CLAREMONT BUSINESS PARK 2 FILING NO. 1

COUNTY OF EL PASO, STATE OF COLORADO

STREET IMPROVEMENT PLANS

(INCLUDING STORM SEWER)

OCTOBER 2020

AGENCIES:

OWNER/DEVELOPER:	HAMMERS CONSTRUCTION, INC 1411 WOOLSEY HEIGHTS COLORADO SPRINGS, CO 80915 (719) 570-1599
CIVIL ENGINEER:	M & S CIVIL CONSULTANTS, INC. 102 E. PIKES PEAK, 5TH FLOOR COLORADO SPRINGS, CO 80903 VIRGIL A. SANCHEZ P.E. (719) 955-5485
COUNTY ENGINEERING:	EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT 2880 INTERNATIONAL CIRCLE, SUITE 110 COLORADO SPRINGS, CO 80910 DANIEL TORRES P.E. (719) 520-6305
TRAFFIC ENGINEERING:	EL PASO COUNTY DEPARTMENT OF PUBLIC WORKS 3275 AKERS DRIVE COLORADO SPRINGS, CO 80922 JENNIFER IRVINE, P.E. (719) 520-6460
WATER RESOURCES:	CHEROKEE METROPOLITAN DISTRICT 6250 PALMER PARK BOULEVARD COLORADO SPRINGS, CO 80915-1721 JEFF MUNGER (719) 597-5080
FIRE DISTRICT:	CIMARRON HILLS FIRE DEPARTMENT 1835 TUSKEGEE PLACE COLORADO SPRINGS, CO 80915 (719) 591-0960
GAS DEPARTMENT:	COLORADO SPRINGS UTILITIES 7710 DURANT DR. COLORADO SPRINGS, CO 80947 TIM WENDT (719) 668-3556
ELECTRIC DEPARTMENT:	MOUNTAIN VIEW ELECTRIC 11140 E. WOODMEN ROAD FALCON, CO 80831 (719) 495-2283
COMMUNICATIONS:	QWEST COMMUNICATIONS (U.N.C.C. LOCATORS) (800) 922-1987 AT&T (LOCATORS) (719) 635-3674

VICINITY MAP

N.T.S.

SITE MAP

N.T.S.

BASIS OF BEARINGS

BASIS OF BEARINGS: THE CHORD OF THE WESTERLY LINE OF LOT 2, "CLAREMONT BUSINESS PARK FILING NO. 1A" UNDER RECEPTION NO. 206712398, BEING MONUMENTED AT THE SOUTHERLY END WITH A NAIL AND WASHER, PLS NO ILLEGIBLE, AND AT THE NORTHERLY END WITH A REBAR AND ALUMINUM CAP PLS NO. 27605 IS ASSUMED TO BEAR N22°18'18"E, A DISTANCE OF 218.26 FEET.

BENCHMARKS

1. BL33 BEING A BERNTSEN TOP SECURITY MONUMENT IN RANGE BOX 5' SOUTH OF SOUTH ROW FENCE OF HWY 24 UNDER CENTERLINE OF TRANSMISSION LINE.
   ELEVATION = 6455.17'
2. CONTROL POINT 1, SET PK NAIL IN NE CORNER OF ELECTRIC TRANSFORMER PAD
   ELEVATION = 6372.26'

DESIGN ENGINEER'S STATEMENT

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

COLORADO REGISTERED VIRGIL A. SANCHEZ 37160 10-21-20 PROFESSIONAL ENGINEER

VIRGIL A. SANCHEZ, COLORADO P.E. #37160
FOR AND ON BEHALF OF M & S CIVIL CONSULTANTS, INC.

OWNER/DEVELOPER'S STATEMENT:

I, THE OWNER/DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS IN THESE DETAILED PLANS AND SPECIFICATIONS.

HAMMERS CONSTRUCTION, INC — DATE

ADDRESS: 1411 WOOLSEY HEIGHTS, COLORADO SPRINGS, CO 80915

EL PASO COUNTY:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GENERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

FILED IN ACCORDANCE WITH THE REQUIREMENTS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE, DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND ENGINEERING CRITERIA MANUAL AS AMENDED.

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

JENNIFER IRVINE, P.E. — DATE
COUNTY ENGINER / ECM ADMINISTRATOR

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EL PASO COUNTY FILE NO. PCD # SF-20-014

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES

FOR BURIED UTILITY INFORMATION
48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

CLAREMONT BUSINESS PARK 2 FILING NO. 1
STREET IMPROVEMENT PLANS

PROJECT NO. 44-037		DATE: 10/21/2020	SI01
DESIGNED BY: GW DRAWN BY: CLP CHECKED BY: VAS	SCALE: HORIZONTAL: N/A VERTICAL: N/A	SHEET 1 OF 12	

102 PIKES PEAK AVE, SUITE 500
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
M&S CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160
FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.
COLORADO REGISTERED VIRGIL A. SANCHEZ 37160 10-21-20 PROFESSIONAL ENGINEER

REVISIONS:

NO.	DATE:	BY:	DESCRIPTION:	APRV'D. BY:	DATE:

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

CAUTION

File: O:\44037A-CBP F2-Lots 1-8\44037A-CBP F2-Lots 1-8\dwg\Const Dwg\STREET AND STORM\SI01.dwg Plotstamp: 10/21/2020 10:29 AM

GENERAL CONSTRUCTION NOTES:

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES ALONG THE ROUTE OF THE WORK. THE OMISSION FROM OR THE INCLUSION OF UTILITY LOCATIONS ON THE PLANS IS NOT TO BE CONSIDERED AS THE NONEXISTENCE OF OR A DEFINITE LOCATION OF EXISTING UNDERGROUND UTILITIES.
2. THE CONTRACTOR WILL TAKE THE NECESSARY PRECAUTIONS TO PROTECT EXISTING UTILITIES FROM DAMAGE DUE TO THIS OPERATION. ANY DAMAGE TO THE UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE, AND ANY SERVICE DISRUPTION WILL BE SETTLED BY THE CONTRACTOR.
3. ADDITIONAL EROSION CONTROL STRUCTURES MAY BE REQUIRED AT THE TIME OF CONSTRUCTION.
4. ALL BACKFILL, SUB-BASE, AND/OR BASE COURSE (CLASS 6) MATERIAL SHALL BE COMPACTED PER THE SOILS ENGINEER'S RECOMMENDATIONS, AND APPROVED BY EL PASO COUNTY PCD.
5. ALL STATIONING IS CENTERLINE OF IMPROVEMENTS UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE FLOW LINE UNLESS OTHERWISE INDICATED AS TOP BACK OF CURB (TBC), ASPHALT (ASP), OR TOP OF INLET OR BOX (TOB).
6. ALL DISTURBED PAVEMENT EDGES SHALL BE CUT TO NEAT LINES. REPAIR SHALL CONFORM TO EPC ECM APPENDIX K – 1.2C.
7. ALL INTERSECTION ACCESSES TO BE CONSTRUCTED WITH A 25 FOOT SIGHT VISIBILITY TRIANGLES IS REQUIRED AND THERE SHALL BE NO OBSTRUCTIONS GREATER THAN 18" VERTICAL IN THIS AREA.
8. ALL CULVERTS AND STORM DRAIN PIPES SHALL BE SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE (HDPE), REINFORCED CONCRETE PIPE (RCP). ALL CULVERTS SHALL BE PLACED COMPLETE WITH FLARED END SECTIONS. ADEQUACY OF MATERIAL THICKNESS FOR ANY CSP INSTALLED SHALL BE VERIFIED BY OWNER'S GEOTECHNICAL ENGINEER TO SUPPORT MINIMUM 50 YEAR DESIGN LIFE. CULVERTS MUST CONFORM TO EPC ECM SECTION 3.32 – CULVERTS.
9. ASPHALT THICKNESS AND BASE COURSE THICKNESS (COMPACTED) FOR ROADS SHALL BE PER DESIGN REPORT BY OWNER'S GEOTECHNICAL ENGINEER. OWNER'S GEOTECHNICAL ENGINEER TO BE ON SITE AT THE TIME OF ROAD CONSTRUCTION TO EVALUATE SOIL CONDITIONS AND DETERMINE IF ADDITIONAL MEASURES ARE NECESSARY TO ASSURE STABILITY OF THE NEW ROADS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO CONSTRUCTION.

SIGNING AND STRIPING NOTES:

1. ALL SIGNS AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH THE CURRENT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
2. REMOVAL OF EXISTING PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY A METHOD THAT DOES NOT MATERIALLY DAMAGE THE PAVEMENT. THE PAVEMENT MARKINGS SHALL BE REMOVED TO THE EXTENT THAT THEY WILL NOT BE VISIBLE UNDER DAY OR NIGHT CONDITIONS. AT NO TIME WILL IT BE ACCEPTABLE TO PAINT OVER EXISTING PAVEMENT MARKINGS.
3. ANY DEVIATION FROM THE STRIPING AND SIGNING PLAN SHALL BE APPROVED BY EL PASO COUNTY PCD.
4. ALL SIGNS SHOWN ON THE SIGNING AND STRIPING PLAN SHALL BE NEW SIGNS. EXISTING SIGNS MAY REMAIN OR BE REUSED IF THEY MEET CURRENT EL PASO COUNTY AND MUTCD STANDARDS.
5. STREET NAME AND REGULATORY STOP SIGNS SHALL BE ON THE SAME POST AT INTERSECTIONS.
6. ALL REMOVED SIGNS SHALL BE DISPOSED OF IN A PROPER MANNER BY THE CONTRACTOR.
7. ALL STREET NAME SIGNS SHALL HAVE "D" SERIES LETTERS, WITH LOCAL ROADWAY SIGNS BEING 4" UPPER-LOWER CASE LETTERING ON 8" BLANK AND NON-LOCAL ROADWAY SIGNS BEING 6" LETTERING, UPPER-LOWER CASE ON 12" BLANK, WITH A WHITE BORDER THAT IS NOT RECESSED. MULTI-LANE ROADWAYS WITH SPEED LIMITS OF 40 MPH OR HIGHER SHALL HAVE 8" UPPER-LOWER CASE LETTERING ON 18" BLANK WITH A WHITE BORDER THAT IS NOT RECESSED. THE WIDTH OF THE NON-RECESSED WHITE BORDERS SHALL MATCH PAGE 255 OF THE 2012 MUTCD "STANDARD HIGHWAY SIGNS"
8. ALL TRAFFIC SIGNS SHALL HAVE A MINIMUM HIGH INTENSITY PRISMATIC GRADE SHEETING.
9. ALL LOCAL RESIDENTIAL STREET SIGNS SHALL BE MOUNTED ON A 1.75" X 1.75" SQUARE TUBE SIGN POST AND STUB POST BASE. FOR OTHER APPLICATIONS, REFER TO THE CDOT STANDARD S-614-8 REGARDING USE OF THE P2 TUBULAR STEEL POST SLIPBASE DESIGN.
10. ALL SIGNS SHALL BE SINGLE SHEET ALUMINUM WITH 0.100" MINIMUM THICKNESS.
11. ALL LIMIT LINES/STOP LINES, CROSSWALK LINES, PAVEMENT LEGENDS, AND ARROWS SHALL BE A MINIMUM 125 MIL THICKNESS PREFORMED THERMOPLASTIC PAVEMENT MARKINGS WITH TAPERED LEADING EDGES PER CDOT STANDARD S-627-1. WORD AND SYMBOL MARKINGS SHALL BE THE NARROW TYPE. STOP BARS SHALL BE 24" IN WIDTH. CROSSWALKS LINES SHALL BE 12" WIDE AND 8' LONG PER CDOT S-627-1.
12. ALL LONGITUDINAL LINES SHALL BE A MINIMUM 15MIL THICKNESS EPOXY PAINT. ALL NON-LOCAL RESIDENTIAL ROADWAYS SHALL INCLUDE BOTH RIGHT AND LEFT EDGE LINE STRIPING AND ANY ADDITIONAL STRIPING AS REQUIRED BY CDOT S-627-1.
13. THE CONTRACTOR SHALL NOTIFY EL PASO COUNTY PLANNING AND COMMUNITY DEVELOPMENT (719) 520-6819 PRIOR TO AND UPON COMPLETION OF SIGNING AND STRIPING.
14. THE CONTRACTOR SHALL OBTAIN A WORK IN THE RIGHT OF WAY PERMIT FROM THE EL PASO COUNTY DPW PRIOR TO ANY SIGNAGE OR STRIPING WORK WITHIN AN EXISTING EL PASO COUNTY ROADWAY.

STANDARD NOTES FOR EL PASO COUNTY CONSTRUCTION PLANS

1. ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD NOTIFICATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT, AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIMES, INCLUDING THE FOLLOWING:
   a. EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
   b. CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL, VOLUMES 1 AND 2
   c. COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION
   d. CDOT M & S STANDARDS
4. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING. ANY MODIFICATIONS NECESSARY TO MEET CRITERIA AFTER-THE-FACT WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
5. IT IS THE DESIGN ENGINEER'S RESPONSIBILITY TO ACCURATELY SHOW EXISTING CONDITIONS, BOTH ONSITE AND OFFSITE, ON THE CONSTRUCTION PLANS. ANY MODIFICATIONS NECESSARY DUE TO CONFLICTS, OMISSIONS, OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPER'S RESPONSIBILITY TO RECTIFY.
6. CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH EL PASO COUNTY PCD – INSPECTIONS, PRIOR TO STARTING CONSTRUCTION.
7. IT IS THE CONTRACTOR'S RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, U.S. ARMY CORPS OF ENGINEERS-ISSUED 401 AND/OR 404 PERMITS, AND COUNTY AND STATE FUGITIVE DUST PERMITS.
8. CONTRACTOR SHALL NOT DEVIATE FROM THE PLANS WITHOUT FIRST OBTAINING WRITTEN APPROVAL FROM THE DESIGN ENGINEER AND PCD. CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY ERRORS OR INCONSISTENCIES.
9. ALL STORM DRAIN PIPE SHALL BE CLASS III RCP UNLESS OTHERWISE NOTED AND APPROVED BY PCD.
10. CONTRACTOR SHALL COORDINATE GEOTECHNICAL TESTING PER ECM STANDARDS. PAVEMENT DESIGN SHALL BE APPROVED BY EL PASO COUNTY PCD PRIOR TO PLACEMENT OF CURB AND GUTTER AND PAVEMENT.
11. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE AT APPROVED CONSTRUCTION ACCESS POINTS.
12. SIGHT VISIBILITY TRIANGLES AS IDENTIFIED IN THE PLANS SHALL BE PROVIDED AT ALL INTERSECTIONS. OBSTRUCTIONS GREATER THAN 18 INCHES ABOVE FLOWLINE ARE NOT ALLOWED WITHIN SIGHT TRIANGLES.
13. SIGNING AND STRIPING SHALL COMPLY WITH EL PASO COUNTY DPW AND MUTCD CRITERIA. [IF APPLICABLE, ADDITIONAL SIGNING AND STRIPING NOTES WILL BE PROVIDED.]
14. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DPW, INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
15. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFF-SITE DISTURBANCE, GRADING, OR CONSTRUCTION.

PEDESTRIAN RAMP NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE CURRENT ENGINEERING CRITERIA MANUAL AND ADA REQUIREMENTS.
2. CONTRACTOR TO NOTIFY ENGINEERING DIVISION INSPECTION STAFF 48 HOURS PRIOR TO CONCRETE PLACEMENT.
3. PEDESTRIAN CURB RAMP CONSTRUCTION SHALL BE A MINIMUM 4,500 PSI CONCRETE, MINIMUM 4" THICK, NON-COLORED, NON-SCORED, COARSE BROOM FINISH.
4. PEDESTRIAN CURB RAMP LOCATION AND LENGTH MAY REQUIRE MODIFICATION TO MAINTAIN THE 8.3% MAXIMUM RUNNING RAMP SLOPE DUE TO STREET INTERSECTION GRADES AND/OR ALIGNMENTS. SEE ECM SECTION 6.3.6 FOR PEDESTRIAN PUSHBUTTON LOCATION REQUIREMENTS.
5. DETECTABLE WARNING SURFACE SHALL START A MINIMUM OF 6" BUT NOT MORE THAN 8" FROM THE FLOWLINE OF THE CURB AT ANY POINT.
6. DETECTABLE WARNING SURFACE SHALL BE PREFABRICATED, CAST IRON (PATINA NATURAL FINISH) AND IN ACCORDANCE WITH ECM CHAPTER 6 AND SD_2-42. THERMOPLASTIC TRUNCATED DOMES AND PAVERS WILL NOT BE ACCEPTED.
7. THE DETECTABLE WARNING SURFACE SHALL BE 24" IN LENGTH AND THE FULL WIDTH OF THE RAMP.
8. PEDESTRIAN CURB RAMP WIDTH REQUIRED IS SAME AS APPROACHING SIDEWALK; 4' MINIMUM.
9. ALL PEDESTRIAN CURB RAMPS WILL BE PERPENDICULAR TO TRAFFIC WITH THE EXCEPTION OF MID-BLOCK OR TERMINAL RAMPS WHICH MAY BE PARALLEL SUBJECT TO APPROVAL.
10. DRAINAGE STRUCTURES, TRAFFIC SIGNAL/SIGNAGE, UTILITIES/JUNCTION BOXES, OR OTHER OBSTRUCTIONS WITHIN PROPOSED PEDESTRIAN CURB RAMP AREAS AND LANDINGS ARE PROHIBITED.
11. THE COUNTER SLOPE OF THE GUTTER OR ROAD AT THE FOOT OF A RAMP SHALL NOT EXCEED 5%.

GENERAL NOTES

1. WHERE THE 1'-6" FLARED SIDE(S) OF A PERPENDICULAR CURB RAMP IS (ARE) CONTIGUOUS WITH A PEDESTRIAN OR HARD SURFACE AREA (PEDESTRIAN CIRCULATION PATH), THE MAXIMUM FLARE SLOPE SHALL NOT EXCEED 10:1.
2. PEDESTRIAN WALKWAY (PEDESTRIAN ACCESS ROUTE) AND/OR LOCATION OF EXISTING OR FUTURE PEDESTRIAN RAMPS ON OPPOSITE CORNERS SHALL BE REVIEWED BEFORE CONSTRUCTING NEW RAMPS.
3. AT MARKED PEDESTRIAN CROSSINGS, THE BOTTOM OF THE RAMPS, EXCLUSIVE OF THE FLARE SIDES, SHALL BE TOTALLY CONTAINED WITHIN THE MARKINGS.

6/23/20 DATE APPROVED: Jennifer E. Irvine DEPARTMENT OF PUBLIC WORKS	Pedestrian Curb Ramp Detail Standard Drawing REVISION DATE: 6/23/20	FILE NAME: SD_2-41 DEPARTMENT OF PUBLIC WORKS

SPECIAL NOTE:

THE PARTIES RESPONSIBLE FOR THIS PLAN HAVE FAMILIARIZED THEMSELVES WITH ALL CURRENT ACCESSIBILITY CRITERIA AND SPECIFICATIONS AND THE PROPOSED PLAN REFLECTS ALL SITE ELEMENTS REQUIRED BY THE APPLICABLE ADA DESIGN STANDARDS AND GUIDELINES AS PUBLISHED BY THE UNITED STATES DEPARTMENT OF JUSTICE. APPROVAL OF THIS PLAN BY EL PASO COUNTY DOES NOT ASSURE COMPLIANCE WITH THE ADA OR ANY REGULATIONS OR GUIDELINES ENACTED OR PROMULGATED UNDER OR WITH RESPECT TO SUCH LAWS.

SCALE: NOT TO SCALE

TYPICAL CURB AND GUTTER DETAIL (SD 2-20C)

SCALE: NTS

URBAN LOCAL CROSS SECTION (PRIVATE)

SCALE: NTS

POSTED SPEED 25 MPH
DESIGN SPEED 35 MPH

EL PASO COUNTY FILE NO. PCD # SF-20-014

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CLAREMONT BUSINESS PARK 2 FILING NO. 1
NOTE & DETAIL SHEET

PROJECT NO. 44-037	FILE: \dwg\Const Dwg\Street Plans\SI02.dwg	SCALE	DATE: 10/21/2020
DESIGNED BY: GW		HORIZ: N/A	SHEET 2 OF 12
DRAWN BY: CLP		VERT: N/A	SI02
CHECKED BY: VAS			

102 E. PIKES PEAK AVE. SUITE 500
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF MVS CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160

COLORADO REGISTERED VIRGIL A. SANCHEZ 37160 10-21-20 PROFESSIONAL ENGINEER

REVISIONS:				
NO.	DATE:	BY:	DESCRIPTION:	APRV'D. BY:	DATE:

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CAUTION

File: Q:\44037A-CBP F2-Lots 1-8\44037A-CBP F2-Lots 1-8\dwg\Const Dwg\STREET AND STORM\SI02.dwg Plotstamp: 10/21/2020 10:49 AM

GARY WATSON PT (PRIVATE)

ABBREVIATION LEGEND

℄–℄	CENTERLINE INTERSECTION
FL–FL	FLOWLINE INTERSECTION
BT	BEGIN TRANSITION
ET	END TRANSITION
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURB
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT
EL	ELEVATION
LT	LEFT
RT	RIGHT

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CENTERLINE LINE TABLE

LINE	LENGTH	DIRECTION
L1	104.00'	N77°22'44"E
L2	125.98'	N89°41'23"E
L3	59.87'	S66°49'29"E

CENTERLINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	200.00'	42.97'	12°18'39"
C2	50.00'	20.50'	23°29'08"

CURB FLOWLINE LINE TABLE

LINE	LENGTH	DIRECTION
L4	82.77'	N89°41'23"E

CURB FLOWLINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C3	44.17'	191.30'	248°09'48"
C4	45.00'	53.54'	68°09'48"

CURB FLOWLINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C5	52.00	6.01	6.62
C6	298.83	22.31	4.28
C7	216.17	37.60	9.97
C8	98.83	17.21	9.98
C9	52.00	6.13	6.76
C10	183.83	29.17	9.09
C11	1.00	1.52	86.88
C12	1.00	1.52	86.88

1" = 50'

0 25 50 100
Scale in Feet

CUL-DE-SAC STA 1+00.00 TO STA 4+27.60

EL PASO COUNTY FILE NO. PCD # SF-20-014

CLAREMONT BUSINESS PARK 2 FILING NO. 1
STREET IMPROVEMENT PLANS

PROJECT NO. 44-037 | FILE: \dwg\Const. Dwg\Street & Storm Plans\SI03.dwg | DATE: 10/21/2020 | SHEET 3 OF 12 | SI03

DESIGNED BY: GW | DRAWN BY: CLP | CHECKED BY: VAS | SCALE HORIZ: 1"=50' VERT: 1"=5'

102 E. PIKES PEAK AVE SUITE 500
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
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COLORADO REGISTERED PROFESSIONAL ENGINEER VIRGIL A. SANCHEZ 37160 10-21-20

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EL PASO COUNTY FILE NO. PCD # SF-20-01

CLAREMONT BUSINESS PARK 2 FILING NO. 1

SIGNAGE AND STRIPING PLAN

PROJECT NO. 44-037	SCALE:	DATE: 10/21/2020	SI04
DESIGNED BY: GW	HORIZONTAL: N/A	SHEET 4 OF 12	
DRAWN BY: CLP	VERTICAL: N/A		
CHECKED BY: VAS			

102 E. PIKES PEAK AVE SUITE 500
COLORADO SPRINGS, CO 80903
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FOR AND ON BEHALF OF MVS CIVIL CONSULTANTS, INC.

COLORADO REGISTERED PROFESSIONAL ENGINEER VIRGIL A. SANCHEZ 37160 10-21-20

REVISIONS:

NO.	DATE:	BY:	DESCRIPTION:	APRV'D.	BY:	DATE:

THE ENGINEER PREPARING THESE PLANS WILL NOT BE RESPONSIBLE OR LIABLE FOR UNAUTHORIZED CHANGES TO OR USES OF THESE PLANS. ALL CHANGES TO THE PLANS MUST BE IN WRITING AND MUST BE APPROVED BY THE PREPARER OF THESE PLANS.

CAUTION

File: G:\44037A-CBP F2-Lots 1-8\44037A-CBP F2-Lots 1-8\dwg\Const Dwg\STREET AND STORM\SI04.dwg Plotstamp: 10/21/2020 11:02 AM

STANDARD CONSTRUCTION NOTES:

1. ALL DRAINAGE AND ROADWAY CONSTRUCTION SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF COLORADO SPRINGS/EL PASO COUNTY DRAINAGE CRITERIA MANUAL VOLUMES 1 AND 2, AND THE EL PASO COUNTY ENGINEERING CRITERIA MANUAL.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR THE NOTIFICATION AND FIELD LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLANS OR NOT, BEFORE BEGINNING CONSTRUCTION. LOCATION OF EXISTING UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. CALL 811 TO CONTACT THE UTILITY NOTIFICATION CENTER OF COLORADO (UNCC).
3. CONTRACTOR SHALL KEEP A COPY OF THESE APPROVED PLANS, THE GRADING AND EROSION CONTROL PLAN, THE STORMWATER MANAGEMENT PLAN (SWMP), THE SOILS AND GEOTECHNICAL REPORT AND THE APPROPRIATE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AT THE JOB SITE AT ALL TIME INCLUDING THE FOLLOWING:
   - 3.1 EL PASO COUNTY ENGINEERING CRITERIA MANUAL (ECM)
   - 3.2 CITY OF COLORADO SPRINGS/EL PASO COUNTY ENGINEERING CRITERA MANUAL VOLUMES 1 AND 2.
   - 3.3 COLORADO DEPARTMENT OF TRANSPORTATION (CDOT) STANDARDS SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION.
   - 3.4 CDOT M&S STANDARDS.
4. IT IS THE DESIGN ENGINEERS RESPONSIBILITY TO ACCURACY SHOW EXISTING CONDITION BOTH ONSITE AND OFFSITE ON THE CONSTRUCTION PLANS. ANY MODIFICATION NECESSARY DUE TO CONFLICT OMISSIONS OR CHANGED CONDITIONS WILL BE ENTIRELY THE DEVELOPERS RESPONSIBILITY TO RECTIFY.
5. IT IS THE CONTRACTORS RESPONSIBILITY TO UNDERSTAND THE REQUIREMENTS OF ALL JURISDICTIONAL AGENCIES AND TO OBTAIN ALL REQUIRED PERMITS, INCLUDING BUT NOT LIMITED TO EL PASO COUNTY EROSION AND STORM WATER QUALITY CONTROL PERMIT (ESQCP), REGIONAL BUILDING FLOODPLAIN DEVELOPMENT PERMIT, US ARMY CORPS OF ENGINEER ISSUED 401 AND/OR 404 PERMITS AND COUNTY AND STATE FUGITIVE DUST PERMITS.
6. ANY TEMPORARY SIGNAGE AND STRIPING SHALL COMPLY WITH EL PASO COUNTY PCD AND MUTCD CRITERIA.
7. CONTRACTOR SHALL OBTAIN ANY PERMITS REQUIRED BY EL PASO COUNTY DPW INCLUDING WORK WITHIN THE RIGHT-OF-WAY AND SPECIAL TRANSPORT PERMITS.
8. THE LIMITS OF CONSTRUCTION SHALL REMAIN WITHIN THE PROPERTY LINE UNLESS OTHERWISE NOTED. THE OWNER/DEVELOPER SHALL OBTAIN WRITTEN PERMISSION AND EASEMENTS, WHERE REQUIRED, FROM ADJOINING PROPERTY OWNER(S) PRIOR TO ANY OFFSITE DISTURBANCE GRADING, OR CONSTRUCTION.

STORM SEWER GENERAL NOTES

1. ALL STATIONING IS ALONG STORM SEWER CENTERLINE UNLESS OTHERWISE INDICATED. ALL ELEVATIONS ARE INVERT UNLESS OTHERWISE INDICATED.
2. ALL STORM SEWER PIPE SHALL BE ADS "HP STORM" POLYPROPYLENE PIPE (ADS) WITH GASKETED WATERTIGHT COUPLERS UNLESS OTHERWISE NOTED.
3. ALL STORM SEWER BENDS, MANHOLES, AND WYES SHOWN ON THE PLANS SHALL BE PREFABRICATED. HORIZONTAL AND VERTICAL BENDS ARE INDICATED ON THE PLANS.
4. ALL CONNECTIONS BETWEEN DISSIMILAR MATERIALS (I.E. HP STORM PIPE AND CONCRETE STRUCTURES), SHALL BE WATER TIGHT. REFER TO ADS WATERSTOP STRUCTURE CONNECTION DETAILS (SEE THIS CONSTRUCTION SET) FOR ADDITIONAL INFORMATION.
5. THE CONTRACTOR SHOULD ATTEMPT TO LIMIT CONSTRUCTION TRAFFIC ATOP THE PROPOSED STORM SEWER INSTALLATION. AS PER THE MANUFACTURES RECOMMENDATIONS THE CONTRACTOR SHALL PROVIDE A MIN OF 12" OF COVER AT ALL TIMES ATOP THE BACKFILLED STORM SEWER TO TOP OF THE FINISHED GROUND OR BOTTOM OF FLEXIBLE PAVEMENT SURFACE TO PROTECT THE PIPE FROM H-25 VEHICULAR TRAFFIC. A MINIMUM OF 36" SHOULD BE PROVIDED TO PROTECT THE STORM SEWER FROM 30 T TO 60 T TRAFFIC AND MINIMUM OF 72" FOR TRAFFIC UP TO 78 T AXLE LOADS. FINAL GRADING SHOWN ON THE PLANS WILL PROHIBIT VEHICULAR TRAFFIC TO LOADS LESS THE H-25.
6. REFER TO THE DETAIL IN THIS CONSTRUCTION SET FOR PIPE TRENCH DETAILS AND PIPE SPECIFICATION.

   THE POLYPROPYLENE PIPE BEING INSTALLED POSSESS LESS MASS THAN RIGID PIPE MATERIALS AND MAY HAVE A TENDENCY TO SHIFT IN THE TRENCH DURING INSTALLATION. IT IS THE CONTRACTORS RESPONSIBILITY TO INSTALL THE PRODUCT IN ACCORDANCE WITH THE MANUFACTURES RECOMMENDATIONS AND TO MAINTAIN THE LINE AND GRADE SHOWN ON THE PLANS.
7. THE MINIMUM COVER (TO PREVENT FLOTATION) FROM THE TOP OF PIPE TO THE FINISHED GRADE FOR THE POLYETHYLENE PIPE SHALL BE AS FOLLOWS: 48" ADS = 33", 42" ADS = 29", 36" ADS = 25", 30" ADS = 22", 24" ADS = 17", 18" ADS = 13".

STRUCTURAL CONCRETE NOTES:

1. ALL CONSTRUCTION INVOLVING THE PLACEMENT OF STRUCTURAL CONCRETE SHALL BE COMPLETED IN ACCORDANCE WITH STANDARD SPECIFICATIONS, AND AS SUPPLEMENTED BY THE COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION.
2. STEEL REINFORCING SHALL BE GRADE 60 FOR ALL REINFORCING STEEL GREATER THAN #4. SPLICING, LAP SPLICING SHALL BE MINIMUM IN THE FOLLOWING TABLE UNLESS OTHERWISE SPECIFIED:

BAR SIZE	#4	#5	#6	#7	#8
SPLICE LENGTH	1'-9"	2'-2"	2'-7"	3'-4"	4'-3"

   ALL REINFORCING SHALL HAVE A 2-INCH MINIMUM COVER UNLESS OTHERWISE SPECIFIED. ALL REINFORCED STEEL TO BE EPOXY COATED.
3. CAST-IN-PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (fc) OF 4,000 PSI AT 28 DAYS. ALL CONCRETE PLACED AGAINST SOIL SHALL BE TYPE II PORTLAND CEMENT. ALL EXPOSED CORNERS SHALL BE FORMED WITH A 3/4" CHAMFER UNLESS OTHERWISE SPECIFIED.
4. EXPANSION JOINT MATERIAL SHALL MEET AASHTO SPECIFICATION M-213.
5. BACKFILL AGAINST STRUCTURES SHALL NOT COMMENCE UNTIL ALL SUPPORTING DIAPHRAGMS ARE IN PLACE AND CONCRETE HAS OBTAINED ITS FULL SEVEN DAY STRENGTH. BACKFILL SHALL BE PLACED EQUALLY ON EACH SIDE OF RETAINING WALL STRUCTURES AND CUTOFF WALLS UNTIL THE FINAL GRADE IS REACHED.
6. FOOTING EXCAVATIONS SHALL BE EXAMINED BY THE GEOTECHNICAL ENGINEER WITH A 24-HOUR MINIMUM NOTIFICATION FOR SOIL AND/OR CONCRETE TESTING. PLACEMENT OF CONCRETE IN THE ABSENCE OF TESTING SHALL BE COMPLETED AT THE SOLE RISK OF THE CONTRACTOR.
7. PRIOR TO THE PLACEMENT OF CONCRETE IN AREAS WHERE SOIL IS PRESENT, THE SOIL SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 6-INCHES. THE MOISTURE CONTENT SHALL BE ADJUSTED TO WITHIN PLUS OR MINUS 2 PERCENT OF THE OPTIMUM MOISTURE CONTENT AND RECOMPACTED TO AT LEAST 95 PERCENT RELATIVE COMPACTION (AASHTO-T-180).

ABBREVIATIONS
EC -- EPOXY COATED O.F. -- OUTSIDE FACE E.F. -- EACH FACE E.W. -- EACH WAY I.F. -- INSIDE FACE N.F. -- NEAR FACE
T.O.C. -- TOP OF CONCRETE B.O.C. -- BOTTOM OF CONCRETE CONT. -- CONTINUOUS

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES
FOR BURIED UTILITY INFORMATION
48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

August 2013 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 SB-5

TABLE SB-1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN

Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 ½	2	9/32
2	21	3	13/64
3	27 ½	5	9/16
4	33 ½	6	5/8
5	38 ½	8	11/16
6	43	9	25/32
7	47 ½	11	29/32
8	51	12	31/32
9	55	13	1 3/64
10	58 ½	15	1 9/64
11	61	16	1 25/64
12	64	18	1 31/64
13	67 ½	19	1 3/4
14	70 ½	21	1 7/8
15	73 ½	22	1 15/16

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   - LOCATION OF SEDIMENT BASIN.
   - TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   - FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER HD.
   - FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.
2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.
3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS AS A STORMWATER CONTROL.
4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.
5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
6. PIPE SCH 40 OR GREATER SHALL BE USED.
7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S). FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

SB-6 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 3 August 2013

NORTH AMERICAN GREEN — A Berkshire Company

Material and Performance Specification Sheet

North American Green
14649 Highway 41 North
Evansville, IN 47725
800-772-3040
FAX: 812-867-0247
www.nagreen.com

SC150 Erosion Control Blanket

The extended-term double net erosion control blanket shall be a machine-produced mat of 70% agricultural straw and 30% coconut fiber with a functional longevity of up to 24 months. (NOTE: functional longevity may vary depending upon climatic conditions, soil, geographical location, and elevation). The blanket shall be of consistent thickness with the straw and coconut evenly distributed over the entire area of the mat. The blanket shall be covered on the top side with a heavyweight photodegradable polypropylene netting having ultraviolet additives to delay breakdown and an approximate 0.83 x 0.83 (1.59 x 1.59 cm) mesh, and on the bottom side with a lightweight photodegradable polypropylene netting with an approximate 0.50 x 0.50 in [1.27 x 1.27 cm] mesh. The blanket shall be sewn together on 1.50 inch [3.81 cm] centers with degradable thread.

The SC150 shall meet requirements established by the Erosion Control Technology Council (ECTC) Specification and the US Department of Transportation, Federal Highway Administration's (FHWA) *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-03 Section 713.17 at a type 3.B Extended-term Erosion Control Blanket.*

The SC150 is also available with the DOT System™, which consists of installation staple patterns clearly marked on the erosion control blanket with environmentally safe paint. The blanket shall be manufactured with a colored thread stitched along both outer edges (approximately 2-5 inches [5-12.5 cm] from the edge) as an overlap guide for adjacent mats.

Material Content		
Matrix	70% Straw Fiber	0.35 lbs/yd² [0.19 kg/m²]
	30% Coconut Fiber	0.15 lbs/yd² [0.09 kg/m²]
Nettings	Top – Heavyweight photodegradable with UV additives	3.0 lb/1000 ft² [1.47 kg/100 m²]
	Bottom – Lightweight Photodegradable	1.5 lb/1000 ft² [0.73 kg/100 m²]
Thread	Degradable	

SC150 is available in the following standard roll sizes:

Width	6.67 ft (2.03 m)	16 ft (4.87 m)
Length	108 ft (32.92 m)	108 ft (32.92 m)
Weight ± 10%	44 lbs (19.95 kg)	105.6 lbs (47.9 kg)
Area	80.0 yd² (66.9 m²)	192 yd² (165.5 m²)

Index Value Properties:

Property	Test Method	Typical
Thickness	ASTM D6525	0.39 in (9.91 mm)
Resiliency	ECTC Guidelines	79%
Water Absorbency	ASTM D1117	280%
Mass/Unit Area	ASTM D4270	11.44 oz/yd² (388 g/m²)
Swell	ECTC Guidelines	30%
Smolder Resistance	ECTC Guidelines	Yes
Stiffness	ASTM D1388	1.11 oz-in
Light Penetration	ECTC Guidelines	8.7%
Tensile Strength – MD	ASTM D6818	146.0 lbs/ft (2.17 kN/m)
Elongation – MD	ASTM D6818	26.9%
Tensile Strength – TD	ASTM D6818	147.8 lbs/ft (2.19 kN/m)
Elongation – TD	ASTM D6818	25.2%

Performance Design Values:

Maximum Permissible Shear Stress		
Unvegetated Shear Stress	2.00 lbs/ft² (96 Pa)	
Unvegetated Velocity	8.00 fps (2.44 m/s)	

Slope Design Data: C Factors		
	Slope Gradients (S)	
Slope Length (L)	≤ 3:1	3:1 – 2:1	≥ 2:1
≤ 20 ft (6 m)	0.001	0.049	0.100
20-50 ft	0.051	0.079	0.145
≥ 50 ft (15.2 m)	0.10	0.110	0.190

Roughness Coefficients- Unveg.	
Flow Depth	Manning's n
≤ 0.50 ft (0.15 m)	0.050
0.50 – 2.0 ft	0.050 – 0.018
≥ 2.0 ft (0.60 m)	0.018

Bench Scale Testing* (NTPEP):

Test Method	Parameters	Results
ECTC Method 2 Rainfall	50 mm (2 in)/hr for 30 min	SLR** = 6.47
	100mm (4 in)/hr for 30 min	SLR** = 5.67
	150 mm (6 in)/hr for 30 min	SLR** = 5.68
ECTC Method 3 Shear Resistance	**Shear at 0.50 inch soil loss**	**2.72 lbs/ft²**
ECTC Method 4 Germination	Top Soil, Fescue, 21 day Incubation	538% improvement of biomass

* Bench Scale tests should not be used for design purposes
** Soil Loss Ratio = Soil loss with liner/Soil Loss with REF(* soil loss is based on regression analysis)

Product Participant of:

Updated 3/09

10/15/2020 Open Channel Flow Calculator

Copyright 2000 Dr. Xing Fang, Department of Civil Engineering, Lamar University.

POND 2 EMERGENCY SPILLWAY
Q_{100}=46.9 cfs

10/15/2020 Open Channel Flow Calculator

Copyright 2000 Dr. Xing Fang, Department of Civil Engineering, Lamar University.

DP8 SWALE
Q_{100}=15.7 cfs

TABLE 10-4

MAXIMUM PERMISSIBLE VELOCITIES FOR EARTH CHANNELS WITH VARIED GRASS LININGS AND SLOPES

Channel Slope	Lining	Permissible Mean Channel Velocity * (ft/sec)
0 - 5%	Sodded grass	7
	Bermudagrass	6
	Reed canarygrass	5
	Tall fescue	5
	Kentucky bluegrass	5
	Grass-legume mixture	4
	Red fescue	2.5
	Redtop	2.5
	Sericea lespedeza	2.5
	Annual lespedeza	2.5
	Small grains (temporary)	2.5
5 - 10%	Sodded grass	6
	Bermudagrass	5
	Reed canarygrass	4
	Tall fescue	4
	Kentucky bluegrass	4
	Grass-legume mixture	3
Greater than 10%	Sodded grass	5
	Bermudagrass	4
	Reed canarygrass	3
	Tall fescue	3
	Kentucky bluegrass	3

* For highly erodible soils, decrease permissible velocities by 25%.

* Grass lined channels are dependent upon assurances of continuous growth and maintenance of grass.

10-13

RIPRAP DESIGNATION	% SMALLER THAN GIVEN SIZE BY WEIGHT	INTERMEDIATE ROCK DIMENSION (INCHES)	D_{50}* (INCHES)
TYPE VL	70 - 100	12	6
	50 - 70	9	
	35 - 50	6	
	2 - 10	2	
TYPE L	70 - 100	15	9
	50 - 70	12	
	35 - 50	9	
	2 - 10	3	
TYPE M	70 - 100	21	12
	50 - 70	18	
	35 - 50	12	
	2 - 10	4	
TYPE H	70 - 100	30	18
	50 - 70	24	
	35 - 50	18	
	2 - 10	6	

*D_{50} = MEAN ROCK SIZE

Figure 8-34. Riprap and soil riprap placement and gradation (part 1 of 3)

8-76 Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual Volume 1 January 2016

EL PASO COUNTY FILE NO. PCD # SF-20-01

CLAREMONT BUSINESS PARK 2 FILING NO. 1
GENERAL NOTES AND DETAILS

PROJECT NO. 44-037	FILE: \dwg\Const Dwg\Storm - District\ST01.dwg		
DESIGNED BY: GW	SCALE	DATE: 10/15/2020	ST01
DRAWN BY: CLP	HORIZ: N/A	SHEET 5 OF 12	
CHECKED BY: VAS	VERT: N/A		

102 E. PIKES PEAK AVE. SUITE 500
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
M&S CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160

FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

COLORADO REGISTERED PROFESSIONAL ENGINEER VIRGIL A. SANCHEZ 37160 10-21-20

REVISIONS: NO. | DATE: | BY: | DESCRIPTION: | APRV'D: | BY: | DATE:

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CAUTION

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FOR BURIED UTILITY INFORMATION
48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

NOTE:
STORM 7 BETWEEN STATIONS 1+06.13 AND 3+06.97
SHALL HAVE GASKETED, WATERTIGHT JOINTS AND
ADHERE TO PERFORMANCE STANDARDS PER ASTM D3212.

STORM 5
STA 1+00.00 TO STA 5+92.88
(PRIVATE)

STORM 7
STA 1+00.00 TO STA 3+45.30
(PRIVATE)

HORIZ:
1" = 50'

VERT:
1" = 5'

EL PASO COUNTY FILE NO. PCD # SF-20-014

CLAREMONT BUSINESS PARK 2 FILING NO. 1
STORM SEWER PLAN & PROFILE

PROJECT NO. 44-037		DATE: 10/15/2020	SHEET 6 OF 12
DESIGNED BY: GW	SCALE: HORIZONTAL: 1"=50'		ST02
DRAWN BY: CLP	VERTICAL: 1"=5'		
CHECKED BY: VAS			

102 E. PIKES PEAK AVE. STE 500
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160

COLORADO REGISTERED PROFESSIONAL ENGINEER VIRGIL A. SANCHEZ 37160 10-21-20

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CALL 1-800-922-1987

CLAREMONT BUSINESS PARK 2 FILING NO. 1
STORM SEWER PLAN AND PROFILE

PROJECT NO. 44-037	DESIGNED BY: GW DRAWN BY: CLP CHECKED BY: VAS	SCALE: HORIZONTAL: 1"=50' VERTICAL: 1"=5'	DATE: 10/15/2020
			SHEET 7 OF 12
			ST03

102 E. PIKES PEAK AVE. STE 500
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
CIVIL CONSULTANTS, INC.

STORM 10
STA 1+00.00 TO STA 4+07.61
(PRIVATE)

STORM 11
STA 1+00.00 TO STA 1+43.87
(PRIVATE)

HORIZ:
1" = 50'
0 25 50 100
Scale in Feet

VERT:
1" = 5'
0 2.5 5 10
Scale in Feet

EL PASO COUNTY FILE NO. PCD # SF-20-014

FOR AND ON BEHALF OF MCS CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160

COLORADO REGISTERED PROFESSIONAL ENGINEER
VIRGIL A. SANCHEZ
37160
10-21-20

REVISIONS:					
NO.	DATE:	BY:	DESCRIPTION:	APRV'D. BY:	DATE:

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MAINTENANCE & ACCESS ROAD BELOW EURV TYPICAL SECTION

NOT TO SCALE

MAINTENANCE & ACCESS ROAD ABOVE EURV TYPICAL SECTION

NOT TO SCALE

SECTION B-B DPB SWALE

NOT TO SCALE

SPILLWAY SECTION A-A (PRIVATE)

NOT TO SCALE

POND 2 WATER QUALITY DETENTION BASIN DATA
WQ WATER SURFACE EL=6366.17
WQ VOLUME=0.143 AC-FT.
EURV WATER SURFACE EL=6366.84
EURV VOLUME=0.223 AC-FT
100-YR WATER SURFACE EL=6367.38
SPILLWAY CREST EL=6367.74
TOP OF EMBANKMENT EL=6370.00
100-YR VOLUME=0.299 AC-FT
100-YR INFLOW=29.5 CFS
100-YR RELEASE=23.8 CFS

GRADING NOTES:

1. ALL PROPOSED CONTOURS ARE TO FINISHED GRADE.
2. EARTHEN CUT AND FILL SLOPES SHALL BE 3:1 MAXIMUM. SLOPES IN EXCESS OF 4:1 SHALL BE COVERED WITH SOIL RETENTION BLANKET OVER 4" MIN. THICKNESS OF TOPSOIL AND SEEDED.
3. IF THE PROJECT IS CONSTRUCTED DURING THE SUMMER WHEN SEEDING IS NOT ALLOWED, APPLY 1-1/2 TONS OF CERTIFIED WEED FREE MULCH PER ACRE MECHANICALLY CRIMPED INTO THE SOIL IN COMBINATION WITH AN ORGANIC MULCH TACKIFIER.
4. PRIOR TO ANY CONSTRUCTION ACTIVITIES THE PROPOSED SILT FENCE SHOWN ON THE EROSION CONTROL SHEET SHALL BE CONSTRUCTED. THE FENCE SHALL BE REMOVED UPON THE LATER OF STABILIZATION OF THE SITE OR COMPLETION OF CONSTRUCTION.
5. TO REDUCE THE POTENTIAL FOR CLOGGING OF DEBRIS GRATES, NO STRAW MULCH SHALL BE USED WITHIN THE EURV OR WQCV OF A DETENTION BASIN. INSTEAD, EROSION CONTROL BLANKETS SHALL BE INSTALLED FOR A WIDTH OF AT LEAST 6 FEET ON EITHER SIDE OF CONCRETE LOW-FLOW CHANNELS. THE BLANKETS SHALL COMPLY WITH THE MATERIALS AND INSTALLATION REQUIREMENTS FOR EROSION CONTROL BLANKETS (STRAW COCONUT OR 100 PERCENT COCONUT). SITE-SPECIFIC CONDITIONS MAY REQUIRE ADDITIONAL BLANKET OR OTHER EROSION CONTROL MEASURES.

SAND FILTER WATER QUALITY POND 2 (PRIVATE)

POND WARNING SIGN

SCALE: 3/8" = 1'

LEGEND

EX	EXISTING
FUT	FUTURE
PROP	PROPOSED
	PROP MAJ CONT
	PROP MIN CONT
	EXIST MAJ CONT
	EXIST MIN CONT
	MAINTENANCE/ACCESS ROAD ABOVE EURV 8" CDOT CLASS 2
	MAINTENANCE/ACCESS ROAD BELOW EURV 12" CDOT CLASS 2
	RIPRAP RUNDOWN & LOW TAILWATER BASIN
	SC150 NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR EQUIVALENT
	EX. FLOW ARROW
	PROP. FLOW ARROW
	PROPERTY LINE
	PROP STORM SEWER PIPE
	EASEMENT LINE
	EMERGENCY OVERFLOW

FOR LOCATING & MARKING GAS, ELECTRIC, WATER & TELEPHONE LINES

FOR BURIED UTILITY INFORMATION
48 HRS BEFORE YOU DIG
CALL 1-800-922-1987

CLAREMONT BUSINESS PARK 2 FILING NO. 1

WATER QUALITY POND 2 SITE PLAN

DATE: 10/15/2020

SHEET 8 OF 12

ST04

PROJECT NO. 44-037

SCALE: HORIZONTAL: N/A VERTICAL: N/A

DESIGNED BY: GW
DRAWN BY: CLP
CHECKED BY: VAS

102 E. PIKES PEAK AVE. STE 500
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

MS CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF MS CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160

COLORADO REGISTERED PROFESSIONAL ENGINEER VIRGIL A. SANCHEZ 37160 10-21-20

REVISIONS:

NO.	DATE:	BY:	DESCRIPTION:	APRV'D.	BY:	DATE:

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CAUTION

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RESTRICTOR PLATE~30" OUTFALL PIPE

NOT TO SCALE

RESTRICTOR PLATE~4" UNDERDRAIN

NOT TO SCALE

SECTION A-A

NOT TO SCALE

POND 2 WATER QUALITY OUTLET STRUCTURE

NOT TO SCALE

GRATE DETAIL "A"

GRATE DETAIL "B"

NOTE:
ALL GRATES, IMBEDS, AND FASTENERS SHALL BE FABRICATED USING GALVANIZED STEEL, UNLESS OTHERWISE NOTED.

ALL GRATE DIMENSIONS TO BE FIELD VERIFIED PRIOR TO FABRICATION. ALL GRATE MATERIAL SHALL BE GALVANIZED.

GRATE PLAN

NOT TO SCALE

SECTION C-C BACK WALL

NOT TO SCALE

SECTION B-B FRONT WALL

NOT TO SCALE

Table SF-1. Gradation specifications for CDOT Class B or C filter material
(Source: CDOT Table 703-7)

	CDOT Class B filter material	CDOT Class C filter material
Sieve Size	Mass Percent Passing Square Mesh Sieves	
37.5 mm (1.5")	100	
19.0 mm (0.75")		100
4.75 mm (No.4)	20-60	60-100
1.18 um (No. 16)	10-30	
300 um (No. 50)	0-10	10-30
150 um (No. 100)		0-10
75 um (No. 200)	0-3	0-3

Table SF-2. Dimensions for Slotted Pipe[1]

Pipe Size	Slot Length	Maximum Slot Width	Slot Centers	Open Area (per foot)
4"	1-1/16"	0.032"	0.413"	1.90 in^2
6"	1-3/8"	0.032"	0.516"	1.98 in^2

[1] Pipe must conform to requirements of ASTM designation F949. There shall be no evidence of splitting, cracking, or breaking when the pipe is tested per ASTM test method D2412 in accordance with F949 section 7.5 and ASTM F794 section 8.5. Contech A-2000 slotted pipe (or equal).

Figure SF-1. Sand Filter Plan and Sections

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CLAREMONT BUSINESS PARK 2 FILING NO. 1
OUTLET STRUCTURE POND 2 DETAILS

PROJECT NO. 44-037	DATE: 10/21/2020	SCALE: HORIZONTAL: N/A VERTICAL: N/A	ST05
DESIGNED BY: GW DRAWN BY: CLP CHECKED BY: VAS	SHEET 9 OF 12		

102 E. PIKES PEAK AVE. 5TH FLOOR
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF MATTHEW MANN CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160

COLORADO REGISTERED PROFESSIONAL ENGINEER VIRGIL A. SANCHEZ 37160 10-21-20

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LEGEND

EX	EXISTING
FUT	FUTURE
PROP	PROPOSED
	PROP MAJ CONT
	PROP MIN CONT
	EXIST MAJ CONT
	EXIST MIN CONT
	RIPRAP
	SC150 NORTH AMERICAN GREEN EROSION CONTROL BLANKET OR EQUIVALENT
	EX. FLOW ARROW
	PROP. FLOW ARROW
	PROPERTY LINE
	PROP STORM SEWER PIPE
	EASEMENT LINE

PROFILE

PIPE SIZE OR BOX HEIGHT	D	W*	L
18" – 24"	1'-0"	4'	12'

LOW TAILWATER RIPRAP BASIN FIG. 9-37

NOT TO SCALE

STORM 5 TEMP SEDIMENT BASIN

SCALE 1"=10'

STORM 7 OUTFALL

NOT TO SCALE

STORM 10 OUTFALL

NOT TO SCALE

RIPRAP RUNDOWN

NOT TO SCALE

SECTION A-A RIPRAP RUNDOWN

NOT TO SCALE

SECTION B-B RIPRAP RUNDOWN

NOT TO SCALE

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WATER QUALITY POND 2 DETAILS & TSB

PROJECT NO. 44-037	DATE: 08/19/2020	SHEET 10 OF 12	ST06
DESIGNED BY: GW	SCALE: HORIZONTAL: N/A		
DRAWN BY: CLP	VERTICAL: N/A		
CHECKED BY: VAS			

102 E. PIKES PEAK AVE. STE 500
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.

VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160

COLORADO REGISTERED PROFESSIONAL ENGINEER VIRGIL A. SANCHEZ 37160 10-21-20

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STEEL GRATE QUANTITIES

NO. PIECES	DESCRIPTION	LENGTH	LBS PER FT.	WEIGHT (LBS.)
4	S4 x 7.7 BEAM	40"	7.70	103
2	3½" x ¼" FLAT	26⅝"	2.98	13
2	3" x ¼" FLAT	26⅝"	2.55	12

TOTAL LBS. - 128

QUANTITIES FOR ONE INLET

H	CONCRETE (CU. YDS.)	STEEL (LBS.)	NO. STEPS REQ'D.
2'-6"	0.9	75	0
3'-0"	1.0	80	0
3'-6"	1.2	96	0
4'-0"	1.3	101	1
4'-6"	1.4	116	2
5'-0"	1.5	122	2
5'-6"	1.7	137	2
6'-0"	1.8	142	3
6'-6"	1.9	158	3
7'-0"	2.0	163	3
7'-6"	2.2	179	4
8'-0"	2.3	184	4
8'-6"	2.4	199	4
9'-0"	2.5	205	5
9'-6"	2.7	220	5
10'-0"	3.0	235	6
11'-6"	3.4	251	6

▼ PIPE INSIDE DIAMETER SHALL BE 30 IN. OR LESS. 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.

GENERAL NOTES

1. INLET TYPE C 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. REINFORCING BARS SHALL BE EPOXY COATED AND DEFORMED #4, AND SHALL HAVE A MINIMUM 2 IN. CLEARANCE. CUT OR BEND AROUND PIPES AS REQUIRED.
4. CONCRETE SLOPE AND DITCH PAVING SHALL BE IN ACCORDANCE WITH SECTION 507. REINFORCEMENT FOR CONCRETE SLOPE PAVING SHALL BE 6 X 6 - W1.4 X W1.4 OR 6 X 6 - W2.1 X W2.1.
5. STRUCTURAL STEEL FOR GRATES AND GRATE INSTALLATION HARDWARE SHALL BE GALVANIZED, AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
6. THE STANDARD INLET GRATES SHALL BE USED ON ALL TYPE C INLETS UNLESS CLOSE MESH GRATES ARE SPECIFIED ON THE PLANS.
7. 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.
8. STEPS SHALL BE PROVIDED WHEN INLET DIMENSION "H" IS EQUAL TO OR GREATER THAN 3 FT. - 6 IN., AND SHALL CONFORM TO AASHTO M 199.
9. SEE STANDARD PLAN M-604-11, FOR REINFORCEMENT AROUND THE PIPE OPENING.
10. ALL INLETS SHALL HAVE A 4 IN. 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 TOP OF THE INLET WITH A PERMANENT FASTENER.

BAR LIST FOR H = 2 FT.-6 IN. AND BENDING DIAGRAM

MARK	NO. REQ'D.	HEIGHT	LENGTH
401	2	2'-3"	7'-11"
401	6	2'-7"	8'-7"
402	3	*U1	15'-0"

NO. 401 — 3'-4" — *U1

*U1 INCREASE DIMENSION 5 IN. FOR EACH 6 IN. INCREASE OF "H" ABOVE 2 FT.-6 IN.

NO. 402 — 3'-6" — 6" — 12"

ADD ONE BAR FOR EACH FT. INCREASE OF "H" ABOVE 2 FT.- 6 IN.

402 BARS SHALL BE EQUALLY SPACED FROM EACH OTHER.

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Denver, Colorado 80222
Phone: (303) 757-9083
Fax: (303) 757-9820
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INLET, TYPE C

Issued By: Project Development Branch July 4, 2012

STANDARD PLAN NO.
M-604-10
Sheet No. 1 of 1

GENERAL NOTES

1. CONCRETE SHALL BE CLASS B. INLET MAY BE CAST-IN-PLACE OR PRECAST.
2. SEE PLANS FOR SIZE AND LOCATION OF PIPE.
3. STRUCTURAL STEEL FOR GRATES AND GRATE INSTALLATION HARDWARE SHALL BE GALVANIZED AND SHALL BE IN ACCORDANCE WITH SUBSECTION 712.06.
4. STANDARD INLET GRATES SHALL BE USED ON ALL TYPE D INLETS UNLESS CLOSE MESH GRATES ARE SPECIFIED ON THE PLANS.
5. STEPS SHALL BE PROVIDED WHEN INLET DIMENSION "H" IS EQUAL TO OR GREATER THAN 3 FT.-6 IN. AND SHALL CONFORM WITH AASHTO M 199.
6. REINFORCING BARS SHALL BE EPOXY COATED AND DEFORMED #4, AND SHALL HAVE A 2 IN. MINIMUM CLEARANCE. CUT OR BEND BARS AROUND PIPE AS REQUIRED.

"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

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

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

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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9083
Fax: (303) 757-9820
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INLET, TYPE D

Issued By: Project Development Branch on July 04, 2006

STANDARD PLAN NO.
M-604-11
Sheet No. 1 of 1

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Fax: (303) 757-9820
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CURB INLET TYPE R

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STANDARD PLAN NO.
M-604-12
Sheet No. 1 of 2

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.	L = 10 FT. LENGTH	L = 15 FT. NO. REQ'D.	L = 15 FT. LENGTH	INLETS: H > 5 FT.: L = 10 FT. NO. REQ'D.	L = 10 FT. LENGTH	L = 15 FT. NO. REQ'D.	L = 15 FT. LENGTH
401	4	11"	II	15	*	21	*	26	*	11	*	11	*
402	4	11"	II	7	*	13	*	18	*	7	*	7	*
403	4	9"	II	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"	*	4'-0"
405	4	6"	VI	11	6'-10"	21	6'-10"	31	6'-10"	11	6'-10"	11	6'-10"
406	4	6"	VIII	7	8'-10"	7	13'-10"	7	18'-10"	7	8'-10"	7	8'-10"
407	4	9"	II	*	5'-10"	*	10'-10"	*	15'-10"	*	5'-10"	*	5'-10"
408	4	12"	II	3	6'-10"	3	11'-10"	3	16'-10"	3	11'-10"	3	16'-10"
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"
■8 B 8.5				1	5'-10"	1	10'-10"	1	15'-10"	1	10'-10"	1	15'-10"
				2 BARS, 1 RODS	—	4 BARS, 3 RODS	—	6 BARS, 5 RODS	—	4 BARS, 3 RODS	—	8 BARS, 5 RODS	—
						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 IN. 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 3/4 IN. 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 IN. MINIMUM CLEARANCE. ALL REINFORCING BARS SHALL BE 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.

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4201 East Arkansas Avenue
Denver, Colorado 80222
Phone: (303) 757-9083
Fax: (303) 757-9820
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CURB INLET TYPE R

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STANDARD PLAN NO.
M-604-12
Sheet No. 2 of 2

EL PASO COUNTY FILE NO. PCD # SF-20-014

CLAREMONT BUSINESS PARK 2 FILING NO.1
STANDARD DETAILS

DATE: 07/29/2020
SCALE: HORIZONTAL: N/A VERTICAL: N/A
SHEET 11 OF 12
ST07

PROJECT NO. 44-037
DESIGNED BY: GT
DRAWN BY: CLP
CHECKED BY: VAS

20 BOULDER CRESCENT, SUITE 110
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485
CIVIL CONSULTANTS, INC.

FOR AND ON BEHALF OF M&S CIVIL CONSULTANTS, INC.
VIRGIL A. SANCHEZ, COLORADO P.E. NO. 37160
COLORADO REGISTERED PROFESSIONAL ENGINEER 37160 10-21-20

REVISIONS: NO. DATE: BY: DESCRIPTION: APRV'D. BY: DATE:

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CAUTION

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SHEET NO.	TOTAL SHEETS

END SECTIONS FOR HDPE PIPE

Dia.	Gauge	Weight	* A	* H	* L	* W	Slope	Overall Width
6"	18	10	4	3	8	12	2	20"
8"	18	14	5 3/4	4	14 1/2	16	2 1/4	27 1/2"
10"	18	17	7 5/8	6	14 1/2	20	2 1/2	35 1/4"
12"	16	25	7	6	21	24	2 1/2	39"
15"	16	33	8	6	26	30	2 1/2	46"
18"	16	42	8	6	31	36	2 1/2	52"
21"	16	49	9	6	36	42	2 1/2	60"
24"	16	65	10	6	41	48	2 1/2	68"
30"	14	123	12	8	51	60	2 1/2	84"
36"	14	135	14	9	60	72	2 1/2	100"
42"	12	320	16	11	69	84	2 1/2	116"
48"	12	375	18	12	78	90	2 1/4	126"
54"	12	440	18	12	84	102	2 1/4	138"
60"	12/10	610	18	12	87	114	2	150"

Toe plate extensions where specified, to be punched to match holes in apron flp. 3/8" bolts to be furnished. The length of toe plate to be as follows: W + 10" for 12" to 30" diameter pipes inclusive. W + 20" for 36" to 60" diameter pipes inclusive.

Multiple panel end sections shall have lap seams which are to be tightly jointed by bolts. Corner plate, and toe plate to be same gauge as end section.

** – Dimensions in Inches Plus or Minus Standard Shop Tolerance.*

TYPE 1
(10" & Smaller)

TYPE 2
(12" & Larger)

CONNECTIONS

TAPERED SLEEVE FOR ATTACHING STEEL END SECTIONS TO SMOOTH PIPE

Form 1/2"x 2 2/3" Corrugations. Maintain Inside Diameter of Sleeve.

NOTE: Metal to be 12 Gage Smooth Galvanized In Accordance with AASHTO M218.

SMOOTH TAPERED SLEEVE DETAIL

No.	Date	Revisions

STANDARD END SECTION FOR HDPE PIPES

ADS HP STORM 12"- 60" PIPE SPECIFICATION

Scope
This specification describes 12- through 60-inch (300 to 1500 mm) ADS HP Storm pipe for use in gravity-flow storm drainage applications.

Pipe Requirements
- 12- through 30-inch (300 to 750 mm) pipe shall have a smooth interior and annular exterior corrugations and meet or exceed ASTM F2736 and AASHTO M330
- 36- through 60-inch (900 to 1500 mm) pipe shall have a smooth interior and annular exterior corrugations and meet or exceed ASTM F2881 and AASHTO M330
- Manning's "n" value for use in design shall be 0.012

Joint Performance
Pipe shall be joined with a gasketed integral bell & spigot joint meeting the requirements of ASTM F2736 or F2881, for the respective diameters.

12- through 60-inch (300 to 1500 mm) shall be watertight according to the requirements of ASTM D3212. Spigots shall have gaskets meeting the requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

12- through 60-inch (300 to 1500 mm) diameters shall have a reinforced bell with a polymer composite band installed by the manufacturer.

Fittings
Fittings shall conform to ASTM F2736, ASTM F2881 and AASHTO M330, for the respective diameters. Bell & spigot connections shall utilize a spun-on, welded or integral bell and spigot with gaskets meeting ASTM F477. Bell & spigot fittings joint shall meet the watertight joint performance requirements of ASTM D3212. Corrugated couplings shall be split collar, engaging at least 2 full corrugations.

Field Pipe and Joint Performance
To assure watertightness, field performance verification may be accomplished by testing in accordance with ASTM F1417 or ASTM F2487. Appropriate safety precautions must be used when field-testing any pipe material. Contact the manufacturer for recommended leakage rates.

Material Properties
Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2736, Section 4, ASTM F2881, Section 5 and AASHTO M330, Section 6.1, for the respective diameters.

Installation
Installation shall be in accordance with ASTM D2321 and ADS recommended installation guidelines, with the exception that minimum cover in traffic areas for 12- through 48-inch (300 to 1200 mm) diameters shall be one foot, (0.3 m) and for 60-inch (1500 mm) diameters, the minimum cover shall be 2 ft. (0.6 m) in single run applications. Backfill for minimum cover situations shall consist of Class 1, Class 2 (minimum 90% SPD) or Class 3 (minimum 95%) material. Maximum fill heights depend on embedment material and compaction level; please refer to Technical Note 2.04. Contact your local ADS representative or visit our website at www.ads-pipe.com for a copy of the latest installation guidelines.

Pipe Dimensions

Nominal Pipe I.D. in (mm)	12 (300)	15 (375)	18 (450)	24 (600)	30 (750)	36 (900)	42 (1050)	48 (1200)	60 (1500)
Average Pipe I.D. in (mm)	12.1 (307)	14.5 (368)	18.0 (457)	24.1 (612)	30.1 (765)	36.1 (917)	42.0 (1067)	47.9 (1216)	59.9 (1521)
Average Pipe O.D. in (mm)	14.4 (366)	17.8 (452)	21.7 (551)	28.8 (732)	35.8 (910)	43.1 (1094)	47.2 (1199)	53.9 (1369)	66.5 (1689)
Minimum Pipe Stiffness * @ 5% Deflection* in/in/lb (N/m)	75 (525)	60 (415)	50 (345)	40 (276)	40 (276)	35 (241)	35 (241)	35 (241)	30 (206)

* Minimum pipe stiffness values listed; contact a representative for maximum values

Table 5-7
Bend Radii for ADS Thermoplastic Pipe

Pipe Diameter, in (mm)	Joint Type	Maximum Deflection at Joint (deg)	Radius, ft (m), per pipe length		
			10 ft (3m)	13 ft (4m)	20 ft (6m)
4 – 36 (100 – 900)	N-12 (spin band or bell-bell couplers)	3	191 (58)	246 (76)	382 (116)
42 – 60 (1050 – 1500)	N-12 (spin band or bell-bell couplers)	1.5	382 (117)	497 (152)	764 (233)
4 – 24 (100 – 600)	N-12 ST IB or N-12 WT IB (bell & spigot)	1.5	n/a	497 (152)	764 (233)
30 – 60 (750 – 1500)	N-12 ST IB or N-12 WT IB (bell & spigot)	1	n/a	745 (227)	1146 (349)
12 – 60 (300 – 1500)	HP STORM, SanTite, SanTite HP or Low Head, (extended bell & spigot)	3	n/a	248 (76)	382 (116)

Bend radii calculated with joint articulations only. Calculations do not assume any bend in the pipe wall. Joint deflections based on joint profiles and accounts for possible field variances.

12"-60" HP STORM WATERSTOP GROUTED MANHOLE CONNECTION (DUAL WALL)

PIPE SIZE	PIPE OD	"A" MIN. HOLE Ø	"B" MIN. DISTANCE FROM PIPE INVERT TO STRUCTURE INVERT	ADS PRODUCT CODE
12" (300mm)	14.5" (368mm)	19.50" (495mm)	3.7" (94mm)	1202PS
15" (375mm)	17.6" (447mm)	23.00" (584mm)	4.0" (102mm)	1502PS
18" (450mm)	21.2" (538mm)	26.50" (673mm)	4.2" (107mm)	1802PS
21" (525mm)	24.8" (630mm)	30.25" (768mm)	4.5" (114mm)	2102PS
24" (600mm)	27.6" (706mm)	33.25" (845mm)	4.5" (114mm)	2402PS
30" (750mm)	35.1" (892mm)	40.50" (1029mm)	5.2" (132mm)	3002PS
36" (900mm)	41.1" (1044mm)	47.00" (1194mm)	5.5" (140mm)	3602PS
42" (1050mm)	47.7" (1212mm)	53.00" (1346mm)	5.7" (145mm)	4202PS
48" (1200mm)	53.6" (1361mm)	59.00" (1499mm)	5.7" (145mm)	4802PS
60" (1500mm)	66.3" (1684mm)	72.00" (1829mm)	6.4" (163mm)	6002PS

NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST ENSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

INSTALLATION RECOMMENDATIONS ARE ALSO SPECIFIED IN INSTALLATION GUIDE 1.05: WATERSTOP INSTALLATION

REV	DESCRIPTION	BY	MM/DD/YY	CHKD
3	ADDED METRIC UNITS AND RENAMED	TJR	01/20/16	

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12"-60" HP STORM WATERSTOP GROUTED MANHOLE CONNECTION (DUAL WALL) — DRAWING NUMBER: STD-206A

ADS, 4640 TRUEMAN BLVD HILLIARD, OHIO 43026 — ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY: JAB | DATE: 4/3/08 | REV. NO.: | SCALE: NTS | SHEET: 1 OF 1

Sediment Basin (SB) SC-7

SC-7 Sediment Basin (SB)

TABLE SB–1. SIZING INFORMATION FOR STANDARD SEDIMENT BASIN

Upstream Drainage Area (rounded to nearest acre), (ac)	Basin Bottom Width (W), (ft)	Spillway Crest Length (CL), (ft)	Hole Diameter (HD), (in)
1	12 ½	2	9/32
2	21	3	5/16
3	28	5	⅜
4	33 ½	6	7/16
5	38 ½	8	9/16
6	43	9	23/32
7	47 ¼	11	25/32
8	51	12	27/32
9	55	13	⅞
10	58 ¼	15	15/16
11	61	16	29/32
12	64	18	7/8
13	67 ½	19	1 1/32
14	70 ½	21	1 ⅛
15	73 ¼	22	1 5/32

SEDIMENT BASIN INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION OF SEDIMENT BASIN.
   –TYPE OF BASIN (STANDARD BASIN OR NONSTANDARD BASIN).
   –FOR STANDARD BASIN, BOTTOM WIDTH W, CREST LENGTH CL, AND HOLE DIAMETER, HD.
   –FOR NONSTANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT H, NUMBER OF COLUMNS N, HOLE DIAMETER HD AND PIPE DIAMETER D.
2. FOR STANDARD BASIN, BOTTOM DIMENSION MAY BE MODIFIED AS LONG AS BOTTOM AREA IS NOT REDUCED.
3. SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO ANY OTHER LAND–DISTURBING ACTIVITY THAT RELIES ON ON BASINS AS AS A STORMWATER CONTROL.
4. EMBANKMENT MATERIAL SHALL CONSIST OF SOIL FREE OF DEBRIS, ORGANIC MATERIAL, AND ROCKS OR CONCRETE GREATER THAN 3 INCHES AND SHALL HAVE A MINIMUM OF 15 PERCENT BY WEIGHT PASSING THE NO. 200 SIEVE.
5. EMBANKMENT MATERIAL SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D698.
6. PIPE SCH 40 OR GREATER SHALL BE USED.
7. THE DETAILS SHOWN ON THESE SHEETS PERTAIN TO STANDARD SEDIMENT BASIN(S) FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

SEDIMENT BASIN MAINTENANCE NOTES

1. INSPECT BMPs EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPs SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPs AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.
2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
4. SEDIMENT ACCUMULATED IN BASIN SHALL BE REMOVED AS NEEDED TO MAINTAIN BMP EFFECTIVENESS, TYPICALLY WHEN SEDIMENT DEPTH REACHES ONE FOOT (I.E., TWO FEET BELOW THE SPILLWAY CREST).
5. SEDIMENT BASINS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND GRASS COVER IS ACCEPTED BY THE LOCAL JURISDICTION.
6. WHEN SEDIMENT BASINS ARE REMOVED, ALL DISTURBED AREAS SHALL BE COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED AS APPROVED BY LOCAL JURISDICTION.

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO)

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

Sediment Basin (SB) SC-7

HP STORM TRENCH INSTALLATION DETAIL (ALTERNATE)

TABLE 1, RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN TRENCH WIDTH
12" (300mm)	30" (750mm)
15" (375mm)	34" (860mm)
18" (450mm)	39" (990mm)
24" (600mm)	46" (1150mm)
30" (750mm)	56" (1420mm)
36" (900mm)	64" (1630mm)
42" (1050mm)	72" (1830mm)
48" (1200mm)	80" (2030mm)
60" (1500mm)	96" (2440mm)

NOTES:

1. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL WHEN REQUIRED.
2. SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION OF ASTM D2321. CLASS IVB MATERIALS (MH, CH), AS DEFINED IN PREVIOUS VERSIONS OF ASTM D2321 ARE NOT APPROPRIATE BACKFILL MATERIALS.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, III, OR IV. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER, UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 12"-24" (300mm-600mm) DIAMETER PIPE; 6" (150mm) FOR 30"-60" (750mm-900mm) DIAMETER PIPE. THE MIDDLE 1/3 BENEATH THE PIPE (INVERT SHALL BE LOOSELY PLACED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
5. BACKFILL: FOR PIPES OUTSIDE OF PAVEMENT CLASS I MATERIAL TO BE USED FOR BACKFILL UP TO THE SPRINGLINE OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER, UNLESS OTHERWISE NOTED BY THE ENGINEER. CLASS I MATERIAL MUST BE COMPACTED IN 6" (200mm) LIFTS.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (300mm) FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION.
7. SELECT NATIVE CLEAN BACKFILL SHALL BE WELL PLACED, MODERATELY COMPACTED (85% SPD), CLASS IV OR BETTER PER ASTM D2321 WITH NO FOREIGN DEBRIS INCLUDING ROCKS, LARGE CLUMPS ORGANIC MATERIAL, OR FROZEN MATERIAL.
8. HP ALTERNATE STORM TRENCH DETAIL MUST BE APPROVED BY DESIGN ENGINEER. DETAIL DOES NOT SUPERSEDE ADS STANDARD DETAIL STD-108.

TABLE 2, MAXIMUM COVER FOR ADS HP STORM PIPE, ALTERNATE INSTALLATION, ft (mm)(2)

	SELECT NATIVE CLEAN MATERIAL CLASSIFICATION		
PIPE DIAM.	CLASS II	CLASS III	CLASS IV
12" (300mm)	17 (5.2m)	14 (4.3m)	11 (3.4m)
15" (375mm)	17 (5.2m)	14 (4.3m)	10 (3.0m)
18" (450mm)	16 (4.9m)	13 (4.0m)	10 (3.0m)
24" (600mm)	14 (4.3m)	12 (3.7m)	9 (2.7m)
30" (750mm)	13 (4.0m)	12 (3.7m)	8 (2.4m)
36" (900mm)	11 (3.4m)	11 (3.4m)	7 (2.1m)
42" (1050mm)	11 (3.4m)	11 (3.4m)	7 (2.1m)
48" (1200mm)	11 (3.4m)	10 (3.0m)	6 (1.8m)
60" (1500mm)	11 (3.4m)	10 (3.0m)	6 (1.8m)

FILL HEIGHT TABLE GENERATED ASSUMING DRY CONDITIONS, OUTSIDE OF WATER TABLE. FOR INSTALLATION WITHIN THE WATER TABLE, CONTACT APPLICATIONS ENGINEERING.

REV.	DESCRIPTION	BY	MM/DD/YY	CHKD
4	CLASS I COMPACTION	CMP	03/08/2016	

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HP STORM TRENCH DETAIL (ALTERNATE) — DRAWING NUMBER: STD-109

ADS, 4640 TRUEMAN BLVD HILLIARD, OHIO 43026 — ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY: JAB | DATE: 4/3/08 | REV. NO.: | SCALE: NTS | SHEET: 1 OF 1

N-12 HP STORM TRENCH INSTALLATION DETAIL

TABLE 1, RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN TRENCH WIDTH
12" (300mm)	30" (750mm)
15" (375mm)	34" (860mm)
18" (450mm)	39" (990mm)
24" (600mm)	46" (1200mm)
30" (750mm)	56" (1420mm)
36" (900mm)	64" (1620mm)
42" (1050mm)	72" (1830mm)
48" (1200mm)	80" (2030mm)
60" (1500mm)	96" (2440mm)

TABLE 2, MINIMUM RECOMMENDED COVER HEIGHTS ON VEHICLE LOADING CONDITIONS

	SURFACE LIVE LOADING CONDITION	
PIPE DIAM.	H-25	HEAVY CONSTRUCTION (1ST AXLE LOAD) *
12" - 48" (300mm - 1200mm)	12" (300mm)	48" (1200mm)
60" (1500 mm)	24" (600mm)	60" (1500mm)

* VEHICLES IN EXCESS OF 275 MVP REQUIRE ADDITIONAL COVER

TABLE 3, MAXIMUM COVER FOR ADS N-12 HP PIPE, ft

	CLASS I		CLASS II		CLASS III		CLASS IV
PIPE DIA.	COMPACTED	85%	90%	95%	95%	90%	85%	90%
12" (300mm)	39 (11.9m)	27 (8.2m)	20 (6.1m)	16 (4.9m)	24 (7.3m)	16 (4.9m)	14 (4.3m)	13 (4.0m)
15" (375mm)	42 (12.8m)	29 (8.8m)	21 (6.4m)	16 (4.9m)	22 (6.7m)	17 (5.2m)	15 (4.6m)	14 (4.3m)
18" (450mm)	36 (11.0m)	25 (7.6m)	18 (5.5m)	15 (4.6m)	19 (5.8m)	16 (4.9m)	14 (4.3m)	13 (4.0m)
24" (600mm)	31 (9.4m)	22 (6.7m)	16 (4.9m)	11 (3.4m)	16 (4.9m)	12 (3.7m)	11 (3.4m)	10 (3.0m)
30" (750mm)	36 (11.0m)	25 (7.6m)	18 (5.5m)	13 (4.0m)	19 (5.8m)	14 (4.3m)	13 (4.0m)	12 (3.7m)
36" (900mm)	32 (9.8m)	23 (7.0m)	16 (4.9m)	12 (3.7m)	18 (5.5m)	13 (4.0m)	12 (3.7m)	11 (3.4m)
42" (1050mm)	37 (11.3m)	26 (7.9m)	18 (5.5m)	13 (4.0m)	18 (5.5m)	13 (4.0m)	12 (3.7m)	9 (2.7m)
48" (1200mm)	35 (10.7m)	25 (7.6m)	17 (5.2m)	12 (3.7m)	17 (5.2m)	12 (3.7m)	11 (3.4m)	8 (2.4m)
60" (1500mm)	37 (11.3m)	26 (7.9m)	17 (5.2m)	12 (3.7m)	18 (5.5m)	13 (4.0m)	11 (3.4m)	8 (2.4m)

FILL HEIGHT TABLE GENERATED USING AASHTO SECTION 12, LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS:
HEIGHT OF WATER (H_w) = CROWN + 1ft, UNIT WEIGHT OF SOIL (γ_s) = 120 PCF

REV	DESCRIPTION	BY	MM/DD/YY	CHKD
3	GENERAL UPDATE	CMP	03/4/13	

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TYPICAL STORM TRENCH DETAIL N-12 (NEW) PERFORMANCE (HP) — DRAWING NUMBER: STD-108

ADS, 4640 TRUEMAN BLVD HILLIARD, OHIO 43026 — ADVANCED DRAINAGE SYSTEMS, INC.

DRAWN BY: JAB | DATE: 4/3/08 | REV. NO.: 3 | SCALE: NTS | SHEET: 1 OF 1

STORM SEWER GENERAL NOTES

1. THE CONTRACTOR SHALL COORDINATE WITH THE GEOTECHNICAL ENGINEER AND PIPE MANUFACTURE (ADS) TO DETERMINE ACCEPTABLE MATERIAL(S) FOR BACKFILL AND SHALL PRESENT A COPY OF THE TYPICAL TRENCH SECTION(S) TO EL PASO COUNTY ENGINEERING FOR ACCEPTANCE PRIOR TO CONSTRUCTION.
2. COMPACTION AND MATERIAL TESTING SHALL BE IN ACCORDANCE WITH EL PASO COUNTY SPECIFICATIONS.
3. THE SPECIFICATION AND GUIDELINES PROVIDED ON THIS PLAN ARE FOR INFORMATION PURPOSES ONLY, IT IS THE CONTRACTOR RESPONSIBILITY TO BE IN COMPLIANCE WITH THE INSTALLATION GUIDELINES PROVIDED BY THE PIPE MANUFACTURE.

WATERTIGHT CONNECTION USING A MANHOLE BOOT (CORED HOLE OR PRECAST) OR PRECAST COMPRESSION GASKET W/ PREFABRICATED ADAPTER

| PIPE SIZE | ADAPTER OD | ADS ADAPTER GASKET | PREFABRICATED M