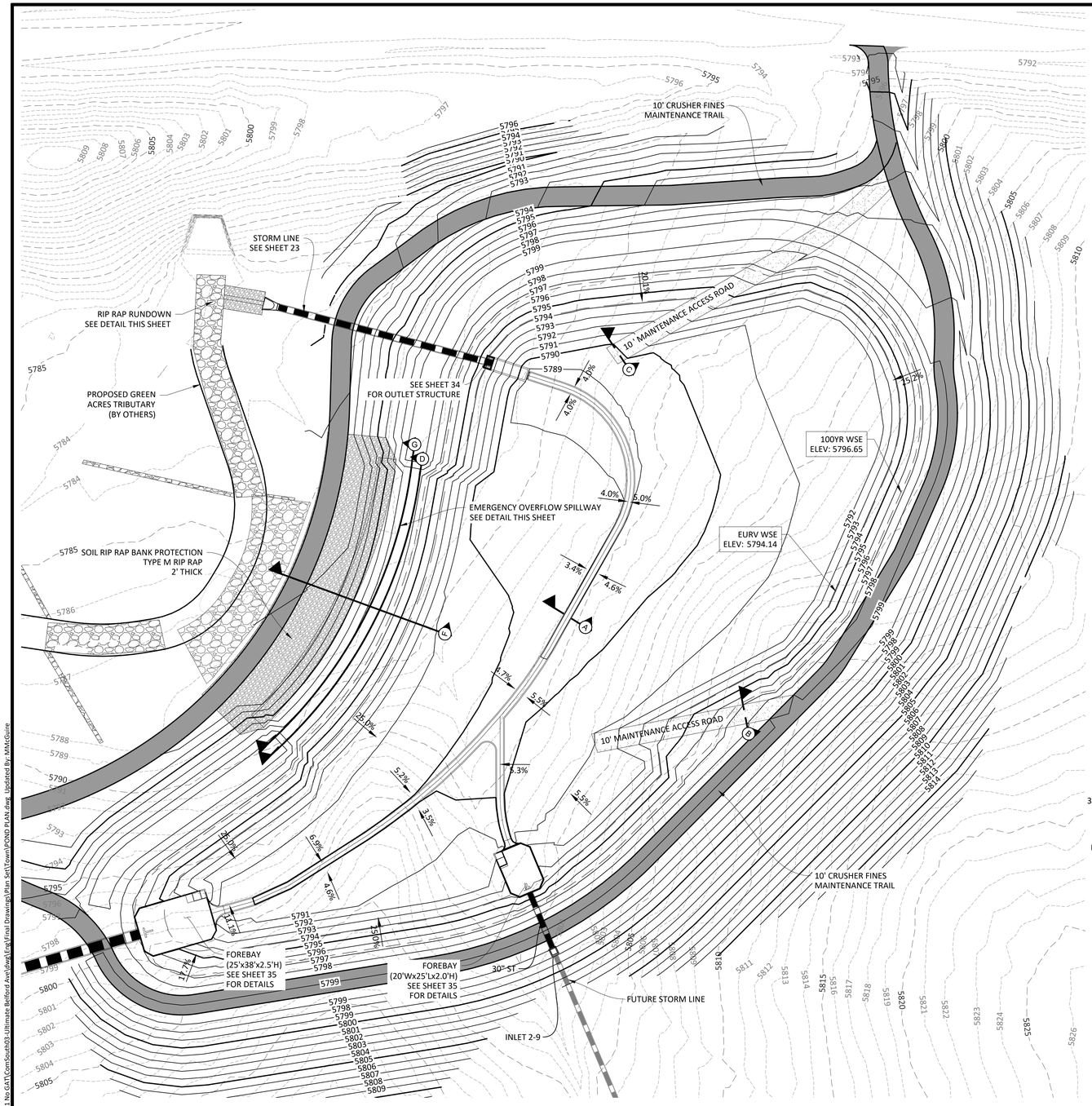
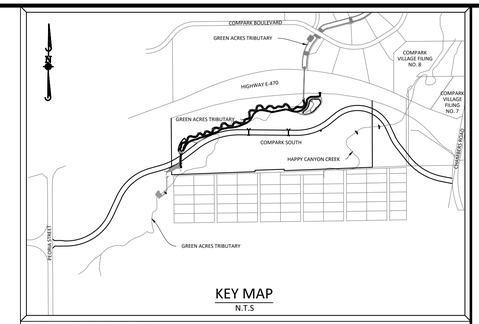


0 15 30 60

SCALE: 1"=30'

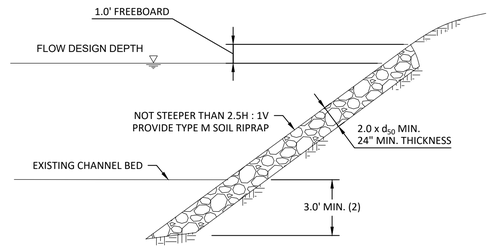


KEY MAP

N.T.S

SOURCE BENCHMARKS:

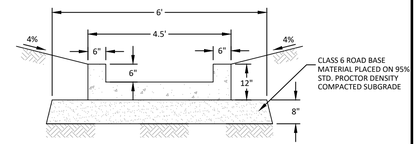
DOUGLAS COUNTY BM 1.115010
A DOUGLAS COUNTY GIS MONUMENT SET IN CONCRETE LOCATED APPROXIMATELY 130 FEET SOUTHWESTERLY OF THE CENTERLINE OF CHAMBERS ROAD AND 95 FEET NORTHWESTERLY OF THE CENTERLINE OF COMPARK BOULEVARD. ELEVATION = 5752.84 (NAVD 88)



(1) USE SOIL RIPRAP WHEN d_{50} IS LESS THAN OR EQUAL TO TYPE M. (SUGGEST USE OF SOIL RIPRAP FOR LARGER RIPRAP SIZES AS WELL)
(2) 5 - FEET MINIMUM IN SANDY OR EROSIVE SOILS
(3) ELIMINATE GRANULAR BEDDING WHEN SOIL-RIPRAP IS USED

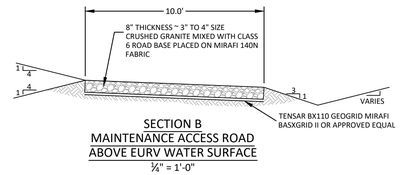
RIP-RAP TOE PROTECTION

N.T.S.

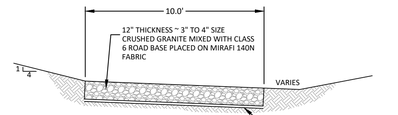


SECTION A
4.5' WIDE TRICKLE CHANNEL
½" = 1'-0"

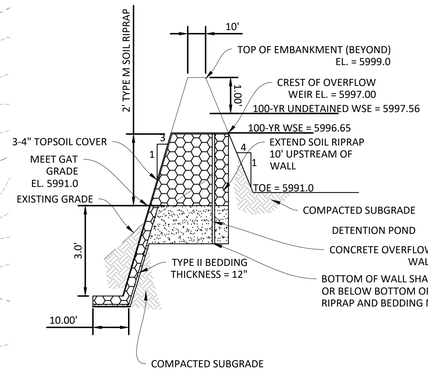
NOTE: USE 4 POUNDS PER CU. YD. OF FIBRE MESH TO REINFORCE CONCRETE



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



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

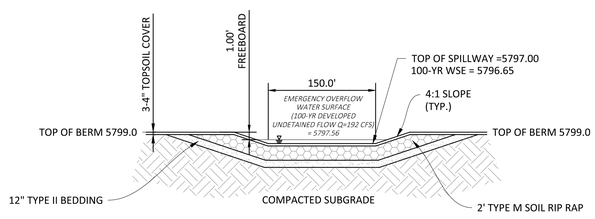


SECTION F - EMERGENCY OVERFLOW SPILLWAY

N.T.S.

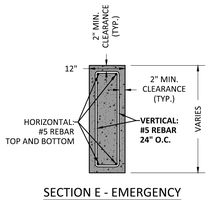
NOTE:

1. PRIOR TO FINAL 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.



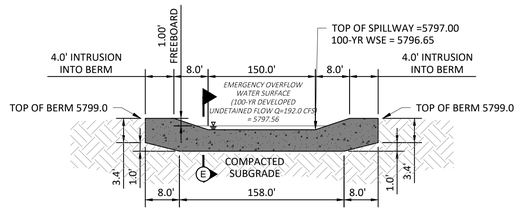
SECTION G - EMERGENCY OVERFLOW SPILLWAY

N.T.S.



SECTION E - EMERGENCY OVERFLOW SPILLWAY CUTOFF WALL

1" = 2'



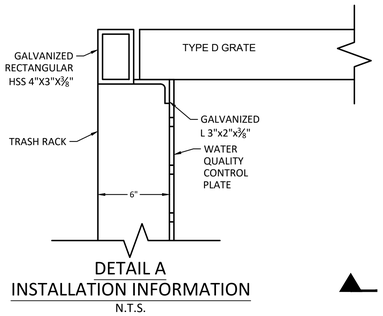
SECTION D - EMERGENCY OVERFLOW SPILLWAY CUTOFF WALL

N.T.S.

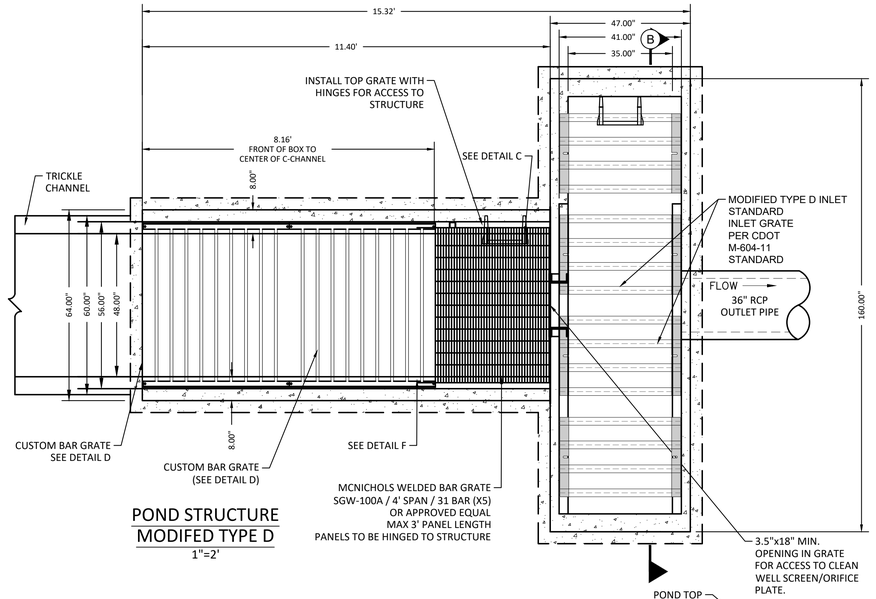
811

Know what's below.
Call before you dig.

DRAWN BY	DATE	REVISIONS	
ETG			



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.

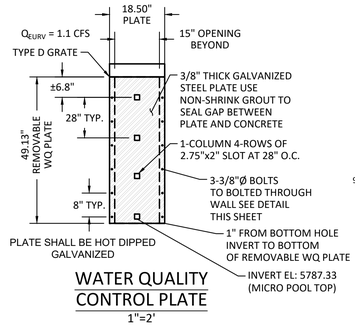
3. GRATES SHALL BE STANDARD GRATE TYPE.

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

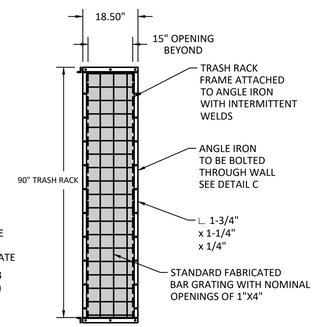
5. CONTRACTOR TO HAVE PROFESSIONAL ENGINEER DESIGN AND CERTIFY THE OUTLET STRUCTURE.

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

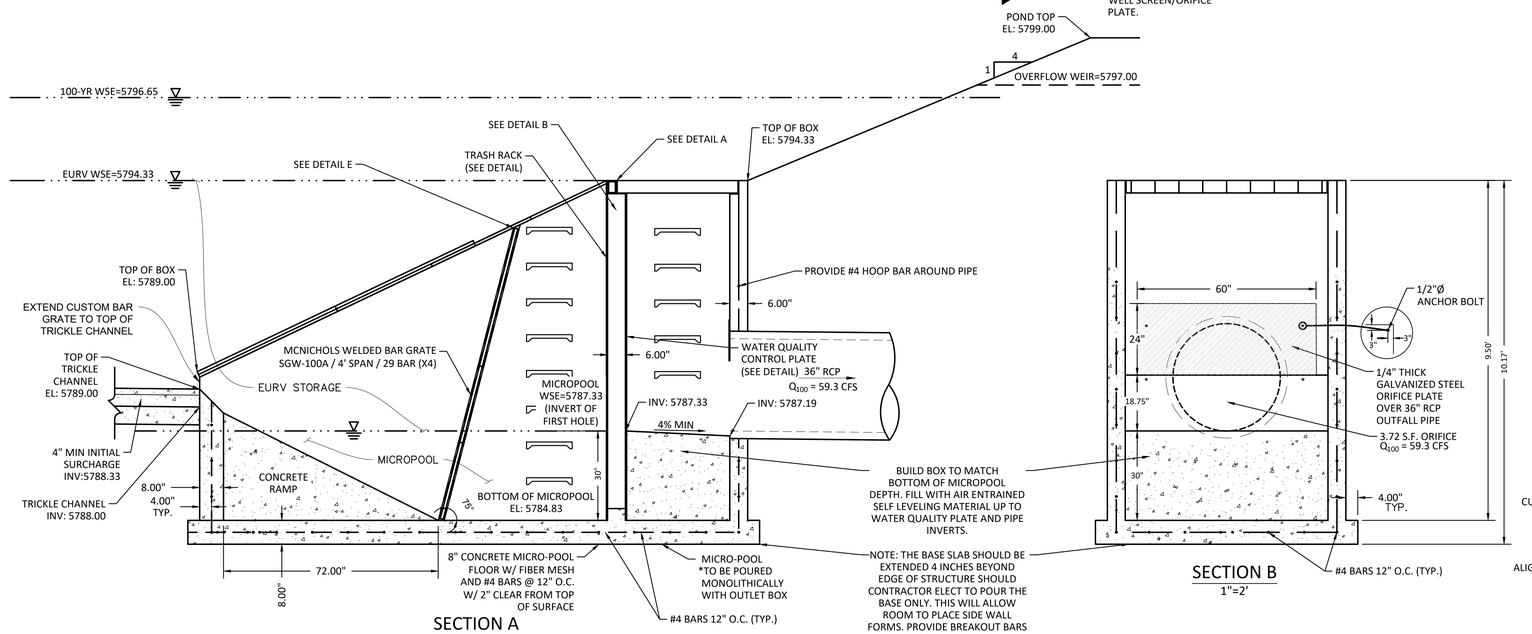
NOTE: DRAINAGE STRUCTURES REQUIRE FINAL SHOP DRAWINGS AND STRUCTURAL ENGINEERING TO BE SUBMITTED TO THE TOWN OF PARKER AND MANHARD CONSULTING FOR FINAL REVIEW AND APPROVAL. ANY CHANGE IN STRUCTURE TYPE , CONFIGURATION OR SHAPE WILL REQUIRE A "NOTICE OF CHANGE" AND WILL REQUIRE REVISIONS TO THE CIVIL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



WATER QUALITY
CONTROL PLATE
1"=2'

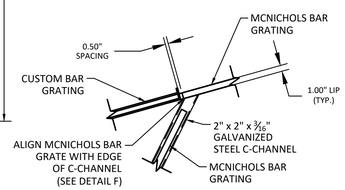


TRASH RACK DETAIL
1"=2'

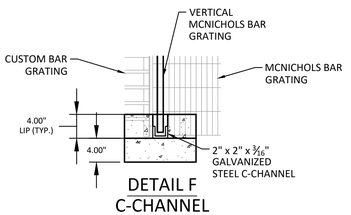


SECTION A
1"=2'

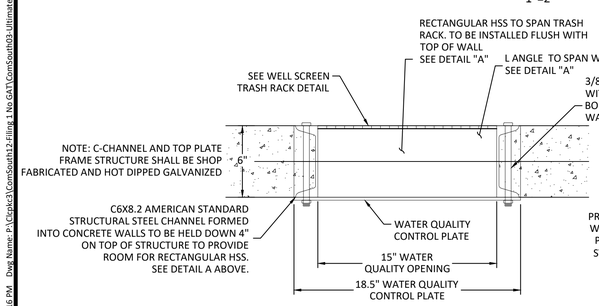
SECTION B
1"=2'



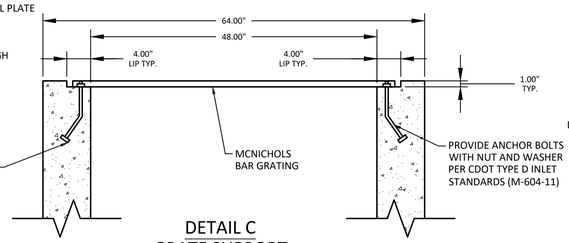
DETAIL E
GRATE JUNCTION
N.T.S.



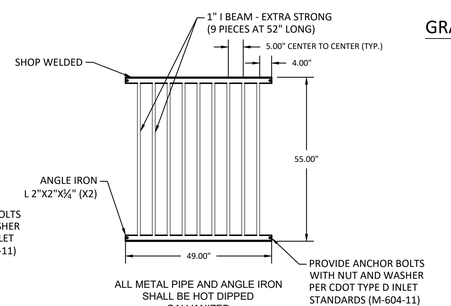
DETAIL F
C-CHANNEL
N.T.S.



DETAIL B
OPENING DETAIL
N.T.S.



DETAIL C
GRATE SUPPORT
N.T.S.



DETAIL D
CUSTOM BAR GRATE
N.T.S.

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

DATE	REVISIONS	DRAWN BY
03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	ETG
12/21/16	FINAL SUBMITTAL	
11/21/16	4TH SUBMITTAL	
07/25/16	3RD SUBMITTAL	
4/11/16	2ND SUBMITTAL	
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 | Civil 3D | GIS
Water Resource Management | Construction Management

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

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

SHEET
34 OF 49
CLCPKC3 ---

PRELIMINARY - NOT FOR CONSTRUCTION

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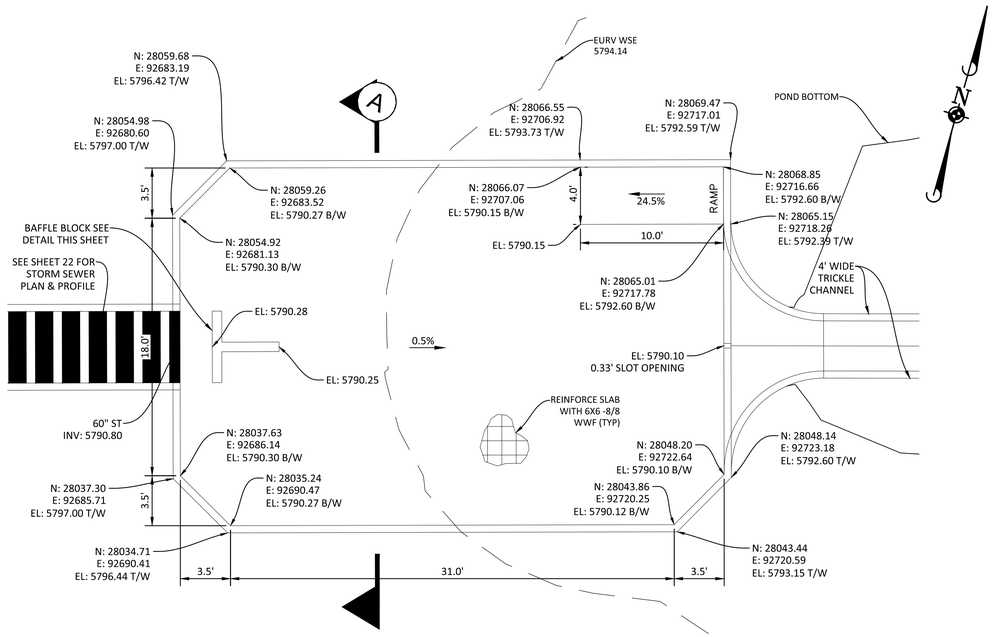
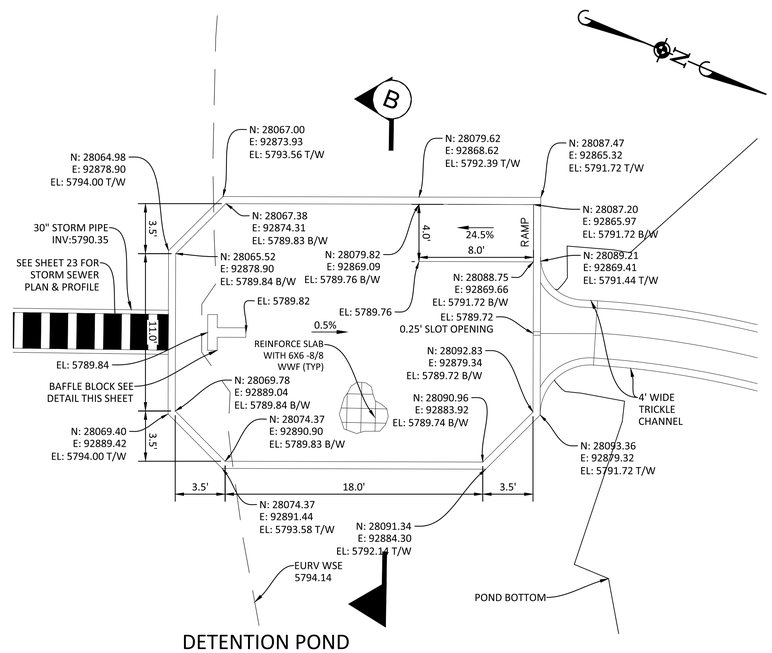
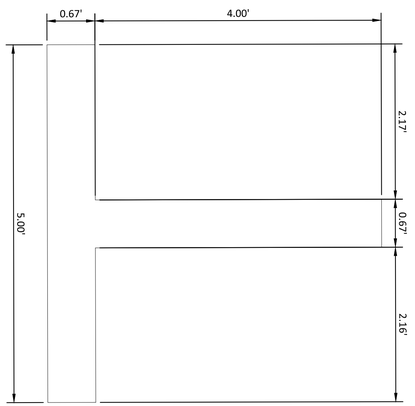
Plotted: 3/3/2020 4:16 PM Dwg Name: P:\Clcpkc3\ComSouth3-2-Filing_1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawing\Plan Set\Town\CLCPKC3-STORM OUTLET STRUCTURE.dwg Updated By: MMcGuire



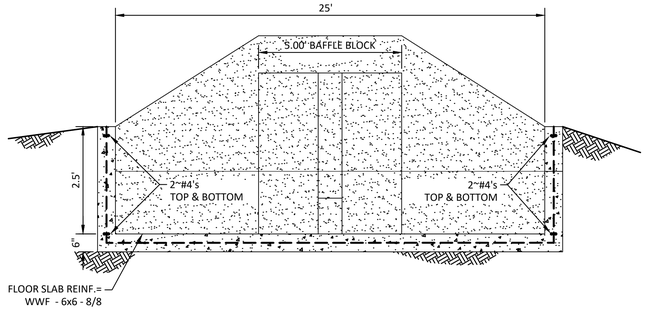
DETENTION POND
FOREBAY A
1"=5'



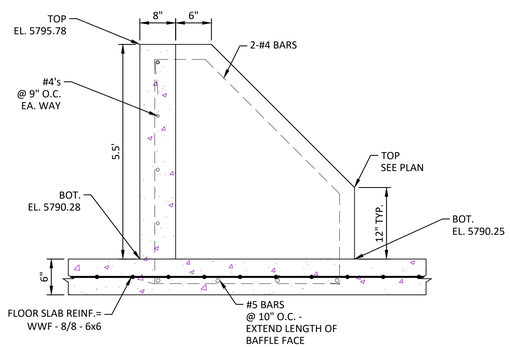
DETENTION POND
FOREBAY B
1"=5'



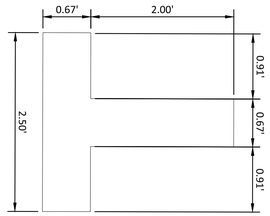
DETENTION POND
FOREBAY A
BAFFLE BLOCK DETAIL
1"=1'



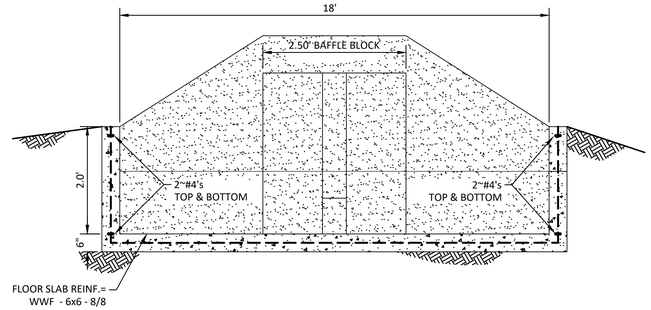
SECTION A-A
N.T.S.



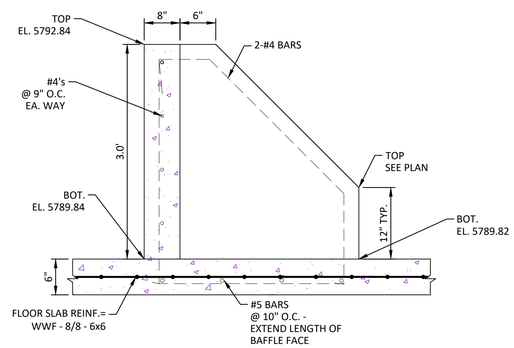
BAFFLE BLOCK
REINFORCING DETAIL
1"=0.5'



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

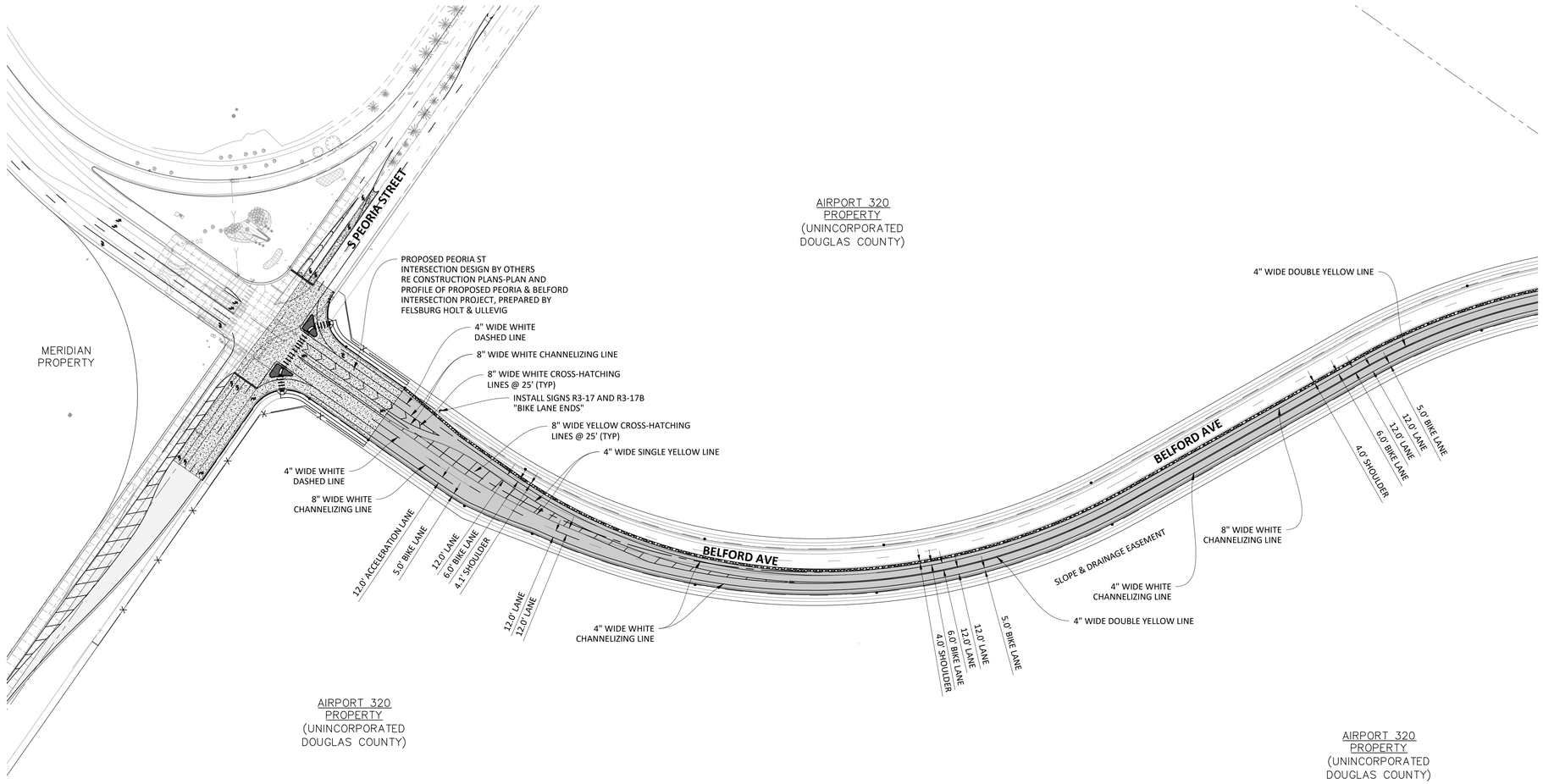


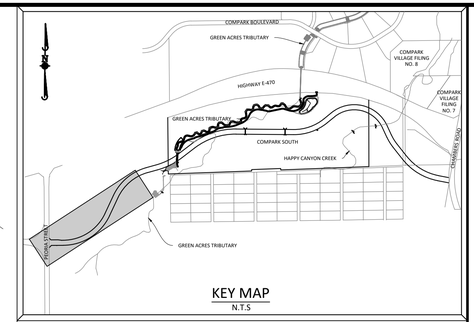
SECTION B-B
N.T.S.



BAFFLE BLOCK
REINFORCING DETAIL
1"=0.5'

DRAWN BY		

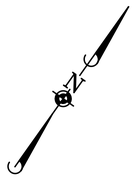




KEY MAP
N.T.S

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'

811 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 LABELLED OTHERWISE.

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.

2. A field inspection of location and installation of all signs and markings shall be performed by the Town of Parker.

3. The contractor installing signs shall be responsible for the locating and protecting of all underground utilities.

4. Type III (lighted) barricades shall be set at the ends of roadways separating finished (and/or accepted) and unfinished construction areas and shall be maintained by the contractor/developer. A "Road Closed Ahead" and "To Be Extended" warning signs shall be installed appropriately in advance of the Type III barricades.

5. Special care shall be taken in sign locations to ensure an unobstructed view of each sign.

6. Where stop sign control is appropriate, 36 inch stop signs shall be used for approaches to any roadway that is classified as a collector or greater.

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.

8. Delineation of roadways shall be as specified in the Colorado Department of Transportation M and S Standards.

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):

12. All street name signs shall be high intensity, extruded, green and white blades. Arterial and collector street name signs shall be 9 inch blades and have mixed case lettering. Local street name signs shall be 6 inches blades with mixed case lettering.

13. All layouts for internally illuminated street name signs shall be submitted to the Town for review and approval prior to fabrication.

14. All removed signs shall be returned to the Town of Parker.

15. Crosswalks: Shall be constructed using preformed thermo-plastic or an approved equal.

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 — DATE

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

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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

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

SHEET 36 OF 49
CLCPKC3 ---

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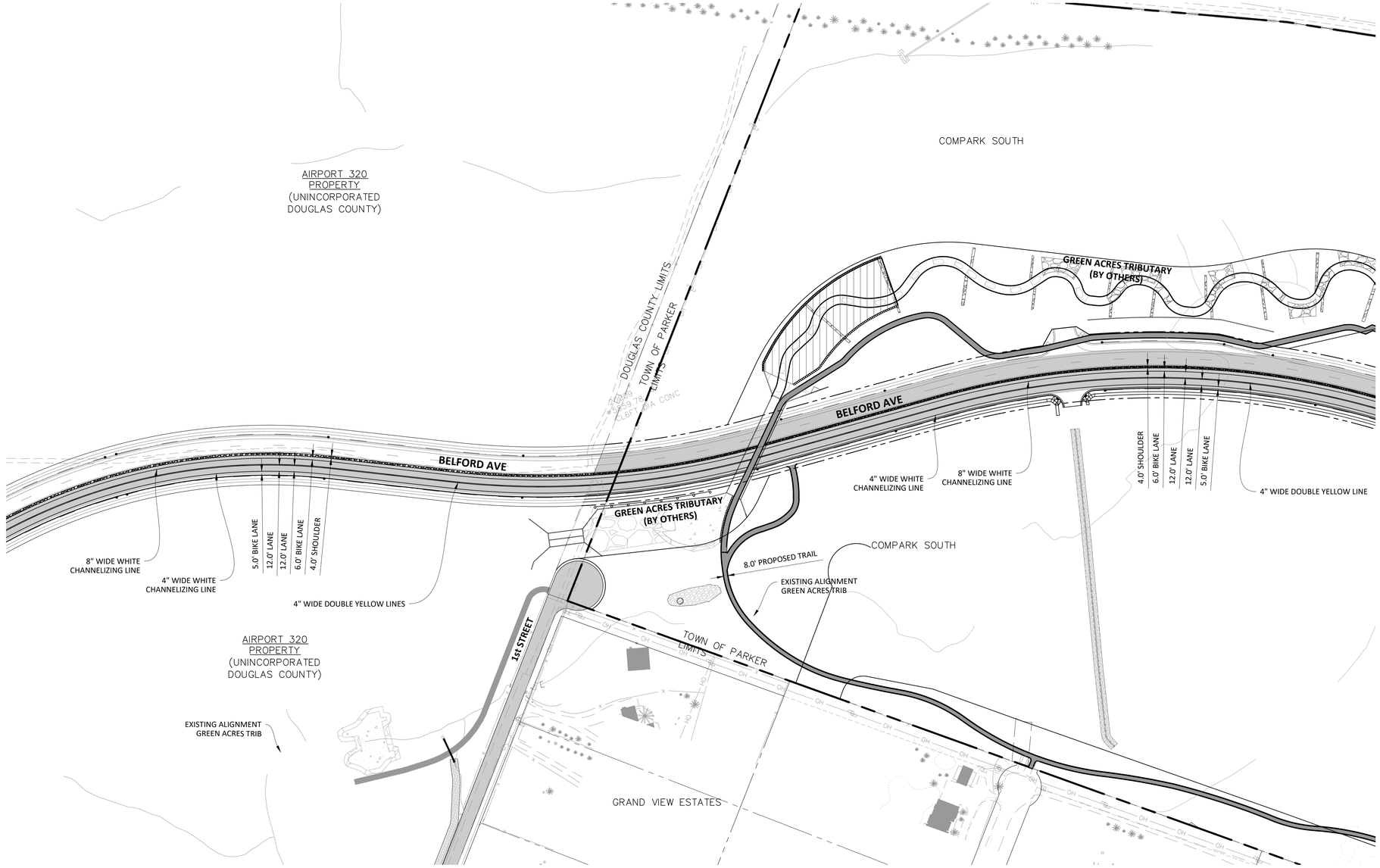
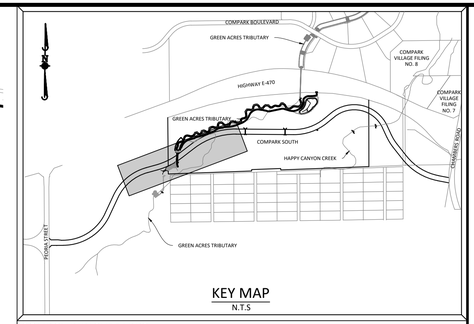
PRELIMINARY - NOT FOR CONSTRUCTION

Plotted: 3/3/2020 4:18 PM Dwg Name: P:\Clcpkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CPKC3-Signage and Striping (1).dwg Updated By: SKoblaib

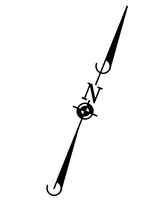




KEY MAP
N.T.S

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

IIIIII	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 LABELLED OTHERWISE.

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.

2. A field inspection of location and installation of all signs and markings shall be performed by the Town of Parker.

3. The contractor installing signs shall be responsible for the locating and protecting of all underground utilities.

4. Type III (lighted) barricades shall be set at the ends of roadways separating finished (and/or accepted) and unfinished construction areas and shall be maintained by the contractor/developer. A "Road Closed Ahead" and "To Be Extended" warning signs shall be installed appropriately in advance of the Type III barricades.

5. Special care shall be taken in sign locations to ensure an unobstructed view of each sign.

6. Where stop sign control is appropriate, 36 inch stop signs shall be used for approaches to any roadway that is classified as a collector or greater.

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.

8. Delineation of roadways shall be as specified in the Colorado Department of Transportation M and S Standards.

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):

12. All street name signs shall be high intensity, extruded, green and white blades. Arterial and collector street name signs shall be 9 inch blades and have mixed case lettering. Local street name signs shall be 6 inches blades with mixed case lettering.

13. All layouts for internally illuminated street name signs shall be submitted to the Town for review and approval prior to fabrication.

14. All removed signs shall be returned to the Town of Parker.

15. Crosswalks: Shall be constructed using preformed thermo-plastic or an approved equal.

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.

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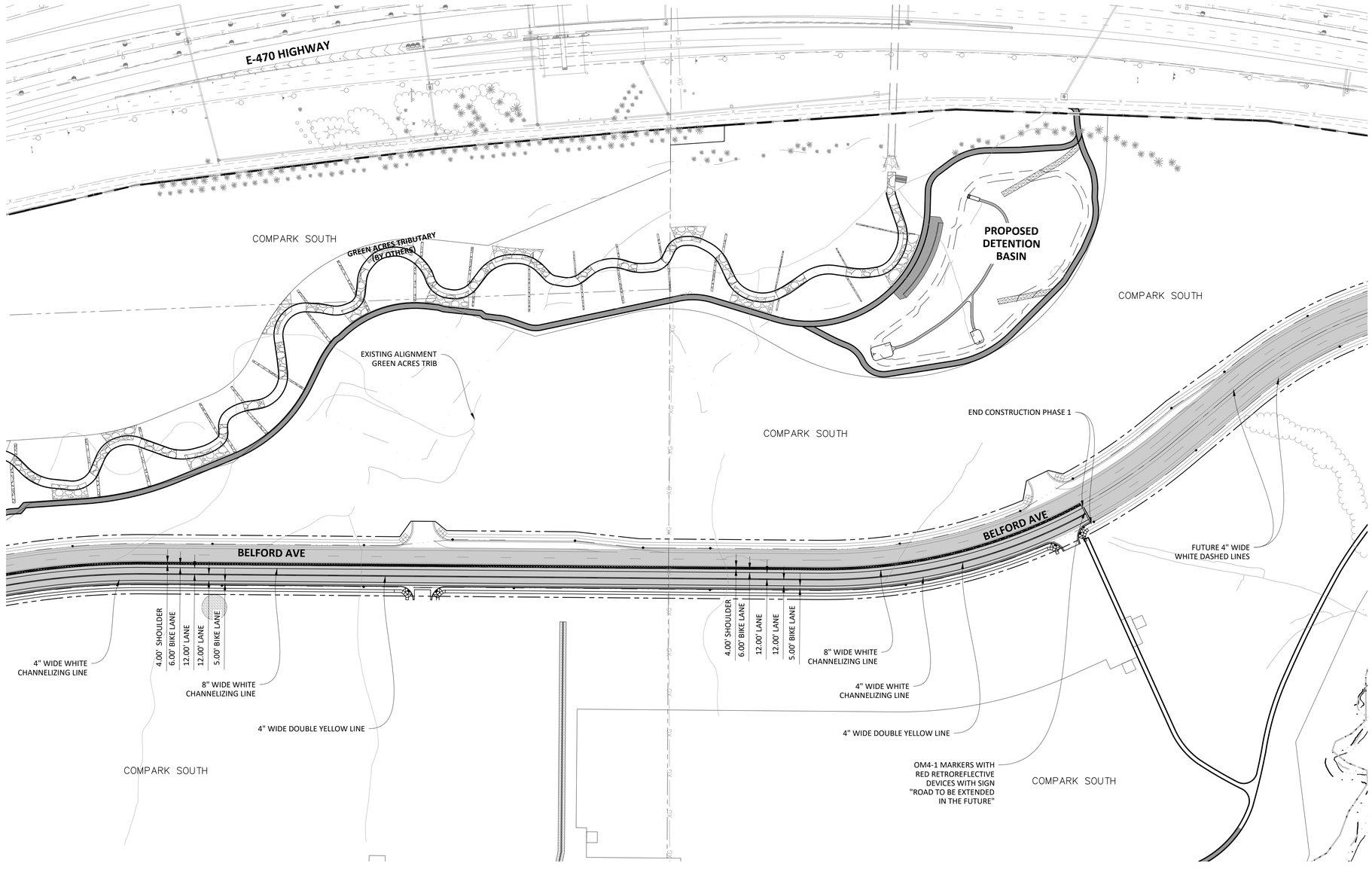
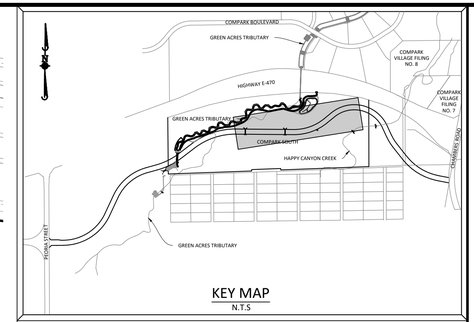
TOWN OF PARKER, DIRECTOR OF ENGINEERING — DATE

| DRAWN BY | | |





KEY MAP
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N

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811
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TOWN OF PARKER, DIRECTOR OF ENGINEERING — DATE

DATE	REVISIONS	DRAWN BY
03/02/20	F. UPDATE GAT & ADD OFF-LINE DET BASIN	
12/21/16	E. FINAL SUBMITTAL	
11/7/16	D. 4TH SUBMITTAL	
6/24/16	C. 3RD SUBMITTAL	
4/11/16	B. 2ND SUBMITTAL	EG
11/2015	A. 1ST SUBMITTAL	

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Civil Engineering | Surveying | Water Resource Management | Construction Management

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

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

SHEET
38 OF 49
CLCPKC3 ---

PRELIMINARY - NOT FOR CONSTRUCTION

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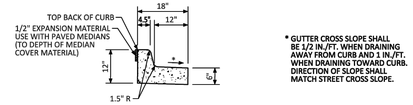
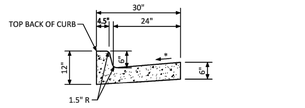
Plotted: 3/3/2020 4:21 PM Dwg Name: P:\Clcpkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Signage and Striping-[3].dwg Updated By: MMcGuire

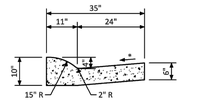


MEDIAN CURB AND GUTTER SECTION
(CDOT CURB AND GUTTER TYPE 2 (SECTION I-B))

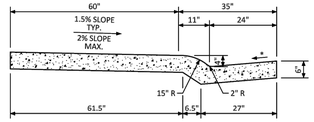
* GUTTER CROSS SLOPE SHALL BE 1/2 IN./FT. WHEN DRAINING AWAY FROM CURB AND 1 IN./FT. WHEN DRAINING TOWARD CURB. DIRECTION OF SLOPE SHALL MATCH STREET CROSS SLOPE.



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



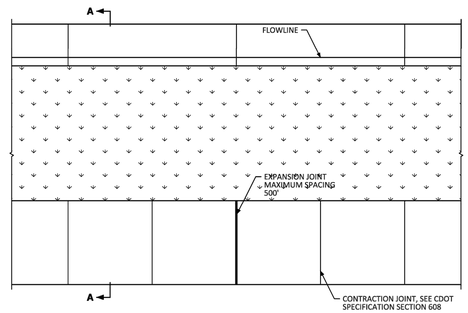
MOUNTABLE CURB AND GUTTER SECTION



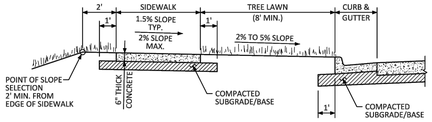
MONOLITHIC COMBINATION CURB, GUTTER AND SIDEWALK SECTION

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



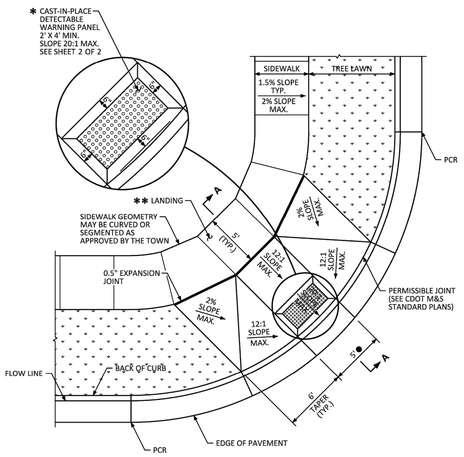
SECTION A-A

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



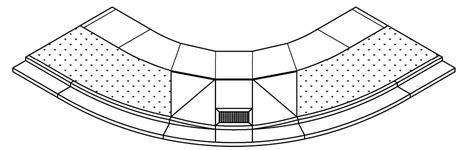
✱ DETECTABLE WARNINGS SHALL BE ONE OF CAST-IN-PLACE THE PRODUCTS APPROVED FOR USE AS LISTED ON CDOT'S APPROVED LIST.

✱✱ LANDING SHALL HAVE A MAXIMUM OF 2% SLOPE IN EACH DIRECTION.

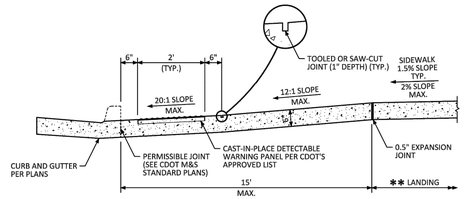
● FOR RESIDENTIAL COLLECTOR/COLLECTOR LAYOUT OR COLLECTOR/ARTERIAL LAYOUT, CURB RAMP SHALL BE 7' WIDE.

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

PARKER COLORADO | **DIAGONAL CURB RAMP (DETACHED SIDEWALK) LAYOUT STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 15 | 1 OF 2



ISOMETRIC

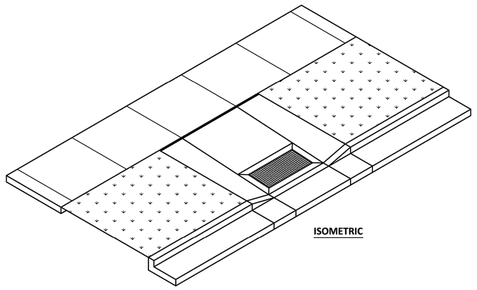


SECTION A-A

✱✱ LANDING SHALL HAVE A MAXIMUM OF 2% SLOPE IN EACH DIRECTION.

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

PARKER COLORADO | **DIAGONAL CURB RAMP LAYOUT STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 15 | 2 OF 2



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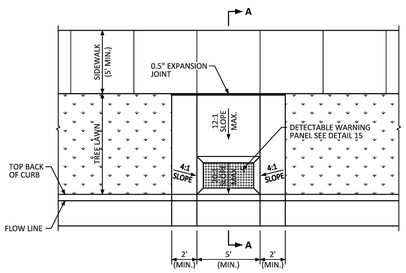
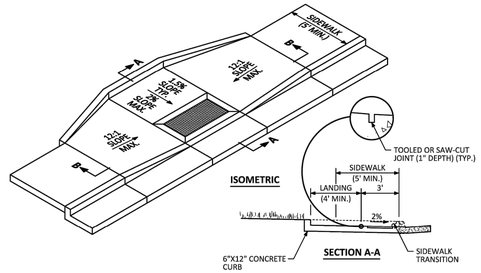
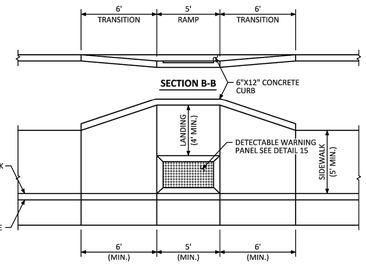


MIDBLOCK CURB RAMP

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





MIDBLOCK CURB RAMP

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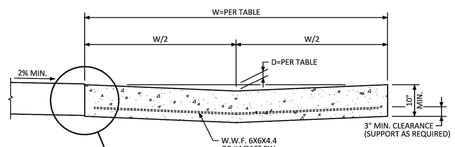
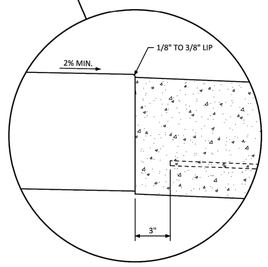
PARKER COLORADO | **MIDBLOCK CURB RAMP LAYOUT STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 17 | 2 OF 2



SECTION A-A

WIDTH (W)	DEPTH (D)
8'-0" (TYP.)	3"
10'-0"	2 1/2"



GENERAL NOTES

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

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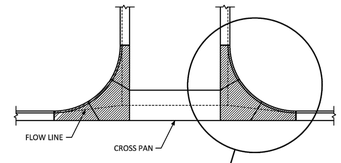
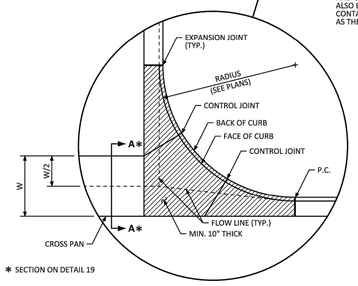
PARKER COLORADO | **INTERSECTION CROSS PAN LAYOUT STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 19 | 1 OF 2



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

	DATE	REVISIONS	DRAWN BY
F.	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E.	12/21/16	FINAL SUBMITTAL	
D.	11/1/16	4TH SUBMITTAL	
C.	6/24/16	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
STREET DETAILS

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

SHEET 39 OF 49
CLCPKC3

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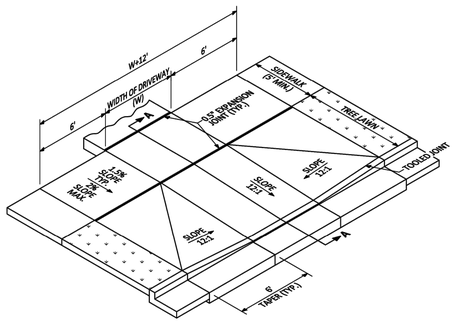
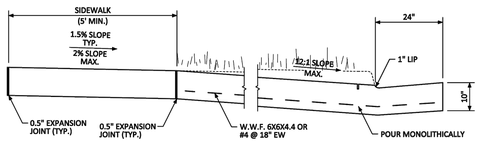
Plotted: 3/3/2020 4:21 PM Dwg Name: P:\Clcpkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\Cd CPKC3-Street Details.dwg Updated By: SKotsbab



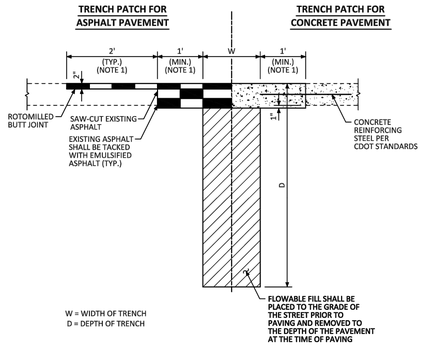
ISOMETRIC



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 DETACHED SIDEWALK STANDARD DETAIL** | DATE DECEMBER 2016 | DETAIL 20 2 OF 2



W = WIDTH OF TRENCH
D = DEPTH OF TRENCH

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

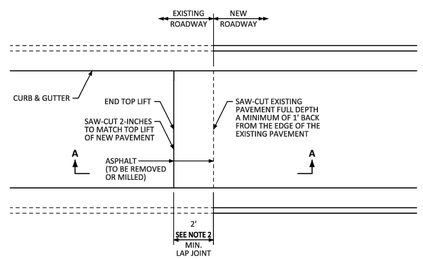
1. HOT MIX ASPHALT PATCH TO BE 6" THICK OR EXISTING PAVEMENT THICKNESS +1" (WHICHEVER IS GREATEST).
2. THE MINIMUM LIFT THICKNESS SHALL BE AT LEAST THREE TIMES (PREFERABLY FOUR TIMES) THE NOMINAL AGGREGATE SIZE. MAXIMUM LIFT THICKNESS SHALL BE FIVE TIMES THE NOMINAL AGGREGATE SIZE.
3. THE TOP LIFT OF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

CONCRETE PAVEMENT NOTES

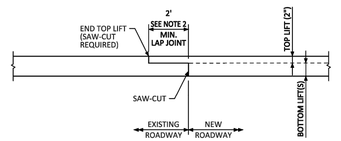
1. CONCRETE PAVEMENT THICKNESS SHALL BE 1 INCH GREATER THAN EXISTING CONCRETE PAVEMENT.
2. CONCRETE SHALL BE CDOT CLASS P.

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



PLAN



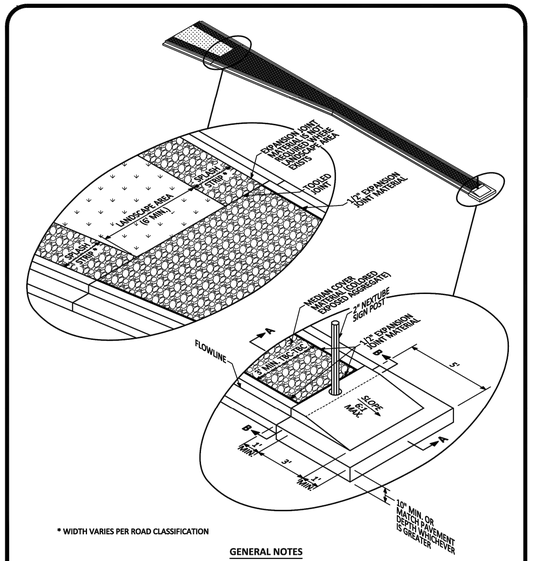
SECTION A-A

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



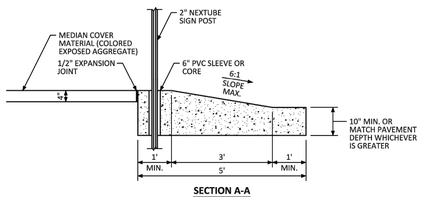
* WIDTH VARIES PER ROAD CLASSIFICATION

GENERAL NOTES

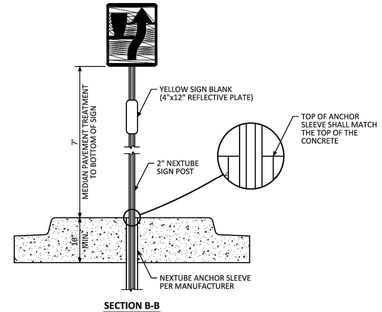
1. MEDIAN COVER MATERIAL SHALL BE DAVIS COLOR "RUSTIC BROWN" AND HAVE AN EXPOSED AGGREGATE FINISH. CONCRETE SHALL BE CDOT CLASS "B" WITH 3/8" MAXIMUM AGGREGATE SIZE.
2. TOOLED JOINTS IN THE MEDIAN COVER MATERIAL SHALL MATCH CURB AND GUTTER JOINTS.

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

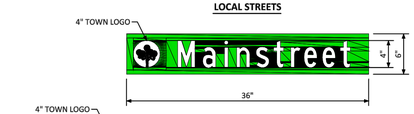
GENERAL NOTES

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

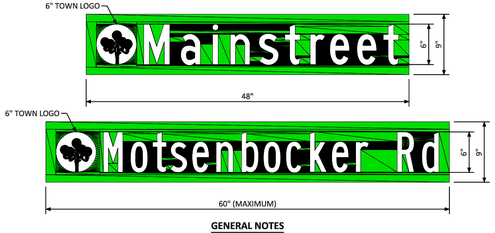
NO CHANGES ARE TO BE MADE TO THIS DRAWING WITHOUT WRITTEN PERMISSION OF THE TOWN OF PARKER.

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

LOCAL STREETS



ARTERIALS/COLLECTORS

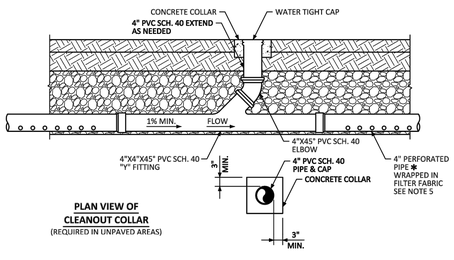


GENERAL NOTES

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



✻ 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

NO.	DATE	REVISIONS	DRAWN BY
F.	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
E.	12/21/16	FINAL SUBMITTAL	
D.	11/7/16	4TH SUBMITTAL	
C.	09/21/16	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

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

SHEET 40 OF 49
CLCPKC3 ---

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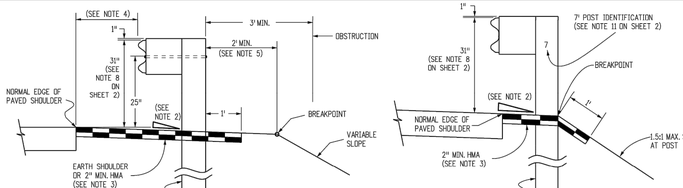
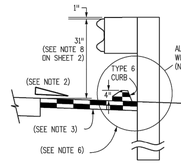
Plotted: 3/3/2020 4:21 PM Dwg Name: P:\Clcpkc3\ComSouth12-Filing 1 No GAT\ComSouth03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Street Details.dwg, Updated By: SKotsbb

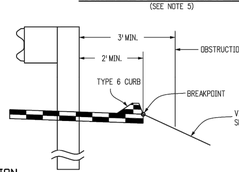


NORMAL ROADSIDE INSTALLATION
WHEN FILL REQUIRES GUARDRAIL

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

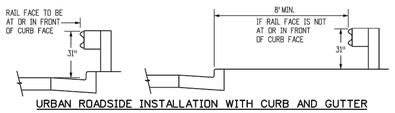


OPTION A

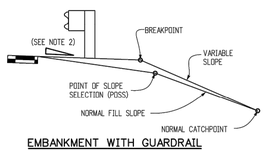


OPTION B (PREFERRED)

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

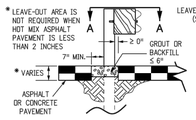
GENERAL NOTES (CONTINUE ON SHEET 2)

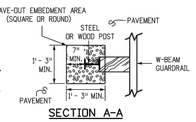
1. TOLERANCE FOR TOP OF GUARDRAIL BEAM IS ±1 IN.
2. RATE OF SLOPE DEPENDS ON GUARDRAIL LOCATION:
   A. FOR GUARDRAIL FACE 2 FT. OR LESS FROM THE NORMAL EDGE OF PAVED SHOULDER, CONTINUE THE RATE OF SLOPE OF THE NORMAL PAVED SHOULDER TO THE BREAKPOINT.
   B. FOR GUARDRAIL FACE MORE THAN 2 FT. FROM THE 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 1½ IN. OVERSIZED 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 1Ø4 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.

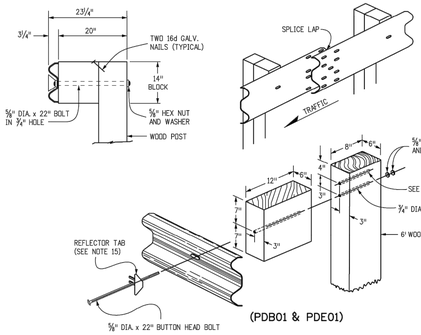




SECTION A-A

LEAVE-OUT AREA FOR GUARDRAIL POSTS LOCATED IN PAVEMENT

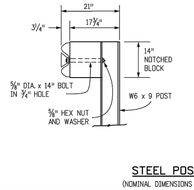
NOTE: LEAVE-OUT AREAS SHALL BE PROVIDED FOR ALL GUARDRAIL POSTS LOCATED IN PAVEMENT * TO ALLOW THE POSTS TO ROTATE IN THEIR EMBEDMENT SUCH THAT VEHICLE IMPACT LOADS ARE DISTRIBUTED THROUGH THE POST INTO THE EMBEDMENT MATERIAL PRIOR TO THE POSTS BREAKING PREMATURELY.

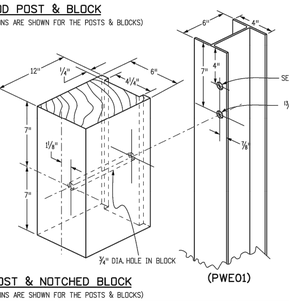


(PDB01 & PDE01)

WOOD POST & BLOCK

(NOMINAL DIMENSIONS ARE SHOWN FOR THE POSTS & BLOCKS)





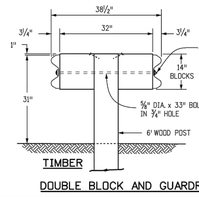
(PWE01)

STEEL POST & NOTCHED BLOCK

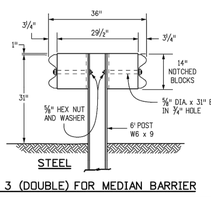
(NOMINAL DIMENSIONS ARE SHOWN FOR THE POSTS & BLOCKS)

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 INDENTIFICATION. 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 1⅝ IN. x ⅜ 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 ØØPDB01", ØØPDE01", AND ØØPWE01" IN THIS STANDARD PLAN SPECIFY HARDWARE DETAILS FROM ØØA 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 SPECIFIED 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.



TIMBER



STEEL

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

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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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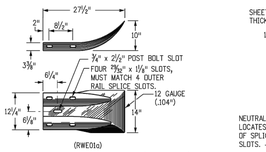
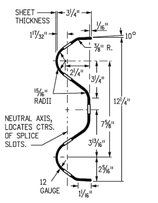


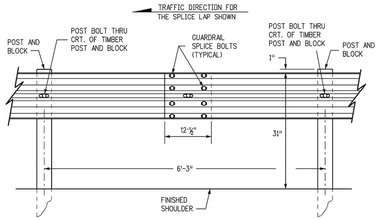
(RWE01a)

TERMINAL SECTION (FLARED)



(RWM02a)

W-BEAM RAIL SECTION

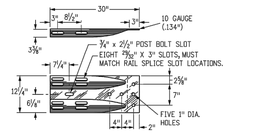


W-BEAM RAIL SPLICE

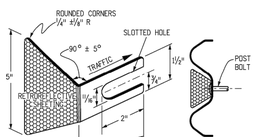
PART	MATERIAL SPEC.	GALVANIZING SPEC.	CORROSION-RESISTANT SPEC.
W-BEAM RAIL & TERMINAL SECTIONS	AASHTO M 180, CLASS A OR B	AASHTO M 180, TYPE 1 OR 2	AASHTO M 180, TYPE 4
BASE PLATE	ASTM A 36	AASHTO M 111	N.A.
NUTS, BOLTS & STUDS FOR GENERAL USE	ASTM A 307	AASHTO M 232, CLASS C	
HIGH STRENGTH BOLTS &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

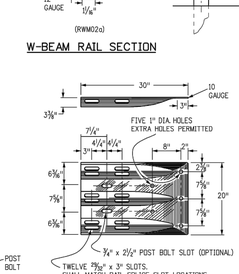


TERMINAL SECTION (CONNECTOR)

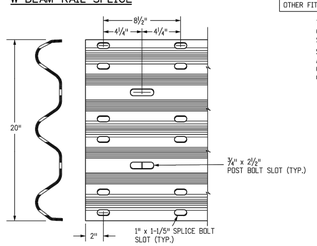


RETROREFLECTOR TAB

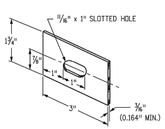
NOTE: RETROREFLECTOR TABS SHALL BE MANUFACTURED FROM 12 TO 14 GAUGE STEEL AND SHALL CONFORM TO THE REQUIREMENTS OF S STANDARD S-612-1.



THRIE BEAM TERMINAL SECTION (CONNECTOR)

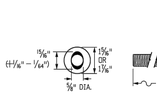


THRIE BEAM DETAIL



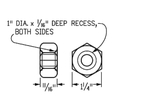
(FWR03)

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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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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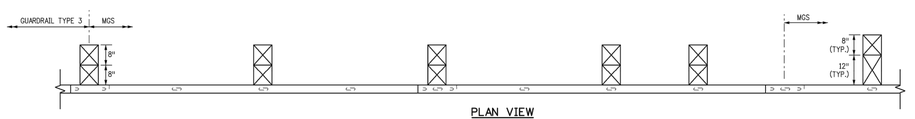
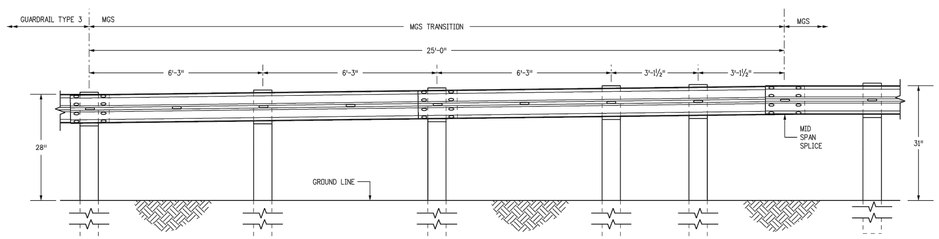
NOTES

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

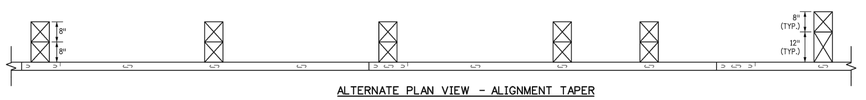


PLAN VIEW



ELEVATION VIEW

TRANSITION FROM 28 INCH GUARDRAIL TO 31 INCH MGS



ALTERNATE PLAN VIEW - ALIGNMENT TAPER

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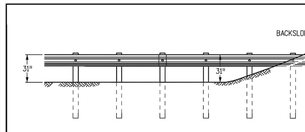
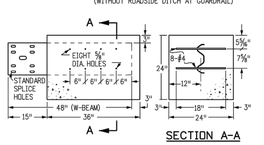


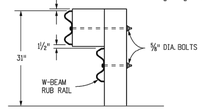
SEE TYPE 3B (RUB RAIL) PLAN VIEW FOR ALIGNMENT. THE 100 FT. FLARE LENGTH MAY BE SHORTENED IF THE SLOPE IS LESS THAN 8 FT. WIDE.

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



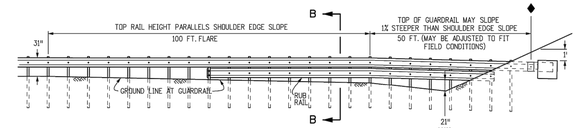
SECTION A-A

TYPE 3B ANCHOR BLOCK DETAIL

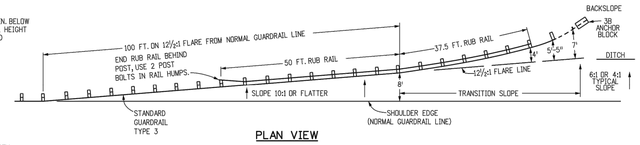


SECTION B-B

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



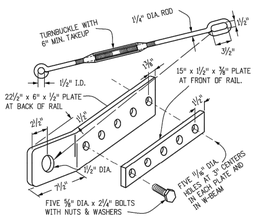
ELEVATION VIEW



PLAN VIEW

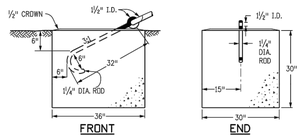
END ANCHORAGE TYPE 3B (RUB RAIL)
(WITH ROADSIDE DITCH AT GUARDRAIL)

◆ END OF GUARDRAIL PAY LENGTH

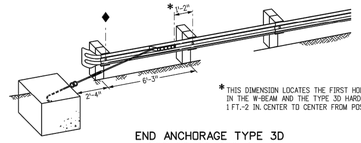


TYPE 3D HARDWARE DETAILS

NOTE: ALL PARTS SHALL BE GALVANIZED



TYPE 3D ANCHOR BLOCK DETAIL



END ANCHORAGE TYPE 3D DEPARTURE TERMINAL

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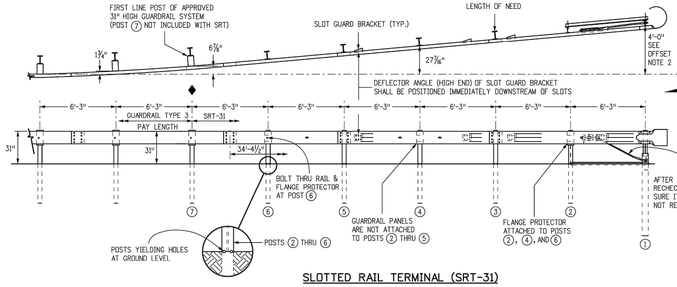
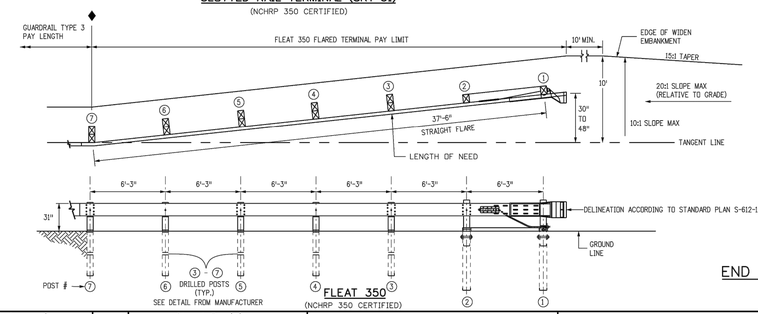
OFFSET NOTES

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.



◆ END OF GUARDRAIL PAY LENGTH

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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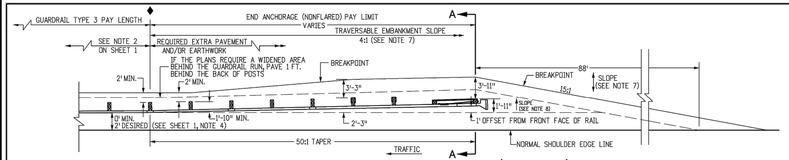
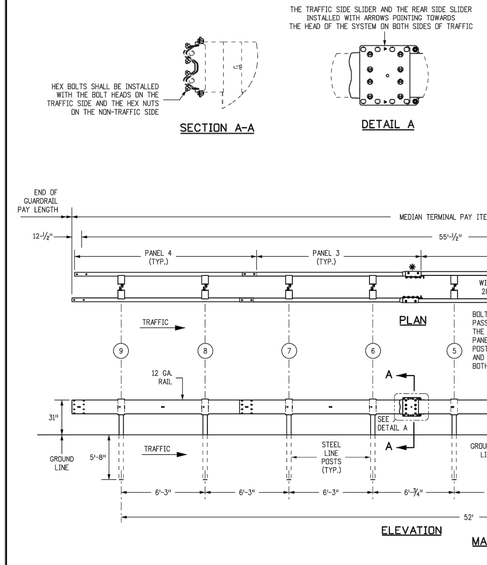
DATE				



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 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 BREAKWAY 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.

Computer File Information		Sheet Revisions		Colorado Department of Transportation	MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES	STANDARD PLAN NO.
Creation Date: 11/01/18 Initials: JJP		Date:	Comments	2829 West Howard Place, CDOT HQ, 3rd Floor, Denver, CO 80204, Phone: 303-757-9021 FAX: 303-757-9868		M-606-1
Last Modification Date: 12/21/18 Initials: LTA	(R-X)			Division of Project Support JJP/LTA	Issued By: Project Development Branch November 1, 2018	Sheet No. 9 of 19
Full Path: www.codot.gov/business/designsupport	(R-X)					
Drawing File Name: 60601011019.dgn	(R-X)					
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)					



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 ROCK 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.

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Last Modification Date: 12/21/18 Initials: LTA	(R-X)	12/21/18	Replaced the CAT 350, Breakmaster, and the FLEAT-MT median terminals (deleted Sheet 11) with the MAX-TENSION median terminal to comply with the MASH only crash cushion device by the December 31, 2018 deadline.	Division of Project Support JJP/LTA	Issued By: Project Development Branch November 1, 2018	Sheet No. 10 of 19
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Drawing File Name: 60601010019.dgn	(R-X)					
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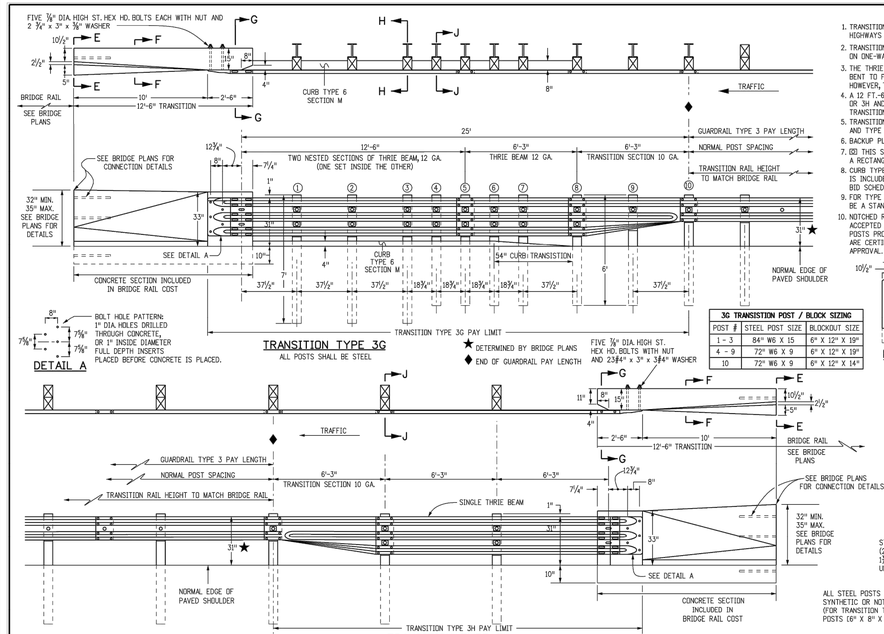

NOTES

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. (D) 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 8 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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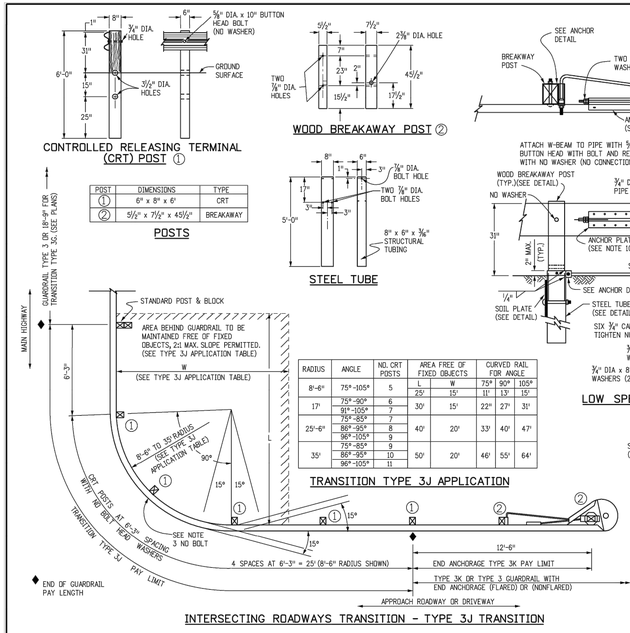
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)					



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 7/16IN. 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	(R-X)					
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DATE	REVISIONS	DRAWN BY
03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	ETG
12/21/16	FINAL SUBMITTAL	
11/7/16	4TH SUBMITTAL	
10/24/16	3RD SUBMITTAL	
4/11/16	2ND SUBMITTAL	
11/2015	1ST SUBMITTAL	

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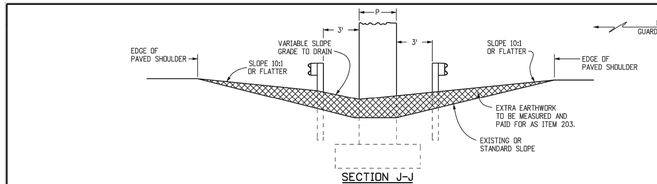
COMPARK VILLAGE SOUTH, FILING NO. 1 - BELFORD AVENUE
TOWN OF PARKER, COLORADO
STREET DETAILS

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

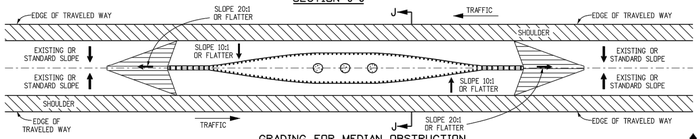
SHEET 43 OF 49
CLCPKC3

PRELIMINARY - NOT FOR CONSTRUCTION

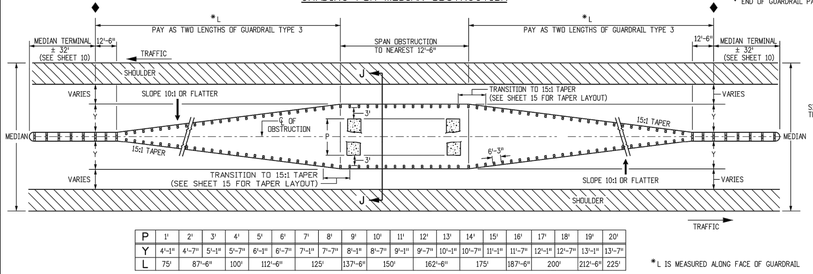
Plotted: 3/3/2020 4:22 PM Dwg Name: P:\Ctcpkc3\Com\South\12-Filing 1 NO GAT\Com\South\03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Street Details.dwg Updated By: Skotab



SECTION J-J



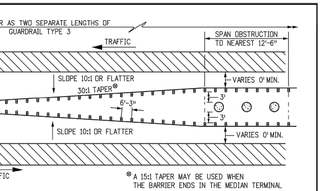
GRADING FOR MEDIAN OBSTRUCTION



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'							

GUARDRAIL FOR OBSTRUCTION IN MEDIANS WIDER THAN 30 FT.

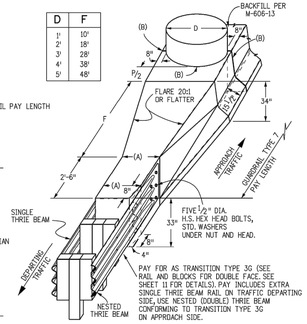
NOTE: FOR OBSTRUCTIONS (P) THAT ARE WIDER THAN 20 FT. IN MEDIANS USE SHEET 16.



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

OBSTRUCTION IN MEDIAN 30 FT. WIDE OR LESS

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



END OF GUARDRAIL PAY LENGTH

PAY FOR AS TRANSITION TYPE 3G (SEE RAIL AND BLOCKS FOR DOUBLE FACE, SEE SHEET 11 FOR DETAILS). PAY INCLUDES EXTRA SINGLE THRIE BEAM RAIL ON TRAFFIC DEPARTING SIDE, USE NESTED (DOUBLE) THRIE BEAM CONFORMING TO TRANSITION TYPE 3G ON APPROACH SIDE.

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

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

*L IS MEASURED ALONG FACE OF GUARDRAIL

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

Issued By: Project Development Branch November 1, 2018

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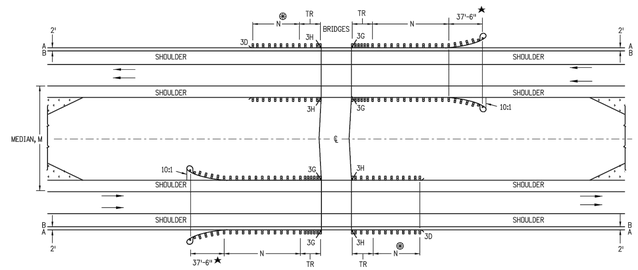

MULTILANE DIVIDED HIGHWAYS FOR STEEP EMBANKMENTS IN MEDIAN

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

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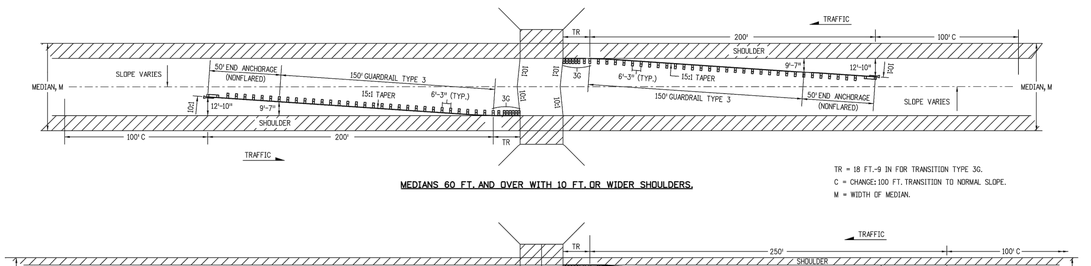
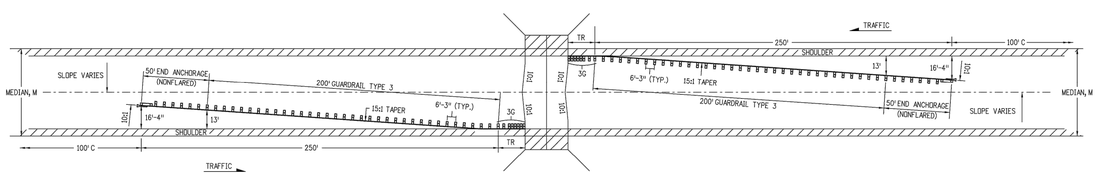
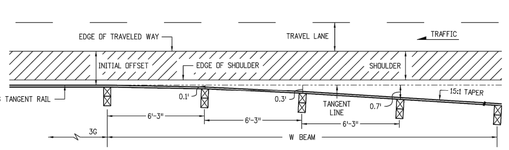


MEDIANS 60 FT. AND OVER WITH 10 FT. OR WIDER SHOULDERS.

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

Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1

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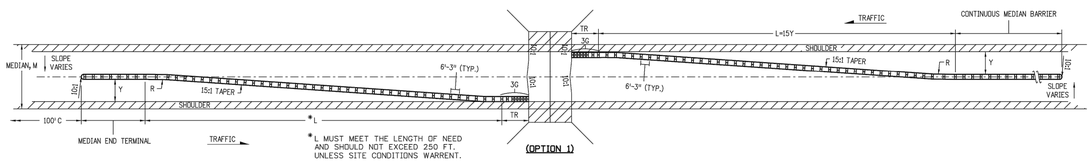
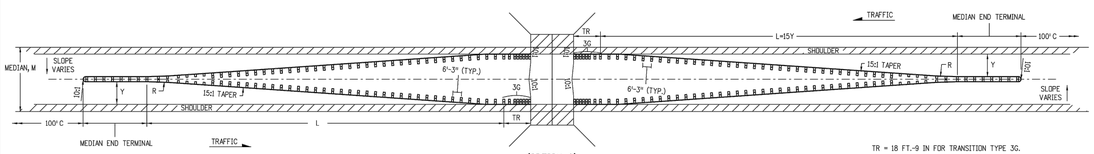
NOTES

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.



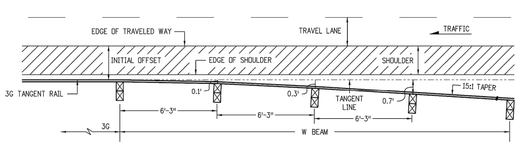
* L MUST MEET THE LENGTH OF NEED AND SHOULD NOT EXCEED 250 FT. UNLESS SITE CONDITIONS WARRENT.

(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

Issued By: Project Development Branch November 1, 2018

STANDARD PLAN NO. M-606-1

Sheet No. 16 of 19

DATE	REVISIONS	DRAWN BY
03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
12/21/16	FINAL SUBMITTAL	
11/2/16	4TH SUBMITTAL	
08/31/16	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

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

SHEET 44 OF 49
CLCPKC3 ---

PRELIMINARY - NOT FOR CONSTRUCTION

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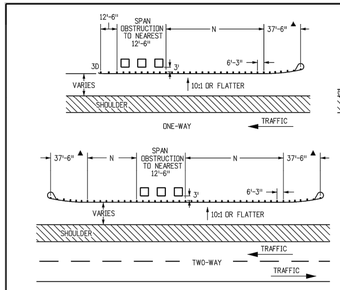
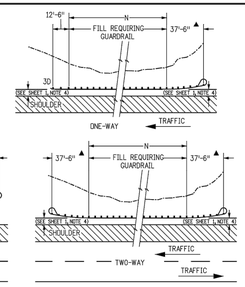
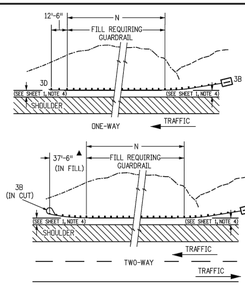
Plotted: 3/3/2020 4:22 PM Dwg Name: P:\Ctcpkc3\Com\South\12-Filing 1 NO GAT\Com\South\03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Street Details.dwg Updated By: SKobab







GUARDRAIL FOR ROADSIDE OBSTRUCTIONS

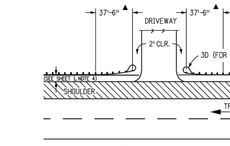
GUARDRAIL FOR ROADSIDE FILL CONSTRUCTION

GUARDRAIL FOR ROADSIDE CUT-TO-FILL CONDITION

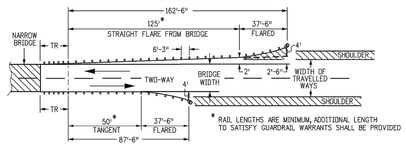
NOTES

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.

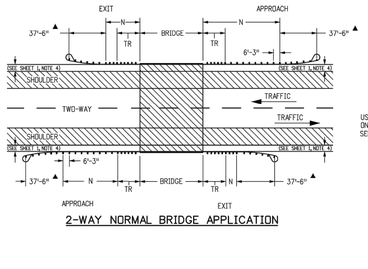
▲ END ANCHORAGE CAN BE FLARED OR NONFLARED



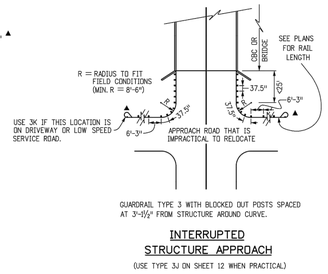
LAYOUT FOR DRIVEWAY APPROACH



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)

Computer File Information			Sheet Revisions	
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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

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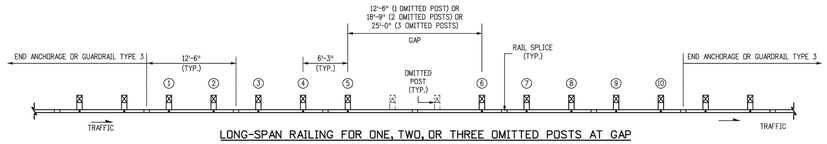
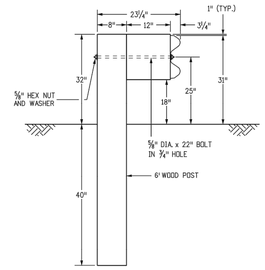
NOTES

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.

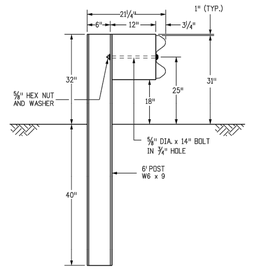


LONG-SPAN RAILING FOR ONE, TWO, OR THREE OMITTED POSTS AT GAP



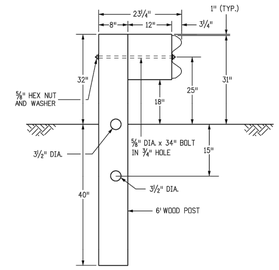
TIMBER POST

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

Computer File Information			Sheet Revisions	
Creation Date: 11/01/18	Initials: JJP		Date:	Comments
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MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

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STANDARD PLAN NO.
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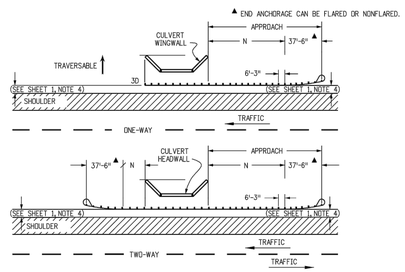
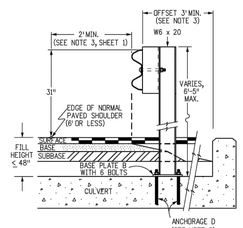
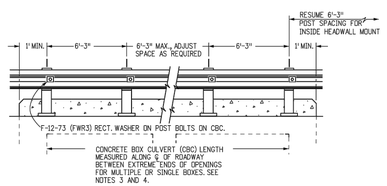


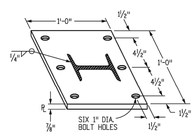
GUARDRAIL FOR CULVERTS



INSIDE MOUNT ON CBC

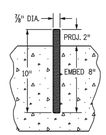


RAIL PLACEMENT FOR INSIDE MOUNT



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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Full Path: www.codot.gov/business/designsupport		(R-X)		
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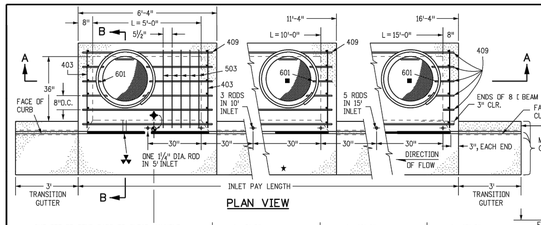
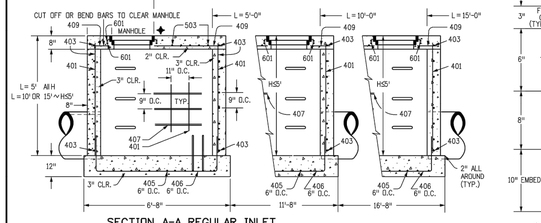
MIDWEST GUARDRAIL SYSTEM (MGS) TYPE 3 W-BEAM 31 INCHES

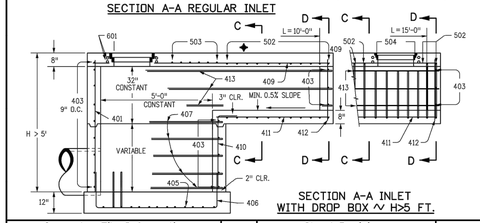
Issued By: Project Development Branch November 1, 2018

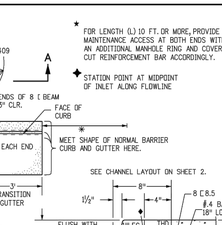
STANDARD PLAN NO.
M-606-1
Sheet No. 19 of 19

DRAWN BY	DATE	REVISIONS



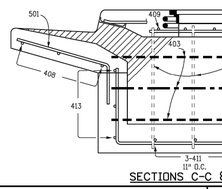




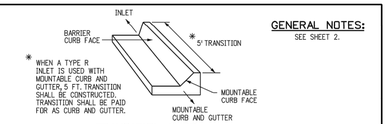


CURB FACE ASSEMBLY

✦PLACE ENTIRE ASSEMBLY BEFORE POURING CONCRETE.

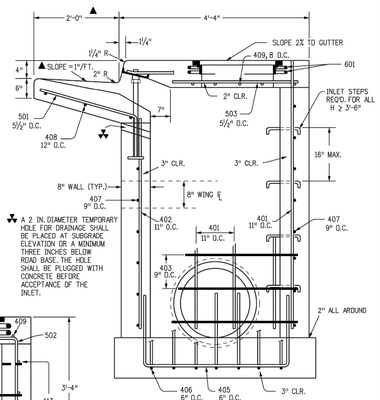


SECTIONS C-C & D-D (DOTTED BARS ARE IN SECTION D-D)



TRANSITION CURB

▲ - FOR A 1'-0" PAN SLOPE 2" PER FT.



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.

Computer File Information		Sheet Revisions	
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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)		

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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	*	28	*	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"
■B8.5				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"

REGULAR INLETS | DROP BOX INLETS

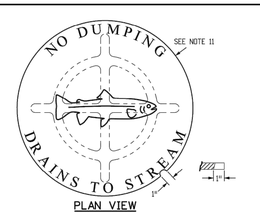
* VARIABLE REFER TO TABLE TWO.
■ INCLUDE #4, 18 IN. BARS (SEE CHANNEL LAYOUT).

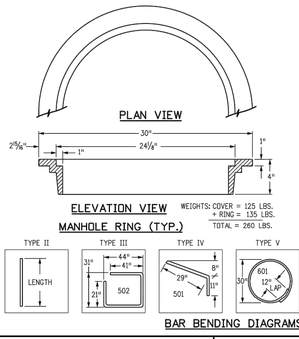
TABLE ONE ~ BAR LIST FOR CURB INLETS, TYPE "R"

"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.

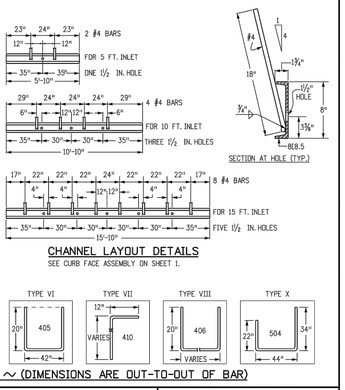
TABLE TWO ~ BARS AND QUANTITIES VARIABLE WITH "H"

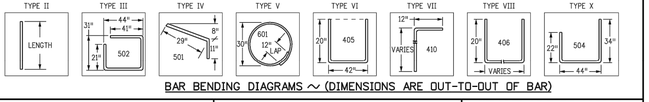




GENERAL NOTES

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 REINFORCING 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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CURB INLET TYPE R

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

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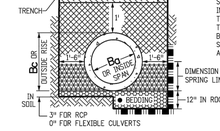
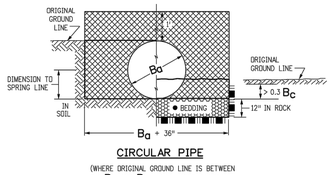


PIPE IN TRENCH

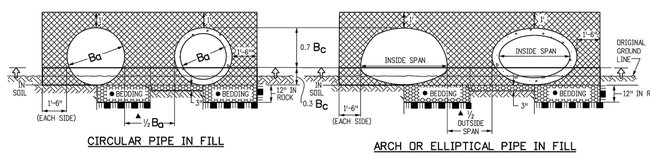
● THE BEDDING MATERIAL FOR RIGID PIPE IN SOIL SHALL BE 3 IN. OF LOOSE STRUCTURE BACKFILL (CLASS 1 OR 2). BEDDING IS NOT REQUIRED FOR FLEXIBLE PIPE IN SOIL. BEDDING MATERIAL FOR RIGID OR FLEXIBLE PIPE IN ROCK SHALL BE 12 IN. OF LOOSE STRUCTURE BACKFILL, CLASS 1.



CIRCULAR PIPE

(WHERE ORIGINAL GROUND LINE IS BETWEEN 0.3 Bc AND Bc + 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

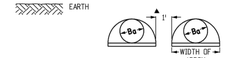
ARCH OR ELLIPTICAL PIPE IN FILL

GENERAL NOTES

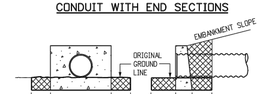
1. EXCAVATION AND BACKFILL PATTERNS DIFFERENT FROM THOSE INDICATED ON THESE SHEETS WILL BE SHOWN ELSEWHERE ON THE PLANS.
2. EXCAVATION FOR CHANNEL CHANGE OR CHANNEL IMPROVEMENT WILL BE EITHER UNCLASSIFIED EXCAVATION OR MUCK EXCAVATION AND WILL BE NOTED ON THE PLANS. EXCAVATION FROM THE CHANNEL FLOWLINE 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

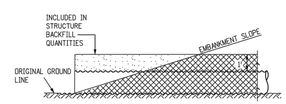
STRUCTURE EXCAVATION LIMITS
STRUCTURE BACKFILL, CLASS 1 OR 2, AS SHOWN ON PLANS
STRUCTURE BACKFILL, CLASS 1
EMBANKMENT MATERIAL
EARTH
ROCK
BEDDING
CONCRETE
= WHEN FLOW LINE OF CULVERT IS LESS THAN 0.3 B_c BELOW THE ORIGINAL GROUND LINE, EMBANKMENT SHALL BE BUILT UP TO 0.3 B_c ABOVE THE FLOW LINE AND TRENCH EXCAVATED TO THE BOTTOM OF PIPE OR AS SHOWN.



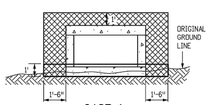
CONDUIT WITH END SECTIONS



HEADWALL

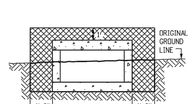


END OF PIPE



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.

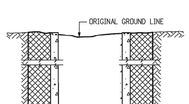


CASE 2

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

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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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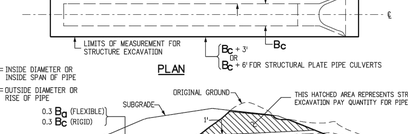
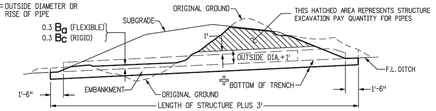


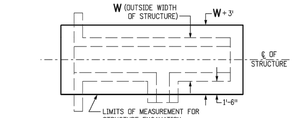
PLAN



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



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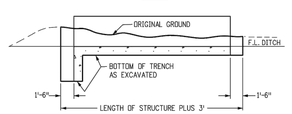
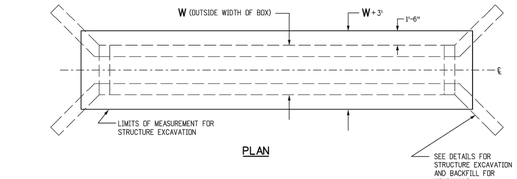


PROFILE

STRUCTURE EXCAVATION MEASUREMENT FOR DIVISION BOXES



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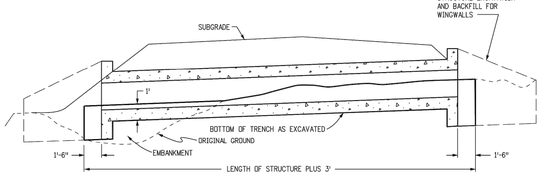
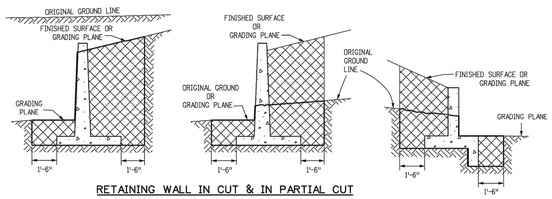


PROFILE

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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EXCAVATION AND BACKFILL FOR STRUCTURES

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

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DATE									
	F.	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN						
	E.	12/21/16	FINAL SUBMITTAL						
	D.	11/7/16	4TH SUBMITTAL						
	C.	5/31/16	3RD SUBMITTAL						
	B.	4/11/16	2ND SUBMITTAL						
	A.	11/2015	1ST SUBMITTAL						

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

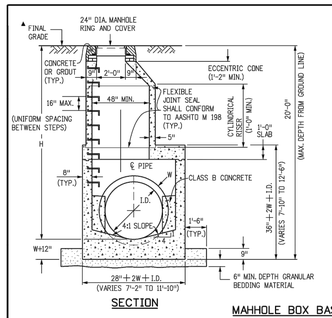
PRELIMINARY - NOT FOR CONSTRUCTION

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

SHEET 46 OF 49

CLCPKC3

Plotted: 3/9/2020 4:23 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-Storm Details.dwg Updated By: MMcGuire



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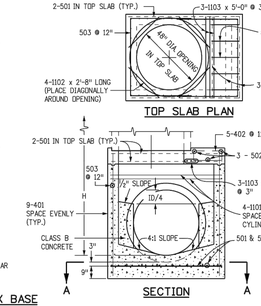
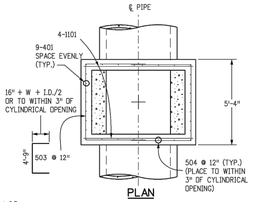
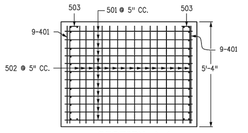


MAHHOLE BOX BASE





GENERAL NOTES

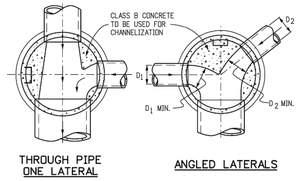
1. SINCE ALL PIPE ENTRIES INTO THE BASE ARE VARIABLE, THE DIMENSIONS SHOWN ARE TYPICAL. ACTUAL DIMENSIONS AND QUANTITIES FOR CONCRETE AND REINFORCEMENT SHALL BE AS REQUIRED IN THE WORK.
2. THE PRECAST FLAT TOP MAY BE USED ON ANY MANHOLE. THE ECCENTRIC CONE MAY BE USED WHEN THE MANHOLE "H" HEIGHT IS AT 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.

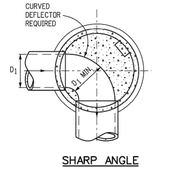
▲ WHEN FINAL GRADE IS PAVEMENT SURFACE, RECESS MANHOLE RING AND COVER 1/4" MIN. TO 1/2" MAX.

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 + $\left(\frac{24+I.D.+2W}{6}+1\right)$ @ 5"
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 $\left(\frac{13+I.D.+2W}{6}+1\right)$ @ 12" 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	16 / 9'-10" / 164.1	18 / 11'-0" / 206.5	20 / 12'-2" / 253.8	504 NUMBER BARS REQ'D. = 2 $\left(\frac{2W+I.D.-4}{12}+1\right)$ @ 12" 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'-4" / 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; TYPE II 4'-9"; TYPE III 12" 12" 7" I.D.+2W-38"
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	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	
CONCRETE = CUBIC YARDS = TOTAL					4.0	5.5	7.3	8.7	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





TYPICAL CHANNELIZATION DETAILS

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MANHOLES

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Standard Sheet No. 1 of 3
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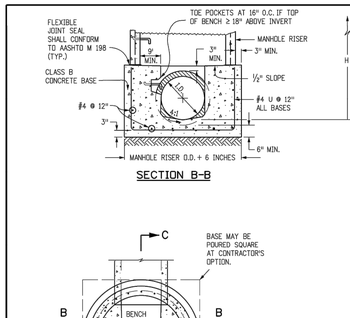

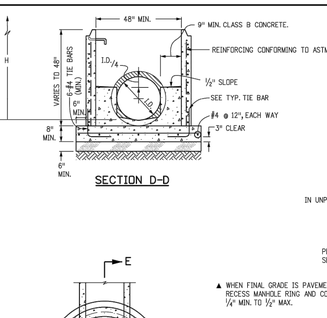

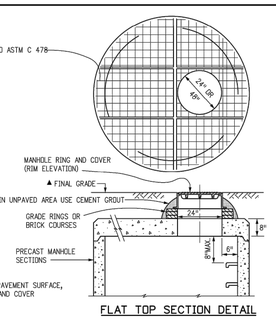

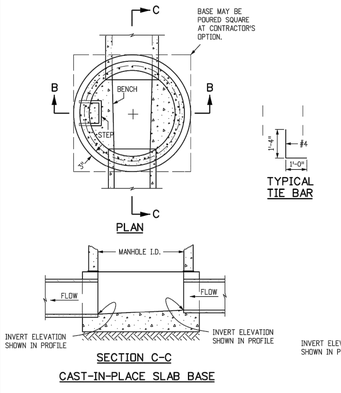

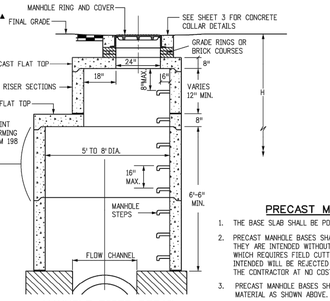

PRECAST MANHOLE BASES NOTES:

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

STANDARD PLAN NO. M-604-20
Standard Sheet No. 2 of 3
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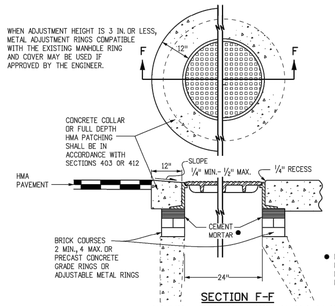
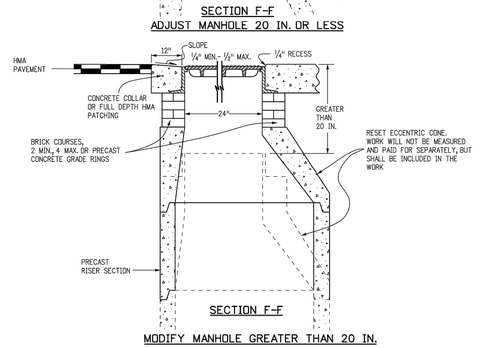
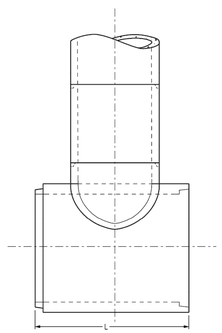
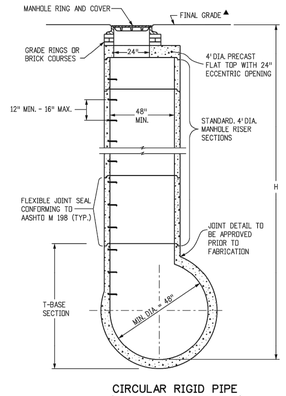
T-BASE MANHOLES NOTES

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.









MANHOLE T-BASE

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MANHOLES

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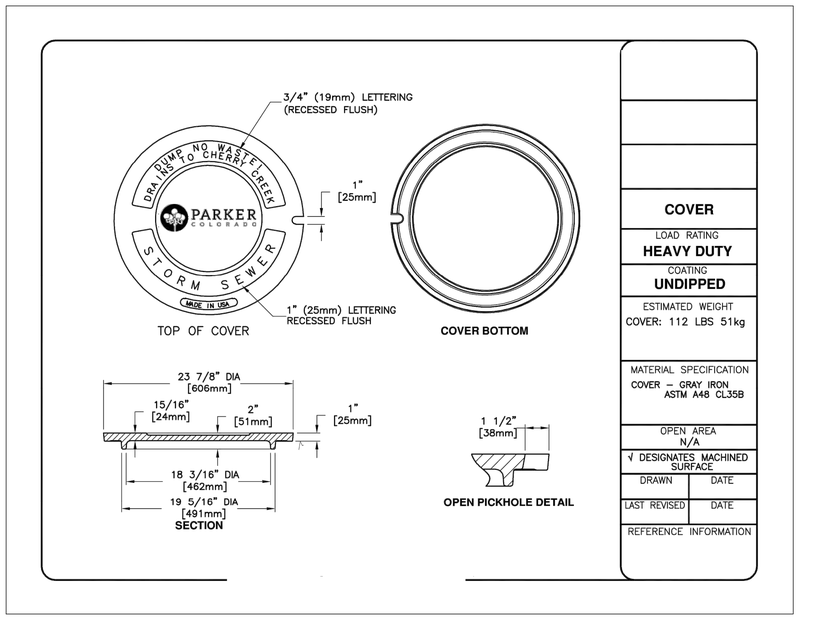

811 Know what's below. Call before you dig.

DATE	DRAWN BY
03/02/20	EG
12/21/16	
11/1/16	
10/1/16	
4/11/16	
11/2015	

REVISIONS
F. UPDATE GAT & ADD OFF-LINE DET BASIN
E. FINAL SUBMITTAL
D. 4TH SUBMITTAL
C. 3RD SUBMITTAL
B. 2ND SUBMITTAL
A. 1ST SUBMITTAL

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Civil Engineering | Water Resource Management | Construction Management

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

PRELIMINARY - NOT FOR CONSTRUCTION

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

SHEET 47 OF 49
CLCPKC3 ---

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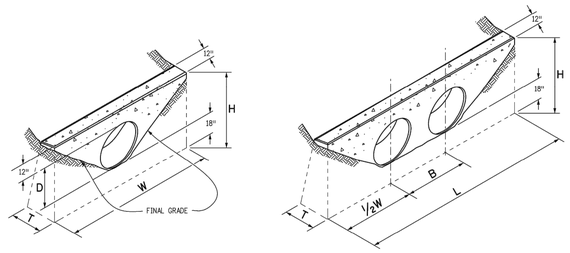
Plotted: 3/3/2020 4:23 PM Dwg Name: P:\Clcpkc3\Com\South\3-Filing 1 No GAT\Com\South\03-Ultimate Belford Ave\dwg\Engl\Final Drawings\Plan Set\Town\CLCPKC3 Storm Details.dwg Updated By: MMcGuire



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)

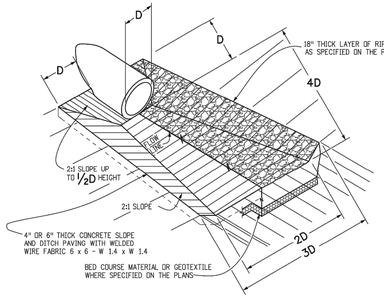
THICKNESS	MATERIAL	PIPE DIAMETER (IN.)					
		18	24	30	36	42	48
4"	CONCRETE	0.4	0.8	1.2			
6"	CONCRETE				2.6	3.6	4.7
18"	RIPRAP	2.0	3.5	5.4	7.8	10.7	13.9

PIPE OUTLET PAVING (CUBIC YARDS)

NOTE: VOLUME OCCUPIED BY PIPE HAS BEEN DEDUCTED.

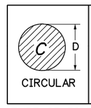
GENERAL NOTES

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 601.06(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

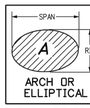
MAY BE USED WITH MULTIPLE PIPES.



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

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HEADWALLS AND PIPE OUTLET PAVING

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STANDARD PLAN NO. M-601-12
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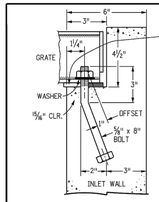
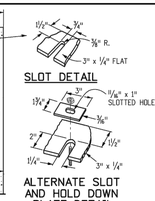
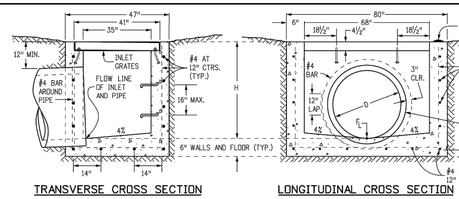


ALTERNATE SLOT AND HOLD DOWN PLATE DETAIL



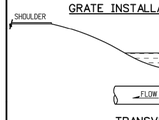
GRATE INSTALLATION DETAIL



TRANSVERSE CROSS SECTION

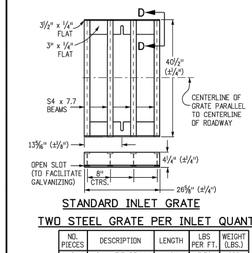
LONGITUDINAL CROSS SECTION

LEVEL GRATE INSTALLATION

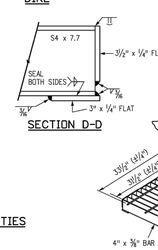


TRANSVERSE VIEW LONGITUDINAL VIEW

DIKE



STANDARD INLET GRATE

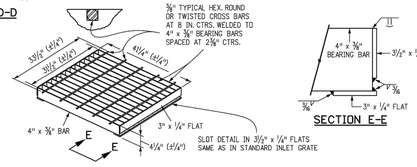


SECTION D-D

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

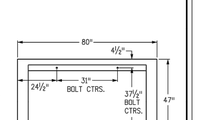
TOTAL LBS. = 256



CLOSE MESH GRATE

SECTION E-E

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



PLAN VIEW

(SHOWING ANCHOR BOLT LAYOUT)

"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

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 INLET'S SURFACE WITH A PERMANENT FASTENER.

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INLET, TYPE D

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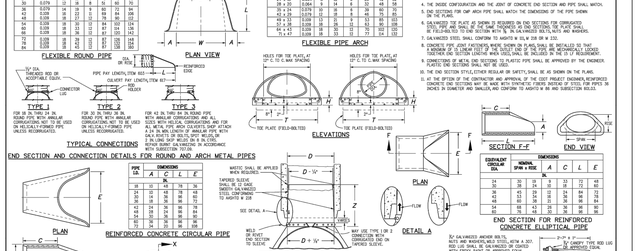

GENERAL NOTES

1. DIMENSIONS OF END SECTIONS MAY VARY SLIGHTLY FROM THOSE SHOWN ON THE TABLES DUE TO VARIATIONS IN MANUFACTURING PRACTICES.
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, AND 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 IN TABLE.
6. GALVANIZED TOE PLATE AT SKEWS IS REQUIRED ON END SECTIONS FOR CORRUGATED STEEL PIPE AND ARCH. TOE PLATE THICKNESS ON END SECTIONS FOR PLATE SHALL BE THE SAME AS THE PIPE PLATE THICKNESS AS SHOWN IN TABLE FOR PLATE AND WASHERS.
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 LINEAR FEET OF THE OUTLET END OF THE PIPE ARE MECHANICALLY LOCKED TOGETHER. CONCRETE JOINT FASTENERS SHALL BE INCLUDED IN THE CY REQUIREMENTS.
9. CONNECTIONS OF METAL END SECTIONS TO CORRUGATED 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 CDOT 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	
Creation Date: 07/31/19		Date:	Comments
Designer Initials: CEDD	(R-X)		
Last Modification Date: 07/31/19	(R-X)		
Detailer Initials: CEDD	(R-X)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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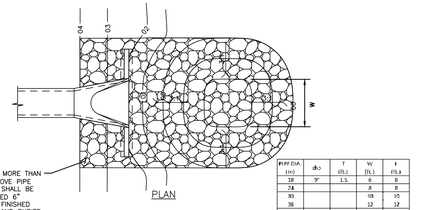
Project Development Branch JBK

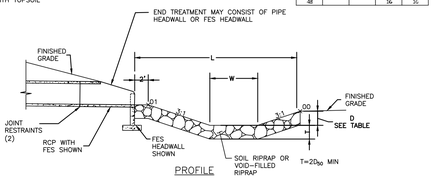
CONCRETE AND METAL END SECTIONS

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.)	d=.5	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

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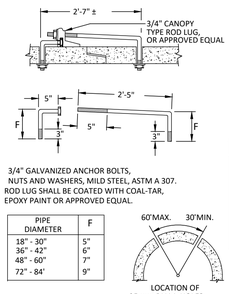
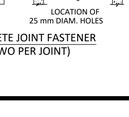


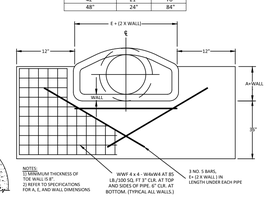
PIPE DIAMETER	F
18" - 30"	5"
36" - 42"	6"
48" - 60"	7"
72" - 84"	9"



LOCATION OF 25 mm DIAM. HOLES

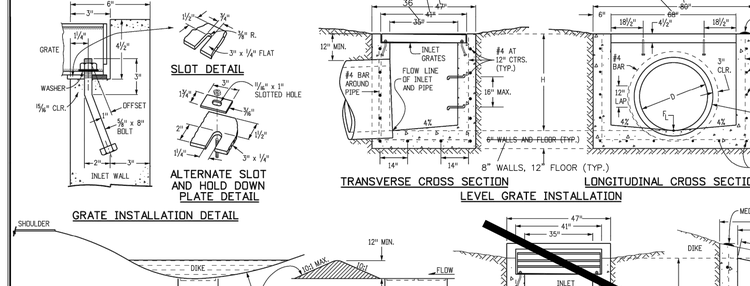
CONCRETE JOINT FASTENER (TWO PER JOINT)

PIPE DIA.	A	E
18"	9"	36"
24"	9.5"	48"
30"	12"	60"
36"	15"	72"
42"	21"	78"
48"	24"	84"



FLARED END SECTION TOEWALL DETAIL

N.T.S.



GRATE INSTALLATION DETAIL

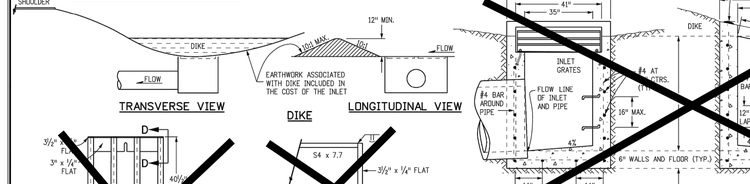
ALTERNATE SLOT AND HOLD DOWN PLATE DETAIL

TRANSVERSE CROSS SECTION 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 INLET'S SURFACE WITH A PERMANENT FASTENER.

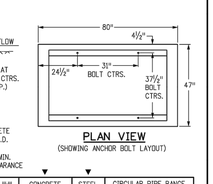


TRANSVERSE VIEW LONGITUDINAL VIEW

DIKE

TRANSVERSE CROSS SECTION LONGITUDINAL CROSS SECTION

SLOPING GRATE INSTALLATION



PLAN VIEW

(SHOWING ANCHOR BOLT LAYOUT)

"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)		
CAD Ver.: MicroStation V8 Scale: Not to Scale Units: English	(R-X)		

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2829 West Howard Place
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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:

DRAWN BY	DATE	REVISIONS
EG	03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN
	12/21/16	FINAL SUBMITTAL
	11/7/16	4TH SUBMITTAL
	6/13/16	3RD SUBMITTAL
	4/11/16	2ND SUBMITTAL
	11/2015	1ST SUBMITTAL

Manhard CONSULTING
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

PRELIMINARY - NOT FOR CONSTRUCTION

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

SHEET 48 OF 49
CLCPKC3 ---

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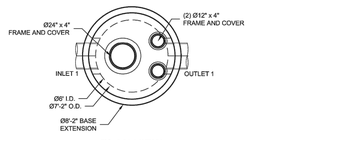
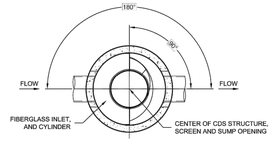
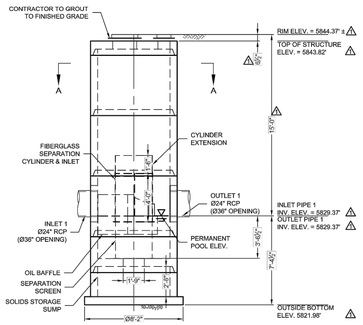
Plotted: 3/3/2020 4:23 PM Dwg Name: P:\Clpkc3\Com\South\2-Filing 1 No GAT\Com\South\03-Ultimate Belford Ave\dwg\Eng\Final Drawings\Plan Set\Town\CLCPKC3-Storm Details.dwg Updated By: MMcGuire



PLAN VIEW



SECTION A-A



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#41600389, 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

LP/OO
LAYOUT 1A
3030-6-F/GIS
1026 / FIT2886

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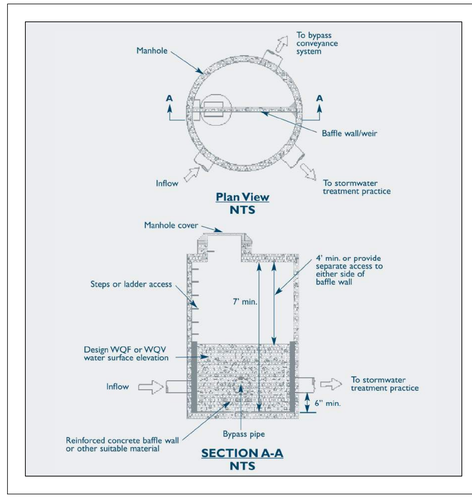
MARK	DATE	REVISION DESCRIPTION	APP
1	7/29/16	INLET/OUTLET & RIM ELEVATIONS	KJW

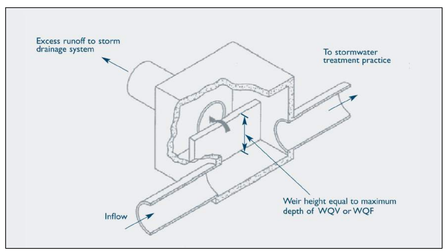
CDS3030-6-C - 542946-10
COMPARK SOUTH
PARKER, CO
for SYSTEM: STMH 1-3

CONTECH ENGINEERED SOLUTIONS LLC
9025 Centre Pointe Drive, Suite 400
West Chester, OH 45069
800.338.1122
513.645.7000
513.645.7993 FAX
www.ContechES.com

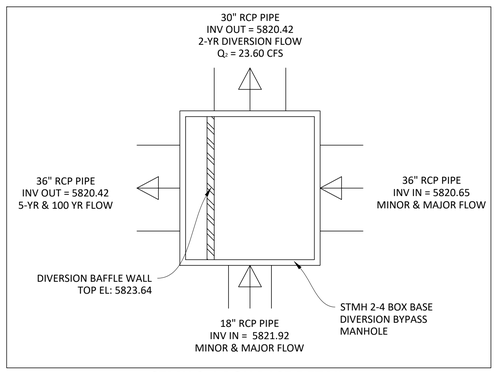
CDS
Continuous Deflective Separation

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	

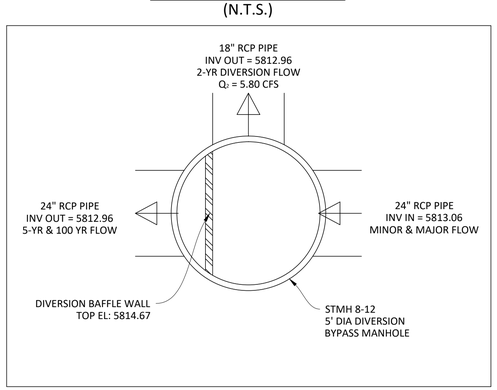




DIVERSION DETAIL
(N.T.S.)



STMH 2-4 BOX BASE DETAIL
(N.T.S.)



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

DATE	REVISIONS	DRAWN BY
03/02/20	UPDATE GAT & ADD OFF-LINE DET BASIN	
12/21/16	FINAL SUBMITTAL	
11/1/16	4TH SUBMITTAL	
6/24/16	3RD SUBMITTAL	
4/11/16	2ND SUBMITTAL	
11/2015	1ST SUBMITTAL	EG

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TOWN OF PARKER, COLORADO
STORM DETAILS

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

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49 OF 49
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