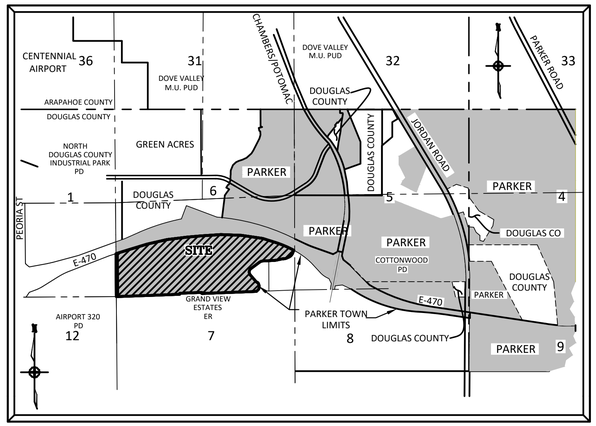
FINAL ROAD & STORM DRAINAGE CONSTRUCTION PLANS
FOR
BELFORD AVENUE
COMPARK VILLAGE SOUTH, FILING NO. 1

PARKER, COLORADO

THE WEST LINE OF THE SOUTHWEST QUARTER OF SECTION 6, TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE SIXTH PRINCIPAL MERIDIAN BEING MONUMENTED AS SHOWN HEREON HAVING A BEARING OF NORTH 00°29'49" WEST, AS DETERMINED BY GPS OBSERVATION FROM NGS CONTROL POINTS IN THE COLORADO CENTRAL ZONE, STATE PLANE COORDINATE SYSTEM TOWN OF PARKER, COUNTY OF DOUGLAS, STATE OF COLORADO



VICINITY MAP

N.T.S.

SIGHT DISTANCE CERTIFICATION:

"I, THE UNDERSIGNED, HEREBY CERTIFY THAT THE PROPOSED SUBDIVISION, COMPARK VILLAGE SOUTH, FILING NO. 1, IS DESIGNED WITH ADEQUATE CORNER SIGHT DISTANCE FOR ALL INTERSECTIONS AND PEDESTRIAN CROSSING LOCATIONS. CONSIDERATION OF LANDSCAPING IMPACTS TO THE CORNER SIGHT DISTANCE AT BOTH INITIAL AND MATURE GROWTH HAS BEEN REVIEWED. THE MINIMUM CORNER SIGHT DISTANCE IS IN COMPLIANCE WITH AASHTO 'POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS'."

I HEREBY AFFIRM THAT THESE CONSTRUCTION PLANS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION.

COLORADO REGISTERED RICKY MOORE 30877 11-17-2020 PROFESSIONAL ENGINEER

FOR AND ON BEHALF OF MANHARD CONSULTING

AGENCY CONTACT LIST

COMPARK LAND COMPANY
MICHAEL VICKERS
1001 BANNOCK ST, SUITE 463
DENVER, CO 80204 — 303-881-6292

MANHARD CONSULTING
RICKY J. MOORE, P.E.
7600 E ORCHARD RD, SUITE 150-N
GREENWOOD VILLAGE, CO 80111 — 303-708-0500

PARKER PUBLIC WORKS
20120 E. MAINSTREET
PARKER, CO. 80138 — 303-840-9546
STREETS - ALEX MESTDAGH
STORM WATER - MICHAEL GRABCZYK
EROSION CONTROL - MICHAEL GRABCZYK
LIFE SAFETY - RANDY CAPRA

TOWN OF PARKER POLICE DEPARTMENT
19,600 E. PARKER SQUARE DR.
PARKER, CO. 80134 — 303-841-9800

STONEGATE VILLAGE METRO DISTRICT
DISTRICT ENGINEER:
SCOTT BARNETT
MULHERN MRE, INC.
188 INVERNESS DRIVE WEST, SUITE 150
ENGLEWOOD, CO 80112 — 303-858-9909

DISTRICT MANAGER:
SARAH SJOBAKKEN
10252 STONEGATE PARKWAY
PARKER, CO 80134 — 303-858-9909

COMPARK VILLAGE CAMPUS METRO DISTRICT
C/O CLIFFTON LARSON ALLEN
8390 E. CRESCENT PARKWAY, SUITE 500
GREENWOOD VILLAGE, CO 80111 — (303) 779-4525

SOUTH METRO FIRE RESCUE AUTHORITY
MICHELLE HERIAN
9195 E. MINERAL AVE.
CENTENNIAL, CO 80112 — 720-488-7200

UTILITY NOTIFICATION COMPANY OF COLORADO
2801 SOUTH YOUNGFIELD ST, SUITE 301
GOLDEN, CO 80401 — 1-800-922-1987
LOCAL CALLS — (811)

XCEL ENERGY
MICHELLE O'NAN
5909 E. 38TH AVE.
DENVER, CO 80207 — 303-329-1618

COMCAST
KEVIN YOUNG
6850 S. TUCSON WAY
ENGLEWOOD, CO 80112 — 720-490-3867

CENTURY LINK
WILLIAM BENSON
9750 E. COSTILLA AVE.
ENGLEWOOD, CO 80112 — 303-792-6069

COLORADO DEPARTMENT OF HEALTH
4210 E. 11TH AVE.
DENVER, CO 80220 — 303-320-8333

INTERMOUNTAIN RURAL ELECTRIC ASSOCIATION
BROOKS KAUFMAN
5496 NORTH US HWY 85
P.O. BOX DRAWER A
SEDALIA, CO 80135 — 303-688-3100

BENCHMARKS: (COMPARK SOUTH)

SOURCE BENCHMARKS:
DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD.
ELEVATION = 5752.84 (NAVD 88)

SITE BENCHMARKS:
1. A NO. 5 REBAR WITH 2" ALUMINUM CAP STAMPED "LS 28286, 2001" FOUND AT THE SOUTHWEST CORNER OF SECTION 6, T6S, R66W LOCATED ON THE WEST LINE OF FIRST STREET APPROXIMATELY 1000 FEET NORTH OF ELM AVENUE.
ELEVATION = 5845.51
2. A 2.5" IRON PIPE WITH 3.25" ALUMINUM CAP STAMPED "PLS 12405, 1997" FOUND AT THE SOUTHEAST CORNER OF SECTION 6, T6S, R66W LOCATED APPROXIMATELY 960 FEET NORTH OF THE CENTERLINE OF AVENTERRA PARKWAY AND APPROXIMATELY 1050 FEET WEST OF THE CENTERLINE OF CHAMBERS ROAD.
ELEVATION = 5808.06

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

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TOWN OF PARKER APPROVALS

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

THIS REVIEW DOES NOT CONSTITUTE APPROVAL OF ANY PRIVATE ON-SITE IMPROVEMENTS WHICH MAY BE SHOWN. CONSTRUCTION CANNOT COMMENCE UNTIL ALL REQUIRED DRAINAGE/TRAFFIC REPORT(S), FINAL DEVELOPMENT PLAN(S), SPECIAL REVIEW(S), GRADING PERMIT, AND/OR OTHER PERMITS ARE COMPLETE, APPROVED AND ON FILE WITH THE TOWN OF PARKER.

TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS — DATE

REVISIONS	DATE		DRAWN BY
I	09/2020	APPROVED	
H	07/31/20	RESPONSES TO TOWN COMMENTS	JAH
G	06/01/20	RESPONSES TO TOWN COMMENTS	JAH
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/1/16	4TH SUBMITTAL	
C	7/21/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	
A	11/2015	1ST SUBMITTAL	EG

Manhard CONSULTING
7600 East Orchard Road, Suite 150-N, Greenwood Village, CO 80111 ph:303.708.0500 manhard.com
Civil Engineering | Surveying & Geospatial Services | GIS
Water Resource Management | Construction Management

COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
COVER SHEET

PROJ. MGR.: RIM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 1 OF 50
CLCPKC3 ---

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Plotted: 10/31/2020 12:17 PM Dwg Name: P:\Clpk3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Engl\Final Drawings\Plan Set\Town\CLCPKC3-BelFord-Cv01.dwg Updated By: ADrucker

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL COMPLY WITH THE STONEGATE VILLAGE METRO DISTRICT WATER AND SANITATION SYSTEM SPECIFICATIONS, THE DOUGLAS COUNTY ROADWAY DESIGN AND CONSTRUCTION STANDARDS, THE TOWN OF PARKER ROADWAY DESIGN AND CONSTRUCTION CRITERIA, THE TOWN OF PARKER STORM DRAINAGE AND ENVIRONMENTAL CRITERIA, THE URBAN DRAINAGE AND FLOOD CONTROL DISTRICT, THE COLORADO STATE BOARD OF HEALTH, THE ENVIRONMENTAL PROTECTION AGENCY AND THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION.

2. THE CONTRACTOR SHALL CONTACT ALL APPROPRIATE UTILITY COMPANIES AND THE TOWN OF PARKER PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ANY EXISTING UTILITY (INCLUDING DEPTHS) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION. ALL EXISTING UTILITIES SHALL BE PROTECTED FROM DAMAGE BY THE CONTRACTOR. DAMAGED UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE. ALL ITEMS SHOWN ON THE PLANS AS EXISTING ARE SHOWN IN APPROXIMATE LOCATIONS ONLY. THE ACTUAL LOCATIONS MAY VARY FROM THE PLANS, ESPECIALLY IN THE CASE OF UNDERGROUND UTILITIES. WHENEVER THE CONTRACTOR DISCOVERS A DISCREPANCY IN LOCATIONS, HE SHALL CONTACT THE ENGINEER IMMEDIATELY.

3. THE DISTRICT ENGINEER AND OTHER APPROVING AGENCIES ARE TO BE NOTIFIED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.

4. THE CONTRACTOR SHALL OBTAIN, AT HIS EXPENSE, ALL PERMITS WHICH ARE NECESSARY TO PERFORM THE PROPOSED WORK, INCLUDING STREET CUTS, UTILITY INTERFERENCE AND TRAFFIC CONTROL.

5. ALL CONCRETE SHALL BE A MINIMUM OF CLASS B, 6-SACK, TYPE II, 3000 POUND COMPRESSION STRENGTH. ALL CONCRETE ASSOCIATED WITH ROADWAY CONSTRUCTION SHALL BE CLASS D.

6. THE DESIGN ENGINEER SHALL SUBMIT ONE (1) SET OF ROLLED "AS-BUILT" BLUELINE PRINTS TO THE DESIGNATED TOWN AUTHORITY FOR APPROVAL PRIOR TO PRINTING MYLAR SEPIAS AND ELECTRONIC FILES FOR THE TOWN. AFTER APPROVAL HAS BEEN GRANTED BY THE DESIGNATED TOWN AUTHORITY, FULL SIZE MYLAR SEPIA PRINTS SHALL BE TRANSMITTED TO THE TOWN.

7. ALL BACKFILL MATERIAL SHALL BE COMPACTED TO ALL APPLICABLE TOWN AND DISTRICT STANDARDS. COMPACTION TESTS MUST BE SUBMITTED TO THE TOWN AND DISTRICT PRIOR TO PROBATIONARY ACCEPTANCE.

8. ALL CURBS SHALL BE CAREFULLY AND FIRMLY BACKFILLED BY THE CONTRACTOR. ANY EXCESS MATERIAL FROM SUBGRADE TRIMMING SHALL NOT BE LEFT IN THE STREET CORE, BUT SHALL BE SPREAD UNIFORMLY IN A 20-FOOT WIDE ZONE BEHIND THE WALK.

9. REFER TO OVERLOT GRADING AND EROSION CONTROL PLAN FOR GRADING NOTES.

10. EXPANSION JOINTS WILL BE PLACED IN ALL SIDEWALKS AND CURB AND GUTTER AT PCs, PTs, AND AT ANY FIXED OBJECT, BUT IN NO CASE ANY FARTHER THAN 500 FEET APART.

11. THE APPLICANT IS 470 COMPARK LLC.

12. THE UTILITY CONTRACTOR THAT INSTALLS SANITARY SEWER, STORM SEWER, AND WATER SHALL, AFTER PROPERLY COMPLETING THE WORK, WALK THE SITE WITH THE OWNER'S REPRESENTATIVE(S) TO INSPECT MANHOLES, HYDRANTS, VALVE BOXES, AND INLETS PRIOR TO THE START OF WORK BY THE CURB, GUTTER, AND WALK CONTRACTOR. A SIMILAR FIELD INSPECTION SHALL OCCUR WITH THE UTILITY CONTRACTOR AND CURB CONTRACTOR TO INSPECT THESE ITEMS PLUS CURB STOP BOXES AND CONCRETE WORK PRIOR TO THE START OF WORK BY THE PAVING CONTRACTOR. THESE FIELD INSPECTIONS ARE INTENDED TO HELP ESTABLISH RESPONSIBILITY FOR ANY NECESSARY REPAIRS, CLEANING, ETC. THAT ARE NEEDED. THESE INSPECTIONS WITH A REPRESENTATIVE OF THE OWNER ARE IN ADDITION TO ANY INSPECTIONS BY REPRESENTATIVES OF THE TOWN OF PARKER OR COTTONWOOD WATER AND SANITATION DISTRICT.

13. ALL TESTING AND INSPECTION FOR COMPLIANCE WITH TOWN OF PARKER STANDARDS SHALL BE COMPLETED PRIOR TO PROBATIONARY ACCEPTANCE.

14. THE DESIGN ENGINEER SHALL SUBMIT ONE (1) SET OF ROLLED "AS-BUILT" BLUELINE PRINTS AND ELECTRONIC FILES TO THE DISTRICT ENGINEER FOR APPROVAL PRIOR TO PRINTING MYLAR SEPIAS FOR THE DISTRICT. AFTER APPROVAL HAS BEEN GRANTED BY THE DISTRICT ENGINEER, FULL SIZE MYLAR SEPIA PRINTS SHALL BE TRANSMITTED TO THE COTTONWOOD WATER AND SANITATION DISTRICT OFFICE AND AN ADDITIONAL SET OF ROLLED BLUELINE PRINTS SHALL BE TRANSMITTED TO THE DISTRICT ENGINEER'S OFFICE PRIOR TO PROBATIONARY ACCEPTANCE.

15. TRENCHES SHALL BE EXCAVATED AND THE PIPE EXPOSED FOR THE INSPECTION AT ANY LOCATION ON THE PROJECT IF SO ORDERED BY THE INSPECTOR.

16. CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE PROPER FUNCTIONING OF LINES (WATER AND SEWER) FOR UP TO TWO (2) YEARS FROM THE DATE OF PROBATIONARY ACCEPTANCE OF THE LINES BY THE DISTRICT. ANY MALFUNCTION DURING THIS PERIOD OF GUARANTEE SHALL BE REMEDIED BY THE CONTRACTOR TO THE SATISFACTION OF THE DISTRICT ENGINEER AT NO EXPENSE TO THE DISTRICT.

17. SURFACE GRADES ARE TO BE WITHIN PLUS OR MINUS ONE FOOT OF FINISHED GRADE AND VERIFICATION OF COMPACTION RESULTS OBTAINED PRIOR TO THE INSTALLATION OF WATER AND SEWER LINES. RESULTS MUST BE SUBMITTED TO THE DISTRICT ENGINEER.

18. NO WORK SHALL BE BACKFILLED UNTIL THE CONSTRUCTION HAS BEEN INSPECTED AND APPROVED FOR BACKFILLING BY THE DISTRICT ENGINEER OR REPRESENTATIVE OF THE DISTRICT ENGINEER.

19. ALL SERVICES WILL BE PERMANENTLY MARKED ON CURB FACE AS FOLLOWS:

"X" FOR SANITARY SERVICE SEWERS
"V" FOR WATER SERVICES

20. NO TREES SHALL BE ALLOWED IN EASEMENTS OR WITHIN 8' OF ANY WATER OR SANITARY SEWER MAINS IN RIGHT-OF-WAY. NO TREES ALLOWED WITHIN 7' OF THE EDGE OF ANY STORM SEWER.

21. BENCHMARKS:

SOURCE BENCHMARKS:
DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD.
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ELEVATION = 5808.06

22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION, PROTECTION AND REPAIR OF ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION, WHETHER SHOWN ON THESE PLANS OR NOT. CONTRACTOR SHALL CONTACT REPRESENTATIVES OF THE RESPECTIVE UTILITIES AND HAVE ALL UTILITIES FIELD LOCATED PRIOR TO CONSTRUCTION. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL LOCATIONS OF EXISTING STRUCTURES AND UTILITIES SHOWN ON THE DRAWINGS, TO ASCERTAIN WHETHER ANY STRUCTURES AND UTILITIES MAY EXIST, AND REPAIR AND/OR REPLACE ANY STRUCTURES AND/OR UTILITIES THAT ARE DAMAGED BY THE CONTRACTOR.

23. T.C. INDICATES TOP BACK OF WALK GRADE FOR COMBINATION CURB, GUTTER, AND SIDEWALK, OR TOP BACK OF CURB FOR OTHER CURB AND GUTTER TYPES.

24. ALL DIMENSIONS AND RADII ARE TO FLOWLINE UNLESS OTHERWISE NOTED.

25. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH A SET OF "AS-BUILT" PLANS MARKED WITH ALL DEVIATIONS FROM THE CONSTRUCTION PLANS PRIOR TO INITIAL ACCEPTANCE.

26. ALL STATIONING IS ON CENTERLINE OF RIGHT OF WAY UNLESS OTHERWISE NOTED.

CONSTRUCTION NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE LATEST EDITION OF THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, THE LATEST EDITION OF THE TOWN OF PARKER ROADWAY DESIGN AND CONSTRUCTION CRITERIA MANUAL, AND THE TOWN OF PARKER STORM DRAINAGE AND ENVIRONMENTAL CRITERIA MANUAL.

2. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF PARKER PUBLIC WORKS DEPARTMENT. THE TOWN RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.

3. A PRE-CONSTRUCTION MEETING SHALL BE SCHEDULED A MINIMUM OF 48 HOURS AND A MAXIMUM OF 96 HOURS PRIOR TO THE START OF CONSTRUCTION. A PRE-CONSTRUCTION MEETING WILL NOT BE SCHEDULED UNTIL THE GRADING PERMIT AND ALL OTHER NECESSARY PERMITS HAVE BEEN OBTAINED.

4. A DEVELOPMENT REVIEW ENGINEER SHALL BE CONTACTED A MINIMUM OF 24 HOURS PRIOR TO A NECESSARY INSPECTION. IF A DEVELOPMENT REVIEW ENGINEER IS NOT AVAILABLE AFTER PROPER NOTICE OF CONSTRUCTION ACTIVITY HAS BEEN PROVIDED, THE PERMITTEE MAY COMMENCE WORK IN THE DEVELOPMENT REVIEW ENGINEER'S ABSENCE. HOWEVER, TOWN OF PARKER RESERVES THE RIGHT TO REJECT THE IMPROVEMENT IF SUBSEQUENT TESTING REVEALS AN IMPROPER INSTALLATION.

5. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ACTUAL CONSTRUCTION. FOR INFORMATION, CONTACT DENVER INTER-UTILITY GROUP AT 303-534-6700, OR 1-800-922-1987. THE CONTRACTOR SHALL FIELD VERIFY SIZE AND HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING FACILITIES PRIOR TO CONSTRUCTION, AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.

6. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE PLANS, APPROVED BY THE TOWN OF PARKER PUBLIC WORKS DIRECTOR, AND ONE (1) COPY OF THE ROADWAY DESIGN AND CONSTRUCTION CRITERIA AT THE JOB SITE AT ALL TIMES.

7. ALL PROPOSED STREET CUTS TO EXISTING PAVEMENTS FOR UTILITIES, STORM SEWER, OR FOR OTHER PURPOSES ARE LISTED AND REFERENCED BELOW:

WATER TIE-IN	----
SANITARY SEWER CONNECTION	----
STORM SEWER CONNECTION	NONE

8. A PLAN FOR TRAFFIC CONTROL DURING CONSTRUCTION SHALL BE SUBMITTED TO THE TOWN OF PARKER FOR ACCEPTANCE WITH THE RIGHT-OF-WAY PERMIT USE APPLICATION. A PERMIT WILL NOT BE ISSUED WITHOUT AN APPROVED TRAFFIC CONTROL PLAN FOR USE DURING CONSTRUCTION.

9. ALL TRENCHES SHALL BE ADEQUATELY SUPPORTED AND THE SAFETY OF WORKERS PROVIDED FOR AS REQUIRED BY THE MOST RECENT OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION."

10. COMPACTION OF ALL TRENCHES MUST BE ATTAINED AND COMPACTION TEST RESULTS SUBMITTED TO THE DEVELOPMENT REVIEW ENGINEER IN PRELIMINARY FORM PRIOR TO PAVING AND IN FINAL FORM PRIOR TO PROBATIONARY ACCEPTANCE.

11. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING AND MAINTAINING EROSION AND SEDIMENT CONTROL MEASURES AT ALL TIMES DURING CONSTRUCTION. THE PLAN MAY BE MODIFIED AS FIELD CONDITIONS WARRANT WITH APPROVAL FROM THE TOWN OF PARKER PUBLIC WORKS DEPARTMENT.

12. THE CONTRACTOR SHALL PROVIDE, ERECT, AND MAINTAIN PROPER TRAFFIC CONTROL DEVICES UNTIL THE SITE IS OPEN TO TRAFFIC. THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE TOWN OF PARKER PUBLIC WORKS DEPARTMENT FOR APPROVAL PRIOR TO CONSTRUCTION.

13. PLANS ARE APPROVED FOR A PERIOD OF ONE (1) YEAR FROM THE DATE SHOWN ON THE TOWN OF PARKER SIGNATURE BLOCK. PLANS SHALL BE RESUBMITTED TO THE TOWN FOR APPROVAL AFTER ONE (1) YEAR. THE COST OF THE PLAN RE-REVIEW AND RE-ACCEPTANCE WILL BE CHARGED BACK TO THE DEVELOPER INCLUDING ALL TIME AND EXPENSES OF THE TOWN OF PARKER PUBLIC WORKS DEPARTMENT.

14. REPAIR OF ANY DAMAGE TO EXISTING IMPROVEMENTS OR LANDSCAPING IS THE RESPONSIBILITY OF THE CONTRACTOR.

15. ALL DAMAGED EXISTING CURB, GUTTER, AND SIDEWALK SHALL BE REPAIRED PRIOR TO ACCEPTANCE OF COMPLETED IMPROVEMENTS.

16. ALL CONSTRUCTION ACTIVITIES MUST COMPLY WITH THE STATE OF COLORADO PERMITTING PROCESS FOR "STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY." FOR INFORMATION, PLEASE CONTACT COLORADO DEPARTMENT OF HEALTH, WATER QUALITY CONTROL DIVISION, WQCD-PE-B2, 4300 CHERRY DRIVE SOUTH, DENVER, COLORADO 80222-1530. ATTENTION: PERMITS AND ENFORCEMENT SECTION. PHONE: 303-692-3500.

17. IF DEWATERING IS REQUIRED, A STATE CONSTRUCTION DEWATERING DISCHARGE PERMIT IS REQUIRED FOR DISCHARGES TO A STORM SEWER, CHANNEL, IRRIGATION DITCH, ANY STREET THAT IS TRIBUTARY TO THE AFOREMENTIONED FACILITIES, OR ANY WATER OF THE UNITED STATES.

18. ALL REFERENCES TO BOOKS, PAGES, MAPS, AND RECEPTION NUMBER ARE PUBLIC DOCUMENTS ON FILE WITH THE COUNTY CLERK AND RECORDER'S OFFICE.

PARKER STANDARD STORM DRAINAGE INFRASTRUCTURE NOTES

1. ALL STORM DRAINAGE IMPROVEMENTS ARE SUBJECT TO COMPLIANCE WITH THE COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, M & S STANDARDS, AND ALL STANDARD SPECIAL PROVISIONS CURRENTLY USED BY CDOT, WITH THE MODIFICATIONS SET FORTH IN THE TOWN OF PARKER'S STORM DRAINAGE AND ENVIRONMENT CRITERIA MANUAL (SDECM), AS AMENDED.

2. THE CONTRACTOR SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8 CRS), THE "PROTECTION OF FISHING STREAMS" TITLE 33, ARTICLE 5, CRS), THE "CLEAN WATER ACT" (33 USC 1344), "CHERRY CREEK RESERVOIR CONTROL REGULATION NO. 72" (5 CCR 1002-72), THE REGULATION PROMULGATED, CERTIFICATION OR PERMITS ISSUES, AND THE REQUIREMENTS PRESENTED IN THE SDECM REVISION TO SECTION 107 AND THE CONSTRUCTION BMP PLAN. IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND WATER QUALITY CONTROL LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, OR STATE AGENCIES, THE MORE RESTRICTIVE LAWS, RULES, OR REGULATIONS SHALL APPLY.

3. INSPECTIONS: CONSTRUCTION SHALL NOT BEGIN UNTIL A GRADING PERMIT HAS BEEN ISSUED FOR THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE TOWN OF PARKER ENGINEERING DEPARTMENT (PUBLIC WORKS) TO SCHEDULE INSPECTIONS A MINIMUM OF 48 HOURS PRIOR TO THE CONSTRUCTION OF ALL DRAINAGE INFRASTRUCTURE (STORM SEWERS, INLETS, MANHOLES, ENERGY DISSIPATERS, RIPRAP, GROUTED BOULDERS, DETENTION POND OUTLET STRUCTURES, FOREBAYS, TRICKLE CHANNELS, ETC.). FAILURE TO NOTIFY THE ENGINEERING DEPARTMENT FOR INSPECTIONS MAY RESULT IN NON-ACCEPTANCE OF THE INFRASTRUCTURE BY THE TOWN. URBAN DRAINAGE AND FLOOD CONTROL DISTRICT MUST ALSO BE NOTIFIED IN A SIMILAR MANNER FOR ALL MAINTENANCE ELIGIBLE DRAINAGE INFRASTRUCTURES (CONSULT WITH STORMWATER ENGINEERING DIVISION).

4. STRUCTURAL BACKFILL (CDOT CLASS 1) SHALL BE COMPACTED TO CDOT STANDARD SPECIFICATIONS 203.03. STRUCTURAL BACKFILL (CDOT CLASS 2) SHALL CONFORM TO CDOT STANDARD SPECIFICATION 203.07. AT THE CONTRACTOR'S OPTION, STRUCTURAL BACKFILL (SQUEEGEE) MEETING THE GRADATION REQUIREMENTS CONTAINED IN REVISION OF SECTION 206 OF THE CDOT STANDARD SPECIFICATIONS AS PRESENTED IN THE SDECM, MAY BE SUBSTITUTED FOR STRUCTURE BACKFILL (CLASS 1 OR CLASS 2) FOR BACKFILLING OF CULVERT PIPES, STORM SEWER PIPES, MANHOLES AND INLET STRUCTURES; HOWEVER, THE TOP 2 FEET BELOW SUB-GRADE ELEVATION SHALL BE THE REQUIRED EMBANKMENT MATERIAL.

5. ALL EXCAVATIONS SHALL MEET OSHA REQUIREMENTS.

6. TESTING: PROBATIONARY ACCEPTANCE OF STORM DRAINAGE IMPROVEMENTS WILL BE CONTINGENT UPON SATISFACTORY TESTING RESULTS. IN ALL CASES WHERE TESTS INDICATE COMPACTION LESS THAN THAT REQUIRED BY TOWN SPECIFICATIONS, ADDITIONAL COMPACTION AND TESTS WILL BE REQUIRED UNTIL THE SPECIFICATIONS ARE MET. FREQUENCY OF TESTING WILL BE AS FOLLOWS:

A) 1 TEST FOR SUB-GRADE AND 1 TEST FOR BACKFILL AT EVERY ABOVE-GROUND APPURTENANCE (MANHOLES, INLETS, ETC.)
B) 1 TEST EVERY 200 LF OF MAINLINE TRENCHES EVERY 1-FOOT OF BACKFILL LIFT AND WITHIN 1 FOOT FROM ALL STRUCTURES.

7. ALLOWABLE STORM SEWER CONDUIT MATERIAL WITHIN THE TOWN OF PARKER SHALL BE LIMITED TO REINFORCED CONCRETE PIPE (RCP) CONFORMING TO CDOT STANDARD SPECIFICATION 706.02.

8. ALL RCP JOINTS SHALL BE MANUFACTURED IN ACCORDANCE WITH ASTM C443. RUBBER GASKETS SHALL BE USED ON ALL PIPE JOINTS CONFORMING TO ASTM C443. ALL RCP SECTIONS SHALL BE JOINTED IN SUCH A MANNER THAT THE ENDS ARE FULLY ENTERED AND THE INNER SURFACES ARE REASONABLY FLUSH. AVERAGE JOINT GAP THAT EXCEEDS ½ INCH SHALL BE FILLED WITH AN APPROVED FLEXIBLE PLASTIC SEALANT.

9. JOINT RESTRAINTS AND TOE-WALLS CONFORMING TO CDOT M&S STANDARD PLAN NO. M-601-11 SHALL BE USED ON ALL RCP FLARED END SECTION OUTFALLS.

10. EPOXY COATED REBAR SHALL BE USED AS REINFORCING STEEL ON ALL STORM INLETS. REFERENCE CDOT M&S STANDARD NO. M-604-10, 11, 12, AND 13.

11. CDOT CLASS D CONCRETE SHALL BE USED FOR ALL CONCRETE DRAINAGE STRUCTURES.

12. PRE-CAST INLETS AND MANHOLE BASES SHALL NOT BE USED WITHIN THE TOWN OF PARKER RIGHT-OF-WAY, WITH THE EXCEPTION OF CDOT TYPE C AND D INLETS.

13. TWO (2) MANHOLE ACCESS JOINTS ARE REQUIRED ON ALL TYPE "R" CURB INLETS GREATER THAN OR EQUAL TO TEN (10) FEET IN LENGTH AS PRESENTED IN CDOT M&S STANDARD PLAN NO. M-604-12.

14. ALL GROUTING (BOULDERS, RIPRAP) SHALL BE IN ACCORDANCE WITH THE REVISION OF SECTION 506 OF THE CDOT STANDARD SPECIFICATIONS AS PRESENTED IN THE SDECM.

15. ALL BOULDERS AND RIPRAP SHALL BE SELECTED AND PLACED IN ACCORDANCE WITH THE REVISION OF SECTION 506 OF THE CDOT STANDARD SPECIFICATIONS AS PRESENTED IN THE SDECM.

16. CONTRACTOR SHALL REFER TO THE TOWN OF PARKER'S CONSTRUCTION BEST MANAGEMENT PRACTICES DETAILS AND NOTES FOR ALL REQUIREMENTS RELATING TO RE-VEGETATION, SEDIMENT AND EROSION CONTROL REQUIREMENTS FOR CONSTRUCTION ACTIVITIES.

17. PIPE BELLS SHALL NOT BE CAST INTO MANHOLE BASES OR INLETS.

SIGNAGE & STRIPING NOTES

1. SEE SIGNAGE & STRIPING PLAN FOR NOTES.

ROADWAY NOTES:

1. PAVING SHALL NOT COMMENCE UNTIL A SOILS REPORT AND PAVEMENT DESIGN IS APPROVED BY THE ENGINEERING DIVISION AND SUB-GRADE COMPACTION TESTS ARE SUBMITTED TO AND APPROVED BY THE DEVELOPMENT REVIEW ENGINEER.

2. STANDARD TOWN OF PARKER HANDICAP RAMPS ARE TO BE CONSTRUCTED AT ALL CURB RETURNS AND AT ALL "T" INTERSECTIONS.

3. ALL STATIONING IS BASED ON CENTERLINE OF ROADWAYS UNLESS OTHERWISE NOTED.

4. ALL ELEVATIONS ARE ON USGS DATUM WITH DATE. RANGE POINT OR MONUMENT SHALL BE SHOWN ON THE CONSTRUCTION PLANS.

5. EXCEPT WHERE OTHERWISE PROVIDED FOR IN THESE PLANS AND SPECIFICATIONS, THE COLORADO DEPARTMENT OF HIGHWAYS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, THE COLORADO DEPARTMENT OF HIGHWAYS M-STANDARDS, AND THE TOWN OF PARKER ROADWAY DESIGN AND CONSTRUCTION CRITERIA MANUAL, LATEST EDITION, SHALL APPLY.

MASTER LEGEND

PROPOSED SANITARY SEWER W/MANHOLE
PROPOSED WATERLINE W/ GATE VALVE
PROPOSED F.H. ASSEMBLY, GATE VALVE & TEE
EXISTING SANITARY SEWER W/ MANHOLE
EXISTING WATERLINE W/ GATE VALVE
EXISTING FH ASSEMBLY, GATE VALVE & TEE
EXISTING HIGH PRESSURE GAS LINE
PROPOSED STORM SEWER W/ MANHOLE
PROPOSED EOA, FL AND BOC
PROPOSED SIDEWALK
PROPOSED ROW
PROPOSED UTILITY EASEMENT
EXISTING TOP BACK OF CURB
EXISTING FLOWLINE
EXISTING LIP OF CURB/EDGE OF ASPHALT
EXISTING STORM INLET
PROPOSED STORM INLET
PROPOSED WATER SERVICE W/ CURBSTOP
PROPOSED SANITARY SERVICE
EXISTING WATER SERVICE W/ CURBSTOP
EXISTING SANITARY SERVICE
CAUTION! UTILITY CROSSING
PROPOSED CROSS PAN
EXISTING CROSS PAN
PROPOSED CONTOURS
EXISTING CONTOURS
EXISTING TELEPHONE LINE
EXISTING ELECTRIC LINE
EXISTING STORM
EXIST. OVERHEAD UTILITY
EXISTING POWER POLES
HP HIGH POINT
LP LOW POINT
TW TOP OF WALL ELEVATION
M.E. MATCH EXISTING
INDICATES PROPERTY CORNER ELEV. PER GRADING TEMPLATES
CUT/FILL LINE
FLOW DIRECTION ARROW
PROPOSED ASPHALT LIMITS
PROPOSED SIGN
PROPOSED STREET LIGHT
TRAIL (CRUSHED FINES)
TRAIL (CONCRETE)

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TOWN OF PARKER APPROVALS

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS DATE

	DATE	REVISIONS	DRAWN BY
I.	09/2020	APPROVED	
H.	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
G.	05/01/20	RESPONSED TO TOWN COMMENTS	JAH
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A.	11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
GENERAL NOTES

COLORADO REGISTERED PROFESSIONAL ENGINEER — ERIC T. GUTH — 30877 — 11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 2 OF 50
CLCPKC3

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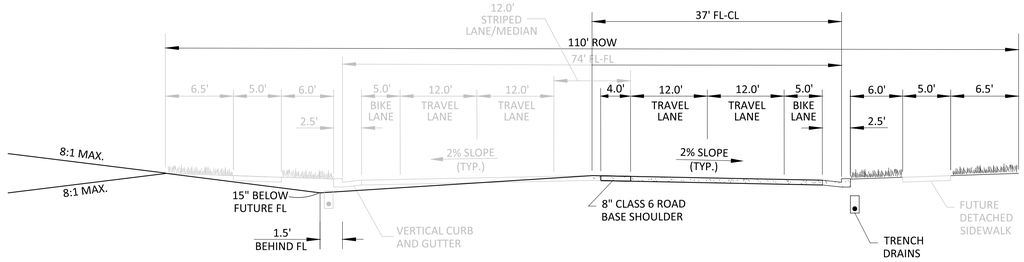


PARKER MAJOR COLLECTOR WITHIN DOUGLAS COUNTY JURISDICTION

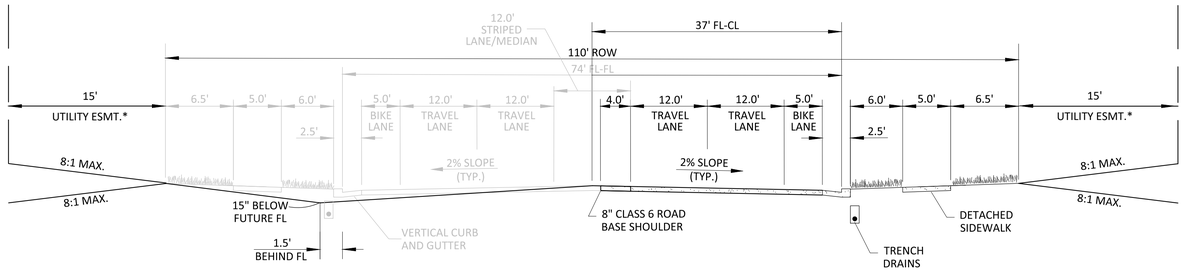
PROPOSED CONDITION

STA 13+93.54 - 44+00.69

*FUTURE IMPROVEMENTS ARE SHADED FOR REFERENCE

GENERAL NOTES:

1. TRENCH DRAINS ARE REQUIRED ON COLLECTOR STREETS, SEE STANDARD DETAIL 30.
2. ROW WIDTH SHOWN IS TYPICAL. ADDITIONAL ROW AND/OR LANES MAY BE REQUIRED BASED ON A TRAFFIC STUDY.
3. SEE STANDARD DETAIL 3 FOR TYPICAL CURB AND GUTTER INFORMATION.
4. SEE STANDARD DETAIL 4 FOR TYPICAL SIDEWALK INFORMATION.
5. *UTILITY EASEMENT WIDTH VARIES FROM TYPICAL AT CERTAIN LOCATIONS. SEE PLANS FOR LOCATION INFORMATION.



PARKER MAJOR COLLECTOR

PROPOSED CONDITION

STA 44+00.69 - 78+00

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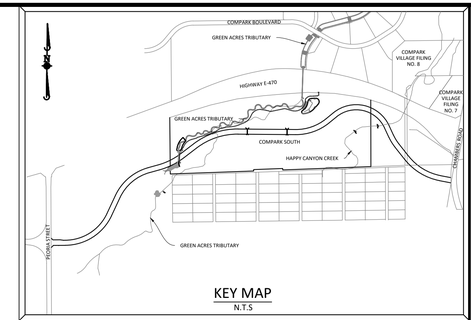
BELFORD AVENUE

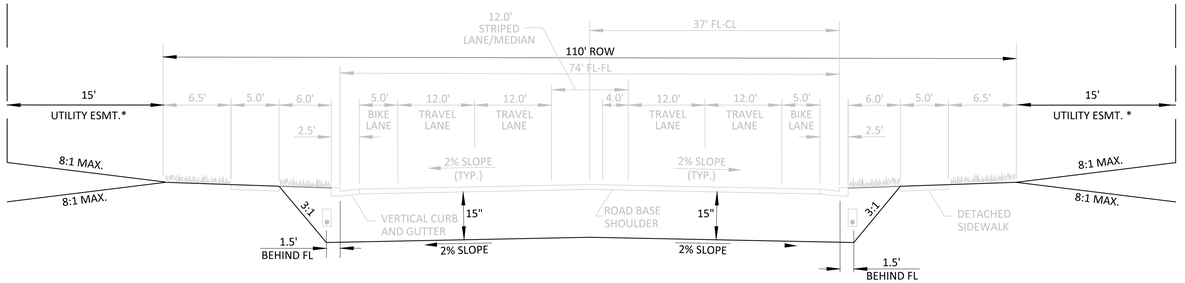


KEY MAP

N.T.S

SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)



UNDERCUT

PROPOSED CONDITION

STA 78+00 - 92+93

*FUTURE IMPROVEMENTS ARE SHADED FOR REFERENCE

** UNDERCUT DETERMINED FROM PRELIMINARY GEOTECHNICAL EVALUATION

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS — DATE

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H	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
G	06/30/20	RESPONSED TO TOWN COMMENTS	JAH
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/1/16	4TH SUBMITTAL	
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B	4/11/16	2ND SUBMITTAL	
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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE

TOWN OF PARKER, COLORADO

TYPICAL ROADWAY SECTION

COLORADO REGISTERED PROFESSIONAL ENGINEER — ETG — 30877 — 11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 3 OF 50

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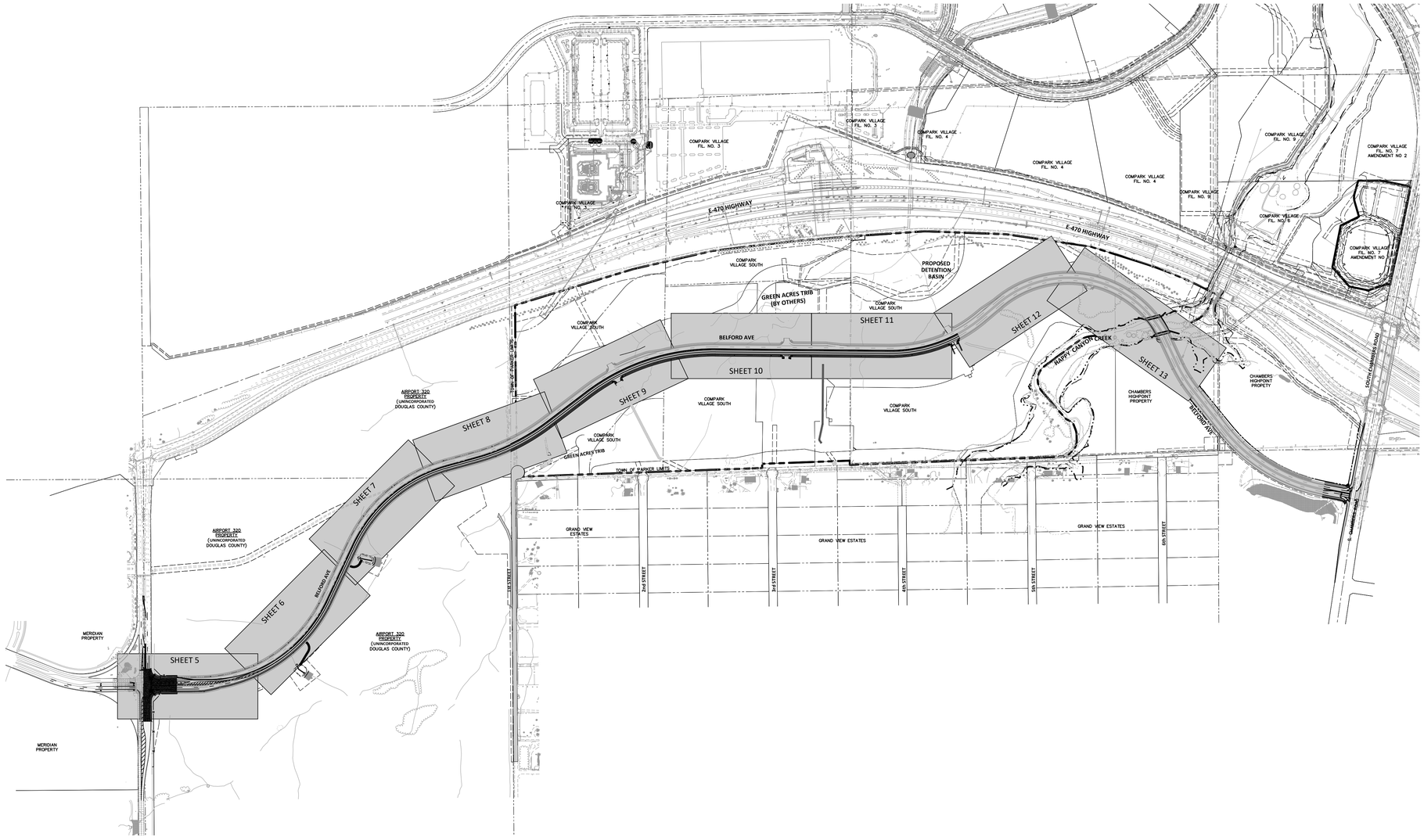

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F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/1/2016	4TH SUBMITTAL	
C	6/24/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	
A	11/2015	1ST SUBMITTAL	EG

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TOWN OF PARKER, COLORADO

STREET INDEX SHEET

COLORADO REGISTERED PROFESSIONAL ENGINEER
RICKY L. MOORE
30877
11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
4 OF 50
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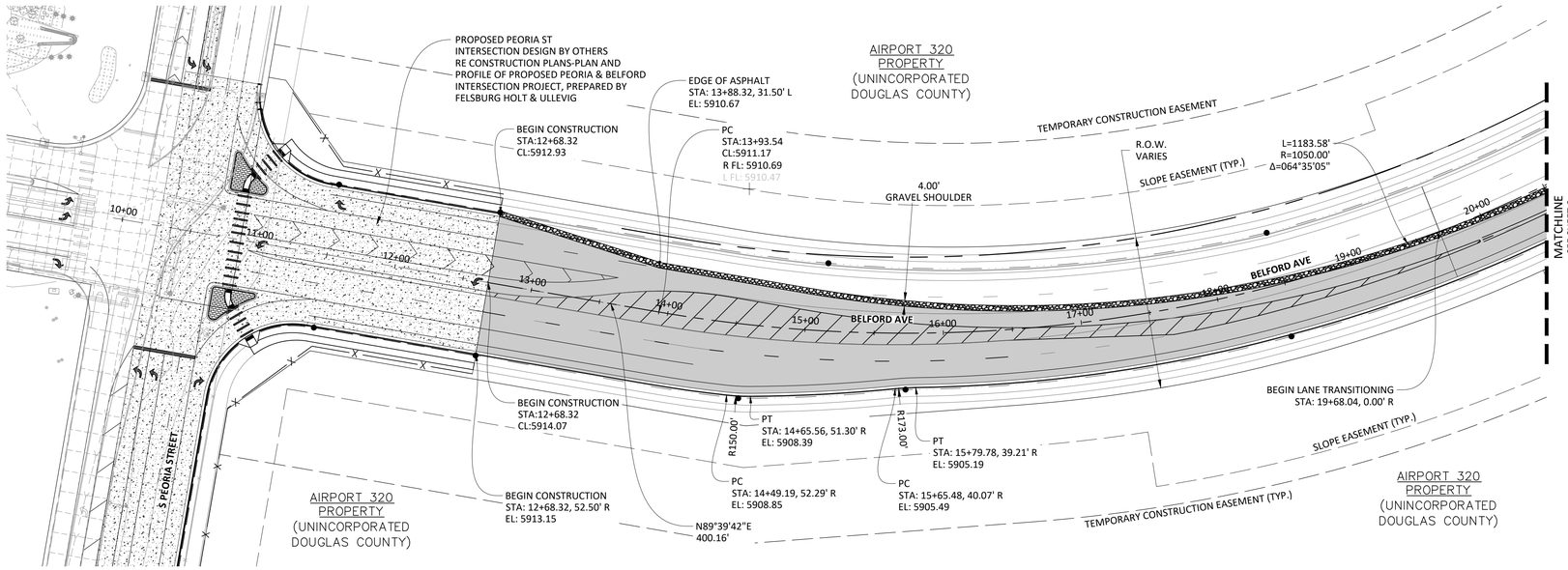
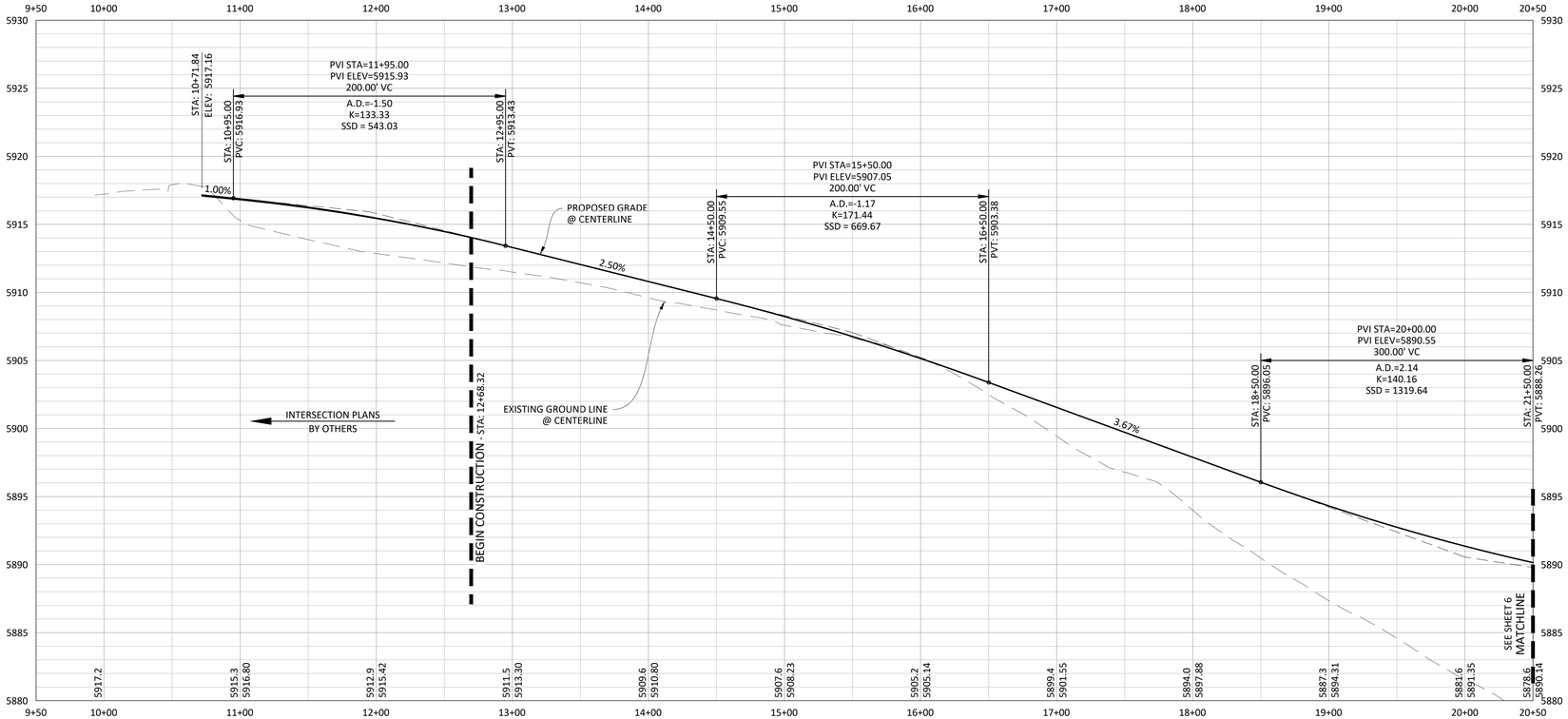
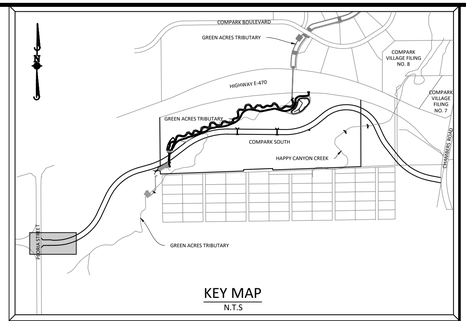


PLAN: BELFORD AVENUE



PROFILE: BELFORD AVENUE



KEY MAP
N.T.S

SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

0 25 50 100
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

NOTES:

1) REFER TO GENERAL NOTES ON SHEET 2 FOR ALL APPLICABLE CONSTRUCTION STANDARDS & MASTER LEGEND
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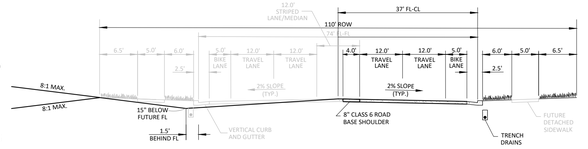
7) REFER TO SHEET 39-45 FOR STREET AND CURB DETAILS.REFER TO SHEET 46-50 FOR STORM SEWER DETAILS.



PARKER MAJOR COLLECTOR WITHIN
DOUGLAS COUNTY JURISDICTION
PROPOSED CONDITION

0 25 50 100
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
BELFORD AVENUE - PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
KEVIN M. MCCARTY
30877
11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET
5 OF 50
CLCPKC3 ---

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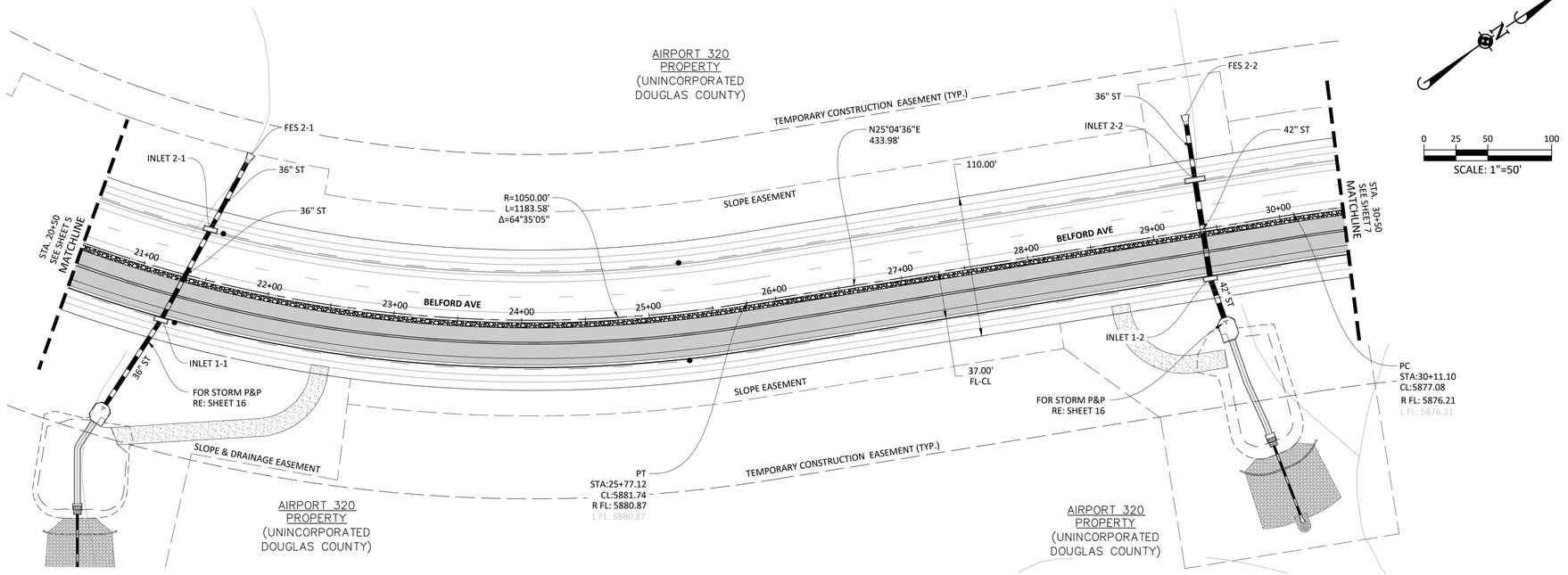
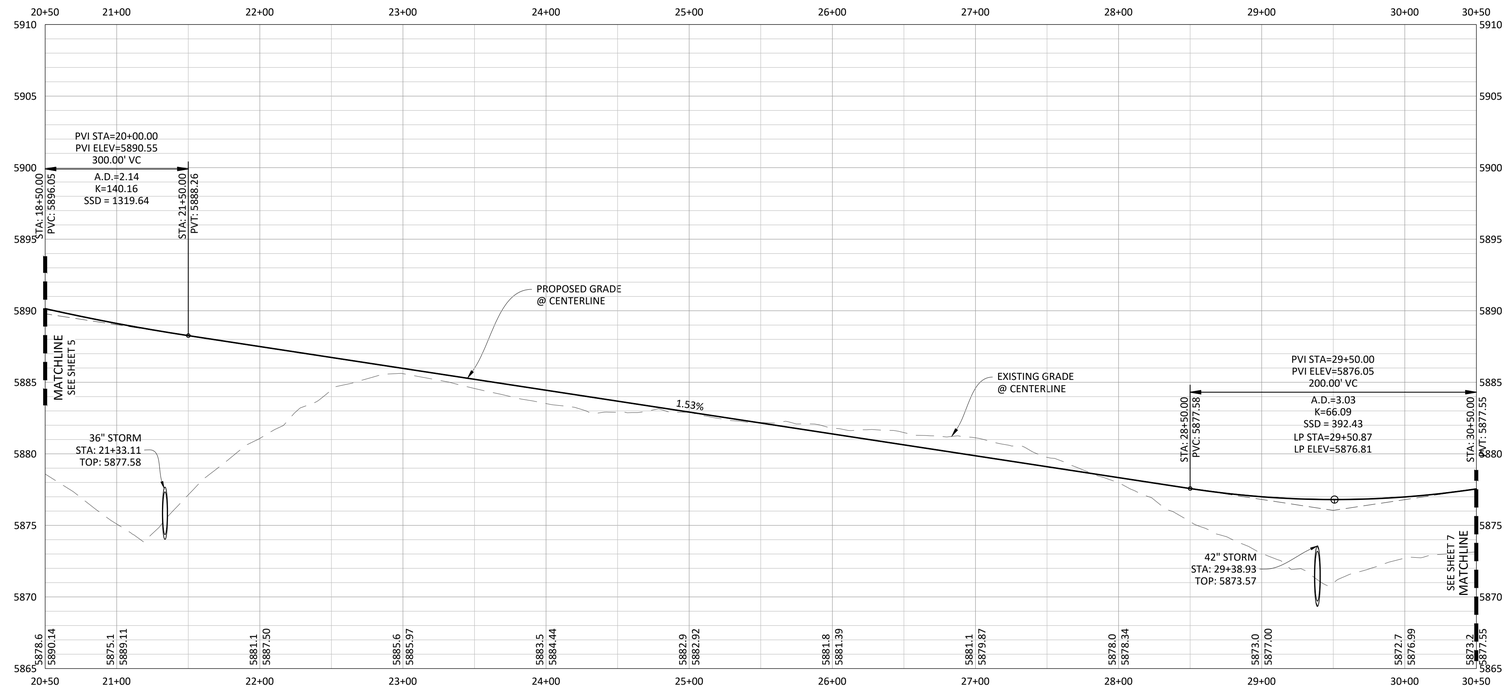
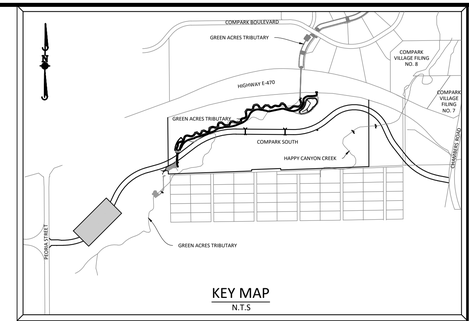


PLAN: BELFORD AVENUE



PROFILE: BELFORD AVENUE



KEY MAP
N.T.S

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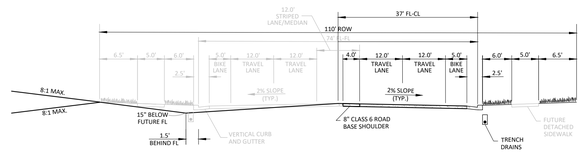

PARKER MAJOR COLLECTOR WITHIN DOUGLAS COUNTY JURISDICTION
PROPOSED CONDITION

0 25 50 100
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

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

TOWN OF PARKER APPROVALS

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B.	4/11/16	2ND SUBMITTAL	
A.	11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
BELFORD AVENUE - PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER 30877 11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET
6 OF 50
CLCPKC3 ---

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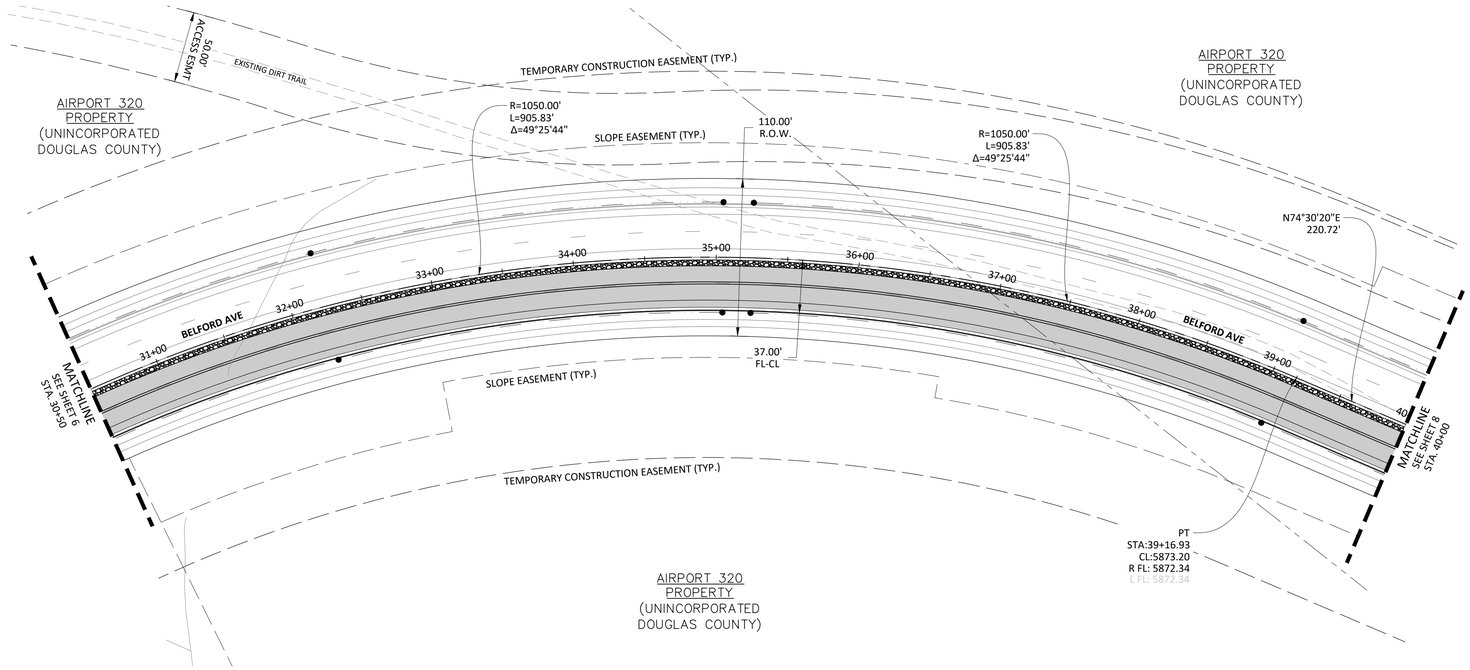
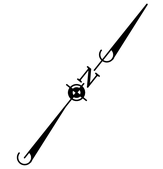
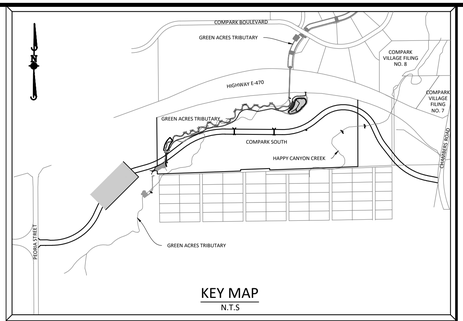
Plotted: 10/30/2020 1:02 PM Dwg Name: P:\Clcpkc3\Com\South\2 Filing 1 No GAT\Com\South\03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Belford Ave - (2).dwg Updated By: JHawthorne



PLAN: BELFORD AVENUE





KEY MAP
N.T.S

SOURCE BENCHMARKS:

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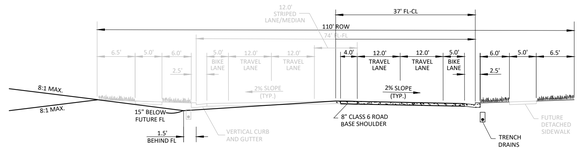
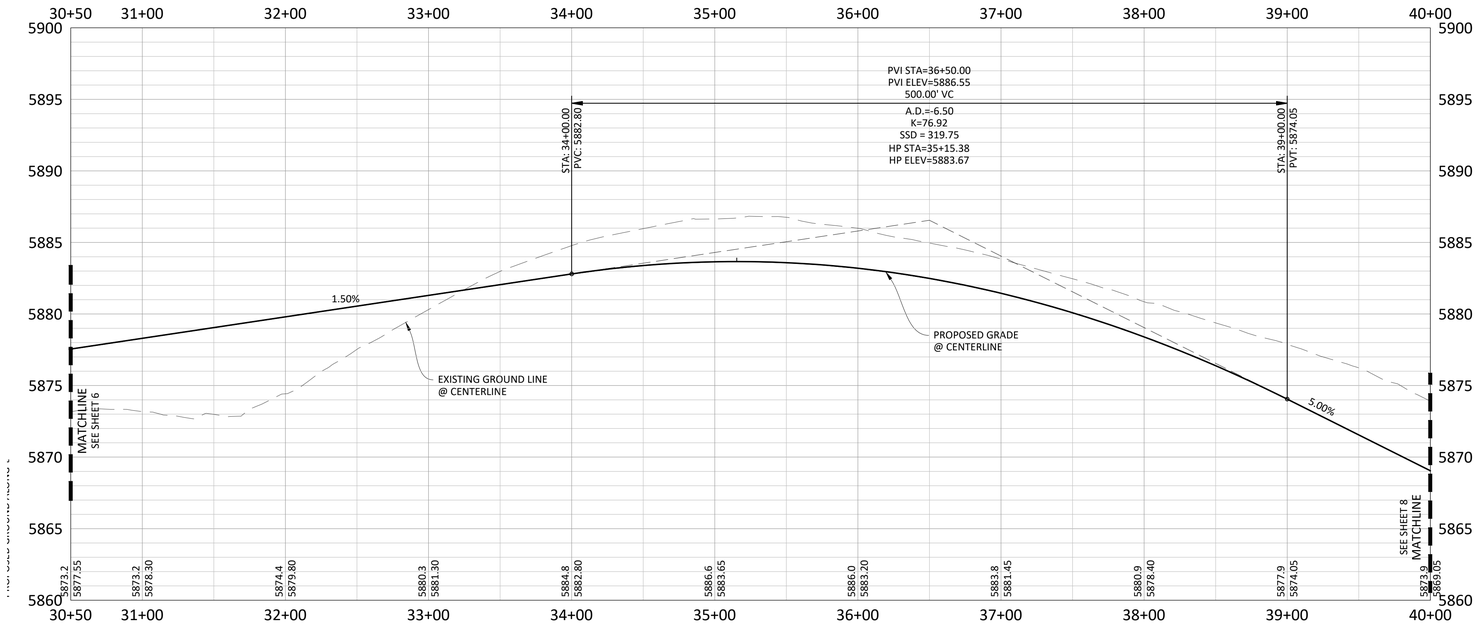


PARKER MAJOR COLLECTOR WITHIN
DOUGLAS COUNTY JURISDICTION
PROPOSED CONDITION



PROFILE: BELFORD AVENUE

0 25 50 100
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

Know what's **below.**
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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
BELFORD AVENUE - PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
RYAN J. MOSS
30877
11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
7 OF 50
CLCPKC3 ---

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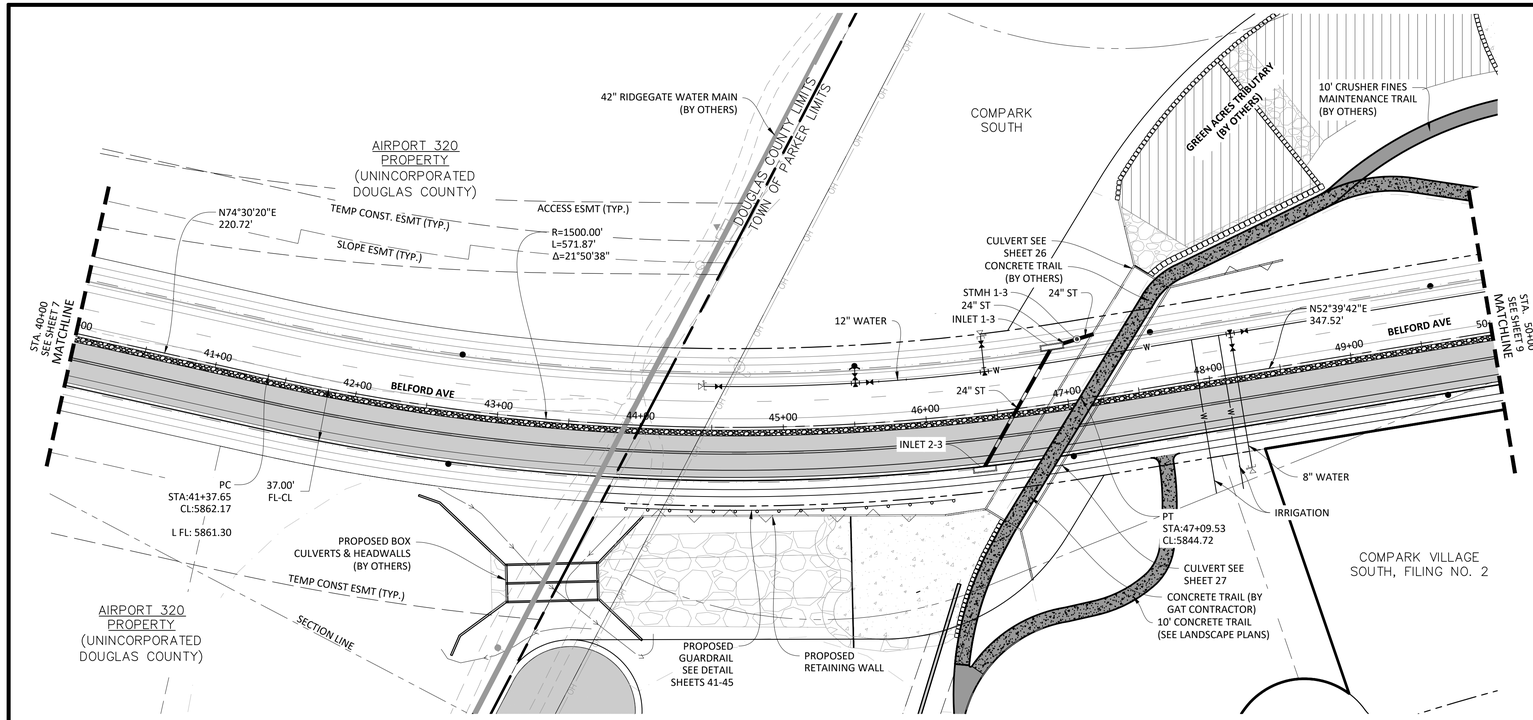
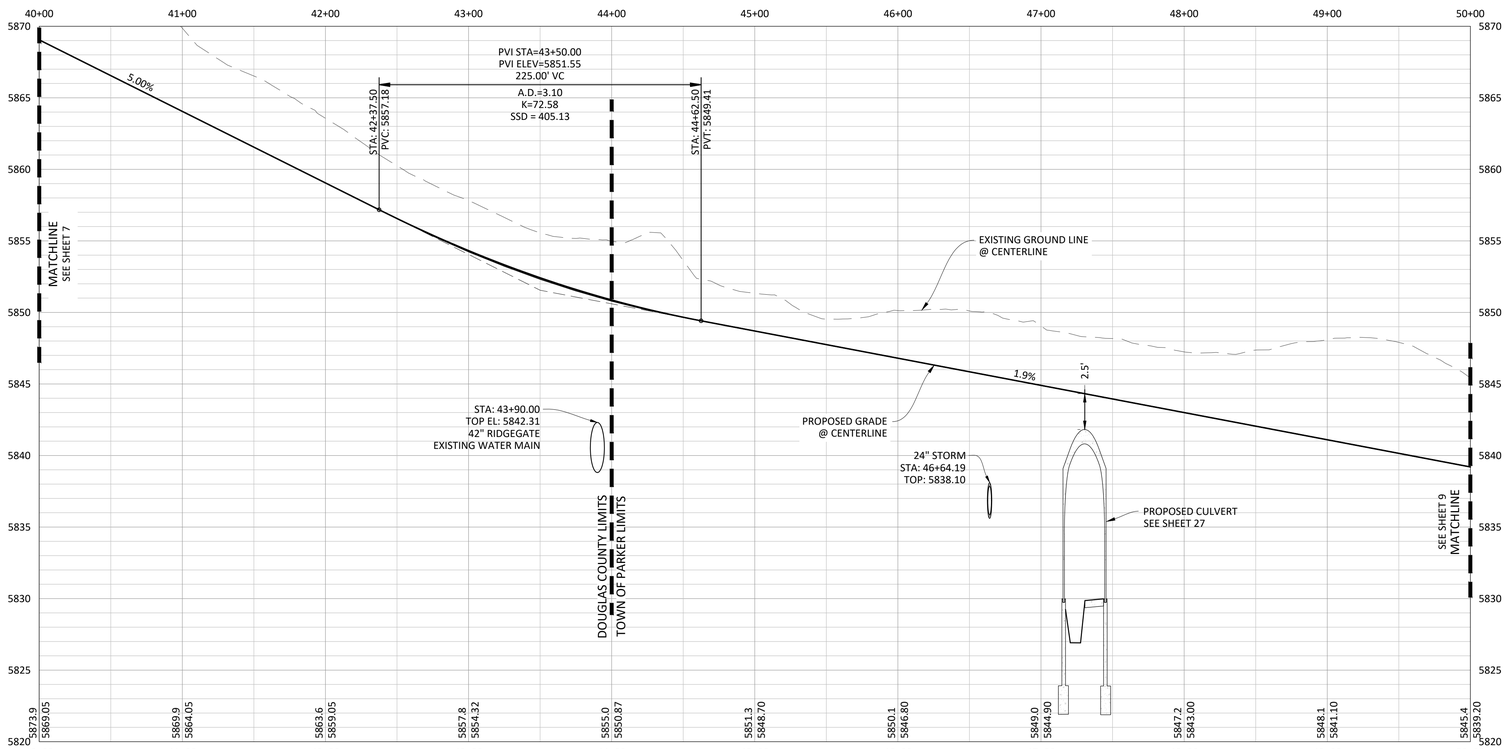
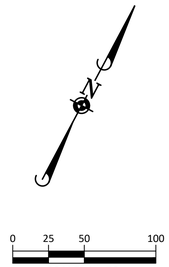


PLAN: BELFORD AVENUE



PROFILE: BELFORD AVENUE



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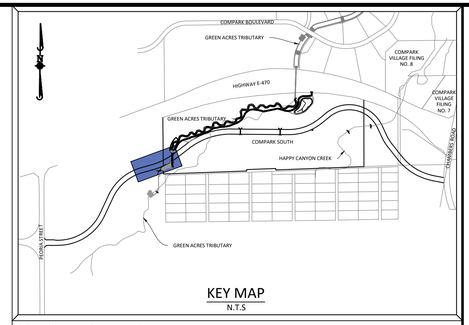

KEY MAP
N.T.S

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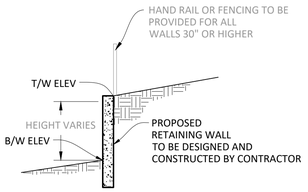

TYPICAL RETAINING WALL GRADING LABEL DETAIL
N.T.S

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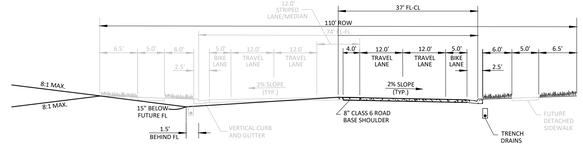
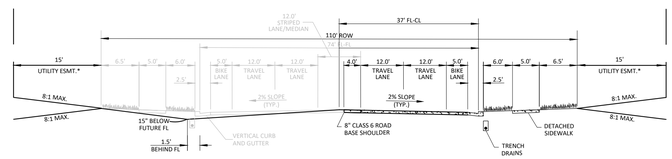


PARKER MAJOR COLLECTOR WITHIN DOUGLAS COUNTY JURISDICTION
PROPOSED CONDITION



PARKER MAJOR COLLECTOR
PROPOSED CONDITION

*FUTURE IMPROVEMENTS ARE SHADED FOR REFERENCE

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

0 25 50 100

SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
BELFORD AVENUE - PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
RICHARD I. MAPP
30877
11-17-2020

PROJ. MGR.:	RIM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 8 OF 50
CLCPKC3 ---

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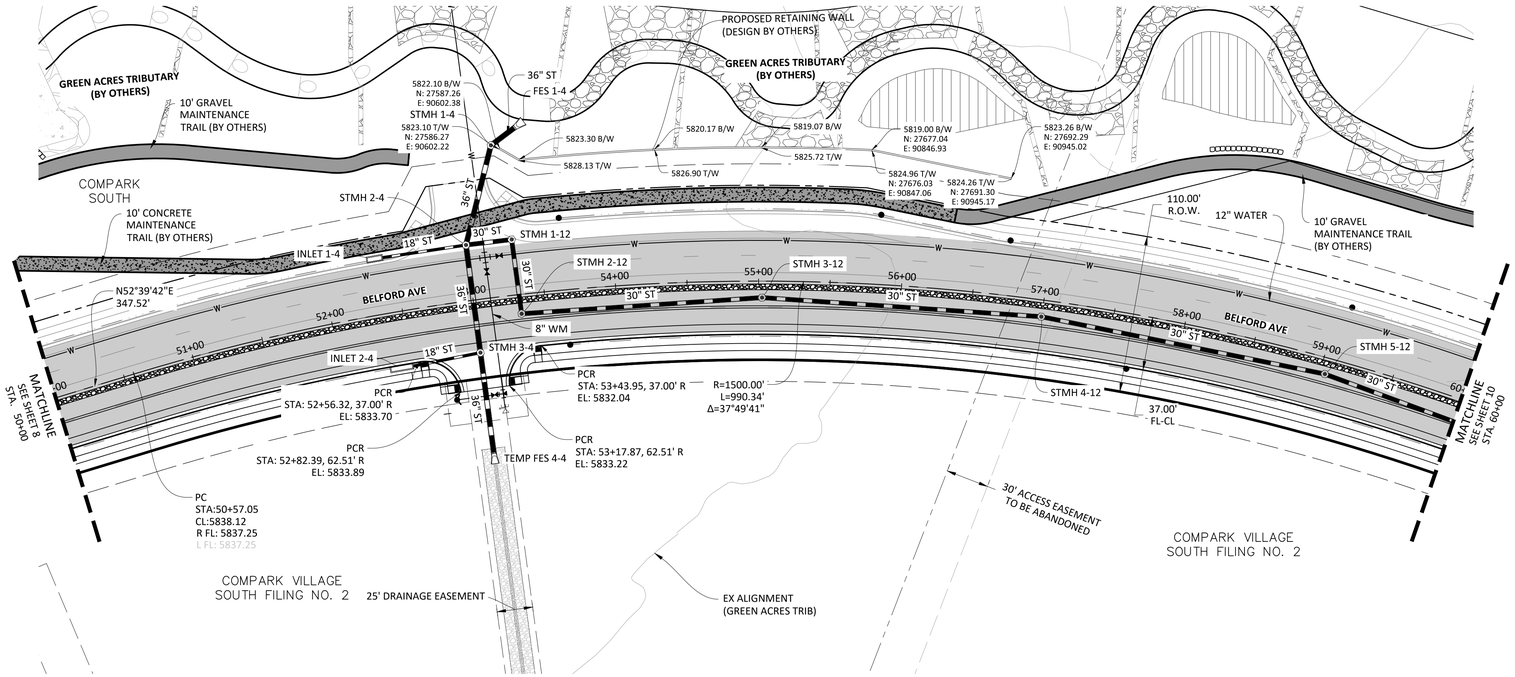
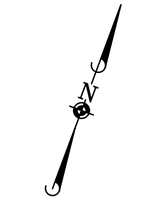
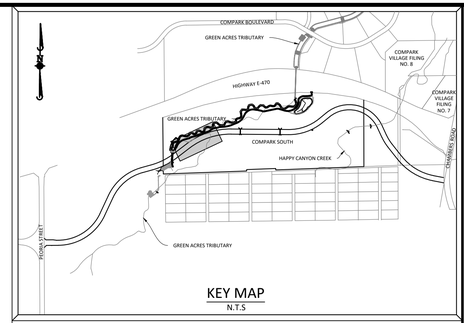


PLAN: BELFORD AVENUE





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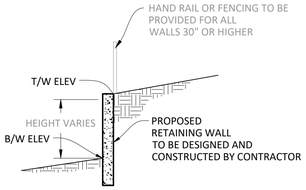

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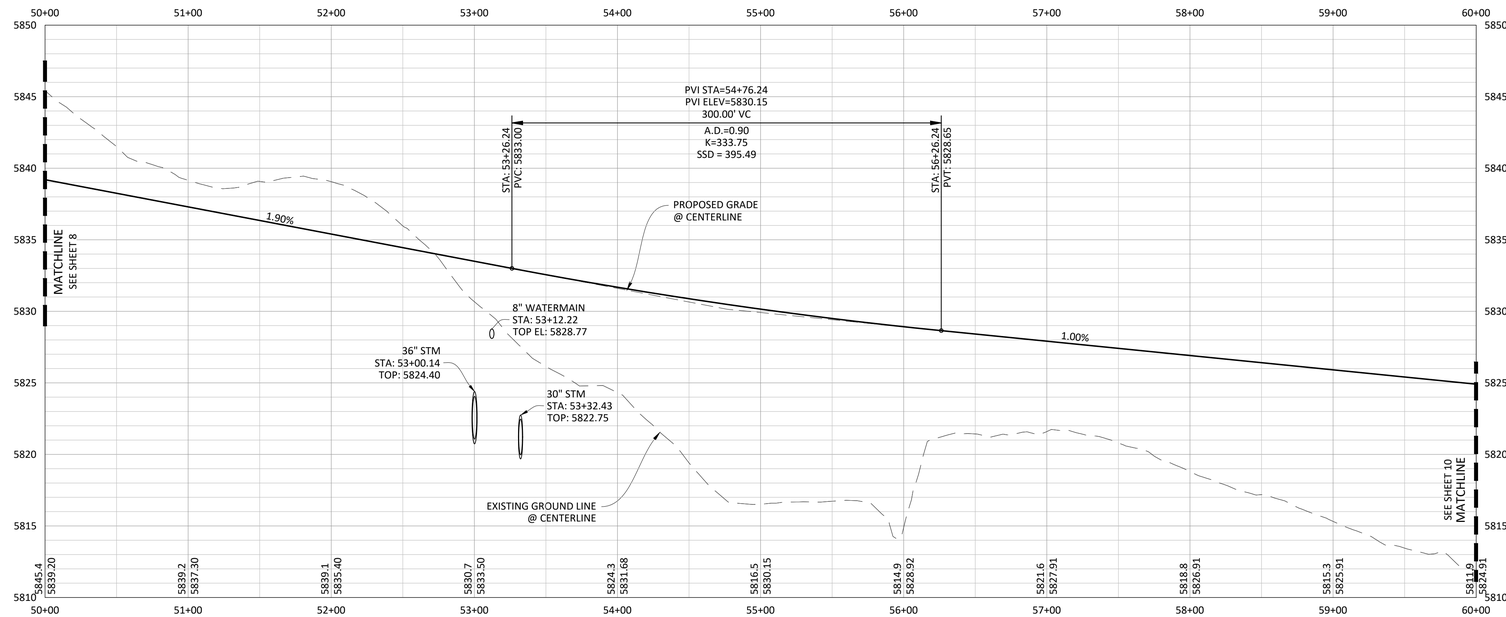
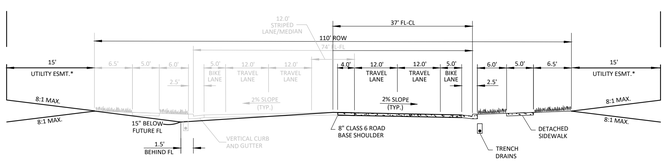


PROFILE: BELFORD AVENUE



PARKER MAJOR COLLECTOR
PROPOSED CONDITION

0 25 50 100
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
BELFORD AVENUE - PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER 30877 11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 9 OF 50
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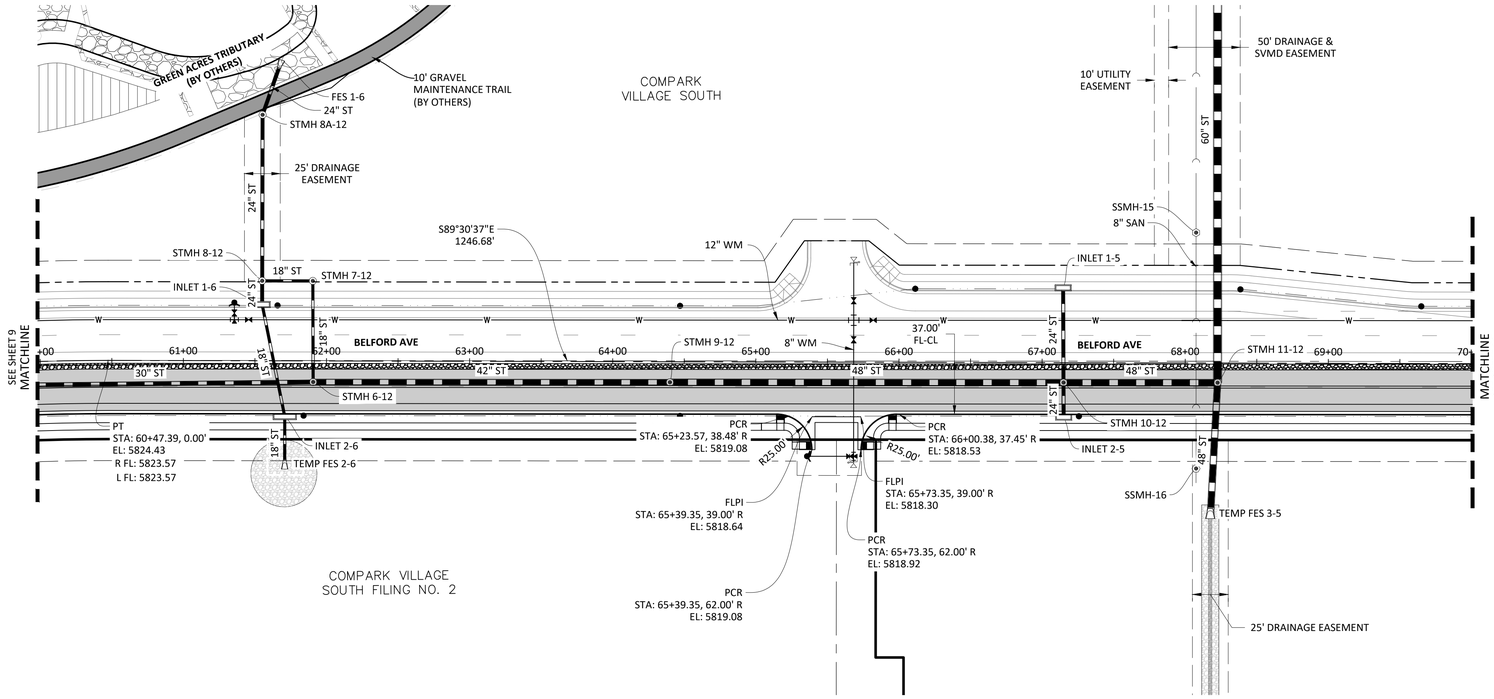
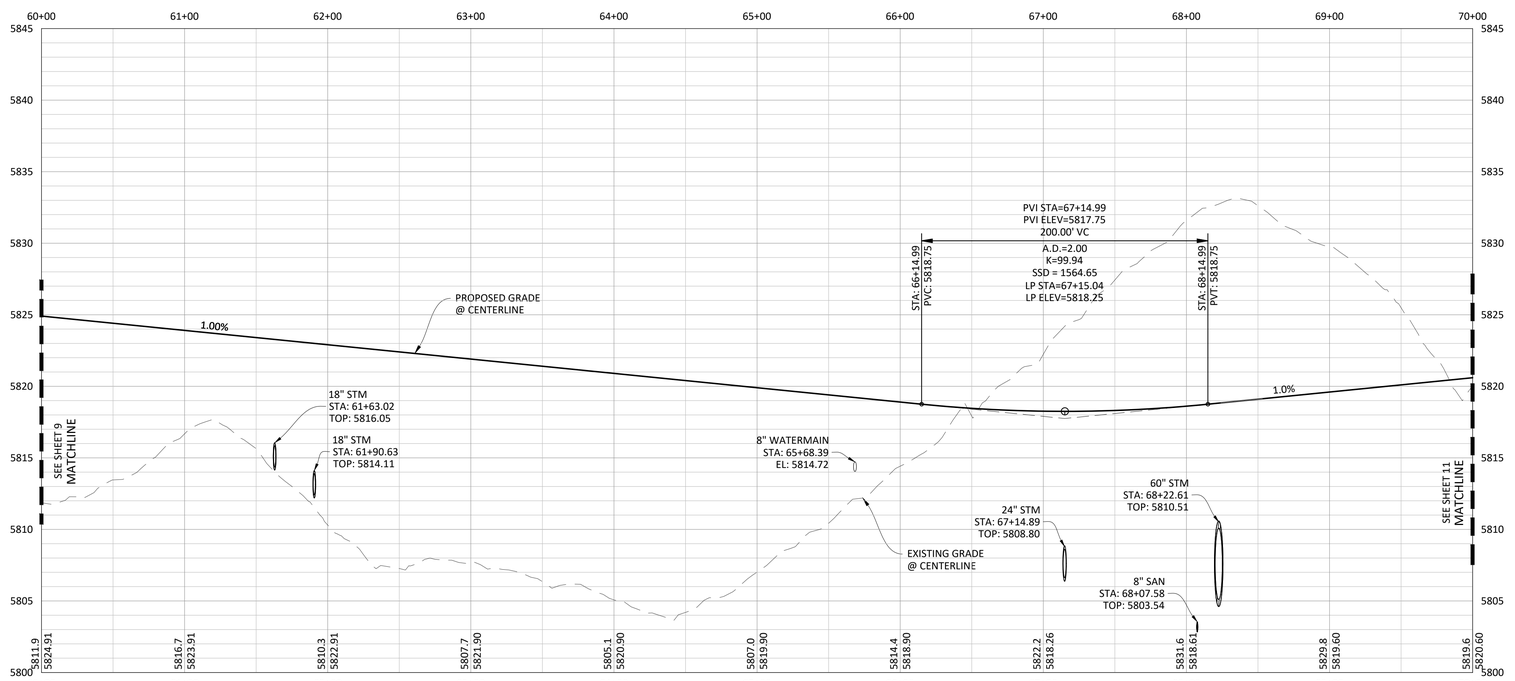
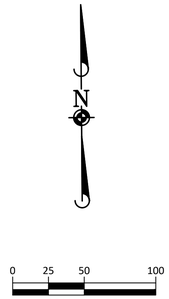
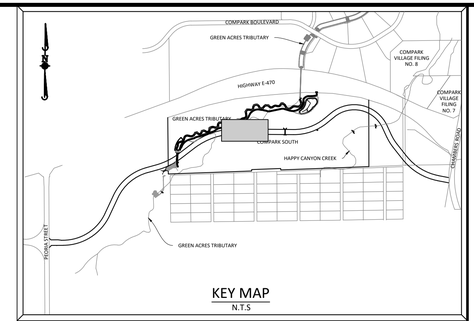


PLAN: BELFORD AVENUE



PROFILE: BELFORD AVENUE





KEY MAP
N.T.S

SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

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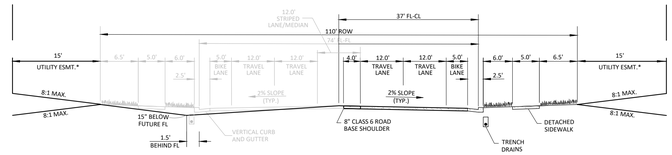

PARKER MAJOR COLLECTOR
PROPOSED CONDITION



Know what's below. Call before you dig.

TOWN OF PARKER APPROVALS

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B	4/11/16	2ND SUBMITTAL	
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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
BELFORD AVENUE - PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
30877
11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET
10 OF 50
CLCPKC3 ---

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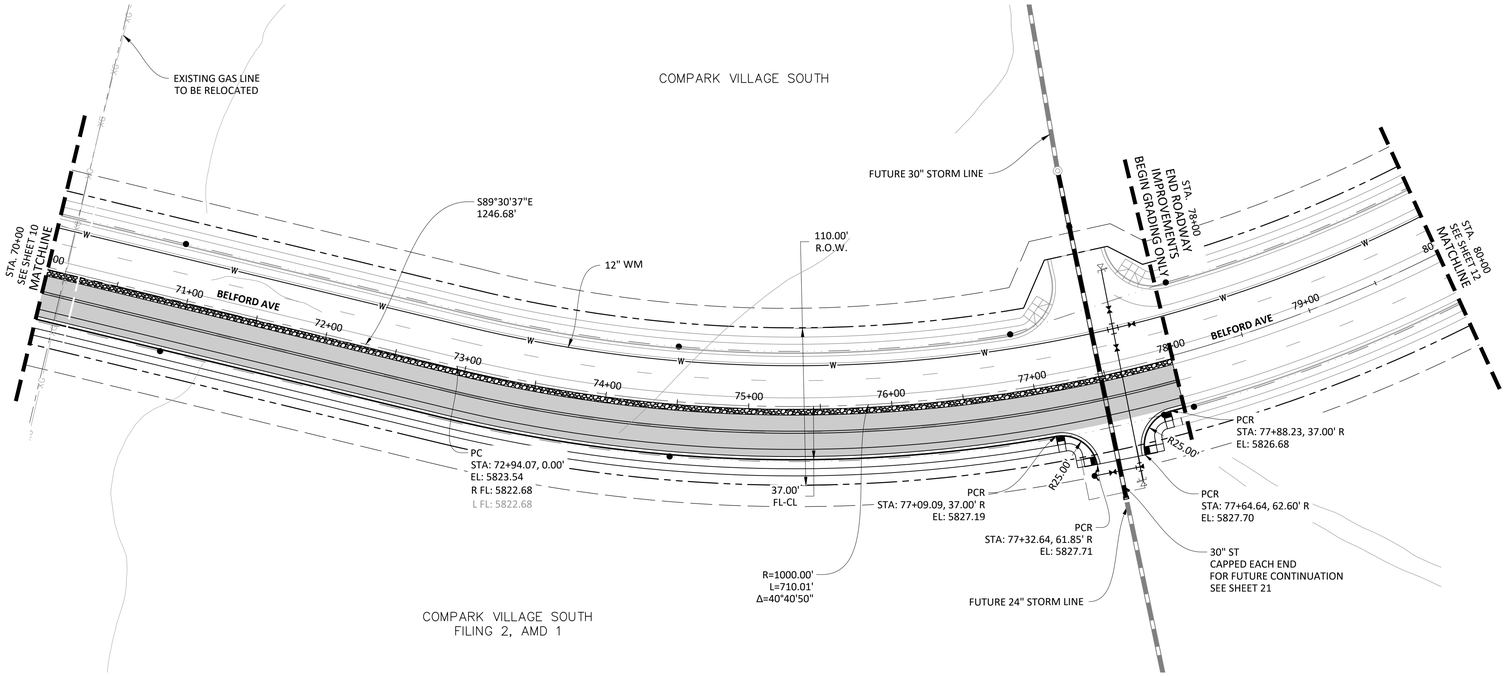
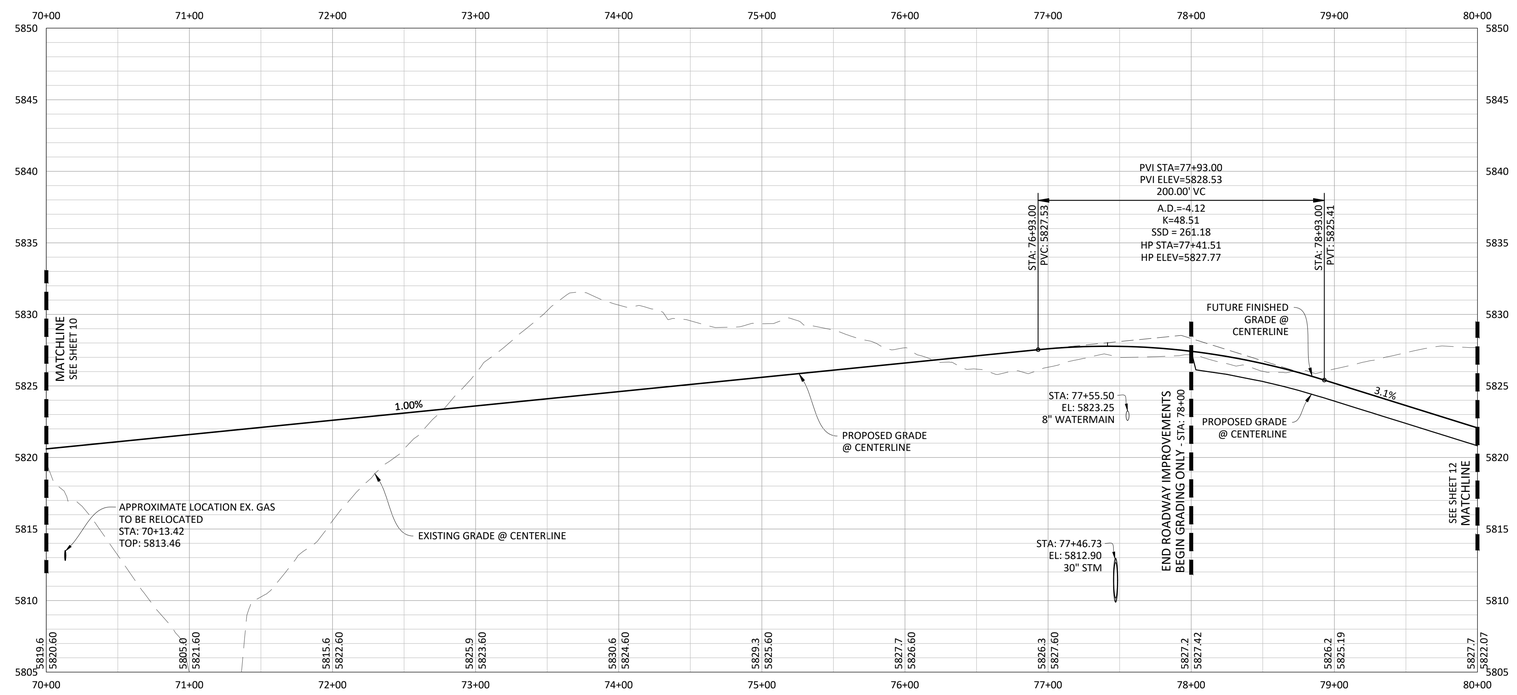
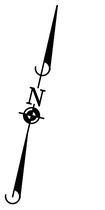


PLAN: BELFORD AVENUE



PROFILE: BELFORD AVENUE



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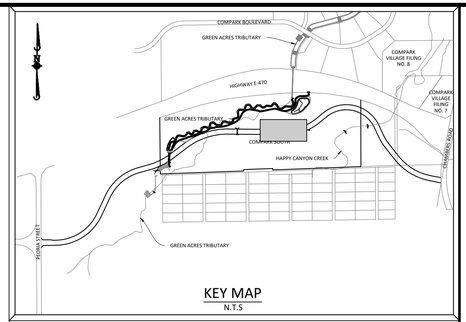

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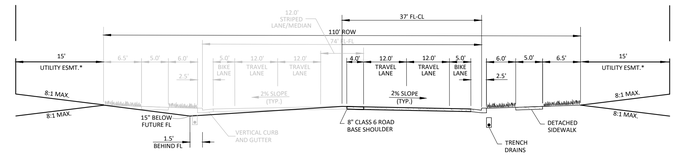
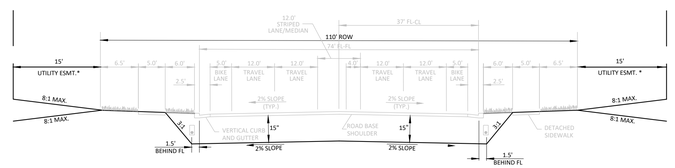


PARKER MAJOR COLLECTOR
PROPOSED CONDITION



UNDERCUT
PROPOSED CONDITION

0 25 50 100

SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
BELFORD AVENUE - PLAN & PROFILE

COLORADO REGISTERED
ERIC TOLLEFSON
30877
11-17-2020
PROFESSIONAL ENGINEER

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
11 OF 50
CLCPKC3 ---

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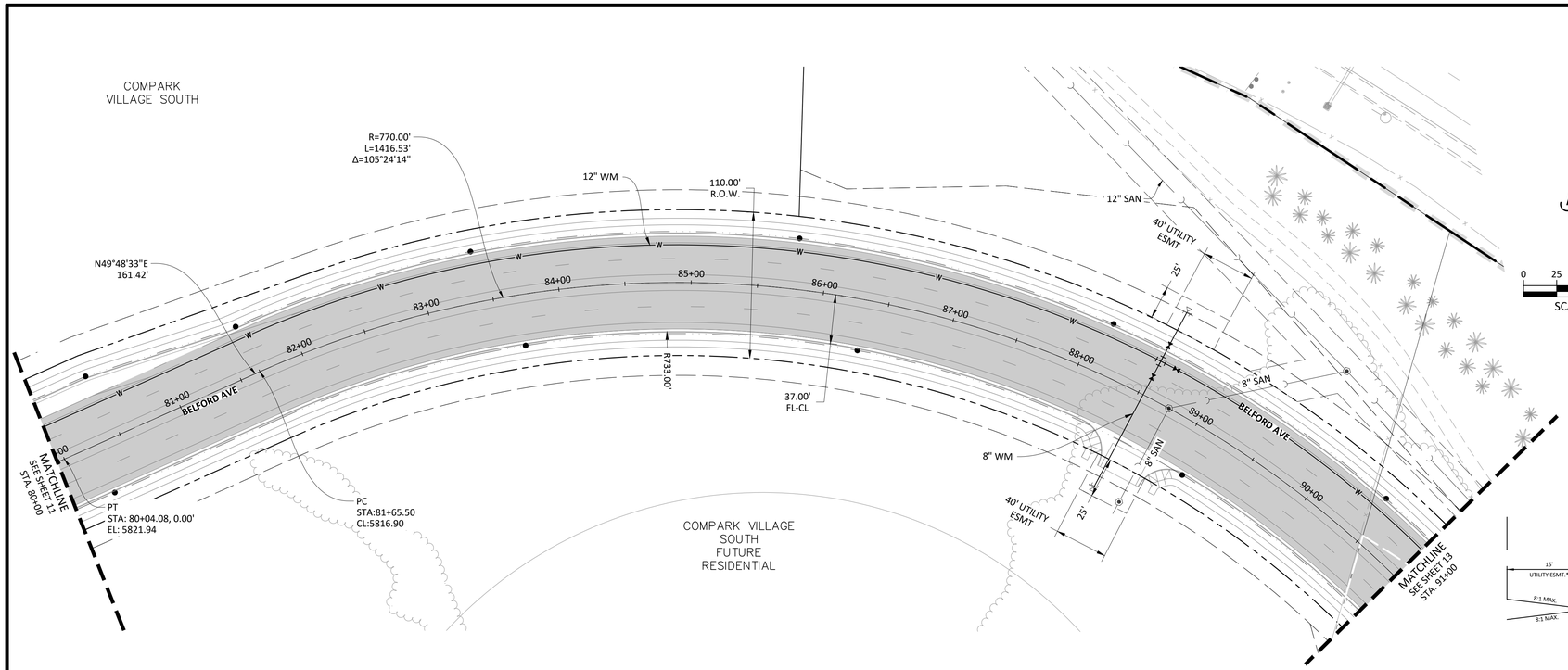

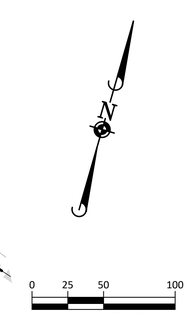

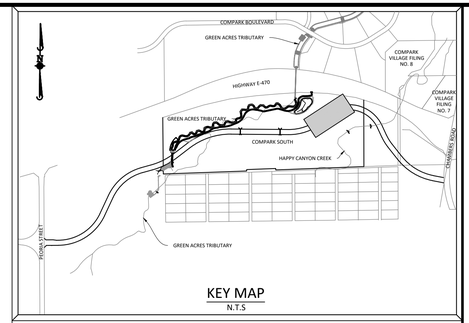

KEY MAP
N.T.S

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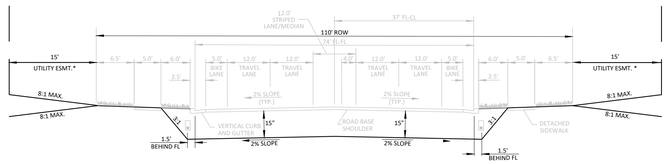

UNDERCUT
PROPOSED CONDITION

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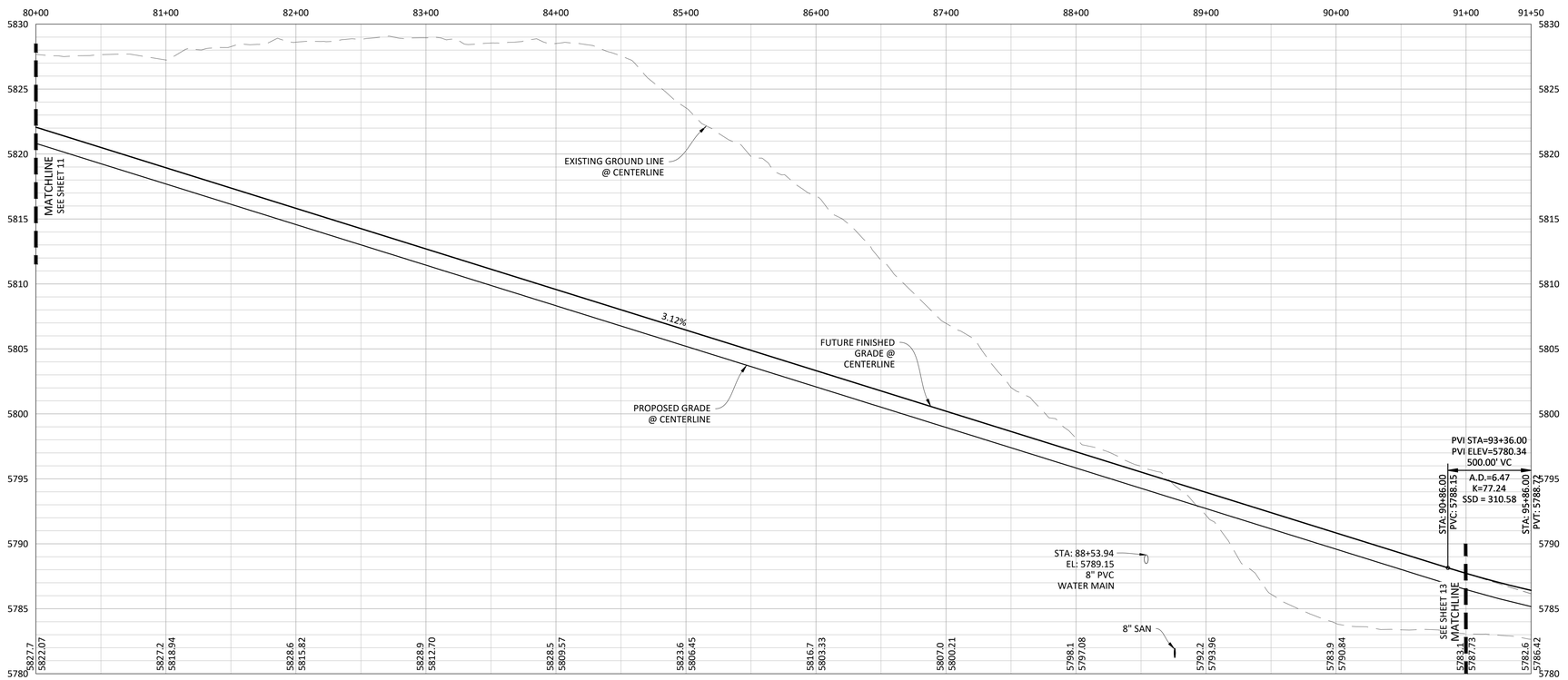
PLAN: FUTURE BELFORD AVENUE



PROFILE: BELFORD AVENUE

SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
BELFORD AVENUE - PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER — 30877 — 11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 12 OF 50
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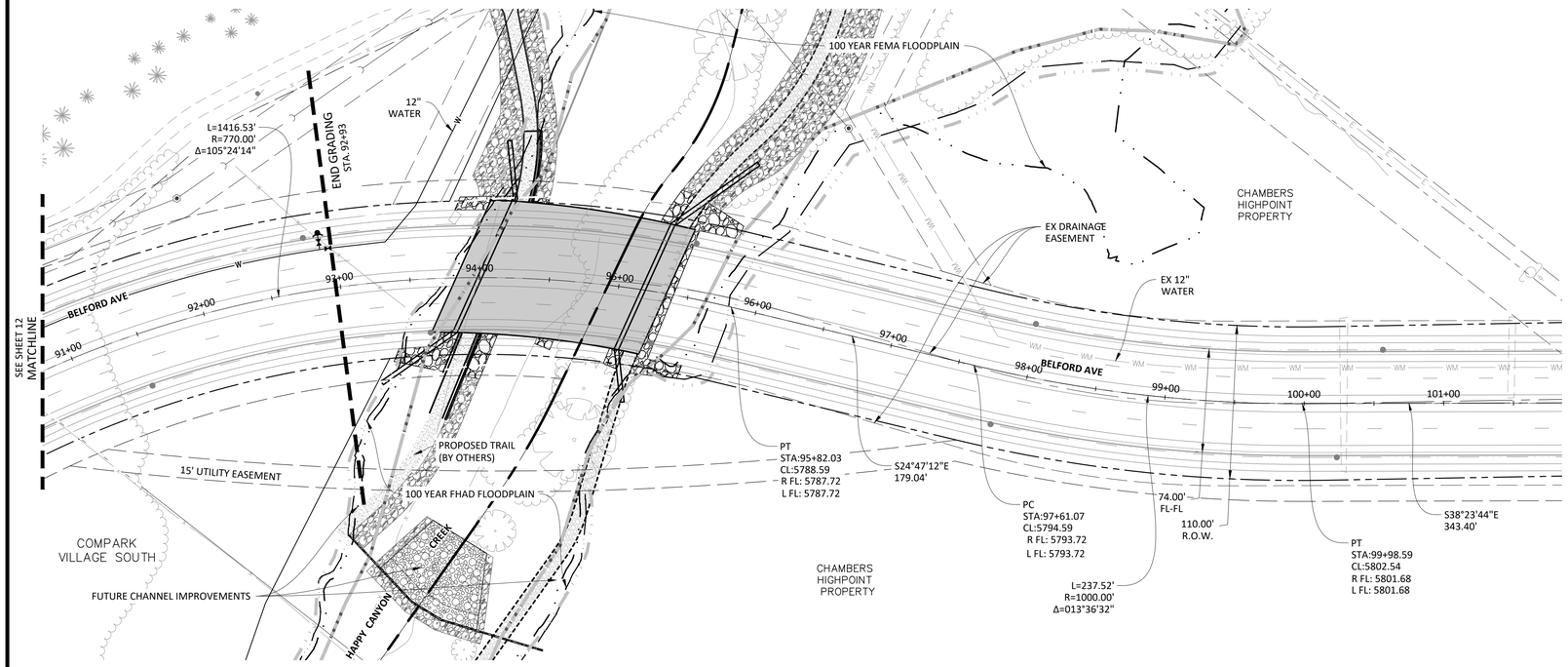
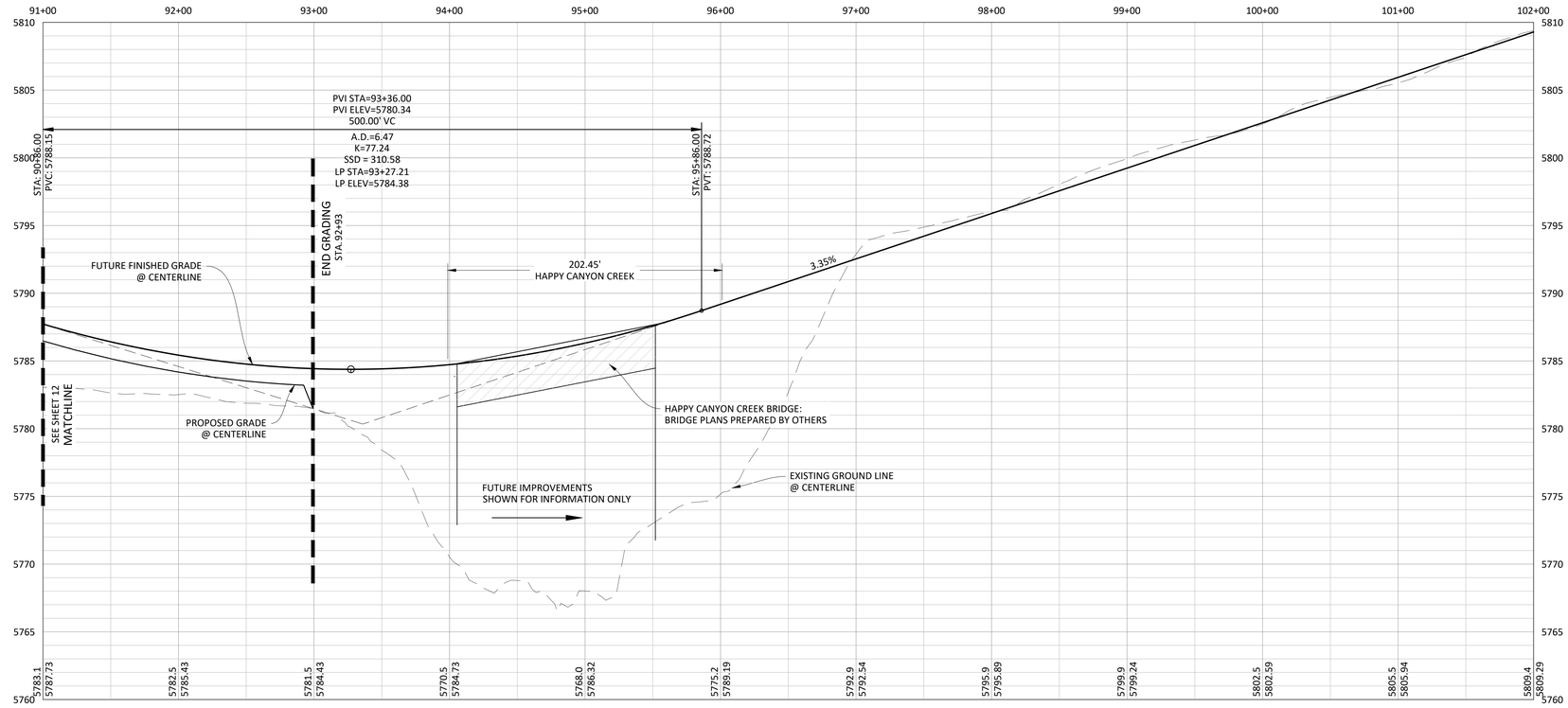
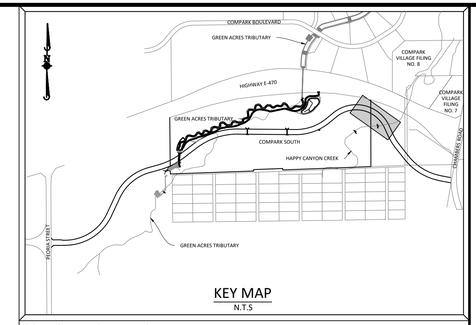


PLAN: FUTURE BELFORD AVENUE



PROFILE: BELFORD AVENUE



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0 25 50 100
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COLORADO REGISTERED PROFESSIONAL ENGINEER
RYAN M. MARTIN
30877
11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET
13 OF 50
CLCPKC3 ---

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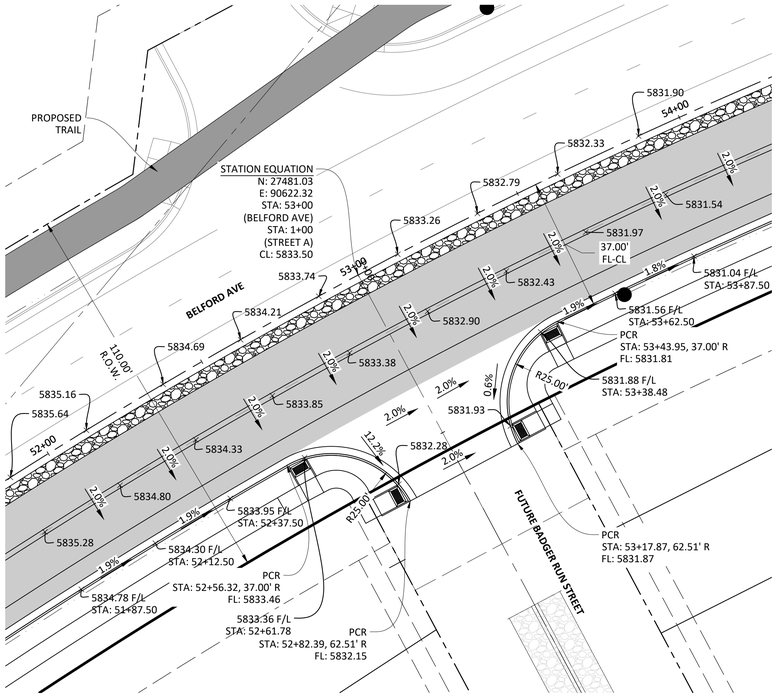
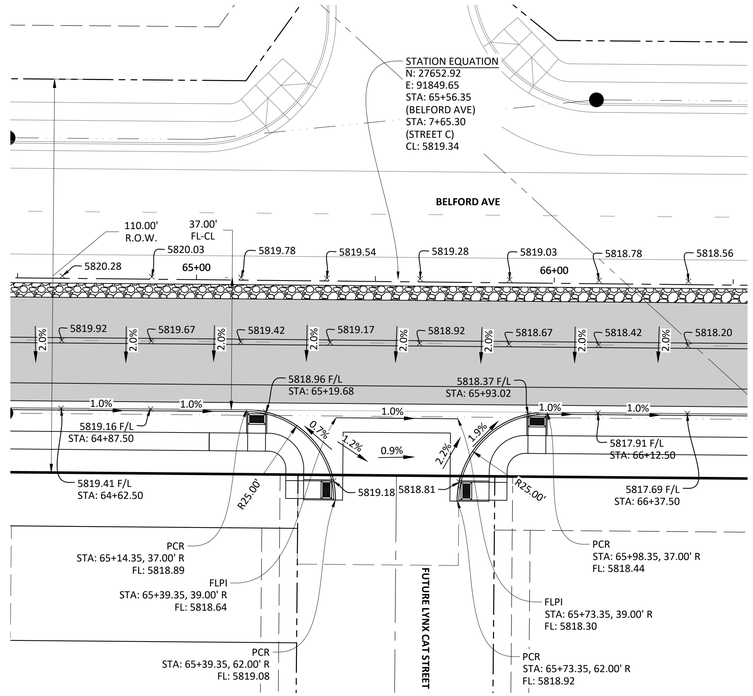
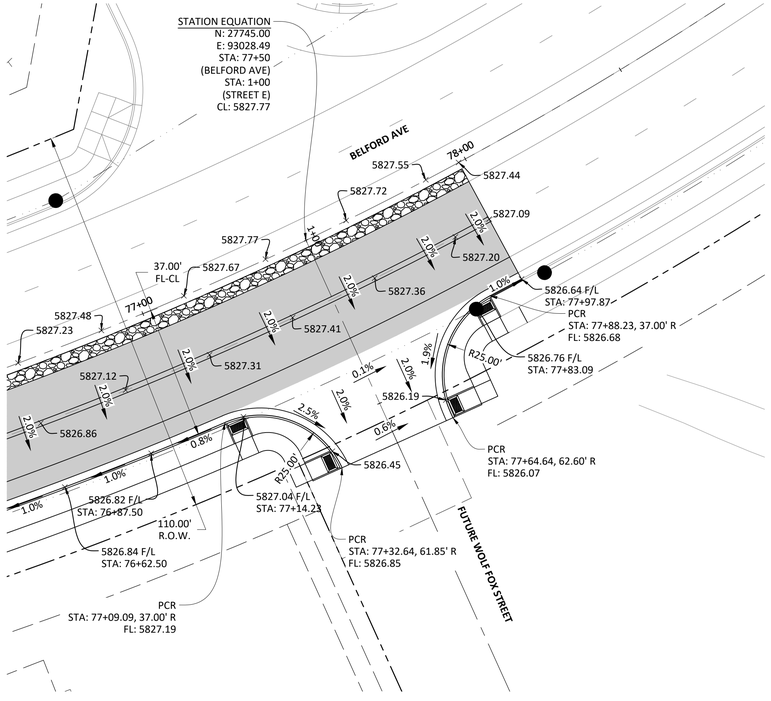


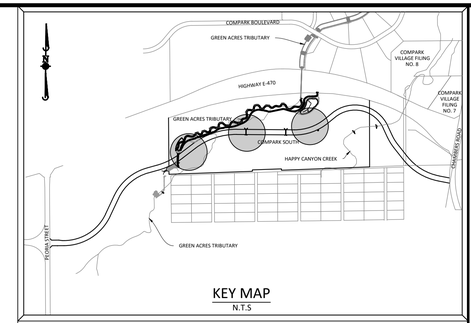
BELFORD AVENUE & FUTURE BADGER RUN STREET



BELFORD AVENUE & FUTURE LYNX CAT STREET



BELFORD AVENUE & FUTURE WOLF FOX STREET



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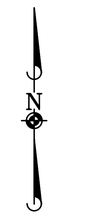
H	07/31/20	RESPONSES TO TOWN COMMENTS	JAH
G	06/01/20	RESPONSES TO TOWN COMMENTS	JAH
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/1/16	4TH SUBMITTAL	
C	8/31/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	EG
A	11/2015	1ST SUBMITTAL	



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SCALE: 1"=20'

Know what's below.
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TOWN OF PARKER APPROVALS

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS DATE

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
INTERSECTION DETAILS

COLORADO REGISTERED KEY MANN 30877 11-17-2020 PROFESSIONAL ENGINEER

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 14 OF 50
CLCPKC3

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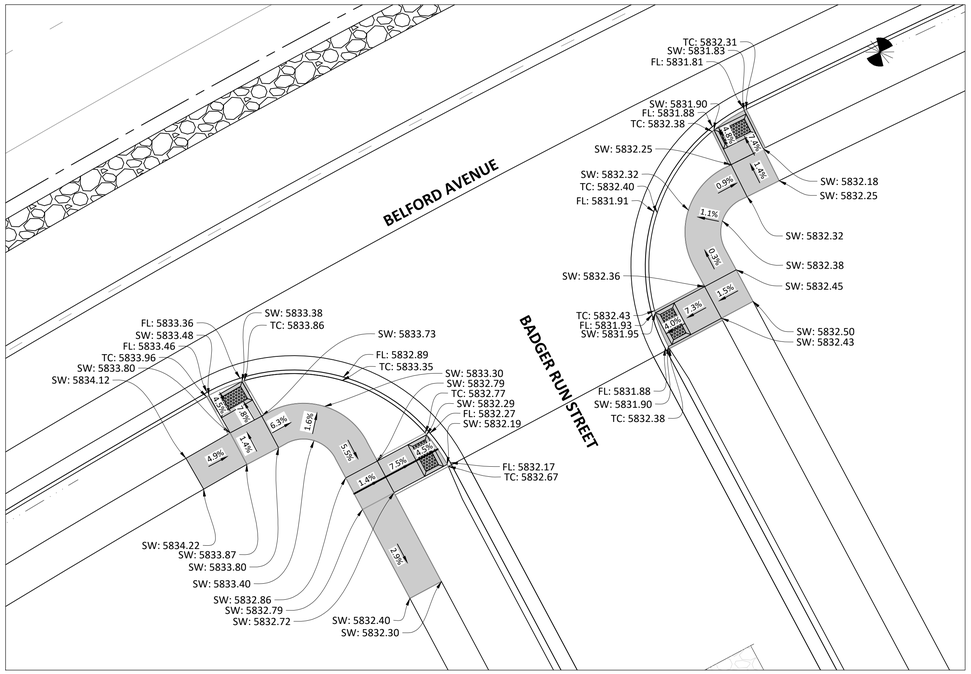
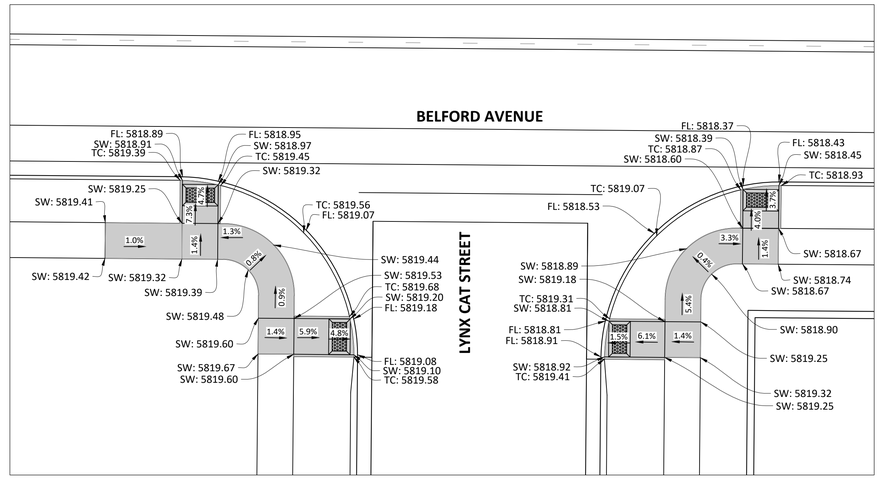
Plotted: 10/30/2020 1:22 PM Dwg Name: P:\Clgisk3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Belford - Intersection.dwg Updated By: ADrucker

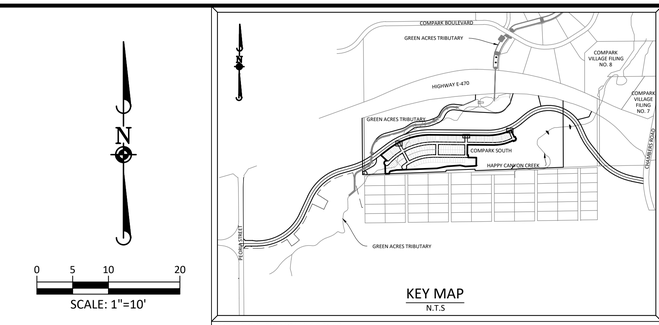


PLAN - BADGER RUN STREET AND BELFORD AVENUE

PLAN - WOLF FOX STREET AND BELFORD AVE



PLAN - LYNX CAT STREET AND BELFORD AVENUE



KEY MAP
N.T.S

SCALE: 1"=10'

SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

	DATE	REVISIONS	DRAWN BY
I	09/2020	APPROVED	
H	07/31/20	RESPONDED TO TOWN COMMENTS	JAH
G	05/01/20	RESPONDED TO TOWN COMMENTS	JAH
F	03/03/20	ADDED CURB OPENING DET, EASEN	
E	12/21/16	FINAL SUBMITTAL	
D	11/1/16	4TH SUBMITTAL	
C	6/24/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	EG
A	11/2015	1ST SUBMITTAL	

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
CURB RAMP DETAILS

COLORADO REGISTERED JACK D. RUCKER 30877 PROFESSIONAL ENGINEER 11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

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15 OF 50
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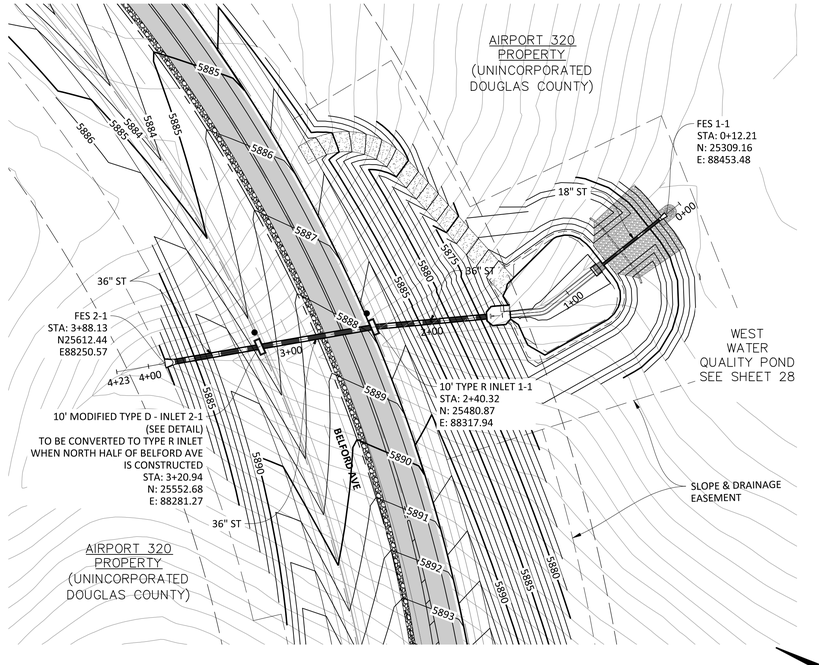
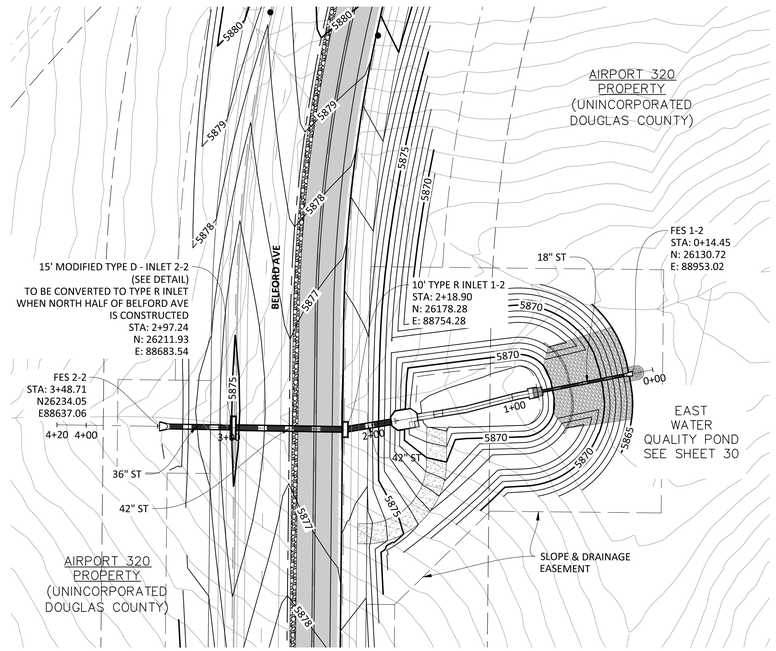


PLAN: STORM-1



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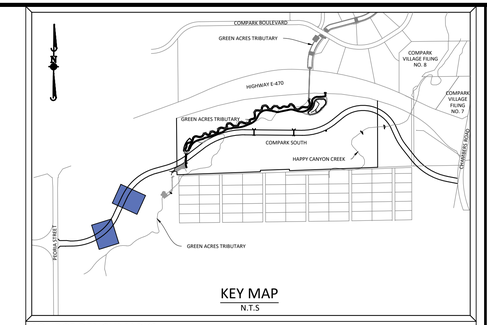

KEY MAP
N.T.S

SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

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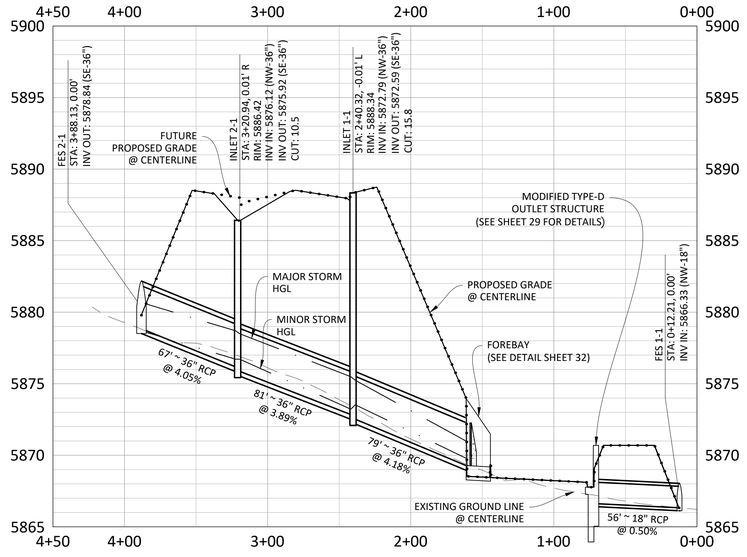
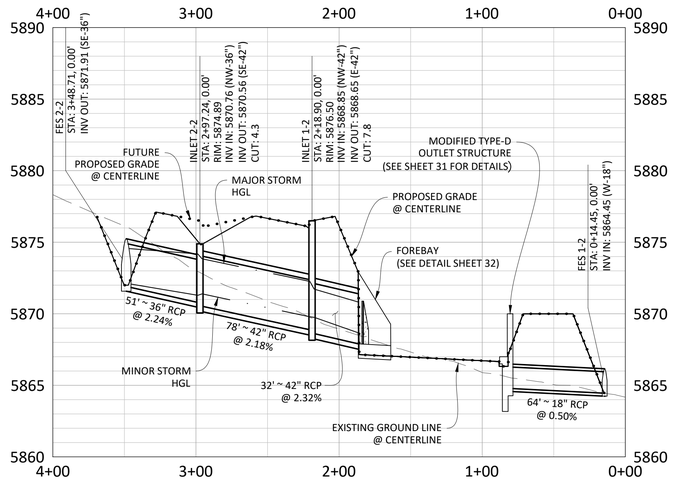
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



PROFILE: STORM-1
BELFORD AVE ℄ STA. 21+33.73



PROFILE: STORM-2
BELFORD AVE ℄ STA. 29+38.95

0 25 50 100
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS — DATE

REVISIONS			DRAWN BY
I	09/2020	APPROVED	
H	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
G	05/01/20	RESPONSE TO TOWN COMMENTS	JAH
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/1/16	4TH SUBMITTAL	
C	8/15/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	EG
A	11/2015	1ST SUBMITTAL	

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER — ERIC T. GUNNING — 30877 — 11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
16 OF 50
CLCPKC3 ---

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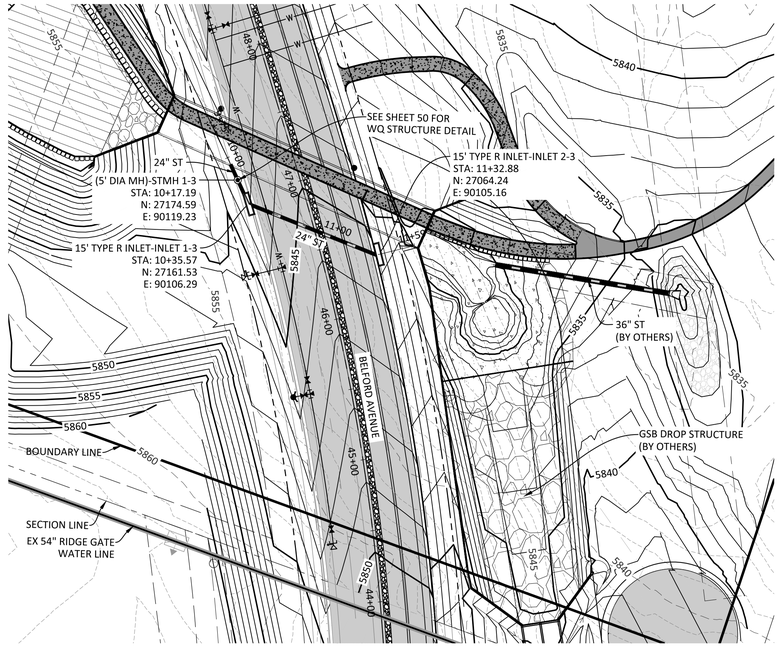

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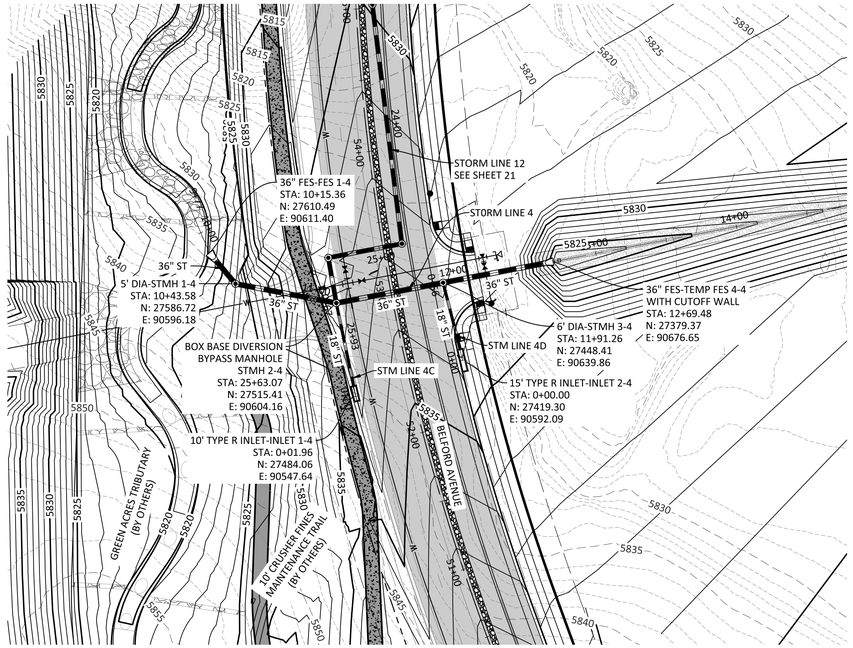

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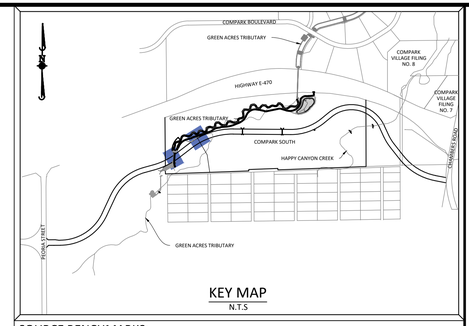
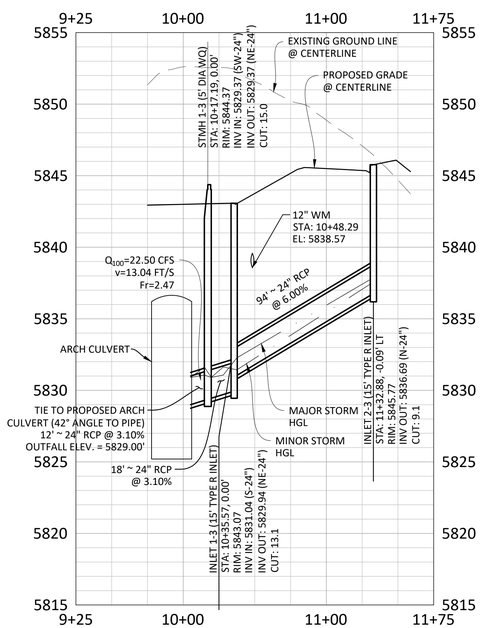


KEY MAP
N.T.S

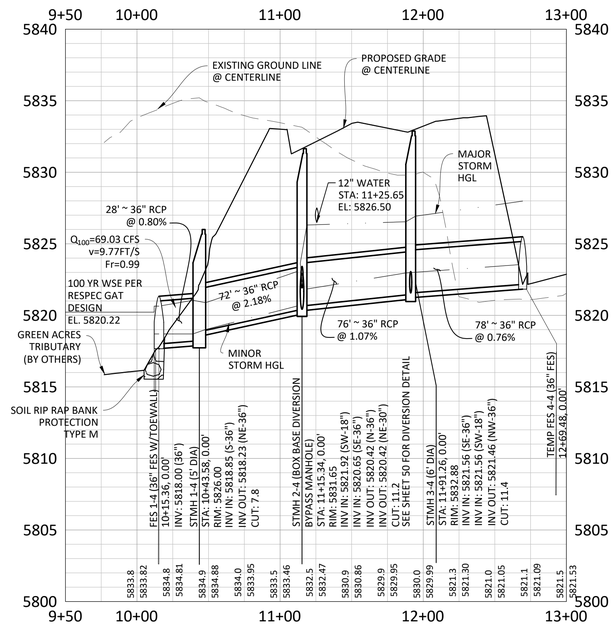
SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

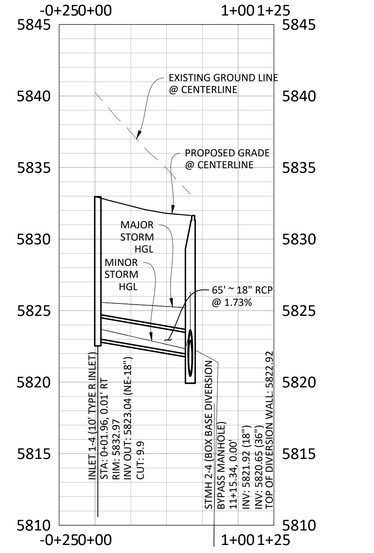


PROFILE: STORM-3
BELFORD AVE ℄ STA. 46+64.73

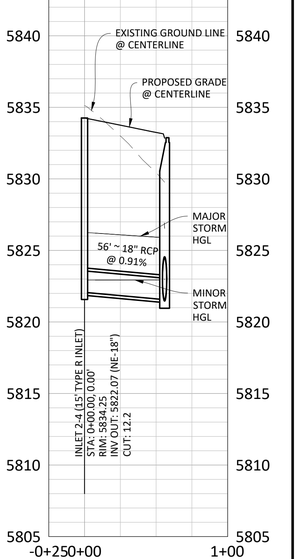


PROFILE: STORM-4
BELFORD AVE ℄ STA. 53+00

SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



PROFILE: STORM-4C
BELFORD AVE ℄ STA. 53+00



PROFILE: STORM-4D
BELFORD AVE ℄ STA. 53+00

DRAWN BY
JAH
RIM
MAM
EG
EG
EG
EG
EG

	DATE	REVISIONS
I	09/2020	APPROVED
H	07/31/20	RESPONSED TO TOWN COMMENTS
G	06/30/20	RESPONSED TO TOWN COMMENTS
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN
E	12/21/16	FINAL SUBMITTAL
D	11/7/16	4TH SUBMITTAL
C	6/15/16	3RD SUBMITTAL
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A	11/2015	1ST SUBMITTAL

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
30877
11-17-2020

PROJ. MGR.:	RIM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
17 OF 50
CLCPKC3 ---

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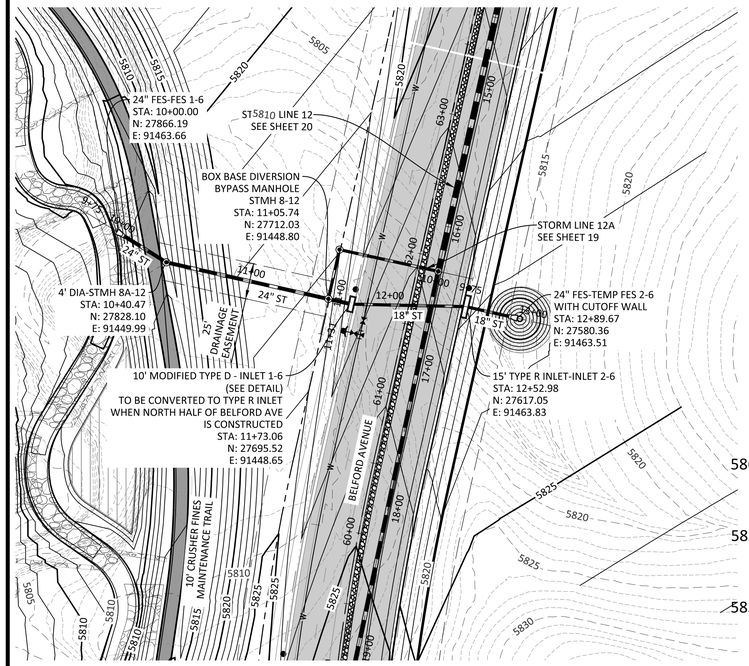
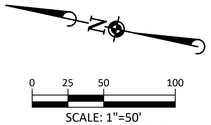
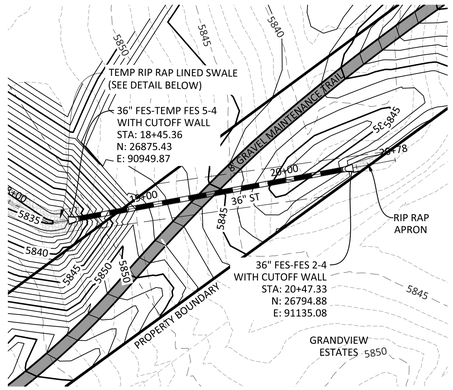


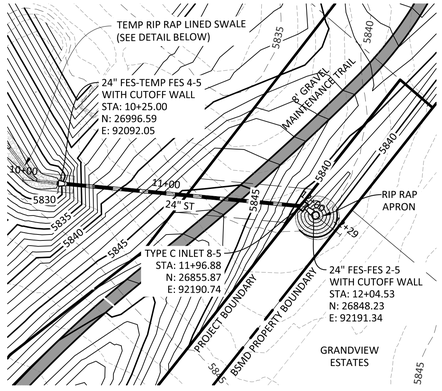
PLAN: STORM-6





PLAN: STORM-4 (WEST BERM)





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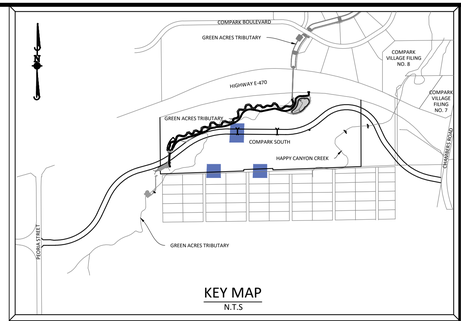
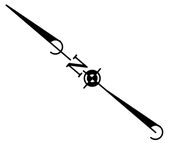
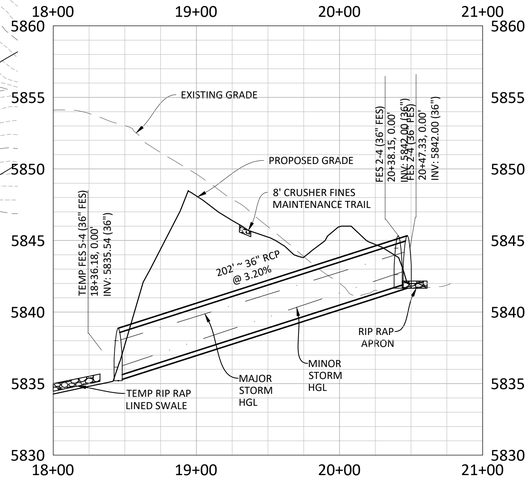


SOURCE BENCHMARKS:

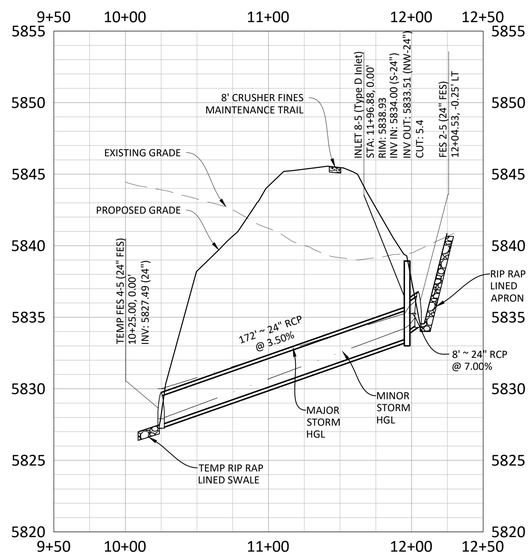
DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

	DATE	REVISIONS	DRAWN BY
I.	09/2020	APPROVED	
H.	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
G.	06/30/20	RESPONSED TO TOWN COMMENTS	JAH
F.	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	MAM
E.	12/21/16	FINAL SUBMITTAL	EG
D.	11/7/16	4TH SUBMITTAL	EG
C.	08/10/16	3RD SUBMITTAL	EG
B.	4/11/16	2ND SUBMITTAL	EG
A.	11/2015	1ST SUBMITTAL	EG

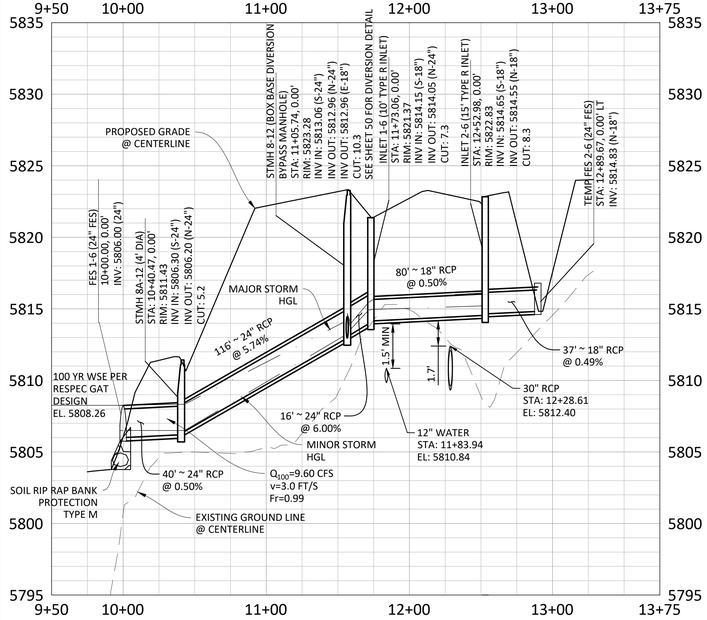




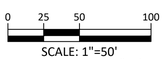
PROFILE: STORM-4 (WEST BERM)

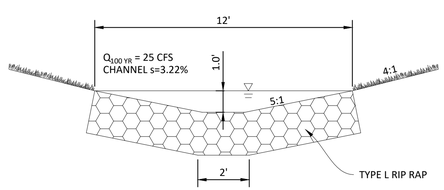


PROFILE: STORM-5 (EAST BERM)

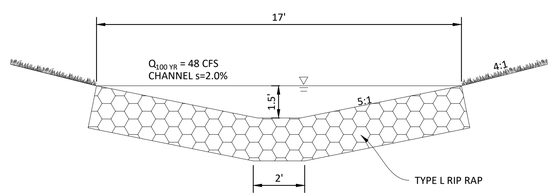


PROFILE: STORM-6
BELFORD AVE ℄ STA. 61+55.10





TEMPORARY RIP RAP SWALE
(WEST BERM)
N.T.S



TEMPORARY RIP RAP SWALE
(EAST BERM)
N.T.S

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM PLAN & PROFILE

COLORADO REGISTERED
JEFFREY A. BECKER
30877
11-17-2020
PROFESSIONAL ENGINEER

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
18 OF 50
CLCPKC3 ---

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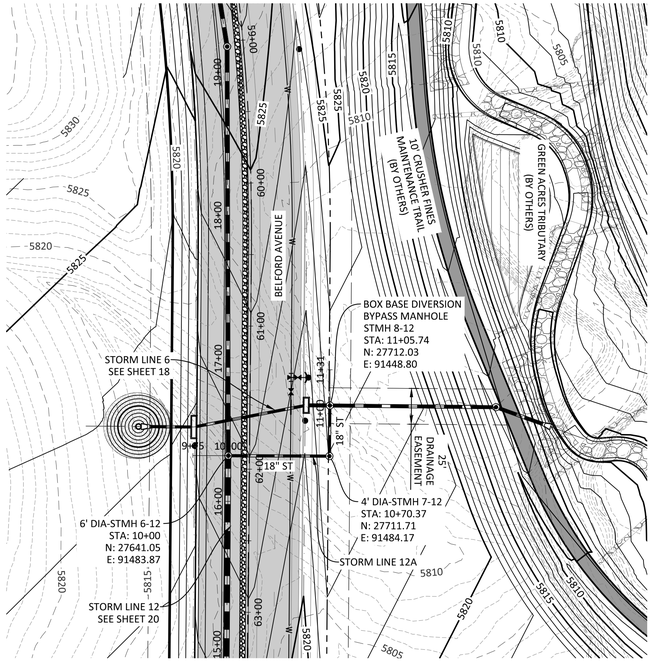
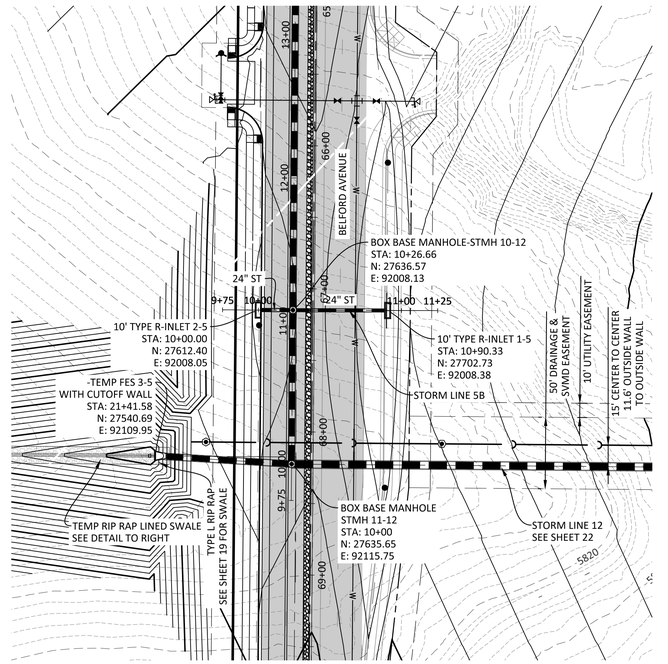


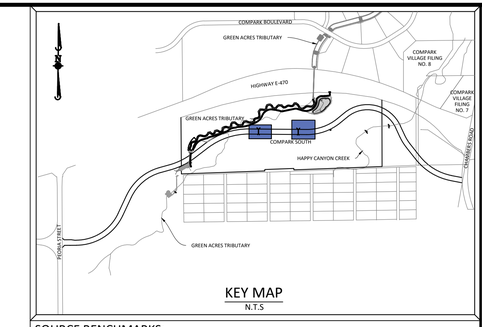
PLAN: STORM-12A

BELFORD AVE ℄ STA. 61+90.55



PLAN: STORM-5B

BELFORD AVE ℄ STA. 11+02.64

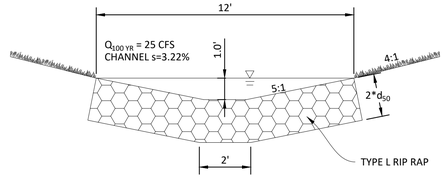


KEY MAP

N.T.S

SOURCE BENCHMARKS:

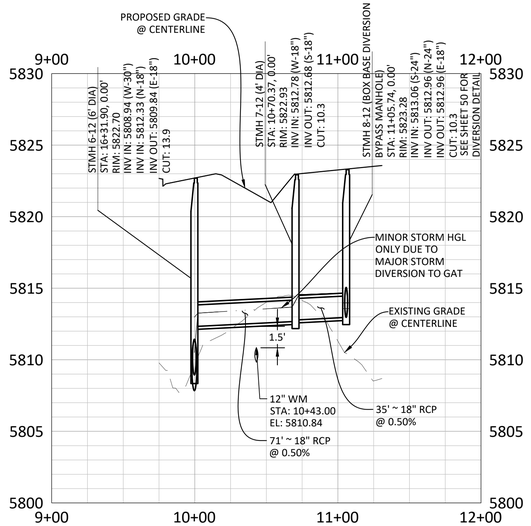
DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)



TEMPORARY RIP RAP SWALE
(WEST BERM)

N.T.S

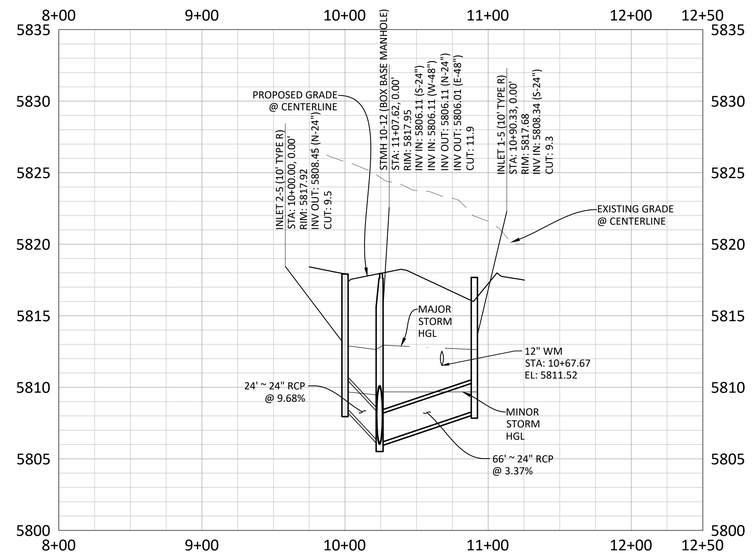
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



PROFILE: STORM-12A

BELFORD AVE ℄ STA. 61+90.55

SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



PROFILE: STORM-5B

BELFORD AVE ℄ STA. 11+02.64

SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

REVISIONS			DRAWN BY
	DATE	APPROVED	
I	09/2020	RESPONSED TO TOWN COMMENTS	JAH
H	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
G	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	MAM
F	12/21/16	FINAL SUBMITTAL	EG
E	11/7/16	4TH SUBMITTAL	EG
D	7/15/16	3RD SUBMITTAL	EG
C	4/11/16	2ND SUBMITTAL	EG
B	11/2015	1ST SUBMITTAL	EG
A			

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE

TOWN OF PARKER, COLORADO

STORM PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
KEVIN M. MCCARTY
30877
11-17-2020

PROJ. MGR.: RIM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET
19 OF 50
CLCPKC3

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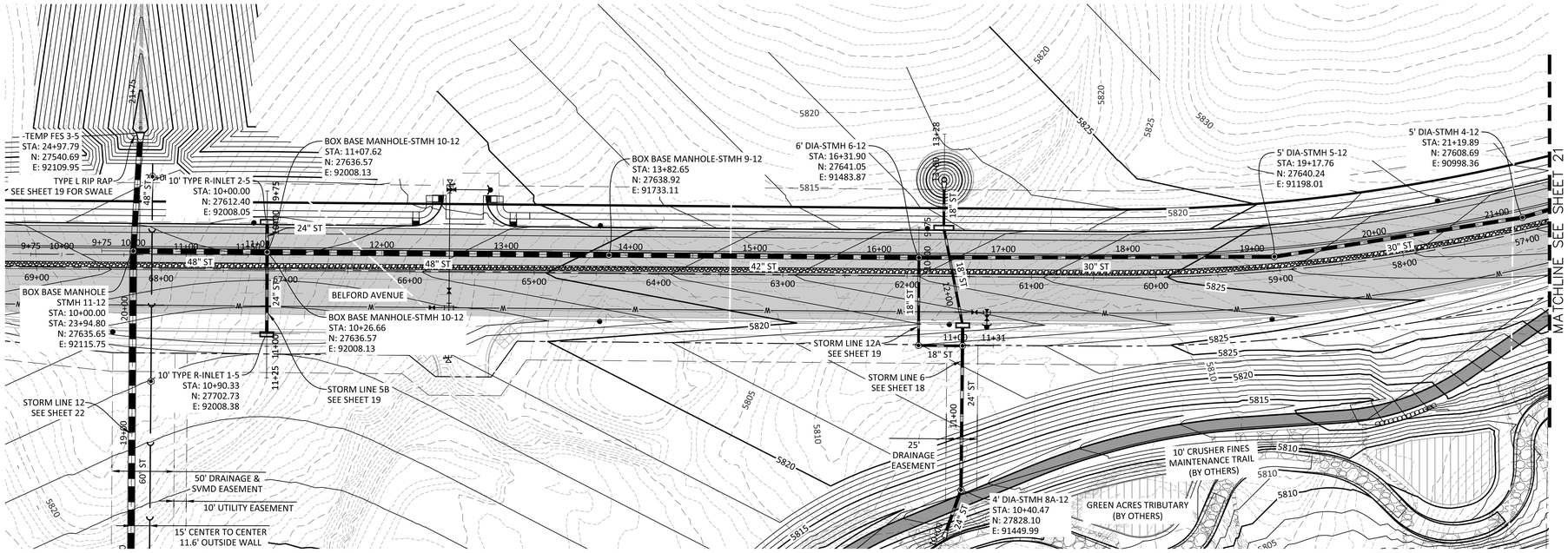
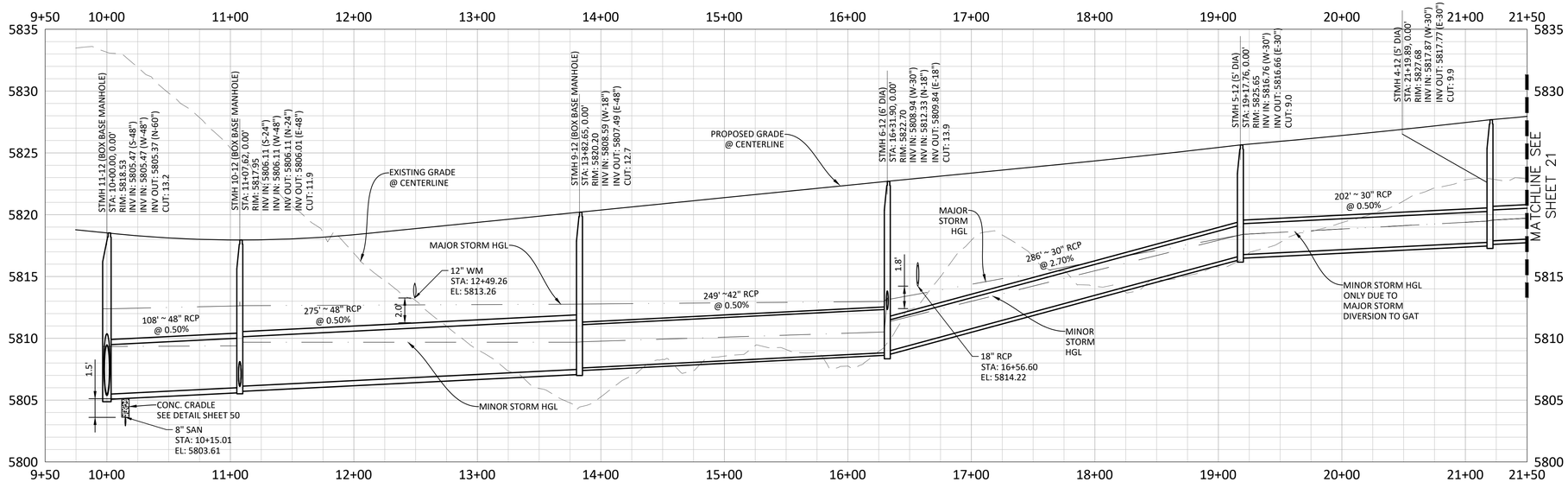
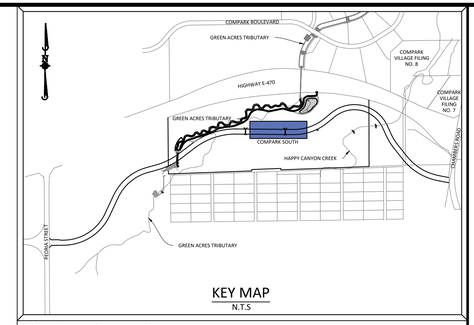
Plotted: 10/30/2020 1:29 PM Dwg Name: P:\Ccpkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\STORM PLAN & PROFILE.dwg Updated By: ADrucker



PLAN: STORM-12
STA: 10+00 TO 21+00



PROFILE: STORM-12



KEY MAP
N.T.S

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B	4/11/16	2ND SUBMITTAL	EG
A	11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
RYAN J. MOSS
30877
11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET
20 OF 50
CLCPKC3

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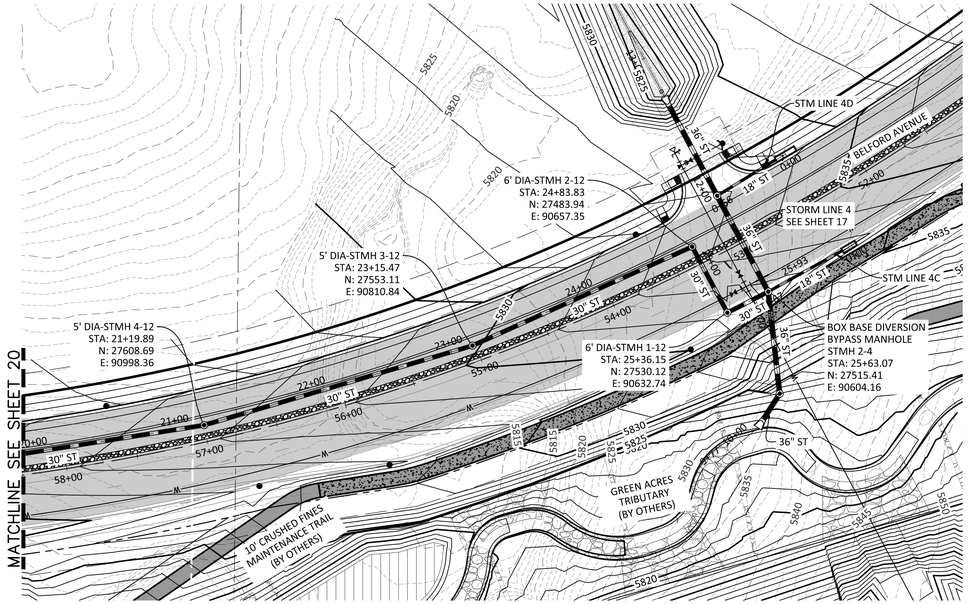
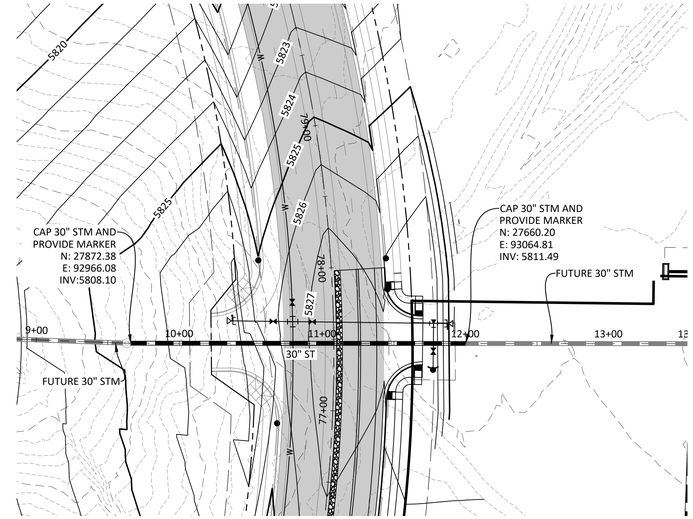
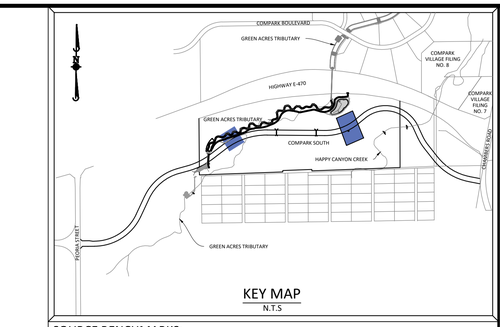


PLAN: STORM-12
STA: 21+00 TO 25+63.07



PROFILE: STORM-FUTURE STORM CAP
BELFORD AVE ℄ STA. 77+47.20



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SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

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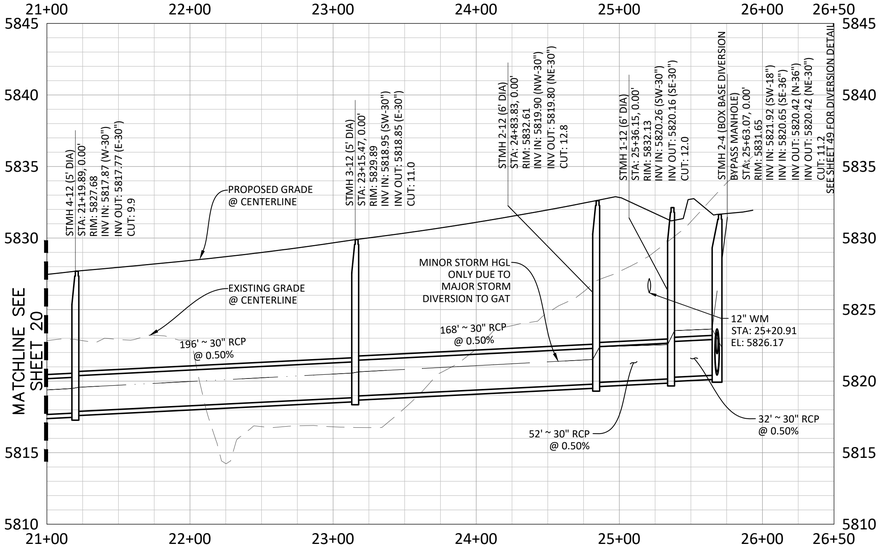
COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
30877
11-17-2020

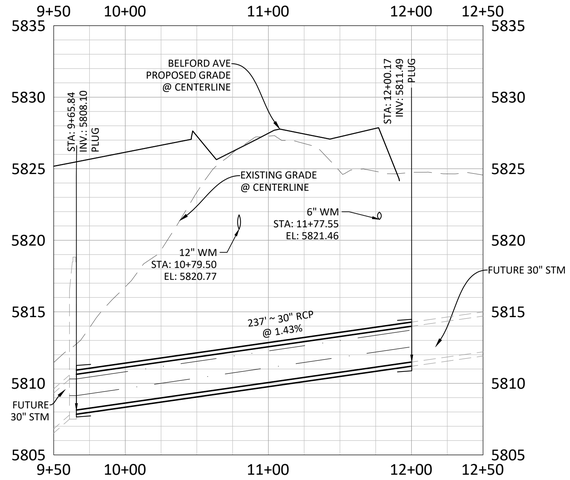
PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET
21 OF 50
CLCPKC3



PROFILE: STORM-12
STA: 21+00 TO 25+63.07

SCALE: 1"=50'
VERTICAL SCALE: 1"=5'



PLAN: STORM-FUTURE STORM CAP
BELFORD AVE ℄ STA. 77+47.20

SCALE: 1"=50'
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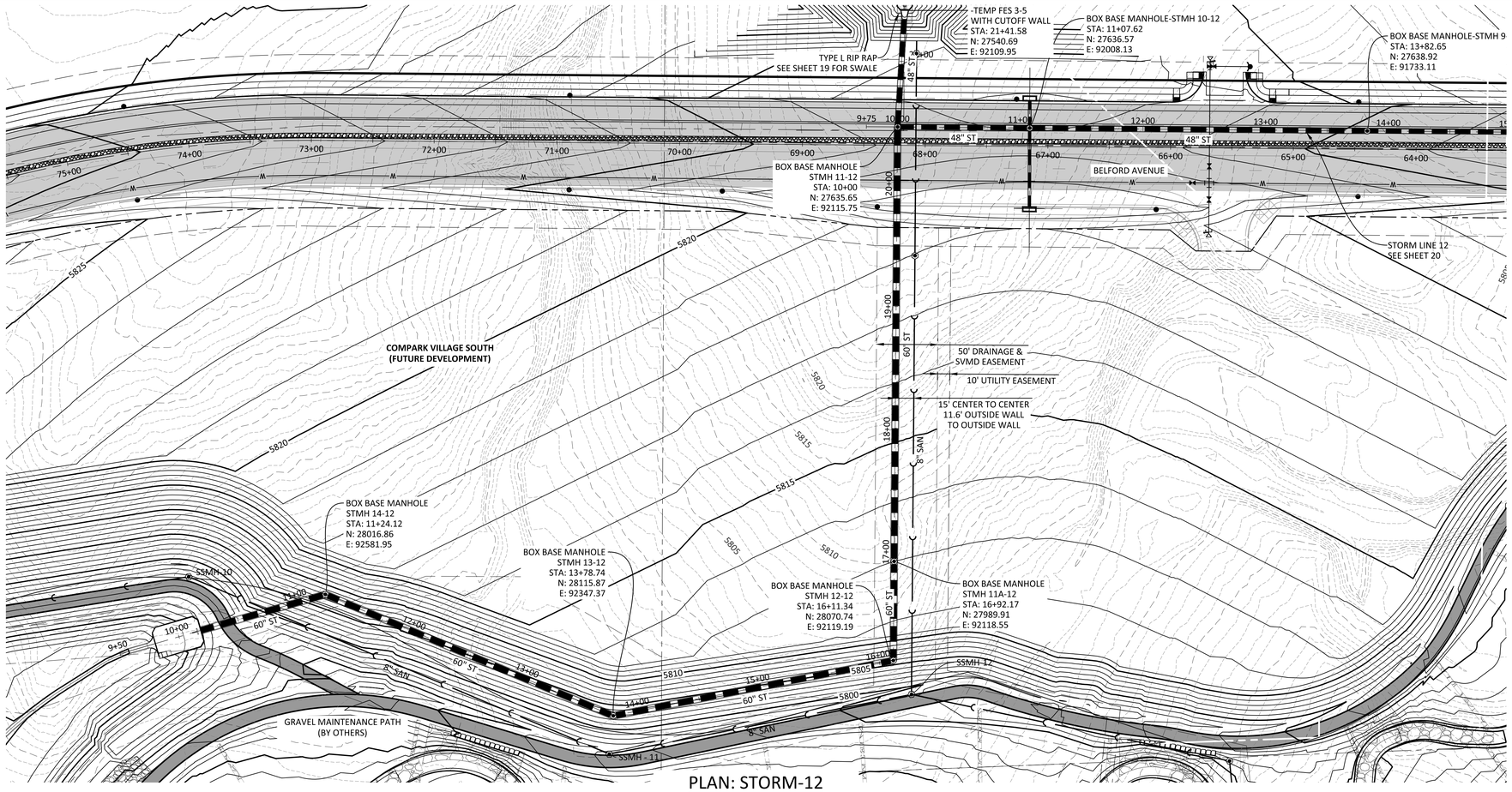
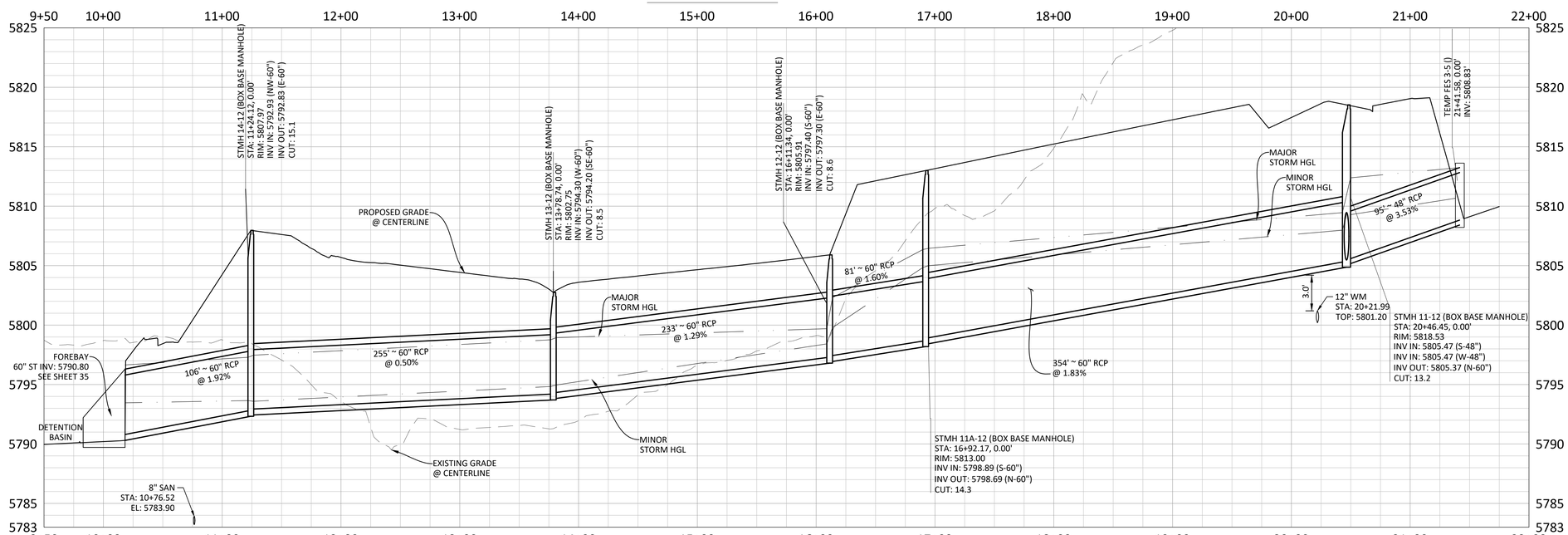
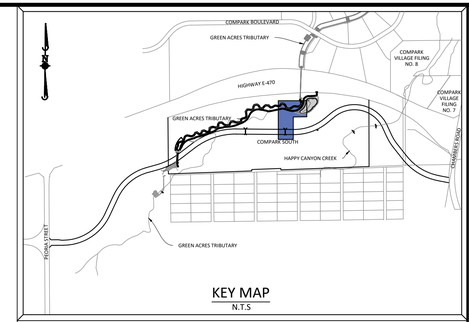


PLAN: STORM-12



PROFILE: STORM-12



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0 25 50 100
SCALE: 1"=50'
VERTICAL SCALE: 1"=5'

0 25 50 100
SCALE: 1"=50'
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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM PLAN & PROFILE

COLORADO REGISTERED PROFESSIONAL ENGINEER
30877
11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
22 OF 50
CLCPKC3

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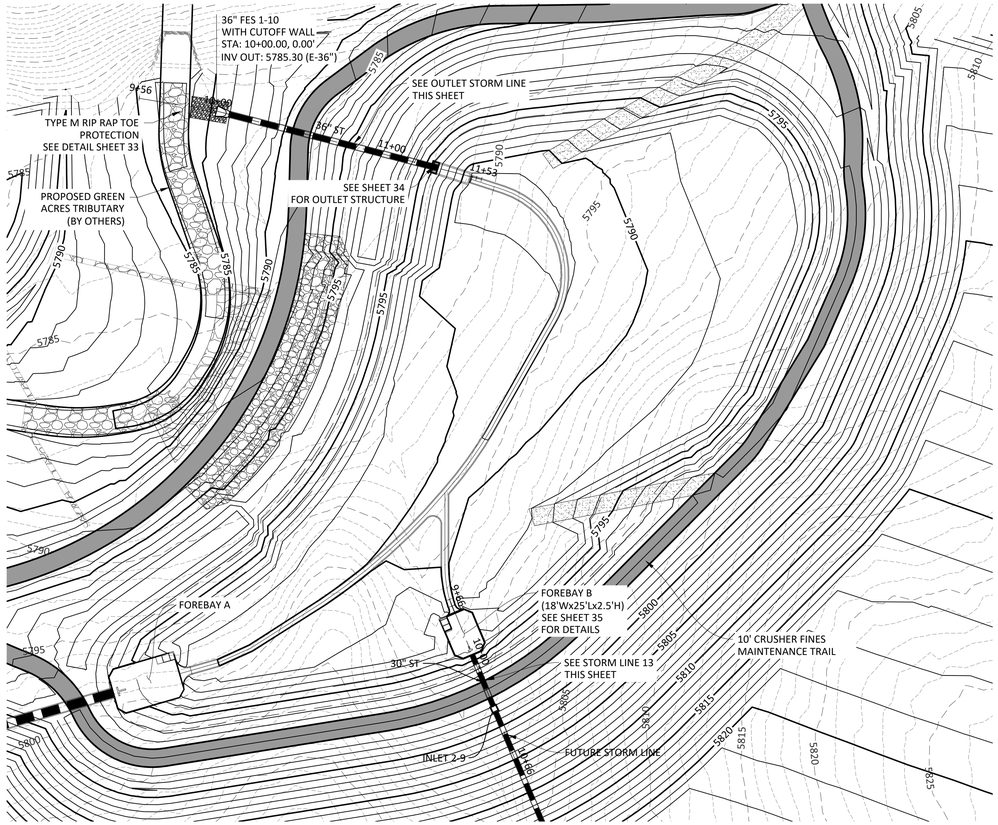
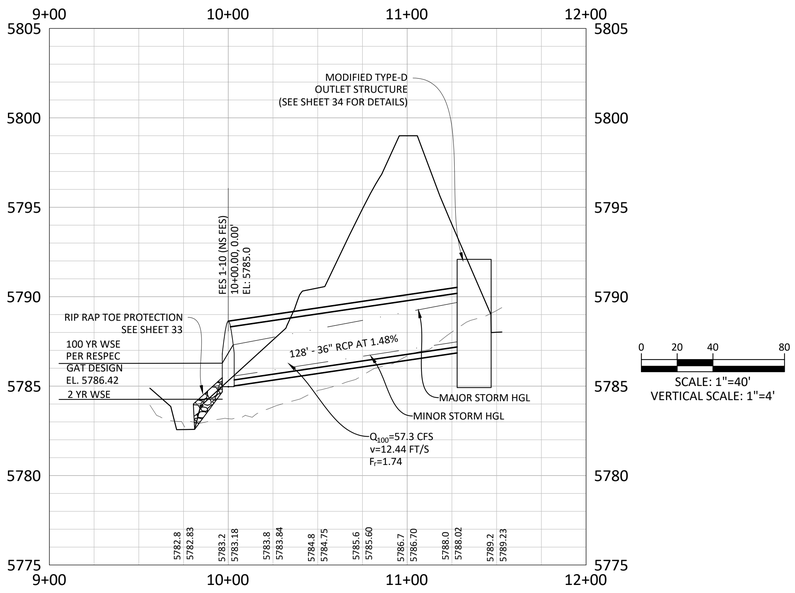
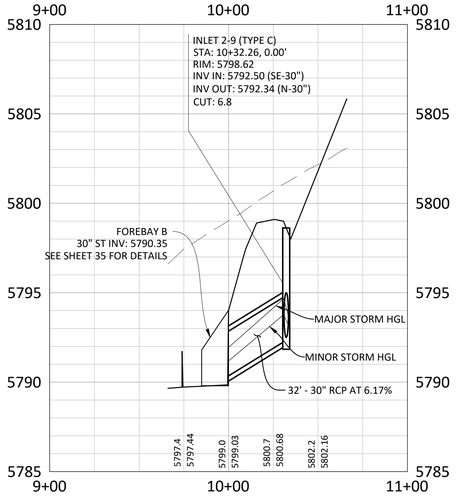


PLAN: STORM 13 & POND OUTLET



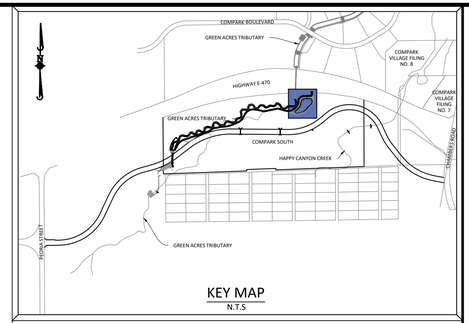
SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

PROFILE: STORM-POND OUTLET



SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

PROFILE: STORM-13



KEY MAP
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NOTE:

1. PRIOR TO FINAL TOPSOILING, SEEDING AND MULCHING, CONTRACTOR SHALL OBTAIN FINAL AS-BUILT VOLUME CHECK AND CERTIFICATION FROM THE ENGINEER. FAILURE TO DO SO WILL REQUIRE THE CONTRACTOR TO REMOVE AND REPLACE TOPSOIL MATERIALS AT HIS/HER EXPENSE.
2. REFER TO GENERAL NOTES ON SHEET 2 AND DETAILS ON FOLLOWING SHEETS
3. EMBANKMENT FILL SHALL MEET THE MINIMUM REQUIREMENTS OF TOWN OF PARKER AND THE GEOTECHNICAL REPORT. SEE GENERAL NOTES ON SHEET 2.

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

	DATE	REVISIONS	DRAWN BY
I	09/2020	APPROVED	
H	07/31/20	RESPONSES TO TOWN COMMENTS	JAH
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TOWN OF PARKER, COLORADO
STORM PLAN & PROFILE

COLORADO REGISTERED KEVIN M. RIMMER 30877 11-17-2020 PROFESSIONAL ENGINEER

PROJ. MGR.:	RIM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
23 OF 50
CLCPKC3 ---

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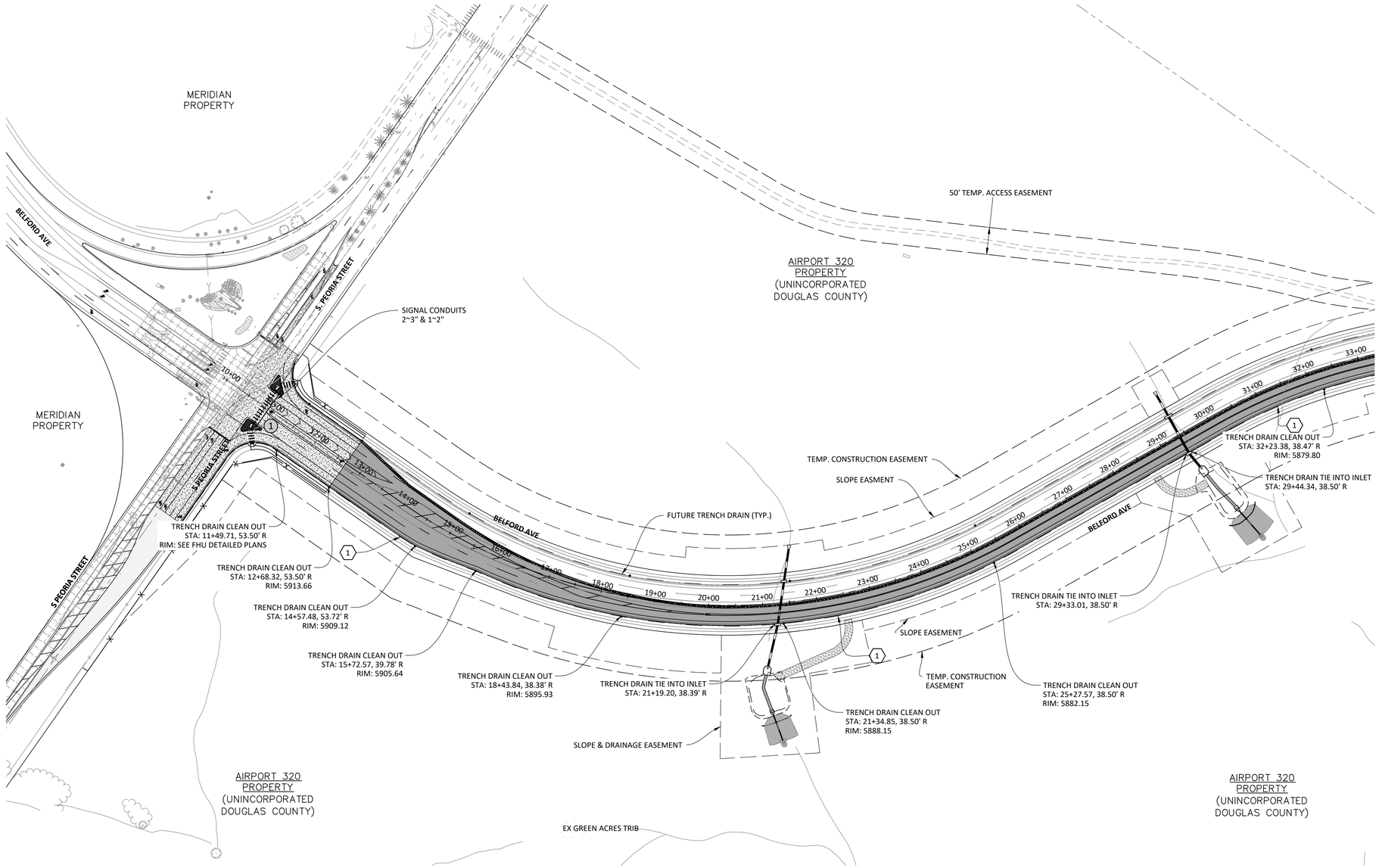
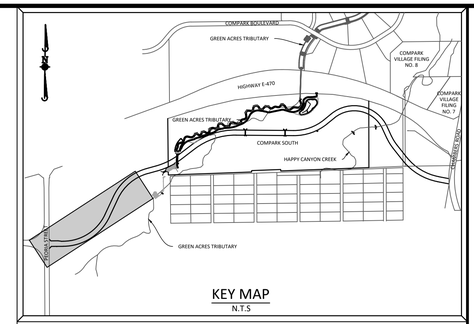
Plotted: 10/30/2020 1:31 PM Dwg Name: P:\Clcpkc3\Com\South\2-Filing_1 No GAT\Com\South03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\STORM PP - POND.dwg Updated By: ADrucker





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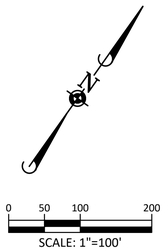


Know what's below. Call before you dig.

LEGEND

2	CONSTRUCTION NOTE
1	UTILITY SLEEVE CROSSING N0.

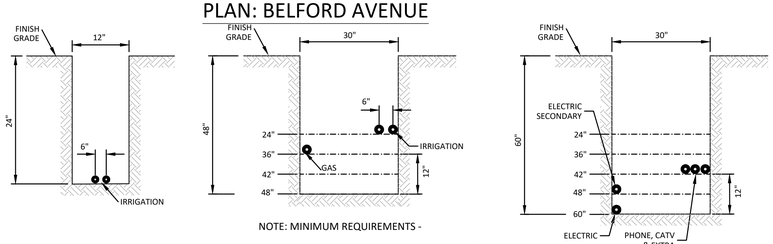
CONSTRUCTION NOTES

1. 4" TRENCHDRAIN (TYP.)
2. 4" SCH 80 CONDUIT SLEEVE PIPE REQUIRED UNDER ALL ROADWAY CROSSINGS FOR TRENCHDRAIN
3. BORE TRENCHDRAIN UNDER EXISTING ROADWAY
4. 2" CONDUIT W/ 14 GA. TRACER WIRE AND PULL ROPE FOR SIGNAL INTERCONNECT
5. ALL CONDUITS TO LANDSCAPED MEDIANS SHALL BE SWEPT UP AT 90° AND SHALL TERMINATE IN A PULL BOX SET TO FINISHED GRADE.
6. ALL INTERCONNECT CONDUITS SHALL BE SWEPT UP AT 90° TO 11"X17" QUASITE PULLBOXES. 400' SPACING MAXIMUM.

TRENCH DRAIN NOTES:

1. SEE DETAIL 30 OF STREET DETAILS FOR TRENCH DRAIN SPECIFICATIONS
2. TRENCH DRAINS SHALL TIE INTO STORM MANHOLES OR INLETS
3. CLEANOUTS SHALL BE PROVIDED AT ALL JUNCTIONS, ANGLE POINTS AND SPACED AT MAXIMUM 500' INTERVALS.

PLAN: BELFORD AVENUE



NOTE: MINIMUM REQUIREMENTS -

ELECTRIC - 3' HORIZONTAL AND 12" VERTICAL SEPARATION FROM GAS, 10' HORIZONTAL AND 12" VERTICAL SEPARATION FROM WATER/SEWER/STORM, AND 12" FROM ALL OTHER UTILITIES

GAS - 12" FROM ALL OTHER UTILITIES

TYPICAL CONDUIT SLEEVE SECTIONS
N.T.S.

NOTES:

1. INSTALL CROSSINGS TO EXTEND AT LEAST 6 FEET BEYOND THE ROW AND WALKS. INSTALL SLEEVES IN LINE WITH THE APPROPRIATE EASEMENTS.
2. EXTRA CROSSINGS ARE INSTALLED AT THE DISCRETION OF THE DEVELOPER.
3. THESE CROSSING LOCATIONS HAVE BEEN PROVIDED BY THE RESPECTIVE UTILITY COMPANIES AS OF THIS DATE. ANY CHANGES, ADDITIONS, OR RELOCATIONS RECEIVED BY MANHARD CONSULTING, LTD. AFTER PAVING HAS BEEN COMPLETED WILL HAVE TO BORED.
4. ALL ELECTRIC CONDUITS TO BE GRAY SCHEDULE 40 PVC OR BLACK SCHEDULE 40 PVC WITH A RED STRIPE. GAS CROSSINGS MUST BE SCHEDULE 40 GRAY PVC. PHONE AND TV ARE TO BE WHITE SCHEDULE 40 PVC. IRRIGATION TO BE CLASS 160 PVC PER IRRIGATION PLAN.
5. ALL CROSSINGS MUST BE 95% COMPACTION AND TESTED. MARK BOTH ENDS OF SLEEVE WITH 2 X 4 POST-PAINTED.
6. XCEL REQUIRES ALL CROSSINGS TO HAVE TRACER WIRE INSTALLED NEXT TO THE SLEEVE.
7. ALL TRENCH LINES MUST BE WITHIN 6" OF FINISHED GRADE PER XCEL STANDARDS.
8. GRADE AT TRANSFORMERS MUST BE 100% TO FINISHED GRADE.

CAUTION:

HAVE ALL BURIED UTILITIES LOCATED PRIOR TO TRENCHING OR BORING.

TOWN OF PARKER APPROVALS

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

THIS REVIEW DOES NOT CONSTITUTE APPROVAL OF ANY PRIVATE ON-SITE IMPROVEMENTS WHICH MAY BE SHOWN. CONSTRUCTION CANNOT COMMENCE UNTIL ALL REQUIRED DRAINAGE/TRAFFIC REPORT(S), FINAL DEVELOPMENT PLAN(S), SPECIAL REVIEW(S), GRADING PERMIT, AND/OR OTHER PERMITS ARE COMPLETE, APPROVED AND ON FILE WITH THE TOWN OF PARKER.

TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS — DATE

REVISIONS			DRAWN BY
	I	09/2020	APPROVED	
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	G	05/01/20	RESPONSED TO TOWN COMMENTS	JAH
	F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
	E	12/21/16	FINAL SUBMITTAL	
	D	11/7/16	4TH SUBMITTAL	
	C	6/24/16	3RD SUBMITTAL	
	B	4/11/16	2ND SUBMITTAL	
	A	11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
CONDUIT SLEEVING & TRENCH DRAIN

COLORADO REGISTERED JACK R. NOE 30877 11-17-2020 PROFESSIONAL ENGINEER

PROJ. MGR.:	RIM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
24 OF 50
CLCPKC3 ---

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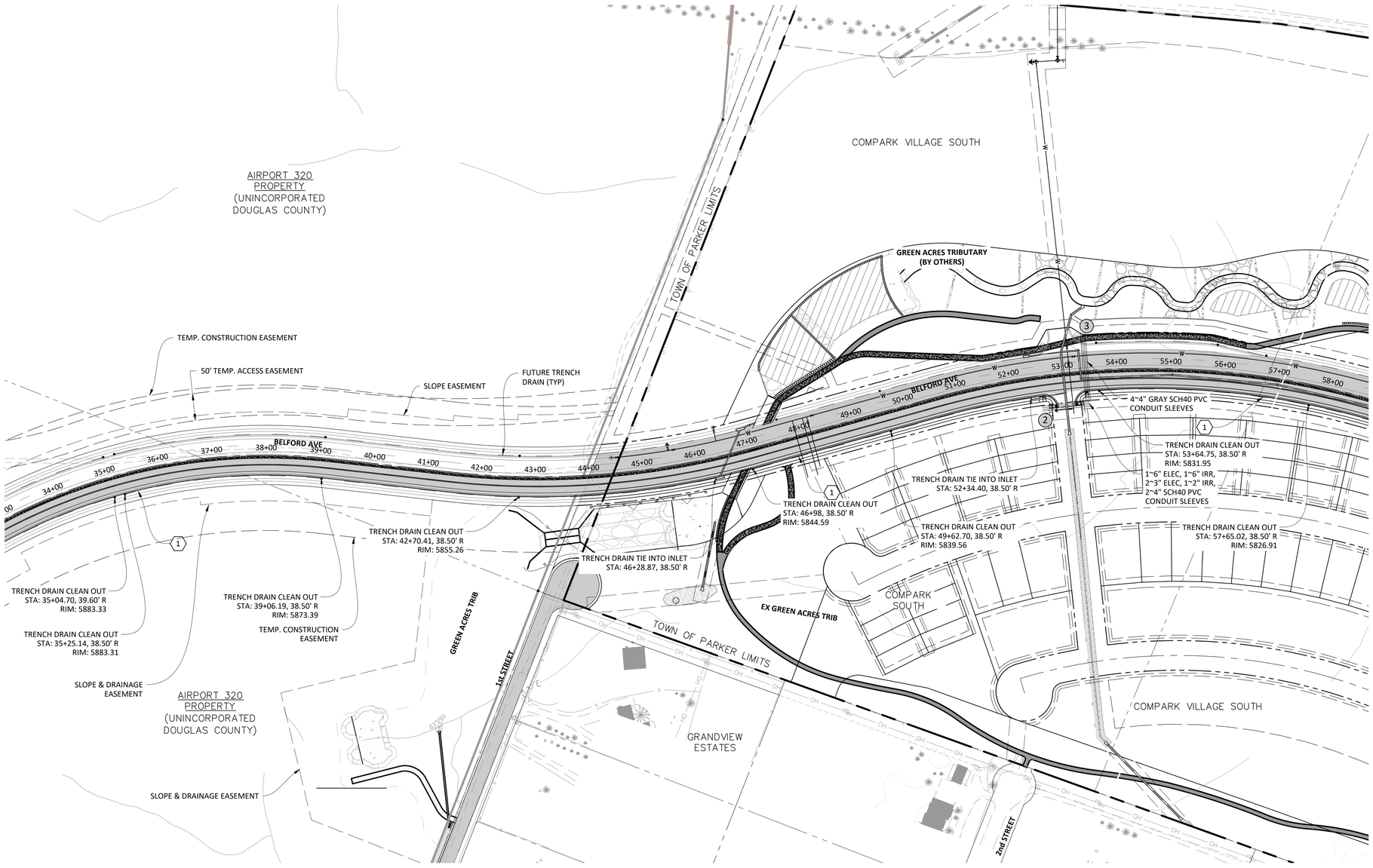
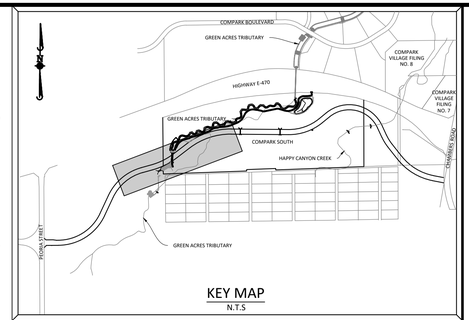
Plotted: 10/30/2020 1:33 PM Dwg Name: P:\Cepk3\Com\South\2-Filing 1 No GAT\Com\South\03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Traffic Signal Interconnect (2).dwg Updated By: ADrucker





KEY MAP
N.T.S

SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

0 50 100 200
SCALE: 1"=100'

Know what's below. Call before you dig.

LEGEND

(2) CONSTRUCTION NOTE

(1) UTILITY SLEEVE CROSSING N0.

CONSTRUCTION NOTES

1. 4" TRENCHDRAIN (TYP.)
2. 4" SCH 80 CONDUIT SLEEVE PIPE REQUIRED UNDER ALL ROADWAY CROSSINGS FOR TRENCHDRAIN
3. BORE TRENCHDRAIN UNDER EXISTING ROADWAY
4. 2" CONDUIT W/ 14 GA. TRACER WIRE AND PULL ROPE FOR SIGNAL INTERCONNECT
5. ALL CONDUITS TO LANDSCAPED MEDIANS SHALL BE SWEPT UP AT 90° AND SHALL TERMINATE IN A PULL BOX SET TO FINISHED GRADE.
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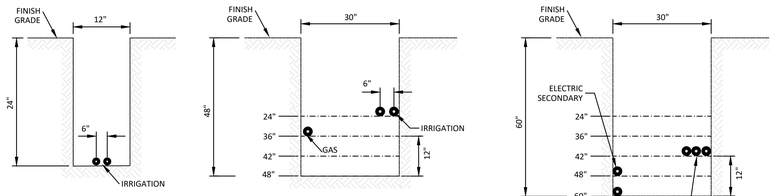
TRENCH DRAIN NOTES:

1. SEE DETAIL 30 OF STREET DETAILS FOR TRENCH DRAIN SPECIFICATIONS
2. TRENCH DRAINS SHALL TIE INTO STORM MANHOLES OR INLETS
3. CLEANOUTS SHALL BE PROVIDED AT ALL JUNCTIONS, ANGLE POINTS AND SPACED AT MAXIMUM 500' INTERVALS.



NOTE: MINIMUM REQUIREMENTS -

ELECTRIC - 3' HORIZONTAL AND 12" VERTICAL SEPARATION FROM GAS, 10' HORIZONTAL AND 12" VERTICAL SEPARATION FROM WATER/SEWER/STORM, AND 12" FROM ALL OTHER UTILITIES

GAS - 12" FROM ALL OTHER UTILITIES

TYPICAL CONDUIT SLEEVE SECTIONS
N.T.S.

NOTES:

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TOWN OF PARKER APPROVALS

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS — DATE

	DATE	REVISIONS	DRAWN BY
I.	09/2020	APPROVED	
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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
CONDUIT SLEEVING & TRENCH DRAIN

COLORADO REGISTERED PROFESSIONAL ENGINEER — ERIC T. GUSTAFSON — 30677 — 11-17-2020

PROJ. MGR.:	RIM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 25 OF 50
CLCPKC3

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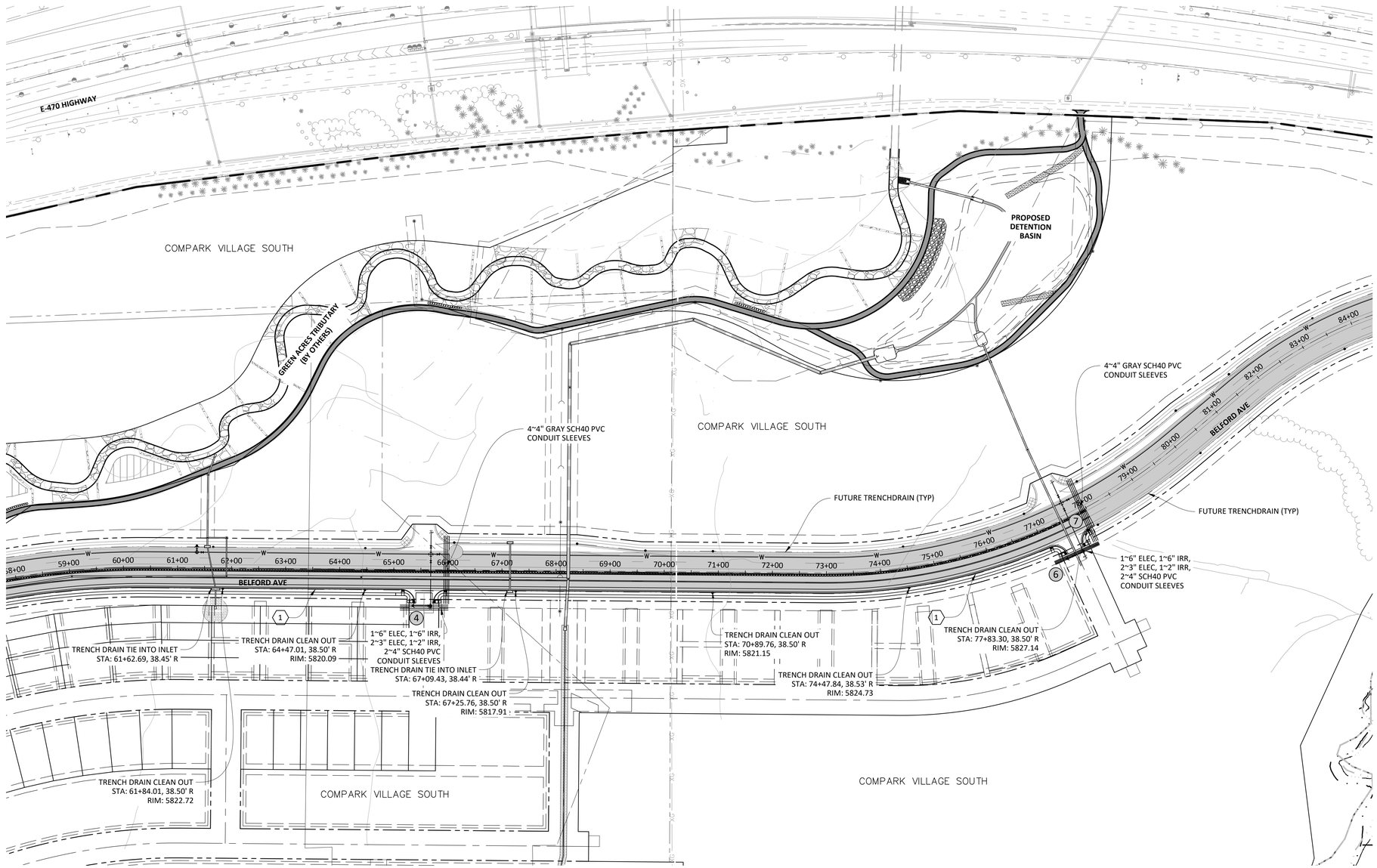
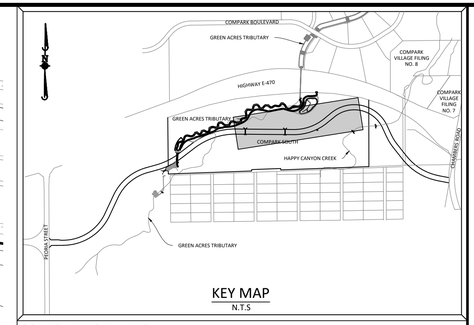
Updated By: ADrucker





KEY MAP
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N

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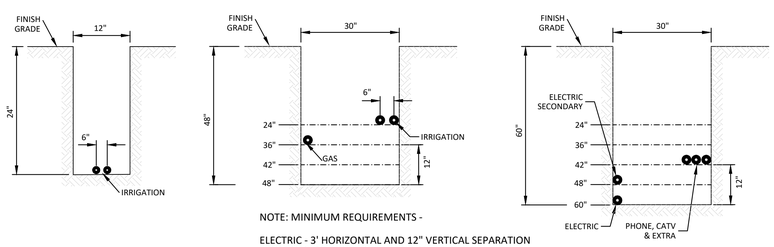

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
CONDUIT SLEEVING & TRENCH DRAIN

COLORADO REGISTERED PROFESSIONAL ENGINEER — ERIC T. GRAY — 30877 — 11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 26 OF 50
CLCPKC3 ---

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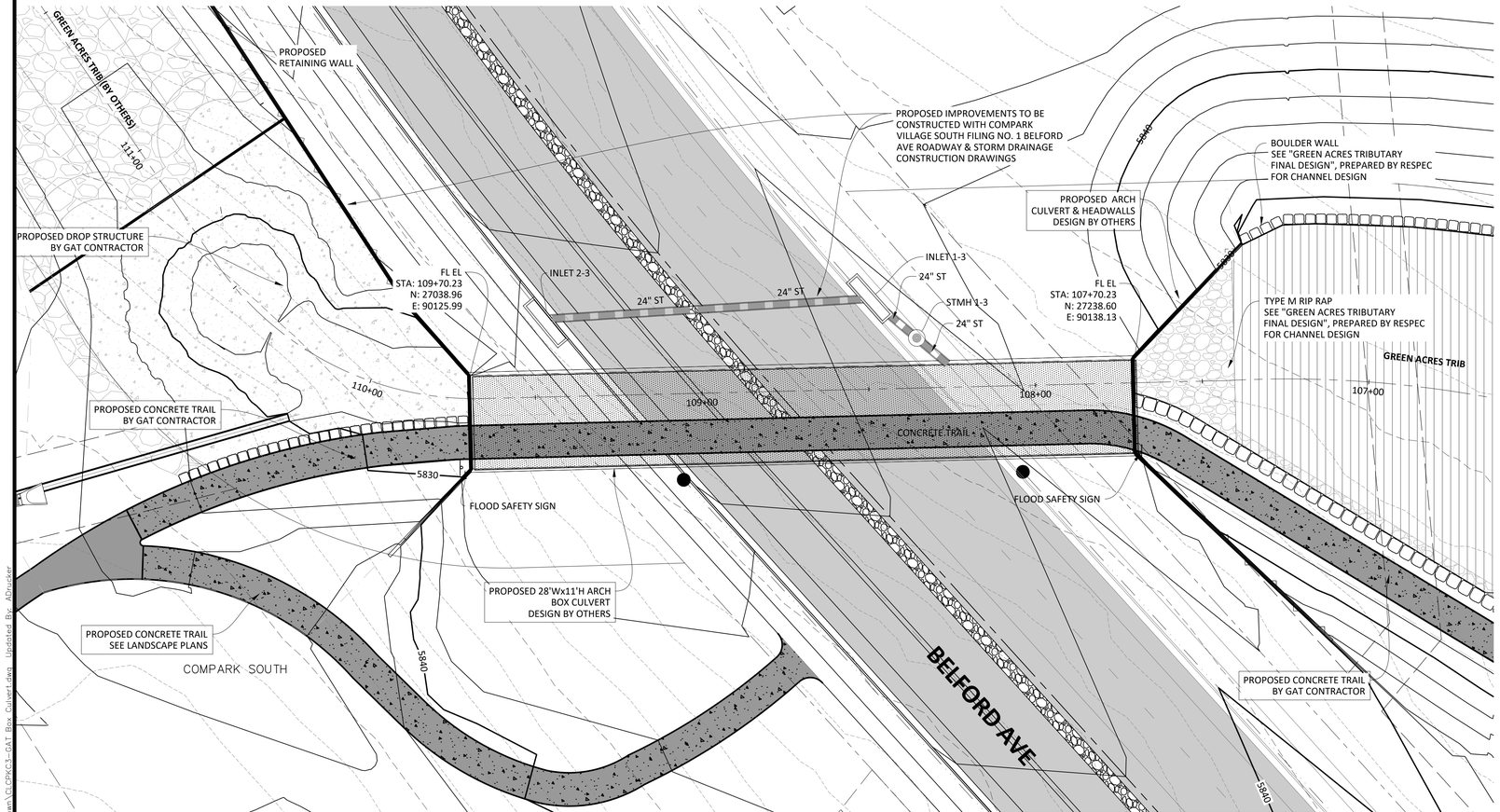
Plotted: 10/30/2020 1:36 PM Dwg Name: P:\Clcpkc3\Com\South\12-Filing 1 No GAT\Com\South03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Traffic Signal Interconnect (4).dwg Updated By: ADrucker



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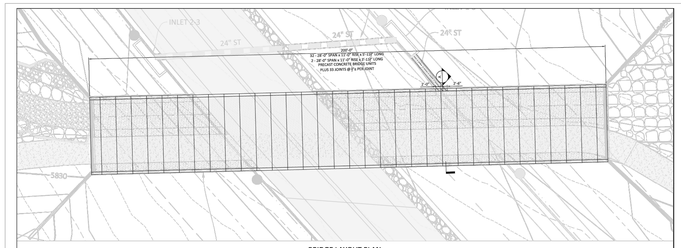

PRELIMINARY

ECO-SPAN ARCH SYSTEMS WWW.ECO-SPAN.COM

COMM PARK SOUTH CROSS SECTION

PREPARED BY: Lindsay — PREPARED FOR PROJECT REVIEW ONLY NOT RELEASED FOR CONSTRUCTION

PRETEK GROUP — P.O. BOX 751471, DAYTON, OH 45475 (800) 241-0823

PROJECT: 217067134 — DATE: 10/01/2015 — DRAWN BY: JC — CHECKED BY: TSO

SK2

DATE	DESCRIPTION	NO.
		1
		2
		3
		4
		5
		6

DATE		DRAWN BY
09/2020	APPROVED	
07/31/20	RESPONSES TO TOWN COMMENTS	JAH
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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE

TOWN OF PARKER, COLORADO

GAT BOX CULVERT PLAN & DETAILS

ECO-SPAN ARCH SYSTEMS

COMM PARK SOUTH BRIDGE #1

LOCATION : AURORA CO

PREPARED FOR : Mark Wilson, THK Assoc.

PROJECT ID# : 217067134

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PROJECT DATA SUMMARY:

ARCH UNITS

Shape	Arch-Box Series
Number of Cells/Barrels	1
Span	28.5 FT
Size	AB28
Bridge Length	200.0 FT
Maximum Piece Weight	128.7 TONS
Crown Rise	11.3 FT
Effective Waterway Area	281 SF
Precast Rise	11.0 FT
Number of Pieces	34
Cover Height	2.0 FT

NOTE: Effective waterway area based on span and clear rise.

SITE LAYOUT

Alignment	Ahd Skew
Roadway Sump Angle	0 DEG
Skewed End Angle	0 DEG

HEADWALLS

Guardrail (F.T)raffic Barrier	no
Upstream Headwall Ht.	2.8 FT
Downstream Headwall Ht.	2.8 FT

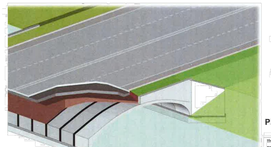
FOUNDATIONS

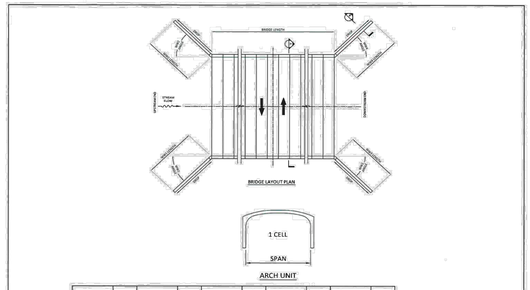
Foundation Type	Strip Footing
Foundation Burial Depth	4

WINGWALLS

WW1 Angle	45 DEG
WW1 Length	28.5 FT
WW1 Height	11.3 FT
WW1 Drop	7.0 FT
WW2 Angle	45 DEG
WW2 Length	28.5 FT
WW2 Height	11.3 FT
WW2 Drop	7.0 FT
WW3 Angle (deg.)	45 DEG
WW3 Length (ft.)	28.5 FT
WW3 Height	11.3 FT
WW3 Drop (ft.)	7.0 FT
WW4 Angle (deg.)	45 DEG
WW4 Length (ft.)	28.5 FT
WW4 Height (ft.)	11.3 FT
WW4 Drop (ft.)	7.0 FT

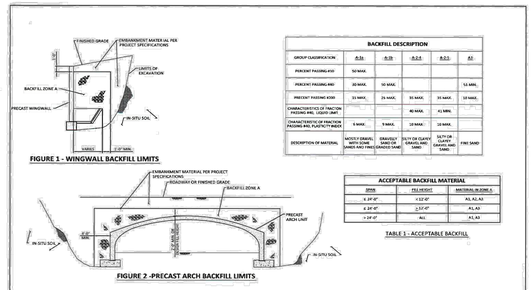
PRETEK GROUP — INSTANT DESIGN



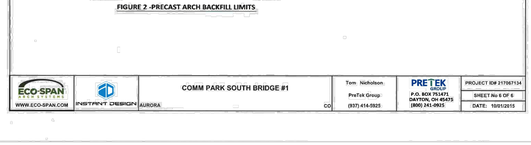


WW1 Angle	45 DEG	WW2 Angle	45 DEG	WW3 Angle	45 DEG	WW4 Angle	45 DEG	Bridge Length	200.0 FT
WW1 Length	28.5 FT	WW2 Length	28.5 FT	WW3 Length	28.5 FT	WW4 Length	28.5 FT	Number of Cells/Barrels	1
WW1 Drop	7.0 FT	WW2 Drop	7.0 FT	WW3 Drop	7.0 FT	WW4 Drop	7.0 FT	Span	28.0 FT

ECO-SPAN WWW.ECO-SPAN.COM — INSTANT DESIGN — COMM PARK SOUTH BRIDGE #1 — AURORA CO — Tom Nicholson, PreTek Group, (937) 414-0925 — PRETEK GROUP P.O. BOX 751471, DAYTON, OH 45475 (800) 241-0823 — PROJECT ID# 217067134 — SHEET No 2 OF 6 — DATE: 10/01/2015



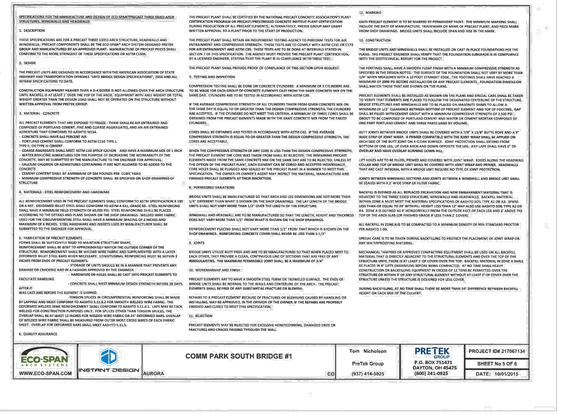
BACKFILL DESCRIPTION					
GROUP CLASSIFICATION:	A-1a	A-1b	A-2-4	A-2-5	A-3
PERCENT PASSING #10	50 MAX.				
PERCENT PASSING #40	30 MAX.	50 MAX.			51 MIN.
PERCENT PASSING #200	15 MAX.	25 MAX.	35 MAX.	35 MAX.	10 MAX.
CHARACTERISTICS OF FRACTION PASSING #40, LIQUID LIMIT			40 MAX.	41 MIN.	
CHARACTERISTICS OF FRACTION PASSING #40, PLASTICITY INDEX	6 MAX.	9 MAX.	10 MAX.	10 MAX.	
DESCRIPTION OF MATERIAL	MOSTLY GRAVEL AND STONE FRAGMENTS WITH SAND AND A NONPLASTIC OR SLIGHTLY PLASTIC BINDER		SILTY OR CLAYEY GRAVEL AND SAND	SILTY OR CLAYEY GRAVEL AND SAND	FINE SAND



ACCEPTABLE BACKFILL MATERIAL		
SPAN	CLASS(ES)	MATERIAL IN ZONE A
≤ 24'-0"	<12'-0"	A1, A2, A3
≤ 24'-0"	≥ 12'-0"	A1, A3
> 24'-0"	ALL	A1, A3

TABLE 1 - ACCEPTABLE BACKFILL

ECO-SPAN WWW.ECO-SPAN.COM — INSTANT DESIGN — COMM PARK SOUTH BRIDGE #1 — AURORA CO — Tom Nicholson, PreTek Group, (937) 414-0925 — PRETEK GROUP P.O. BOX 751471, DAYTON, OH 45475 (800) 241-0823 — PROJECT ID# 217067134 — SHEET No 6 OF 6 — DATE: 10/01/2015



SPECIFICATIONS FOR THE MANUFACTURE AND DESIGN OF ECO-SPAN/PRECAST THREE SIDED ARCH STRUCTURES, WINGWALLS AND HEADWALLS

1. DESCRIPTION

THESE SPECIFICATIONS ARE FOR A PRECAST THREE SIDED ARCH STRUCTURE, HEADWALLS AND WINGWALLS MANUFACTURED BY A MEMBER OF THE ECO-SPAN PRECAST CONCRETE ARCH SYSTEMS GROUP AND MANUFACTURED AT AN APPROVED PLANT. MANUFACTURER OF PRECAST PIECES SHALL CONFORM TO THE WORK STRINGENT OF THESE SPECIFICATIONS OR ASTM C1504.

2. DESIGN

THE PRECAST UNITS ARE DESIGNED IN ACCORDANCE WITH THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS "LRFD BRIDGE DESIGN SPECIFICATIONS", 2010 AND ALL INTERIM SPECIFICATIONS TO DATE.

CONSTRUCTION EQUIPMENT HEAVIER THAN H-15-44 LOADS IS NOT ALLOWED OVER THE ARCH STRUCTURE UNTIL THE FILL DEPTH IS AT LEAST EQUAL TO THE TOP OF THE RISE. EQUIPMENT WITH AXLE WEIGHT OR TOTAL WEIGHT GREATER THAN THE DESIGN LOAD SHALL NOT BE OPERATED ON THE STRUCTURE WITHOUT WRITTEN APPROVAL FROM PRETEK GROUP.

3. MATERIAL - CONCRETE

ALL PRECAST ELEMENTS THAT ARE EXPOSED TO FREEZE - THAW SHALL BE AIR ENTRAINED AND COMPOSED OF PORTLAND CEMENT, FINE AND COARSE AGGREGATES, AND AN AIR ENTRAINED ADMIXTURE CONFORMING TO ASTM C260.

- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 5000 PSI.
- PORTLAND CEMENT SHALL CONFORM TO ASTM C150 TYPE I, II, OR III.
- AIR ENTRAINMENT SHALL BE 6% ± 1.5%.
- CURING ENDORSED SHALL MEET ASTM C309 TYPE 1 OR 2 CURING COMPOUND. AND HAVE A MAXIMUM SIZE OF 2 INCH - WATER BOILDOWN ADMIXTURES FOR THE PURPOSE OF INCREASING THE WORKABILITY OR THE REDUCTION OF THE WATER CONTENT OF CONCRETE SHALL CONFORM TO ASTM C494 TYPE A.
- CALCIUM CHLORIDE OR ADMIXTURES CONTAINING IT ARE NOT ALLOWED TO BE ADDED TO THE CONCRETE
- MINIMUM CONCRETE COMPRESSIVE STRENGTH OF CONCRETE SHALL BE SPECIFIED ON SHOP DRAWINGS OF STRUCTURE

4. MATERIAL - STEEL REINFORCEMENT AND HARDWARE

ALL REINFORCEMENT USED IN THE PRECAST ELEMENTS SHALL CONFORM TO ASTM SPECIFICATION A 185 (WWR), DEFORMED BILLET STEEL BARS CONFORMS TO ASTM A 615, GRADE 60, STEEL REINFORCING SHALL MAKE A MINIMUM YIELD STRENGTH OF 60,000 PSI. STEEL REINFORCING SHALL BE PLACED ACCORDING TO THE SHOP DRAWINGS. ALL REINFORCING STEEL SHALL BE FREE OF RUST, MILL SCALE, OIL, DIRT, OR OTHER FOREIGN MATERIAL THAT WOULD REDUCE BOND. STEEL SHALL HAVE A MINIMUM BINDING OF 2 INCHES AND MAXIMUM OF 3 INCHES. STEEL ASSIGNMENTS AND INSERTS USED BY MANUFACTURER SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.

5. FABRICATION OF PRECAST ELEMENTS

ALL PRECAST ELEMENTS SHALL BE FABRICATED TO THE MANUFACTURER STRUCTURE SHAPE. REINFORCEMENT SHALL BE KEPT TO APPROXIMATELY MATCH THE CUTLINES CORNER OF THE STRUCTURE. REINFORCEMENT SHALL BE HOUSED WIRE FABRIC AND SUPPLEMENTED WITH A LAYER OF REINFORCING STEEL AT THE CORNER HAUNCH. CONDITIONAL REINFORCING MUST BE WITHIN 3 INCHES FROM EDGES OF PRECAST ELEMENTS.

STRENGTH OF CAST'S SHOULD BE 80 % MINIMUM THAT PREVENTS ANY DAMAGE ON CRACKING WHEN LIFTING AND HANDLING.

BY LIFTING AND HOIST CONFORMS TO ANSI/ASME B30.20 BELOW-THE-HOOK LIFTING DEVICES. THE DESIGNATED WELDERS SHALL BE HOUSED WIRE FABRIC AND SUPPLEMENTED WITH A LAYER OF REINFORCING STEEL AT THE CORNER HAUNCH. CONDITIONAL REINFORCING MUST BE WITHIN 3 INCHES FROM EDGES OF PRECAST ELEMENTS.

- NO STRENGTH OR HOLES SHALL BE CAST INTO PRECAST ELEMENTS TO FACILITATE HANDLING.
- CONCRETE SHALL MEET MINIMUM DESIGN STRENGTH BEFORE BE DEPS

ASTM D

WAS CAST AND BEFORE THE ELEMENT IS DAMMED.

BY LIFTING AND HOIST CONFORMS TO ANSI/ASME B30.20 BELOW-THE-HOOK LIFTING DEVICES. THE DESIGNATED WELDERS SHALL BE HOUSED WIRE FABRIC AND SUPPLEMENTED WITH A LAYER OF REINFORCING STEEL AT THE CORNER HAUNCH. CONDITIONAL REINFORCING MUST BE WITHIN 3 INCHES FROM EDGES OF PRECAST ELEMENTS.

OVERLAP SHALL BE AT LEAST 12 INCHES FOR WELDED WIRE FABRIC OR 24" DEFORMED BARS. OVERLAP OF WELDED WIRE FABRIC SHALL BE MEASURED FROM OUTER MOST CROSS WIRES OF EACH FABRIC SHEET. OVERLAP FOR DEFORMED BARS SHALL MEET AASHTO S.D.S.

6. QUALITY ASSURANCE

12. MARKING

EACH PRECAST ELEMENT IS TO BE MARKED BY PERMANENT PAINT. THE MINIMUM MARKING SHALL INCLUDE THE DATE OF MANUFACTURE, TRADENAME OR NAME OF PRECAST PLANT, AND MOST MARK FROM SHOP DRAWINGS. BRIDGE UNITS SHALL INCLUDE SPAN AND SIDE OF THE MARK.

13. CONSTRUCTION

THE BRIDGE UNITS AND WINGWALLS SHALL BE INSTALLED ON CAST IN PLACE FOUNDATIONS PER THE PLANS. THIS PRODUCT ENGINEER SHALL VERIFY THAT THE FOUNDATION DIMENSION IS IN CONFORMANCE WITH THE ELECTRONICAL REPORT FOR THE PROJECT.

THE STARTING SHALL HAVE A MINIMUM FLOAT FINISH WITH A MINIMUM COMPRESSIVE STRENGTH AS SPECIFIED ON THE SHOP DRAWINGS. THE BRIDGE UNITS SHALL BE PLACED ON THE FOOTINGS WITH A 1/2" LAYER OF MORTAR APPLIED TO THE FOOTINGS SHALL HAVE SURFACE A LEVELED STRAIGHT STONE, THE FOOTINGS SHALL HAVE SURFACE A MINIMUM OF 3000 PSI BEFORE INSTALLATION OF ANY PRECAST ELEMENTS. FOUNDATION DIMENSION SHALL ARE DESIGNED BASED ON THE PLANS.

PRECAST ELEMENTS SHALL BE INSTALLED AS SHOWN ON THE PLANS AND SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT THE ELEMENTS ARE NOT DAMAGED DURING INSTALLATION. THE ENDS OF THE PRECAST STRUCTURES AND WINGWALLS ARE TO BE PLACED ON THE FOOTINGS WITH A 1/2" LAYER OF MORTAR APPLIED TO THE FOOTINGS. THE ELEMENTS SHALL BE CLEANED BETWEEN PIECES FOR PROPER MORTAR BOND AND ARE ACCEPTED. IF THE ELEMENTS DO NOT MEET THIS CRITERIA, A MINIMUM OF TWO CORES SHALL BE DRILLED THROUGH THE PRECAST ELEMENTS NEAR WHERE THE MORTAR COMPOSED OF STONE AND SAND.

CURING SHALL BE OBTAINED AND TESTED IN ACCORDANCE WITH ASTM C42. IF THE AVERAGE COMPRESSIVE STRENGTH OF EQUAL TO OR GREATER THAN THE DESIGN COMPRESSIVE STRENGTH, THE CORES ARE ACCEPTABLE.

IF THE AVERAGE COMPRESSIVE STRENGTH OF ANY CORE IS LESS THAN 75% DESIGN COMPRESSIVE STRENGTH, THE PRECAST ELEMENT THE CORE WAS TAKEN FROM SHALL BE REJECTED, THE REMAINING PRECAST ELEMENTS SHALL BE CORED AND TESTED AS DESCRIBED ABOVE. IF THE AVERAGE OF ALL CORES FROM THE SAME PRECAST ELEMENT WITH LESS THAN 85% DESIGN COMPRESSIVE STRENGTH, THE ELEMENT SHALL BE CORED AND ACCEPTED ACCORDINGLY. CORE HOLES SHALL BE PLUGGED AND SEALED BY THE PRECAST PLANT IN A MANNER TO MEET THIS SPECIFICATION. THE ENGINEER SHALL ALWAYS MUST INSPECT THE MATERIAL, MANUFACTURING AND FINISHED PRECAST ELEMENTS AT THEIR DISCRETION.

8. PERMISSIBLE VARIATIONS

BRIDGE UNITS SHALL BE MANUFACTURED SO THAT SKEW AND LEG DIMENSIONS ARE NOT MORE THAN 1/2" FROM THAT SHOWN ON THE SHOP DRAWINGS. BRIDGE UNITS SHALL BE MANUFACTURED SO THAT THE UNITS SHALL NOT VARY MORE THAN 1/2" OVER THE LENGTH OF THE STRUCTURE.

WINGWALL AND HEADWALL UNITS TO BE MANUFACTURED SO THAT THE LENGTH, HEIGHT AND THICKNESS DOES NOT VARY MORE THAN 1/2" FROM WHAT IS SHOWN ON THE SHOP DRAWINGS.

REINFORCEMENT PLACING SHALL NOT VARY MORE THAN 1/2" FROM THAT WHICH IS SHOWN ON THE SHOP DRAWINGS. REINFORCING CONCRETE COVER SHALL MEET BE LESS THAN 1-1/2"

9. JOINTS

BRIDGE UNITS UTILIZE BUTT ENDS AND ARE TO BE MANUFACTURED SO THAT WHEN PLACED MEET TO FORM A JOINT WIDTH OF NOT MORE THAN 1" AND NOT LESS THAN 1/2". FOR SPECIFIC JOINT WIDTH REQUIREMENTS, THE MAXIMUM PERMISSIBLE JOINT SHALL BE A MAXIMUM OF 3/4".

10. WATERPROOFING AND FINISH :

PRECAST ELEMENTS ARE TO HAVE A SMOOTH STEEL FORM OR TROWELED SURFACE. THE ENDS OF THE PRECAST ELEMENTS SHALL BE FREE OF LUMPS, BULGES, OR OTHER IRREGULARITIES. THE MAXIMUM PERMISSIBLE JOINT SHALL BE A MAXIMUM OF 3/4".

REPAIRS TO A PRECAST ELEMENT BECAUSE OF FRACTURES OR HONEYCOMBED SURFACES MAY BE PERMITTED, BUT ONLY WITH THE APPROVAL OF THE OWNER, IF THE REPAIRS ARE PROPERLY FINISHED AND CURED TO MEET THIS SPECIFICATION.

11. ELECTRICAL

PRECAST ELEMENTS MAY BE INJECTED FOR CATHODIC PROTECTIONING, DAMAGED ONES OR FRACTURED AND CRACKED PASSING THROUGH THE WALL.

12. WARRANTY

THE PRECAST PLANT SHALL BE CERTIFIED BY THE NATIONAL PRECAST CONCRETE ASSOCIATION'S PLANT CERTIFICATION PROGRAM OR PRECAST/PRESTRESSED CONCRETE INSTITUTE PLANT CERTIFICATION DURING PRODUCTION OF ALL PRECAST ELEMENTS, ALTERNATIVELY, PRETEK GROUP MAY GRANT WRITTEN APPROVAL TO A PLANT PRIOR TO THE START OF PRODUCTION.

THE PRECAST PLANT SHALL SETTLE ON RECEIVERSHIP TO BEING ADDED TO PERFORM TESTS FOR ASE ON THE PRECAST ELEMENTS. THE MANUFACTURER SHALL BE ABLE TO PROVIDE A WRITTEN REPORT FOR ASE ON ENFRAMEMENT AND ASTM CON. THESE TESTS ARE TO BE BASED AT INDIVIDUAL STATES IN SECTION 1.09 THIS SPECIFICATION. THE AGENCY MUST PROVIDE THE PRECAST PLANT CERTIFICATION, BY A LICENSED ENGINEER, STATING THAT THE PLANT IS IN COMPLIANCE WITH THESE TEST.

THE PRECAST PLANT SHALL PROVIDE PROOF OF COMPLIANCE OF THESE SECTION UPON REQUEST.

13. TESTING AND INSPECTION

COMPRESSION TESTING SHALL BE DONE ON CONCRETE CYLINDERS. A MINIMUM OF 3 CYLINDERS ARE TO BE MADE FOR EACH DAY OF CONCRETE PLACEMENT. ONE CYLINDER SHALL BE TESTED AT 7 DAYS AND THE SAME DAY. CYLINDERS ARE TO BE TESTED IN ACCORDANCE WITH ASTM C39.

IF THE AVERAGE COMPRESSIVE STRENGTH OF ALL CYLINDERS TAKEN FROM EACH CONCRETE MIX ON THE SAME DAY IS LESS THAN 85% OF THE DESIGN COMPRESSIVE STRENGTH, THE CONCRETE MIX IS NOT ACCEPTED. IF THE CONCRETE DO NOT MEET THIS CRITERIA, A MINIMUM OF TWO CORES SHALL BE DRILLED THROUGH THE PRECAST ELEMENTS NEAR WHERE THE MORTAR COMPOSED OF STONE AND SAND.

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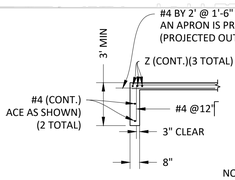
ECO-SPAN WWW.ECO-SPAN.COM — INSTANT DESIGN — COMM PARK SOUTH BRIDGE #1 — AURORA CO — Tom Nicholson, PreTek Group, (937) 414-0925 — PRETEK GROUP P.O. BOX 751471, DAYTON, OH 45475 (800) 241-0823 — PROJECT ID# 217067134 — SHEET No 3 OF 6 — DATE: 10/01/2015

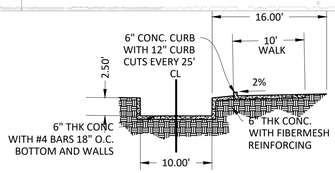
NOTE:
PRECAST ARCH CULVERT TO BE ECO-SPAN OR APPROVED EQUAL. SUPPLIER TO PROVIDE DESIGN

FOUNDATION DESIGN TO BE PROVIDED BY CONTRACTOR

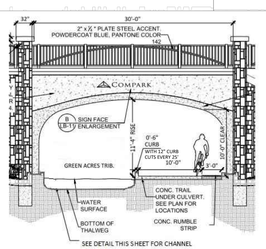
CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION

LIMIT PE CERTIFICATION TO CIVIL





NOTES:
1. CONCRETE MIX TO BE 4000 PSI MIX
2. TRANSVERSE JOINTS TO BE SAWCUT (¼" WIDE X 1-1/4" DEEP) 10-12' ON CENTER
3. EXPANSION JOINTS WITH FILLER & SEALANT TO BE PLACED EVERY 100' AND WHERE PAVEMENT ABUTS ANOTHER STRUCTURE.
4. INSTALL 3' CONC. CUTOFF WALLS AT EACH END OF THE ARCH STRUCTURE.



GAT TYPICAL CHANNEL SECTION



GAT TYPICAL CULVERT SAFETY SIGN

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

TOWN OF PARKER APPROVALS

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS — DATE

COLORADO REGISTERED PROFESSIONAL ENGINEER — TIMOTHY K. SCHMIDT — 30877 — 11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 27 OF 50
CLCPKC3

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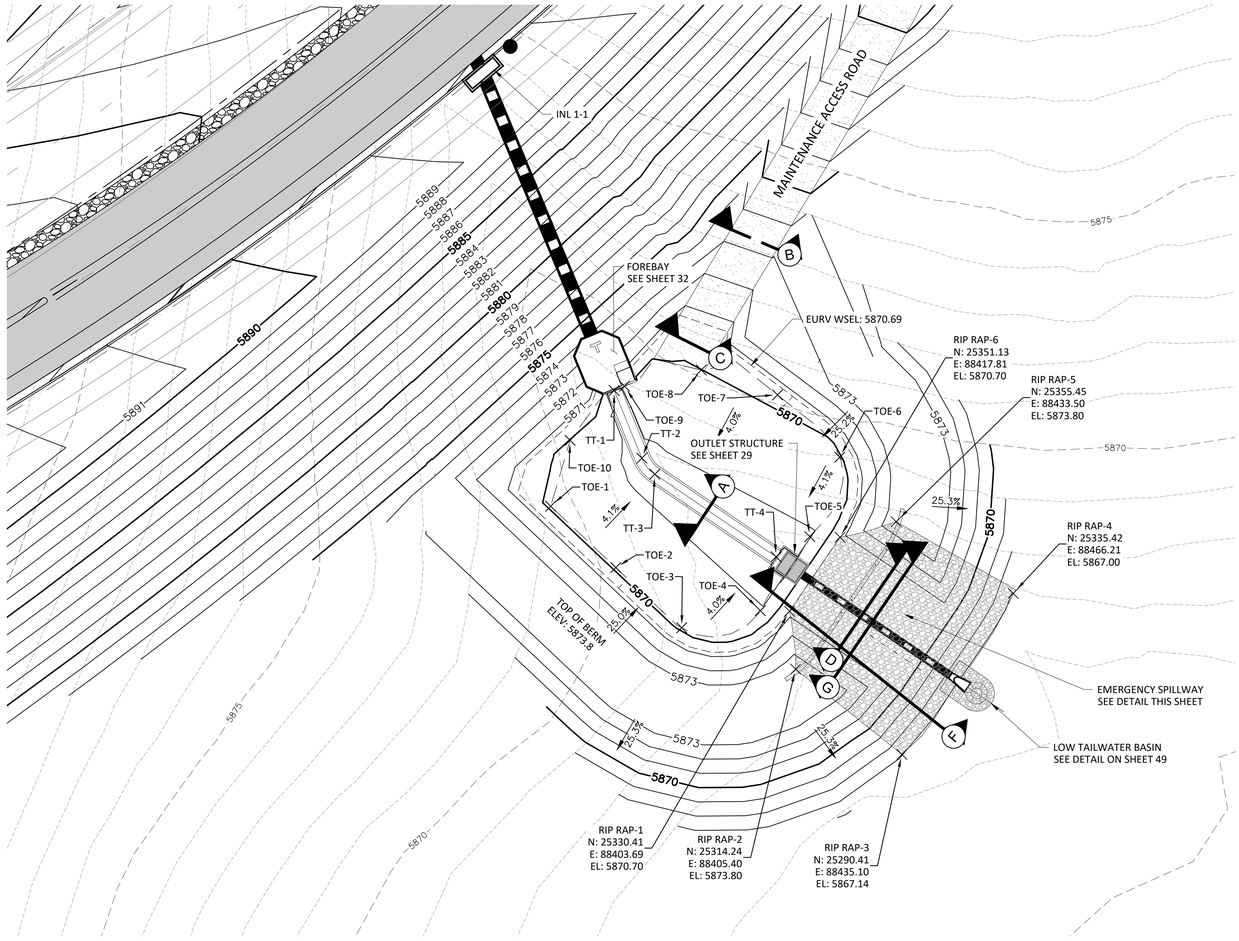
Plotted: 10/30/2020 1:38 PM Dwn Name: P:\Data\3\ComSouth12-Filing 1 No. GA\ComSouth3-Ultimate Belford Ave\Work\Final Drawings\Plan Set\Town\GAT\ECPKC3-GAT Box Culvert.dwg Updated By: ADuncker



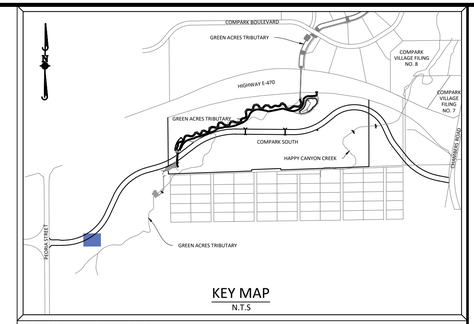
FREQUENCY STORM	REQUIRED VOLUMES (FT^3 OR AC.–FT.)	RECORD DRAWING CALCULATIONS					
		CALC. VOL.	BY:	DATE	CALC. VOL.	BY:	DATE
EURV	0.16 AC.-FT.						

0 10 20 40

SCALE: 1"=20'

Point Table

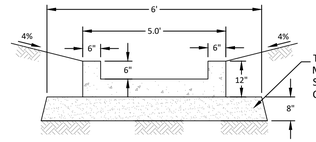
Point	Elevation	Northing	Easting	Description
TOE–1	5869.80	25359.77	88336.93	POND TOE
TOE–2	5869.79	25342.64	88355.14	POND TOE
TOE–3	5869.79	25325.82	88373.57	POND TOE
TOE–4	5869.06	25330.60	88395.52	POND TOE
TOE–5	5868.93	25351.29	88409.37	POND TOE
TOE–6	5869.88	25373.50	88417.74	POND TOE
TOE–7	5870.15	25390.92	88400.34	POND TOE
TOE–8	5869.99	25397.88	88379.04	POND TOE
TOE–9	5869.95	25393.34	88357.58	POND TOE
TOE–10	5869.96	25378.21	88342.37	POND TOE
TT–1	5868.45	25392.15	88354.68	Trickle Channel
TT–2	5868.35	25373.23	88362.42	Trickle Channel
TT–3	5868.32	25368.74	88366.05	Trickle Channel
TT–4	5868.11	25345.64	88399.94	Trickle Channel



KEY MAP
N.T.S

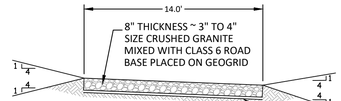
SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

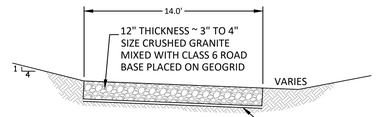


SECTION A
5.0' WIDE TRICKLE CHANNEL
½" = 1'-0"

NOTE: USE 4 POUNDS PER CU. YD. OF FIBRE MESH TO REINFORCE CONCRETE



SECTION B
MAINTENANCE ACCESS ROAD
ABOVE EURV WATER SURFACE
¼" = 1'-0"



SECTION C
MAINTENANCE ACCESS ROAD
BELOW EURV WATER SURFACE
¼" = 1'-0"

NOTE:

1. PRIOR TO FINAL TOP SOILING, SEEDING AND MULCHING, CONTRACTOR SHALL OBTAIN FINAL AS-BUILT VOLUME CHECK AND CERTIFICATION FROM THE ENGINEER. FAILURE TO DO SO WILL REQUIRE THE CONTRACTOR TO REMOVE AND REPLACE TOP SOIL MATERIALS AT HIS/HER EXPENSE.
2. REFER TO GENERAL NOTES ON SHEET 2 AND DETAILS ON FOLLOWING SHEETS
3. EMBANKMENT FILL SHALL MEET THE MINIMUM REQUIREMENTS OF TOWN OF PARKER AND THE GEOTECHNICAL REPORT. SEE GENERAL NOTES ON SHEET 2.
4. THIS WATER QUALITY BASIN HAS BEEN SIZED TO SERVE AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION. ONCE CONSTRUCTION IS COMPLETE, THE SPILLWAY SHALL BE LOWERED TO THE EURV WATER SURFACE ELEVATION, AS SHOWN ON THE DETAIL ON THIS SHEET.

TOWN OF PARKER APPROVALS

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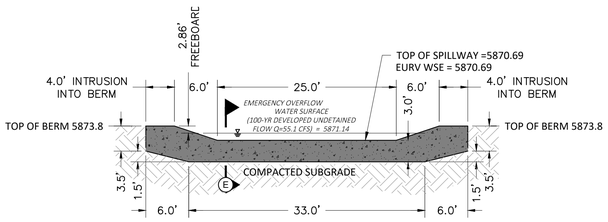
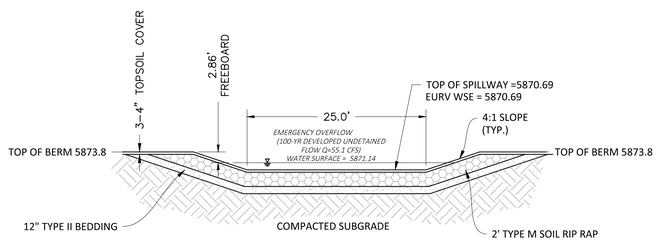
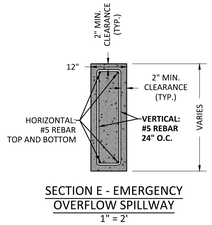
TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS DATE



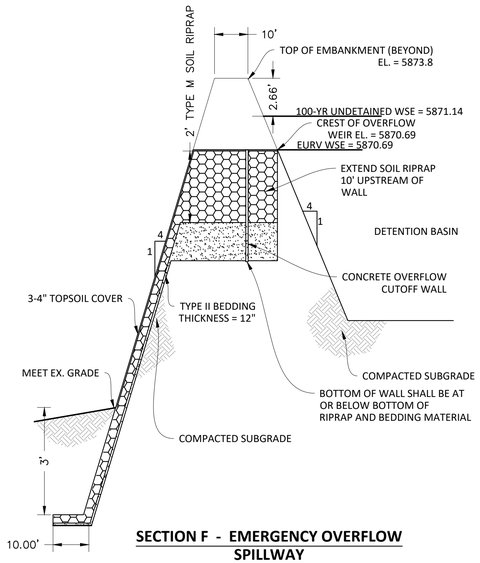
SECTION D - EMERGENCY OVERFLOW SPILLWAY CUTOFF WALL
1" = 10'



SECTION G - EMERGENCY OVERFLOW SPILLWAY



SECTION E - EMERGENCY
OVERFLOW SPILLWAY
1" = 2'



SECTION F - EMERGENCY OVERFLOW
SPILLWAY
1" = 20'H
1"=2'V

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

DATE	REVISIONS	DRAWN BY
09/2020	APPROVED	
07/31/20	RESPONSES TO TOWN COMMENTS	JAH
07/01/20	RESPONSES TO TOWN COMMENTS	JAH
03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
12/21/16	FINAL SUBMITTAL	
11/11/16	4TH SUBMITTAL	
08/24/16	3RD SUBMITTAL	
4/11/16	2ND SUBMITTAL	EG
11/2015	1ST SUBMITTAL	

Manhard CONSULTING
7600 East Orchard Road, Suite 150-N, Greenwood Village, CO 80111 ph 303.708.0500 manhard.com
Civil Engineering | Surveying | Water Resource Management | Construction Management

COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
WEST WATER QUALITY POND PLAN

COLORADO REGISTERED
KEVIN T. LYNCH
30877
11-17-2020
PROFESSIONAL ENGINEER

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
28 OF 50
CLCPKC3

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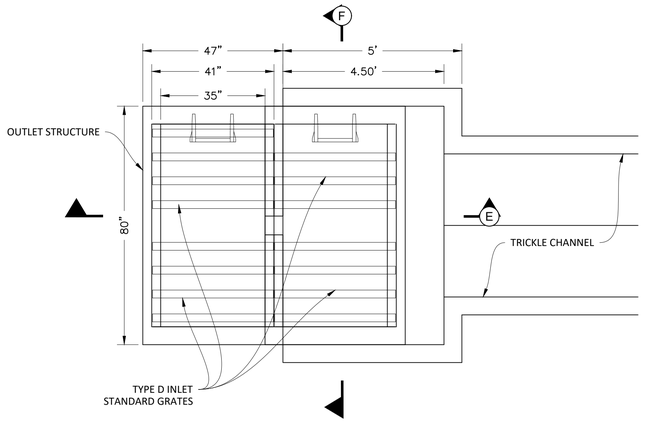
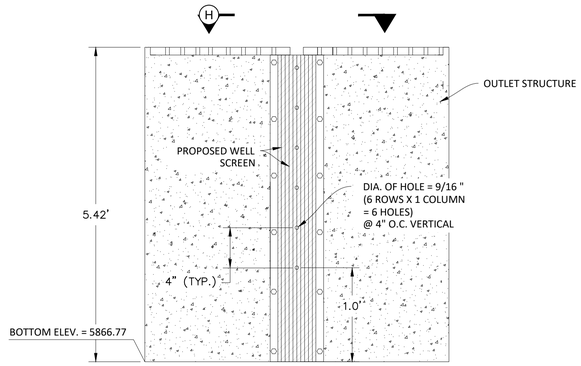
Plotted: 10/30/2020 1:39 PM Dwg Name: P:\Civil\3-Com\South\2-Filing 1 No. GAT\Com\South\3-Ultimate Belford Ave\dwg\Engr\Final Drawings\Plan Set\Town\CLCPKC3-Pond Plan.dwg Updated By: ABruckner

jbockey@thkassoc.com

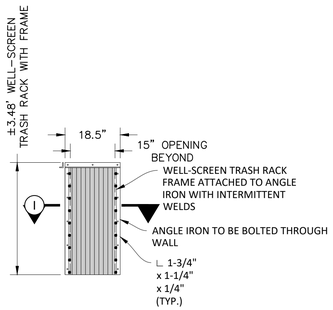
NOTE: DRAINAGE STRUCTURES REQUIRE FINAL SHOP DRAWINGS AND STRUCTURAL ENGINEERING TO BE SUBMITTED TO THE TOWN OF PARKER AND MANHARD CONSULTING FOR FINAL REVIEW AND APPROVAL. ANY CHANGE IN STRUCTURE TYPE, CONFIGURATION OR SHAPE WILL REQUIRE A "NOTICE OF CHANGE" AND WILL REQUIRE REVISIONS TO THE CIVIL DRAWINGS TO REFLECT THEIR CHANGES.



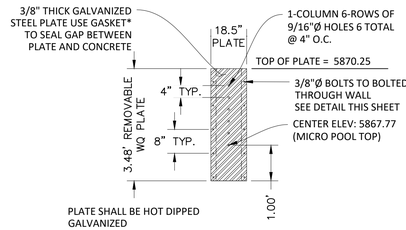
PLAN - WEST POND OUTLET STRUCTURE
1"=2'



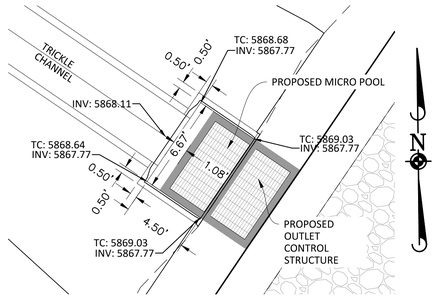
PROFILE VIEW SECTION F-F
N.T.S.



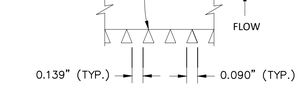
WELL-SCREEN TRASH RACK DETAIL
N.T.S.



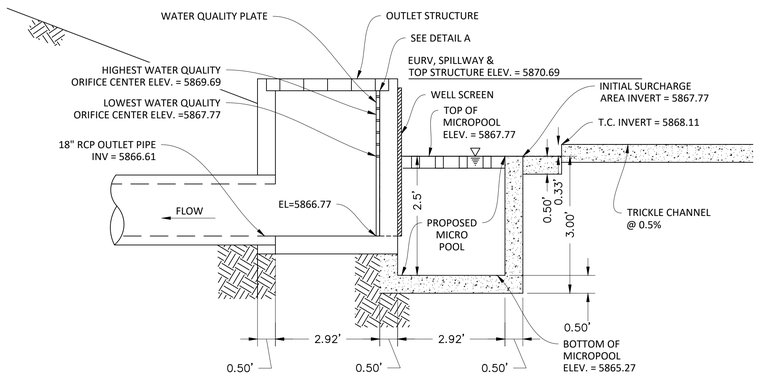
WATER QUALITY
CONTROL PLATE
N.T.S.



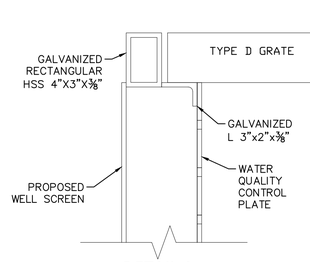
WEST POND INITIAL SURCHARGE AREA
1"=5'



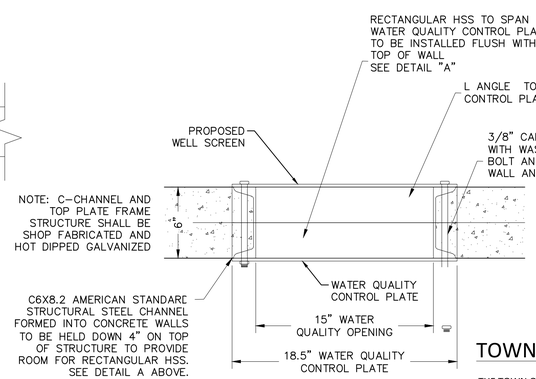
SECTION I-I WELL-SCREEN TRASH RACK
N.T.S.



PROFILE VIEW SECTION E-E
N.T.S.



DETAIL A
INSTALLATION INFORMATION
N.T.S.



SECTION H-H
OPENING DETAIL
N.T.S.

NOTES:

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS — DATE

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D	6/14/16	3RD SUBMITTAL	
C	4/11/16	2ND SUBMITTAL	
B	2/15/16	1ST SUBMITTAL	EG
A	11/2015	1ST SUBMITTAL	

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
OUTLET STRUCTURE WEST

COLORADO REGISTERED PROFESSIONAL ENGINEER
RYAN J. MOLL
30877
11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET
29 OF 50
CLCPKC3

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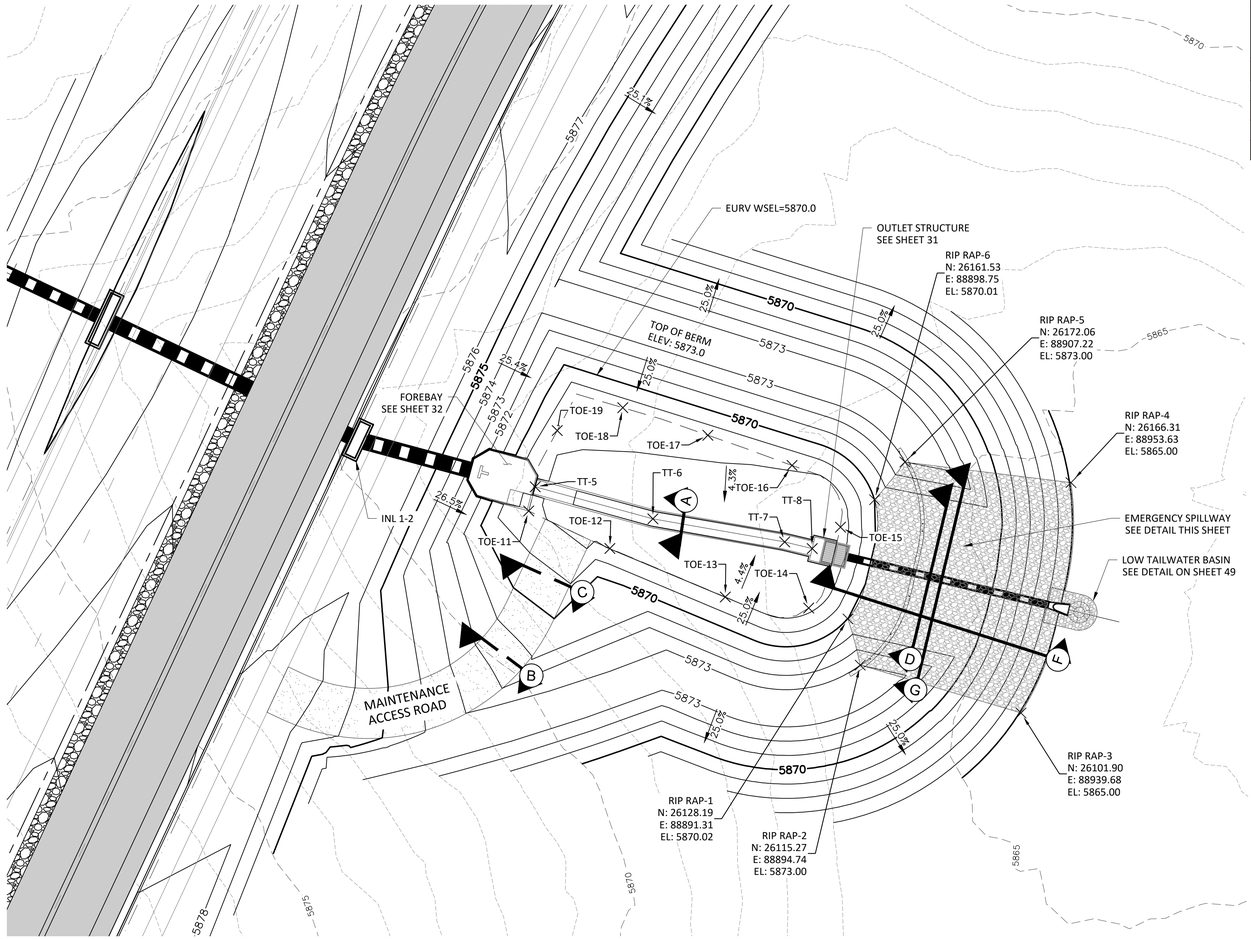
Plotted: 10/30/2020 1:39 PM Dwn Name: P:\Clpkc3\ComSouth03-Ultimate Belford Ave\dwg\Engr\Final Drawings\Plan Set\Town\CLPKC3-Outlet Structure.dwg Updated By: MMcGuire



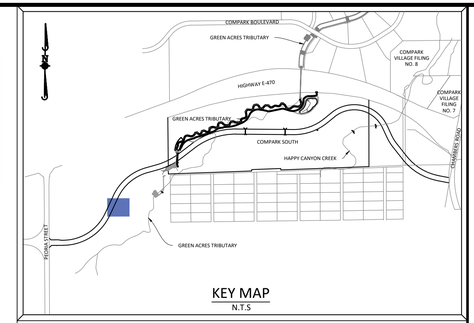
FREQUENCY STORM	REQUIRED VOLUMES (FT^3 OR AC.–FT.)	RECORD DRAWING CALCULATIONS					
		CALC. VOL.	BY:	DATE	CALC. VOL.	BY:	DATE
EURV	0.23 AC.-FT.						

0 10 20 40

SCALE: 1"=20'

Point Table

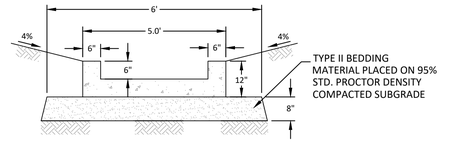
Point	Elevation	Northing	Easting	Description
TOE–11	5868.56	26158.38	88802.07	POND TOE
TOE–12	5867.99	26147.91	88824.77	POND TOE
TOE–13	5867.99	26134.33	88857.03	POND TOE
TOE–14	5867.77	26131.25	88880.33	POND TOE
TOE–15	5867.43	26153.85	88889.22	POND TOE
TOE–16	5868.07	26171.11	88875.68	POND TOE
TOE–17	5868.29	26179.55	88852.15	POND TOE
TOE–18	5868.47	26187.25	88828.37	POND TOE
TOE–19	5868.16	26180.86	88810.05	POND TOE
TT–5	5867.06	26165.13	88803.90	Trickle Channel
TT–6	5866.89	26156.19	88836.79	Trickle Channel
TT–7	5866.70	26149.71	88873.62	Trickle Channel
TT–8	5866.66	26147.87	88881.32	Trickle Channel



KEY MAP
N.T.S

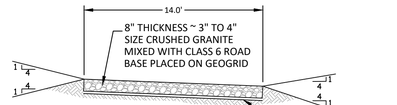
SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

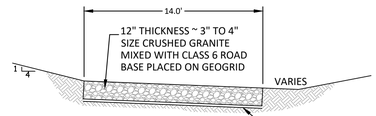


SECTION A
5.0' WIDE TRICKLE CHANNEL
½" = 1'-0"

NOTE: USE 4 POUNDS PER CU. YD. OF FIBRE MESH TO REINFORCE CONCRETE



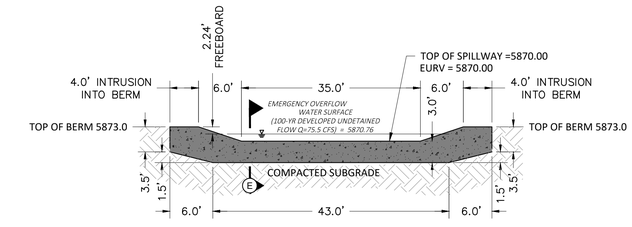
SECTION B
MAINTENANCE ACCESS ROAD
ABOVE EURV WATER SURFACE
¼" = 1'-0"



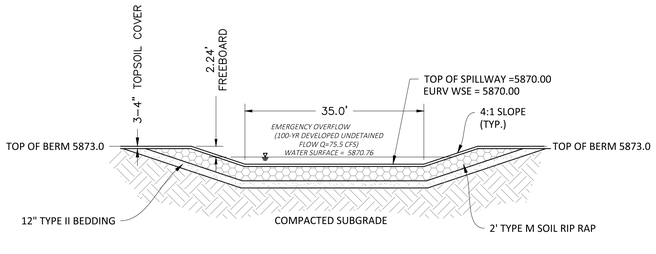
SECTION C
MAINTENANCE ACCESS ROAD
BELOW EURV WATER SURFACE
¼" = 1'-0"

NOTE:

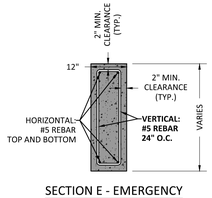
1. PRIOR TO FINAL TOP SOILING, SEEDING AND MULCHING, CONTRACTOR SHALL OBTAIN FINAL AS-BUILT VOLUME CHECK AND CERTIFICATION FROM THE ENGINEER. FAILURE TO DO SO WILL REQUIRE THE CONTRACTOR TO REMOVE AND REPLACE TOP SOIL MATERIALS AT HIS/HER EXPENSE.
2. REFER TO GENERAL NOTES ON SHEET 2 AND DETAILS ON FOLLOWING SHEETS
3. EMBANKMENT FILL SHALL MEET THE MINIMUM REQUIREMENTS OF TOWN OF PARKER AND THE GEOTECHNICAL REPORT. SEE GENERAL NOTES ON SHEET 2.
4. THIS WATER QUALITY BASIN HAS BEEN SIZED TO SERVE AS A TEMPORARY SEDIMENT BASIN DURING CONSTRUCTION. ONCE CONSTRUCTION IS COMPLETE, THE SPILLWAY SHALL BE LOWERED TO THE EURV WATER SURFACE ELEVATION, AS SHOWN ON THE DETAIL ON THIS SHEET.



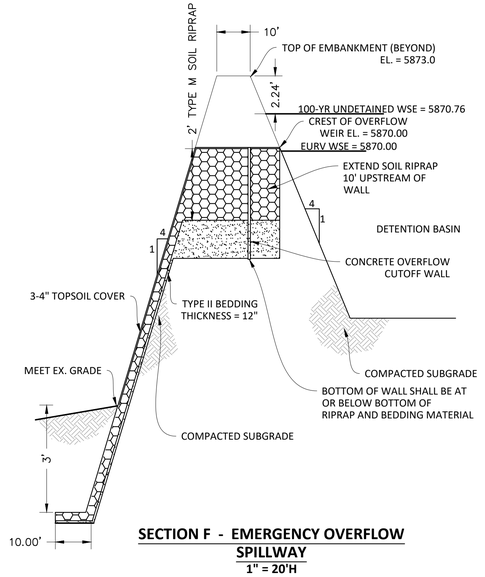
SECTION D - EMERGENCY OVERFLOW CUTOFF WALL
1" = 10'



SECTION G - EMERGENCY OVERFLOW SPILLWAY
1" = 10'



SECTION E - EMERGENCY
OVERFLOW SPILLWAY
1" = 2'



SECTION F - EMERGENCY OVERFLOW SPILLWAY
1" = 20'H
1"=2'V

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

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03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
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11/1/16	4TH SUBMITTAL	
6/1/16	3RD SUBMITTAL	
4/11/16	2ND SUBMITTAL	EG
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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
EAST WATER QUALITY POND PLAN

COLORADO REGISTERED PROFESSIONAL ENGINEER — KEVIN J. MOSS — 30877 — 11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
30 OF 50
CLCPKC3

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Plotted: 10/30/2020 1:40 PM Dwg Name: P:\Clcpkc3\Com\South\12-Filing 1 No. 6A1\Com\South\03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\Cl CPKC3-Pond Plan.dwg Updated By: ADuncker

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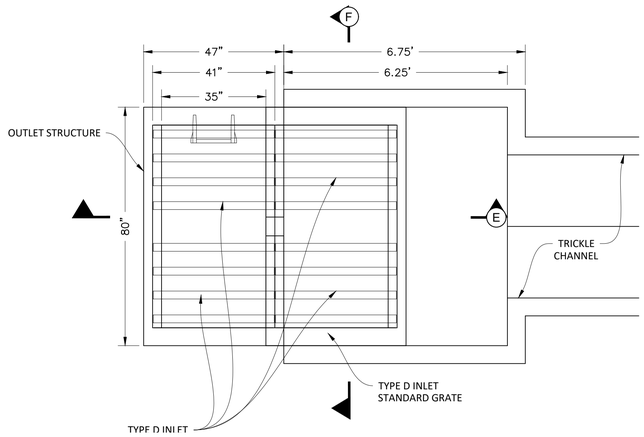
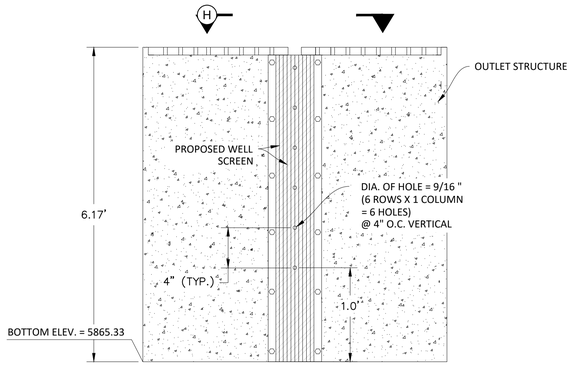
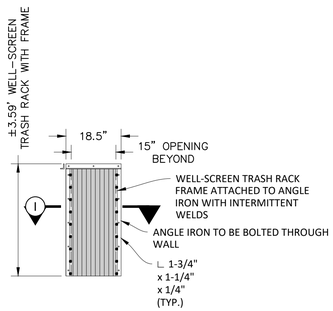


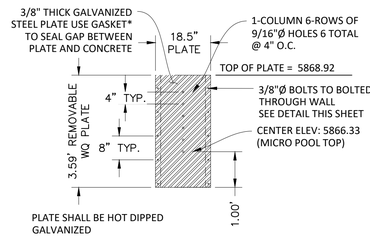
PLAN - EAST POND OUTLET STRUCTURE
1"=2'



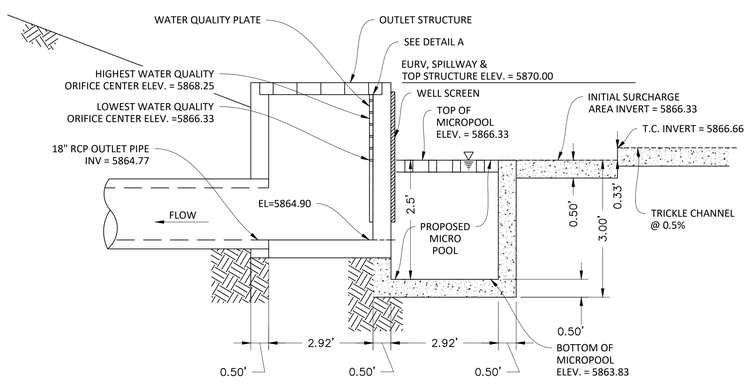
PROFILE VIEW SECTION F-F
N.T.S.



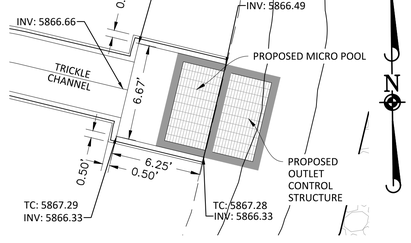
WELL-SCREEN
TRASH RACK DETAIL
N.T.S.



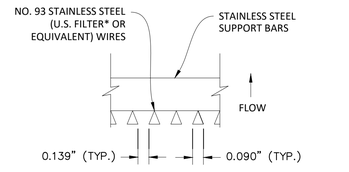
WATER QUALITY
CONTROL PLATE
N.T.S.



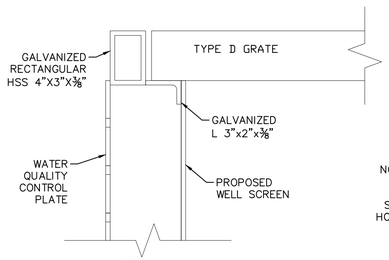
PROFILE VIEW SECTION E-E
N.T.S.



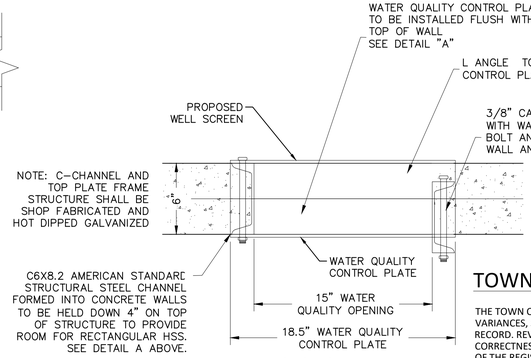
EAST POND INITIAL SURCHARGE AREA
1"=5'



SECTION I-I WELL-SCREEN TRASH RACK
N.T.S.



DETAIL A
INSTALLATION INFORMATION
N.T.S.



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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
OUTLET STRUCTURE EAST

COLORADO REGISTERED KERI L. MOE 30877 11-17-2020 PROFESSIONAL ENGINEER

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

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CLCPKC3

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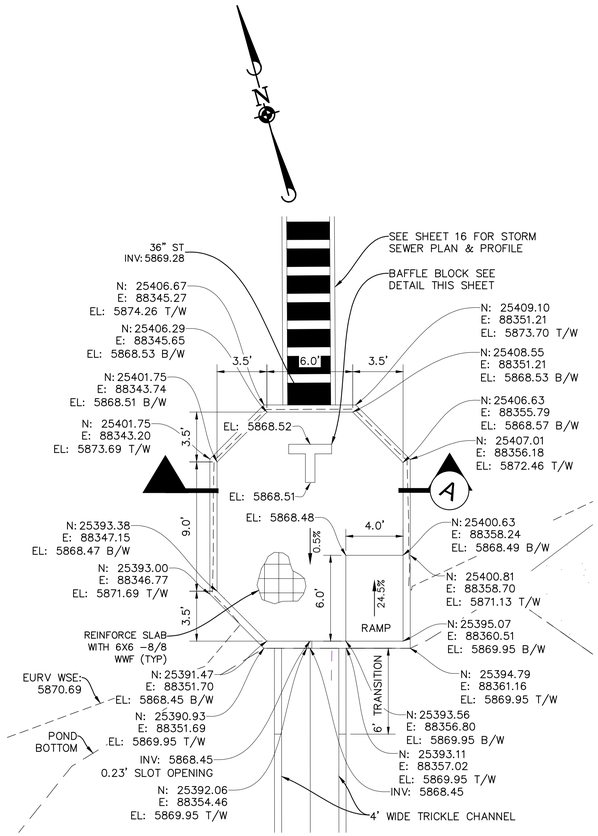
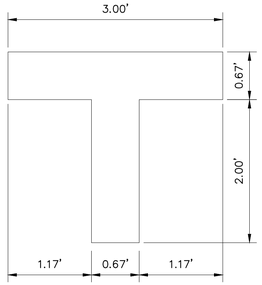
Plotted: 10/30/2020 1:41 PM Dwn Name: P:\Cpzkc3\ComSouth12-Filing 1 No GA1\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\01CPKC3-Outlet Structure.dwg Updated By: MMcGuire

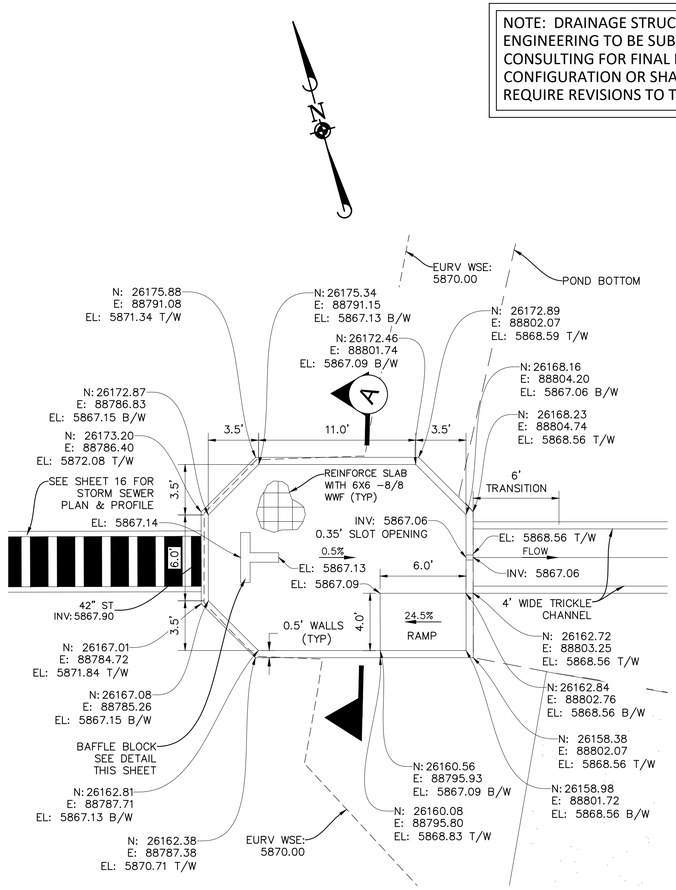


WEST WATER QUALITY
POND FOREBAY
1"=5'

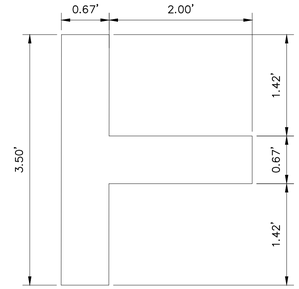


WEST WATER QUALITY
POND FOREBAY BAFFLE
BLOCK DETAIL
1"=1'

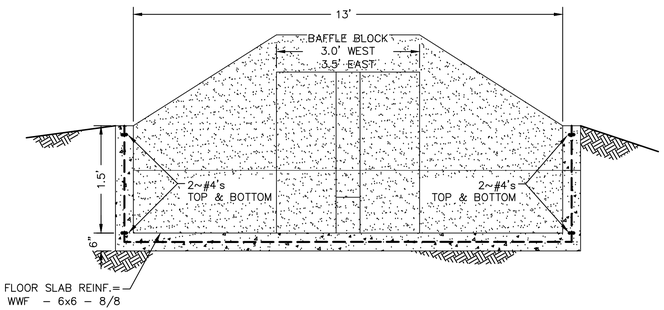
NOTE: DRAINAGE STRUCTURES REQUIRE FINAL SHOP DRAWINGS AND STRUCTURAL ENGINEERING TO BE SUBMITTED TO THE TOWN OF PARKER AND MANHARD CONSULTING FOR FINAL REVIEW AND APPROVAL. ANY CHANGE IN STRUCTURE TYPE, CONFIGURATION OR SHAPE WILL REQUIRE A "NOTICE OF CHANGE" AND WILL REQUIRE REVISIONS TO THE CIVIL DRAWINGS TO REFLECT THEIR CHANGES.



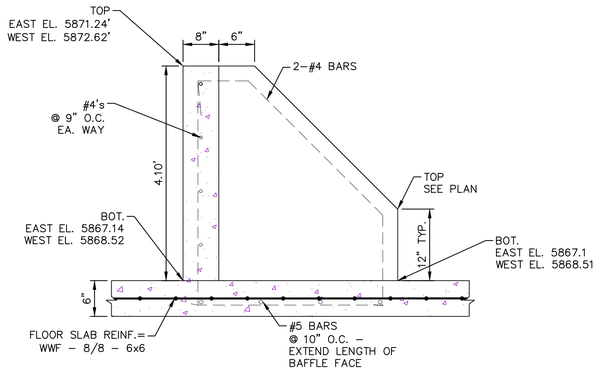
EAST WATER
QUALITY POND
FOREBAY
1"=5'



EAST WATER QUALITY
POND FOREBAY BAFFLE
BLOCK DETAIL
1"=1'



SECTION A-A
N.T.S.



BAFFLE BLOCK
REINFORCING DETAIL
1"=0.5'

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

TOWN OF PARKER APPROVALS

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS — DATE

	DATE	REVISIONS	DRAWN BY
L	09/2020	APPROVED	
K	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
J	06/05/20	RESPONSED TO TOWN COMMENTS	JAH
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	6/21/16	4TH SUBMITTAL	
C	5/24/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	
A	11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
WATER QUALITY FOREBAY PLAN

COLORADO REGISTERED PROFESSIONAL ENGINEER
ERIC T. GORDON
30877
11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
32 OF 50
CLCPKC3

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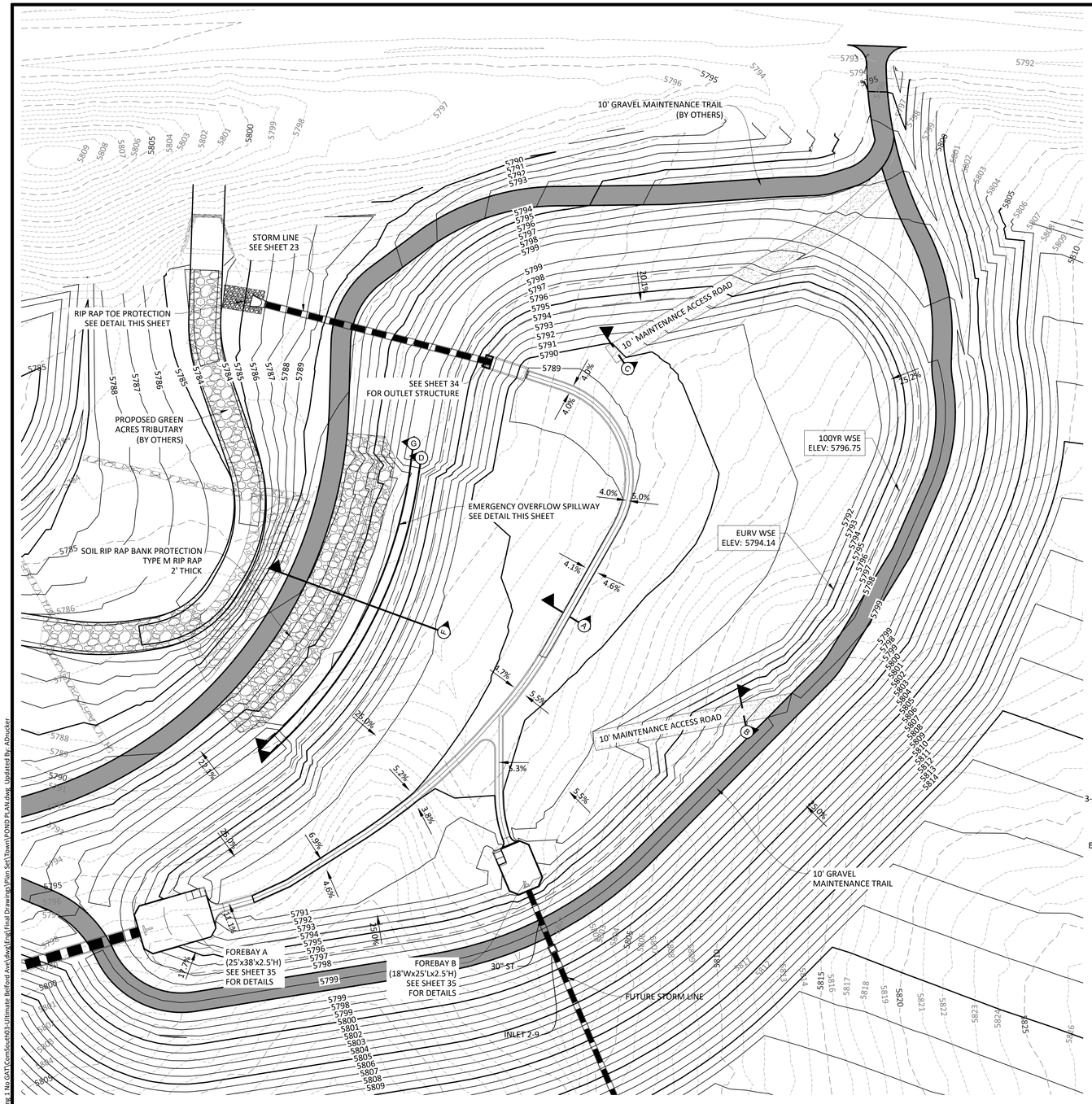
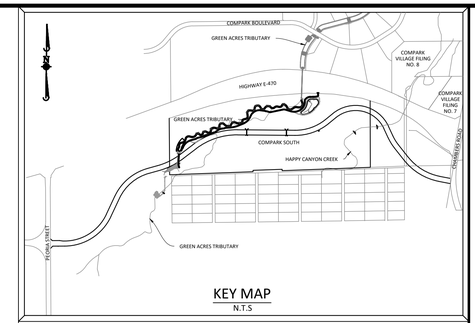
Plotted: 11/16/2020 5:18 PM Dwg Name: P:\Clopk3\Com\South2-Filing 1 No. 6A1\Com\South3-Ultimate Belford Ave\data\Eng\Final Drawings\Plan Set\Town\01CPKC3-Forebay Plan.dwg Updated By: ADrucker



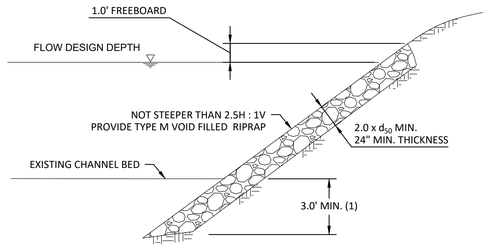
SCALE: 1"=30'



KEY MAP
N.T.S

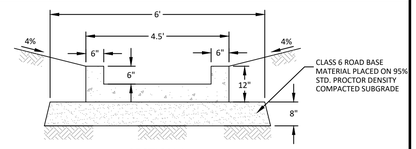
SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)



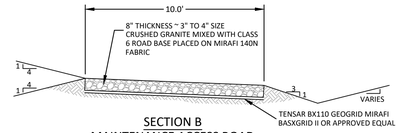
(1) 5 - FEET MINIMUM IN SANDY OR EROSIVE SOILS
(2) ELIMINATE GRANULAR BEDDING WHEN SOIL-RIPRAP IS USED

RIP-RAP TOE PROTECTION
N.T.S.

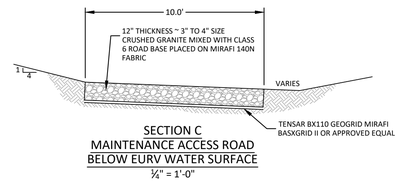


SECTION A
4.5' WIDE TRICKLE CHANNEL
½" = 1'-0"

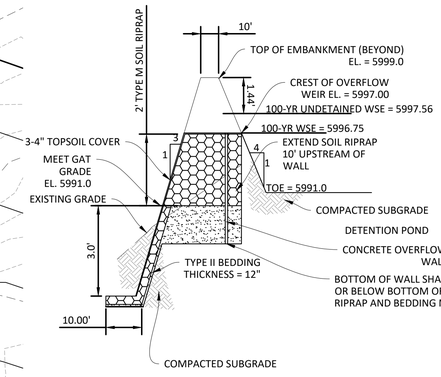
NOTE: USE 4 POUNDS PER CU. YD. OF FIBRE MESH TO REINFORCE CONCRETE



SECTION B
MAINTENANCE ACCESS ROAD
ABOVE EURV WATER SURFACE
¼" = 1'-0"



SECTION C
MAINTENANCE ACCESS ROAD
BELOW EURV WATER SURFACE
¼" = 1'-0"

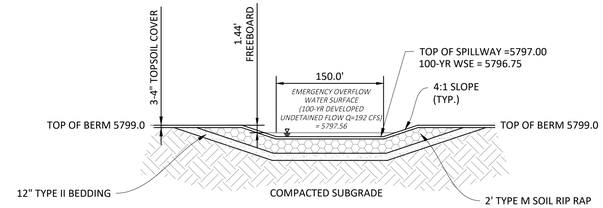


SECTION F - EMERGENCY OVERFLOW SPILLWAY
N.T.S.

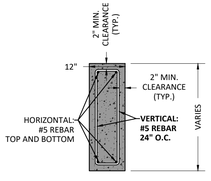
NOTE:

1. PRIOR TO FINAL TOPSOILING, SEEDING AND MULCHING, CONTRACTOR SHALL OBTAIN FINAL AS-BUILT VOLUME CHECK AND CERTIFICATION FROM THE ENGINEER. FAILURE TO DO SO WILL REQUIRE THE CONTRACTOR TO REMOVE AND REPLACE TOPSOIL MATERIALS AT HIS/HER EXPENSE.
2. REFER TO GENERAL NOTES ON SHEET 2 AND DETAILS ON FOLLOWING SHEETS
3. EMBANKMENT FILL SHALL MEET THE MINIMUM REQUIREMENTS OF TOWN OF PARKER AND THE GEOTECHNICAL REPORT. SEE GENERAL NOTES ON SHEET 2.

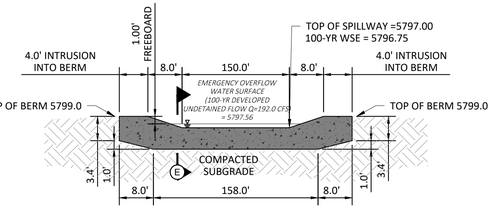
Know what's below. Call before you dig.



SECTION G - EMERGENCY OVERFLOW SPILLWAY
N.T.S.



SECTION E - EMERGENCY
OVERFLOW SPILLWAY CUTOFF WALL
1" = 2'



SECTION D - EMERGENCY OVERFLOW SPILLWAY CUTOFF WALL
N.T.S.

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TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS DATE

	DATE	REVISIONS	DRAWN BY
I	09/2020	APPROVED	
H	07/31/20	RESPONDED TO TOWN COMMENTS	JAH
G	05/01/20	RESPONDED TO TOWN COMMENTS	JAH
F	03/02/20	REVISED PER NEW DPC FLUME EXC BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/1/16	4TH SUBMITTAL	
C	6/24/16	3RD SUBMITTAL	
B	4/1/16	2ND SUBMITTAL	
A	11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
DETENTION POND PLAN

COLORADO REGISTERED PROFESSIONAL ENGINEER 30877 11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 33 OF 50
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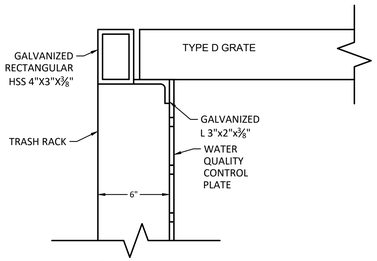
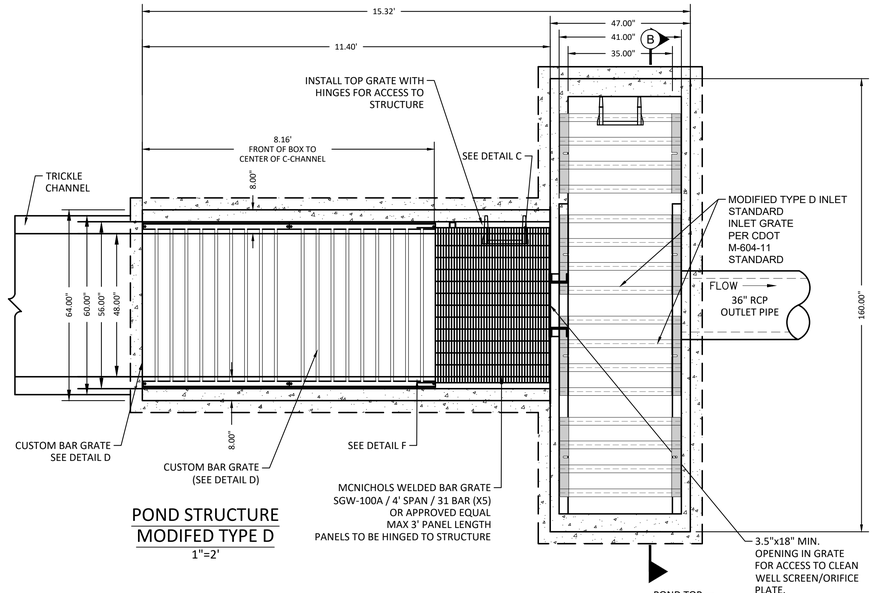


DETAIL A
INSTALLATION INFORMATION
N.T.S.



POND STRUCTURE
MODIFED TYPE D
1"=2'

NOTES:
1. REFER TO CDOT M-604-11 STANDARD, TYPE "D" INLET FOR CONCRETE, STEEL GRATE AND STEP REQUIREMENTS. REINFORCING BARS SHALL BE PLACED IN ALL INTERIOR, EXTERIOR AND BASE WALLS.

2. STEPS SHALL BE PROVIDED , AS SHOWN ON DETAIL AND SHALL BE IN ACCORDANCE WITH AASHTO M 199.

3. GRATES SHALL BE STANDARD GRATE TYPE.

4. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.

5. CONTRACTOR TO HAVE PROFESSIONAL ENGINEER DESIGN AND CERTIFY THE OUTLET STRUCTURE.

6. NO GAP SHALL BE PRESENT AT THE TOP OF THE OUTLET STRUCTURE BETWEEN THE WELL SCREEN AND ORIFICE PLATE.

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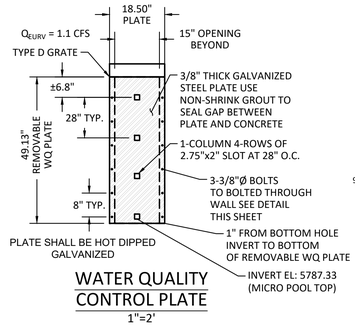
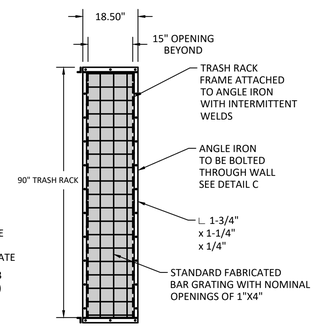
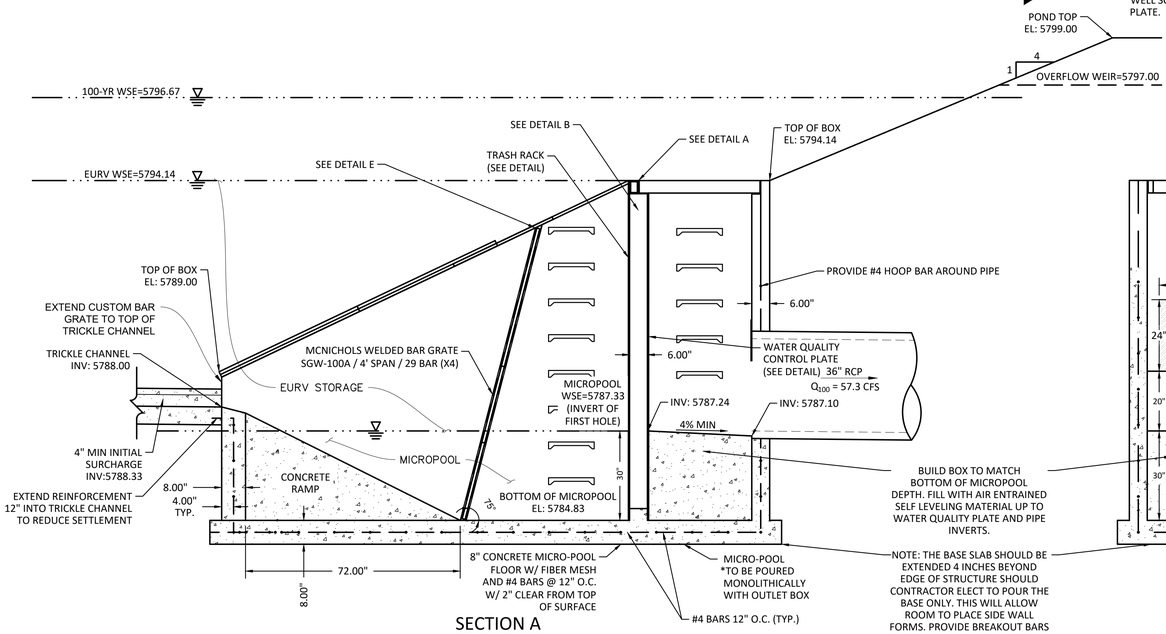


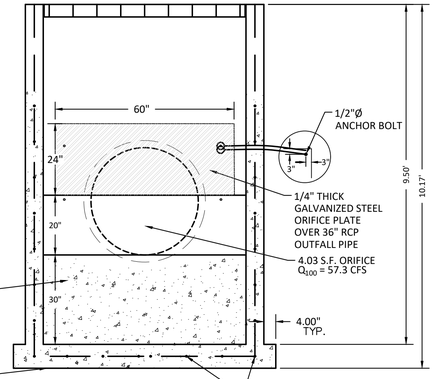
WATER QUALITY
CONTROL PLATE
1"=2'



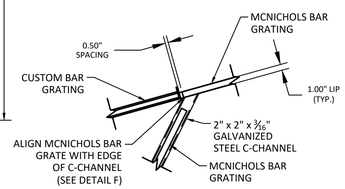
TRASH RACK DETAIL
1"=2'



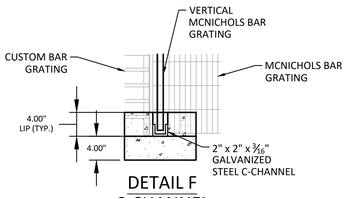
SECTION A
1"=2'



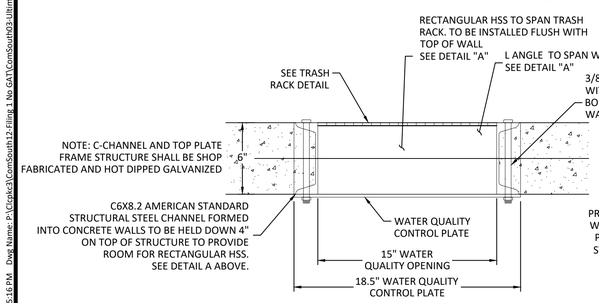
SECTION B
1"=2'



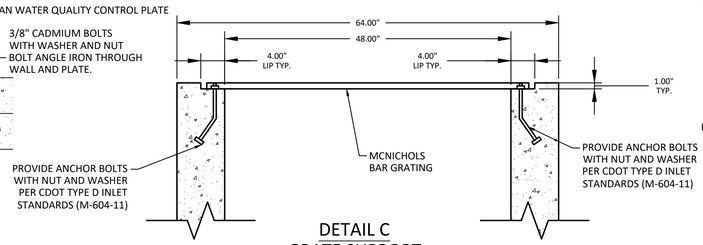
DETAIL E
GRATE JUNCTION
N.T.S.



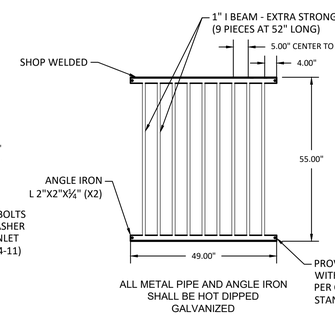
DETAIL F
C-CHANNEL
N.T.S.



DETAIL B
OPENING DETAIL
N.T.S.



DETAIL C
GRATE SUPPORT
N.T.S.



DETAIL D
CUSTOM BAR GRATE
N.T.S.

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D	11/2/16	4TH SUBMITTAL	
C	7/25/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	EG
A	11/2015	1ST SUBMITTAL	

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
DETENTION POND OUTLET STRUCTURE DETAIL

COLORADO REGISTERED PROFESSIONAL ENGINEER — ERIC T. GUSTAFSON — 30877 — 11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 34 OF 50
CLCPKC3 ---

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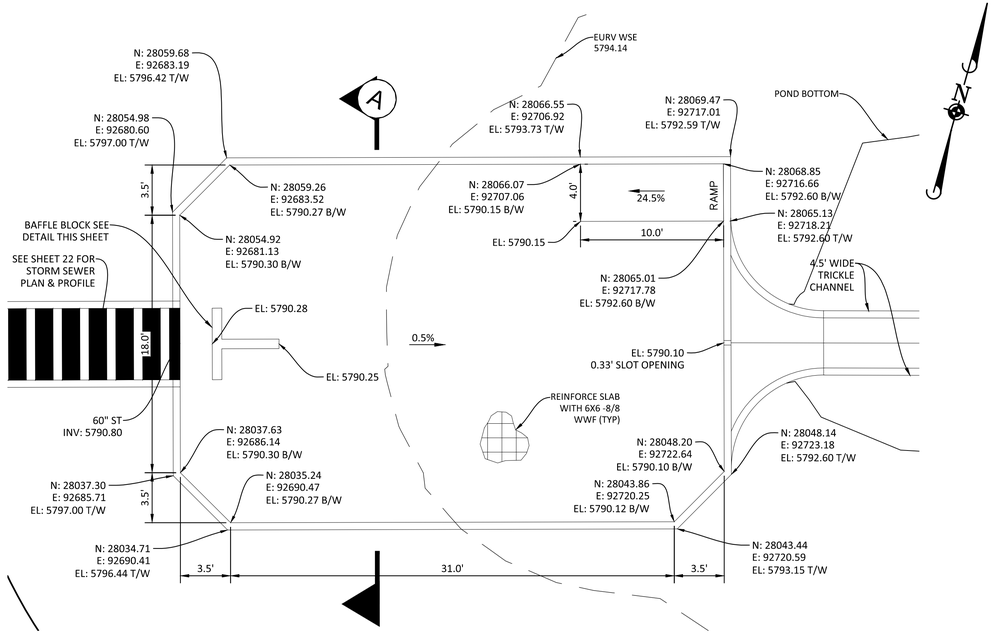
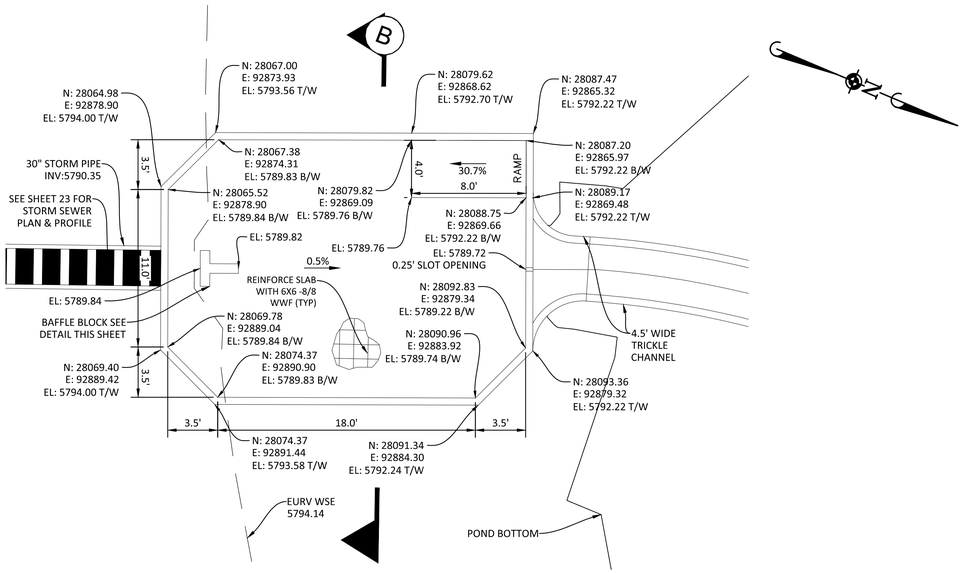
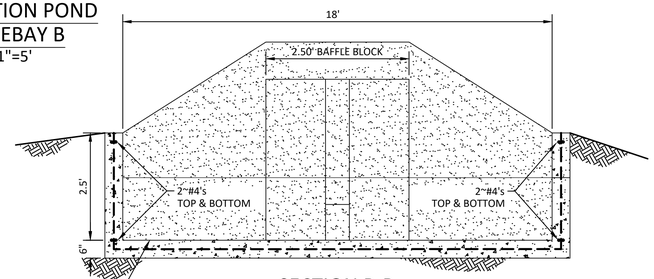


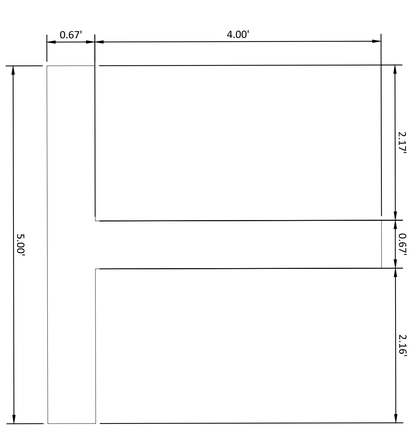
DETENTION POND
FOREBAY A
1"=5'



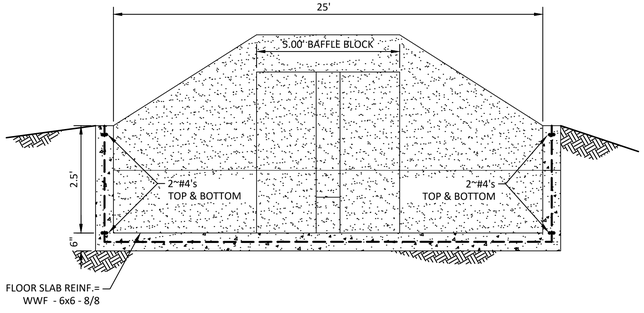
DETENTION POND
FOREBAY B
1"=5'



SECTION B-B
N.T.S.



DETENTION POND
FOREBAY A
BAFFLE BLOCK DETAIL
1"=1'



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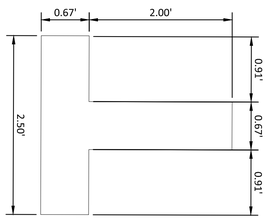
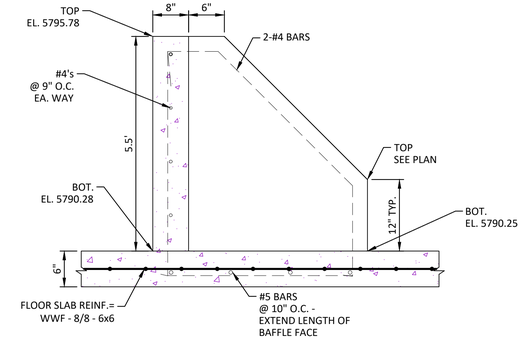
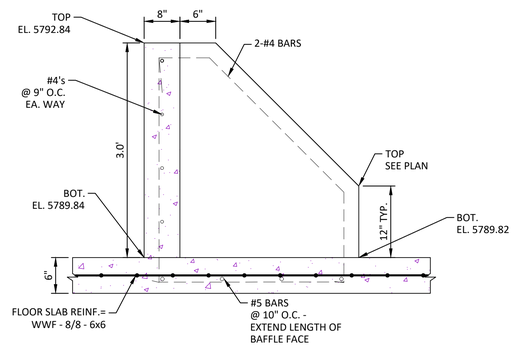


DETENTION POND
FOREBAY B
BAFFLE BLOCK DETAIL
1"=1'



BAFFLE BLOCK
REINFORCING DETAIL
1"=0.5'



BAFFLE BLOCK
REINFORCING DETAIL
1"=0.5'

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7600 East Orchard Road, Suite 150-N, Greenwood Village, CO 80111 ph: 303.708.0500 manhard.com
Civil Engineering | Surveying & Geomatics
Water Resource Management | Construction Management

COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE

TOWN OF PARKER, COLORADO

DETENTION POND FOREBAY PLAN

COLORADO REGISTERED PROFESSIONAL ENGINEER — KEVIN MARR — 30877 — 11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 35 OF 50

CLCPKC3 ---

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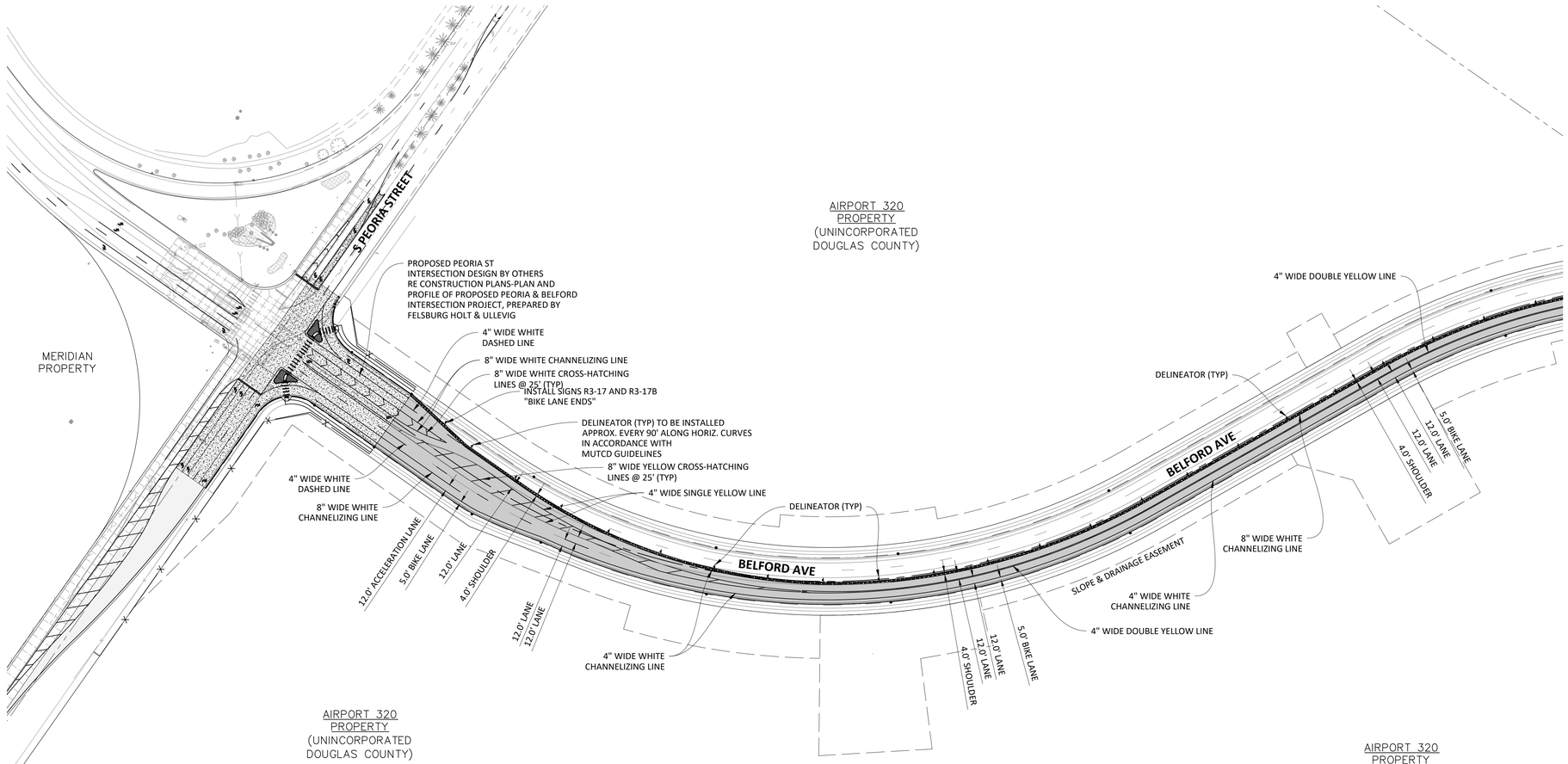
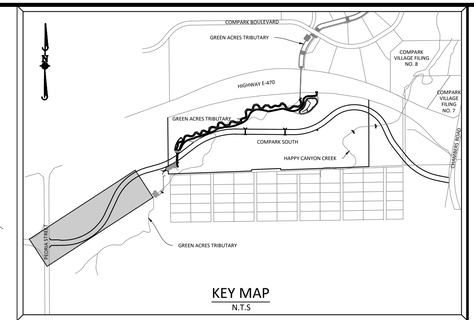
Plotted: 11/17/2020 8:54 AM Dwg Name: P:\Clcpkc3\ComSouth12 Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Engr\Final Drawings\Plan Set\Town\Detention Pond - Forebay Plan.dwg Updated By: ADucker





KEY MAP
N.T.S

SOURCE BENCHMARKS:

DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)

0 50 100 200
SCALE: 1"=100'

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

LEGEND

IIIII	CROSS WALK 24" X 10' WHITE EVENLY SPACED
↑	THROUGH LANE
↰	LEFT TURN ONLY
↱	RIGHT TURN ONLY
↑↰	LEFT OR THROUGH ONLY
↑↱	RIGHT OR THROUGH ONLY

NOTES

1. ALL LANES ARE 12' WIDE UNLESS LABELED OTHERWISE.
2. RETROREFLECTIVE ELEMENTS FOR DELINEATORS SHALL HAVE A MIN. DIMENSION OF 3"
3. DELINEATORS SHALL BE MOUNTED IN SUITABLE SUPPORTS AT A MOUNTING HEIGHT, MEASURED VERTICALLY FROM THE BOTTOM OF THE LOWEST RETROREFLECTIVE DEVICE TO THE ELEVATION OF THE NEAR EDGE OF THE ROADWAY, OF APPROX. FOUR (4) FEET, PER MUTCD GUIDELINES.

SIGNAGE AND STRIPING NOTES:

1. All traffic control devices shall conform to the most recent version of the federal Manual on Uniform Traffic Control Devices (MUTCD), Colorado Supplemental MUTCD, and the Town of Parker Roadway Design and Construction Criteria Manual. Further specifications and illustrations are located in the Colorado Department of Transportation (CDOT) M and S Standards.

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SIGNAGE AND STRIPING NOTES (CONT):

7. A 7 foot minimum post length shall be maintained from the bottom of the sign panel to the ground. This requirement for vertical clearance is for all signs.

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9. Raised median island noses shall have R4-7 signs at each end and a 4"x12" high intensity yellow sign blank located midway between the R4-7 sign and finished grade on each post.

10. Signage and striping has been determined by information available at the time of review. Prior to the initiation of any warranty period, the Town of Parker reserves the right to require modifications to existing, or installation of, additional signage and/or pavement marking if it is determined that conditions warrant such modification according to the MUTCD or the CDOT M and S Standards. All signage and striping shall fall under the requirements of the two-year warranty period for new construction. Additionally, all pavement markings shall not lift or peel during the first year after installation.

11. Diamond grade material shall be used on all stop signs and overhead signs. All other roadside traffic control devices shall use high intensity grade sheeting. No fluorescent yellow green sheeting shall be used unless specifically approved by the Town of Parker.

SIGNAGE AND STRIPING NOTES (CONT):

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
SIGNAGE AND STRIPING

COLORADO REGISTERED PROFESSIONAL ENGINEER — RIM — 30877 — 11-17-2020

PROJ. MGR.:	RIM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET 36 OF 50
CLCPKC3 ---

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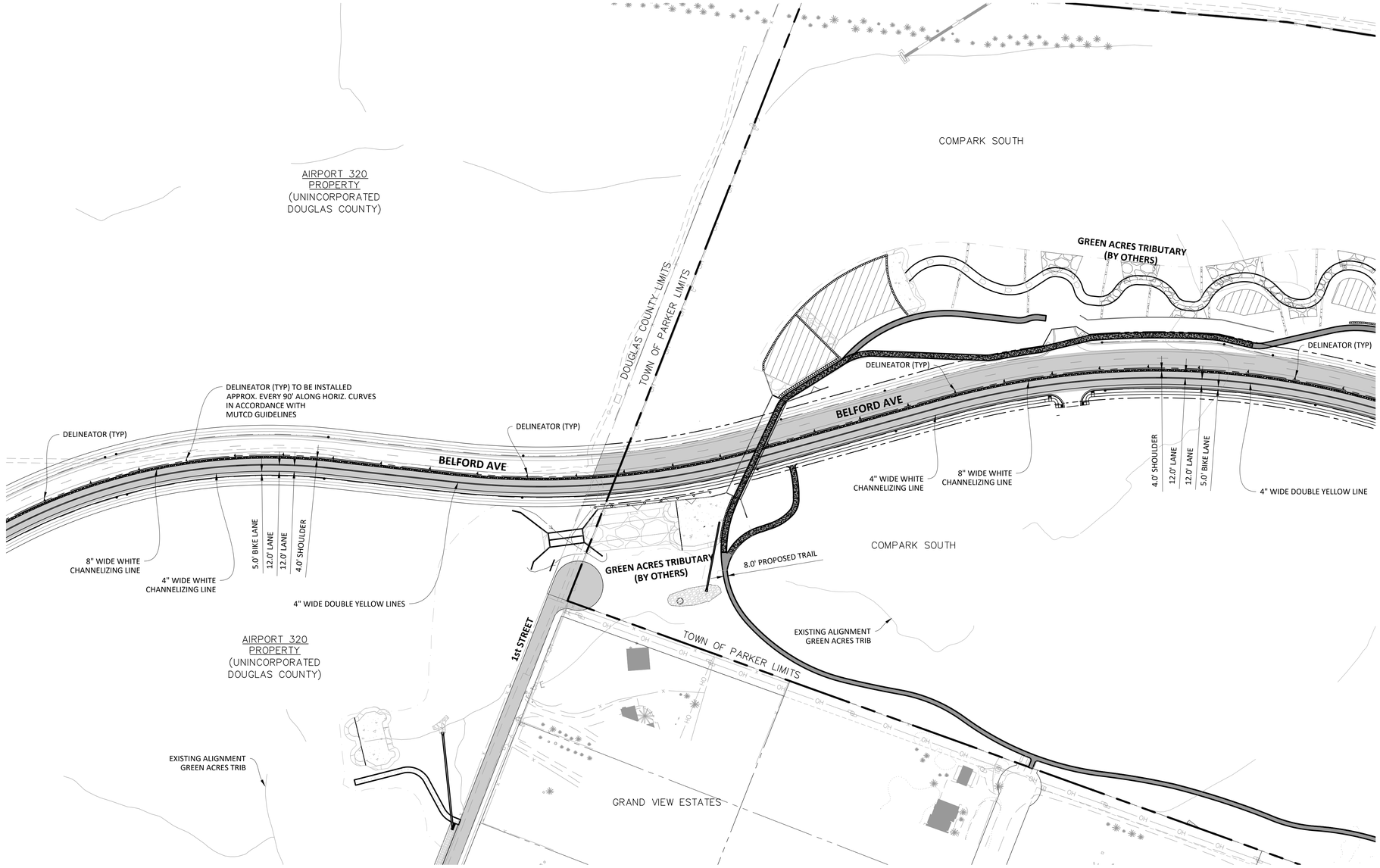
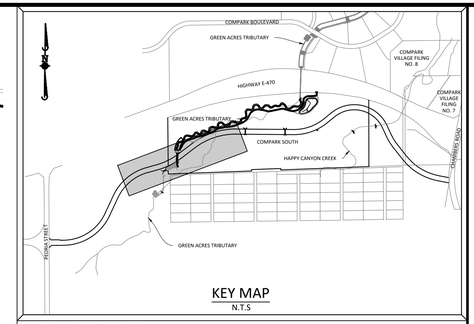
Plotted: 10/30/2020 1:46 PM Dwg Name: P:\Clcpkc3\ComSouth\12-Filing 1 NO GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Signage and Striping (1).dwg Updated By: ADrucker





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TOWN OF PARKER, COLORADO
SIGNAGE AND STRIPING

COLORADO REGISTERED PROFESSIONAL ENGINEER
30877
11-17-2020
PROFESSIONAL ENGINEER

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SHEET
37 OF 50
CLCPKC3 ---

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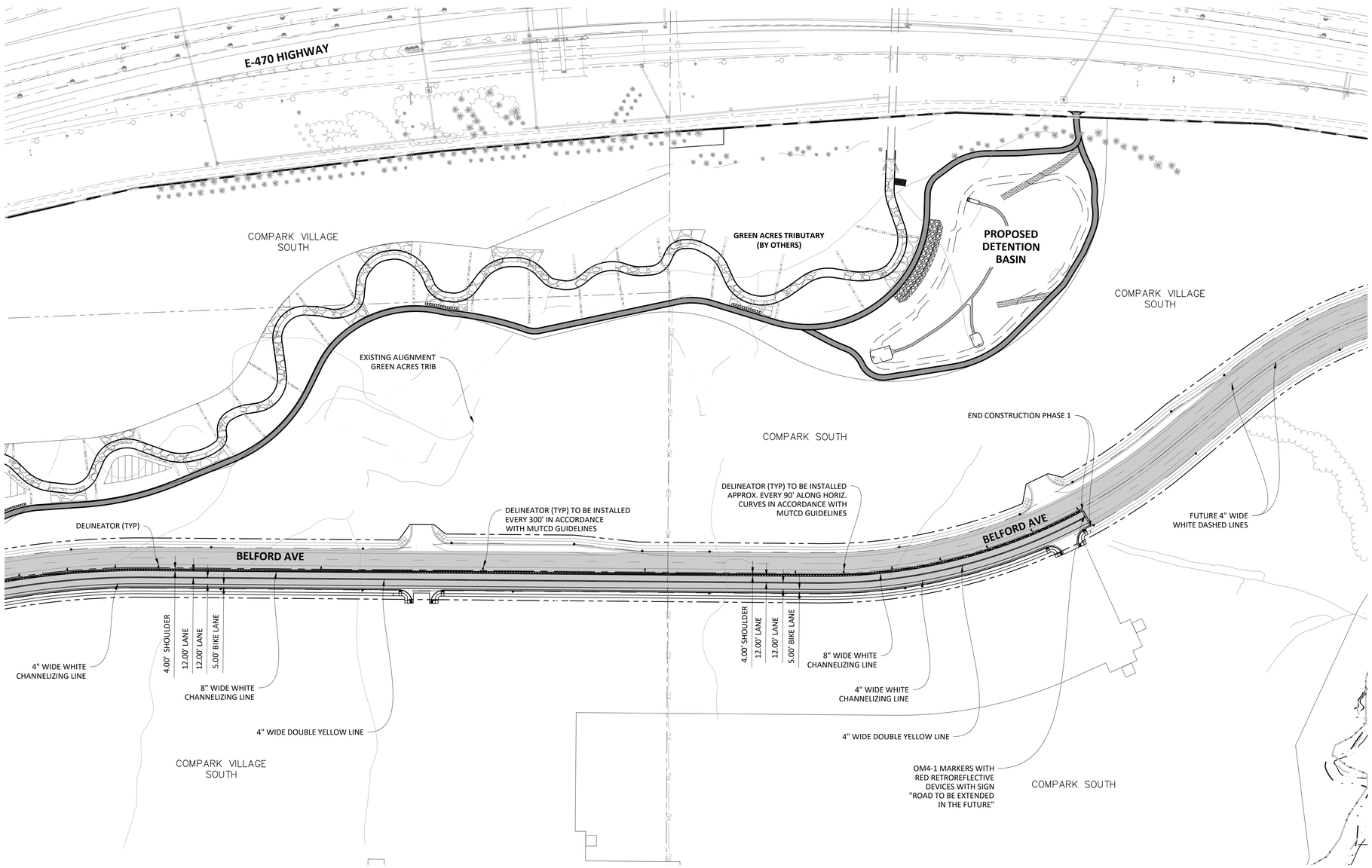
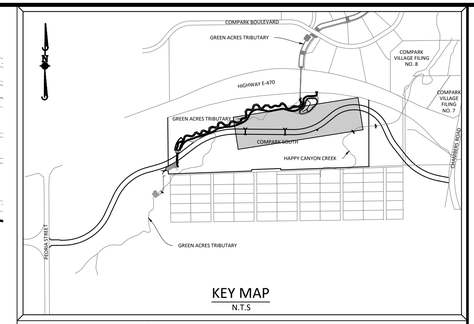
Plotted: 10/30/2020 1:48 PM Dwg Name: P:\Cpkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Signage and Striping (2).dwg Updated By: ADrucker





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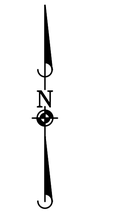

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Shall be Longitudinal 2 feet by 10 feet (Continental) type or other approved by the Town of Parker.

Shall line up with handicap ramps.

Shall be centered within lanes and placed on lane and curb lines so as to avoid vehicle wheel paths.

SIGNAGE AND STRIPING NOTES (CONT):

16. All pavement marking material (including words and symbols) shall be as follows:

For Concrete Surface:
Long line markings (channelization lines, skips, etc.) shall be epoxy paint. Other paint may be used for temporary application only when approved by the Town of Parker.

Words, symbols, and crosswalks/stop bars shall be methyl-mythacralate, preformed thermoplastic (90 mil), preformed plastic (90 mil), inlayed tape (STAMARK), or as specified.

(Sand or water blast curing compound prior to installation of markings.)

For Asphalt Surface:
Long line markings (channelization lines, skips, etc.) shall be epoxy paint. Other paint may be used for temporary application only when approved by the Town of Parker.

Words, symbols, and crosswalks/stop bars shall be hot applied thermoplastic (90 mil), preformed plastic (90 mil), inlayed tape (STAMARK), Methyl-Mythacralate, or as specified.

17. Inspection and approval of striping and crosswalk layout to be done by Town of Parker Development Review Engineer (call 303-840-9546) prior to application of final striping.

TOWN OF PARKER APPROVALS

THE TOWN OF PARKER REVIEW CONSTITUTES GENERAL COMPLIANCE WITH THE TOWN'S STANDARDS AND APPROVED VARIANCES, SUBJECT TO THESE PLANS BEING STAMPED, SIGNED, AND DATED BY THE PROFESSIONAL ENGINEER OF RECORD. REVIEW BY THE TOWN DOES NOT CONSTITUTE APPROVAL OF THE PLAN DESIGN OR ACCURACY AND CORRECTNESS OF ENGINEERING CALCULATIONS. ERRORS IN THE DESIGN OR CALCULATIONS REMAIN THE RESPONSIBILITY OF THE REGISTERED PROFESSIONAL ENGINEER WHOSE STAMP AND SIGNATURE ARE AFFIXED TO THIS DOCUMENT.

THIS REVIEW DOES NOT CONSTITUTE APPROVAL OF ANY PRIVATE ON-SITE IMPROVEMENTS WHICH MAY BE SHOWN. CONSTRUCTION CANNOT COMMENCE UNTIL ALL REQUIRED DRAINAGE/TRAFFIC REPORT(S), FINAL DEVELOPMENT PLAN(S), SPECIAL REVIEW(S), GRADING PERMIT, AND/OR OTHER PERMITS ARE COMPLETE, APPROVED AND ON FILE WITH THE TOWN OF PARKER.

TOWN OF PARKER, DIRECTOR OF ENGINEERING/PUBLIC WORKS DATE

Manhard CONSULTING
7600 East Orchard Road, Suite 150-N, Greenwood Village, CO 80111 ph: 303.708.0500 manhard.com
Civil Engineering | Surveying | Water Resource Management | Construction Management

COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
SIGNAGE AND STRIPING

COLORADO REGISTERED PROFESSIONAL ENGINEER
ERIC T. GUSTAFSON
30877
11-17-2020

PROJ. MGR.:	KIM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
38 OF 50
CLCPKC3 ---

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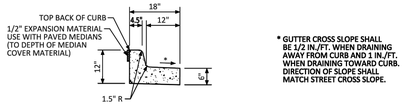
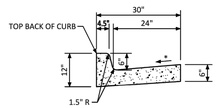
Plotted: 10/30/2020 1:48 PM Dwg Name: P:\Clcpkc3\Com5outh12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Signage and Striping (3).dwg Updated By: ABrucker

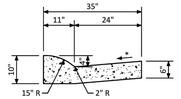


MEDIAN CURB AND GUTTER SECTION
(CDOT CURB AND GUTTER TYPE 2 (SECTION I-B))

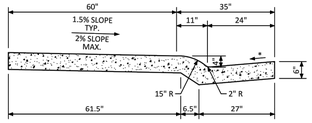
*** GUTTER CROSS SLOPE SHALL BE 1/2 IN./FT. WHEN DRAINING AWAY FROM CURB AND 1 IN./FT. WHEN DRAINING TOWARD CURB. DIRECTION OF SLOPE SHALL MATCH STREET CROSS SLOPE.**



VERTICAL CURB AND GUTTER SECTION
(CDOT CURB AND GUTTER TYPE 2 (SECTION II-B))



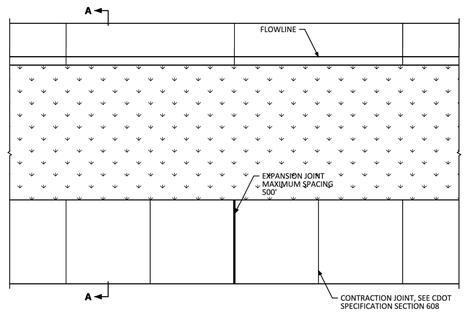
MOUNTABLE CURB AND GUTTER SECTION



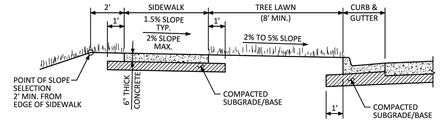
MONOLITHIC COMBINATION CURB, GUTTER AND SIDEWALK SECTION

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **CURB, GUTTER, AND SIDEWALK SECTIONS STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 3 | 1 OF 1



JOINT SPACING



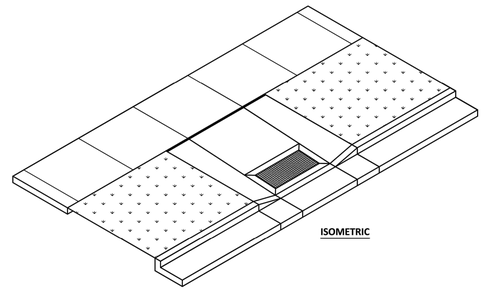
SECTION A-A

GENERAL NOTES

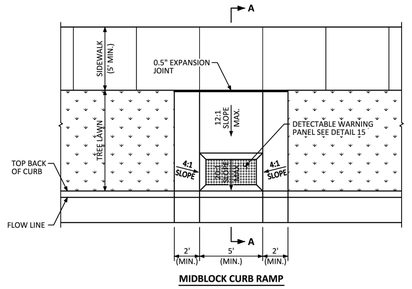
1. CONTRACTION JOINTS ON CONCRETE TRAILS SHALL BE SAWCUT.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **DETACHED SIDEWALK STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 4 | 1 OF 2



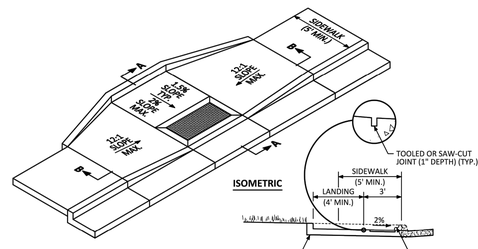
ISOMETRIC



MIDBLOCK CURB RAMP

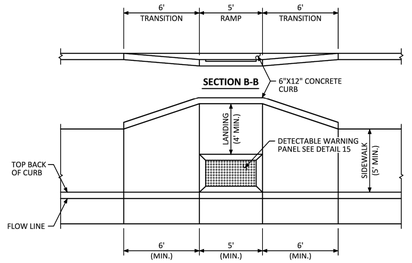
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **MIDBLOCK CURB RAMP LAYOUT STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 17 | 1 OF 2



ISOMETRIC

SECTION A-A

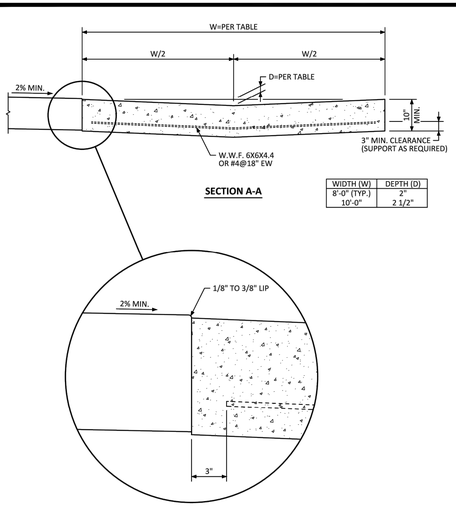


SECTION B-B

MIDBLOCK CURB RAMP

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **MIDBLOCK CURB RAMP LAYOUT STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 17 | 2 OF 2



SECTION A-A

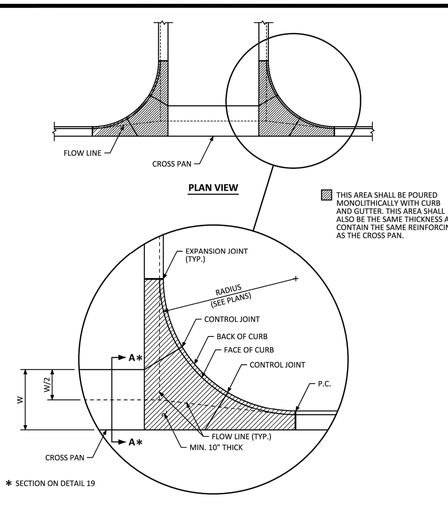
WIDTH (W)	DEPTH (D)
8'-0" (TYP.) 10'-0"	2" 2 1/2"

GENERAL NOTES

1. CONTRACTION JOINTS SHALL BE PROVIDED AT 10' MAXIMUM SPACING.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **INTERSECTION CROSS PAN LAYOUT STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 19 | 1 OF 2



PLAN VIEW

THIS AREA SHALL BE POURED MONOLITHICALLY WITH CURB AND GUTTER. THIS AREA SHALL ALSO BE THE SAME THICKNESS AND CONTAIN THE SAME REINFORCING AS THE CROSS PAN.

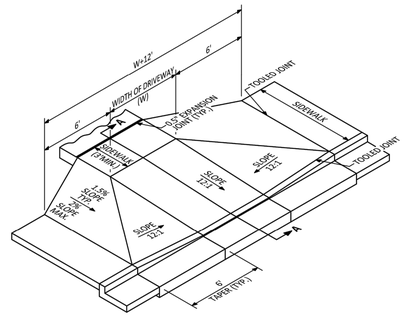
* SECTION ON DETAIL 19

GENERAL NOTES

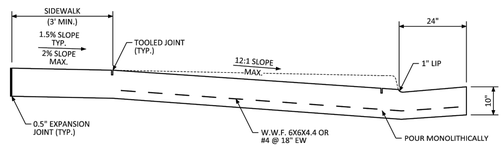
1. EXPANSION JOINTS SHALL BE SEALED IN ACCORDANCE WITH THE LATEST CDOT M&S STANDARD PLANS.
2. REINFORCING SHALL BE CONTINUOUS FROM CROSS PAN TO APRONS AND PLACED AS SHOWN IN STANDARD DETAIL 19.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **INTERSECTION CROSS PAN LAYOUT STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 19 | 2 OF 2



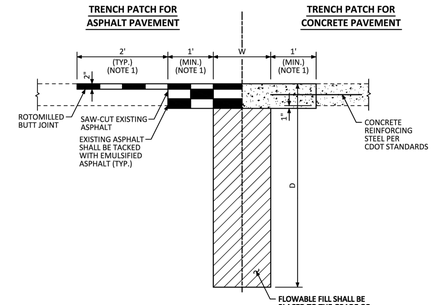
ISOMETRIC



SECTION A-A

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **COMMERCIAL DRIVEWAY WITH ATTACHED SIDEWALK STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 20 | 1 OF 2



GENERAL NOTES

1. SEE SECTION 9 OF THE ROADWAY CRITERIA MANUAL FOR LIMITS OF PATCHING. RECOMPACTION PER TOWN STANDARDS IS REQUIRED UNDER THE LIMITS OF THE PATCHING.

ASPHALT PAVEMENT NOTES

1. HOT MIX ASPHALT PATCH TO BE 6" THICK OR EXISTING PAVEMENT THICKNESS +1" (WHICHEVER IS GREATEST).
2. THE MINIMUM LIFT THICKNESS SHALL BE AT LEAST THREE TIMES (PREFERABLY FOUR TIMES) THE NOMINAL AGGREGATE SIZE. MAXIMUM LIFT THICKNESS SHALL BE FIVE TIMES THE NOMINAL AGGREGATE SIZE.
3. THE TOP LIFT OF ALL HMA PAVEMENT SECTIONS SHALL BE 2" THICK AND GRADING SX.

CONCRETE PAVEMENT NOTES

1. CONCRETE PAVEMENT THICKNESS SHALL BE 1 INCH GREATER THAN EXISTING CONCRETE PAVEMENT.
2. CONCRETE SHALL BE CDOT CLASS P.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **MINIMUM STREET PATCH DETERMINATION STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 25 | 1 OF 1

	DATE	REVISIONS	DRAWN BY
I	09/2020	APPROVED	
H	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
G	06/02/20	RESPONSED TO TOWN COMMENTS	JAH
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/7/16	4TH SUBMITTAL	
C	4/25/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	
A	11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STREET DETAILS

COLORADO REGISTERED PROFESSIONAL ENGINEER 30877 11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 39 OF 50
CLCPKC3

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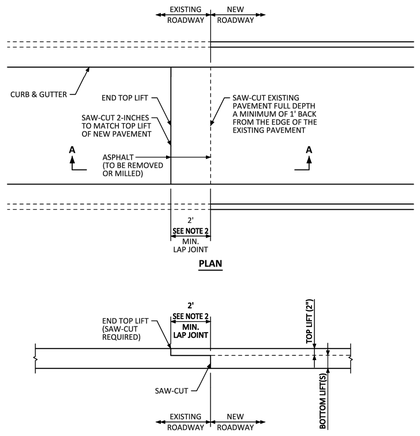
Plotted: 10/30/2020 1:49 PM Dwg Name: P:\Clcpkc3\Com\South\12-Filing 1 No GAT\Com\South\03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Street Details.dwg Updated By: ADucker

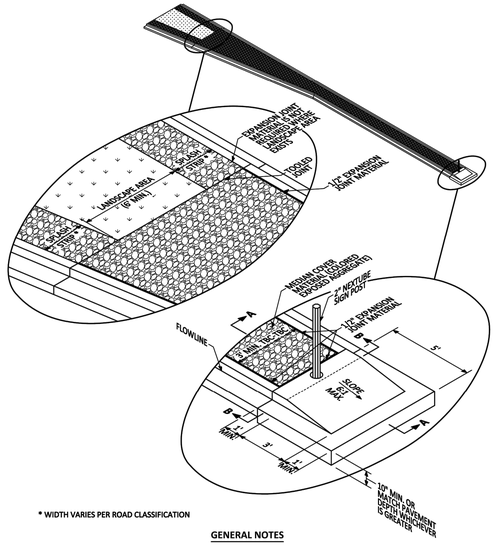


GENERAL NOTES

1. SAW-CUT EXISTING PAVEMENT FULL DEPTH TO PROVIDE A VERTICAL EDGE PRIOR TO PLACEMENT OF NEW ASPHALT AND SAW-CUT THE LAP JOINT 2-INCHES DEEP AT THE LAP JOINT DISTANCE.
2. THIS DETAIL APPLIES TO BOTH TRANSVERSE (WITH A 2-FOOT MIN. LAP JOINT) AND LONGITUDINAL (WITH A 1-FOOT MIN. LAP JOINT) ASPHALT JOINTS BETWEEN EXISTING AND NEW PAVEMENT.
3. SPECIFICATIONS AND ILLUSTRATIONS FOR CONCRETE PAVEMENT JOINTS ARE LOCATED IN CDOT'S M&S STANDARD PLANS AND CDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
4. TEMPORARY ASPHALT RAMPS PLACED AT A 20:1 MAX. SLOPE SHALL BE REMOVED OR MILLED PRIOR TO PLACING FINAL ASPHALT.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **ASPHALT CONNECTION BETWEEN EXISTING AND NEW PAVEMENT STANDARD DETAIL** | DATE: DECEMBER 2016 | DETAIL: 26 | 1 OF 1



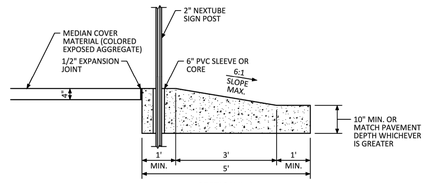
* WIDTH VARIES PER ROAD CLASSIFICATION

GENERAL NOTES

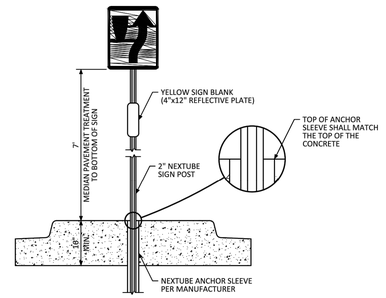
1. MEDIAN COVER MATERIAL SHALL BE DAVIS COLOR "RUSTIC BROWN" AND HAVE AN EXPOSED AGGREGATE FINISH. CONCRETE SHALL BE CDOT CLASS "B" WITH 3/8" MAXIMUM AGGREGATE SIZE.
2. TOOLED JOINTS IN THE MEDIAN COVER MATERIAL SHALL MATCH CURB AND GUTTER JOINTS.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **MEDIAN BULL NOSE ISOMETRIC STANDARD DETAIL** | DATE: DECEMBER 2016 | DETAIL: 27 | 1 OF 2



SECTION A-A



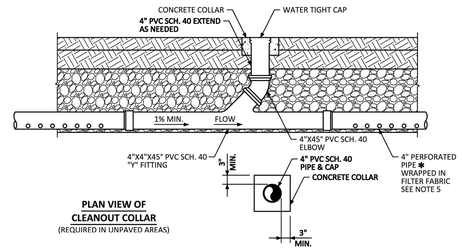
SECTION B-B

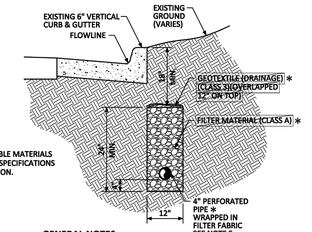
GENERAL NOTES

1. IF MEDIAN WIDTH IS GREATER THAN 12', ADDITIONAL DELINEATORS WILL BE REQUIRED. COORDINATE WITH DESIGNATED TOWN AUTHORITY.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **MEDIAN BULL NOSE TYPICAL SECTIONS STANDARD DETAIL** | DATE: DECEMBER 2016 | DETAIL: 27 | 2 OF 2





✻ **SPECIFICATIONS FOR THESE APPLICABLE MATERIALS ARE LOCATED IN CDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.**

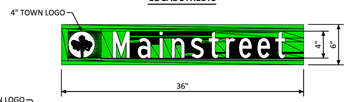
GENERAL NOTES

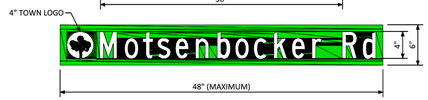
1. TRENCH DRAIN SHALL BE LOCATED HORIZONTALLY AT EDGE OF CONTINUOUS IMPERMEABLE SECTION.
2. TRENCH DRAINS SHALL BE TRANSITIONED TO PVC SCH. 40, NON-PERFORATED PIPE WHEN RAN UNDER ROADWAY HARDSCAPES/INTERSECTIONS.
3. CLEANOUTS SHALL BE PROVIDED AT ALL JUNCTIONS, ANGLE POINTS AND SPACED MAX. OF 500' INTERVALS.
4. TRENCH DRAINS SHALL TIE INTO STORM MANHOLE OR INLETS.
5. PERFORATED PIPE MATERIAL SHALL CONSIST OF CONTECH A-2000 PERFORATED PIPE, SDR-26 PERFORATED PRESSURE PIPE, HDPE SCH. 40 PERFORATED PIPE, N-12 ADS PIPE OR APPROVED EQUAL.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

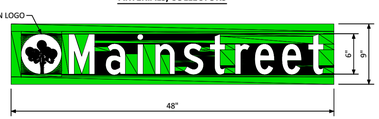
PARKER COLORADO | **TRENCH DRAIN DETAIL SECTION STANDARD DETAIL** | DATE: DECEMBER 2016 | DETAIL: 30 | 1 OF 1

LOCAL STREETS





ARTERIALS/COLLECTORS





GENERAL NOTES

1. STREET NAME SIGNS SHALL BE ON EXTRUDED ALUMINUM BLANKS. ARTERIALS/COLLECTORS SHALL HAVE 9" HIGH PANELS. LOCALS MAY HAVE 6" HIGH PANELS. ARTERIAL/COLLECTOR SIZE BLANKS SHALL NOT EXCEED 60". LOCAL SIZE BLANKS SHALL NOT EXCEED 48".
2. SIGN POSTS FOR INSTALLING STREET NAME SIGNS SHALL BE 12 GAUGE Nex/S-SquareTube STEEL. FINISH TO BE HOT DIPPED GALVANIZED (ASTM A-653 G90). SIZE OF POST TO BE NOMINAL 2" x 2".
3. SIGN MOUNTING HARDWARE TO BE ZINC OR CADMIUM PLATED.
4. SIGN SHEETING SHALL BE REFLECTORIZED AND AFFIXED TO BOTH SIDES OF STREET NAME SIGN BLANK. PRIMARY SHEETING MATERIAL TO BE HIGH INTENSITY PRISMATIC WHITE WITH GREEN TRANSPARENT ELECTRO-CUT FILM. TOWN LAMP LOGO TO BE BLACK FILM ON WHITE SHEETING.
5. STREET NAME FONTS SHALL BE STANDARD HIGHWAY GOTHIC SERIES. TOTAL CHARACTERS INCLUDING SUFFIX SHALL NOT EXCEED 14.
6. MOUNTING HEIGHTS AND LOCATIONS TO BE PER MUTCD GUIDELINES OR AS DIRECTED BY THE TOWN.

NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

PARKER COLORADO | **GROUND MOUNTED STREET NAME PANELS** | DATE: DECEMBER 2016 | DETAIL: 32 | 1 OF 1

	DATE	REVISIONS	DRAWN BY
I	09/2020	APPROVED	
H	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
G	06/30/20	RESPONSED TO TOWN COMMENTS	JAH
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/1/16	4TH SUBMITTAL	
C	6/15/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	
A	11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STREET DETAILS

COLORADO REGISTERED PROFESSIONAL ENGINEER
ERIC G. TUCKER
30877
11-17-2020

PROJ. MGR.:	RJM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
40 OF 50
CLCPKC3 ---

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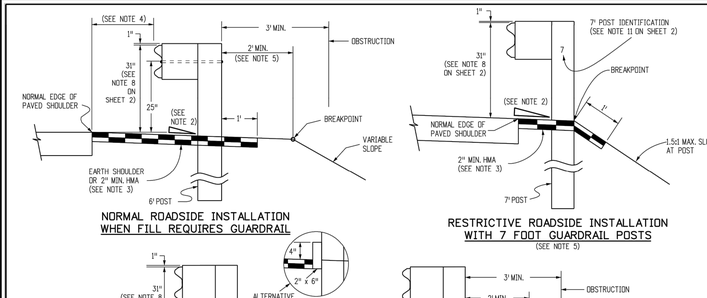
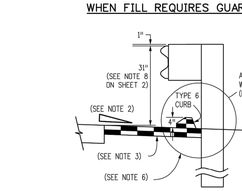
Plotted: 10/30/2020 1:49 PM Dwg Name: P:\Cepk3\ComSouth3-2-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Engl\Final Drawings\Plan Set\Town\CLCPKC3 Street Details.dwg Updated By: ATrucker

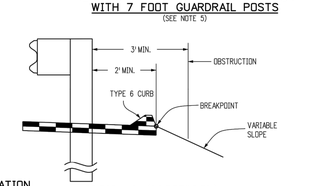


NORMAL ROADSIDE INSTALLATION
WHEN FILL REQUIRES GUARDRAIL

RESTRICTIVE ROADSIDE INSTALLATION
WITH 7 FOOT GUARDRAIL POSTS
(SEE NOTE 5)

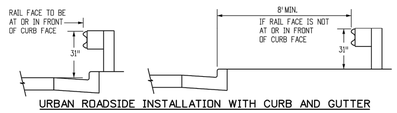


OPTION A

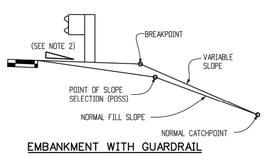


OPTION B (PREFERRED)

ROADSIDE INSTALLATION
WITH EROSION CONTROL CURB



URBAN ROADSIDE INSTALLATION WITH CURB AND GUTTER



EMBANKMENT WITH GUARDRAIL

(NOTE: THE CATCHPOINT REMAINS THE SAME AS THAT FOR "NORMAL" FILL SLOPE. FOR THE WIDER "2" DISTANCES, THE VARIABLE SLOPE MAY "CATCH" AT THE POSS.)

LOCATION	SPACING
ALL LOCATIONS EXCEPT BRIDGE RAIL LOCATIONS	6'-3"
BRIDGE OR STRUCTURE APPROACH	SEE SHEETS 11 & 19

NORMAL CENTER-TO-CENTER POST SPACING

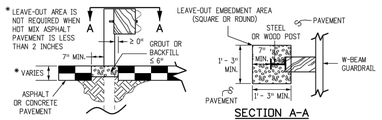
GENERAL NOTES (CONTINUE ON SHEET 2)

1. TOLERANCE FOR TOP OF GUARDRAIL BEAM IS ±1 IN.
2. RATE OF SLOPE DEPENDS ON GUARDRAIL LOCATION:
   A. FOR GUARDRAIL FACE 2 FT. OR LESS FROM THE NORMAL EDGE OF PAVED SHOULDER, CONTINUE THE RATE OF SLOPE OF THE NORMAL PAVED SHOULDER TO THE BREAKPOINT.
   B. FOR GUARDRAIL FACE MORE THAN 2 FT. FROM THE NORMAL EDGE OF THE PAVED SHOULDER, THE SLOPE SHALL BE 10:1 OR FLATTER.
3. WHEN SPECIFIED ON THE PLANS, EXTEND A 2 IN. MINIMUM THICKNESS PAVED SURFACE TO 1 FT. BEHIND THE GUARDRAIL POSTS OR TO THE EROSION CONTROL CURB AS SHOWN ON PLANS. ASPHALT CUTTING & PATCHING OR OTHER APPROVED METHOD SHALL BE USED TO MINIMIZE DAMAGE TO ALL PAVED SURFACES UNDER GUARDRAIL INSTALLATIONS. ALL REPAIRS TO THE PAVED AREA WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK. A MINIMUM 3 IN. THICK FIBER REINFORCED CONCRETE PAVEMENT MAY ALSO BE USED FOR PAVING BENEATH THE GUARDRAIL. INSTALL THE POST IN A 9½ IN. DIVERSION FORMED HOLE FOR GUARDRAIL RUNS AND TERMINALS AS DIRECTED. PAYMENT FOR THIS PAVED SURFACE WILL BE MADE UNDER A PAVEMENT OR CONCRETE PAY ITEM WITH QUANTITIES SHOWN ON THE PLANS.
4. THE MINIMUM GUARDRAIL OFFSET FROM PAVED SHOULDER EDGE SHALL BE:
   0 FT. FOR SHOULDERS 8 FT. OR WIDER
   2 FT. FOR SHOULDERS 6 FT. OR LESS

   THE GUARDRAIL OFFSET FROM PAVED INSIDE SHOULDER EDGE OF A DIVIDED HIGHWAY SHALL BE;
   0 FT. MINIMUM FOR SHOULDERS 6 FT. OR WIDER
   2 FT. DESIRABLE FOR 4 FT. SHOULDERS

   THE ABOVE 2 FT. GUARDRAIL TO SHOULDER OFFSET IS DESIRABLE BUT NOT REQUIRED FOR:
   A. FOR AN EXISTING HIGHWAY WITH A DESIGN SPEED LESS THAN 50 MPH, THE MINIMUM OFFSET IS 4 FT. FROM THE TRAVELED WAY.
   B. FOR A ONE-WAY ONE-LANE RAMP, AND WHERE ONE OR MORE OF THE FOLLOWING ARE TRUE:
      (1) THE NON-OFFSET GUARDRAIL BEGINS AT LEAST 100 FT. BEYOND RAMP NOSE.
      (2) THE NON-OFFSET GUARDRAIL IS NOT LOCATED ON THE RAMP EXIT OR ENTRANCE CURVE CONNECTION TO THE MAJOR HIGHWAY.
      (3) THE RAMP SHOULDERS ARE 4 FT. OR WIDER.

   USE OF GREATER THAN MINIMUM OFFSET DIMENSIONS IS ENCOURAGED TO MEET THE DESIRABLE GOAL OF PLACING THE GUARDRAIL AS FAR AS POSSIBLE FROM THE TRAVEL WAY, EVEN FOR SHORT DISTANCES, WHILE PROVIDING A SMOOTH CHANGE IN GUARDRAIL ALIGNMENT.
5. IF 2 FT. CANNOT BE PROVIDED BETWEEN THE BACK OF THE GUARDRAIL POST AND THE BREAKPOINT, USE 7 FT. GUARDRAIL POSTS. REFER TO THE "RESTRICTIVE ROADSIDE INSTALLATION" DETAIL.
6. WHEN SPECIFIED ON THE PLANS, INSTALL 4 IN. HIGH TYPE 6 CURB WITH ITS FACE AT OR BEHIND THE RAIL FACE AS AN ALTERNATIVE WHEN SPECIFIED ON THE PLANS. INSTALL A 2 IN. x 6 IN. TREATED (AASHTO M 133) WOOD CURB. FASTEN WITH A 4 IN. LAG BOLT AND WASHER AT EACH WOOD POST, OR WITH A 1⁄4⁄4 IN. DIA. BOLT WITH WASHER AND NUT AT EACH STEEL POST. IF THE 2 IN. x 6 IN. WOOD CURB IS SPECIFIED, IT WILL BE INCLUDED IN THE COST OF THE GUARDRAIL. IF APPROVED BY THE ENGINEER, A 2 IN. x 4 IN. TREATED WOOD CURB MAY BE SUBSTITUTED FOR THE 2 IN. x 6 IN. CURB AND SET ON TOP OF PAVEMENT SURFACE AND ATTACHED AS DESCRIBED ABOVE. NO SPLICING SHALL BE ALLOWED IN WOOD CURBS. ADJACENT BOARDS SHALL BE BUTTED TOGETHER AND BOLTED AT A POST LOCATION. JOINTS SHALL BE LOCATED AT THE POSTS.



LEAVE-OUT AREA FOR GUARDRAIL POSTS LOCATED IN PAVEMENT

SECTION A-A

NOTE: LEAVE-OUT AREAS SHALL BE PROVIDED FOR ALL GUARDRAIL POSTS LOCATED IN PAVEMENT * TO ALLOW THE POSTS TO ROTATE IN THEIR EMBEDMENT SUCH THAT VEHICLE IMPACT LOADS ARE DISTRIBUTED THROUGH THE POST INTO THE EMBEDMENT MATERIAL PRIOR TO THE POSTS BREAKING PREMATURELY.

Computer File Information			Sheet Revisions	
Creation Date: 11/01/18	Initials: JJP		Date:	Comments
Last Modification Date: 12/21/18	Initials: LTA	(R-X)	12/21/18	Revised the "Option B" detail as Preferred.
Full Path: www.codot.gov/business/designsupport		(R-X)		
Drawing File Name: 6060101019.dgn		(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English		(R-X)		

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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch November 1, 2018

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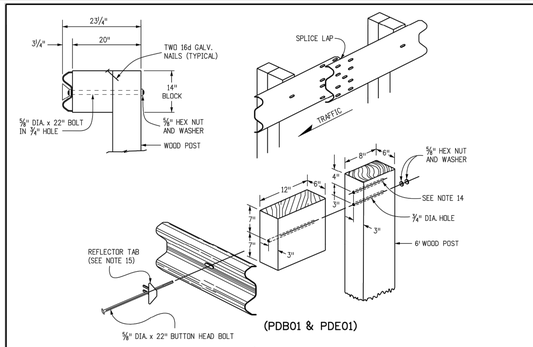
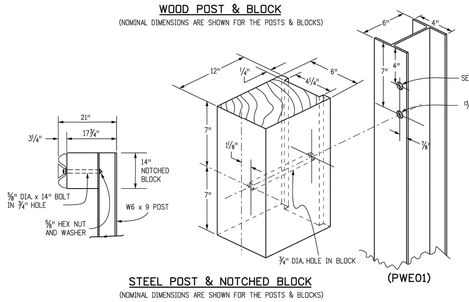


(PDB01 & PDE01)

WOOD POST & BLOCK

(NOMINAL DIMENSIONS ARE SHOWN FOR THE POSTS & BLOCKS)



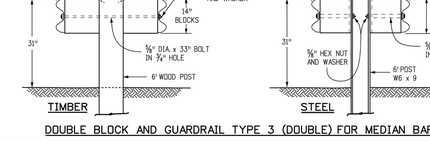
(PWE01)

STEEL POST & NOTCHED BLOCK

(NOMINAL DIMENSIONS ARE SHOWN FOR THE POSTS & BLOCKS)

GENERAL NOTES (CONTINUED FROM SHEET 1)

7. SEE SHEETS 7 AND 9 FOR CURB TREATMENTS AT GUARDRAIL TERMINALS.
8. IF THIS DIMENSION WILL BE LESS THAN 28 INCHES, RESET GUARDRAIL HEIGHT TO 28 INCHES OR ABOVE.
9. ALL W-BEAM SPLICES, AND SPLICES OF TERMINAL CONNECTORS TO W-BEAM SHALL BE LAPPED IN THE DIRECTION OF TRAFFIC UNLESS OTHERWISE NOTED IN THE PLANS OR BY THE MANUFACTURER.
10. MATERIAL TYPE AND SHAPE OF POSTS AND BLOCKS SHALL BE THE SAME THROUGHOUT THE PROJECT EXCEPT WHEN SPECIFIC POSTS AND BLOCKS ARE SPECIFIED, i.e. AT END ANCHORAGES AND BOX CULVERTS.
11. WHEN SPECIFIED IN THE CONTRACT, 7 FT. POSTS SHALL BE INSTALLED INSTEAD OF THE STANDARD 6 FT. POSTS. THE 7 FT. POSTS SHALL BE MARKED WITH THE NUMBER 7 TO ENSURE PERMANENT IDENTIFICATION. STEEL POSTS SHALL BE STAMPED PRIOR TO GALVANIZING. THE NUMBER 7 SHALL BE A MINIMUM 2 IN. TALL AND LOCATED AS SHOWN ON THE ELEVATION VIEW ON SHEET 1.
12. THE STANDARD 3 IN. x 1⅜ IN. x 5⁄16 IN. RECTANGULAR WASHER USED UNDER POST BOLT HEADS IN THE PAST MAY REMAIN IN EXISTING INSTALLATIONS BUT SHALL NOT BE USED IN NEW CONSTRUCTION, REPAIRS, OR RESETTING OF RAIL, EXCEPT WHEN SPECIFICALLY IDENTIFIED ON THE STANDARD PLAN.
13. STANDARD GALVANIZED ROUND STEEL WASHERS SHALL BE USED UNDER ALL NUTS IN CONTACT WITH WOOD POSTS.
14. AN ADDITIONAL HOLE SHALL BE PROVIDED IN THE POSTS TO FACILITATE FUTURE RAISING OF THE RAIL ELEMENTS AND BLOCKS FOR OVERLAYS.
15. RETROREFLECTOR TABS SHALL BE INSTALLED AT 25 FT. INTERVALS (SEE SHEETS 6 AND 8 FOR EXCEPTIONS). RETROREFLECTOR TABS WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK. THE TABS SHALL BE MOUNTED SO THE BOLT SLOT FACES AWAY FROM TRAFFIC, AND THE RETROREFLECTOR SURFACE FACES THE APPROACHING TRAFFIC FOR ONE-WAY ROADS. FOR TWO-WAY ROADS, BOTH SIDES OF THE TABS SHALL BE RETROREFLECTIVE, SO THAT DELINEATION IS PROVIDED FOR BOTH DIRECTIONS OF TRAVEL. THE RETROREFLECTIVE SHEETING COLOR SHALL MATCH THE COLOR OF THE ADJACENT TRAVEL WAY EDGE LINE. SEE THE RETROREFLECTOR TAB DETAIL ON SHEET 3.
16. AT THE TIME OF INSTALLATION, WOOD POSTS OR BLOCKS WITH SEASONING CHECKS GREATER THAN ¼ IN. SHALL NOT BE USED WHEN THE CHECK EXTENDS THE FULL LENGTH OF THE PIECE.
17. WOOD BLOCKS SHALL BE CUT FROM THE SAME CROSS-SECTION, SPECIES, AND GRADE, AND SHALL RECEIVE THE SAME PRESERVATIVE TREATMENT AS THE POSTS WHEN WOOD POSTS ARE USED.
18. REFERENCES SUCH AS @@POB01@, @@POE01@, AND @@PWE01@ IN THIS STANDARD PLAN SPECIFY HARDWARE DETAILS FROM @@A GUIDE TO STANDARDIZED HIGHWAY BARRIER HARDWARE@ PREPARED BY THE AASHTO-AGC-ARTBA JOINT COOPERATIVE COMMITTEE.
19. RAIL BLOCKS MANUFACTURED FROM SYNTHETIC MATERIAL WILL BE ACCEPTED AS ALTERNATIVES TO WOOD BLOCKS FOR USE WITH STEEL POSTS PROVIDED THAT THE BLOCKS HAVE RECEIVED FHWA APPROVAL.
20. WOOD POSTS SHALL BE MADE OF TIMBER WITH AN EXTREME FIBER STRESS IN BENDING OF 1200 PSI STRESS GRADING AND POST DIMENSIONS SHALL CONFORM WITH THE RULES OF THE WEST COAST INSPECTION BUREAU, OR THE SOUTHERN PINE BUREAU, OR THE WESTERN WOOD PRODUCTS ASSOCIATION. TIMBER FOR POSTS SHALL BE EITHER ROUGH SAWN (UNPLANED) OR S4S (SURFACED FOUR SIDES) WITH NOMINAL DIMENSIONS INDICATED. ONLY ONE TYPE OF SURFACE FINISH SHALL BE USED FOR POSTS AND BLOCKS IN ANY ONE CONTINUOUS LENGTH OF GUARDRAIL.
21. GLULAM POSTS AND BLOCKS WILL BE ACCEPTED AS ALTERNATIVES PROVIDED THAT THE SUPPLIED MATERIALS HAVE RECEIVED FHWA APPROVAL AND ARE CERTIFIED AS IDENTICAL TO THE SPECIMENS USED FOR TESTING AND APPROVAL.
22. PRESSURE TREATMENT OF POSTS AND BLOCKS SHALL CONFORM TO AASHTO M 133 EXCEPT THAT BLOCKS NEED NOT BE INCISED. PRESERVATION ASSAY RETENTION REPORTS SHALL BE SUBMITTED TO THE ENGINEER. THE CONTRACTOR SHALL CERTIFY THAT THE SPECIES AND GRADE MEET THE REQUIREMENTS OF THE CONTRACT.
23. W-BEAM AND THRIE-BEAM GUARDRAIL POSTS SHALL BE MANUFACTURED USING AASHTO M 270 (ASTM A 709) GRADE 36 STEEL UNLESS CORROSION RESISTANT STEEL IS REQUIRED, IN WHICH CASE THE POST SHALL BE MANUFACTURED FROM AASHTO M 270 (ASTM A 709) GRADE 50W STEEL. THE DIMENSIONS OF THE CROSS-SECTION SHALL CONFORM TO A W6 X 9 SECTION AS DEFINED IN AASHTO M 160 (ASTM A 6). W6 X 8.5 WIDE FLANGE STEEL POSTS ARE AN ACCEPTABLE ALTERNATIVE TO THE W6 X 9.
24. AFTER THE SECTION IS CUT AND ALL HOLES ARE DRILLED OR PUNCHED THE COMPONENT SHALL BE ZINC-COATED CONFORMING TO AASHTO M 111 (ASTM A 123) UNLESS CORROSION-RESISTANT STEEL IS USED. WHEN CORROSION-RESISTANT STEEL IS USED THE PORTION OF THE POST TO BE EMBEDDED IN SOIL SHALL BE ZINC-COATED CONFORMING TO AASHTO M 111 (ASTM A 123) AND THE PORTION ABOVE THE SOIL SHALL NOT BE ZINC-COATED, PAINTED OR OTHERWISE TREATED.
25. FIELD MODIFICATION TO RAIL ELEMENTS IS ALLOWED PER MANUFACTURER'S RECOMMENDATIONS, OR WITH THE APPROVAL OF THE STANDARDS AND SPECIFICATIONS UNIT. POSTS SHALL NOT BE MODIFIED. COMPONENTS ON WHICH THE SPELTER COATING HAS BEEN DAMAGED SHALL BE EITHER REGALVANIZED OR RECOATED IN CONFORMANCE WITH AASHTO M 36, OR PAINTED WITH ONE FULL BRUSH COAT OF ZINC RICH PAINT CONFORMING TO MILITARY SPECIFICATION DOD-P-21035A.



DOUBLE BLOCK AND GUARDRAIL TYPE 3 (DOUBLE) FOR MEDIAN BARRIER

Computer File Information			Sheet Revisions	
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Last Modification Date: 12/21/18	Initials: LTA	(R-X)	12/21/18	Revised Gen. Notes 9, 19 and 25
Full Path: www.codot.gov/business/designsupport		(R-X)		
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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1

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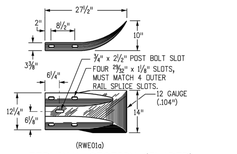
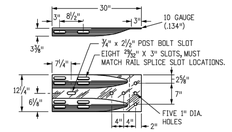
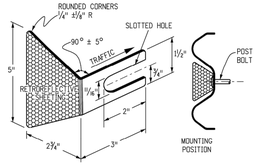


(RWE01a)

TERMINAL SECTION (FLARED)

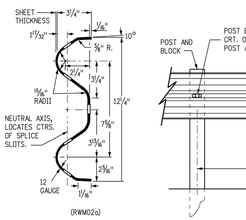


TERMINAL SECTION (CONNECTOR)



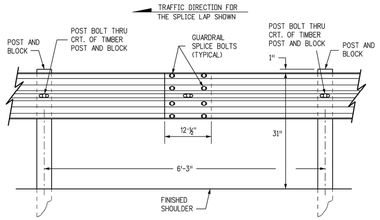
RETROREFLECTOR TAB

NOTE: RETROREFLECTOR TABS SHALL BE MANUFACTURED FROM 12 TO 14 GAUGE STEEL AND SHALL CONFORM TO THE REQUIREMENTS OF S STANDARD S-612-1.



(RWM02a)

W-BEAM RAIL SECTION

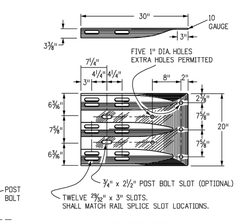


W-BEAM RAIL SPLICE

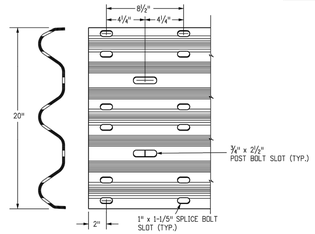
PART	MATERIAL SPEC.	GALVANIZING SPEC.	CORROSION-RESISTANT SPEC.
W-BEAM RAIL & TERMINAL SECTIONS	AASHTO M 180, CLASS A OR B	AASHTO M 180, TYPE 1 OR 2	AASHTO M 180, TYPE 4
BASE PLATE	ASTM A 36	AASHTO M 111	N.A.
NUTS, BOLTS & STUDS FOR GENERAL USE	ASTM A 307	AASHTO M 232, CLASS C OR ASTM B 695 CLASS 50 TYPE 1	
HIGH STRENGTH BOLTS & NUTS	ASTM A 325		
HIGH STRENGTH STUDS & NUTS	ASTM A 449		
ROUND STEEL WASHERS	ASTM F 436		
RECTANGULAR WASHERS	AASHTO M 180		
OTHER FITTINGS	ASTM A 36	AASHTO M 111	

THE TABULATION OF GUARDRAIL WILL SPECIFY THE TYPE OF CORROSION PROTECTION: GALVANIZED OR CORROSION - RESISTANT STEEL.

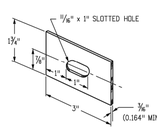
STEEL POSTS SHALL HAVE THE SAME CORROSION PROTECTION AS SPECIFIED FOR THE METAL BEAM RAIL. PUNCHING, DRILLING, CUTTING, OR WELDING OF POSTS WILL NOT BE PERMITTED AFTER GALVANIZING.



THRIE BEAM TERMINAL SECTION (CONNECTOR)



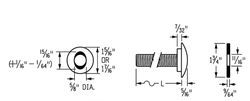
THRIE BEAM DETAIL



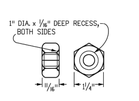
(FWR03)

RECTANGULAR WASHER

(TO BE USED ONLY WHERE SPECIFIED.)



BUTTON HEAD BOLT WITH OVAL SHOULDER



WASHER

HEX NUT

DIAMETER & TYPE (INCHES)	12" BLOCKS L = LENGTH (INCHES)	THREAD LENGTH (INCHES)	INTENDED USE	AASHTO-AGC-ARTBA STANDARD NUMBER	NO. BOLTS, NUTS & WASHERS
⅝	11⁄4	FULL (1 1⁄2)	ALL RAIL SPLICES	FBB01	8 PER SPLICE*
BUTTONHEAD OVAL SHLDR.	22	MIN. 2½	SINGLE BLOCK & POST (TIMBER)	FBB04	1 PER POST
	33	MIN. 2	DOUBLE BLOCK & POST (TIMBER)	FBB05	1 PER POST
	14	MIN. 2	FASTEN NOTCHED BLOCK TO STEEL POST	FBB03	1 PER BLOCK
WASHERS NOT USED AT RAIL SPLICES					

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Last Modification Date: 12/21/18	Initials: LTA	(R-X)		
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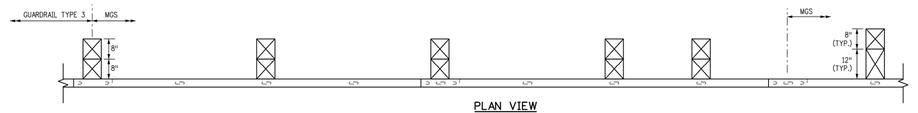
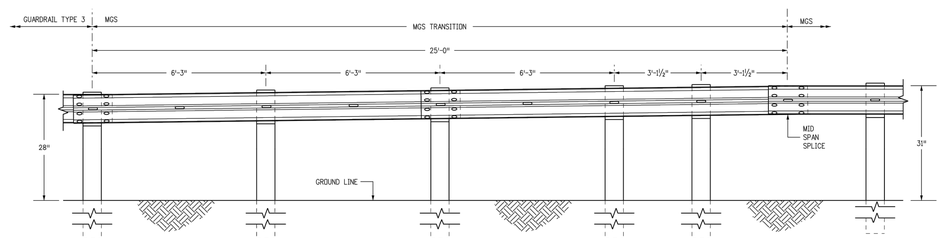
NOTES

1. THE MGS TRANSITION FROM A TYPE 3 GUARDRAIL SHALL BE COMPLETED OUTSIDE THE MGS END ANCHORAGE LIMITS.



PLAN VIEW



ELEVATION VIEW

TRANSITION FROM 28 INCH GUARDRAIL TO 31 INCH MGS



ALTERNATE PLAN VIEW - ALIGNMENT TAPER

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REVISIONS		DRAWN BY
A	APPROVED	
B	09/2020	
C	RESPONDED TO TOWN COMMENTS	JAH
D	07/31/20	
E	RESPONDED TO TOWN COMMENTS	JAH
F	06/30/20	
G	03/02/20	JAH
H	UPDATE GAT & ADD OF-F LINE DET BASIN	
I	12/21/16	
J	FINAL SUBMITTAL	
K	11/21/16	
L	4TH SUBMITTAL	
M	4/11/16	
N	3RD SUBMITTAL	
O	11/2015	EG
P	2ND SUBMITTAL	
Q	1ST SUBMITTAL	

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TOWN OF PARKER, COLORADO
STREET DETAILS

COLORADO REGISTERED JACK R. BRADY 30877 11-17-2020 PROFESSIONAL ENGINEER

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 41 OF 50
CLCPKC3

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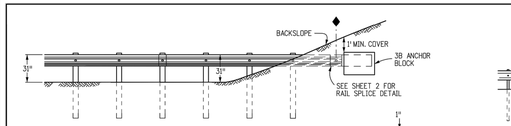
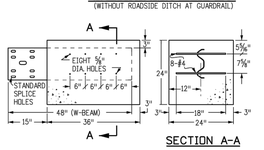
Plotted: 10/30/2020 1:49 PM Dwg Name: P:\Cpk3\ComSouth123 Filing 1 No GAT\ComSouth123 Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3 Street Details.dwg Updated By: AThacker



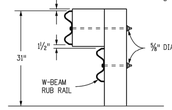
SEE TYPE 3B (RUB RAIL) PLAN VIEW FOR ALIGNMENT. THE 100 FT. FLARE LENGTH MAY BE SHORTENED IF THE SLOPE IS LESS THAN 8 FT. WIDE.

END ANCHORAGE TYPE 3B
(WITHOUT ROADSIDE DITCH AT GUARDRAIL)



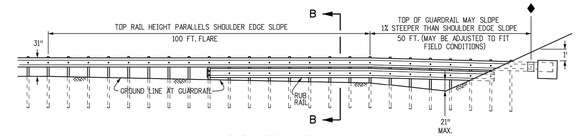
SECTION A-A

TYPE 3B ANCHOR BLOCK DETAIL

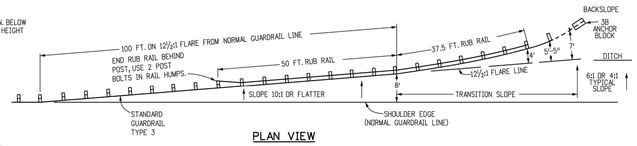


SECTION B-B

MOUNT A W-BEAM RUB RAIL 1-½" IN. BELOW THE TOP RAIL WHEN THE TOP RAIL HEIGHT EXCEEDS 33 IN. ABOVE THE GROUND

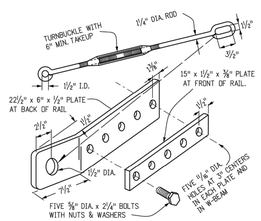


ELEVATION VIEW



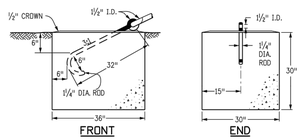
♦ END OF GUARDRAIL PAY LENGTH

PLAN VIEW
END ANCHORAGE TYPE 3B (RUB RAIL)
(WITH ROADSIDE DITCH AT GUARDRAIL)



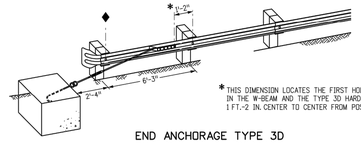
TYPE 3D HARDWARE DETAILS

NOTE: ALL PARTS SHALL BE GALVANIZED



FRONT END

TYPE 3D ANCHOR BLOCK DETAIL



* THIS DIMENSION LOCATES THE FIRST HOLE IN THE W-BEAM AND THE TYPE 3D HARDWARE. 1 FT.-2 IN. CENTER TO CENTER FROM POST BOLT HOLE.

END ANCHORAGE TYPE 3D DEPARTURE TERMINAL

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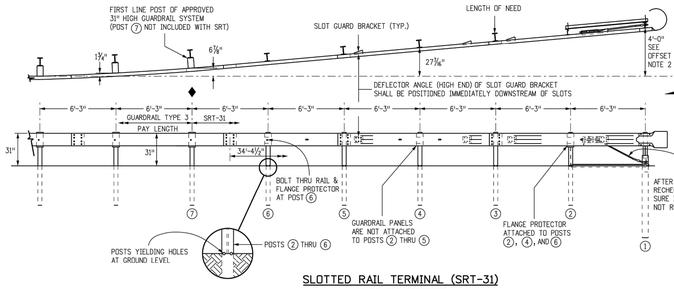
MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES
Issued By: Project Development Branch November 1, 2018

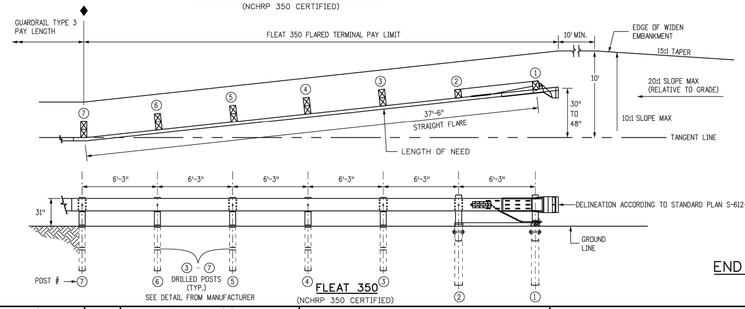
STANDARD PLAN NO. M-606-1
Sheet No. 5 of 19

OFFSET NOTES

1. POST OFFSET DIMENSIONS ARE GIVEN TO THE CENTER OF THE TRAFFIC FACE OF POSTS.
2. THE GUARDRAIL BETWEEN POST (1) THRU (7) IS ON A STRAIGHT LINE FLARE.



SLOTTED RAIL TERMINAL (SRT-31)
(NCHRP 350 CERTIFIED)



FLEAT 350
(NCHRP 350 CERTIFIED)

NOTES

1. THE END ANCHORAGES (FLARED) SHALL EITHER BE THE SLOTTED RAIL TERMINAL SRT-31 AS MANUFACTURED BY TRINITY HIGHWAY PRODUCTS LLC (TELEPHONE #: 800-772-7976), OR THE FLEAT-350, AS MANUFACTURED BY ROAD SYSTEMS INC. (TELEPHONE #: 432-263-2435). ONE END ANCHORAGE (FLARED) SHALL INCLUDE ALL POST, RAIL, AND ALL HARDWARE ITEMS REQUIRED FOR A COMPLETE UNIT. THE END ANCHORAGE (FLARED) SHALL BE INSTALLED CONFORMING TO THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PARTS LIST TO THE ENGINEER PRIOR TO INSTALLATION OF THE DEVICE.
2. IN HEAVY SNOW LOCATIONS, TRIM POSTS (1) AND (2) (IF THEY ARE WOODEN) FLUSH WITH RAIL TOP AND TREAT END WITH SEALANT, IN CONFORMANCE WITH AASHTO M 133.
3. POSTS SHALL BE DRILLED FOR BREAKAWAY ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
4. SEE SHEETS 1, 3 AND 5 FOR STANDARD GUARDRAIL TYPE 3 AND INSTALLATION DETAILS.
5. RETROREFLECTOR TABS SHALL NOT BE USED ON END ANCHORAGE POSTS.
6. DELINEATION SHALL BE APPLIED TO THE END PIECE, AND SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE WORK.

END ANCHORAGES (FLARED)

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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES
Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1
Sheet No. 6 of 19

REVISIONS	DATE	DRAWN BY
APPROVED	09/2020	
RESPONDED TO TOWN COMMENTS	07/31/20	JAH
RESPONDED TO TOWN COMMENTS	05/01/20	JAH
UPDATE GAT & ADD OFF-LINE DET BASIN	03/02/20	
FINAL SUBMITTAL	12/21/16	
4TH SUBMITTAL	11/7/16	
3RD SUBMITTAL	8/31/16	
2ND SUBMITTAL	4/11/16	
1ST SUBMITTAL	11/2015	EG

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STREET DETAILS

COLORADO REGISTERED PROFESSIONAL ENGINEER — 30877 — 11-17-2020

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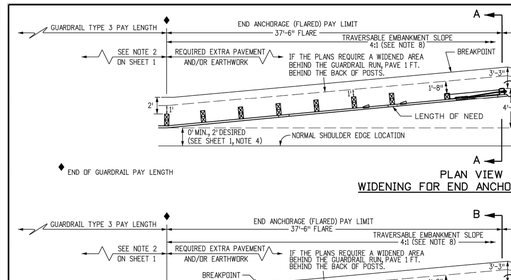
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

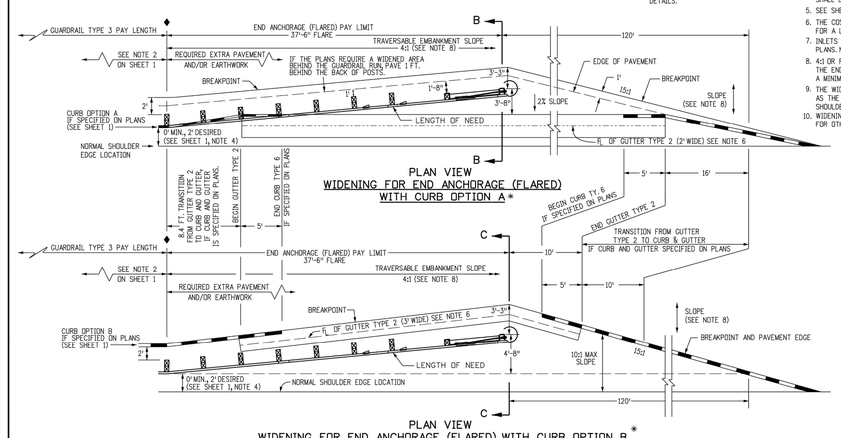
SHEET 42 OF 50
CLCPK3 ---



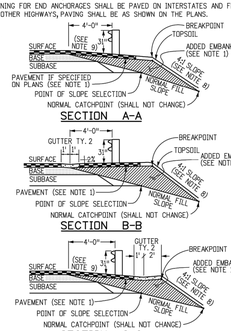
♦ END OF GUARDRAIL PAY LENGTH

PLAN VIEW
WIDENING FOR END ANCHORAGE (FLARED) *

* THIS PLAN VIEW SHOWS ONLY THE SRT-31. THE FLEAT-350 USES THE SAME WIDENING DETAILS.



PLAN VIEW
WIDENING FOR END ANCHORAGE (FLARED) WITH CURB OPTION A *
WIDENING FOR END ANCHORAGE (FLARED) WITH CURB OPTION B *



NOTES

1. PAYMENT FOR THE ADDED EMBANKMENT (APPROXIMATELY 45 CU. YDS.) FOR THE FLARE SHALL BE AS FOLLOWS:
   A. UNDER PAY ITEM 203 WHEN THE CONTRACT PLAN INCLUDES PAY ITEM 203
   B. INCLUDED IN THE COST OF THE END ANCHORAGE (FLARED) WHEN THE CONTRACT PLANS DO NOT INCLUDE PAY ITEM 203. THE ADDED EMBANKMENT SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUBSECTION 203.07, AASHTO T 99.
2. WHEN THE WIDENED AREA IS PAVED, PAVEMENT FOR THE PAVEMENT (APPROX. 70 SQ. YDS.) SHALL BE AS FOLLOWS:
   A. UNDER PAY ITEM 403 OR 412 WHEN THE CONTRACT PLAN INCLUDES PAY ITEM 403 OR 412
   B. INCLUDED IN THE COST OF THE END ANCHORAGE (FLARED) WHEN THE CONTRACT PLAN DOES NOT INCLUDE PAY ITEM 403 OR 412 (SEE SHEET 1, NOTE 2 FOR PAVEMENT TYPES)
3. CONCRETE PAVED AREAS SHALL HAVE THEIR TAPERED ENDS SQUARED OFF AS DIRECTED BY THE ENGINEER.
4. WHEN OVERLAY PAVING, THE FINISHED SURFACE AT EACH POST SHALL NOT BE ABOVE THE TOP BREAKAWAY HOLE OR STRUT ASSEMBLY. THE WIDENED AREA AT THE FLARED END ANCHORAGE SHOULD NOT BE OVERLAYED UNLESS PAVEMENT CONDITIONS WARRANT IT BEING OVERLAYED. ANY OVERLAY PAVEMENT ABUTTING THE FLARED END ANCHORAGE SHALL BE TAPERED TO PREVENT A DROP IN THE PAVED SURFACE BELOW THE RAIL.
5. SEE SHEETS 1, 2, 3, AND 5 FOR STANDARD TYPE 3 GUARDRAIL INSTALLATION DETAILS.
6. THE COST OF THE GUTTER WILL BE PAID FOR AS "GUTTER TYPE 2 (2 FT.)" FOR A LENGTH OF 134 FT. OR "GUTTER TY. 2 (3 FT.)" FOR A LENGTH OF 40 FT.
7. INLETS OR RUNDOWNS MAY BE USED INSTEAD OF THE GUTTER IF SPECIFIED ON THE PLANS. NO ADDITIONAL CURB SHALL BE ADDED IN THE VICINITY OF THE END ANCHORAGE.
8. 4:1 OR FLATTER SLOPES IN THE TRAVERSABLE AREA SHALL BE USED BEHIND THE END ANCHORAGE, AND IN ADVANCE OF POST (1) IF THIS IS NOT POSSIBLE, A MINIMUM 3:1 SLOPE MAY BE USED IF APPROVED BY THE ENGINEER.
9. THE WIDENED AREA, EXCEPT FOR CURB OPTION A, SHALL HAVE THE SAME GRADING AS THE ADJACENT GUARDRAIL: 10:1 OR FLATTER IF MORE THAN 2 FT. FROM SHOULDER OR SLOPE EQUAL TO ROADWAY SLOPE IF 2 FT. OR LESS FROM SHOULDER.
10. WIDENING FOR END ANCHORAGES SHALL BE PAVED ON INTERSTATES AND FREEWAYS. FOR OTHER HIGHWAYS, PAVING SHALL BE AS SHOWN ON THE PLANS.

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Last Modification Date: 12/21/18	Initials: LTA		
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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES
Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1
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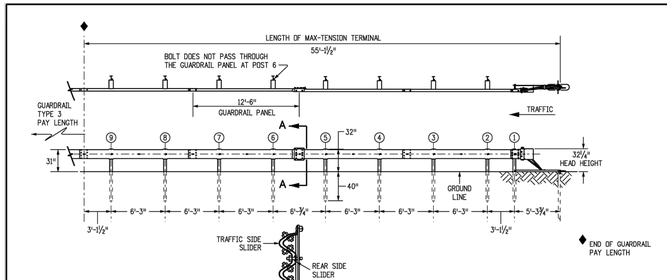
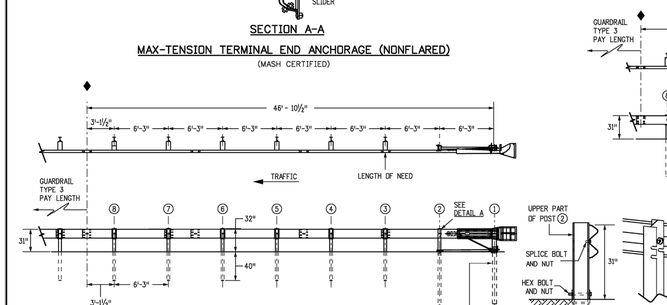


MAX-TENSION TERMINAL END ANCHORAGE (NONFLARED)
(MASH CERTIFIED)

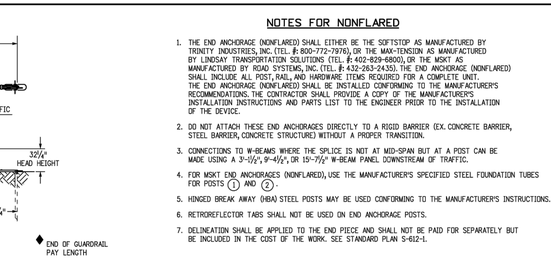
♦ END OF GUARDRAIL PAY LENGTH



MSKT TERMINAL END ANCHORAGE (NONFLARED)
(MASH CERTIFIED)

NOTES FOR NONFLARED

1. THE END ANCHORAGE (NONFLARED) SHALL EITHER BE THE SOFTSTOP AS MANUFACTURED BY TRINITY INDUSTRIES, INC. (TEL. #: 800-772-7976), OR THE MAX-TENSION AS MANUFACTURED BY LINDSAY TRANSPORTATION SOLUTIONS (TEL. #: 402-829-6800), OR THE MSKT AS MANUFACTURED BY ROAD SYSTEMS, INC. (TEL. #: 432-263-2435). THE END ANCHORAGE (NONFLARED) SHALL INCLUDE ALL POST, RAIL, AND HARDWARE ITEMS REQUIRED FOR A COMPLETE UNIT. THE END ANCHORAGE (NONFLARED) SHALL BE INSTALLED CONFORMING TO THE MANUFACTURER'S RECOMMENDATIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PARTS LIST TO THE ENGINEER PRIOR TO THE INSTALLATION OF THE DEVICE.
2. DO NOT ATTACH THESE END ANCHORAGES DIRECTLY TO A RIGID BARRIER (EX. CONCRETE BARRIER, STEEL BARRIER, CONCRETE STRUCTURE) WITHOUT A PROPER TRANSITION.
3. CONNECTIONS TO W-BEAMS WHERE THE SPLICE IS NOT AT MID-SPAN BUT AT A POST CAN BE MADE USING A 3'-1½", 9'-4½", OR 15'-7½" W-BEAM PANEL DOWNSTREAM OF TRAFFIC.
4. FOR MSKT END ANCHORAGES (NONFLARED), USE THE MANUFACTURER'S SPECIFIED STEEL FOUNDATION TUBES FOR POSTS (1) AND (2).
5. HINGED BREAK AWAY (HBA) STEEL POSTS MAY BE USED CONFORMING TO THE MANUFACTURER'S INSTRUCTIONS.
6. RETROREFLECTOR TABS SHALL NOT BE USED ON END ANCHORAGE POSTS.
7. DELINEATION SHALL BE APPLIED TO THE END PIECE AND SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK. SEE STANDARD PLAN S-612-1.



SOFTSTOP TERMINAL END ANCHORAGE (NONFLARED)
(MASH CERTIFIED)

END ANCHORAGES (NONFLARED)

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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES
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Sheet No. 8 of 19

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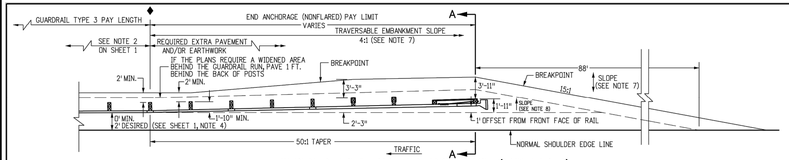
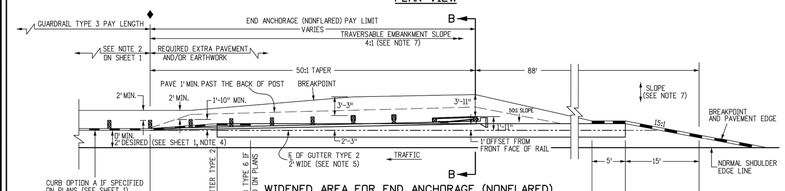
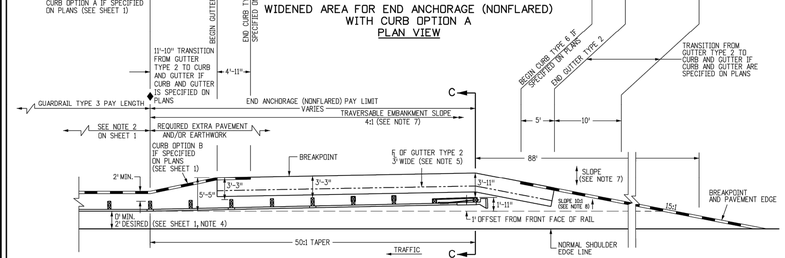
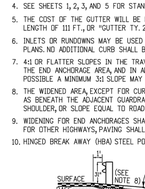






NOTES

1. PAYMENT FOR THE ADDED EMBANKMENT (APPROXIMATELY 25 CU. YDS.) FOR THE FLARE SHALL BE AS FOLLOWS:
   A. UNDER PAY ITEM 203 WHEN THE CONTRACT PLAN INCLUDES PAY ITEM 203.
   B. INCLUDED IN THE COST OF THE END ANCHORAGE (NONFLARED) WHEN THE CONTRACT PLANS DOES NOT INCLUDE PAY ITEM 203. THE ADDED EMBANKMENT SHALL BE BE CONSTRUCTED IN ACCORDANCE WITH SUBSECTION 203.07, AASHTO T 99.
2. WHEN THE WIDENED AREA IS PAVED, PAYMENT FOR THE PAVEMENT (APPROX. 39 SQ. YDS.) SHALL BE AS FOLLOWS:
   A. UNDER PAY ITEM 403 OR 412 WHEN THE CONTRACT PLAN INCLUDES PAY ITEM 403 OR 412.
   B. INCLUDED IN THE COST OF THE END ANCHORAGE (NONFLARED) WHEN THE CONTRACT PLAN DOES NOT INCLUDE PAY ITEM 403 OR 412, (SEE SHEET 1, NOTE 2 FOR PAYMENT TYPES).
3. WHEN OVERLAY PAVING, THE FINISHED SURFACE AT EACH POST SHALL NOT BE ABOVE THE TOP BREAKAWAY HOLE OR STRUT ASSEMBLY. THE WIDENED AREA AT THE END ANCHORAGE (NONFLARED) SHALL NOT BE OVERLAYED UNLESS PAVEMENT CONDITIONS WARRANT IT BEING OVERLAYED, ANY OVERLAY PAVEMENT ABUTTING THE END ANCHORAGE (NONFLARED) SHALL BE TAPERED TO PREVENT A DROP IN THE PAVED SURFACE BELOW THE RAIL.
4. SEE SHEETS 1, 2, 3, AND 5 FOR STANDARD TYPE 3 GUARDRAIL INSTALLATION DETAILS.
5. THE COST OF THE GUTTER WILL BE PAID FOR AS "GUTTER TYPE 2 (2 FT.)" FOR A LENGTH OF 111 FT., OR "GUTTER TY. 2 (3 FT.)" FOR A LENGTH OF 50 FT.
6. INLETS OR RUNDOWNS MAY BE USED INSTEAD OF THE GUTTER IF SPECIFIED ON THE PLANS. NO ADDITIONAL CURB SHALL BE ADDED IN THE VICINITY OF THE END TREATMENT.
7. 4:1 OR FLATTER SLOPES IN THE TRAVERSABLE AREA SHALL BE USED BEHIND THE END ANCHORAGE AREA, AND IN ADVANCE OF POST (1) IF THIS IS NOT POSSIBLE A MINIMUM 3:1 SLOPE MAY BE USED IF APPROVED BY THE ENGINEER.
8. THE WIDENED AREA, EXCEPT FOR CURB OPTION A, SHALL HAVE THE SAME GRADING AS BENEATH THE ADJACENT GUARDRAIL: 10:1 OR FLATTER IF MORE THAN 2 FT. FROM SHOULDER, OR SLOPE EQUAL TO ROADWAY SLOPE IF 2 FT. OR LESS FROM SHOULDER.
9. WIDENING FOR END ANCHORAGES SHALL BE PAVED ON INTERSTATES AND FREEWAYS. FOR OTHER HIGHWAYS, PAVING SHALL BE AS SHOWN ON THE PLANS.
10. HINGED BREAK AWAY (HBA) STEEL POSTS MAY BE USED. SEE MANUFACTURER'S DETAILS.



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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1

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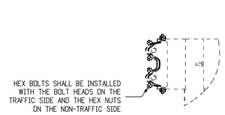
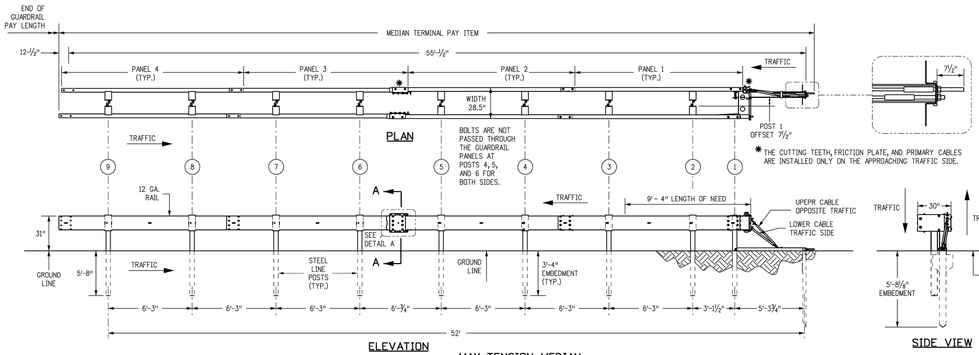
MEDIAN TERMINAL NOTES

1. THE MEDIAN TERMINAL SHALL BE THE MAX-TENSION MEDIAN AS MANUFACTURED BY BY BARRIER SYSTEM BY LINDSAY (LINDSAY TRANSPORTATION SOLUTIONS) (TEL #: 888 800-3691).
2. THE MAX-TENSION SHALL BE APPLIED DIRECTLY TO W-BEAM GUARDRAIL SYSTEMS AT, OR TRANSITIONED TO, 31 INCH WITH PANELS AND POST SPACING CONFIGURED AT MID-SPAN SPLICE. TRANSITIONS TO STRONG POST W-BEAM GUARDRAIL SYSTEMS OR OTHER BARRIERS WHERE THE SPLICE IS NOT MID-SPAN SHALL BE ACCOMPLISHED USING A 3 FT.-1-1/2 INCH, 9 FT.-4-1/2 INCH OR 15 FT.-7-1/2 INCH PANELS AFTER THE MAX-TENSION SYSTEM (MIN. OF 50 FT. DOWNSTREAM OF THE FIRST POST). TRANSITIONS TO OTHER BARRIER SYSTEMS SHALL ALSO BE AT A MIN. OF 50 FT. DOWNSTREAM FROM THE FIRST POST. SEE SHEET 4.
3. THE MAX-TENSION SHALL NOT BE ATTACHED DIRECTLY TO RIGID BARRIERS SUCH AS CONCRETE BARRIERS, STEEL BARRIERS OR CONCRETE STRUCTURES WITHOUT PROPER TRANSITION. IF BEDROCK OR STIFF SOIL IS ENCOUNTERED, THE POSTS AND SOIL ANCHOR MAY BE INSTALLED BY AUGURING AND BACKFILLING THE HOLE.
4. EITHER 8 INCH OR 12 INCH COMPOSITE OR TIMBER BLOCKOUTS SHALL BE USED PER MANUFACTURER'S RECOMMENDATIONS.
5. EITHER 12 FT.-6 INCH OR 25 FOOT PANELS SHALL BE USED DEPENDING ON SITE CONDITIONS OR CONNECTED BARRIER SYSTEMS.
6. RAIL PANELS SHALL BE LAPPED PER MANUFACTURER'S INSTALLATION MANUAL, REGARDLESS OF AN UPSTREAM OR DOWNSTREAM END SYSTEM POSITION.
7. ALL STEEL COMPONENTS SHALL BE GALVANIZED PER ASTM A123 OR EQUIVALENT UNLESS OTHERWISE STATED.
8. ONE MEDIAN TERMINAL SHALL INCLUDE ALL POSTS, RAIL, AND HARDWARE ITEMS REQUIRED FOR A COMPLETE UNIT. THE DEVICE SHALL BE INSTALLED IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS. THE CONTRACTOR SHALL PROVIDE A COPY OF THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND PARTS LISTS TO THE ENGINEER PRIOR TO THE INSTALLATION OF THE DEVICE.
9. UNLESS OTHERWISE SPECIFIED ON THE PLANS, THE MEDIAN TERMINAL SHALL BE INSTALLED FOR BIDIRECTIONAL TRAFFIC APPLICATION.
10. EACH INSTALLATION SHALL BE SUPERVISED AND CERTIFIED AS CORRECT UPON COMPLETION BY A REPRESENTATIVE OF THE DEVICE MANUFACTURER OR BY AN EMPLOYEE OF THE CONTRACTOR WHO IS A CERTIFIED INSTALLER. THE CERTIFIED INSTALLER SHALL HAVE COMPLETED DEVICE TRAINING AND SHALL BE REGISTERED WITH THE MANUFACTURER AS A CERTIFIED INSTALLER. IF NO CERTIFICATION IS AVAILABLE, THE PROJECT ENGINEER OR DESIGNEE MAY INSPECT AND CERTIFY INSTALLATION.
11. DELINEATION, IF REQUIRED, SHALL BE APPLIED TO THE END PIECE AND WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK. SEE STANDARD PLAN S-612-1.





MAX-TENSION MEDIAN
(MASH CERTIFIED)

Computer File Information		Sheet Revisions	
Creation Date: 11/01/18	Initials: JJP	Date:	Comments
Last Modification Date: 12/21/18	Initials: LTA	12/21/18	Replaced the CAT 350, Breakmaster, and the FLEAT-MT median terminals (deleted Sheet 13) with the MAX-TENSION median terminal to comply with the MASH only crash cushion device by the December 31, 2018 deadline.
Full Path: www.codot.gov/business/designsupport			
Drawing File Name: 60601010019.dgn			
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English			

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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1

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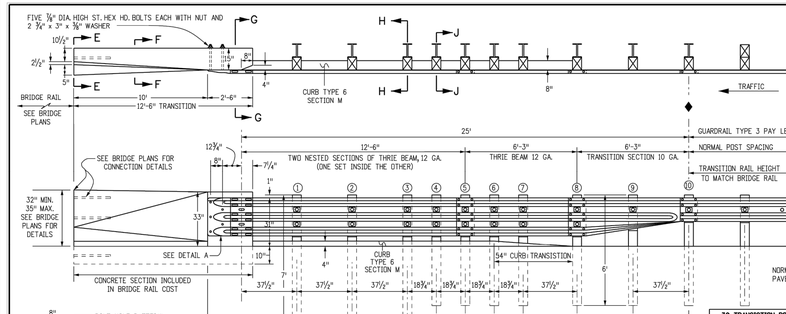
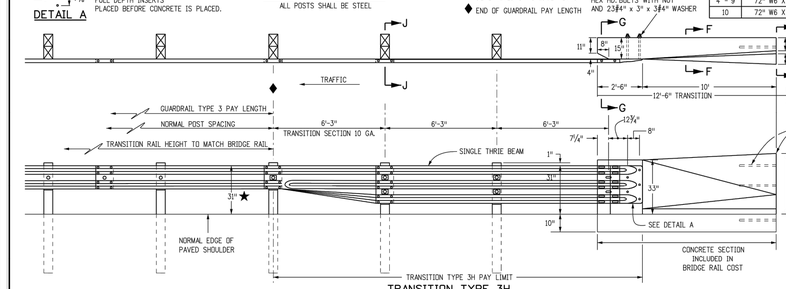
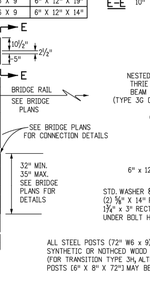


3G TRANSITION POST / BLOCK SIZING		
POST #	STEEL POST SIZE	BLOCKOUT SIZE
1 - 3	84" W6 X 15	6" X 12" X 19"
4 - 9	72" W6 X 9	6" X 12" X 19"
10	72" W6 X 9	6" X 12" X 14"



NOTES

1. TRANSITION TYPE 3G IS FOR USE AT BOTH ENDS OF BRIDGES ON TWO-WAY HIGHWAYS AND AT THE APPROACH END OF BRIDGES ON ONE-WAY HIGHWAYS.
2. TRANSITION TYPE 3H IS FOR USE AT THE TRAILING END OF BRIDGES ON ONE-WAY HIGHWAYS.
3. THE THRIE BEAM SECTION IN TRANSITIONS TYPES 3G AND 3H MAY BE SHOP BENT TO FIT CURVES THAT ARE GREATER THAN OR EQUAL TO A 10 FT. RADIUS. HOWEVER, THE 6 FT.-3 IN. TRANSITION SECTION SHALL NOT BE BENT.
4. A 12 FT.-6 IN. CONCRETE TRANSITION IS REQUIRED BETWEEN THE TYPE 3G OR 3H AND TYPE 7 BRIDGE RAIL. SEE STANDARD PLAN M-606-13 FOR THE TRANSITION BETWEEN TYPE 3 GUARDRAIL AND TYPE 7 GUARDRAIL.
5. TRANSITIONS TYPE 3G AND TYPE 3H ARE ALSO USED TO CONNECT TO TYPE 8 AND TYPE 10 BRIDGE RAIL. SEE BRIDGE PLANS FOR CONNECTION DETAILS.
6. BACKUP PLATE IS NOT REQUIRED AT POSTS ON TYPE 3G AND 3H.
7. (32) THIS SYMBOL IN THE ELEVATION DRAWINGS SHOWS THE LOCATIONS WHERE A RECTANGULAR WASHER IS REQUIRED UNDER THE POST BOLT HEAD.
8. CURB TYPE 6 SECTION M, MAY BE ASPHALT OR CONCRETE. THE COST OF CURB IS INCLUDED IN THE WORK, UNLESS A SEPARATE PAY ITEM IS INCLUDED IN THE BID SCHEDULE.
9. FOR TYPE 3G, POSTS (1) THRU (3) ARE 7 FT. LONG. ALL OTHER POSTS SHALL BE A STANDARD 6 FT. LONG UNLESS OTHERWISE SPECIFIED IN THE CONTRACT.
10. NOTCHED RAIL BLOCKS MANUFACTURED FROM SYNTHETIC MATERIAL WILL BE ACCEPTED AS ALTERNATIVES TO WOOD NOTCHED BLOCKS FOR USE WITH STEEL POSTS PROVIDED THAT THE BLOCKS HAVE RECEIVED FHWA APPROVAL AND ARE CERTIFIED AS IDENTICAL TO THE SPECIMENS USED FOR TESTING AND APPROVAL. STEEL BLOCKS ARE NOT ALLOWED.



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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1

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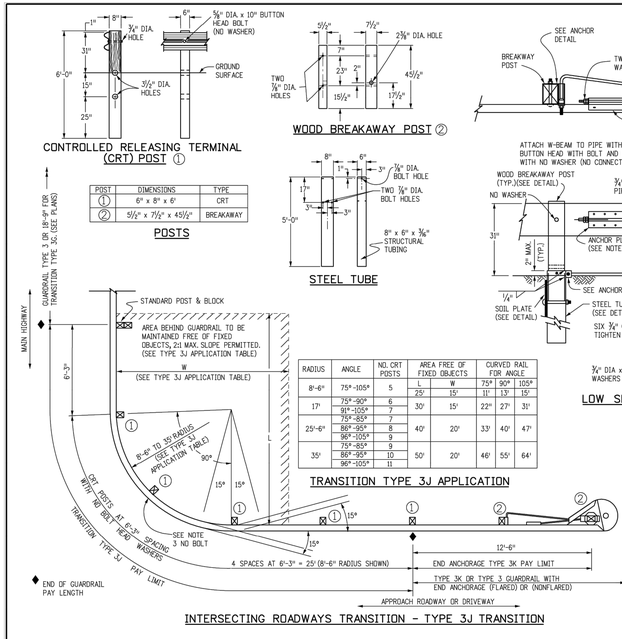
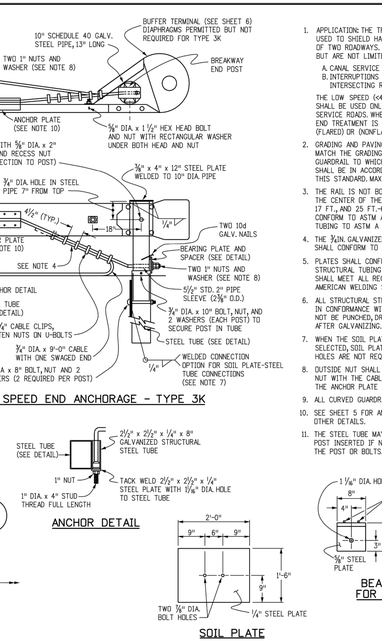


RADIUS	ANGLE	NO. CRT POSTS	AREA FREE OF FIXED OBJECTS		CURVED RAIL FOR ANGLE	
			L	W	75°	90° 105°
8'-6"	75°-105°	5	25'	15'	11'	13' 15'
17'	75°-90°	6	30'	15'	22'	27' 31'
	91°-105°	7				
25'-6"	75°-85°	7	40'	20'	33'	40' 47'
	86°-95°	8				
	96°-105°	9				
35'	75°-85°	9	50'	20'	46'	55' 64'
	86°-95°	10				
	96°-105°	11				

TRANSITION TYPE 3J APPLICATION



NOTES

1. APPLICATION: THE TRANSITION TYPE 3J MAY BE USED TO SHIELD HAZARDS AT THE INTERSECTION OF TWO ROADWAYS. TYPICAL APPLICATIONS INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
   A. CANAL SERVICE ROADS AT BRIDGE ENDS.
   B. INTERRUPTIONS IN GUARDRAIL RUNS BY INTERSECTING ROADWAYS, ETC...
   THE LOW SPEED (<45 MPH) END ANCHORAGE TYPE 3K SHALL BE USED ONLY ON DRIVEWAYS AND LOW SPEED SERVICE ROADS. WHEN AN APPROVED CRASH-TESTED END TREATMENT IS REQUIRED USE THE END ANCHORAGE (FLARED) OR (NONFLARED) WITH 37 FT.-6 IN. LENGTH.
2. GRADING AND PAVING FOR THE 3J & 3K SHALL MATCH THE GRADING AND PAVING OF THE GUARDRAIL TO WHICH THEY ARE ATTACHED, AND SHALL BE IN ACCORDANCE WITH SHEET ONE OF THIS STANDARD. MAXIMUM FILL SLOPE SHALL BE 2:1.
3. THE RAIL IS NOT BOLTED TO THE CRT POST AT THE CENTER OF THE CURVE FOR THE 8 FT.-6 IN., 17 FT., AND 25 FT.-6 IN. RADII. PLATES SHALL CONFORM TO ASTM A 36, AND THE STRUCTURAL TUBING TO ASTM A 500.
4. THE 3/8IN. GALVANIZED WIRE ROPE (CABLE) SHALL CONFORM TO AASHTO M 30 TYPE II.
5. PLATES SHALL CONFORM TO ASTM A 36, AND STRUCTURAL TUBING TO ASTM A 500. WELDING SHALL MEET ALL REQUIREMENTS OF THE AMERICAN WELDING SOCIETY.
6. ALL STRUCTURAL STEEL SHALL BE GALVANIZED IN CONFORMANCE WITH ASTM A 123. POSTS SHALL NOT BE PUNCHED, DRILLED, CUT, OR WELDED AFTER GALVANIZING.
7. WHEN THE SOIL PLATE WELDED OPTION IS SELECTED, SOIL PLATE CONNECTION BOLT HOLES ARE NOT REQUIRED.
8. OUTSIDE NUT SHALL BE TORQUED AGAINST INSIDE NUT WITH THE CABLE INSTALLED TAUT BETWEEN THE ANCHOR PLATE AND FIRST POST.
9. ALL CURVED GUARDRAIL SHALL BE SHOP BENT.
10. SEE SHEET 5 FOR ANCHOR PLATE AND OTHER DETAILS.
11. THE STEEL TUBE MAY BE DRIVEN WITH WOOD POST INSERTED IF NO DAMAGE OCCURS TO THE POST OR BOLTS.

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Drawing File Name: 60601012019.dgn			
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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1

Sheet No. 12 of 19

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DATE	REVISIONS	DRAWN BY
09/2020	APPROVED	
07/31/20	RESPONDED TO TOWN COMMENTS	JAH
06/30/20	RESPONDED TO TOWN COMMENTS	JAH
03/02/20	UPDATE GAT & ADD OF E-LINE DET BASIN	
12/21/16	FINAL SUBMITTAL	
11/21/16	4TH SUBMITTAL	
08/22/16	3RD SUBMITTAL	
4/11/16	2ND SUBMITTAL	
11/2015	1ST SUBMITTAL	EG

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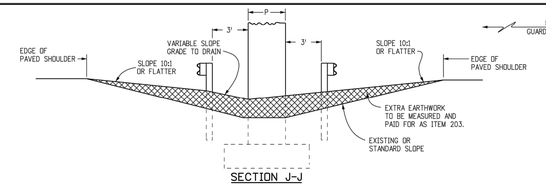
COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STREET DETAILS

COLORADO REGISTERED PROFESSIONAL ENGINEER
ERIC T. GUSTAFSON
30877
11-17-2020

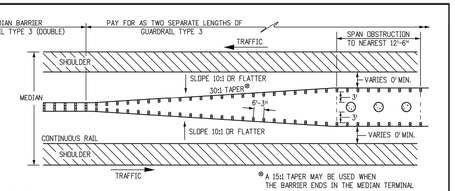
PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 43 OF 50
CLCPKC3

Plotted: 10/30/2020 1:50 PM Dwg Name: P:\Cpkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawing\Plan Set\Town\CLCPKC3-Street Details.dwg Updated By: ADrucker

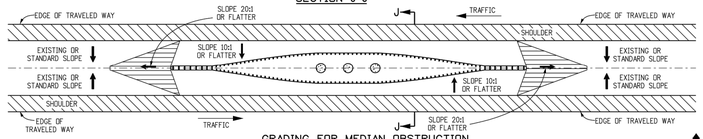


SECTION J-J

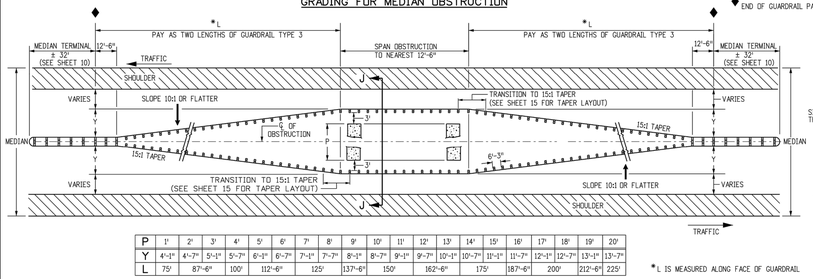


*A 15:1 TAPER MAY BE USED WHEN THE BARRIER ENDS IN THE MEDIAN TERMINAL

OBSTRUCTION IN MEDIAN 30 FT. WIDE OR LESS



GRADING FOR MEDIAN OBSTRUCTION



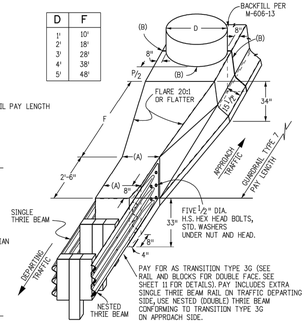
P	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'
Y	4'-1"	4'-7"	5'-1"	5'-7"	6'-1"	6'-7"	7'-1"	7'-7"	8'-1"	8'-7"	9'-1"	9'-7"	10'-1"	10'-7"	11'-1"	11'-7"	12'-1"	12'-7"	13'-1"	13'-7"
L	75'	87'-6"	100'	112'-6"	125'	137'-6"	150'	162'-6"	175'	187'-6"	200'	212'-6"	225'							

*L IS MEASURED ALONG FACE OF GUARDRAIL

GUARDRAIL FOR OBSTRUCTION IN MEDIANS WIDER THAN 30 FT.

NOTE: FOR OBSTRUCTIONS (P) THAT ARE WIDER THAN 20 FT. IN MEDIANS USE SHEET 16.

D	F
1'	10'
2'	18'
3'	28'
4'	38'
5'	48'



END OF GUARDRAIL PAY LENGTH

(A). TIMBER POSTS 2 FT., STEEL POSTS 1 FT.-9 1/2 IN.

(B). 1/2 IN. PREFORMED JOINT MATERIAL

NARROW MEDIAN DETAIL

USUALLY LESS THAN 30 FT. WIDE MEDIAN WITH ALL PAVED SURFACE

OBSTRUCTIONS IN MEDIANS

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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

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STANDARD PLAN NO. M-606-1

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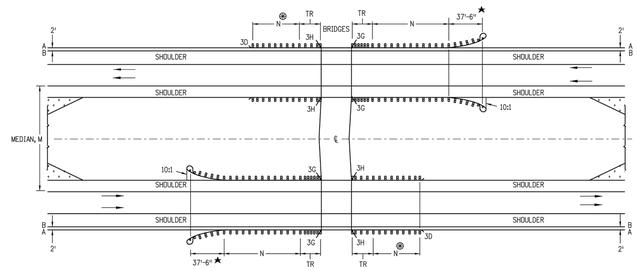

MULTILANE DIVIDED HIGHWAYS FOR STEEP EMBANKMENTS IN MEDIAN

NOTES

1. MEDIAN BARRIERS TANGENT TO THE ROADWAY MAY BE USED WHERE THE SHOULDER SLOPES IN THE MEDIAN ARE STEEP.
2. BARRIER LENGTHS SHALL BE INCREASED TO ACCOUNT FOR STEEP EMBANKMENTS OR OTHER HAZARDS WITHIN CLOSE PROXIMITY OF BRIDGES.

⊗ – DO NOT CONSTRUCT THE TR AND GUARDRAIL ON THE TRAILING BRIDGE ENDS IF SITE CONDITIONS DO NOT WARRANT THE USE OF GUARDRAIL.

N – SHOWN ON PLANS, LENGTH TO SHIELD ALL HAZARDS IS BASED ON GUARDRAIL'S LENGTH OF NEED COMPUTATION, SEE AASHTO ROADWAY DESIGN GUIDE. THE MINIMUM SHALL BE 12 FT. – 6 IN., WHERE SITE CONDITIONS ALLOW. THE TOTAL LENGTH OF NEED WILL INCLUDE THE LENGTH OF TRANSITION, THE LENGTH OF RAIL (N), AND ANY REDIRECTIVE LENGTH IN THE RAIL END TREATMENT.

TR – 18 FT.-9 IN. FOR 3G AND 3H.

A – EDGE OF 8 FT. OR 10 FT. SHOULDER.

B – EDGE OF 6 FT. OR LESS SHOULDER.

★ – END ANCHORAGE CAN BE FLARED OR NONFLARED.

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RESPONSED TO TOWN COMMENTS	07/31/20	JAH
RESPONSED TO TOWN COMMENTS	06/30/20	JAH
UPDATE GAT & ADD OFF-LINE DET BASIN	03/02/20	
FINAL SUBMITTAL	12/21/16	
4TH SUBMITTAL	11/7/16	
3RD SUBMITTAL	08/01/16	
2ND SUBMITTAL	4/11/16	
1ST SUBMITTAL	11/2015	

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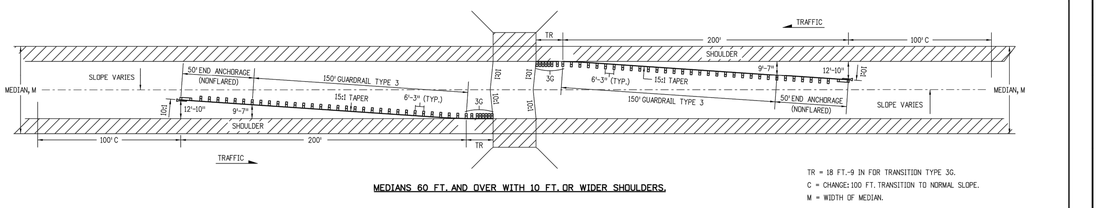
STREET DETAILS

COLORADO REGISTERED PROFESSIONAL ENGINEER
JACK J. HUMPHRIES
30877
11-17-2020

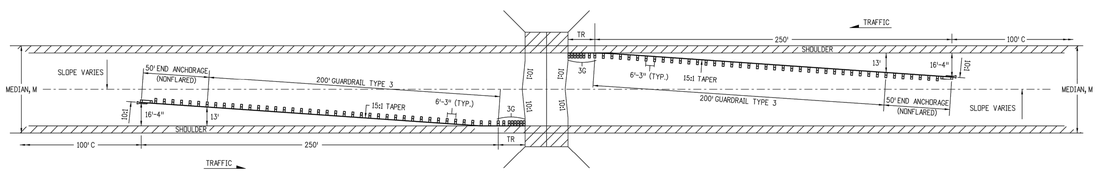
PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 44 OF 50
CLCPKC3

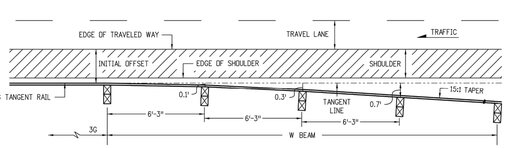


MEDIANS 60 FT. AND OVER WITH 10 FT. OR WIDER SHOULDERS.

TR = 18 FT.-9 IN FOR TRANSITION TYPE 3G.
C = CHANGE: 100 FT. TRANSITION TO NORMAL SLOPE.
M = WIDTH OF MEDIAN.



MEDIANS 60 FT. AND OVER WITH 4 to 8 FT. SHOULDERS.



TRANSITION TO TYPICAL 15:1 TAPER

NOTES

1. GUARDRAIL TRANSITIONS FROM PARALLEL TO ROADWAY SHOULDER AT 3G SEGMENT TO 15:1 TAPER WITHIN 18'-9" BASED ON POST OFFSET DIMENSIONS SHOWN.
2. SEE SHEET 14 FOR THE RIGHT SHOULDER GUARDRAIL LAYOUT.

MULTILANE DIVIDED HIGHWAYS – (DEPRESSED MEDIANS, 60 FT. AND OVER WITH OPEN HAZARDS OR OBSTRUCTIONS)

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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

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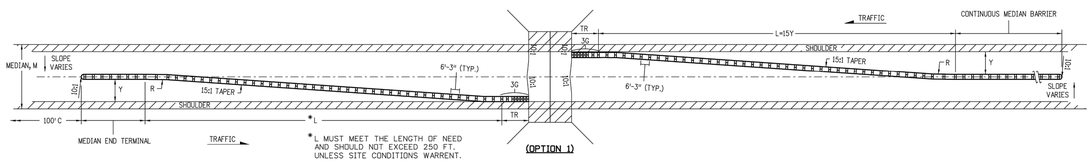
STANDARD PLAN NO. M-606-1

Sheet No. 15 of 19

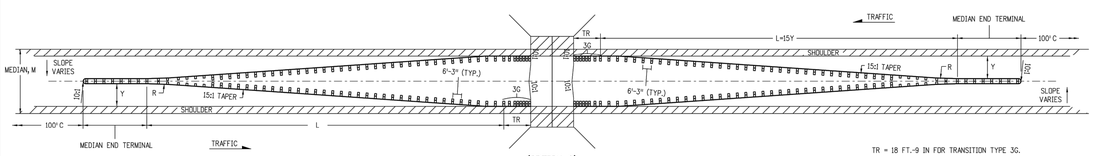
NOTES

1. GUARDRAIL TRANSITIONS FROM PARALLEL TO ROADWAY SHOULDER AT 3G SEGMENT TO 15:1 TAPER WITHIN 18'-9" BASED ON POST OFFSET DIMENSIONS SHOWN.
2. THE OPTION 1 LAYOUT SHALL BE USED WHEN "Y" EXCEEDS 16 FEET OR WHEN MEDIAN BARRIER IS CONTINUOUS.
3. THE OPTION 2 LAYOUT SHALL BE USED WHEN "Y" IS 16 FEET OR LESS.
4. SEE SHEET 14 FOR RIGHT SHOULDER GUARDRAIL LAYOUT.



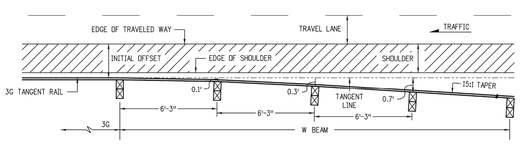
* L MUST MEET THE LENGTH OF NEED AND SHOULD NOT EXCEED 250 FT. UNLESS SITE CONDITIONS WARRENT.

(OPTION 1)



(OPTION 2)

TR = 18 FT.-9 IN FOR TRANSITION TYPE 3G.
C = CHANGE: 100 FT. TRANSITION TO NORMAL SLOPE.
M = WIDTH OF MEDIAN.
L = TOTAL LENGTH PAID AS GUARDRAIL TYPE 3.
Y = FINAL OFFSET AT END.



TRANSITION TO TYPICAL 15:1 TAPER

MULTILANE DIVIDED HIGHWAYS – (DEPRESSED MEDIANS, 21 – 59 FT. WITH OPEN HAZARDS OR OBSTRUCTIONS)

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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

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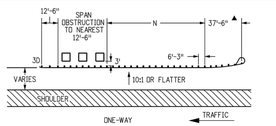
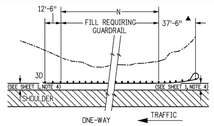
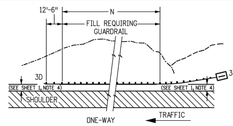
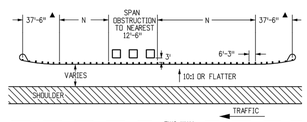
Plotted: 10/30/2020 1:50 PM Dwg Name: P:\Clcpkc3\ComSouth123 Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Street Details.dwg Updated By: AThrocker

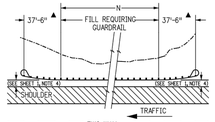




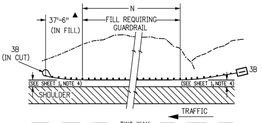




GUARDRAIL FOR ROADSIDE OBSTRUCTIONS



GUARDRAIL FOR ROADSIDE FILL CONSTRUCTION

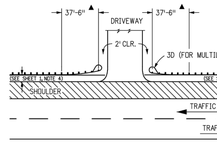


GUARDRAIL FOR ROADSIDE CUT-TO-FILL CONDITION

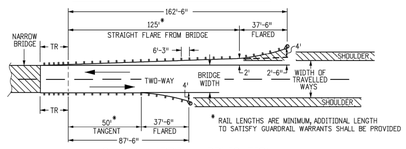
NOTES

1. THE TYPE 3G OR 3H TRANSITIONS (SEE SHEET 11) SHALL BE USED TO CONNECT A TYPE 3 W-BEAM TO TYPE 7 CONCRETE BARRIER OR TO A TYPE 7, 8, OR 10 BRIDGE RAIL.
2. "TR" WILL BE 18 FT.-9 IN. FOR THE TRANSITIONS TYPE 3G AND 3H.
3. THE GUARDRAIL LENGTH DIMENSION "N" IS THE LENGTH AS DETERMINED BY THE LENGTH OF NEED COMPUTATION AND IS SHOWN ON THE PLANS. THE MINIMUM IS 12 FT.-6 IN. WHERE SITE CONDITIONS ALLOW. THE OVERALL REQUIRED LENGTH OF NEED CAN INCLUDE THE LENGTH OF TRANSITION, THE LENGTH OF RAIL (N), AND ANY REDIRECTIVE LENGTH IN THE RAIL END TREATMENT. A TRAVERSABLE SLOPE SHALL BE PROVIDED BEHIND THE TERMINAL TO DIMENSION "N" PRIOR TO THE OBSTRUCTION UNLESS OTHERWISE APPROVED BY THE ENGINEER.

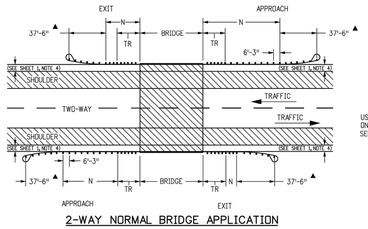
▲ END ANCHORAGE CAN BE FLARED OR NONFLARED



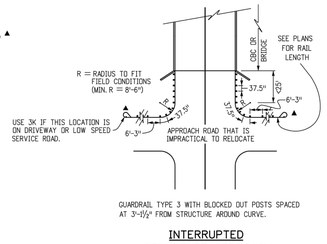
LAYOUT FOR DRIVEWAY APPROACH



2-WAY NARROW APPLICATION



2-WAY NORMAL BRIDGE APPLICATION



GUARDRAIL TYPE 3 WITH BLOCKED OUT POSTS SPACED AT 3'-1½" FROM STRUCTURE AROUND CURVE.

INTERRUPTED STRUCTURE APPROACH

(USE TYPE 3J ON SHEET 12 WHEN PRACTICAL)

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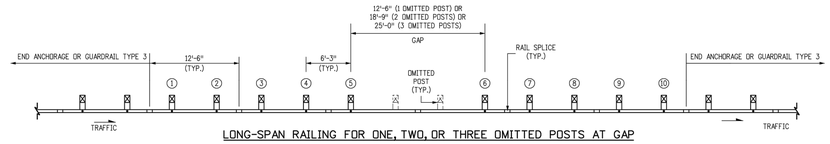
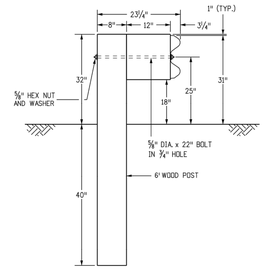
NOTES

1. POSTS ①, ②, ⑨, AND ⑩ MAY BE TIMBER OR STEEL.
2. THE NUMBER OF OMITTED POSTS IS DEPENDENT ON THE LENGTH OF THE GAP.

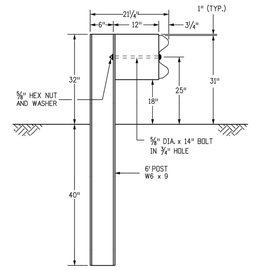


LONG-SPAN RAILING FOR ONE, TWO, OR THREE OMITTED POSTS AT GAP



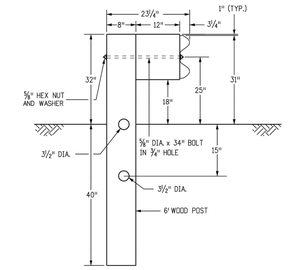
TIMBER POST

POSTS ①-② AND ⑨-⑩ (SEE NOTE 1)



STEEL POST

POSTS ①-② AND ⑨-⑩ (SEE NOTE 1)



BREAKWAY TIMBER POST

POSTS ③ - ⑧

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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

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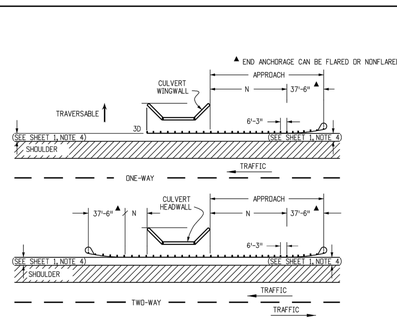
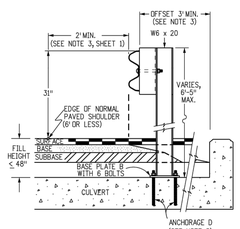
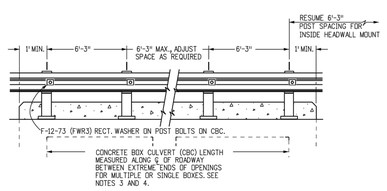


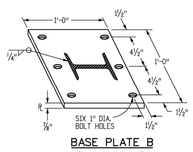
GUARDRAIL FOR CULVERTS



INSIDE MOUNT ON CBC

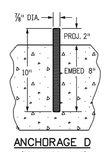


RAIL PLACEMENT FOR INSIDE MOUNT



BASE PLATE B

(FOR INSIDE MOUNT)



ANCHORAGE D

(FOR INSIDE MOUNT)

NOTES

1. LOCATION AND LENGTH OF MEDIAN GUARDRAIL APPROACHES TO CULVERTS WITH FULL HEADWALL AND WINGWALLS SHALL BE AS SHOWN FOR BRIDGES ON SHEET 15. THE GUARDRAIL TYPE 3 SHALL CONTINUE ACROSS THE CULVERT AS SHOWN ON THIS SHEET.
2. RIGHT SHOULDER BOX CULVERT TREATMENT IS SHOWN ON THIS SHEET FOR CULVERTS 20 FT. OR LESS IN LENGTH.
3. GUARDRAIL ACROSS CULVERTS WITH A LENGTH OF 20 FT. OR LESS SHALL BE AS FOLLOWS:
   A. FILL HEIGHT AT GUARDRAIL POST 48 IN. OR GREATER: CONSTRUCTION AND PAYMENT WILL BE AS GUARDRAIL TYPE 3.
   B. FILL HEIGHT AT GUARDRAIL POST LESS THAN 48 IN. AND BLOCK FACE TO HEADWALL OFFSET OF 3 FT. OR GREATER: CONSTRUCTION AND PAYMENT AS GUARDRAIL TYPE 3.
   C. FILL HEIGHT AT GUARDRAIL POST 48 IN. OR LESS AND BLOCK FACE TO HEADWALL OFFSET LESS THAN 3 FT: CONSTRUCTION ACCORDING TO HEADWALL MOUNT DETAILS AND PAYMENT AS BRIDGE RAIL TYPE 3.
4. GUARDRAIL ACROSS CULVERTS WITH LENGTH GREATER THAN 20 FT. SHALL BE AS FOLLOWS:
   A. FILL HEIGHT AT GUARDRAIL POSTS 48 IN. OR GREATER: CONSTRUCTION AND PAYMENT WILL BE FOR STANDARD GUARDRAIL TYPE 3.
   B. FILL HEIGHT AT GUARDRAIL POSTS 48 IN. OR LESS: CONSTRUCTION AND PAYMENT IN ACCORDANCE WITH THE CONTRACT BRIDGE PLANS. WHEN BLOCK FACE TO HEADWALL OFFSET IS 3 FT. OR GREATER: CONSTRUCTION AND PAYMENT AS GUARDRAIL TYPE 3.
5. ANCHORAGE D: SIX BOLTS FOR BASE PLATE "B" WITH INSIDE MOUNT. THE BOLTS SHALL BE 7/8 IN. DIA X 10 IN. HIGH STRENGTH RODS THREADED FULL LENGTH AND ALL GALVANIZED. RODS SHALL BE CAST-IN-PLACE FOR A NEW STRUCTURE. FOR AN EXISTING STRUCTURE, THE RODS SHALL BE INSTALLED IN 1-1/4 IN. DIA HOLES WITH NON-SHRINK GROUT OR EPOXY CONFORMING TO ASTM C 881.
6. THE GUARDRAIL LENGTH DIMENSION "N" IS THE LENGTH AS DETERMINED BY THE LENGTH OF NEED COMPUTATION AND IS SHOWN ON THE PLANS. THE MINIMUM IS 12 FT.-6 IN. WHERE SITE CONDITIONS ALLOW. THE OVERALL REQUIRED LENGTH OF NEED CAN INCLUDE THE LENGTH OF TRANSITION, THE LENGTH OF RAIL (N), AND ANY REDIRECTIVE LENGTH IN THE RAIL END TREATMENT.
7. ALL POSTS, BASE PLATES, AND ANCHOR BOLTS SHALL BE FABRICATED FROM ASTM A 36 STEEL. THE ABOVE MATERIAL, W-BEAM, AND ALL ANCHOR BOLTS AND MISCELLANEOUS BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 509. CONCRETE, REINFORCING STEEL, AND STRUCTURAL STEEL ELEMENTS SHALL BE IN ACCORDANCE WITH SECTIONS 601, 602, AND 509, RESPECTIVELY.
8. POST ANCHORS, ENCASED IN CONCRETE, SHALL BE ASTM A 36 STEEL, AND NEED NOT BE GALVANIZED.
9. PRIOR TO FABRICATION OF BRIDGE RAIL, THREE SETS OF WORKING DRAWINGS WHICH COMPLY WITH THE REQUIREMENTS OF SECTION 105 SHALL BE SUBMITTED TO THE ENGINEER FOR INFORMATION ONLY.

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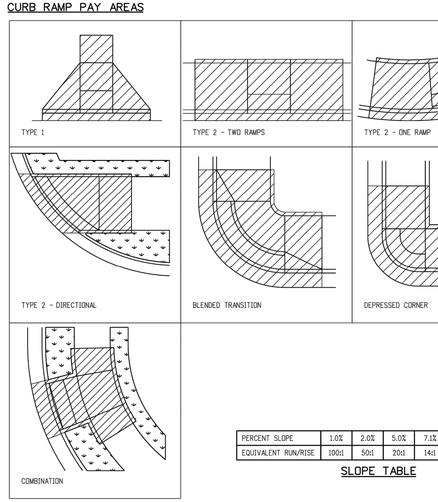
CURB RAMP GENERAL NOTES:

1. IN NEW CONSTRUCTION OR FULL-DEPTH RECONSTRUCTION, PROVIDE A SEPARATE CURB RAMP FOR EACH MARKED OR UNMARKED PEDESTRIAN STREET CROSSING. CURB RAMPS SHALL BE CONTAINED WHOLLY WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING OR CROSSWALK THEY SERVE, OR AS SHOWN ON THE CONTRACT PLANS.
2. ALTERATIONS ARE DEFINED AS CHANGES TO AN EXISTING HIGHWAY THAT AFFECT PEDESTRIAN ACCESS, CIRCULATION, OR USE. ALTERATIONS INCLUDE, BUT ARE NOT LIMITED TO, RESURFACING, REHABILITATION, RECONSTRUCTION, CURB RAMP RETROFITS, HISTORIC RESTORATION, OR CHANGES OR REARRANGEMENT TO STRUCTURAL PARTS OR ELEMENTS OF A PEDESTRIAN FACILITY.
3. A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP OR TURNING SPACE, WITHOUT RAISED OBSTACLES, THAT COULD BE MISTAKENLY TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
4. IN ALTERATIONS, WHERE AN EXISTING PHYSICAL CONSTRAINT PREVENTS PROVIDING A SEPARATE CURB RAMP FOR EACH PEDESTRIAN STREET CROSSING, A SINGLE DIAGONAL RAMP (ON THE APEX) SHALL BE PERMITTED TO SERVE BOTH PEDESTRIAN STREET CROSSINGS. THE USE OF A SINGLE DIAGONAL RAMP SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. DIAGONAL RAMPS ARE NOT ACCEPTABLE IN NEW CONSTRUCTION OR FULL-DEPTH RECONSTRUCTION.
5. DETECTABLE WARNINGS SURFACES (DWS) ARE INTENDED TO INDICATE THE BOUNDARY BETWEEN A PEDESTRIAN ROUTE AND VEHICULAR ROUTE WHERE THERE IS A FLUSH RATHER THAN CURBED CONNECTION. DWS ARE NOT INTENDED TO PROVIDE WAYFINDING. DWS SHALL BE PROVIDED AT THE FOLLOWING LOCATIONS;
   1. CURB RAMPS, BLENDED TRANSITIONS, AND DEPRESSED CORNERS AT PEDESTRIAN STREET CROSSINGS;
   2. PEDESTRIAN REFUGE ISLANDS (6 FEET IN WIDTH OR GREATER);
   3. BOARDING PLATFORMS AT TRANSIT STOPS WHERE THE EDGE OF THE PLATFORM IS NOT PROTECTED TO PEDESTRIAN CROSS TRAFFIC; AND
   4. BOARDING AREAS AT SIDEWALK OR STREET LEVEL TRANSIT STOPS WHERE THE AREA IS NOT PROTECTED TO PEDESTRIAN CROSS TRAFFIC.
6. DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH THE ADJACENT GUTTER, HIGHWAY, OR PEDESTRIAN ACCESS ROUTE SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. FEDERAL YELLOW COLOR IS PREFERRED, HOWEVER, OTHER COLORS MAY BE USED IF APPROVED BY THE ENGINEER.
7. IN ALTERATIONS, TO AVOID CHASING GRADE INDEFINITELY ON STEEP ROADWAYS, A CURB RAMPS LENGTH IS NOT REQUIRED TO EXCEED 15 FEET REGARDLESS OF THE RESULTING RAMP RUNNING SLOPE.
8. ALL SLOPES ARE MEASURED WITH RESPECT TO A LEVEL PLANE.
9. DRAINAGE STRUCTURES, TRAFFIC SIGNAL EQUIPMENT, OR OTHER OBSTRUCTIONS SHALL NOT BE INSTALLED ON THE CURB RAMP, OR TURNING SPACE AREAS.
10. IN NEW CONSTRUCTION, PULL BOXES, METER BOXES, MAINTENANCE HOLE COVERS, VAULT LIDS, OR SIMILAR, SHALL NOT BE CONSTRUCTED WITHIN ANY PART OF CURB RAMP OR TURNING SPACE. IN ALTERATIONS, WHERE THESE ITEMS CANNOT BE RELOCATED OUTSIDE OF THE CURB RAMP OR TURNING SPACE, THEY MUST NOT CREATE A VERTICAL DISCONTINUITY GRATER THAN 1/2 INCH. ANY VERTICAL DISCONTINUITY BETWEEN 1/4 INCH AND 1/2 INCH SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1V:2H. THE BEVEL SHALL BE APPLIED ACROSS THE ENTIRE SURFACE DISCONTINUITY.
11. CONSTRUCTION OF ANY REQUIRED PEDESTRIAN CURB SHALL BE INCLUDED IN THE BID PRICE OF THE CONCRETE CURB RAMP AND WILL NOT BE PAID FOR SEPARATELY.
12. ALL CURB RAMP JOINTS AND GRADE BREAKS SHALL BE FLUSH (0'-1/8"). THE JOINT BETWEEN THE ROADWAY SURFACE AND THE GUTTER PAN SHALL BE FLUSH.
13. THE CONTRACTOR SHALL VERIFY REMOVAL LIMITS ARE SUFFICIENT TO PROVIDE POSITIVE DRAINAGE, MAINTAIN EXISTING DRAINAGE PATTERNS, AND AVOID PONDING IN THE FINAL CONFIGURATION.
14. FLARED SIDE SLOPES MAY EXCEED 10.0% ONLY WHERE THEY ABUT A NON-WALKABLE SURFACE, OR WHERE THE ADJACENT RAMP SURFACE IS BLOCKED TO PEDESTRIAN TRAFFIC.
15. THE CHANGE IN GRADE AT THE BOTTOM OF THE CURB RAMP SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 13.33% THE COUNTER SLOPE OF THE GUTTER AT THE FOOT OF A RAMP, TURNING SPACE, OR BLENDED TRANSITION SHALL NOT EXCEED 5.0%.
16. GRADE BREAKS AT THE TOP AND BOTTOM OF RAMP RUNS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. GRADE BREAKS SHALL NOT BE PERMITTED ON THE SURFACE OF THE RAMP RUN OR TURNING SPACE. SURFACE SLOPES THAT MEET AT GRADE BREAKS SHALL BE FLUSH.
17. A BROOM FINISH, WITH SWEEPS PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAFFIC, SHALL BE APPLIED TO ALL RAMP AND TURNING SPACE SURFACES.
18. IN ALTERATIONS, WHERE A RAMP OR TURNING SPACE MUST TIE INTO AN EXISTING GRADE THAT CANNOT BE ALTERED, THE RAMP OR TURNING SPACE MAY BE WARPED TO TRANSITION TO THE REQUIRED CROSS SLOPE. THE TRANSITION TO THE REQUIRED CROSS SLOPE SHALL BE SPREAD EVENLY OVER THE LENGTH OF THE RAMP OR TURNING SPACE TO MINIMIZE THE DEGREE OF WARPING. THE RATE OF CHANGE ON A RAMP OR TURNING SPACE SHALL NOT EXCEED 3% PER LINEAR FOOT.
19. DESIGN AND CONSTRUCT CURB RAMPS, TURNING SPACES, AND FLARE SLOPES WITH THE FLATTEST SLOPES POSSIBLE. THE SLOPES INDICATED IN THESE DETAILS SHOW THE MAXIMUM SLOPES ALLOWABLE. PREFERRED VALUES TO BE USED DURING DESIGN, LAYOUT, AND CONSTRUCTION ARE:
   - RAMP RUNNING SLOPE 7.5%
   - RAMP CROSS SLOPE 1.5%
   - TURNING SPACE RUNNING SLOPE 1.5%
   - TURNING SPACE CROSS SLOPE 1.5%
   - FLARE SLOPE 8.0-9.0%
20. WHERE SNOW REMOVAL EQUIPMENT WILL BE USED TO CLEAR THE PEDESTRIAN ACCESS ROUTE, CONSULT THE ENGINEER PRIOR TO CONSTRUCTION TO ENSURE THE WIDTH AND THICKNESS OF CURB RAMPS IS SUFFICIENT TO ACCOMODATE SUCH EQUIPMENT.
21. PROVIDE EXPANSION JOINT MATERIAL 1/2" THICK WHERE CURB RAMPS ADJOIN ANY RIGID PAVEMENT, OR STRUCTURE. THE TOP OF THE JOINT FILLER MATERIAL SHALL BE FLUSH WITH ADJOINING CONCRETE SURFACES. THE EXPANSION JOINT MATERIAL SHALL EXTEND FOR THE FULL DEPTH OF THE CONCRETE SURFACE.
22. PROVIDE TIE BAR REINFORCING BETWEEN INDEPEDENTLY POURED CONCRETE CURB RAMPS OR TURNING SPACES AND CURB AND GUTTER. DRILL AND GROUT NO. 4 12 INCH LONG REINFORCEMENT BARS (EPOXY COATED) AT 18 INCHES CENTER TO CENTER MINIMUM.

GENERAL NOTES & PAY AREAS

CURB RAMP PAY AREAS



PERCENT SLOPE	1.0%	2.0%	5.0%	7.1%	8.3%	10.0%
EQUIVALENT RUN/RISE	100:1	50:1	20:1	14:1	12:1	10:1

SLOPE TABLE

Computer File Information		Sheet Revisions	
Creation Date: 07/31/19	Initials: JBK	Date:	Comments
Designer Initials: JBK	(R-X)		
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Detailer Initials: LTA	(R-X)		
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CURB RAMPS

Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO. M-608-1

Standard Sheet No. 1 of 10

Project Sheet Number: ---

REVISIONS	DATE	DRAWN BY
APPROVED	09/2020	
RESPONDED TO TOWN COMMENTS	07/31/20	JAH
RESPONDED TO COMMENTS	05/01/20	JAH
UPDATE GAT & ADD OFF-LINE DET BASIN	03/02/20	
FINAL SUBMITTAL	12/21/16	
4TH SUBMITTAL	11/7/16	
3RD SUBMITTAL	06/24/16	
2ND SUBMITTAL	4/11/16	
1ST SUBMITTAL	11/2015	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STREET DETAILS

COLORADO REGISTERED JASON R. BROWN 30877 11-17-2020 PROFESSIONAL ENGINEER

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 45 OF 50
CLCPKC3

Plotted: 10/30/2020 1:50 PM Dwg Name: P:\Cepkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Street Details.dwg Updated By: ABrucker

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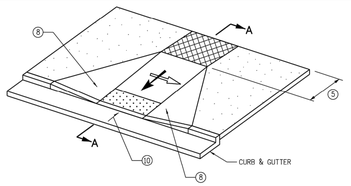
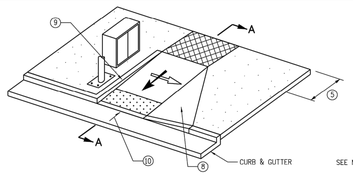
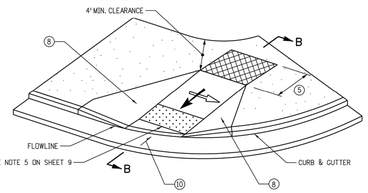


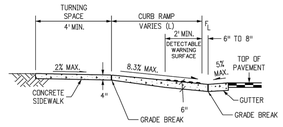
PERPENDICULAR RAMP
(TYPICAL)



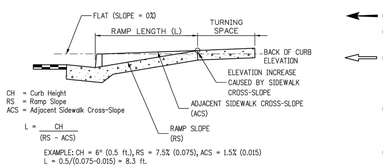
PERPENDICULAR RAMP
(WITH VERTICAL RETURN CURB)



PERPENDICULAR RAMP
(DIRECTIONAL)

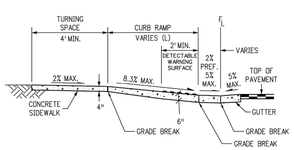


SECTION A-A



EXAMPLE: CH = 6" (0.5 ft.), RS = 7.5% (0.075), ACS = 1.5% (0.015)
L = 0.5/(0.075-0.015) = 8.3 ft.

DETAIL A - RAMP LENGTH



SECTION B-B

PERPENDICULAR RAMP NOTES

1. RAMP WIDTH - PROVIDE 5 FT. OR GREATER WHERE POSSIBLE. IF SITE CONSTRAINTS DO NOT PERMIT, PROVIDE 4 FT. MINIMUM. RAMPS SERVICING SHARED USE PATHS SHALL MATCH THE WIDTH OF THE PATH.
2. RAMP RUNNING SLOPE - 8.3% MAX.
3. TURNING SPACE RUNNING SLOPE - 2.0% MAX. TURNING SPACE RUNNING SLOPE IS MEASURED IN THE SAME DIRECTION AS THE RAMP RUNNING SLOPE.
4. RAMP AND TURNING SPACE CROSS SLOPE - 2.0% TYPICAL. AT CROSSINGS WITHOUT YIELD OR STOP CONTROL, OR WITH A SIGNAL WHERE VEHICLES CAN PROCEED THROUGH THE INTERSECTION WITHOUT SLOWING OR STOPPING, THE CROSS SLOPE OF RAMPS AND TURNING SPACES MAY EQUAL THE HIGHWAY GRADE. AT MIDBLOCK PEDESTRIAN STREET CROSSINGS THE RAMP AND TURNING SPACE CROSS SLOPE MAY EQUAL THE HIGHWAY GRADE.
5. TURNING SPACE DIMENSIONS - PROVIDE A TURNING SPACE AT THE TOP OF PERPENDICULAR RAMPS WITH A WIDTH EQUAL TO THE WIDTH OF THE CURB RAMP. TURNING SPACE LENGTH MUST BE 4 FT. MINIMUM, MEASURED IN THE DIRECTION OF THE RAMP RUN. WHEN A TURNING SPACE IS CONSTRAINED AT THE BACK OF SIDEWALK, INCREASE LENGTH TO 5 FT. MINIMUM IN THE DIRECTION OF THE RAMP RUN.
6. RAMP ALIGNMENT - RAMPS SHALL BE ALIGNED TO BE FULLY CONTAINED WITHIN THE CROSSWALK OR STREET CROSSING THEY SERVE. PROVIDE ONE RAMP FOR EACH STREET CROSSING DIRECTION. IN ALTERATIONS, WHERE EXISTING PHYSICAL CONSTRAINTS PREVENT PROVIDING ONE CURB RAMP FOR EACH CROSSING DIRECTION, A SINGLE DIAGONAL CURB RAMP (ON THE APEX OF A CORNER) SHALL BE PERMITTED TO SERVE BOTH PEDESTRIAN STREET CROSSINGS. IF A DIAGONAL RAMP IS USED, A CLEAR SPACE 4 FT. X 4 FT. MUST BE PROVIDED AT THE BASE OF THE RAMP. THE CLEAR SPACE MUST BE WITHIN BOTH CROSSWALKS AND WHOLLY OUTSIDE OF ANY ADJACENT VEHICULAR TRAVEL LANES. DIAGONAL RAMPS ARE NOT ACCEPTABLE IN NEW CONSTRUCTION, OR FULL-DEPTH RECONSTRUCTION.
7. RAMP LENGTH - PERPENDICULAR RAMP LENGTH IS DEPENDENT UPON THE RAMP SLOPE, HEIGHT OF CURB, AND ADJACENT SIDEWALK CROSS-SLOPE WHICH MUST BE INTERCEPTED. SEE DETAIL A FOR CALCULATING RAMP LENGTH WHEN CHASING SIDEWALK CROSS-SLOPE. WHERE TERRAIN IS SLOPING A RAMP IS NOT REQUIRED TO CHASE GRADE MORE THAN 15 FT. REGARDLESS OF THE RESULTING RAMP SLOPE.
8. RAMP FLARES - WHERE A RAMP EDGE ABUTS A WALKABLE SURFACE, A FLARED SIDE SHALL BE PROVIDED. RAMP FLARE SLOPES SHALL NOT EXCEED 10.0%.
9. VERTICAL CURB RETURNS - VERTICAL CURB RETURNS MAY BE USED ONLY WHERE A RAMP ABUTS A NON-WALKABLE SURFACE, OR WHERE A RAMP IS PROTECTED FROM PEDESTRIAN CROSS TRAFFIC (FOR EXAMPLE BY A SIGNAL CABINET OR UTILITY POLE WHICH BLOCKS PASSAGE).
10. GUTTER COUNTER SLOPE - 5.0% MAX.

SIDEWALK

TURNING SPACE ③ ④ ⑤

DETECTABLE WARNING SURFACE (DWS)

TYPE 1 PERPENDICULAR CURB RAMPS

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CURB RAMPS

STANDARD PLAN NO.
M-608-1
Standard Sheet No. 2 of 10
Project Sheet Number:

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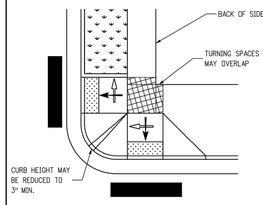
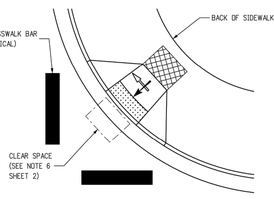
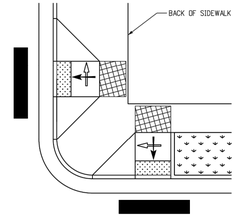


TYPE 1 RAMPS FOR WIDE SIDEWALK
(3" REDUCED CURB)



TYPE 1 RAMP
(DIAGONAL)

NOT ALLOWABLE IN NEW CONSTRUCTION/FULL DEPTH RECONSTRUCTION
SEE GENERAL NOTE 4



TYPE 1 RAMPS FOR WIDE SIDEWALK

TURNING SPACE (SEE NOTES 3, 4, 5 - SHEET 2)

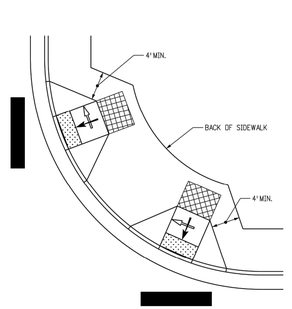
DETECTABLE WARNING SURFACE (DWS) SEE DWS SHEETS FOR PLACEMENT DETAILS

RAMP RUNNING SLOPE

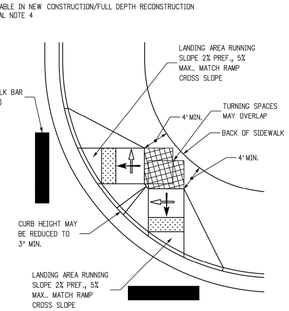
RAMP CROSS SLOPE

NOTE

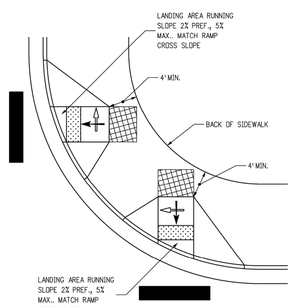
PLACEMENTS SHOWN ARE TYPICAL CONFIGURATIONS ONLY AND NOT INDICATIVE OF ALL OPTIONS. OTHER RAMP CONFIGURATIONS MAY BE ACCEPTABLE AS LONG AS THEY CONFORM TO THE CRITERIA IN THESE STANDARDS, AND ARE APPROVED BY THE ENGINEER.



TYPE 1 PERPENDICULAR RAMPS



TYPE 1 DIRECTIONAL RAMPS
(3" REDUCED CURB)



TYPE 1 DIRECTIONAL RAMPS
(LARGE RADIUS)

TYPE 1 CURB RAMPS TYPICAL CONFIGURATIONS

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Designer Initials: JBK	(R-X)		
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CURB RAMPS

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M-608-1
Standard Sheet No. 3 of 10
Project Sheet Number:

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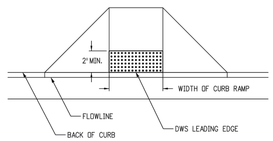
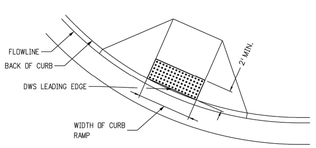
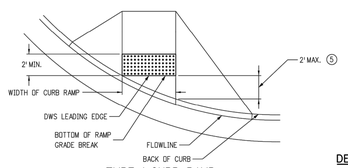


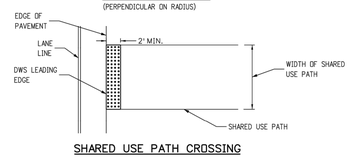
TYPE 1 CURB RAMP
(PERPENDICULAR ON TANGENT)



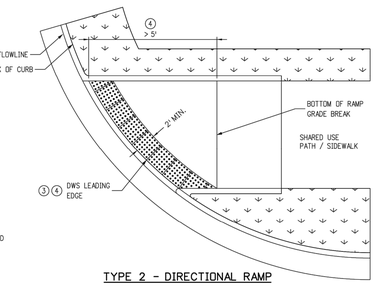
TYPE 1 CURB RAMP
(PERPENDICULAR ON RADIUS)



TYPE 1 CURB RAMP
(DIRECTIONAL ON RADIUS)



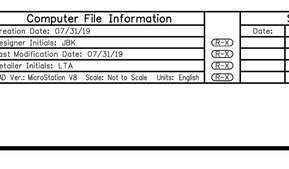
SHARED USE PATH CROSSING



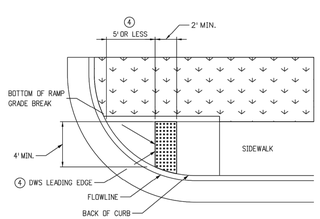
TYPE 2 - DIRECTIONAL RAMP

DETECTABLE WARNING SURFACE NOTES:

1. DETECTABLE WARNING SURFACES (DWS) SHALL BE INSTALLED AT SIDEWALK, OR SHARED USE PATH, TO STREET TRANSITIONS, AND SHALL CONSIST OF TRUNCATED DOME SURFACES. ANY TRUNCATED DOME PANELS OR PAVERS WHICH ARE USED MUST BE ON THE CDOT APPROVED PRODUCTS LIST (APL).
2. THE DETECTABLE WARNING SURFACE SHALL SPAN THE FULL WIDTH OF THE CURB RAMP, SHARED USE PATH, OR OTHER ROADWAY ENTRANCE AS APPLICABLE. A GAP OF 2 INCHES FROM THE EDGE OF THE DETECTABLE WARNING SURFACE TO THE EDGE OF THE CURB RAMP OR SHARED USE PATH IS PERMITTED.
3. WHEN DETECTABLE WARNING SURFACES ARE PLACED ON A SLOPE GREATER THAN 5.0%, TRUNCATED DOMES SHOULD BE ALIGNED IN THE DIRECTION OF THE RAMP RUN; OTHERWISE DOMES ARE NOT REQUIRED TO BE ALIGNED. TRUNCATED DOMES SHALL BE IN A SQUARE GRID OR RADIAL PATTERN. WHEN PLACED RADIALLY, PLACE ADJACENT DWS PLATES EDGE TO EDGE. EDGES OF CUT PLATES SHALL BE STRAIGHT.
4. LOCATE ONE CORNER OF THE DWS LEADING EDGE AT THE BACK OF CURB. NO POINT ON THE LEADING EDGE OF THE DWS MAY BE MORE THAN 5 FT. FROM THE BACK OF CURB. WHEN ANY POINT OF THE LEADING EDGE OF THE DWS WILL BE GREATER THAN 5 FT. FROM THE BACK OF CURB, PLACE THE DWS RADIALLY AT THE BACK OF CURB.
5. WHERE PERPENDICULAR DIRECTIONAL RAMPS ABUT A WALKABLE SURFACE, THE LEADING EDGE OF THE DWS SHALL NOT BE PLACED FURTHER THAN 2 FEET FROM THE BACK OF CURB. IF THE RADIUS OF A CORNER MAKES THIS IMPOSSIBLE, ORIENT THE CURB RAMP PERPENDICULAR TO THE CURB AND GUTTER.
6. IF THE DETECTABLE WARNING SURFACE IS CUT, GRIND OFF THE REMAINING PORTION OF ANY CUT TRUNCATED DOMES. SEAL ALL CUT PANEL EDGES WITH AN APL SEALANT TO PREVENT WATER DAMAGE.
7. TRUNCATED DOME PLATES SHALL BE EMBEDED IN THE CONCRETE CURB RAMP WHILE THE CONCRETE IS PLASTIC.
8. DWS SHALL NOT BE PLACED OVER GRADE BREAKS.



TYPE 2 CURB RAMP



TYPE 2 - DIRECTIONAL RAMP

DETECTABLE WARNING SURFACE (DWS)

DETECTABLE WARNING SURFACE PLACEMENT

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CURB RAMPS

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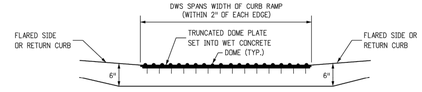
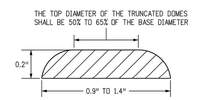
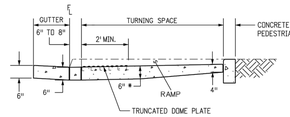


SECTION VIEW OF DETECTABLE WARNING SURFACE PLATE
(LOOKING AT PERPENDICULAR RAMP RUN FROM STREET)



ELEVATION VIEW OF SINGLE TRUNCATED DOME



SECTION VIEW FOR PARALLEL CURB RAMP TYPES
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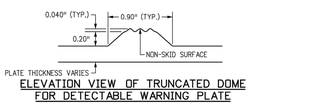
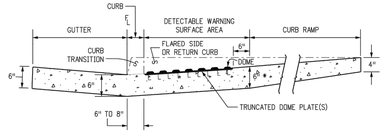


ELEVATION VIEW OF TRUNCATED DOME FOR DETECTABLE WARNING PLATE



SECTION VIEW FOR PERPENDICULAR CURB RAMP TYPES
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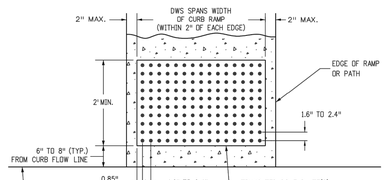

PLAN VEIW OF DETECTABLE WARNING SURFACE PLATE

DETECTABLE WARNING SURFACE DETAILS

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COLORADO REGISTERED PROFESSIONAL ENGINEER
RYAN MOON
30877
11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
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SHEET
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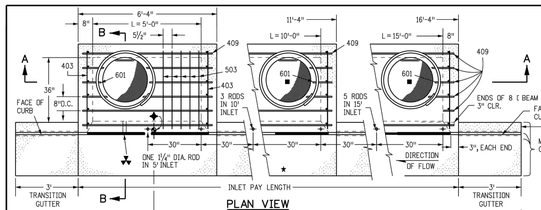
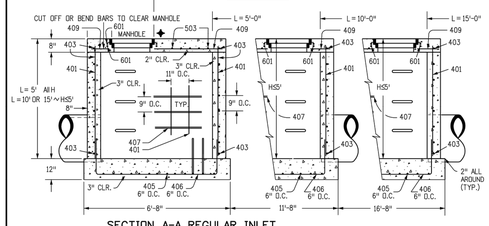
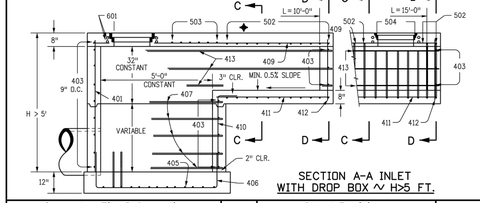
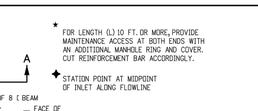


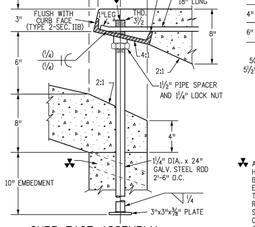


SECTION A-A REGULAR INLET



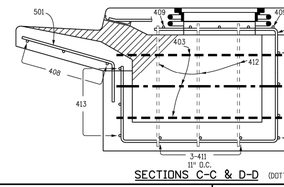
SECTION A-A INLET WITH DROP BOX ∼ H>5 FT.



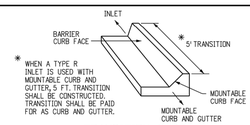


CURB FACE ASSEMBLY

✦PLACE ENTIRE ASSEMBLY BEFORE POURING CONCRETE.



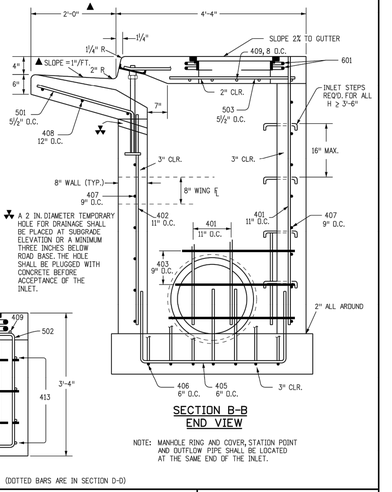
SECTIONS C-C & D-D (DOTTED BARS ARE IN SECTION D-D)



WHEN A TYPE R INLET IS USED WITH MOUNTABLE CURB AND GUTTER, 5 FT. TRANSITION SHALL BE CONSTRUCTED. TRANSITION SHALL BE PAID FOR AS CURB AND GUTTER.

TRANSITION CURB

▲ - FOR A 1'-0" PAN SLOPE 2" PER FT.



A 2 IN. DIAMETER TEMPORARY HOLE FOR DRAINAGE SHALL BE PLACED AT SUBGRADE ELEVATION OR A MINIMUM THREE INCHES BELOW ROAD BASE. THE HOLE SHALL BE PLUGGED WITH CONCRETE BEFORE ACCEPTANCE OF THE INLET.

SECTION B-B END VIEW

NOTE: MANHOLE RING AND COVER, STATION POINT AND OUTFLOW PIPE SHALL BE LOCATED AT THE SAME END OF THE INLET.

GENERAL NOTES:
SEE SHEET 2.

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Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
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CURB INLET TYPE R

STANDARD PLAN NO. M-604-12
Standard Sheet No. 1 of 2
Project Sheet Number:

Issued by the Project Development Branch: July 31, 2019

MARK	BAR # OR SIZE	O.C. SPACING	TYPE	ALL INLETS L = 5 FT. NO. REQ'D.	ALL INLETS L = 5 FT. LENGTH	INLETS: H ≤ 5 FT. L = 10 FT. NO. REQ'D.	INLETS: H ≤ 5 FT. L = 10 FT. LENGTH	INLETS: H ≤ 5 FT. L = 15 FT. NO. REQ'D.	INLETS: H ≤ 5 FT. L = 15 FT. LENGTH	INLETS: H > 5 FT. L = 10 FT. NO. REQ'D.	INLETS: H > 5 FT. L = 10 FT. LENGTH	INLETS: H > 5 FT. L = 15 FT. NO. REQ'D.	INLETS: H > 5 FT. L = 15 FT. LENGTH
401	4	11"	II	15	*	21	*	26	*	11	*	11	*
402	4	11"	II	7	*	13	*	18	*	7	*	7	*
403	4	9"	II	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"
405	4	6"	VI	11	6'-10"	21	6'-10"	31	6'-10"	11	6'-10"	11	6'-10"
406	4	6"	VIII	7	8'-10"	7	13'-10"	7	18'-10"	7	8'-10"	7	8'-10"
407	4	9"	II	*	5'-10"	*	10'-10"	*	15'-10"	*	5'-10"	*	5'-10"
408	4	12"	II	3	6'-10"	3	11'-10"	3	16'-0"	3	11'-10"	3	16'-0"
409	4	8"	II	6	5'-10"	6	10'-10"	6	15'-10"	6	10'-10"	6	15'-10"
410	4	11"	VII							3		3	*
411	4	11"	II							3	5'-2"	3	10'-2"
412	4	11"	II							3	2'-9"	3	2'-9"
413	4	9"	II							7	10'-10"	7	15'-10"
501	5	5½"	IV	11	3'-4"	22	3'-4"	33	3'-4"	22	3'-4"	33	3'-4"
502	5	5½"	III							11	11'-5"	17	11'-5"
503	5	5½"	II	5	3'-6"	16	3'-6"	27	3'-6"	6	3'-6"	6	3'-6"
504	5	5½"	IX									5	8'-4"
601	6	2½"	V	2	8'-10"	2	8'-10"	2	8'-10"	2	8'-10"	4	8'-10"
■C8.5				1 2 BARS, 1 RODS	5'-10"	1 4 BARS, 3 RODS	10'-10"	1 8 BARS, 5 RODS	15'-10"	1 4 BARS, 3 RODS	10'-10"	1 8 BARS, 5 RODS	15'-10"

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

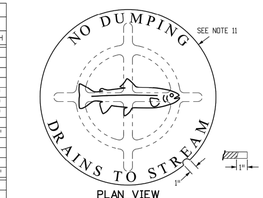
REGULAR INLETS | DROP BOX INLETS

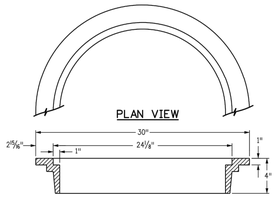
TABLE ONE ∼ BAR LIST FOR CURB INLETS, TYPE "R"

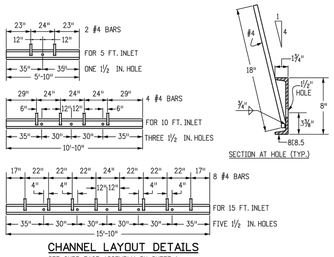
"H"	LENGTH 401	LENGTH 402	LENGTH 410	NO. REQ'D. REGULAR 403	NO. REQ'D. REGULAR 407	NO. REQ'D. DROP BOX 403	NO. REQ'D. DROP BOX 407	L = 5 FT. CONC. CU. YDS.	L = 5 FT. STEEL LBS.	L = 10 FT. CONC. CU. YDS.	L = 10 FT. STEEL LBS.	L = 15 FT. CONC. CU. YDS.	L = 15 FT. STEEL LBS.
3'-0"	2'-8"	1'-8"		10	7			3.2	285	5.3	497	7.4	706
3'-6"	3'-2"	2'-2"		10	7			3.4	305	5.7	528	7.9	747
4'-0"	3'-8"	2'-8"		12	9			3.7	326	6.0	559	8.4	786
4'-6"	4'-2"	3'-2"		12	9			3.9	334	6.4	571	8.8	803
5'-0"	4'-8"	3'-8"		14	11			4.1	354	6.7	602	9.3	844
5'-6"	5'-2"	4'-2"	3"-5"	16	13	15	6	4.4	375	6.0	607	7.4	850
6'-0"	5'-8"	4'-8"	3"-11"	16	13	16	6	4.6	382	6.2	616	7.6	860
6'-6"	6'-2"	5'-2"	4"-5"	18	15	18	8	4.8	402	6.4	637	7.8	880
7'-0"	6'-8"	5'-8"	4"-11"	20	17	19	10	5.0	423	6.6	654	8.0	897
7'-6"	7'-2"	6'-2"	5'-5"	20	17	20	10	5.3	430	6.9	664	8.3	907
8'-0"	7'-8"	6'-8"	5'-11"	22	19	22	12	5.5	451	7.1	684	8.5	927
8'-6"	8'-2"	7'-2"	6'-5"	24	21	23	14	5.7	471	7.3	702	8.7	944
9'-0"	8'-8"	7'-8"	6'-11"	24	21	24	14	6.0	479	7.6	711	9.0	954
9'-6"	9'-2"	8'-2"	7'-5"	26	23	26	16	6.2	499	7.8	732	9.2	974
10'-0"	9'-8"	8'-8"	7'-11"	28	25	27	18	6.4	520	8.0	749	9.4	992
10'-6"	10'-2"	9'-2"	8'-5"	28	25	28	18	6.7	527	8.3	759	9.7	1001
11'-0"	10'-8"	9'-8"	8'-11"	30	27	30	20	6.9	547	8.5	779	9.9	1022

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

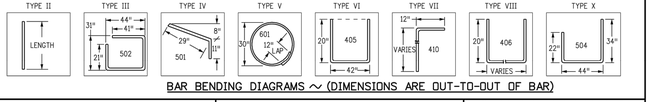
TABLE TWO ∼ BARS AND QUANTITIES VARIABLE WITH "H"







CHANNEL LAYOUT DETAILS
SEE CURB FACE ASSEMBLY ON SHEET 1.



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

GENERAL NOTES

1. CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
2. CONCRETE WALLS SHALL BE FORMED ON BOTH SIDES AND SHALL BE 8 INCHES THICK.
3. INLET STEPS SHALL BE IN CONFORMANCE WITH AASHTO M 199.
4. CURB FACE ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.
5. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED ¾ OF A INCH. CURB AND GUTTER CORNERS SHALL BE FINISHED TO MATCH THE EXISTING CURB AND GUTTER BEYOND THE TRANSITION GUTTER.
6. REINFORCING BARS SHALL BE DEFORMED AND SHALL HAVE A 2 INCH MINIMUM CLEARANCE. ALL REBAR IN CURB BARS SHALL BE GRADE 60 AND EPOXY COATED.
7. DIMENSIONS AND WEIGHTS OF TYPICAL MANHOLE RING AND COVER ARE NOMINAL.
8. MATERIAL FOR MANHOLE RINGS AND COVERS SHALL BE GRAY OR DUCTILE CAST IRON IN ACCORDANCE WITH SUBSECTION 712.06.
9. SINCE PIPE ENTRIES INTO THE INLET ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK. QUANTITIES INCLUDE VOLUMES OCCUPIED BY PIPES.
10. STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
11. ALL MANHOLE COVERS SHALL BE CAST WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE AND A FISH SYMBOL. THE SURFACE OF THE MANHOLE COVER SHALL HAVE A NON-SLIP PATTERN.

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Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
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CURB INLET TYPE R

STANDARD PLAN NO. M-604-12
Standard Sheet No. 2 of 2
Project Sheet Number:

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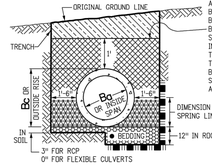
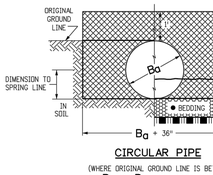


PIPE IN TRENCH

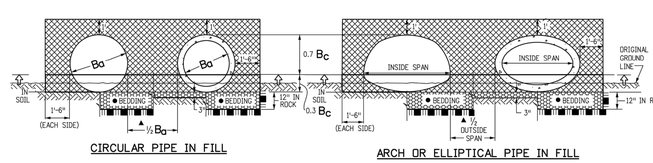
● THE BEDDING MATERIAL FOR RIGID PIPE IN SOIL SHALL BE 3 IN. OF LOOSE STRUCTURE BACKFILL (CLASS 1 OR 2). BEDDING IS NOT REQUIRED FOR FLEXIBLE PIPE IN SOIL. BEDDING MATERIAL FOR RIGID OR FLEXIBLE PIPE IN ROCK SHALL BE 12 IN. OF LOOSE STRUCTURE BACKFILL, CLASS 1.



CIRCULAR PIPE

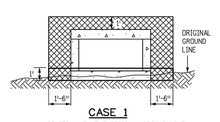
(WHERE ORIGINAL GROUND LINE IS BETWEEN 0.3 B_C AND B_C + 1 FT. ABOVE FLOWLINE)

▲ WHEN TWO OR MORE CONDUITS ARE LAID SIDE-BY-SIDE, THEY SHALL BE PLACED SO THAT THEY ARE ½ OUTSIDE DIAMETER, OR ½ OUTSIDE SPAN, OR 3 FT. APART, WHICHEVER IS LESS. HOWEVER, IF END SECTIONS ARE USED, THE MINIMUM SPACING SHALL BE 1 FT. BETWEEN END SECTIONS.



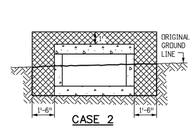
CIRCULAR PIPE IN FILL

ARCH OR ELLIPTICAL PIPE IN FILL



CASE 1

APPLIES WHEN THE ORIGINAL GROUND LINE IS LESS THEN 1 FT. ABOVE THE BOTTOM OF THE BOX CULVERT. THE EMBANKMENT SHALL BE BUILT UP TO 1 FT. ABOVE THE BOTTOM OF THE BOX CULVERT AND THEN EXCAVATED TO THE BOTTOM OF THE BOX CULVERT. THIS EMBANKMENT AND EXCAVATION WILL NOT BE MEASURED AND PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE COST OF THE WORK.

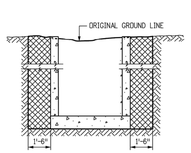


CASE 2

APPLIES WHEN THE ORIGINAL GROUND LINE IS MORE THAN 1 FT. ABOVE THE BOTTOM OF THE BOX CULVERT.

CONCRETE BOX CULVERT

IN BOTH CASES, THE TRENCH (OUTLINED BY THE THICK SOLID LINE) SHALL THEN BE EXCAVATED TO ACCOMMODATE CONSTRUCTION OF THE BOX CULVERT.



DROP INLETS AND DIVISION BOXES

GENERAL NOTES

1. EXCAVATION AND BACKFILL PATTERNS DIFFERENT FROM THOSE INDICATED ON THESE SHEETS WILL BE SHOWN ELSEWHERE ON THE PLANS.
2. EXCAVATION FOR CHANNEL CHANGE OR CHANNEL IMPROVEMENT WILL BE EITHER UNCLASSIFIED EXCAVATION OR MUCK EXCAVATION AND WILL BE NOTED ON THE PLANS. EXCAVATION FROM THE CHANNEL FLOWLINE TO THE DEPTH REQUIRED FOR THE NEW STRUCTURE AND INCIDENTAL CHANNEL EXCAVATION WILL BE PAID FOR AS STRUCTURE EXCAVATION.
3. STRUCTURE FOOTINGS WHICH ARE LOCATED IN ROCK SHALL BE POURED OUT TO UNDISTURBED ROCK WITHOUT FORMING IN CONFORMANCE WITH SUBSECTION 601.09(b).
4. STRUCTURAL PLATE CULVERTS SHALL BE CONSTRUCTED AS SHOWN ON THE PLANS.
5. B_a EQUALS THE INSIDE DIAMETER OF A PIPE AND B_c EQUALS THE OUTSIDE DIAMETER OF A PIPE. FOR THIN WALLED PIPES, IT IS ASSUMED THAT $B_a = B_c$.
6. APPROXIMATE STRUCTURE EXCAVATION AND BACKFILL QUANTITIES, UP TO 1 FT. OVER THE PIPE WILL BE SHOWN ON THE PLANS, FOR INFORMATION ONLY.

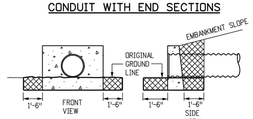
LEGEND

STRUCTURE EXCAVATION LIMITS
STRUCTURE BACKFILL, CLASS 1 OR 2, AS SHOWN ON PLANS
STRUCTURE BACKFILL, CLASS 1
EMBANKMENT MATERIAL
EARTH
ROCK
BEDDING
CONCRETE

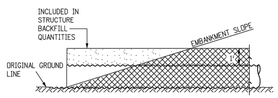
= WHEN FLOW LINE OF CULVERT IS LESS THAN 0.3 B_c BELOW THE ORIGINAL GROUND LINE, EMBANKMENT SHALL BE BUILT UP TO 0.3 B_c ABOVE THE FLOW LINE AND TRENCH EXCAVATED TO THE BOTTOM OF PIPE OR AS SHOWN.



CONDUIT WITH END SECTIONS



HEADWALL



END OF PIPE

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Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
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EXCAVATION AND BACKFILL FOR STRUCTURES

STANDARD PLAN NO. M-206-1
Standard Sheet No. 1 of 2
Project Sheet Number:

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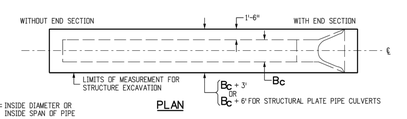
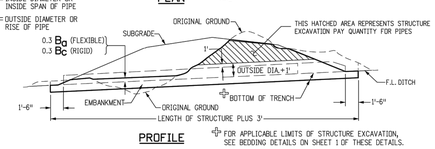


PLAN

FOR STRUCTURAL PLATE PIPE CULVERTS

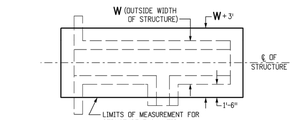


PROFILE

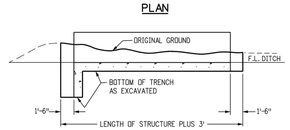
FOR APPLICABLE LIMITS OF STRUCTURE EXCAVATION, SEE BEDDING DETAILS ON SHEET 1 OF THESE DETAILS.

STRUCTURE EXCAVATION UP TO 1 FT. ABOVE THE TOP OF THE PIPE SHALL BE INCLUDED IN THE BID PRICE OF THE PIPE.

STRUCTURE EXCAVATION MEASUREMENT FOR PIPE CULVERTS

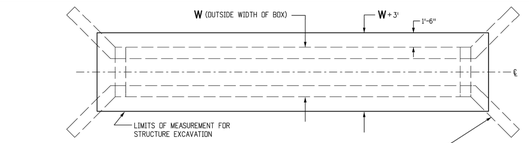


PLAN

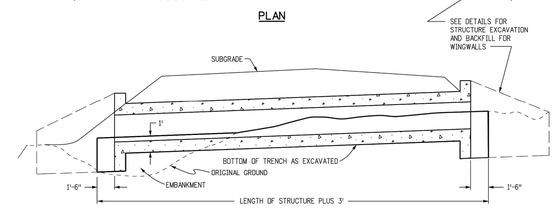


PROFILE

STRUCTURE EXCAVATION MEASUREMENT FOR DIVISION BOXES

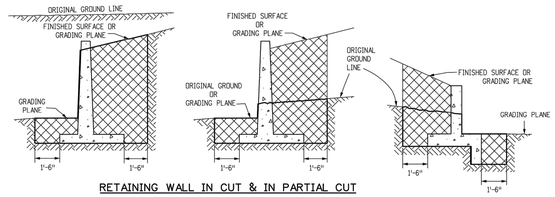


PLAN



PROFILE

STRUCTURE EXCAVATION MEASUREMENT FOR CONCRETE BOX CULVERTS



RETAINING WALL IN CUT & IN PARTIAL CUT

ANY ADDITIONAL EXCAVATION BEHIND THE LIMITS SHOWN SHALL BE FILLED WITH CLASS 1 BACKFILL MATERIAL. THE ADDITIONAL EXCAVATION AND BACKFILL WILL NOT BE MEASURED AND PAID FOR.

WINGWALL

LEGEND

STRUCTURE EXCAVATION LIMITS
STRUCTURE BACKFILL, CLASS 1 OR 2, AS SHOWN ON PLANS
CONCRETE

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DATE	APPROVED		
L 09/2020	RESPONDED TO TOWN COMMENTS		JAH
K 07/31/20	RESPONDED TO TOWN COMMENTS		
J 03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN		JAH
H 12/21/16	FINAL SUBMITTAL		
G 11/7/16	4TH SUBMITTAL		
F 5/31/16	3RD SUBMITTAL		
E 4/11/16	2ND SUBMITTAL		
A 11/2015	1ST SUBMITTAL		EG

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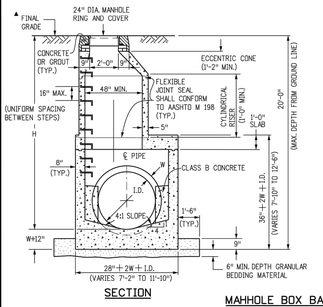
TOWN OF PARKER, COLORADO
STORM DETAILS

COLORADO REGISTERED PROFESSIONAL ENGINEER — KEVIN M. RIM — 30577 — 11-17-2020

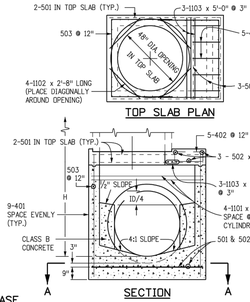
PROJ. MGR.: RIM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 47 OF 50
CLCPKC3

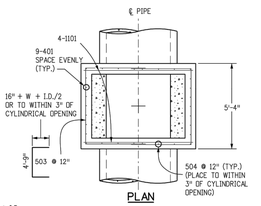
Plotted: 10/30/2020 1:50 PM Dwg Name: P:\Civil\3\ComSouth\12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Storm Details.dwg Updated By: MMcGuire

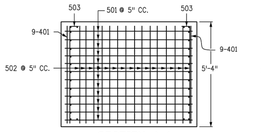


SECTION



MAHHOLE BOX BASE





GENERAL NOTES

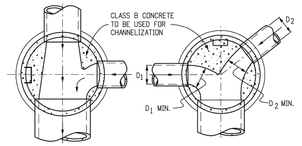
1. SINCE ALL PIPE ENTRIES INTO THE BASE ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK.
2. THE PRECAST FLAT TOP MAY BE USED ON ANY MANHOLE. THE ECCENTRIC CONE MAY BE USED WHEN THE MANHOLE "H" HEIGHT IS AT LEAST 8 FT.
3. THE MANHOLE RING FRAME SHALL BE SET IN A BED OF GROUT. THE FRAME SHALL BE SURROUNDED WITH A CEMENT GROUT IN UNPAVED AREA, OR A CONCRETE COLLAR IN PAVED AREA. SEE DETAILS ON SHEETS 2 AND 3.
4. DESIGN OF BOX BASE IS BASED ON STRAIGHT RUNS OF PIPE OR CHANGE IN DIRECTION OF LESS THAN 45°. SPECIAL DESIGN IS REQUIRED FOR 45° OR GREATER.
5. PRECAST MANHOLES AND REINFORCEMENT SHALL CONFORM TO AASHTO M 199 (ASTM C 478).
6. CAST-IN-PLACE MANHOLES SHALL BE CLASS B CONCRETE.
7. STEPS SHALL BE REQUIRED WHEN THE MANHOLE DEPTH EXCEEDS 3 FT.-6 IN. AND SHALL CONFORM TO AASHTO M 199.
8. ALL REINFORCING STEEL SHALL BE GRADE 60 AND EPOXY COATED. VERTICAL STEEL SHALL BE PLACED AT CENTERLINE OF WALL. ALL BARS SHALL HAVE A 2 IN. MINIMUM CLEARANCE.
9. ALL PIPE ENTRIES INTO THE BASE OF MANHOLE SHALL BE CONNECTED BY OPEN CHANNELIZATION ADJUSTED FOR PIPE SIZE, SHAPE, SLOPE, AND DIRECTION OF FLOW. DETAILS SHOWN ARE TYPICAL FOR INSTALLATIONS WITH ALL INVERTS OF SAME RELATIVE ELEVATION. FOR EXCESSIVE ELEVATION DIFFERENCE BETWEEN INVERTS, SPECIAL BASE/CHANNEL DETAILS WILL BE SHOWN ON THE PLANS.
10. FLOW CHANNELS AND INVERTS SHALL BE FORMED BY SHAPING WITH CLASS B CONCRETE OR APPROVED GROUT.
11. STUB-OUTS SHALL EXTEND 2 FT. MINIMUM BEYOND OUTSIDE WALL SURFACE OF MANHOLE AND BE SATISFACTORILY PLUGGED.
12. THE SLOPE OF THE MANHOLE COVER SHALL MATCH THE ROADWAY PROFILE AND CROSS SLOPE.

▲ WHEN FINAL GRADE IS PAVEMENT SURFACE, RECESS MANHOLE RING AND COVER 1/4" MIN. TO 1/2" MAX.

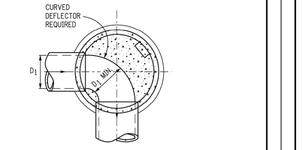
MARK	SIZE	TYPE	WT. #/FT.	BARS	I.D. 54"	60"	66"	72"	84"	96"	FORMULAS
401	4	I	0.668	(NO. REQ'D. \ LENGTH \ WEIGHT *)	18 \ 8'-1" \ 97.2	18 \ 8'-8" \ 104.2	18 \ 9'-3" \ 111.2	18 \ 9'-10" \ 118.2	18 \ 11'-0" \ 132.3	18 \ 12'-2" \ 146.3	401 BAR LENGTH = 32" + 2W + I.D.
402	4	III	0.668	(NO. REQ'D. \ LENGTH \ WEIGHT *)	5 \ 5'-5" \ 18.1	5 \ 6'-0" \ 20.0	5 \ 6'-7" \ 22.0	5 \ 7'-2" \ 23.9	5 \ 8'-4" \ 27.8	5 \ 9'-6" \ 31.7	402 BAR LENGTH = I.D. + 2W
501	5	I	1.043	(NO. REQ'D. \ LENGTH \ WEIGHT *)	17 \ 7'-5" \ 131.5	17 \ 8'-0" \ 141.8	17 \ 8'-7" \ 152.2	17 \ 9'-2" \ 162.5	17 \ 10'-4" \ 183.2	17 \ 11'-6" \ 203.9	501 BAR LENGTH = 24" + I.D.+ 2W
502	5	I	1.043	(NO. REQ'D. \ LENGTH \ WEIGHT *)	22 \ 5'-0" \ 114.7	23 \ 5'-0" \ 119.9	25 \ 5'-0" \ 130.4	26 \ 5'-0" \ 135.6	29 \ 5'-0" \ 151.2	32 \ 5'-0" \ 166.9	502 NUMBER BARS REQ'D. = 3 + $\left(\frac{24+I.D.+2W}{@\ 5"}+1\right)$
503	5	II	1.043	(NO. REQ'D. \ LENGTH \ WEIGHT *)	16 \ 12'-10" \ 214.2	16 \ 13'-5" \ 223.9	18 \ 14'-0" \ 262.8	18 \ 14'-7" \ 273.8	20 \ 15'-9" \ 328.5	24 \ 16'-11" \ 423.5	503 NUMBER BARS REQ'D. = 2 $\left(\frac{13+I.D.+2W}{@\ 12"}+1\right)$ BAR LENGTH = 4'-0"+2(16+W+I.D./2)
504	5	I	1.043	(NO. REQ'D. \ LENGTH \ WEIGHT *)	12 \ 8'-4" \ 101.2	14 \ 8'-8" \ 126.6	14 \ 9'-3" \ 135.1	14 \ 9'-10" \ 164.1	18 \ 11'-0" \ 206.5	20 \ 12'-2" \ 253.8	504 NUMBER BARS REQ'D. = 2 $\left(\frac{2W+I.D.-4}{@\ 12"}+1\right)$ BAR LENGTH = 32"+2W+I.D.
1101	11	I	5.313	(NO. REQ'D. \ LENGTH \ WEIGHT *)	4 \ 7'-2" \ 152.3	4 \ 7'-9" \ 164.7	4 \ 8'-4" \ 177.1	4 \ 8'-11" \ 189.5	4 \ 10'-1" \ 214.3	4 \ 11'-3" \ 239.1	1101 BAR LENGTH = 21" + I.D. + 2W
1102	11	I	5.313	(NO. REQ'D. \ LENGTH \ WEIGHT *)	4 \ 2'-8" \ 56.7	4 \ 2'-8" \ 56.7	4 \ 2'-8" \ 56.7	4 \ 2'-8" \ 56.7	4 \ 2'-8" \ 56.7	4 \ 2'-8" \ 56.7	BENDING TYPE I: STRAIGHT
1103	11	I	5.313	(NO. REQ'D. \ LENGTH \ WEIGHT *)	3 \ 5'-0" \ 79.7	3 \ 5'-0" \ 79.7	3 \ 5'-0" \ 79.7	3 \ 5'-0" \ 79.7	3 \ 5'-0" \ 79.7	3 \ 5'-0" \ 79.7	TYPE II: 4'-9", 16"+W+I.D./2
* REINFORCING STEEL TOTAL					965.6	1,037.5	1,127.2	1,204.0	1,380.2	1,601.6	TYPE III: 12", 12", 7", I.D.+2W-38"
CONCRETE = CUBIC YARDS = TOTAL					4.0	4.6	7.3	5.7	8.0	9.5	11.1

NOTE: QUANTITIES ARE BASED ON SAME SIZE PIPE ENTRANCE TO AND EXIT FROM, BASE, AND A 4 FT. MANHOLE ENTRANCE INTO TOP SLAB OF BASE.

QUANTITIES FOR CONCRETE MANHOLE BOX BASE



THROUGH PIPE ONE LATERAL



ANGLED LATERALS

SHARP ANGLE

TYPICAL CHANNELIZATION DETAILS

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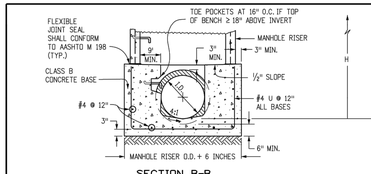
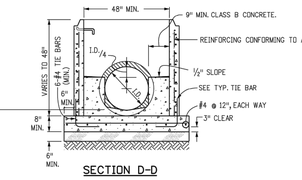
MANHOLES

Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO. M-604-20
Standard Sheet No. 1 of 3
Project Sheet Number:



SECTION B-B



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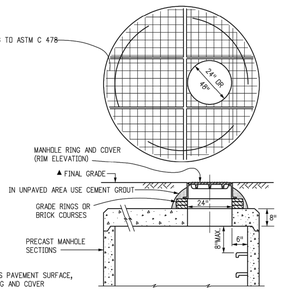
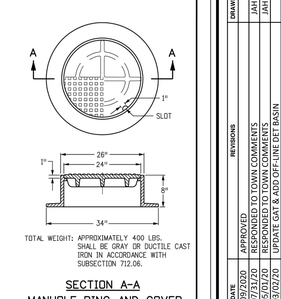
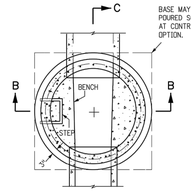
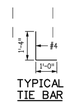


FLAT TOP SECTION DETAIL

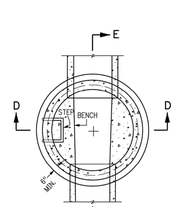


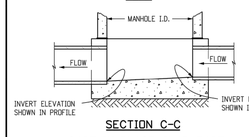
SECTION A-A
MANHOLE RING AND COVER



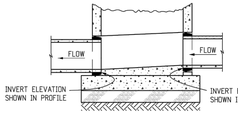


TYPICAL TIE BAR

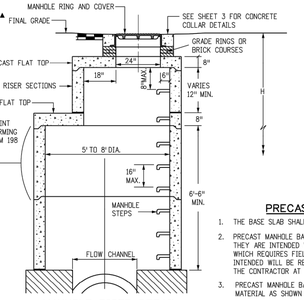




SECTION C-C
CAST-IN-PLACE SLAB BASE



SECTION E-E
PRECAST SLAB BASE



MANHOLE RISER DETAIL

PRECAST MANHOLE BASES NOTES:

1. THE BASE SLAB SHALL BE POURED MONOLITHICALLY WITH BOTTOM RISER SECTION.
2. PRECAST MANHOLE BASES SHALL FIT THE CONDITIONS AND LOCATIONS FOR WHICH THEY ARE INTENDED WITHOUT ANY FIELD MODIFICATIONS. ANY MANHOLE BASE WHICH REQUIRES FIELD CUTTING OR MODIFICATION IN ORDER TO FIT THE LOCATIONS INTENDED WILL BE REJECTED BY THE ENGINEER AND REMOVED AND REPLACED BY THE CONTRACTOR AT NO COST TO THE DEPARTMENT.
3. PRECAST MANHOLE BASES SHALL BE BEDDED ON AN APPROVED GRANULAR BEDDING MATERIAL AS SHOWN ABOVE.

LEGEND

SUITABLE SUBGRADE
GRANULAR BEDDING MATERIAL
CONCRETE

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MANHOLES

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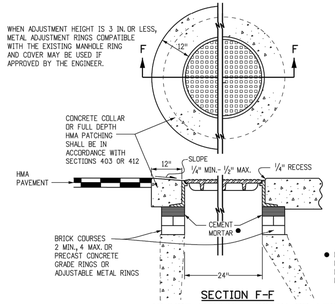
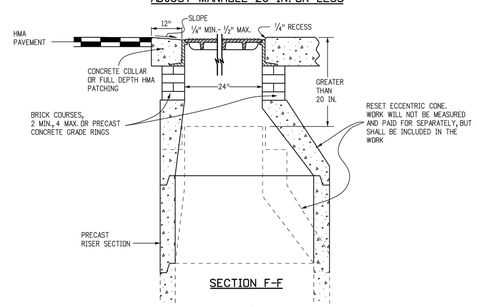
STANDARD PLAN NO. M-604-20
Standard Sheet No. 2 of 3
Project Sheet Number:

T-BASE MANHOLES NOTES

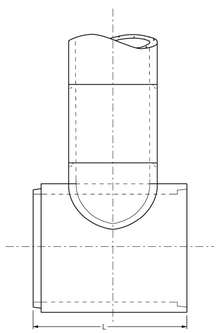
1. THE T-BASE SECTION SHALL BE SHOP-FABRICATED FOR DELIVERY TO THE CONSTRUCTION SITE AS A COMPLETE UNIT.
2. THESE DETAILS SHOW ONLY THE CONCEPTUAL AND STANDARD DIMENSIONAL REQUIREMENTS FOR TYPE T-BASE MANHOLES. THE CONTRACTOR SHALL FURNISH DETAILED SHOP DRAWINGS FOR APPROVAL PRIOR TO FABRICATION. THE DETAILS SHOWN HEREIN APPLY ONLY TO 48 IN. AND GREATER DIAMETER PIPES.
3. EXCEPT FOR CLASS OF PIPE, SPECIFICATIONS FOR THE MANHOLE SHALL BE THE SAME AS THOSE REQUIRED FOR THE ADJOINING PIPE.
4. THE T-BASE SECTION SHALL MAINTAIN ITS INTERNAL SHAPE AND FLOW AREA. GROUTING OR FILLING SHALL BE APPLIED SO AS TO NOT DISTURB THE NORMAL FLOW OR REDUCE THE AREA.

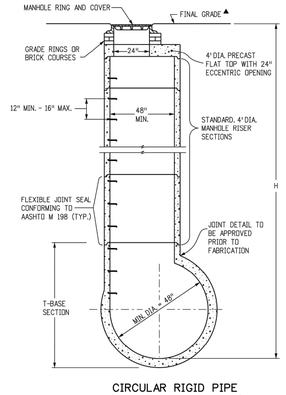


SECTION F-F
ADJUST MANHOLE 20 IN. OR LESS



SECTION F-F
MODIFY MANHOLE GREATER THAN 20 IN.





CIRCULAR RIGID PIPE (TRANSVERSE SECTION)

MANHOLE T-BASE

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MANHOLES

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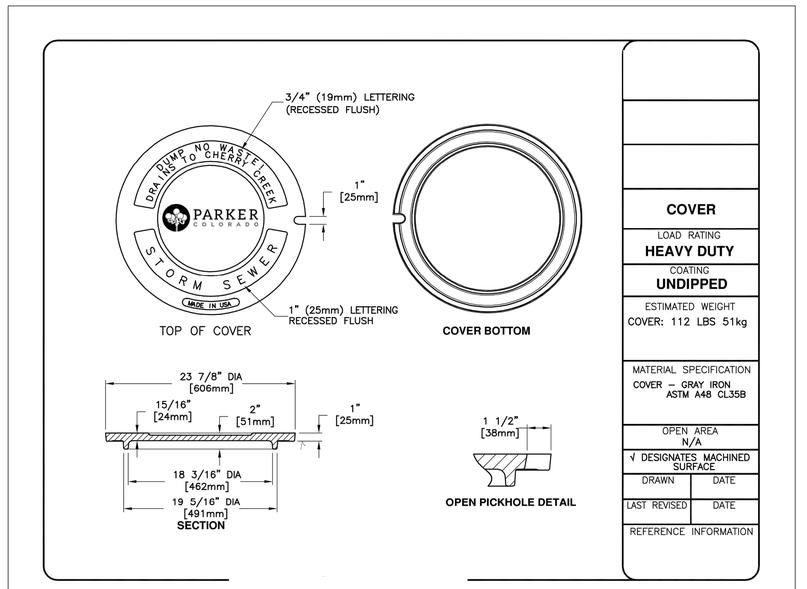
STANDARD PLAN NO. M-604-20
Standard Sheet No. 3 of 3
Project Sheet Number:



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DATE	REVISIONS	DRAWN BY
09/2020	APPROVED	
07/31/20	RESPONSED TO TOWN COMMENTS	JAH
06/30/20	RESPONSED TO TOWN COMMENTS	JAH
03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
12/21/16	FINAL SUBMITTAL	
11/21/16	4TH SUBMITTAL	
08/23/16	3RD SUBMITTAL	
4/11/16	2ND SUBMITTAL	
11/2015	1ST SUBMITTAL	EG

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COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM DETAILS

COLORADO REGISTERED PROFESSIONAL ENGINEER 30877 11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 48 OF 50
CLCPKC3

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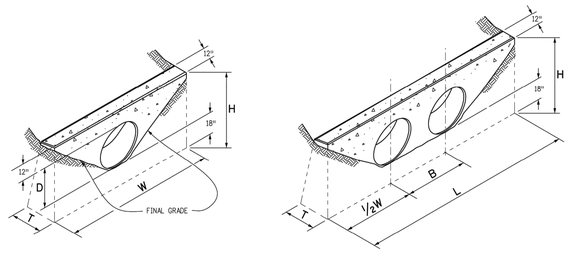


SINGLE PIPE

DOUBLE PIPE

CONCRETE HEADWALL INSTALLATIONS

SEE STANDARD PLAN M-601-10 FOR REINFORCING DETAILS.

PIPE		PIPE DIAMETER (AND EQUIVALENT DIAMETER) (IN.)											
		18		24		30		36		42		48	
TYPE	MATERIAL	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE	SINGLE	DOUBLE
CIRCULAR	RIGID	1.0	1.3	1.5	2.0	2.0	2.7	2.8	3.6	3.6	4.6	4.6	6.0
	FLEXIBLE	1.1	1.4	1.6	2.1	2.2	3.0	3.0	4.0	3.9	5.3	5.0	6.8
ELLIPTICAL	RIGID	23 x 14		30 x 19		38 x 24		45 x 29		53 x 34		60 x 38	
		0.9	1.2	1.3	1.6	1.7	2.2	2.3	2.9	2.9	3.7	3.5	4.4
ARCH	METAL	22 x 13		29 x 18		36 x 22		43 x 27		50 x 31		58 x 36	
		0.9	1.3	1.4	1.9	1.8	2.4	2.4	3.4	3.2	4.4	3.4	5.0

CONCRETE QUANTITIES FOR ONE CONCRETE HEADWALL (CUBIC YARDS)

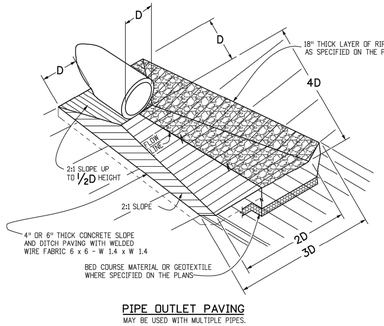
THICKNESS	MATERIAL	PIPE DIAMETER (IN.)					
		18	24	30	36	42	48
4"	CONCRETE	0.4	0.8	1.2			
6"	CONCRETE				2.6	3.6	4.7
18"	RIPRAP	2.0	3.5	5.4	7.8	10.7	13.9

PIPE OUTLET PAVING (CUBIC YARDS)

NOTE: VOLUME OCCUPIED BY PIPE HAS BEEN DEDUCTED.

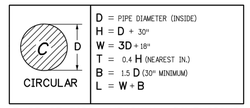
GENERAL NOTES

1. FOR SIZE AND LOCATION OF PIPES, SEE THE PLANS.
2. ALL CONCRETE SHALL BE CLASS B.
3. FOOTINGS IN ROCK SHALL BE POURED OUT TO ROCK AND NOT FORMED IN ACCORDANCE WITH SUBSECTION 601.09(b).
4. EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED ¾ IN.
5. HEADWALL SHALL HAVE REINFORCING STEEL INSTALLED IN A PATTERN SIMILAR TO STANDARD PLAN M-601-10.
6. THE COST OF REINFORCING STEEL SHALL BE INCLUDED IN THE WORK UNLESS THE STEEL QUANTITIES ARE LISTED IN THE PLANS AND ARE PAID FOR SEPARATELY.



PIPE OUTLET PAVING

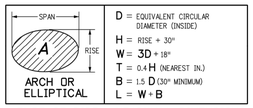
MAY BE USED WITH MULTIPLE PIPES.



CIRCULAR

D = PIPE DIAMETER (INSIDE)
H = D + 30"
W = 3D + 18"
T = 0.4 H (NEAREST IN.)
B = 1.5 D (30" MINIMUM)
L = W + B

TYPE OF PIPE HEADWALL DIMENSIONS



ARCH OR ELLIPTICAL

D = EQUIVALENT CIRCULAR DIAMETER (INSIDE)
H = RISE + 30"
W = 3D + 18"
T = 0.4 H (NEAREST IN.)
B = 1.5 D (30" MINIMUM)
L = W + B

TYPE OF PIPE HEADWALL DIMENSIONS

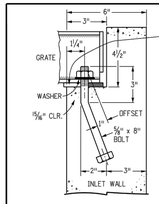
Computer File Information		Sheet Revisions	
Creation Date: 07/31/19		Date:	Comments
Designer Initials: JBK	(R-X)		
Last Modification Date: 07/31/19	(R-X)		
Detailer Initials: LTA	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Project Development Branch JBK

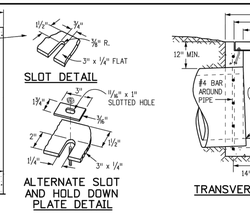
HEADWALLS AND PIPE OUTLET PAVING

Issued by the Project Development Branch: July 31, 2019

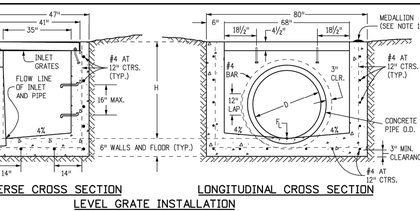
STANDARD PLAN NO. M-601-12
Standard Sheet No. 1 of 1
Project Sheet Number:



ALTERNATE SLOT AND HOLD DOWN PLATE DETAIL



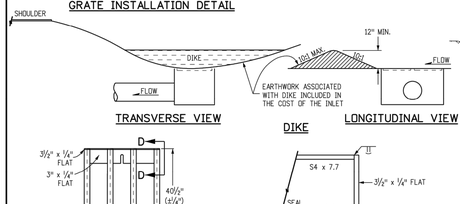
TRANSVERSE CROSS SECTION LEVEL GRATE INSTALLATION



LONGITUDINAL CROSS SECTION LEVEL GRATE INSTALLATION

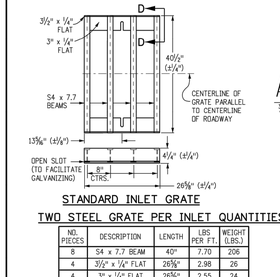
GENERAL NOTES

1. INLET TYPE D IS NOT HS-20 RATED AND SHALL NOT BE PLACED IN PAVED ROADWAYS. THIS INLET SHALL BE USED ONLY OUTSIDE PAVED ROADWAYS.
2. CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
3. SEE PLANS FOR SIZE AND LOCATION OF PIPE.
4. STRUCTURAL STEEL FOR GRATES AND GRATE INSTALLATION HARDWARE SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
5. STANDARD INLET GRATES SHALL BE USED ON ALL TYPE D INLETS UNLESS CLOSE MESH GRATES ARE SPECIFIED ON THE PLANS.
6. CLOSE MESH GRATES ARE RECOMMENDED WHERE FOOT TRAFFIC OR BICYCLE ROUTES ARE IN CLOSE PROXIMITY TO GRATE. THIS GRATE IS NOT ADA COMPLIANT OR BICYCLE FRIENDLY AND SHALL NOT BE PLACED DIRECTLY IN SIDEWALKS, CROSSWALKS OR BIKE PATHS.
7. STEPS SHALL BE PROVIDED WHEN INLET DIMENSION "H" IS EQUAL TO OR GREATER THAN 3 FEET-6 INCHES AND SHALL CONFORM WITH AASHTO M 199.
8. REINFORCING BARS SHALL BE GRADE 60, EPOXY COATED, AND DEFORMED #4, AND SHALL HAVE A 2 INCH MIN. CLEARANCE. CUT OR BEND BARS AROUND PIPE AS REQUIRED.
9. ALL INLETS SHALL HAVE A 4 INCH DIA. METAL MEDALLION WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE ON IT. THE MEDALLION SHALL HAVE A FISH SYMBOL WITH A BLUE BACKGROUND. IT SHALL BE FIRMLY ATTACHED TO THE INLETS SURFACE WITH A PERMANENT FASTENER.

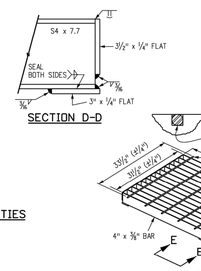


GRATE INSTALLATION DETAIL

TRANSVERSE VIEW LONGITUDINAL VIEW DIKE



STANDARD INLET GRATE



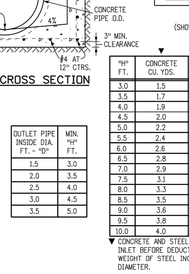
SECTION D-D

TWO STEEL GRATE PER INLET QUANTITIES

NO. PIECES	DESCRIPTION	LENGTH	LBS PER FT.	WEIGHT (LBS.)
8	S4 x 7.7 BEAM	40"	7.70	206
4	3½" x ¼" FLAT	26⅝"	2.98	26
4	3" x ¼" FLAT	26⅝"	2.55	24
TOTAL LBS. = 256				

CLOSE MESH GRATE

SECTION E-E



PLAN VIEW
(SHOWING ANCHOR BOLT LAYOUT)

OUTLET PIPE INSIDE DIA. FT. – "D"	MIN. "H" FT.
1.5	3.0
2.0	3.5
2.5	4.0
3.0	4.5
3.5	5.0

"H" FT.	CONCRETE CU. YDS.	STEEL LBS.	CIRCULAR PIPE RANGE INSIDE DIA., IN. – "D"
3.0	1.5	127	18
3.5	1.7	149	18-24
4.0	1.9	157	18-30
4.5	2.0	179	18-36
5.0	2.2	187	18-42
5.5	2.4	208	18-42
6.0	2.6	215	18-42
6.5	2.8	236	18-42
7.0	2.9	243	18-42
7.5	3.1	264	18-42
8.0	3.3	271	18-42
8.5	3.5	292	18-42
9.0	3.6	299	18-42
9.5	3.8	320	18-42
10.0	4.0	327	18-42

▼ CONCRETE AND STEEL QUANTITIES ARE FOR ONE ENTIRE INLET BEFORE DEDUCTION FOR VOLUME OCCUPIED BY PIPE. WEIGHT OF STEEL INCLUDES A RING FOR THE MAXIMUM PIPE DIAMETER.

QUANTITIES FOR ONE INLET

Computer File Information		Sheet Revisions	
Creation Date: 07/31/19		Date:	Comments
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Last Modification Date: 07/31/19	(R-X)		
Detailer Initials: LTA	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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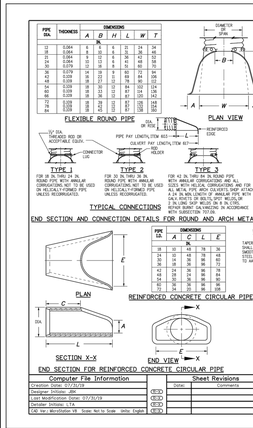
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Project Development Branch JBK

INLET, TYPE D

Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO. M-604-11
Standard Sheet No. 1 of 1
Project Sheet Number:



GENERAL NOTES

1. DIMENSIONS OF END SECTIONS MAY VARY SLIGHTLY FROM THOSE SHOWN ON THE TABLES DUE TO VARIATIONS IN CORRUGATION PROFILE.
2. CONCRETE END SECTIONS SHALL BE FURNISHED WITH TONGUE OR GROOVE AS REQUIRED.
3. DESIGN LENGTH OF PIPE OR SIDE DRAIN IS BASED ON LENGTH OF END SECTION SHOWN IN TABLE, MAY ADDITIONAL PIPE REQUIRED TO PROVIDE THE DESIGN LENGTH SHALL BE FURNISHED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT.
4. THE SKEW CONFIGURATION AND THE JOINT OF CONCRETE END SECTION AND PIPE SHALL MATCH.
5. END SECTIONS FOR CMP ARCH PIPE SHALL MATCH THE DIMENSIONS OF THE PIPE SHOWN ON THE PLANS.
6. GALVANIZED TOE PLATE #3 SHOWN IS REQUIRED ON END SECTIONS FOR CORRUGATED STEEL PIPE AND PIPE ARCH. TOE PLATE THICKNESS ON END SECTIONS FOR PLASTIC PIPE SHALL BE AS SPECIFIED IN SECTION 712.06 FOR PLASTIC PIPE CULVERTS AND WINGWALLS.
7. GALVANIZED STEEL SHALL CONFORM TO AASHTO M 36,M 218 OR M 232.
8. CONCRETE PIPE JOINT FASTENERS WHERE SHOWN ON PLANS SHALL BE INSTALLED SO THAT A MINIMUM OF 12.5MM (½") OF THE TWIST END OF THE PIPE ARE MECHANICALLY LOCKED. CONCRETE PIPE JOINT FASTENERS SHALL BE INCLUDED IN THE CY REQUIRED.
9. CONSTRUCTION OF METAL END SECTIONS FOR PLASTIC PIPE SHALL BE APPROVED BY THE ENGINEER. PLASTIC END SECTIONS SHALL NOT BE USED.
10. THE END SECTION STYLE, EITHER BEVELED OR SAFETY, SHALL BE AS SHOWN ON THE PLANS.
11. AT THE OPTION OF THE CONTRACTOR AND APPROVAL OF THE COST PROJECT ENGINEER, REINFORCED CONCRETE END SECTIONS MAY BE MADE WITH SYNTHETIC FIBERS INSTEAD OF STEEL FOR PIPES 36 INCHES IN DIAMETER AND SMALLER, AND CONFORM TO AASHTO M 86 AND SUBSECTION 601.03.

Computer File Information		Sheet Revisions	
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Designer Initials: JBK	CEED		
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Detailer Initials: LTA	CEED		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	CEED		

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2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
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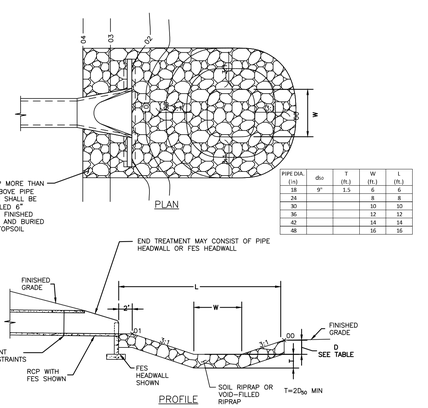
CONCRETE AND METAL END SECTIONS

Issued by the Project Development Branch: July 31, 2019

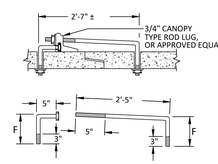
STANDARD PLAN NO. M-603-10
Standard Sheet No. 1 of 1
Project Sheet Number:



PIPE DIA. (in)	do (ft.)	T (ft.)	W (ft.)	L (ft.)
18	9"	1.5	6	6
24			8	8
30			10	10
36			12	12
42			14	14
48			16	16

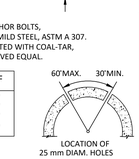
LOW TAILWATER RIPRAP BASIN

N.T.S.



3/4" GALVANIZED ANCHOR BOLTS, NUTS AND WASHERS, MILD STEEL, ASTM A 307. ROD LUG SHALL BE COATED WITH COAL-TAR, EPOXY PAINT OR APPROVED EQUAL

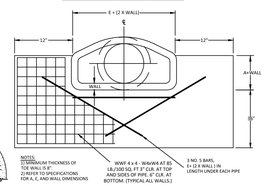
PIPE DIAMETER	F
18" - 30"	5"
36" - 42"	6"
48" - 60"	7"
72" - 84"	9"



CONCRETE JOINT FASTENER (TWO PER JOINT)

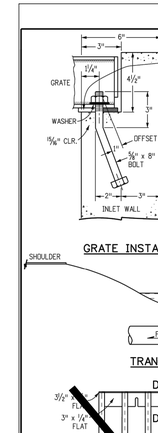
N.T.S.

PIPE DIA.	A	E
18"	9"	36"
24"	9.5"	48"
30"	13"	60"
36"	15"	72"
42"	21"	78"
48"	24"	84"

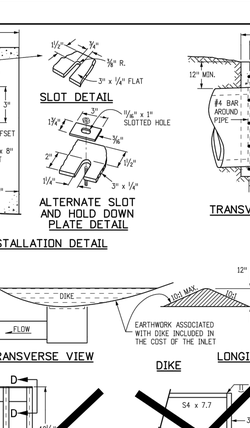


FLARED END SECTION TOEWALL DETAIL

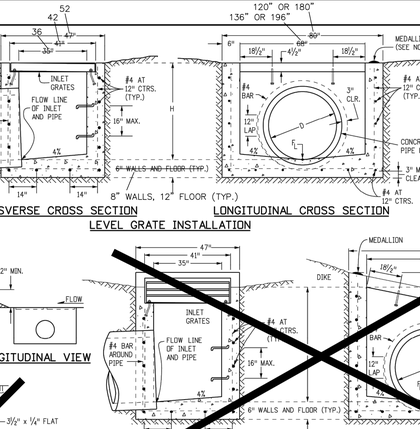
N.T.S.



ALTERNATE SLOT AND HOLD DOWN PLATE DETAIL



TRANSVERSE CROSS SECTION LEVEL GRATE INSTALLATION



LONGITUDINAL CROSS SECTION LEVEL GRATE INSTALLATION

GENERAL NOTES

1. INLET TYPE D IS NOT HS-20 RATED AND SHALL NOT BE PLACED IN PAVED ROADWAYS. THIS INLET SHALL BE USED ONLY OUTSIDE PAVED ROADWAYS.
2. CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
3. SEE PLANS FOR SIZE AND LOCATION OF PIPE.
4. STRUCTURAL STEEL FOR GRATES AND GRATE INSTALLATION HARDWARE SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
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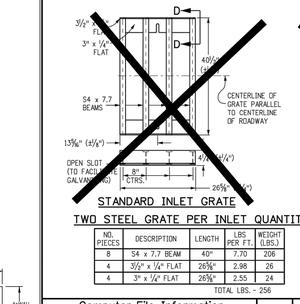
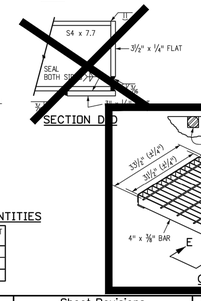
6. CLOSE MESH GRATES ARE RECOMMENDED WHERE FOOT TRAFFIC OR BICYCLE ROUTES ARE IN CLOSE PROXIMITY TO GRATE. THIS GRATE IS NOT ADA COMPLIANT OR BICYCLE FRIENDLY AND SHALL NOT BE PLACED DIRECTLY IN SIDEWALKS, CROSSWALKS OR BIKE PATHS.
7. STEPS SHALL BE PROVIDED WHEN INLET DIMENSION "H" IS EQUAL TO OR GREATER THAN 3 FEET-6 INCHES AND SHALL CONFORM WITH AASHTO M 199.
8. REINFORCING BARS SHALL BE GRADE 60, EPOXY COATED, AND DEFORMED #4, AND SHALL HAVE A 2 INCH MIN. CLEARANCE. CUT OR BEND BARS AROUND PIPE AS REQUIRED.
9. ALL INLETS SHALL HAVE A 4 INCH DIA. METAL MEDALLION WITH A "NO DUMPING DRAINS TO STREAM" MESSAGE ON IT. THE MEDALLION SHALL HAVE A FISH SYMBOL WITH A BLUE BACKGROUND. IT SHALL BE FIRMLY ATTACHED TO THE INLETS SURFACE WITH A PERMANENT FASTENER.

GRATE INSTALLATION DETAIL

TRANSVERSE VIEW LONGITUDINAL VIEW DIKE



STANDARD INLET GRATE



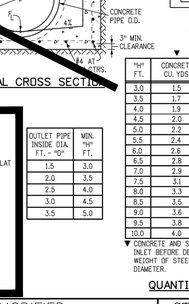
SECTION D-D

TWO STEEL GRATE PER INLET QUANTITIES

NO. PIECES	DESCRIPTION	LENGTH	LBS PER FT.	WEIGHT (LBS.)
8	S4 x 7.7 BEAM	40"	7.70	206
4	3½" x ¼" FLAT	26⅝"	2.98	26
4	3" x ¼" FLAT	26⅝"	2.55	24
TOTAL LBS. = 256				

CLOSE MESH GRATE

SECTION E-E



PLAN VIEW
(SHOWING ANCHOR BOLT LAYOUT)

OUTLET PIPE INSIDE DIA. FT. – "D"	MIN. "H" FT.
1.5	3.0
2.0	3.5
2.5	4.0
3.0	4.5
3.5	5.0

"H" FT.	CONCRETE CU. YDS.	STEEL LBS.	CIRCULAR PIPE RANGE INSIDE DIA., IN. – "D"
3.0	1.5	127	18
3.5	1.7	149	18-24
4.0	1.9	157	18-30
4.5	2.0	179	18-36
5.0	2.2	187	18-42
5.5	2.4	208	18-42
6.0	2.6	215	18-42
6.5	2.8	236	18-42
7.0	2.9	243	18-42
7.5	3.1	264	18-42
8.0	3.3	271	18-42
8.5	3.5	292	18-42
9.0	3.6	299	18-42
9.5	3.8	320	18-42
10.0	4.0	327	18-42

▼ CONCRETE AND STEEL QUANTITIES ARE FOR ONE ENTIRE INLET BEFORE DEDUCTION FOR VOLUME OCCUPIED BY PIPE. WEIGHT OF STEEL INCLUDES A RING FOR THE MAXIMUM PIPE DIAMETER.

QUANTITIES FOR ONE INLET

Computer File Information		Sheet Revisions	
Creation Date: 07/31/19		Date:	Comments
Designer Initials: JBK	(R-X)		
Last Modification Date: 07/31/19	(R-X)		
Detailer Initials: LTA	(R-X)		
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Colorado Department of Transportation
2829 West Howard Place
CDOT HQ, 3rd Floor
Denver, CO 80204
Phone: 303-757-9021 FAX: 303-757-9868
Project Development Branch JBK

MODIFIED INLET, TYPE D

Issued by the Project Development Branch: July 31, 2019

STANDARD PLAN NO. M-604-11
Standard Sheet No. 1 of 1
Project Sheet Number:

DATE	REVISIONS	DRAWN BY
09/2020	APPROVED	
07/31/20	RESPONDED TO TOWN COMMENTS	JAH
03/02/20	RESPONDED TO TOWN COMMENTS	JAH
03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
12/21/16	FINAL SUBMITTAL	
11/7/16	4TH SUBMITTAL	
4/11/16	3RD SUBMITTAL	
4/11/16	2ND SUBMITTAL	
11/2015	1ST SUBMITTAL	EG

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7600 East Orchard Road, Suite 150-N, Greenwood Village, CO 80111 ph: 303.708.0500 manhard.com
Water Resource Management | Construction Management

COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM DETAILS

COLORADO REGISTERED PROFESSIONAL ENGINEER — ERIC T. GUIDRY — 30877 — 11-17-2020

PROJ. MGR.: RJM
PROJ. ASSOC.: BRB
DRAWN BY: ETG
DATE: 12/2015

SHEET 49 OF 50
CLCPKC3 ---

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

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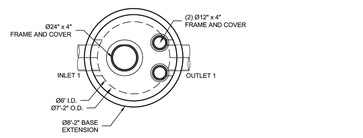
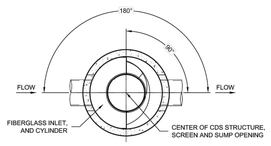
Plotted: 10/30/2020 1:50 PM Dwg Name: P:\Clpkc3\Com\South\12-Filing 1 No GAT\Com\South\03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Storm Details.dwg Updated By: MMcGuire

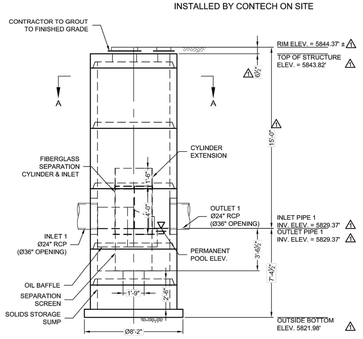


PLAN VIEW



SECTION A-A

• INTERNAL COMPONENTS TO BE INSTALLED BY CONTECH ON SITE



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 3' O.D. x 3.04' SEP. SCREEN	CONTECH
1	CYLINDER EXTENSION	CONTRACTOR
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø24" x 4" FRAME & COVER, EJ#416000389, OR EQUIV.	CONTRACTOR
2	Ø12" x 4" FRAME & COVER, EJ#41610201, OR EQUIV.	CONTRACTOR

SITE DESIGN DATA

WATER QUALITY FLOW RATE	0 CFS
PEAK FLOW RATE	29.2 CFS
RETURN PERIOD OF PEAK FLOW	100 YRS

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE, www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

⚠ STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 10000 LBS.
STRUCTURE IS DELIVERED IN 6 PIECES

MAX FOOTPRINT = Ø8'-2"

CONTECH
CONTRACT
DRAWING

LPCO
LAYOUT 1A
3030-6-FGIS
1026 / FI72886

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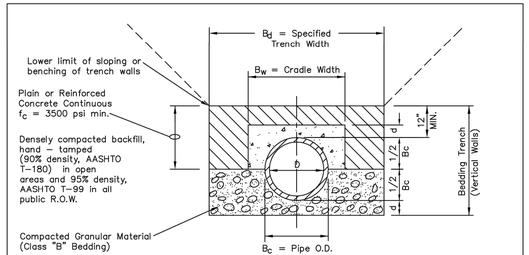
MARK	DATE	REVISION DESCRIPTION	BY
1	7/28/16	IN/OUTLET & RIM ELEVATIONS	KJW

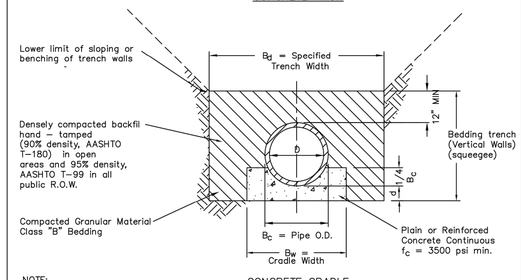
CDS3030-6-C - 542946-10
COMPARK SOUTH
PARKER, CO
for SYSTEM: STMH 1-3

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
800.338.1122 513.645.7000 513.645.7993 FAX
9109 Mason-Montgomery Road Mason, Ohio 45040

DATE:	07/15/16
SCALE:	3/16" = 1'-0"
DESIGNED:	JHR
DRAWN:	KJW
CHECKED:	XXX
APPROVED:	----
PROJECT No.:	542946
SEQUENCE No.:	10
SHEET:	1 OF 1



CONCRETE ARCH



CONCRETE CRADLE
CLASS "A" BEDDING

NOTE:
The Design Engineer shall be responsible for structural design of the concrete cradle and/or concrete arch.

TABLE III

NOMINAL DIAMETER (D)	MINIMUM THICKNESS (d)	MIN. WIDTH OF CRADLE (B_w)
18" & smaller	6"	B_c + 8"
21" to 24"	6"	B_c + 8"
27" to 33"	8"	B_c + 8"
36" to 42"	10"	1.25 B_c
48" & larger	1/4 D	1.25 B_c

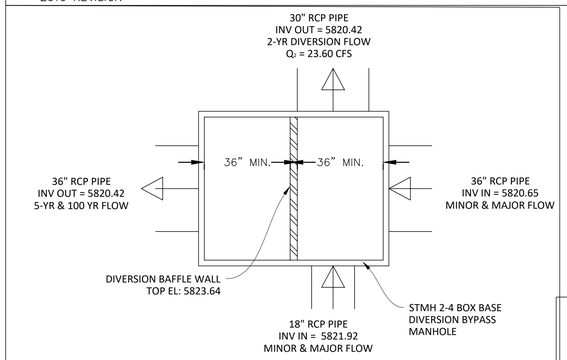
PARKER WATER
& SANITATION DISTRICT

TRENCHING AND BEDDING
DETAIL – CLASS "A"

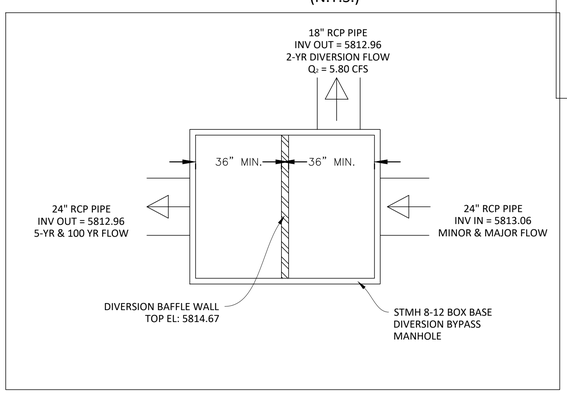
SCALE: NONE
DATE: 2/96
APPROVED: PVR
1/16
10/16
DIRECTOR OF ENGINEERING

2016 REVISION

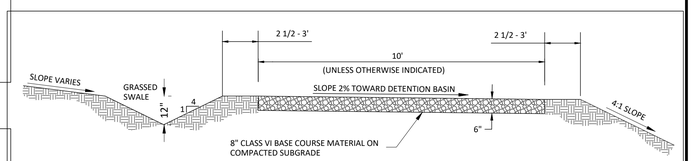
SHEET S4.2



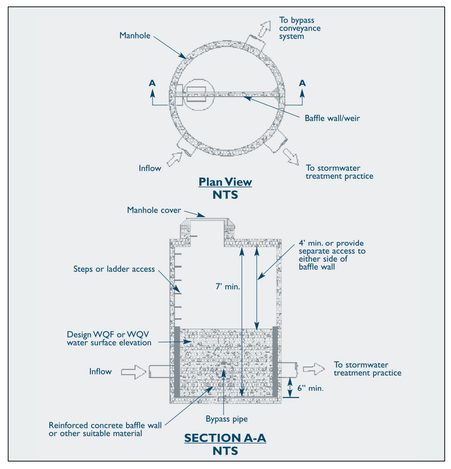
STMH 2-4 DIVERSION DETAIL
(N.T.S.)

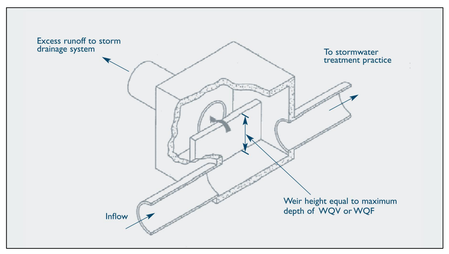


STMH 8-12 DIVERSION DETAIL
(N.T.S.)



10' MAINTENANCE TRAIL
N.T.S.





DIVERSION DETAIL
(N.T.S.)

	DATE	REVISIONS	DRAWN BY
I	09/2020	APPROVED	
H	07/31/20	RESPONSED TO TOWN COMMENTS	JAH
G	05/01/20	RESPONSED TO TOWN COMMENTS	JAH
F	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E	12/21/16	FINAL SUBMITTAL	
D	11/7/16	4TH SUBMITTAL	
C	08/24/16	3RD SUBMITTAL	
B	4/11/16	2ND SUBMITTAL	
A	11/2015	1ST SUBMITTAL	EG

Manhard CONSULTING
7600 E Orchard Road, Suite 150-N, Greenwood Village, CO 80111 ph: 303.708.0500 manhard.com
Civil Engineering & Consulting Services
Water Resource Management & Construction Management

COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STORM DETAILS

COLORADO REGISTERED
PROFESSIONAL ENGINEER
30577
11-17-2020

PROJ. MGR.:	RIM
PROJ. ASSOC.:	BRB
DRAWN BY:	ETG
DATE:	12/2015

SHEET
50 OF 50
CLCPKC3 ---

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

Plotted: 10/30/2020 1:51 PM Dwg Name: P:\Clpkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Storm Details.dwg Updated By: MMcGuire