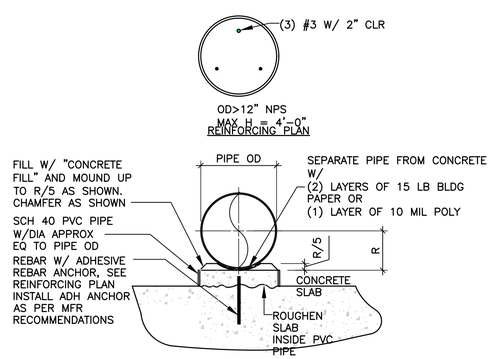
NOTES:
1. PRECAST CONCRETE SUPPLIER TO PROVIDE FOUR RECESSED LIFTING POINTS IN TOP OF PRECAST TOP SLAB FOR THE PURPOSE OF REMOVAL OF TOP SLAB.
2. ATTACH CASTING TO STRUCTURE USING ANCHOR BOLTS.
3. ALL MECHANICAL JOINTS SHALL BE RESTRAINED WITH MEGALUGS OR APPROVED EQUIVALENT.
4. PRECAST STRUCTURE MONOLITHIC BASE SLAB THICKNESS SHALL BE PER PRECAST MFGR RECOMMENDATION AND BE ABLE TO SUFFICIENTLY SUPPORT DUCTILE IRON TEE.

2A COMBO VALVE STRUCTURE DETAIL – SECTION 1
NTS

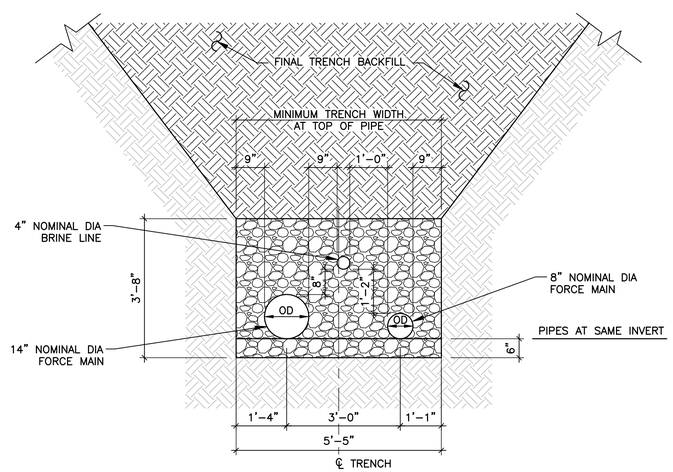


2B COMBO VALVE STRUCTURE DETAIL – SECTION 2
NTS

STRUCTURE ID	ELEV "A"	ELEV "B"	ELEV "C"	DIM "D"	DIM "E"	DIM "F"	COMBO VALVE SIZE
CVS#1	6917.58	6916.08	6924.75	7.67	9	MIN. 1'	3-INCH
CVS#2	7025.46	7023.96	7028.56	3.6	15	MIN. 1'	3-INCH
CVS#3	7024.68	7023.18	7031.7	7.52	10	MIN. 1'	3-INCH
CVS#4	7048.46	7046.96	7052.52	4.56	10	MIN. 1'	3-INCH



3 TYPE 'D' PIPE SUPPORT
NTS



4 TYPICAL PARALLEL PIPING TRENCH LAYOUT
NTS

NOTE:
1. SPECIAL PRECAUTIONS SHALL BE TAKEN IN SLOPING OR SHORING THE SIDES OF EXCAVATIONS TO MAINTAIN EXCAVATION WITHIN THE DELINEATED LIMITS OF EXCAVATION.
2. SEE DETAIL WW-1 FOR ADDITIONAL REQUIREMENTS.

DRAWN BY: JMM JOB DATE: 9/6/2024
APPROVED: GP JOB NUMBER: 201662.07
CAD DATE: 1/7/2025
CAD FILE: \\hrgreen.com\HRG\Data\2020\201662.07\CAD\Dwgs\C\Force_Main\Fm_Details Group 1

BAR IS ONE INCH ON OFFICIAL DRAWINGS.
0 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

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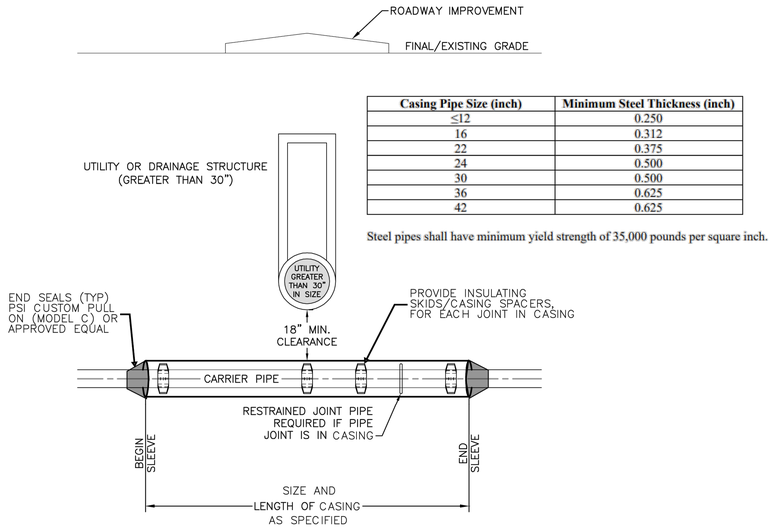
GRANDVIEW RESERVE M.D. -
DUAL FORCE MAINS
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

CONSTRUCTION DOCUMENTS
DETAILS

SHEET
C502



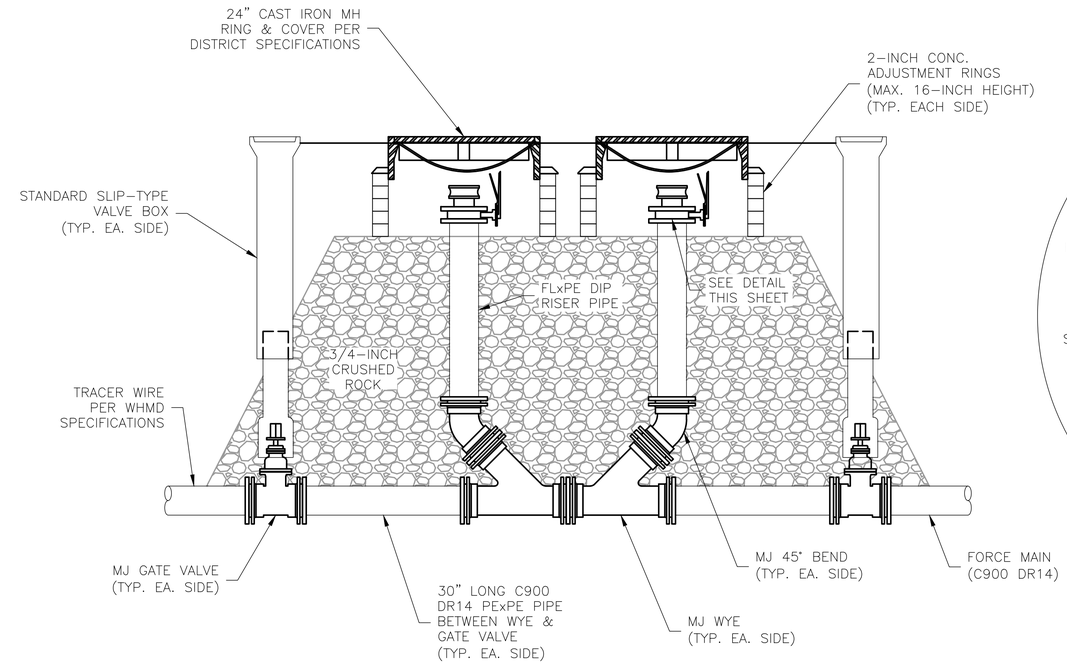
Casing Pipe Size (inch)	Minimum Steel Thickness (inch)
≤12	0.250
16	0.312
22	0.375
24	0.500
30	0.500
36	0.625
42	0.625

Steel pipes shall have minimum yield strength of 35,000 pounds per square inch.

NOTES:

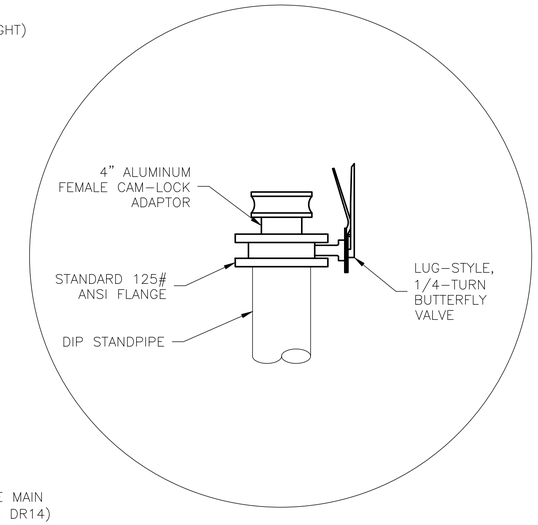
1. 3/4" ALL-THREAD TO BE USED FROM VALVE TO REVERSE ANCHOR AND FROM UPPER BEND TO VALVE.
2. IF A JOINT IS LOCATED BETWEEN ANY FITTINGS INCORPORATED INTO THE LOWERING, BELL/JOINT RESTRAINTS MUST BE USED.
3. CASING PIPE MUST BE CLEAN AND FREE OF ALL DIRT AND DEBRIS BEFORE INSTALLING CARRIER PIPE AND BEFORE INSTALLING END SEALS.
4. CARRIER PIPE AS SPECIFIED.
5. FURNISH AND INSTALL ONE 17 LB. MAGNESIUM ANODE PER 20 FEET OF CASING PIPE LENGTH.
6. ENTIRE LENGTH OF LOWERING (FROM VERTICAL BEND TO LOWER VERTICAL BEND) SHALL REST ON 18" MINIMUM OF 3/4" ROCK BELOW CASING AND UP TO SPRINGLINE OF CASING AND CARRIER PIPE.

CASING PIPE DETAIL

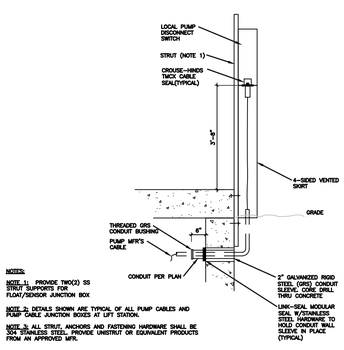


NOTE:
ALL MJ-MJ FITTINGS SHALL BE MADE USING FOSTER ADAPTORS.

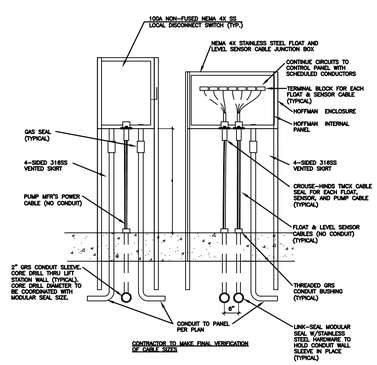
BRINE LINE FORCEMAIN CLEANOUT DETAIL
SCALE: N.T.S.



STAND-PIPE CONNECTION DETAIL
N.T.S.



1 PUMP CABLE CONDUIT AND JB SUPPORT DETAIL
SCALE: NONE



2 PUMP CABLE AND CONTROL JUNCTION BOX DETAIL
SCALE: NONE

DRAWN BY: JMM	JOB DATE: 9/6/2024	BAR IS ONE INCH ON OFFICIAL DRAWINGS. 0 1" IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.
APPROVED: GP	JOB NUMBER: 201662.07	
CAD DATE: 1/7/2025		
CAD FILE: \\hrgreen.com\HRG\Data\2020\201662.07\CAD\Dwgs\C\Force_Main\Fm_Details Group 1		

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen

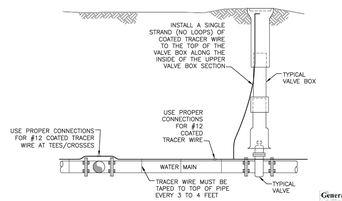
HR GREEN - COLORADO SPRINGS
1975 RESEARCH PARKWAY | SUITE 230
COLORADO SPRINGS CO 80920
PHONE: 719.300.4140
FAX: 713.965.0044

GRANDVIEW RESERVE M.D. -
DUAL FORCE MAINS
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

CONSTRUCTION DOCUMENTS
DETAILS

SHEET
C503

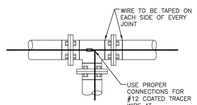


General: Housing is to protect split bolt wire nut and tracer wire in buried applications.

Specifications: Housing shall be made of high impact polypropylene and be filled with a dielectric silicone gel.

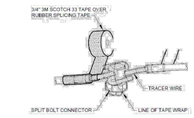
Aqua Housing 69105

Max. Voltage: 50V
Housing: High Impact Polypropylene
Sealant: Dielectric Silicone Gel
Wire Range: #14-10 Solid Copper; #14-10 Steel Core Tracer Wire
Split bolt size not to exceed 1.0" tall by 0.8" wide by 0.2" deep



Visilock Housing 98010

Max. Voltage: 100V
Temperature Rating: -40°C - 90°C (-40°F)
Measurements: See specification sheet for complete product measurements
Wire Range:
#8 - #10 (.363" - .625" O.D.)
#12 - #4 (.305" - .445" O.D.)
Amperage not to exceed maximum temperature of the conductor

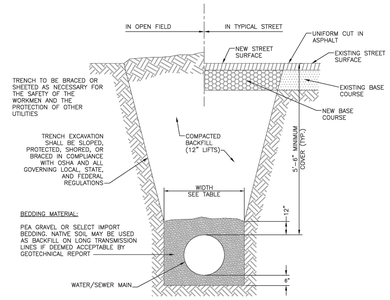


SPLIT BOLT TAPING

1. Wrap all Tracer Wire split bolt connectors or exposed wire using 1" 3M Scotch 130C Linerless Rubber Splicing Tape making sure to seal all ends to prevent moisture penetration.

TRACER WIRE INSTALLATION DETAILS

Drawn: GGM/SKG	Revised: DECEMBER 2021	WOODMEN HILLS METROPOLITAN DISTRICT — WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	W-10
Date: MARCH 2011	Revised:		
Scale: N.T.S.	Revised:		

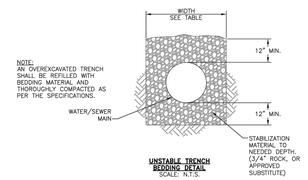


BEDDING MATERIAL:

PEA GRAVEL OR SELECT IMPORT BEDDING. NATIVE SOIL MAY BE USED AS BACKFILL ON LONG TRANSMISSION LINES IF DEEMED ACCEPTABLE BY GEOTECHNICAL REPORT

TYPICAL TRENCH SECTION
SCALE: N.T.S.

PIPE DIAMETER	MINIMUM WIDTH	MAXIMUM WIDTH
4"	2'-2"	3'-0"
6"	2'-2"	3'-0"
8"	2'-2"	3'-0"
10"	2'-4"	3'-0"
12"	2'-6"	3'-6"
18"	2'-10"	3'-9"
24"	3'-2"	4'-3"

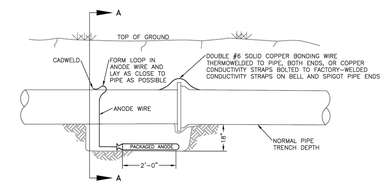


NOTE:
AN OVEREXCAVATED TRENCH SHALL BE REFILLED WITH BEDDING MATERIAL AND THOROUGHLY COMPACTED AS PER THE SPECIFICATIONS.

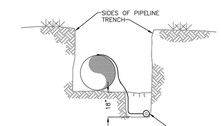
UNSTABLE TRENCH BEDDING DETAIL
SCALE: N.T.S.

TYPICAL TRENCH CROSS-SECTION

Drawn: GGM/SKG	Revised: DECEMBER 2021	WOODMEN HILLS METROPOLITAN DISTRICT — WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	W-14
Date: MARCH 2011	Revised:		
Scale: N.T.S.	Revised:		



ELEVATION



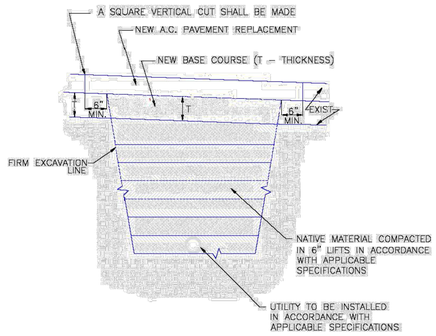
SECTION A-A

NOTES:

1. CADWELD CONNECTION TO BE PRIMED AND COATED CAREFULLY. PACKAGED ANODE SHOULD BE COVERED WITH FINE SOIL CONTAINING NO ROCKS OR DIRT CLUMPS, TAMPED.
2. WHEN ANODES ARE REQUIRED WITH METAL FITTINGS AND APPURTENANCES TOGETHER WITH PVC PIPE INSTALLATION, THE ANODES SHALL BE PLACED AND ATTACHED TO THE METAL IN SAME MANNER AS SHOWN ON THIS DRAWING. 9 LB. ANODES CAN BE USED ON METAL FITTINGS 12" AND LESS IN DIAMETER AND 17 LB. ANODES FOR METAL FITTINGS GREATER THAN 12" DIAMETER WHEN USING PVC PIPE.
3. PACKAGED ANODE TO BE WETTED AND COVERED WITH SOIL PRIOR TO BACKFILLING.

BONDING JOINT & ANODE INSTALLATION

Drawn: GGM	Revised: DECEMBER 2021	WOODMEN HILLS METROPOLITAN DISTRICT — WATER & WASTEWATER SYSTEM STANDARD SPECIFICATIONS	WW-10
Date: MARCH 2011	Revised:		
Scale: N.T.S.	Revised:		

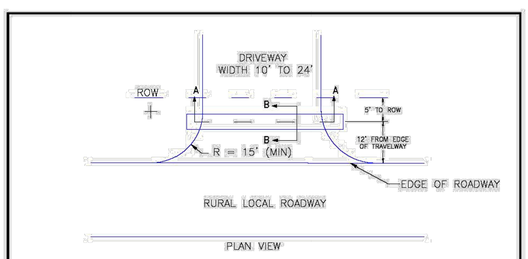


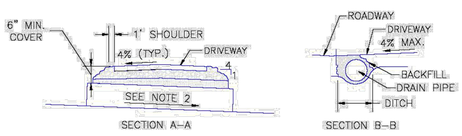
NOTES:

1. THIS DETAIL MAY BE USED FOR PAVEMENT CUTS LESS THAN 200 SQ. FT.
2. EXISTING PAVEMENT MAY BE ROUGH CUT INITIALLY IN CONJUNCTION WITH TRENCHING.
3. A SQUARE VERTICAL CUT SHALL BE MADE IN THE EXISTING A.C. PAVEMENT AFTER PLACEMENT OF BACKFILL PRIOR TO PAVEMENT REPLACEMENT.
4. THICKNESS OF NEW A.C. PAVEMENT REPLACEMENT SHALL MATCH EXISTING (4" MIN.)
5. THICKNESS OF NEW BASE COURSE SHALL BE MINIMUM OF 6" OR EQUAL TO EXISTING, WHICHEVER IS GREATER.

SCALE: NOT TO SCALE

8/11/11 DATE APPROVED	Utility Trench Repair Detail Asphalt Pavement Standard Drawing	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
André P. Brackin DEPARTMENT OF TRANSPORTATION	REVISION DATE: 11/10/04 — FILE NAME: SD_4-20	





NOTES
1. SURFACE TREATMENT OF DRIVEWAY TO MATCH SURFACE TREATMENT OF ROAD WITHIN THE ROW.
2. DRAIN PIPE TO BE 18" DIAMETER CMP MINIMUM.
3. PIPE SLOPE TO BE CONSISTENT WITH FLOWLINE OF DITCH, MINIMUM OF 1% PREFERED.
4. ALL DRIVEWAYS SHALL HAVE A 4 PERCENT CROWN.
5. WHEN SLOPING TOWARDS ROAD, DRIVEWAYS SHALL HAVE A MAXIMUM GRADE OF 4 PERCENT FOR A MINIMUM OF 20 FEET WHERE THE SITE ALLOWS.

SCALE: NOT TO SCALE

8/11/11 DATE APPROVED	Driveway Access on Rural Local Roadway Standard Drawing	EL PASO COUNTY DEPARTMENT OF TRANSPORTATION
André P. Brackin DEPARTMENT OF TRANSPORTATION	REVISION DATE: 12/8/15 — FILE NAME: SD_3-14	

CDPHE DESIGN REVIEW
DOCUMENT SUBMITTAL
NOT FOR CONSTRUCTION

DRAWN BY: JMM
JOB DATE: 4/25/2024
APPROVED: GP
JOB NUMBER: 201662.07
CAD DATE: 1/7/2025
CAD FILE: \\hrgreen.com\HRG\Data\2020\201662.07\CAD\Dwgs\C\Force_Main\Fm_Details

BAR IS ONE INCH ON OFFICIAL DRAWINGS.
0 1"
IF NOT ONE INCH, ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

HRGreen
HR GREEN - COLORADO SPRINGS
1975 RESEARCH PARKWAY | SUITE 230
COLORADO SPRINGS CO 80920
PHONE: 719.300.4140
FAX: 713.965.0044

GRANDVIEW RESERVE M.D. -
DUAL FORCE MAINS
D.R. HORTON
EL PASO COUNTY, CO

D·R·HORTON America's Builder

CONSTRUCTION DOCUMENTS
STANDARD DETAILS

SHEET
C701

Comment response for FORCE MAIN

Page No	Comments	Response
7	Include road classification, row width & public/private (for all roads)	Added
8	Easements? Please label	Labeled as property line
8	Per note in plan view, box is 10' high. Profile does not appear to be showing correct height. Please verify	height adjusted to scale
9	Provide property owner info on this side of the road	Added
9	Easement? Please label	Labeled as property line
10	Provide property owner info on this side of the road	added
10	Tract or easement? Please label	labeled
11	Provide property owner info on this side of the road	added
12	Provide property owner info on this side of the road	added
13	Provide property owner info on this side of the road	added
14	Provide property owner info on this side of the road	added
14	Unresolved: Appears to be new fence. Please label	Resolved: REMOVE AND REPLACE BARBED WIRE FENCING AND STEEL POSTS
16	Unresolved: Appears to be new fence. Please label	Resolved: REMOVE AND REPLACE BARBED WIRE FENCING AND STEEL POSTS
16	Provide property owner info on this side of the road	added
17	Provide property owner info on this side of the road	added
18	Provide property owner info on this side of the road	added
19	Provide property owner info on this side of the road	added
20	Provide property owner info on this side of the road	added
21	Does easement extend to Judge Orr ROW?	ROW, Label removed replaced from the easement line for clear view
21	Provide property owner info on this side of the road	added
26	Property Lines	added property lines and property owners