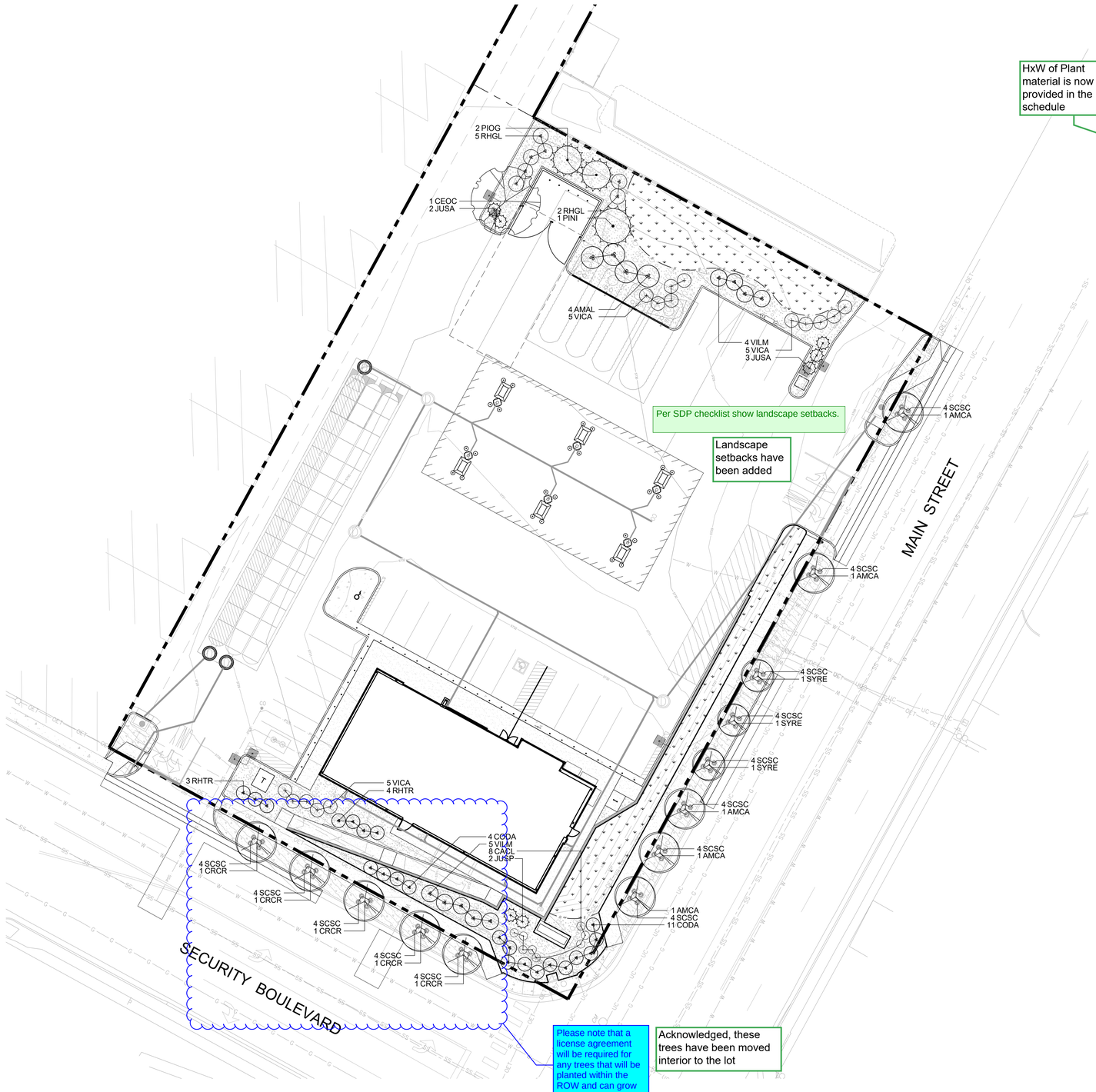


Per SDP checklist show landscape setbacks.

Landscape setbacks have been added

Please note that a license agreement will be required for any trees that will be planted within the ROW and can grow over the travel lane.

Acknowledged, these trees have been moved interior to the lot

LEGEND

Please provide the height and diameter of the trees

HxW of Plant material is now provided in the plant schedule

- DECIDUOUS TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUBS
- EVERGREEN SHRUBS
- ORNAMENTAL GRASS
- 2"-4" COBBLE ROCK MULCH
- 1" CHIPPED GRANITE ROCK MULCH
- LANDSCAPE EDGER

PLANT SCHEDULE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT
CEOC	1	CELTIS OCCIDENTALIS	COMMON HACKBERRY	B & B

EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT
PINI	1	PINUS NIGRA	AUSTRIAN PINE	B & B
PIOG	2	PINUS NIGRA `OREGON GREEN`	OREGON GREEN PINE	B & B

ORNAMENTAL TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT
AMCA	5	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	B & B
CRCR	5	CRATAEGUS CRUS-GALLI `INERMIS`	THORNLESS HAWTHORN	B & B
SYRE	3	SYRINGA RETICULATA	JAPANESE TREE LILAC	B & B

DECIDUOUS SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT
AMAL	4	AMELANCHIER ALNIFOLIA	SASKATOON SERVICEBERRY	#5
CACL	8	CARYOPTERIS X CLANDONENSIS `BLUE MIST`	BLUE MIST SPIREA	#5
CODA	15	COTONEASTER DAMMERI `CORAL BEAUTY`	BEARBERRY COTONEASTER	#5
RHGL	7	RHUS GLABRA `CISMONTANA`	ROCKY MOUNTAIN SUMAC	#5
RHTR	7	RHUS TRILOBATA	THREE LEAF SUMAC	#5
VICA	15	VIBURNUM CARLESII	KOREAN SPICE VIBURNUM	#5
VILM	9	VIBURNUM LANTANA `MOHICAN`	MOHICAN WAYFARING TREE	#5

EVERGREEN SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT
JUSP	2	JUNIPERUS CHINENSIS 'SPEARMINT'	SPEARMINT JUNIPER	#5
JUSA	5	JUNIPERUS SABINA `MONNA`	CALGARY CARPET JUNIPER	#5

ORNAMENTAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	CONT
SCSC	52	SCHIZACHYRIUM SCOPARIUM	BLAZE LITTLE BLUESTEM	#1

GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	CONT @
	3,051 SF	NATIVE SEED	EL PASO COUNTY ALL-PURPOSE LOW GROW MIX	SEED

EL PASO COUNTY ALL-PURPOSE LOW GROW MIX FOR UPLAND AREAS

COMMON NAME	SCIENTIFIC NAME	RECOMMENDED PLS LBS/AC	% OF SEED MIX
GRAMINOIDS			
BUFFALO GRASS	Buchloe dactyloides	9.6	25
BLUE GRAMA	BOUTELOUA GRACILIS	10.8	20
SIDEOATS GRAMA	BOUTELOUA CURTIPENDULA	5.6	29
GREEN NEEDLEGRASS	NASSELLA VIRIDULA	3.2	5
WESTERN WHEATGRASS	PASCOPYRUM SMITHII	12	20
SAND DROPSEED	SPOROBOLUS CRYPTANDRUS	0.8	1
	TOTAL	42.0	100.0

1 LANDSCAPE PLAN

NORTH

0 20 40 60 feet

SCALE: 1" = 20'

EES ENTITLEMENT AND ENGINEERING SOLUTIONS, INC.
501 S Cherry St, Suite 300
Denver, CO 80246
303-572-7997 www.ees-us.com

Kum & Go
1459 Grand Ave
Des Moines, IA 50309
P: 888-458-6646

2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

LANDSCAPE PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **11**

GENERAL NOTES:

1. VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK. BE AWARE OF ANY UNDERGROUND UTILITIES. PROTECT ALL EXISTING SITE FEATURES TO REMAIN FROM POTENTIAL DAMAGE BY SITE CONSTRUCTION OPERATIONS. AVOID ANY WORK BEYOND SCOPE OF PROJECT AREA.
2. COORDINATE ALL DISCIPLINES AND SITE CONSTRUCTION THAT WILL BE NEEDED TO COMPLETE THE PROJECT IN THE TIME FRAME GIVEN AND WITHIN BUDGET. ALL ACCESS TO SITE, USE OF UTILITIES, STORAGE, AND OTHER REQUIREMENTS SHALL BE COORDINATED PRIOR TO BEGINNING WORK.
3. CONTRACTOR IS RESPONSIBLE TO INSPECT AND CONFIRM SITE CONDITIONS PRIOR TO BEGINNING WORK. COMMENCEMENT OF WORK SHALL SIGNIFY ALL CONDITIONS ARE ACCEPTABLE AND NO ALLOWANCE WILL BE MADE FOR UNRECOGNIZED CONDITIONS AFTER START OF WORK.
4. NOTIFY OWNER/LANDSCAPE ARCHITECT IMMEDIATELY UPON DISCOVERY OF UNFORESEEN SITE CONDITIONS OR PLAN DISCREPANCIES. NO CHANGE TO SPECIFIED WORK SHALL BE COMPLETED WITHOUT VERIFICATION OF EXISTING CONDITIONS AND WRITTEN APPROVAL OF MODIFICATION BY THE LANDSCAPE ARCHITECT.

CLEARING & GRADING:

1. ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL APPLICABLE MUNICIPAL CODES AND DEVELOPMENT STANDARDS; UNIFORM BUILDING CODES; PERMIT CONDITIONS; AND ALL OTHER APPLICABLE CODES, ORDINANCES, STANDARDS, AND POLICIES.
2. A COPY OF THE APPROVED PLANS MUST BE ON-SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY OTHER RELATED OR REQUIRED PERMITS PRIOR TO BEGINNING CONSTRUCTION.
4. ALL LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD, THEREFORE, BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR (1) TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS AND (2) TO DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.

SOIL SPECIFICATIONS:

1. ANY PLANTING AREA THAT DOES NOT MEET THE FOLLOWING SOIL PREPARATION REQUIREMENTS ARE SUBJECT TO REJECTION AT OWNER/OWNERS REPRESENTATIVES DISCRETION.
2. LANDSCAPE CONTRACTOR IS REQUIRED TO NOTIFY OWNER/OWNERS REPRESENTATIVE A MINIMUM OF 24 HOURS PRIOR TO BEGINNING SOIL PREP WORK. SOIL PREP NOT INSPECTED BY OWNER/OWNERS REPRESENTATIVE IS SUBJECT TO REJECTION AT ANYTIME PRIOR TO INITIAL ACCEPTANCE.
3. LANDSCAPE CONTRACTOR SHALL SUBMIT DELIVERY (TRIP) TICKETS TO OWNER/OWNERS REPRESENTATIVE FOR ALL ORGANIC SOIL AMENDMENTS WITHIN 24 HOURS AFTER DELIVERY .
4. IMPORTED TOPSOIL SHALL BE FERTILE, FRIABLE, SANDY LOAM FROM THE 'A' HORIZON AND SHALL BE FREE OF STONES OVER .75" IN DIAMETER, REFUSE, PLANTS OR THEIR ROOTS, STICKS, NOXIOUS WEEDS, SALTS, SOIL STERILANTS, OR OTHER MATERIAL WHICH WOULD BE DETRIMENTAL TO PLANT GROWTH.
5. ORGANIC SOIL AMENDMENT SHALL CONSIST OF DRY, WELL-ROTTED, PULVERIZED, AGED MINIMUM ONE YEAR ORGANIC COMPOST CLASS I TYPE SUCH AS AVAILABLE FROM A-1 COMPOST, JENSEN SALES. PULVERIZED HORSE, SHEEP OR DAIRY COW MANURE ***NOT ACCEPTABLE***. SUBMIT DATED RECENT MATERIAL ANALYSIS TO OWNER/OWNERS REPRESENTATIVE TO GUARANTEE PRODUCT CONDITION AND PROOF NO LIVE WEED SEEDS AND CHEMICAL ADDITIVES ARE PRESENT.
6. SOIL PREPARATION FOR AREAS TO BE SODDED SHALL INCLUDE TOPSOIL AND ORGANIC MATTER ADDED AT A RATE OF FIVE CUBIC YARDS PER ONE THOUSAND SQUARE FEET AND TILLED EIGHT (8) INCHES INTO THE SOIL.
7. PREPARED BACKFILL FOR TREE/SHRUB PLANTING SHALL BE A MIX OF 2/3 IMPORTED/ SALVAGED TOPSOIL AND 1/3 ORGANIC SOIL AMENDMENT. WHERE TREES AND SHRUBS ARE LOCATED IN LARGE BEDS PROVIDE SOIL AMENDMENT AT A RATE OF FIVE CUBIC YARDS PER ONE THOUSAND SQUARE FEET AND TILL EIGHT INCHES INTO THE SOIL THROUGHOUT THE ENTIRE PLANTING BED, NOT JUST IN EXCAVATED PLANTING HOLES.

EDGING:

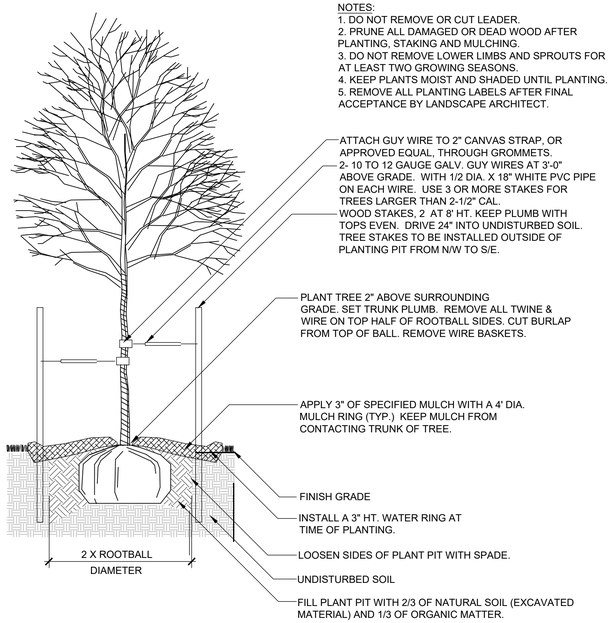
1. ALL EDGING SHALL BE 1/8" X 4" GREEN PAINTED "RYERSON TYPE" METAL EDGING W/ MILLED EDGE AND ANCHOR STAKES PER MANUFACTURE'S SPECIFICATIONS OR EQUAL

MULCH

1. PLANTING BEDS (AS SPECIFIED) SHALL CONTAIN 2"-4" RIVER ROCK COBBLE MULCH OVER FABRIC AT A MINIMUM DEPTH OF 3" WITH A DOUBLE SHREDDED CEDAR MULCH RING AROUND EACH TREE, SHRUB, GRASS, AND PERENNIAL. WOOD MULCH RING SHALL BE 1.5X THE CONTAINER SIZE OF THE SHRUB, GRASS OR PERENNIAL. TREE MULCH RING SHALL BE GREEN INDUSTRY STANDARD SIZE.
2. PLANTING BEDS (AS SPECIFIED) SHALL CONTAIN 1" GRAY CHIPPED GRANITE MULCH AT A MINIMUM DEPTH OF 3", DEPRESSED 2" BELOW SURROUNDING CURBS AND WALKS. PLACE WITH TIGHT JOINTS.
3. GEOTEXTILE FABRIC (FILTER FABRIC) UNDERLAYMENT SHALL BE MIRAFI, MIRASCAPE, DUPONT TYPAR 3301 OR APPROVED EQUAL (SUBMIT SAMPLE).

PLANTING NOTES:

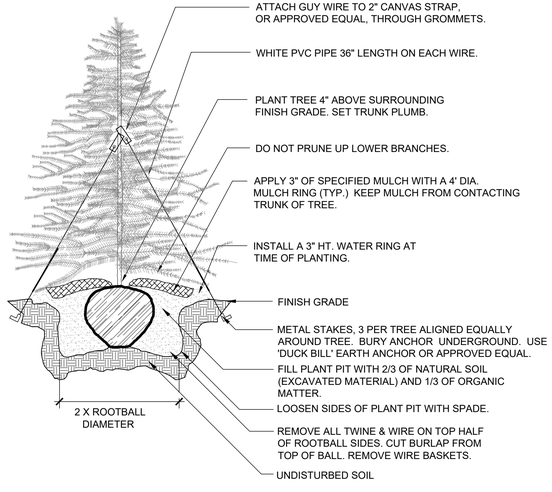
1. LANDSCAPE CONTRACTOR SHALL LOCATE ALL TREES, SHRUBS AND PLANTING BEDS ACCORDING TO LOCATIONS SHOWN ON DRAWINGS. ALL PLANTING LOCATIONS SHALL BE SUBJECT TO REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO THE START OF PLANTING OPERATIONS. LANDSCAPE CONTRACTOR SHALL MAKE MODIFICATIONS IN LOCATIONS AS DIRECTED BY LANDSCAPE ARCHITECT.
2. THE PLANT SCHEDULE IS FOR CONTRACTOR'S CONVENIENCE ONLY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS AND REPORTING IN WRITING TO THE LANDSCAPE ARCHITECT ANY CONFLICTS RELATIVE TO IMPLEMENTATION OF THE LANDSCAPE CONSTRUCTION DOCUMENTS. VALERIAN LLC. SHALL NOT ASSUME ANY ERRORS OR OMISSIONS IN THE PLANT SCHEDULE LISTED HEREIN. THE PLANT SYMBOLS SHOWN ON THE LANDSCAPE PLAN SHALL PREVAIL SHOULD THERE BE ANY DISCREPANCIES IN QUANTITIES BETWEEN THE PLAN AND PLANT SCHEDULE.
3. LANDSCAPE CONTRACTOR SHALL PROVIDE PLANT PROTECTION AND MAINTENANCE THROUGHOUT INSTALLATION AND UNTIL FINAL ACCEPTANCE OF LANDSCAPE INSTALLATION AS FOLLOWS:
   A) ALL PLANT MATERIAL SHALL BE PROTECTED, FROM TIME OF DIGGING TO TIME OF FINAL ACCEPTANCE, FROM INJURY, EXCESSIVE DRYING FROM WINDS, IMPROPER VENTILATION, OVER-WATERING, FREEZING, HIGH TEMPERATURES, OR ANY OTHER CONDITION DAMAGING TO PLANTS.
   B) PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY IF POSSIBLE. ALL PLANTS NOT PLANTED ON THE DAY OF DELIVERY SHALL BE PLACED IN A TEMPORARY NURSERY AND KEPT MOIST, SHADED, AND PROTECTED FROM THE SUN AND WIND. EACH ROOTBALL SHALL BE COVERED ENTIRELY WITH MULCH. ALL PLANT MATERIALS SHALL BE INSTALLED PER THE PLAN DRAWINGS AND SPECIFICATIONS.
   C) LANDSCAPE CONTRACTOR SHALL PROVIDE PLANT MATERIALS THAT COMPLY WITH THE REQUIREMENTS OF THE MOST RECENT ANSI Z 60.1 "STANDARDS FOR NURSERY STOCK"' UNLESS OTHERWISE SPECIFIED. CALIPER OF B&B TREES SHALL BE TAKEN 6 INCHES ABOVE THE GROUND UP TO AND INCLUDING 4 INCH CALIPER SIZE, AND 12 INCHES ABOVE THE GROUND FOR LARGER SIZES.
   D) PLANTING MAINTENANCE SHALL INCLUDE WATERING, WEEDING, CULTIVATING, RESETTING PLANTS TO PROPER GRADES OR POSITION, REESTABLISHING SETTLED GRADES. HERBICIDE IS NOT RECOMMENDED FOR ONE YEAR FOLLOWING LANDSCAPE INSTALLATION.
   E) PLANT MAINTENANCE SHALL INCLUDE THOSE OPERATIONS NECESSARY TO PROPER GROWTH AND SURVIVAL OF ALL PLANT MATERIALS. CONTRACTOR SHALL PROVIDE THIS WORK IN ADDITION TO SPECIFIC WARRANTY/GUARANTEES.
4. CONTRACTOR SHALL VERIFY AND MAINTAIN ALL SETBACKS, CLEAR ZONES AND SIGHT TRIANGLES REQUIRED BY ALL LOCAL AND MUNICIPAL CODES WHERE APPLICABLE.
5. LANDSCAPE CONTRACTOR SHALL ENSURE THAT THE LANDSCAPE INSTALLATION IS COORDINATED WITH THE PLANS PREPARED BY OTHER CONSULTANTS SO THAT THE PROPOSED GRADING, STORM DRAINAGE OR OTHER PROPOSED CONSTRUCTION DOES NOT CONFLICT WITH NOR PRECLUDE INSTALLATION AND MAINTENANCE OF LANDSCAPE ELEMENTS AS DESIGNATED ON THIS PLAN.
6. ALL LANDSCAPE AREAS SHALL BE IRRIGATED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. THE SYSTEM SHALL BE PROPERLY ZONED TO SEPARATE PLANT MATERIAL BY WATER REQUIREMENT. ALL SHRUB BEDS AND TREES IN NATIVE SEED AREAS SHALL BE IRRIGATED BY USING LOW WATER/DRIP TECHNIQUES. ALL TURF AREAS SHALL BE IRRIGATED USING POP-UP SPRAY OR ROTOR APPLICATION.



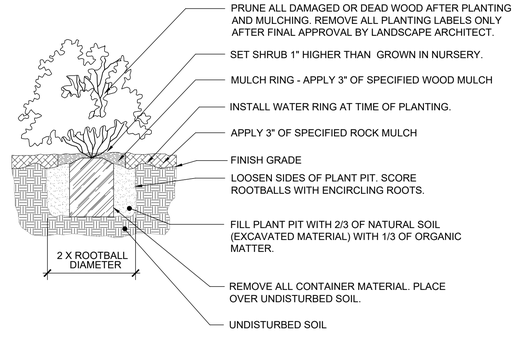
NOTES:
1. DO NOT REMOVE OR CUT LEADER.
2. PRUNE ALL DAMAGED OR DEAD WOOD AFTER PLANTING, STAKING AND MULCHING.
3. DO NOT REMOVE LOWER LIMBS AND SPROUTS FOR AT LEAST TWO GROWING SEASONS.
4. KEEP PLANTS MOIST AND SHADED UNTIL PLANTING.
5. REMOVE ALL PLANTING LABELS AFTER FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT.

NOTE: ALL TREES LOCATED WITHIN SIGHT TRIANGLES OR WITHIN 100' APPROACHING A STOP SIGN ARE TO BE LIMBED TO 8'. AT ONSET OF WINTER FOR THE FIRST YEAR OF INSTALLATION, WRAP ENTIRE SURFACE OF TRUNK UP TO BRANCHES. SECURE AT TOP AND BOTTOM WITH DUCT TAPE. AT ONSET OF SPRING REMOVE ALL WRAPPING.

1 DECIDUOUS TREE PLANTING
1" = 1'-0" BLCC-03



2 EVERGREEN TREE PLANTING
1" = 1'-0" BLCC-04



NOTE: ANY PLANT NOT IN ACCORDANCE WITH COLORADO NURSERY ACT REQUIREMENTS WILL BE REJECTED. HOLD MULCH GRADE 1" BELOW EDGE OF WALK, EDGING AND CURB. JUNIPER PLANTS SHALL BE PLANTED WITH TOP OF ROOTBALL AT FINISH GRADE OF MULCH LAYER.

3 SHRUB / ORNAMENTAL GRASS PLANTING WITH MULCH RING
1" = 1'-0" 32 9333.13-11

EES ENTITLEMENT AND ENGINEERING SOLUTIONS, INC.
501 S Cherry St, Suite 300
Denver, CO 80246
303-572-7397 www.ees-us.com

Kum & Go

1459 Grand Ave
Des Moines, IA 50309
P: 888-458-6646

2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

LANDSCAPE NOTES & DETAILS

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS	DATE	REVISION DESCRIPTION
△		

DATE: 04-26-2022

SHEET NUMBER: **12**

CRITERIA PLAN 04/2020

X:\DROPBOX (VALERIAN)\VALERIAN TEAM FOLDER\PROJECTS\21-074_EES_EL PASO MAIN STREET K&G 22322-WORKING\2022-04-25_LANDSCAPE SUBMITTAL_1ST\21-074_12_LANDSCAPE DETAILS & NOTES.DWG

EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP)
EL PASO COUNTY APPLICATION AND PERMIT

EPC Project Number: PPR2225

APPLICANT INFORMATION ***PERMIT NUMBER*** _____

Owner Information	
Property Owner	Kum and Go, L.C.
Applicant Name (Permit Holder)	Dan Garneau
Company/Agency	Kum and Go, L.C.
Position of Applicant	Site Development Manager
Address (physical address, not PO Box)	1459 Grand Ave.
City	Des Moines
State	Iowa
Zip Code	50309
Mailing address, if different from above	
Telephone	515-457-6392
FAX number	
Email Address	dan.garneau@kumandgo.com
Cellular Phone number	
Contractor/Operator Information	
Name (person of responsibility)	TBD
Company	TBD
Address (physical address, not PO Box)	TBD
City	TBD
State	TBD
Zip Code	TBD
Mailing address, if different from above	TBD
Telephone	TBD
FAX number	TBD
Email Address	TBD
Cellular Phone number	TBD
Erosion Control Supervisor (ECS)*	TBD
ECS Phone number*	TBD
ECS Cellular Phone number*	TBD

*Required for all applicants. May be provided at later date pending securing a contract when applicable.

PROJECT INFORMATION

Project Information	
Project Name	Kum and Go Gas and C-Store
Legal Description	Parcel A: Lot 2, Pedrick-Eckerd Filing No. 3. County of El Paso, State of Colorado.
Address (or nearest major cross streets)	Security Boulevard and Main Street
Acreage (total and disturbed)	Total: 1.29 acres Disturbed: 1.20 acres
Schedule	Start of Construction: TBD Completion of Construction: TBD Final Stabilization: TBD
Project Purpose	Kum & Go convenience store with 6 MDP fueling canopy and it's associated parking, landscape and drive aisles.
Description of Project	Site is located at the intersection of Main Street and Security Boulevard. Proposed site entrances are located off both Main St and Security Blvd. New sidewalks are provided from the main entry of the store to Security Blvd. New Utilities are required to serve the new store building. Sewer,
Tax Schedule Number	6511415042

FOR OFFICE USE ONLY

The following signature from the ECM Administrator signifies the approval of this ESQCP. All work shall be performed in accordance with the permit, the El Paso County Engineering Criteria Manual (ECM) Standards, City of Colorado Springs Drainage Criteria Manual, Volume 2 (DCM2) as adopted by El Paso County Addendum, approved plans, and any attached conditions. The approved plans are an enforceable part of the ESQCP. Construction activity, except for the installation of initial construction BMPs, is not permitted until issuance of a Construction Permit and Notice to Proceed.

Signature of ECM Administrator: _____ Date _____

1.1 REQUIRED SUBMISSIONS

In addition to this completed and signed application, the following items must be submitted to obtain an ESQCP:

- Permit fees;
- Stormwater Management Plan (SWMP) meeting the requirements of DCM2 and ECM either as part of the plan set or as a separate document;
- Operation and Maintenance Plan for any proposed permanent stormwater control measures; and
- Signed Private Detention Basin/Stormwater Quality Best Management Practice Maintenance Agreement and Easement, if any permanent stormwater control measures are to be constructed.

1.2 RESPONSIBILITY FOR DAMAGE

The County and its officers and employees, including but not limited to the ECM Administrator, shall not be answerable or accountable in any manner for damage to property or for injury to or death of any person, including but not limited to a permit holder, persons employed by the permit holder, or persons acting in behalf of the permit holder, from any cause. The permit holder shall be responsible for any liability imposed by law and for damage to property or injuries to or death of any person, including but not limited to the permit holder, persons employed by the permit holder, persons acting in behalf of the permit holder, arising out of work or other activity permitted and done under a permit, or arising out of the failure to perform the obligations under any permit with respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work or other activity, or at any subsequent time work or other activity is being performed under the obligations provided by and contemplated by the permit.

The permit holder shall indemnify, save, and hold harmless the County and its officers and employees, including but not limited to the BOCC and ECM Administrator, from all claims, suits or actions of every name, kind and description brought for or on account of damage to property or injuries to or death of any person, including but not limited to the permit holder, persons employed by the permit holder, persons acting in behalf of the permit holder and the public, resulting from the performance of work or other activity under the permit, or arising out of the failure to perform obligations under any permit with respect to maintenance or any other obligations, or resulting from defects or obstructions, or from any cause whatsoever during the progress of the work or other activity, or at any subsequent time work or other activity is being performed under the obligations provided by and contemplated by the permit, except as otherwise provided by state law. The permit holder waives any and all rights to any type of expressed or implied indemnity against the County, its officers or employees. It is the intent of the parties that the permit holder will indemnify, save, and hold harmless the County, its officers and employees from any and all claims, suits or actions as set forth above regardless of the existence or degree of fault of or negligence, whether active or passive, primary or secondary, on the part of the County, the permit holder, persons employed by the permit holder, or persons acting in behalf of the permit holder

1.3 APPLICATION CERTIFICATION

We, as the Applicants or the representative of the Applicants, hereby certify that this application is correct and complete as per the requirements presented in this application, the El Paso County Engineering Criteria Manual, and Drainage Criteria Manual, Volume 2 and El Paso County Addendum.

We, as the Applicants or the representatives of the Applicants, have read and will comply with all of the requirements of the specified Stormwater Management Plan and any other documents specifying stormwater best management practices to be used on the site, including permit conditions that may be required by the ECM Administrator. We understand that the stormwater control measures are to be maintained on the site and revised as necessary to protect stormwater quality as the project progresses. We further understand that a Construction Permit must be obtained and all necessary stormwater quality control measures are to be installed in accordance with the SWMP, the El Paso County Engineering Criteria Manual, Drainage Criteria Manual, Volume 2 and El Paso County Addendum before land disturbance begins and that failure to comply will result in a Stop Work Order and may result in other penalties as allowed by law. We further understand and agree to indemnify, save, and hold harmless the County and its officers and employees, including but not limited to the BOCC and ECM Administrator, from all claims, suits or actions of every name, kind and description as outlined in Section 1.2 Responsibility for Damage

_____ Date:_____

Signature of Owner or Representative

_____

Print Name of Owner or Representative

_____ Date:_____

Signature of Operator or Representative

_____

Print Name of Operator or Representative

Permit Fee $_____

Surcharge $_____

Financial Surety $_____ Type of Surety _____

Total $_____

3275 Akers Drive
Colorado Springs, CO 80922
Phone 719-520-6460
Fax 719-520-6879
www.elpasoco.com

Y - Satisfies criteria

N - Needs to be addressed

EL PASO COUNTY
GRADING AND EROSION CONTROL PLAN CHECKLIST

EPC Project Number: PPR2225

Revised: October 2021

		Applicant	EPC
1. GRADING AND EROSION CONTROL PLAN (complete form using Y, N, N/A in the "Applicant" column)			
a	Vicinity map	Y	Y
b	Adjacent city/town/jurisdictional boundaries, subdivision names, and property parcel numbers labeled	Y	Y
c	North arrow and acceptable scale (1"=20' to 1"=100')	Y	Y
d	Legend for all symbols used in the plan	Y	Y
e	Existing and proposed property lines. Proposed subdivision boundary for subdivision projects	Y	Y
f	All existing structures	Y	Y
g	All existing utilities	Y	Y
h	Construction site boundaries .Added Note	Y	N
i	Existing vegetation (notes are acceptable in cases where there is no notable vegetation, only grasses/weeds, or site has already been stripped) Add a note on drawings explaining status of veg.	N/A	
j	FEMA 100-yr floodplain	Y	Y
k	Existing and proposed water courses including springs, streams, wetlands, detention ponds, stormwater quality structures, roadside ditches, irrigation ditches and other water surfaces. Show maintenance of pre-existing vegetation within 50 feet of a receiving water	N/A	N/A
l	Existing and proposed contours 2 feet or less (except for hillside)	Y	Y
m	Limits of disturbance delineating all anticipated areas of soil disturbance	Y	Y
n	Identify and protect areas outside of the construction site boundary with existing fencing, construction fencing or other methods as appropriate	Y	Y
o	Off-site grading clearly shown and called out Added Labels	N/A	N
p	Areas of cut and fill identified make their identification more clear with linework and/or a note	Y	
q	Conclusions from soils/geotechnical report and geologic hazards report incorporated in grading design (slopes, embankments, materials, mitigation, etc.) upload soils report to EDARP	Y	N
r	Proposed slopes steeper than 3:1 with top and toe of slope delineated. Erosion control blanketing or other protective covering required	N/A	N/A
s	Stormwater flow direction arrows	Y	Y
t	Location of any dedicated asphalt / concrete batch plants	N/A	N/A
u	Areas used for staging, storage of building materials, soils (stockpiles) or wastes. The use of construction office trailers requires PCD permitting	Y	
v	All proposed temporary construction control measures, structural and non-structural. Temporary construction control measures shall be identified by phase of implementation to include" "initial," "interim," and "final" or shown on separate phased maps identifying each phase see note on plans	Y task complete	
w	Vehicle tracking provided at all construction entrances/exits. Construction fencing, barricades, and/or signage provided at access points not to be used for construction	Y	Y
x	Temporary sediment ponds provided for disturbed drainage areas greater than 1 acre	Y	Y

Only SSA shown on plans. If locations of other items are TBD, notate as such on the plans.

task complete.

3275 Akers Drive
Colorado Springs, CO 80922
Phone 719-520-6460
Fax 719-520-6879
www.elpasoco.com

EL PASO COUNTY
GRADING AND EROSION CONTROL PLAN CHECKLIST

EPC Project Number:

Revised: October 2021

		Applicant	EPC
y	Dewatering operations to include locations of diversion, pump and discharge(s) as anticipated at time of design Details meet EPC Standards.	N/A	N/A
z	All proposed temporary construction control measure details. Custom or other jurisdiction's details used must meet or exceed EPC standards	Y	N
aa	Any off-site stormwater control measure proposed for use by the project and not under the direct control or ownership of the Owner or Operator	N/A	N/A
bb	Existing and proposed permanent storm water management facilities, including areas proposed for stormwater infiltration or subsurface detention	Y	Y
cc	Existing and proposed easements (permanent and construction) including required off-site easements	Y	Y
dd	Retaining walls shall not to be located in County ROW unless approved via license agreement. A building permit from Regional Building Department is required for walls greater than or equal to 4 feet in height, series of walls, or walls supporting a surcharge and must be design by P.E.	Y	Y
ee	Plan certified by a Colorado Registered P.E., with EPC standard signature blocks for Engineer, Owner and EPC	Y	pending
ff	Engineer's Statement (for standalone GEC Plan): This Grading and Erosion Control Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County for Grading and Erosion Control Plans. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this plan. _____ _____ Engineer of Record Signature Date	Y	Y
gg	Engineer's Statement (for GEC Plan within Construction Drawing set): These detailed plans and specifications were prepared under my direction and supervision. Said plans and specifications have been prepared according to the criteria established by the County for detailed roadway, drainage, grading and erosion control plans and specifications, and said plans and specifications are in conformity with applicable master drainage plans and master transportation plans. Said plans and specifications meet the purposes for which the particular roadway and drainage facilities are designed and are correct to the best of my knowledge and belief. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparation of these detailed plans and specifications. _____ _____ Engineer of Record Signature Date	Y	N/A
hh	Owner's Statement (for standalone GEC Plan): I, the owner/developer have read and will comply with the requirements of the Grading and Erosion Control Plan. _____ _____ Owner Signature Date	Y	Y
ii	Owner's Statement (for GEC Plan within Construction Drawing set): I, the owner/developer have read and will comply with the requirements of the grading and erosion control plan and all of the requirements specified in these detailed plans and specifications. _____ _____ Owner Signature Date	Y	N/A

revise to "N/A"

Revised to N/A

3275 Akers Drive
Colorado Springs, CO 80922
Phone 719-520-6460
Fax 719-520-6879
www.elpasoco.com

EL PASO COUNTY
GRADING AND EROSION CONTROL PLAN CHECKLIST

EPC Project Number:

Revised: October 2021

		Applicant	EPC
jj	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 Director's discretion. _____ _____ Jennifer Irvine, P.E. Date County Engineer/ECM Administrator	Y	Y
2. ADDITIONAL REPORTS/PERMITS/DOCUMENTS			
a	Soils report / geotechnical investigation as appropriate for grading/utilities/drainage/road construction.	Y	
b	Use Agreement/easement between the Owner or Operator and other third party for use of all off-site grading or stormwater control measures, used by the owner or operator but not under their direct control or ownership.	N/A	
c	Floodplain Development Permit		
d	USACE 404/wetlands permit/mitigation plan	N/A	
e	FEMA CLOMR	N/A	
f	State Engineer's permit/Notice Of Intent to Construct		
g	Stormwater Management Plan (SWMP)	Y	
h	Financial Assurance Estimate (FAE) (signed)	Y	
i	Erosion and Stormwater Quality Control Permit (ESQCP) (signed)	Y	
j	Pre-Development Site Grading Acknowledgement & Right of Access Form (signed)		
k	Conditions of Approval met?		

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EL PASO COUNTY
GRADING AND EROSION CONTROL PLAN CHECKLIST

EPC Project Number:

Revised: October 2021

		Applicant	EPC
3. STANDARD NOTES FOR EL PASO COUNTY GRADING AND EROSION CONTROL PLANS			
1	Stormwater discharges from construction sites shall not cause or threaten to cause pollution, contamination, or degradation of State Waters. All work and earth disturbance shall be done in a manner that minimizes pollution of any on-site or off-site waters, including wetlands.	Y	Y
2	Notwithstanding anything depicted in these plans in words or graphic representation, all design and construction related to roads, storm drainage and erosion control shall conform to the standards and requirements of the most recent version of the relevant adopted El Paso County standards, including the Land Development Code, the Engineering Criteria Manual, the Drainage Criteria Manual, and the Drainage Criteria Manual Volume 2. Any deviations from regulations and standards must be requested, and approved, in writing.	Y	Y
3	A separate Stormwater Management Plan (SMWP) for this project shall be completed and an Erosion and Stormwater Quality Control Permit (ESQCP) issued prior to commencing construction. Management of the SWMP during construction is the responsibility of the designated Qualified Stormwater Manager or Certified Erosion Control Inspector. The SWMP shall be located on-site at all times during construction and shall be kept up to date with work progress and changes in the field.	Y	Y
4	Once the ESQCP is approved and a “Notice to Proceed” has been issued, the contractor may install the initial stage erosion and sediment control measures as indicated on the approved GEC. A Preconstruction Meeting between the contractor, engineer, and El Paso County will be held prior to any construction. It is the responsibility of the applicant to coordinate the meeting time and place with County staff.	Y	Y
5	Control measures must be installed prior to commencement of activities that could contribute pollutants to stormwater. Control measures for all slopes, channels, ditches, and disturbed land areas shall be installed immediately upon completion of the disturbance.	Y	Y
6	All temporary sediment and erosion control measures shall be maintained and remain in effective operating condition until permanent soil erosion control measures are implemented and final stabilization is established. All persons engaged in land disturbance activities shall assess the adequacy of control measures at the site and identify if changes to those control measures are needed to ensure the continued effective performance of the control measures. All changes to temporary sediment and erosion control measures must be incorporated into the Stormwater Management Plan.	Y	Y
7	Temporary stabilization shall be implemented on disturbed areas and stockpiles where ground disturbing construction activity has permanently ceased or temporarily ceased for longer than 14 days.	Y	Y
8	Final stabilization must be implemented at all applicable construction sites. Final stabilization is achieved when all ground disturbing activities are complete and all disturbed areas either have a uniform vegetative cover with individual plant density of 70 percent of pre-disturbance levels established or equivalent permanent alternative stabilization method is implemented. All temporary sediment and erosion control measures shall be removed upon final stabilization and before permit closure.	Y	Y
9	All permanent stormwater management facilities shall be installed as designed in the approved plans. Any proposed changes that effect the design or function of permanent stormwater management structures must be approved by the ECM Administrator prior to implementation.	Y	Y

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		Applicant	EPC
10	Earth disturbances shall be conducted in such a manner so as to effectively minimize accelerated soil erosion and resulting sedimentation. All disturbances shall be designed, constructed, and completed so that the exposed area of any disturbed land shall be limited to the shortest practical period of time. Pre-existing vegetation shall be protected and maintained within 50 horizontal feet of a waters of the state unless shown to be infeasible and specifically requested and approved.	Y	Y
11	Compaction of soil must be prevented in areas designated for infiltration control measures or where final stabilization will be achieved by vegetative cover. Areas designated for infiltration control measures shall also be protected from sedimentation during construction until final stabilization is achieved. If compaction prevention is not feasible due to site constraints, all areas designated for infiltration and vegetation control measures must be loosened prior to installation of the control measure(s).	Y	Y
12	Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be a stabilized conveyance designed to minimize erosion and the discharge of sediment off-site.	Y	Y
13	Concrete wash water shall be contained and disposed of in accordance with the SWMP. No wash water shall be discharged to or allowed to enter State Waters, including any surface or subsurface storm drainage system or facilities. Concrete washouts shall not be located in an area where shallow groundwater may be present, or within 50 feet of a surface water body, creek or stream.	Y	Y
14	During dewatering operations, uncontaminated groundwater may be discharged on-site, but shall not leave the site in the form of surface runoff unless an approved State dewatering permit is in place.	Y	Y
15	Erosion control blanketing or other protective covering shall be used on slopes steeper than 3:1.	Y	Y
16	Contractor shall be responsible for the removal of all wastes from the construction site for disposal in accordance with local and State regulatory requirements. No construction debris, tree slash, building material wastes or unused building materials shall be buried, dumped, or discharged at the site.	Y	Y
17	Waste materials shall not be temporarily placed or stored in the street, alley, or other public way, unless in accordance with an approved Traffic Control Plan. Control measures may be required by El Paso County Engineering if deemed necessary, based on specific conditions and circumstances.	Y	Y
18	Tracking of soils and construction debris off-site shall be minimized. Materials tracked off-site shall be cleaned up and properly disposed of immediately.	Y	Y
19	The owner/developer shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, soil, and sand that may accumulate in roads, storm drains and other drainage conveyance systems and stormwater appurtenances as a result of site development.	Y	Y
20	The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer's labels.	Y	Y
21	No chemical(s) having the potential to be released in stormwater are to be stored or used on-site unless permission for the use of such chemical(s) is granted in writing by the ECM Administrator. In granting approval for the use of such chemical(s), special conditions and monitoring may be required.	Y	Y
22	Bulk storage of allowed petroleum products or other allowed liquid chemicals in excess of 55 gallons shall require adequate secondary containment protection to contain all spills on-site and to prevent any spilled materials from entering State Waters, any surface or subsurface storm drainage system or other facilities.	Y	Y

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GRADING AND EROSION CONTROL PLAN CHECKLIST

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		Applicant	EPC
23	No person shall cause the impediment of stormwater flow in the curb and gutter or ditch except with approved sediment control measures.	Y	Y
24	Owner/developer and their agents shall comply with the "Colorado Water Quality Control Act" (Title 25, Article 8, CRS), and the "Clean Water Act" (33 USC 1344), in addition to the requirements of the Land Development Code, DCM Volume II and the ECM Appendix I. All appropriate permits must be obtained by the contractor prior to construction (1041, NPDES, Floodplain, 404, fugitive dust, etc.). In the event of conflicts between these requirements and other laws, rules, or regulations of other Federal, State, local, or County agencies, the most restrictive laws, rules, or regulations shall apply.	Y	Y
25	All construction traffic must enter/exit the site only at approved construction access points.	Y	Y
26	Prior to construction the permittee shall verify the location of existing utilities.	Y	Y
27	A water source shall be available on-site during earthwork operations and shall be utilized as required to minimize dust from earthwork equipment and wind.	Y	Y
28	The soils report for this site has been prepared by **[Company Name, Date of Report]** and shall be considered a part of these plans.	Y	Y
29	At least ten (10) days prior to the anticipated start of construction, for projects that will disturb one (1) acre or more, the owner or operator of construction activity shall submit a permit application for stormwater discharge to the Colorado Department of Public Health and Environment, Water Quality Division. The application contains certification of completion of a stormwater management plan (SWMP), of which this Grading and Erosion Control Plan may be a part. For information or application materials contact: Colorado Department of Public Health and Environment Water Quality Control Division WQCD – Permits 4300 Cherry Creek Drive South Denver, CO 80246-1530 Attn: Permits Unit	Y	Y
4. APPLICANT COMMENTS			
a			
b			
c			

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EL PASO COUNTY
GRADING AND EROSION CONTROL PLAN CHECKLIST

EPC Project Number:

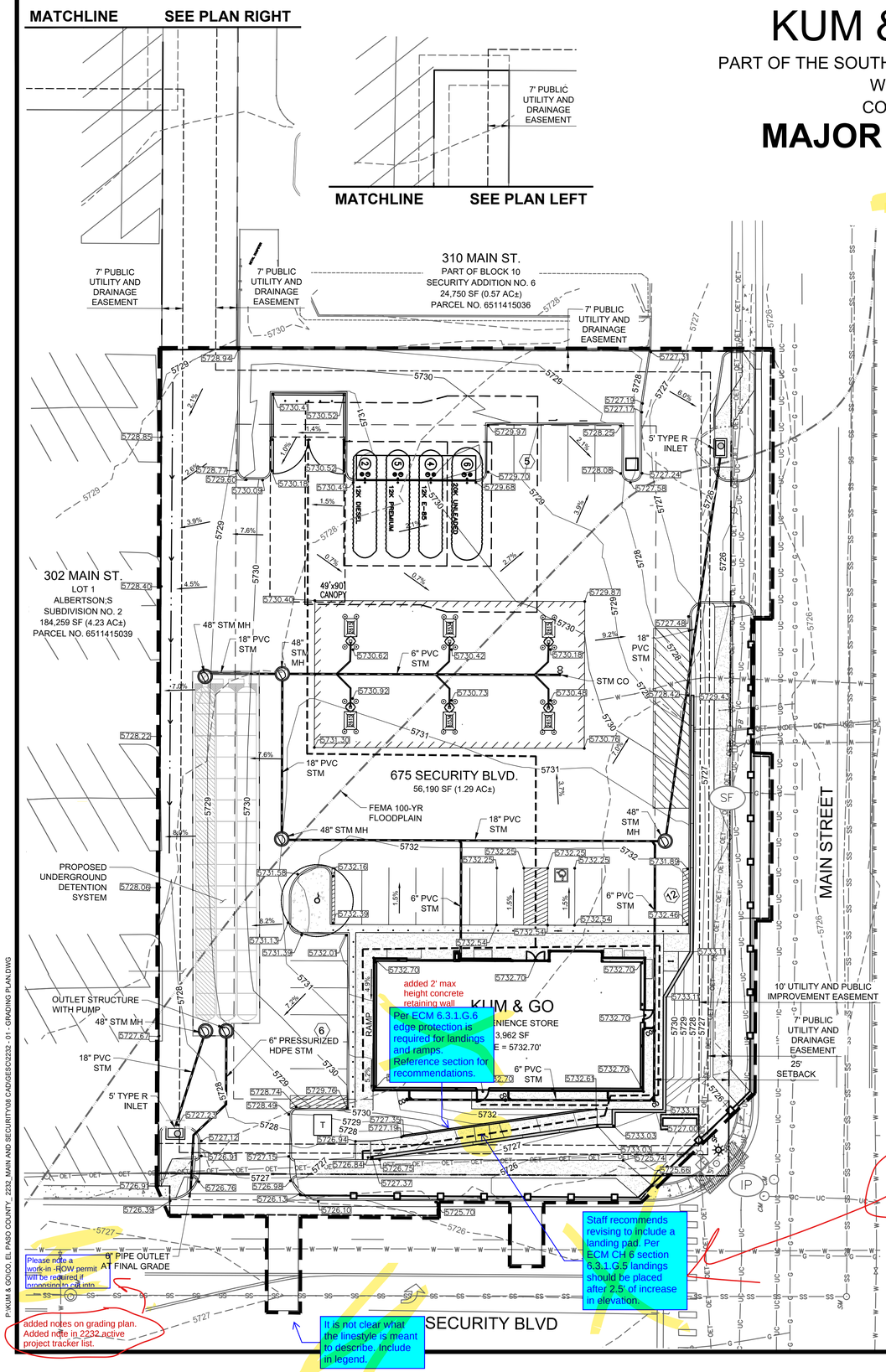
Revised: October 2021

		Applicant	EPC
5. CHECKLIST REVIEW CERTIFICATIONS			
a	Engineer of Record: The Grading and Erosion Control Plan was prepared under my direction and supervision and is complete and correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County for Grading and Erosion Control Plans. _____ _____ Engineer of Record Signature Date		
b	Review Engineer: The Grading and Erosion Control Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request. _____ _____ Review Engineer Date		

KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

MAJOR SITE DEVELOPMENT PLAN



Please provide construction details for underground water quality pond. The details can be shown in these plans or in separate construction drawings. Show outlet structure pipe inverts and elevations of pond. Also include invert elevation of inlet at the intersection of Main and Security that is the outfall for the project.

Added ADS details on sheet 13.

Added "Storm Sewer Plan" showing outlet structure pipe inverts. Added Label with Pipe Elevations for Existing Inlet at NW corner of intersection where new storm drain pipe connects.

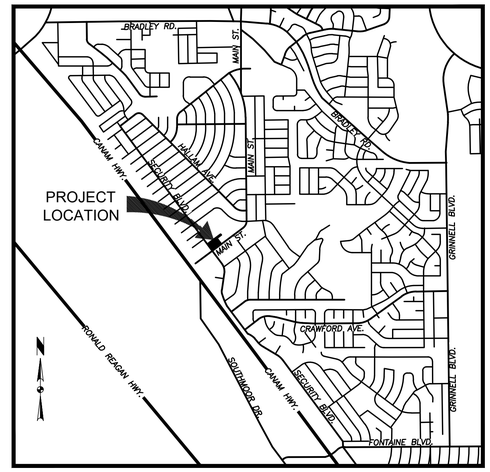
1" = 20'
0' 10' 20' 40'
SCALE IN FEET

GRADING PLAN LEGEND

- EXISTING GAS
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD ELECTRICAL AND TELECOMMUNICATIONS
- EXISTING UNDERGROUND TELECOMMUNICATIONS
- EXISTING WATER
- PROPERTY BOUNDARY
- EXISTING EASEMENT
- EXISTING FLOODPLAIN
- EXISTING CURB & GUTTER
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED CURB & GUTTER
- PROPOSED BUILDING
- PROPOSED ADA ROUTE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER MANHOLE/INLET
- PROPOSED STORM SEWER MANHOLE/INLET
- EXISTING STREET LIGHTING
- EXISTING FIRE HYDRANT
- EXISTING SIGNAGE
- PROPOSED SITE LIGHTING
- PROPOSED SURFACE FLOW DIRECTION ARROW

added construction / disturbance limits

omp



VICINITY MAP
SCALE: 1" = 2000'

BENCHMARK:

ELEVATIONS ARE BASED UPON COLORADO SPRINGS UTILITIES FIMS CONTROL MONUMENT SE09, BEING A 2-INCH DIAMETER ALUMINUM CAP STAMPED "CSU FIMS CONTROL SE09" ON THE EAST CORNER OF THE CONCRETE BASE OF A TELEPHONE RELAY BOX AT THE EAST CORNER OF 226 MAIN STREET, ABOUT 3 FEET NORHTWEST OF THE NORTHWEST CURB OF MAIN STREET, AND ABOUT 205 FEET SOUTHWEST OF THE SOUTHWEST CURB LINE OF SECURITY BOULEVARD. CITY ELEVATION: 5726.76 (NGVD 29)

SOIL PREPARATION NOTE:

SOIL PREPARATION SHALL BE PER RECOMMENDATIONS FROM A GEOTECHNICAL ENGINEERING REPORT PREPARED FOR THIS SITE AS FOLLOWS

GEOTECHNICAL ENGINEER: OLSSON
REPORT NO. 021-05598

THE CONTRACTOR MUST FULLY REVIEW THIS REPORT PRIOR TO CONSTRUCTION INFORMATION IN THE GEOTECHNICAL REPORT SUPERSEDES ANY CONFLICTING INFORMATION CONTAINED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS.

ENGINEER'S STATEMENT:

THIS GRADING AND EROSION CONTROL PLAN WAS PREPARED UNDER MY DIRECTION AND SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. SAID PLAN HAS BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR GRADING AND EROSION CONTROL PLANS. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY AN NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLAN.

ENGINEER OF RECORD SIGNATURE DATE

OWNER'S STATEMENT:

I, THE OWNER / DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN.

OWNER SIGNATURE DATE

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 DIRECTOR'S DISCRETION.

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

task complete

Revise to Joshua Palmer

Interim County Engineer

Please add PCD File No. PPR-2225

task complete

811 Know what's below. Call before you dig.
CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

EES ENTITLEMENT AND ENGINEERING SOLUTIONS, INC.
501 S Cherry St, Suite 300
Glendale, CO 80246
303-572-7997 www.ees.us.com

1459 Grand Ave
Des Moines, IA 50309
P: 888-458-6646

2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

GRADING PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS		
	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **3**

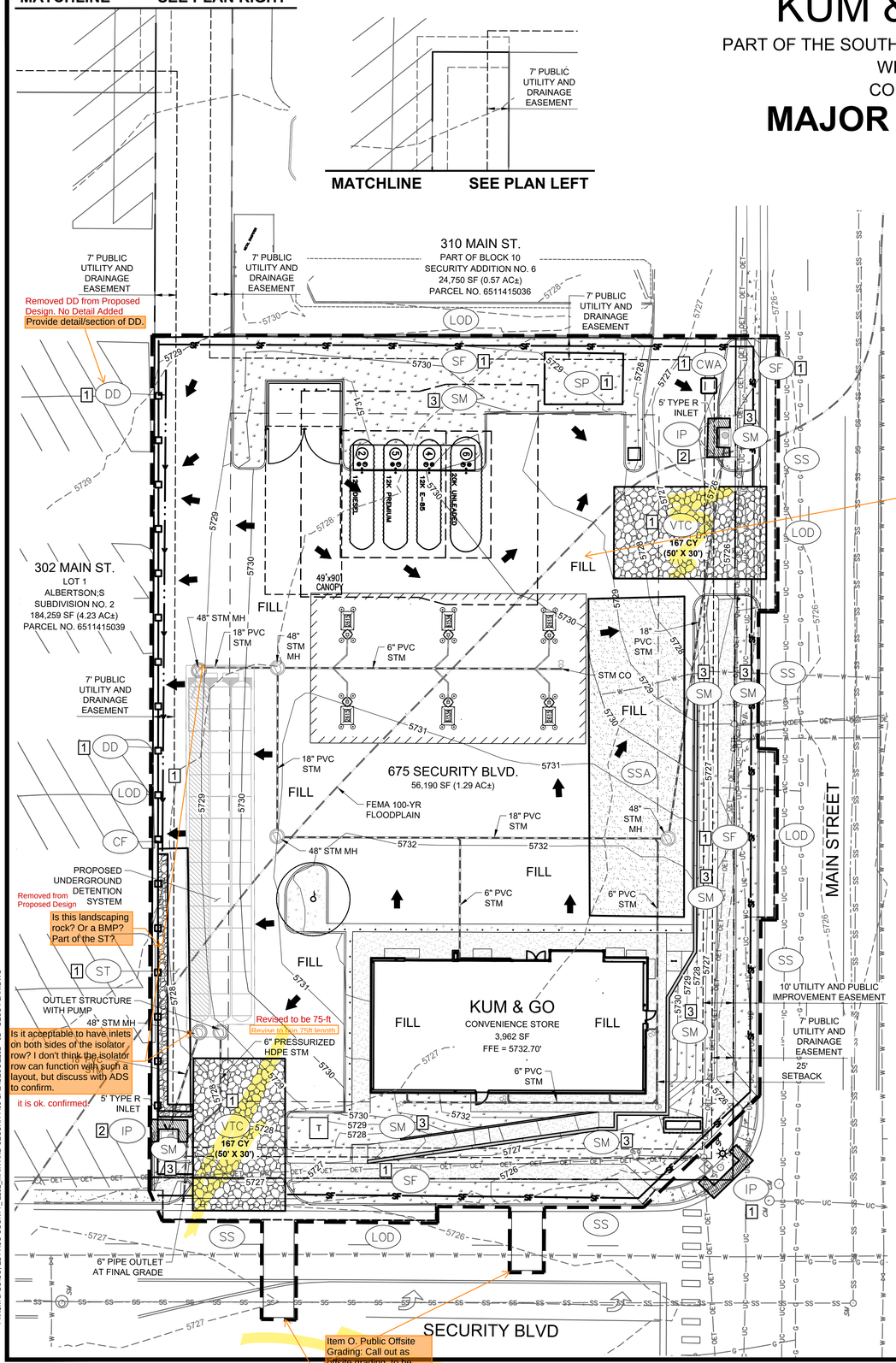
CRITERIA PLAN 04/2020

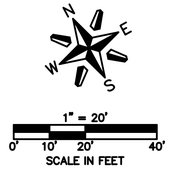
P:\KUM & GO\CO, EL PASO COUNTY_2232_MAIN AND SECURITY\08 CAD\GESC\2232 - 01 - GRADING PLAN.DWG

KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

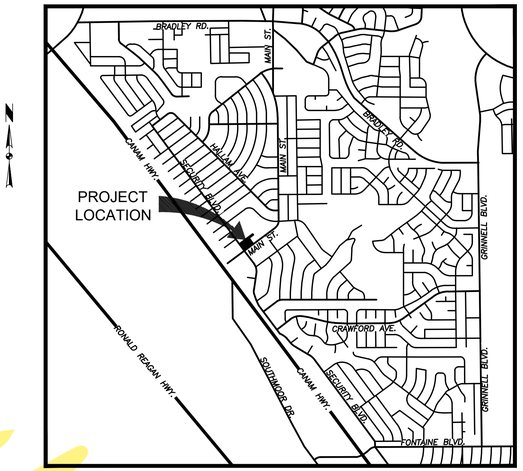
MAJOR SITE DEVELOPMENT PLAN





PHASING LEGEND

#	INDICATES PHASE OF CONSTRUCTION TO INSTALL ASSOCIATED BMP (INITIAL, INTERIM OR FINAL)
1	INITIAL BMP TO BE INSTALLED PRIOR TO CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION
2	INTERIM BMP TO BE INSTALLED DURING CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION
3	FINAL BMP TO BE INSTALLED DURING/AFTER CONSTRUCTION AND REMAIN IN PLACE



VICINITY MAP
SCALE: 1" = 2000'

Item P - it is unclear where the areas of fill end and cut begins. Is the whole site fill? Delineate these areas with a linetype and/or notate on this drawing that: "the site is mostly fill except cut in the following areas...."

Broke out Initial, Interim and Final Erosion and Stormwater Control Plans

Cleared all the clutter up and answered questions in review comments.

Added more FILL Labels, Interim and Final are clearer now for all the Fill

No Cut Area in The Site

Item V. Note that separate phasing maps are preferred (instead of or in addition to a table like this) because this singular map is very busy and hard to follow (for example: What happens to diversion ditch area once the ditch is removed, seeding/mulching? What about the Sediment Trap area? Will that be seeded/mulched/paved after it is removed?)

SITE AND UTILITY PLAN LEGEND

G	EXISTING GAS
SS	EXISTING SANITARY SEWER
OET	EXISTING OVERHEAD ELECTRICAL AND TELECOMMUNICATIONS
UC	EXISTING UNDERGROUND TELECOMMUNICATIONS
W	EXISTING WATER
	PROPERTY BOUNDARY
	EXISTING EASEMENT
	EXISTING FLOODPLAIN
	EXISTING CURB & GUTTER
5280	EXISTING MAJOR CONTOUR
5281	EXISTING MINOR CONTOUR
5730	PROPOSED MAJOR CONTOUR
5732	PROPOSED MINOR CONTOUR
	PROPOSED CURB & GUTTER
	PROPOSED BUILDING
	PROPOSED ADA ROUTE
	PROPOSED STORM SEWER
D	EXISTING STORM SEWER MANHOLE/INLET
D	PROPOSED STORM SEWER MANHOLE/INLET
	EXISTING STREET LIGHTING
	EXISTING FIRE HYDRANT
	EXISTING SIGNAGE
	PROPOSED SITE LIGHTING
	PROPOSED SURFACE FLOW DIRECTION ARROW

BMP LEGEND

CWA	CONCRETE WASHOUT AREA
CF	CONSTRUCTION FENCE
IP	INLET PROTECTION
SCL	SEDIMENT CONTROL LOG
SM	SEEDING AND MULCHING
SF	SILT FENCE
SP	STOCKPILE AREA
SSA	STABILIZED STAGING AREA
VTC	VEHICLE TRACKING CONTROL
LOD	LIMITS OF DISTURBANCE
CS	CURB SOCK
DD	DIVERSION DITCH
ST	SEDIMENT TRAP
SS	STREET SWEEPING

NOW STATES:
LIMITS OF CONSTRUCTION / DISTURBANCE

Items H and M. If "limits of disturbance" and "construction boundary" are the same, change to "limits of construction/disturbance" or otherwise show as separate line types for each on the legend and figure.

TASK COMPLETE

Please upload this to EDARP

811 Know what's below. Call before you dig.
CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

SOIL PREPARATION NOTE:

SOIL PREPARATION SHALL BE PER RECOMMENDATIONS FROM A GEOTECHNICAL ENGINEERING REPORT PREPARED FOR THIS SITE AS FOLLOWS

GEOTECHNICAL ENGINEER: OLSSON
REPORT NO. 021-05598

THE CONTRACTOR MUST FULLY REVIEW THIS REPORT PRIOR TO CONSTRUCTION INFORMATION IN THE GEOTECHNICAL REPORT SUPERSEDES ANY CONFLICTING INFORMATION CONTAINED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS.

BENCHMARK:

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2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

GRADING AND EROSION CONTROL PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **4**

CRITERIA PLAN 04/2020

P:\KUM & GO\CO, EL PASO COUNTY_ 2232_MAIN AND SECURITY\08 CAD\SE\C2232 - 02 - GESC PLAN.DWG

KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

MAJOR SITE DEVELOPMENT PLAN

GENERAL NOTES

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.
2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP SHALL BE LOCATED ON-SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
4. ONCE THE ESQCP IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.
6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.
7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS.
8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.
9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.
10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).
12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF-SITE.
13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL NE DISCHARGED TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.
14. DURING DEWATERING OPERATIONS, UNCONTAMINATED GROUNDWATER MAY BE DISCHARGED ON-SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.
15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
17. WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ON-SITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ON-SITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.
23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.
24. OWNER/DEVELOPER AND THEIR AGENTS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS) AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULE, OR REGULATIONS SHALL APPLY.
25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.
26. PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
27. A WATER SOURCE SHALL BE AVAILABLE ON-SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY OLSSON ON DECEMBER 21ST, 2021 AND SHALL BE CONSIDERED A PART OF THESE PLANS.
29. AT LEAST (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

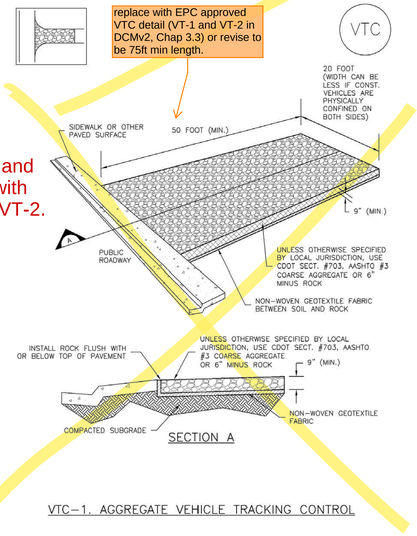
COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT

Please include construction notes as well. See attachment.

Added Notes to this sheet.

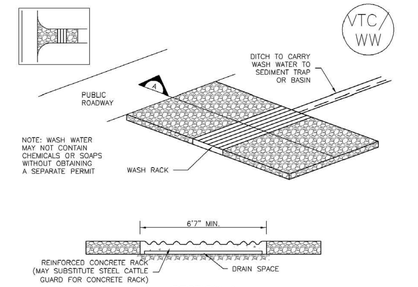
Removed and replaced with VT-1 and VT-2.

Vehicle Tracking Control (VTC) SM-4



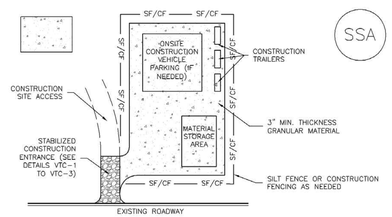
VTC-1. AGGREGATE VEHICLE TRACKING CONTROL

SM-4 Vehicle Tracking Control (VTC)



VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK

Stabilized Staging Area (SSA) SM-6



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA 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. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

Took these two off the sheet and swapped them out with VTC5 and VTC6 from sheet 7 per review comment on sheet 7.

SM-6 Stabilized Staging Area (SSA)

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

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

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

EES ENTITLEMENT AND ENGINEERING SOLUTIONS, INC.
501 S Cherry St, Suite 300
Glendale, CO 80246
303-572-7997 www.ees.us.com

Kum & Go
1459 Grand Ave
Des Moines, IA 50309
P: 888-458-6646

2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

EROSION AND STORMWATER CONTROL DETAILS

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: 5

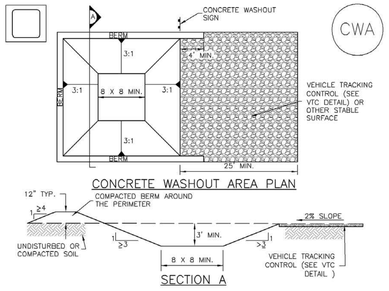
CRITERIA PLAN 04/2020

P:\KUM & GO\CO, EL PASO COUNTY - 2232, MAIN AND SECURITY\08 CAD\GESC\2232 - 03 - GESC DETAILS.DWG

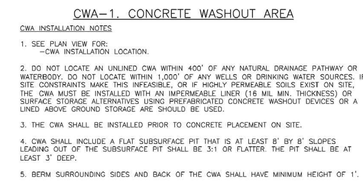
KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

MAJOR SITE DEVELOPMENT PLAN



CONCRETE WASHOUT AREA PLAN



SECTION A

CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   -CWA INSTALLATION LOCATION.

2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.

3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.

4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.

5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.

6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.

7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

CWA 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. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE, CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.

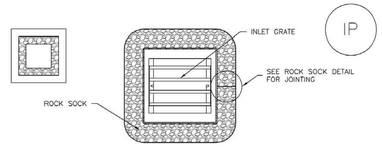
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.

6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

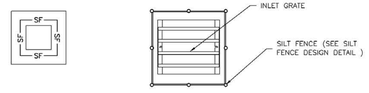
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

GENERAL INLET PROTECTION INSTALLATION NOTES

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

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

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

INLET PROTECTION MAINTENANCE NOTES

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

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

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

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

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

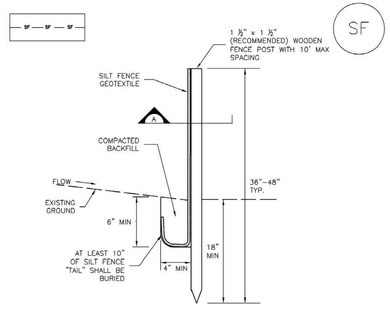
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

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

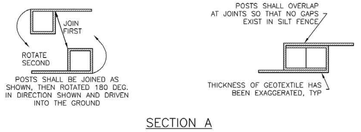
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

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

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



SILT FENCE



SECTION A

SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

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

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

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

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

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

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

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

SILT FENCE MAINTENANCE NOTES

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

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

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

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

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

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

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

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

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

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2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

EROSION AND STORMWATER CONTROL DETAILS

KG PROJECT TEAM:
RDM:
SDM:
CPM:

	DATE	REVISION DESCRIPTION

REVISIONS

DATE: 04-26-2022

SHEET NUMBER:
6

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CRITERIA PLAN 04/2020

KUM & GO GAS & C-STORE

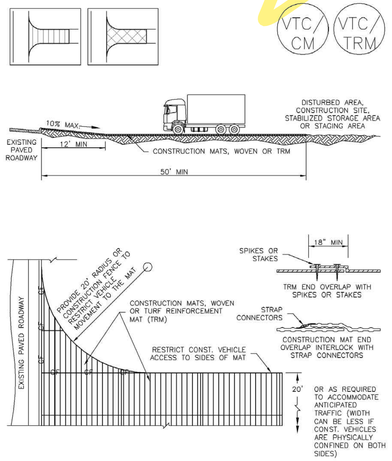
PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

MAJOR SITE DEVELOPMENT PLAN

Move to be with other 2 pages of VTC details above.

ADDED TWO BMP DETAILS FROM THE SHEET VTC'S WENT TO.

Vehicle Tracking Control (VTC) **SM-4**



VTC–3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   –TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT–OF–WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON–WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT 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.

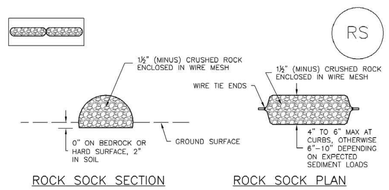
4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

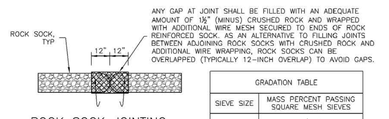
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

SC-5 **Rock Sock (RS)**



ROCK SOCK SECTION ROCK SOCK PLAN



ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1½"	90 – 100
1"	20 – 55
¾"	0 – 15
⅜"	0 – 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF ROCK SOCKS.

2. CRUSHED ROCK SHALL BE 1½" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1½" MINUS).

3. WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF ½". RECOMMENDED MINIMUM ROLL WIDTH OF 48"

4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.

5. SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS–1. ROCK SOCK PERIMETER CONTROL

Rock Sock (RS) **SC-5**

ROCK SOCK 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. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.

5. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE ROCK SOCK.

6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

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

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

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

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

ADDED DETAILS. CREATED NEW SHEETS.

Item Z. Include details for the following BMP's. Examples of acceptable details for each are provided:

BMP	Detail # and Source: ECM (Appendix F)	DCM (Vol 2: Chap 3.3)	MHFD (USDCM Vol 3: Chap 7)	COS - Stormwater Construction Manual (App E	CDOT Standard Plans on M-208-1
Construction Fence			SM-3		
Mulching		MU-1	EC-4	X	
Seeding		TS-1	EC-2	X	
Sediment Trap	SD_3-30 to SD_3-36		SC-8		X
Stockpile Protection & Mgmt			MM-2	X	
Swale	SD_3-88 (cut back swale, perp to flow)	TSW-2, TSW-3	EC-10		X

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2232 - EL PASO, COLORADO
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EROSION AND STORMWATER CONTROL DETAILS

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RDM:
SDM:
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REVISIONS

REVISION DESCRIPTION	DATE	△

DATE: 04-26-2022

SHEET NUMBER: **7**

CRITERIA PLAN 04/2020

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PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

MAJOR SITE DEVELOPMENT PLAN

WHERE & MEANS MORE!

PROJECT TEAM:

Application petition lists owner as Security Owner LLC

OWNER/DEVELOPER/APPLICANT:

corrected owner info. Security Owner LLC.

KUM & GO L.C.
1459 GRAND AVE
DES MOINES, IA 50309
CONTACT: DAN GARNEAU
PH: (515) 457-6392
E: DAN.GARNEAU@KUMANDGO.COM

Add email (per SDP checklist)

ARCHITECT:

added email address

BRR ARCHITECTURE
8131 METCALF AVE., SUITE 300
OVERLAND PARK, KS 66204
CONTACT: ASHLEY WEBER
PH: (913) 236-3325

ENGINEER:

ENTITLEMENT & ENGINEERING SOLUTIONS, INC.
501 S. CHERRY STREET, SUITE 300
GLENDALE, CO 80246
CONTACT: KRYSTA HOUTCHENS, PE
PH: (970) 380-7054
E: KRYSTA.HOUTCHENS@EES.US.COM

LANDSCAPE ARCHITECT:

VALERIAN LLC
907 YUMA ST, SUITE 130
DENVER, CO 80204
CONTACT: NATHANIEL RONEY
PH: (303) 347-1200
E: NATHANIEL@VALERIANLLC.COM

SURVEYOR:

FORESIGHT WEST SURVEYING, INC.
1285 W. BYERS PL., UNIT A
DENVER, CO 80223
CONTACT: LESTER J. LUDEMAN
PH: (303) 504-4440
E: LLUDEMAN@FORESIGHTWEST.COM

SITE DETAILS:

PROPERTY ADDRESS:

675 SECURITY BLVD.
COLORADO SPRINGS, CO 80911
EL PASO COUNTY, STATE OF COLORADO

PROPERTY SIZE:

±56,190 S.F. / ±1.29 ACRES

PROPERTY TAX SCHEDULE NO:

6511415042

LOT AREA COVERAGE CALCULATION:

TOTAL LOT AREA = 56,190 S.F. / TOTAL LOT COVERAGE = 42,691 S.F.
TOTAL LOT COVERAGE PERCENTAGE = 76.0 PERCENT

EXISTING / PROPOSED LAND USE AND ZONING:

EXISTING / PROPOSED LAND USE: VACANT COMMERCIAL LOT / COMMERCIAL
ZONING: CC CAD-O

TOTAL GROSS BUILDING SQUARE FOOTAGE:

3,962 SQ. FT.

OPEN SPACE PERCENTAGE:

N/A

LANDSCAPING PERCENTAGE:

17.6 PERCENT

Impermeable surface + landscaping = ~90% of total property.

added Impermeable Surface and Landscaping being 90 percent as a Separate Item

IMPERMEABLE SURFACE PERCENTAGE

72.3 PERCENT

LEGAL DESCRIPTION:

DESCRIPTION PER TITLE COMMITMENT:

PARCEL A:
LOT 2, PEDRICK-ECKERD FILING NO 3. COUNTY OF EL PASO, STATE OF COLORADO.

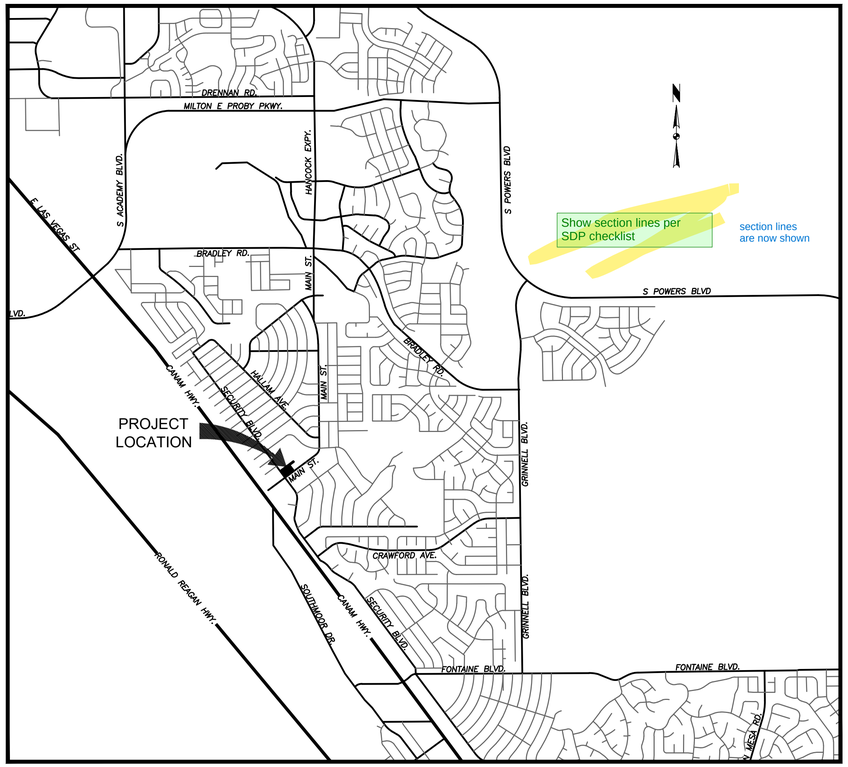
PARCEL B:
THOSE EASEMENT RIGHTS CREATED BY DECLARATION OF RESTRICTIONS AND GRANT OF EASEMENTS RECORDED JULY 1, 1983 IN BOOK 3750 AT PAGE 909, FIRST AMENDMENT TO SAID DECLARATION RECORDED DECEMBER 2, 1994 IN BOOK 6571 AT PAGE 1245 AND SECOND AMENDMENT TO SAID DECLARATION RECORDED JANUARY 29, 2004 UNDER RECEPTION NO. 204016205 AND THIRD AMENDMENT TO SAID DECLARATION RECORDED FEBRUARY 19, 2013 UNDER RECEPTION NO. 213022221, AND COMMON AREA MAINTENANCE AGREEMENT RECORDED JULY 1, 1983 IN BOOK 3750 AT PAGE 929, FIRST AMENDMENT TO SAID AGREEMENT RECORDED DECEMBER 2, 1994 IN BOOK 6571 AT PAGE 1251 AND SECOND AMENDMENT TO SAID AGREEMENT RECORDED JANUARY 29, 2004 UNDER RECEPTION NO. 204016204, AND ASSIGNMENT AND ASSUMPTION OF RECIPROCAL EASEMENT AGREEMENT RECORDED SEPTEMBER 5, 2007 UNDER RECEPTION NO. 207115485.

BASIS OF BEARING:

BEARINGS ARE BASED UPON THE SOUTHEASTERLY LINE OF PEDRICK - ECKERD FILING NO. 3 AS BEARING NORTH 28° 41' 44" EAST, PER SAID PLAT.

BENCHMARK:

ELEVATIONS ARE BASED UPON COLORADO SPRINGS UTILITIES FIMS CONTROL MONUMENT SE09, BEING A 2-INCH DIAMETER ALUMINUM CAP STAMPED "CSU FIMS CONTROL SE09" ON THE EAST CORNER OF THE CONCRETE BASE OF A TELEPHONE RELAY BOX AT THE EAST CORNER OF 226 MAIN STREET, ABOUT 3 FEET NORHTWEST OF THE NORTHWEST CURB OF MAIN STREET, AND ABOUT 205 FEET SOUTHWEST OF THE SOUTHWEST CURB LINE OF SECURITY BOULEVARD. CITY ELEVATION: 5726.76 (NGVD 29)



VICINITY MAP
SCALE: 1" = 2000'

Show section lines per SDP checklist

section lines are now shown

SHEET INDEX

PARKING COMPUTATIONS		
REQUIRED PARKING	STANDARD	22
	ADA	1
	TOTAL	23
	PARKING RATIO = 3 PER FUELING BAY + 1 PER EMPLOYEE MAX SHIFT	
PROPOSED PARKING	STANDARD	22
	ADA	1
	TOTAL	23
	PARKING RATIO =PARKING RATIO = 3 PER FUELING BAY + 1 PER EMPLOYEE MAX SHIFT	

ADDED PCD FILE NO. TO TITLEBLOCK TO SHOW UP ON ALL SHEETS

Please add PCD File No. PPR-2225

PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR SIGNATURE BLOCK

811 Know what's **below.** **Call** before you dig.
CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

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2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

COVER SHEET

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	DATE	REVISION DESCRIPTION
1		

DATE: 04-26-2022

SHEET NUMBER: **1**

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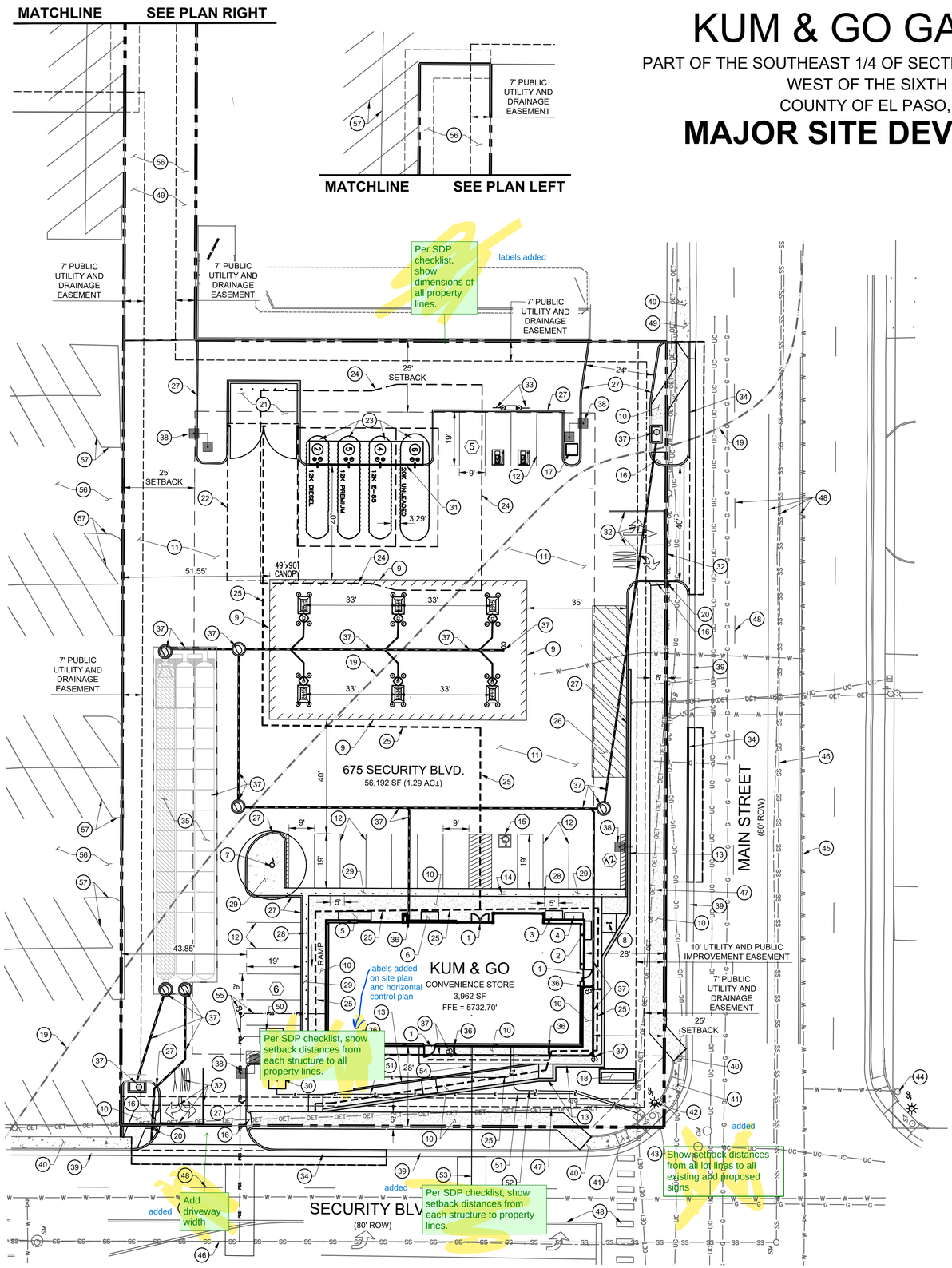
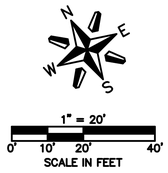
MAJOR SITE DEVELOPMENT PLAN





SITE AND UTILITY PLAN LEGEND

- EXISTING GAS
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD ELECTRICAL AND TELECOMMUNICATIONS
- EXISTING UNDERGROUND TELECOMMUNICATIONS
- EXISTING WATER
- PROPERTY BOUNDARY
- EXISTING EASEMENT
- EXISTING FLOODPLAIN
- EXISTING CURB & GUTTER
- PROPOSED CURB & GUTTER
- PROPOSED BUILDING
- PROPOSED RETAINING WALL
- PROPOSED ADA ROUTE
- EXISTING STORM SEWER MANHOLE/INLET
- PROPOSED STORM SEWER MANHOLE/INLET
- EXISTING STREET LIGHTING
- EXISTING FIRE HYDRANT
- EXISTING SIGNAGE
- PROPOSED SITE LIGHTING
- PROPOSED PARKING COUNT

GENERAL NOTES

1. ALL ITEMS IN SCHEDULE ARE PROPOSED UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO COORDINATE WITH CENTURY LINK PRIOR TO AND DURING CONSTRUCTION.

added note
Add note to plan per 6.1.3 of Land Development Code regarding ADA

SITE SCHEDULE:

1. BUILDING ENTRY, REFER TO ARCHITECTURAL PLANS.
2. PROPANE CAGE
3. MISCELLANEOUS MERCHANDISE.
4. FIREWOOD.
5. RED BOX(ES).
6. ICE MERCHANDISER.
7. 40' FLAGPOLE, MAINTAIN Ø24' CLEAR SPACE ABOVE GRADE.
8. SINGLE WAVE/U-SHAPED BIKE RACK ON 5.0' x 6.5' x 4" THICK CONCRETE PAD (5 BIKE SPACES PROVIDED).
9. FUELING CANOPY
10. 4" CONCRETE SITE SIDEWALK.
11. CONCRETE PAVEMENT.
12. 4" WIDE YELLOW PAVEMENT MARKING, TYP.
13. RETAINING WALL WITH RAILING.
14. BOLLARD MOUNTED ADA VAN PARKING SIGN.
15. ACCESSIBLE PARKING SPACE.
16. ADA CURB RAMP.
17. AIR MACHINE LOCATION, 4'x4' CONCRETE PAD.
18. MONUMENT SIGN.
19. EXISTING FLOODPLAIN
20. STOP SIGN.
21. 14'-8" x 24'-8" TRASH ENCLOSURE. SEE ARCHITECTURAL ELEVATIONS.
22. 55'x25' MINIMUM GARBAGE TRUCK CLEAR SPACE
23. UNDERGROUND FUEL STORAGE TANKS
24. TANK OVERDIG LIMITS.
25. ADA ROUTE.
26. 12'x60' LOADING ZONE, 45° CROSS HATCH, 2' O.C. STRIPING.
27. INTEGRAL CONCRETE CURB.
28. 4" DIAMETER BOLLARDS @ 5' O.C.
29. BROOM FINISHED CONCRETE.
30. TRANSFORMER LOCATION.
31. PAINT CURB ALONG FRONT OF TANKS YELLOW.
32. DRIVEWAY ENTRANCE PAVEMENT MARKINGS.
33. DESIGNATED FUTURE ELECTRIC VEHICLE CHARGING STATION PARKING STALLS. INFRASTRUCTURE TO BE IN PLACE FOR FUTURE INSTALLATION.
34. CONCRETE CURB AND GUTTER.
35. UNDERGROUND DETENTION AND WATER QUALITY FACILITY
36. ROOF DOWNSPOUT
37. STORM INLET / DRAIN LINE / CLEANOUT / MANHOLE.
38. APPROXIMATE LOCATION OF SITE LIGHTING. SEE PHOTOMETRICS PLAN.
39. EXISTING CURB AND GUTTER.
40. EXISTING SIDEWALK.
41. EXISTING ADA RAMP.
42. EXISTING STREET LIGHT.
43. EXISTING STORM INLET.
44. EXISTING FIRE HYDRANT.
45. EXISTING WATER MAIN.
46. EXISTING SEWER MAIN.
47. EXISTING TELECOMMUNICATIONS.
48. EXISTING STRIPING.
49. EXISTING DRIVEWAY.
50. GREASE TRAP.
51. ELECTRICAL LINE.
52. TELECOMMUNICATIONS LINE.
53. 1.5" DOMESTIC WATER SERVICE LINE.
54. IRRIGATION WATER LINE.
55. 4" SANITARY SEWER SERVICE LINE AND CLEANOUT.
56. EXISTING ASPHALT TO REMAIN.
57. EXISTING PARKING STRIPING TO REMAIN.

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SITE AND UTILITY PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **2**

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PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
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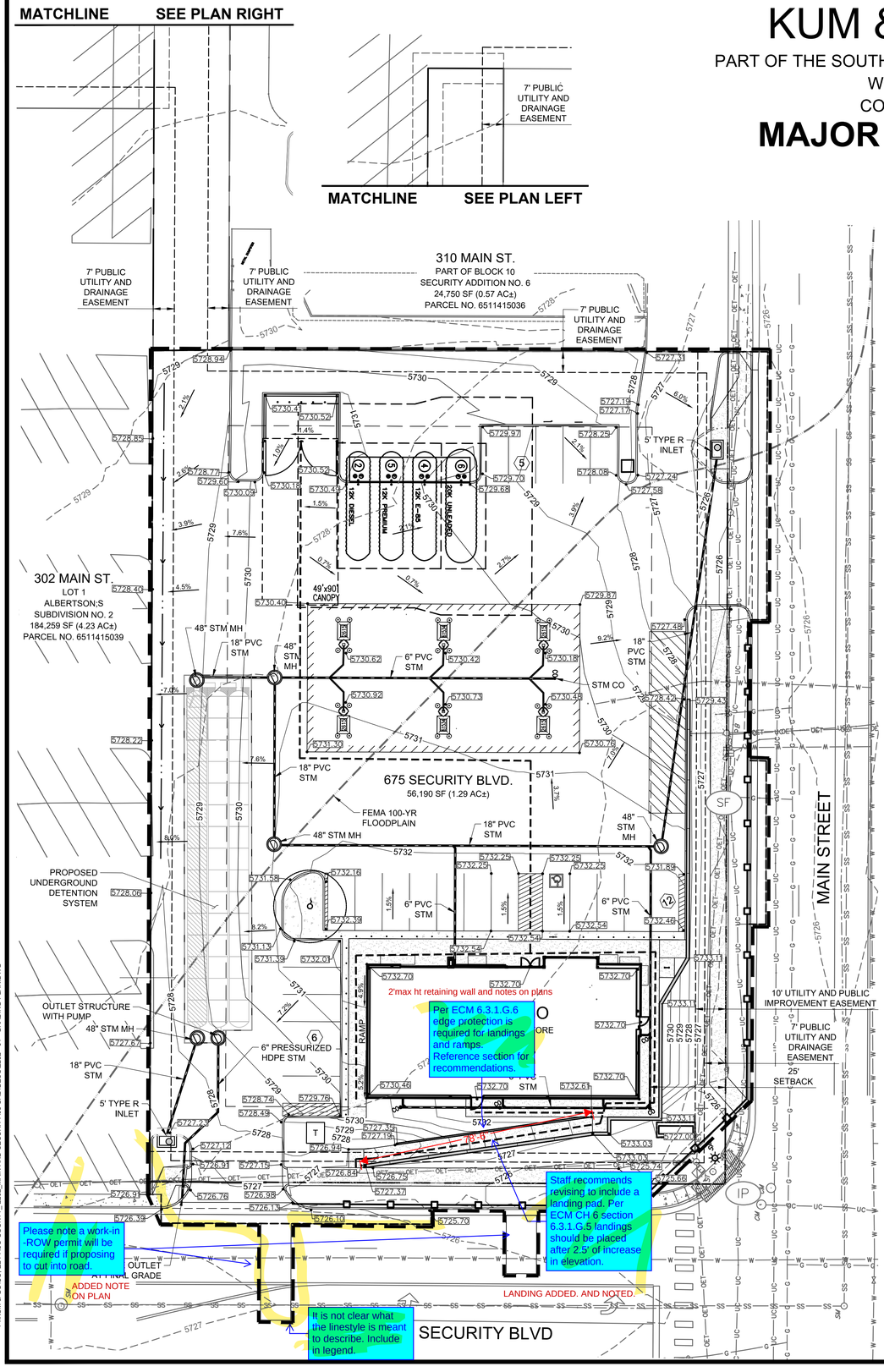
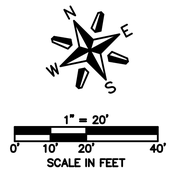
COUNTY OF EL PASO, STATE OF COLORADO

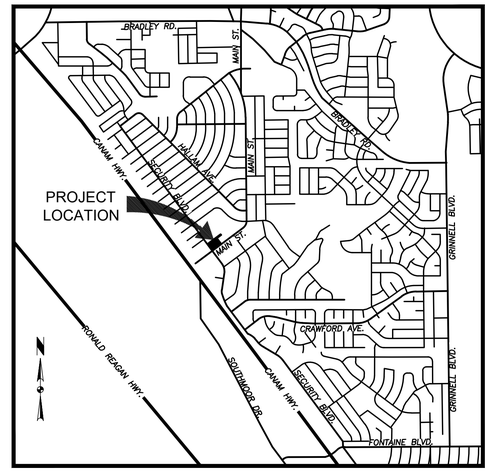
MAJOR SITE DEVELOPMENT PLAN





GRADING PLAN LEGEND

G G G G G G G	EXISTING GAS
SS SS SS SS SS	EXISTING SANITARY SEWER
OET OET OET OET OET	EXISTING OVERHEAD ELECTRICAL AND TELECOMMUNICATIONS
UC UC UC UC UC	EXISTING UNDERGROUND TELECOMMUNICATIONS
W W W W W W	EXISTING WATER
	PROPERTY BOUNDARY
	EXISTING EASEMENT
	EXISTING FLOODPLAIN
	EXISTING CURB & GUTTER
5280	EXISTING MAJOR CONTOUR
5281	EXISTING MINOR CONTOUR
5730	PROPOSED MAJOR CONTOUR
5732	PROPOSED MINOR CONTOUR
	PROPOSED CURB & GUTTER
	PROPOSED BUILDING
	PROPOSED ADA ROUTE
	PROPOSED STORM SEWER
D	EXISTING STORM SEWER MANHOLE/INLET
D	PROPOSED STORM SEWER MANHOLE/INLET
	EXISTING STREET LIGHTING
	EXISTING FIRE HYDRANT
	EXISTING SIGNAGE
	PROPOSED SITE LIGHTING
	PROPOSED SURFACE FLOW DIRECTION ARROW



VICINITY MAP
SCALE: 1" = 2000'

BENCHMARK:

ELEVATIONS ARE BASED UPON COLORADO SPRINGS UTILITIES FIMS CONTROL MONUMENT SE09, BEING A 2-INCH DIAMETER ALUMINUM CAP STAMPED "CSU FIMS CONTROL SE09" ON THE EAST CORNER OF THE CONCRETE BASE OF A TELEPHONE RELAY BOX AT THE EAST CORNER OF 226 MAIN STREET, ABOUT 3 FEET NORHTWEST OF THE NORTHWEST CURB OF MAIN STREET, AND ABOUT 205 FEET SOUTHWEST OF THE SOUTHWEST CURB LINE OF SECURITY BOULEVARD. CITY ELEVATION: 5726.76 (NGVD 29)

SOIL PREPARATION NOTE:

SOIL PREPARATION SHALL BE PER RECOMMENDATIONS FROM A GEOTECHNICAL ENGINEERING REPORT PREPARED FOR THIS SITE AS FOLLOWS

GEOTECHNICAL ENGINEER: OLSSON
REPORT NO. 021-05598

THE CONTRACTOR MUST FULLY REVIEW THIS REPORT PRIOR TO CONSTRUCTION INFORMATION IN THE GEOTECHNICAL REPORT SUPERSEDES ANY CONFLICTING INFORMATION CONTAINED IN THE CONSTRUCTION PLANS AND SPECIFICATIONS.

ENGINEER'S STATEMENT:

THIS GRADING AND EROSION CONTROL PLAN WAS PREPARED UNDER MY DIRECTION AND SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. SAID PLAN HAS BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR GRADING AND EROSION CONTROL PLANS. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY AN NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLAN.

_____
ENGINEER OF RECORD SIGNATURE DATE

OWNER'S STATEMENT:

I, THE OWNER / DEVELOPER HAVE READ AND WILL COMPLY WITH THE REQUIREMENTS OF THE GRADING AND EROSION CONTROL PLAN.

_____ _____
OWNER SIGNATURE DATE

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 DIRECTOR'S DISCRETION.

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

THIS SHEET IS FOR THE GEC PLANS

Please remove signature blocks. The Engineering Manager will only approve engineering documents. Any plans related to grading should be included in the grading and erosion control plan.

811 Know what's **below.** **Call** before you dig.
CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

added linetype to legend for clarification

EES ENTITLEMENT AND ENGINEERING SOLUTIONS, INC.
501 S Cherry St, Suite 300
Glendale, CO 80246
303-572-7997 www.ees.us.com

Kum & Go

1459 Grand Ave
Des Moines, IA 50309
P: 888-458-6646

2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.
GRADING PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **3**

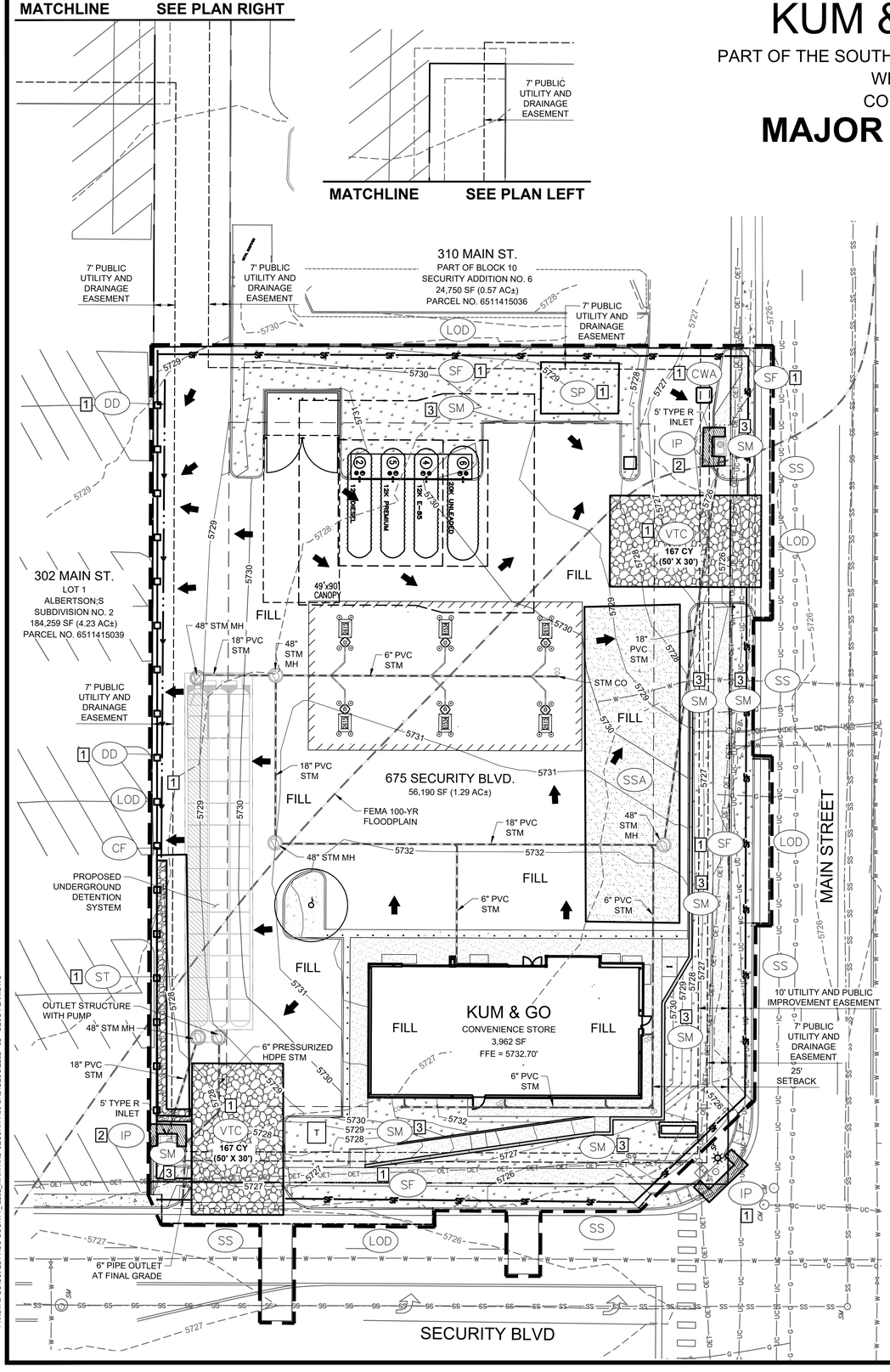
CRITERIA PLAN 04/2020

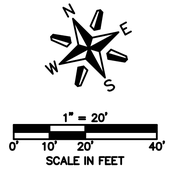
P:\KUM & GO\CO, EL PASO COUNTY_ 2232_MAIN AND SECURITY\08 CAD\GESC\2232 - 01 - GRADING PLAN.DWG

KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

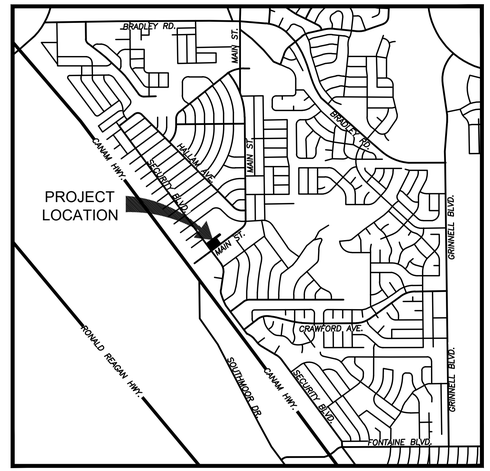
MAJOR SITE DEVELOPMENT PLAN





PHASING LEGEND

#	INDICATES PHASE OF CONSTRUCTION TO INSTALL ASSOCIATED BMP (INITIAL, INTERIM OR FINAL)
1	INITIAL BMP TO BE INSTALLED PRIOR TO CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION
2	INTERIM BMP TO BE INSTALLED DURING CONSTRUCTION AND MAINTAINED THROUGHOUT CONSTRUCTION
3	FINAL BMP TO BE INSTALLED DURING/AFTER CONSTRUCTION AND REMAIN IN PLACE



VICINITY MAP
SCALE: 1" = 2000'

SITE AND UTILITY PLAN LEGEND

- EXISTING GAS
- EXISTING SANITARY SEWER
- EXISTING OVERHEAD ELECTRICAL AND TELECOMMUNICATIONS
- EXISTING UNDERGROUND TELECOMMUNICATIONS
- EXISTING WATER
- PROPERTY BOUNDARY
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- EXISTING FLOODPLAIN
- EXISTING CURB & GUTTER
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
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- PROPOSED STORM SEWER
- EXISTING STORM SEWER MANHOLE/INLET
- PROPOSED STORM SEWER MANHOLE/INLET
- EXISTING STREET LIGHTING
- EXISTING FIRE HYDRANT
- EXISTING SIGNAGE
- PROPOSED SITE LIGHTING
- PROPOSED SURFACE FLOW DIRECTION ARROW

BMP LEGEND

- CWA — CONCRETE WASHOUT AREA
- CF — CONSTRUCTION FENCE
- IP — INLET PROTECTION
- SCL — SEDIMENT CONTROL LOG
- SM — SEEDING AND MULCHING
- SF — SILT FENCE
- SP — STOCKPILE AREA
- SSA — STABILIZED STAGING AREA
- VTC — VEHICLE TRACKING CONTROL
- LOD — LIMITS OF DISTURBANCE
- CS — CURB SOCK
- DD — DIVERSION DITCH
- ST — SEDIMENT TRAP
- SS — STREET SWEEPING

SOIL PREPARATION NOTE:

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2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

GRADING AND EROSION CONTROL PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **4**

P:\KUM & GO\CO. EL PASO COUNTY_ 2232_MAIN AND SECURITY\08 CAD\EES\2232 - 02 - GESC PLAN.DWG

CRITERIA PLAN 04/2020

KUM & GO GAS & C-STORE

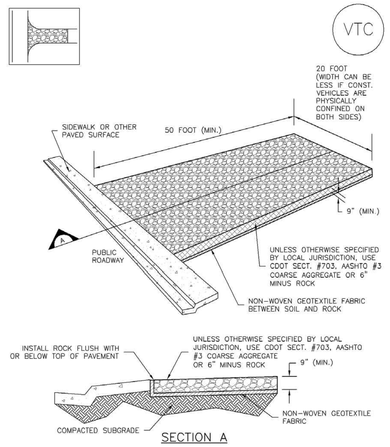
PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

MAJOR SITE DEVELOPMENT PLAN

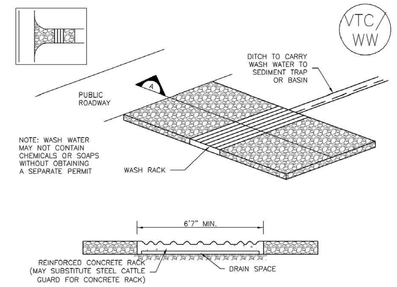
GENERAL NOTES

1. STORMWATER DISCHARGES FROM CONSTRUCTION SITES SHALL NOT CAUSE OR THREATEN TO CAUSE POLLUTION, CONTAMINATION, OR DEGRADATION OF STATE WATERS. ALL WORK AND EARTH DISTURBANCE SHALL BE DONE IN A MANNER THAT MINIMIZES POLLUTION OF ANY ON-SITE OR OFF-SITE WATERS, INCLUDING WETLANDS.
2. NOTWITHSTANDING ANYTHING DEPICTED IN THESE PLANS IN WORDS OR GRAPHIC REPRESENTATION, ALL DESIGN AND CONSTRUCTION RELATED TO ROADS, STORM DRAINAGE AND EROSION CONTROL SHALL CONFORM TO THE STANDARDS AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE RELEVANT ADOPTED EL PASO COUNTY STANDARDS, INCLUDING THE LAND DEVELOPMENT CODE, THE ENGINEERING CRITERIA MANUAL, THE DRAINAGE CRITERIA MANUAL, AND THE DRAINAGE CRITERIA MANUAL VOLUME 2. ANY DEVIATIONS FROM REGULATIONS AND STANDARDS MUST BE REQUESTED, AND APPROVED, IN WRITING.
3. A SEPARATE STORMWATER MANAGEMENT PLAN (SMWP) FOR THIS PROJECT SHALL BE COMPLETED AND AN EROSION AND STORMWATER QUALITY CONTROL PERMIT (ESQCP) ISSUED PRIOR TO COMMENCING CONSTRUCTION. MANAGEMENT OF THE SWMP DURING CONSTRUCTION IS THE RESPONSIBILITY OF THE DESIGNATED QUALIFIED STORMWATER MANAGER OR CERTIFIED EROSION CONTROL INSPECTOR. THE SWMP SHALL BE LOCATED ON-SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL BE KEPT UP TO DATE WITH WORK PROGRESS AND CHANGES IN THE FIELD.
4. ONCE THE ESQCP IS APPROVED AND A "NOTICE TO PROCEED" HAS BEEN ISSUED, THE CONTRACTOR MAY INSTALL THE INITIAL STAGE EROSION AND SEDIMENT CONTROL MEASURES AS INDICATED ON THE APPROVED GEC. A PRECONSTRUCTION MEETING BETWEEN THE CONTRACTOR, ENGINEER, AND EL PASO COUNTY WILL BE HELD PRIOR TO ANY CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE APPLICANT TO COORDINATE THE MEETING TIME AND PLACE WITH COUNTY STAFF.
5. CONTROL MEASURES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ACTIVITIES THAT COULD CONTRIBUTE POLLUTANTS TO STORMWATER. CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, AND DISTURBED LAND AREAS SHALL BE INSTALLED IMMEDIATELY UPON COMPLETION OF THE DISTURBANCE.
6. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE MAINTAINED AND REMAIN IN EFFECTIVE OPERATING CONDITION UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED AND FINAL STABILIZATION IS ESTABLISHED. ALL PERSONS ENGAGED IN LAND DISTURBANCE ACTIVITIES SHALL ASSESS THE ADEQUACY OF CONTROL MEASURES AT THE SITE AND IDENTIFY IF CHANGES TO THOSE CONTROL MEASURES ARE NEEDED TO ENSURE THE CONTINUED EFFECTIVE PERFORMANCE OF THE CONTROL MEASURES. ALL CHANGES TO TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES MUST BE INCORPORATED INTO THE STORMWATER MANAGEMENT PLAN.
7. TEMPORARY STABILIZATION SHALL BE IMPLEMENTED ON DISTURBED AREAS AND STOCKPILES WHERE GROUND DISTURBING CONSTRUCTION ACTIVITY HAS PERMANENTLY CEASED OR TEMPORARILY CEASED FOR LONGER THAN 14 DAYS.
8. FINAL STABILIZATION MUST BE IMPLEMENTED AT ALL APPLICABLE CONSTRUCTION SITES. FINAL STABILIZATION IS ACHIEVED WHEN ALL GROUND DISTURBING ACTIVITIES ARE COMPLETE AND ALL DISTURBED AREAS EITHER HAVE A UNIFORM VEGETATIVE COVER WITH INDIVIDUAL PLANT DENSITY OF 70 PERCENT OF PRE-DISTURBANCE LEVELS ESTABLISHED OR EQUIVALENT PERMANENT ALTERNATIVE STABILIZATION METHOD IS IMPLEMENTED. ALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES SHALL BE REMOVED UPON FINAL STABILIZATION AND BEFORE PERMIT CLOSURE.
9. ALL PERMANENT STORMWATER MANAGEMENT FACILITIES SHALL BE INSTALLED AS DESIGNED IN THE APPROVED PLANS. ANY PROPOSED CHANGES THAT EFFECT THE DESIGN OR FUNCTION OF PERMANENT STORMWATER MANAGEMENT STRUCTURES MUST BE APPROVED BY THE ECM ADMINISTRATOR PRIOR TO IMPLEMENTATION.
10. EARTH DISTURBANCES SHALL BE CONDUCTED IN SUCH A MANNER SO AS TO EFFECTIVELY MINIMIZE ACCELERATED SOIL EROSION AND RESULTING SEDIMENTATION. ALL DISTURBANCES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST PRACTICAL PERIOD OF TIME. PRE-EXISTING VEGETATION SHALL BE PROTECTED AND MAINTAINED WITHIN 50 HORIZONTAL FEET OF A WATERS OF THE STATE UNLESS SHOWN TO BE INFEASIBLE AND SPECIFICALLY REQUESTED AND APPROVED.
11. COMPACTION OF SOIL MUST BE PREVENTED IN AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES OR WHERE FINAL STABILIZATION WILL BE ACHIEVED BY VEGETATIVE COVER. AREAS DESIGNATED FOR INFILTRATION CONTROL MEASURES SHALL ALSO BE PROTECTED FROM SEDIMENTATION DURING CONSTRUCTION UNTIL FINAL STABILIZATION IS ACHIEVED. IF COMPACTION PREVENTION IS NOT FEASIBLE DUE TO SITE CONSTRAINTS, ALL AREAS DESIGNATED FOR INFILTRATION AND VEGETATION CONTROL MEASURES MUST BE LOOSENED PRIOR TO INSTALLATION OF THE CONTROL MEASURE(S).
12. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED AND CONSTRUCTED FOR THE CONVEYANCE OF STORMWATER AROUND, THROUGH, OR FROM THE EARTH DISTURBANCE AREA SHALL BE A STABILIZED CONVEYANCE DESIGNED TO MINIMIZE EROSION AND THE DISCHARGE OF SEDIMENT OFF-SITE.
13. CONCRETE WASH WATER SHALL BE CONTAINED AND DISPOSED OF IN ACCORDANCE WITH THE SWMP. NO WASH WATER SHALL NE DISCHARGED TO OR ALLOWED TO ENTER STATE WATERS, INCLUDING ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR FACILITIES. CONCRETE WASHOUTS SHALL NOT BE LOCATED IN AN AREA WHERE SHALLOW GROUNDWATER MAY BE PRESENT, OR WITHIN 50 FEET OF A SURFACE WATER BODY, CREEK OR STREAM.
14. DURING DEWATERING OPERATIONS, UNCONTAMINATED GROUNDWATER MAY BE DISCHARGED ON-SITE, BUT SHALL NOT LEAVE THE SITE IN THE FORM OF SURFACE RUNOFF UNLESS AN APPROVED STATE DEWATERING PERMIT IS IN PLACE.
15. EROSION CONTROL BLANKETING OR OTHER PROTECTIVE COVERING SHALL BE USED ON SLOPES STEEPER THAN 3:1.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL WASTES FROM THE CONSTRUCTION SITE FOR DISPOSAL IN ACCORDANCE WITH LOCAL AND STATE REGULATORY REQUIREMENTS. NO CONSTRUCTION DEBRIS, TREE SLASH, BUILDING MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, OR DISCHARGED AT THE SITE.
17. WASTE MATERIALS SHALL NOT BE TEMPORARILY PLACED OR STORED IN THE STREET, ALLEY, OR OTHER PUBLIC WAY, UNLESS IN ACCORDANCE WITH AN APPROVED TRAFFIC CONTROL PLAN. CONTROL MEASURES MAY BE REQUIRED BY EL PASO COUNTY ENGINEERING IF DEEMED NECESSARY, BASED ON SPECIFIC CONDITIONS AND CIRCUMSTANCES.
18. TRACKING OF SOILS AND CONSTRUCTION DEBRIS OFF-SITE SHALL BE MINIMIZED. MATERIALS TRACKED OFF-SITE SHALL BE CLEANED UP AND PROPERLY DISPOSED OF IMMEDIATELY.
19. THE OWNER/DEVELOPER SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL CONSTRUCTION DEBRIS, DIRT, TRASH, ROCK, SEDIMENT, SOIL, AND SAND THAT MAY ACCUMULATE IN ROADS, STORM DRAINS AND OTHER DRAINAGE CONVEYANCE SYSTEMS AND STORMWATER APPURTENANCES AS A RESULT OF SITE DEVELOPMENT.
20. THE QUANTITY OF MATERIALS STORED ON THE PROJECT SITE SHALL BE LIMITED, AS MUCH AS PRACTICAL, TO THAT QUANTITY REQUIRED TO PERFORM THE WORK IN AN ORDERLY SEQUENCE. ALL MATERIALS STORED ON-SITE SHALL BE STORED IN A NEAT, ORDERLY MANNER, IN THEIR ORIGINAL CONTAINERS, WITH ORIGINAL MANUFACTURER'S LABELS.
21. NO CHEMICAL(S) HAVING THE POTENTIAL TO BE RELEASED IN STORMWATER ARE TO BE STORED OR USED ON-SITE UNLESS PERMISSION FOR THE USE OF SUCH CHEMICAL(S) IS GRANTED IN WRITING BY THE ECM ADMINISTRATOR. IN GRANTING APPROVAL FOR THE USE OF SUCH CHEMICAL(S), SPECIAL CONDITIONS AND MONITORING MAY BE REQUIRED.
22. BULK STORAGE OF ALLOWED PETROLEUM PRODUCTS OR OTHER ALLOWED LIQUID CHEMICALS IN EXCESS OF 55 GALLONS SHALL REQUIRE ADEQUATE SECONDARY CONTAINMENT PROTECTION TO CONTAIN ALL SPILLS ON-SITE AND TO PREVENT ANY SPILLED MATERIALS FROM ENTERING STATE WATERS, ANY SURFACE OR SUBSURFACE STORM DRAINAGE SYSTEM OR OTHER FACILITIES.
23. NO PERSON SHALL CAUSE THE IMPEDIMENT OF STORMWATER FLOW IN THE CURB AND GUTTER OR DITCH EXCEPT WITH APPROVED SEDIMENT CONTROL MEASURES.
24. OWNER/DEVELOPER AND THEIR AGENTS SHALL COMPLY WITH THE "COLORADO WATER QUALITY CONTROL ACT" (TITLE 25, ARTICLE 8, CRS) AND THE "CLEAN WATER ACT" (33 USC 1344), IN ADDITION TO THE REQUIREMENTS OF THE LAND DEVELOPMENT CODE, DCM VOLUME II AND THE ECM APPENDIX I. ALL APPROPRIATE PERMITS MUST BE OBTAINED BY THE CONTRACTOR PRIOR TO CONSTRUCTION (1041, NPDES, FLOODPLAIN, 404, FUGITIVE DUST, ETC.). IN THE EVENT OF CONFLICTS BETWEEN THESE REQUIREMENTS AND OTHER LAWS, RULES, OR REGULATIONS OF OTHER FEDERAL, STATE, LOCAL, OR COUNTY AGENCIES, THE MOST RESTRICTIVE LAWS, RULE, OR REGULATIONS SHALL APPLY.
25. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE ONLY AT APPROVED CONSTRUCTION ACCESS POINTS.
26. PRIOR TO CONSTRUCTION THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES.
27. A WATER SOURCE SHALL BE AVAILABLE ON-SITE DURING EARTHWORK OPERATIONS AND SHALL BE UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
28. THE SOILS REPORT FOR THIS SITE HAS BEEN PREPARED BY OLSSON ON DECEMBER 21ST, 2021 AND SHALL BE CONSIDERED A PART OF THESE PLANS.
29. AT LEAST (10) DAYS PRIOR TO THE ANTICIPATED START OF CONSTRUCTION, FOR PROJECTS THAT WILL DISTURB ONE (1) ACRE OR MORE, THE OWNER OR OPERATOR OF CONSTRUCTION ACTIVITY SHALL SUBMIT A PERMIT APPLICATION FOR STORMWATER DISCHARGE TO THE COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT, WATER QUALITY DIVISION. THE APPLICATION CONTAINS CERTIFICATION OF COMPLETION OF A STORMWATER MANAGEMENT PLAN (SWMP), OF WHICH THIS GRADING AND EROSION CONTROL PLAN MAY BE A PART. FOR INFORMATION OR APPLICATION MATERIALS CONTACT:

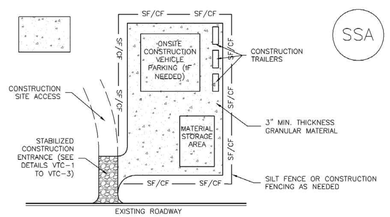
COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL DIVISION
WQCD - PERMITS
4300 CHERRY CREEK DRIVE SOUTH
DENVER, CO 80246-1530
ATTN: PERMITS UNIT



VTC-1. AGGREGATE VEHICLE TRACKING CONTROL



VTC-2. AGGREGATE VEHICLE TRACKING CONTROL WITH WASH RACK



SSA-1. STABILIZED STAGING AREA

STABILIZED STAGING AREA INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   -LOCATION OF STAGING AREA(S).
   -CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL FROM THE LOCAL JURISDICTION.
2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.

STABILIZED STAGING AREA 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. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.

STABILIZED STAGING AREA MAINTENANCE NOTES

5. STABILIZED STAGING AREA SHALL BE ENLARGED IF NECESSARY TO CONTAIN PARKING, STORAGE, AND UNLOADING/LOADING OPERATIONS.
6. THE STABILIZED STAGING AREA SHALL BE REMOVED AT THE END OF CONSTRUCTION. THE GRANULAR MATERIAL SHALL BE REMOVED OR, IF APPROVED BY THE LOCAL JURISDICTION, USED ON SITE, AND THE AREA COVERED WITH TOPSOIL, SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY LOCAL JURISDICTION.

NOTE: MANY MUNICIPALITIES PROHIBIT THE USE OF RECYCLED CONCRETE AS GRANULAR MATERIAL FOR STABILIZED STAGING AREAS DUE TO DIFFICULTIES WITH RE-ESTABLISHMENT OF VEGETATION IN AREAS WHERE RECYCLED CONCRETE WAS PLACED.

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

(DETAILS ADAPTED FROM DOUGLAS COUNTY, COLORADO, NOT AVAILABLE IN AUTOCAD)

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2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

EROSION AND STORMWATER CONTROL DETAILS

KG PROJECT TEAM:
RDM:
SDM:
CPM:

	DATE	REVISION DESCRIPTION
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REVISIONS

DATE: 04-26-2022

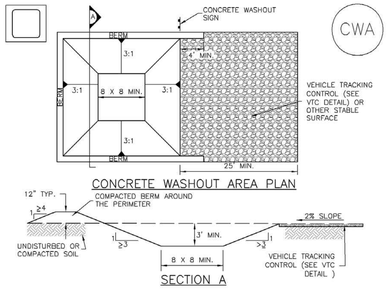
SHEET NUMBER: 5

P:\KUM & GO\CO, EL PASO COUNTY - 2232, MAIN AND SECURITY\08 CAD\GESC\2232 - 03 - GESC DETAILS.DWG

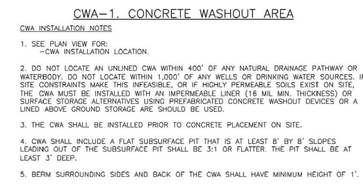
KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

MAJOR SITE DEVELOPMENT PLAN



CONCRETE WASHOUT AREA PLAN



SECTION A

CWA-1. CONCRETE WASHOUT AREA

CWA INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   -CWA INSTALLATION LOCATION.

2. DO NOT LOCATE AN UNLINED CWA WITHIN 400' OF ANY NATURAL DRAINAGE PATHWAY OR WATERBODY. DO NOT LOCATE WITHIN 1,000' OF ANY WELLS OR DRINKING WATER SOURCES. IF SITE CONSTRAINTS MAKE THIS INFEASIBLE, OR IF HIGHLY PERMEABLE SOILS EXIST ON SITE, THE CWA MUST BE INSTALLED WITH AN IMPERMEABLE LINER (16 MIL MIN. THICKNESS) OR SURFACE STORAGE ALTERNATIVES USING PREFABRICATED CONCRETE WASHOUT DEVICES OR A LINED ABOVE GROUND STORAGE ARE SHOULD BE USED.

3. THE CWA SHALL BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE.

4. CWA SHALL INCLUDE A FLAT SUBSURFACE PIT THAT IS AT LEAST 8' BY 8' SLOPES LEADING OUT OF THE SUBSURFACE PIT SHALL BE 3:1 OR FLATTER. THE PIT SHALL BE AT LEAST 3' DEEP.

5. BERM SURROUNDING SIDES AND BACK OF THE CWA SHALL HAVE MINIMUM HEIGHT OF 1'.

6. VEHICLE TRACKING PAD SHALL BE SLOPED 2% TOWARDS THE CWA.

7. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE CWA, AND ELSEWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CWA TO OPERATORS OF CONCRETE TRUCKS AND PUMP RIGS.

8. USE EXCAVATED MATERIAL FOR PERIMETER BERM CONSTRUCTION.

CWA 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. THE CWA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE, CONCRETE MATERIALS, ACCUMULATED IN PIT, SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF 2'.

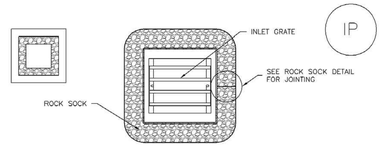
5. CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER-TIGHT CONTAINER AND DISPOSED OF PROPERLY.

6. THE CWA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.

7. WHEN THE CWA IS REMOVED, COVER THE DISTURBED AREA WITH TOP SOIL, SEED AND MULCH OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

(DETAIL ADAPTED FROM DOUGLAS COUNTY, COLORADO AND THE CITY OF PARKER, COLORADO, NOT AVAILABLE IN AUTOCAD).

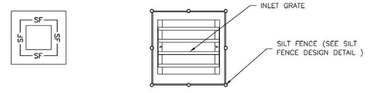
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.



IP-3. ROCK SOCK SUMP/AREA INLET PROTECTION

ROCK SOCK SUMP/AREA INLET PROTECTION INSTALLATION NOTES
1. SEE ROCK SOCK DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF ROCK SOCKS FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.



IP-4. SILT FENCE FOR SUMP INLET PROTECTION

SILT FENCE INLET PROTECTION INSTALLATION NOTES

1. SEE SILT FENCE DESIGN DETAIL FOR INSTALLATION REQUIREMENTS.

2. POSTS SHALL BE PLACED AT EACH CORNER OF THE INLET AND AROUND THE EDGES AT A MAXIMUM SPACING OF 3 FEET.

3. STRAW WATTLES/SEDIMENT CONTROL LOGS MAY BE USED IN PLACE OF SILT FENCE FOR INLETS IN PERVIOUS AREAS. INSTALL PER SEDIMENT CONTROL LOG DETAIL.

GENERAL INLET PROTECTION INSTALLATION NOTES

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

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

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

INLET PROTECTION MAINTENANCE NOTES

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

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

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

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

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

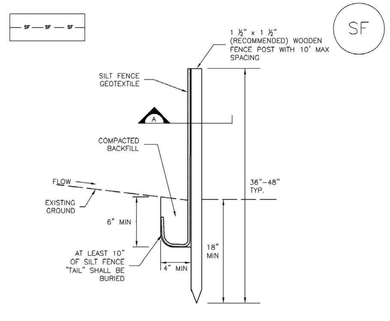
6. WHEN INLET PROTECTION AT AREA INLETS IS REMOVED, THE DISTURBED AREA SHALL BE COVERED WITH TOP SOIL, SEEDED AND MULCHED, OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE LOCAL JURISDICTION.

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

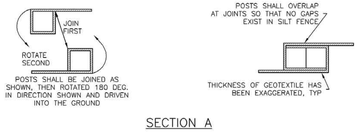
NOTE: MANY JURISDICTIONS HAVE BMP DETAILS THAT VARY FROM UDFCD STANDARD DETAILS. CONSULT WITH LOCAL JURISDICTIONS AS TO WHICH DETAIL SHOULD BE USED WHEN DIFFERENCES ARE NOTED.

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

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



SILT FENCE



SECTION A

SF-1. SILT FENCE

SILT FENCE INSTALLATION NOTES

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

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

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

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

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

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

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

SILT FENCE MAINTENANCE NOTES

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

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

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

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

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

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

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

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

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

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EROSION AND STORMWATER CONTROL DETAILS

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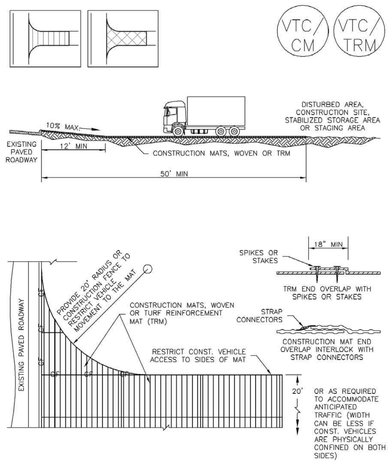
CRITERIA PLAN 04/2020

KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

MAJOR SITE DEVELOPMENT PLAN

Vehicle Tracking Control (VTC) SM-4



VTC–3. VEHICLE TRACKING CONTROL W/ CONSTRUCTION MAT OR TURF REINFORCEMENT MAT (TRM)

SM-4 Vehicle Tracking Control (VTC)

STABILIZED CONSTRUCTION ENTRANCE/EXIT INSTALLATION NOTES

1. SEE PLAN VIEW FOR
   –LOCATION OF CONSTRUCTION ENTRANCE(S)/EXIT(S).
   –TYPE OF CONSTRUCTION ENTRANCE(S)/EXITS(S) (WITH/WITHOUT WHEEL WASH, CONSTRUCTION MAT OR TRM).

2. CONSTRUCTION MAT OR TRM STABILIZED CONSTRUCTION ENTRANCES ARE ONLY TO BE USED ON SHORT DURATION PROJECTS (TYPICALLY RANGING FROM A WEEK TO A MONTH) WHERE THERE WILL BE LIMITED VEHICULAR ACCESS.

3. A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE LOCATED AT ALL ACCESS POINTS WHERE VEHICLES ACCESS THE CONSTRUCTION SITE FROM PAVED RIGHT–OF–WAYS.

4. STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE INSTALLED PRIOR TO ANY LAND DISTURBING ACTIVITIES.

5. A NON–WOVEN GEOTEXTILE FABRIC SHALL BE PLACED UNDER THE STABILIZED CONSTRUCTION ENTRANCE/EXIT PRIOR TO THE PLACEMENT OF ROCK.

6. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.

STABILIZED CONSTRUCTION ENTRANCE/EXIT 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. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY TO THE STABILIZED ENTRANCE/EXIT TO MAINTAIN A CONSISTENT DEPTH.

5. SEDIMENT TRACKED ONTO PAVED ROADS IS TO BE REMOVED THROUGHOUT THE DAY AND AT THE END OF THE DAY BY SHOVELING OR SWEEPING. SEDIMENT MAY NOT BE WASHED DOWN STORM SEWER DRAINS.

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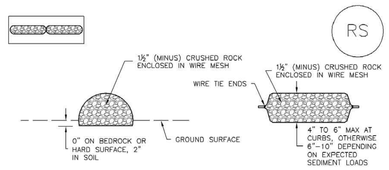
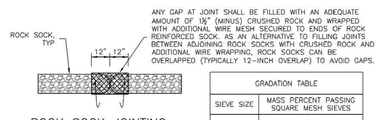
(DETAILS ADAPTED FROM CITY OF BROOMFIELD, COLORADO, NOT AVAILABLE IN AUTOCAD)

SC-5 Rock Sock (RS)



ROCK SOCK SECTION ROCK SOCK PLAN



ROCK SOCK JOINTING

GRADATION TABLE	
SIEVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	NO. 4
2"	100
1½"	90 – 100
1"	20 – 55
¾"	0 – 15
⅜"	0 – 5
MATCHES SPECIFICATIONS FOR NO. 4 COARSE AGGREGATE FOR CONCRETE PER AASHTO M43. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.	

ROCK SOCK INSTALLATION NOTES

1. SEE PLAN VIEW FOR:
   –LOCATION(S) OF ROCK SOCKS.

2. CRUSHED ROCK SHALL BE 1½" (MINUS) IN SIZE WITH A FRACTURED FACE (ALL SIDES) AND SHALL COMPLY WITH GRADATION SHOWN ON THIS SHEET (1½" MINUS).

3. WIRE MESH SHALL BE FABRICATED OF 10 GAGE POULTRY MESH, OR EQUIVALENT, WITH A MAXIMUM OPENING OF ½", RECOMMENDED MINIMUM ROLL WIDTH OF 48"

4. WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6" CENTERS ALONG ALL JOINTS AND AT 2" CENTERS ON ENDS OF SOCKS.

5. SOME MUNICIPALITIES MAY ALLOW THE USE OF FILTER FABRIC AS AN ALTERNATIVE TO WIRE MESH FOR THE ROCK ENCLOSURE.

RS–1. ROCK SOCK PERIMETER CONTROL

Rock Sock (RS) SC-5

ROCK SOCK 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. ROCK SOCKS SHALL BE REPLACED IF THEY BECOME HEAVILY SOILED, OR DAMAGED BEYOND REPAIR.

5. SEDIMENT ACCUMULATED UPSTREAM OF ROCK SOCKS SHALL BE REMOVED AS NEEDED TO MAINTAIN FUNCTIONALITY OF THE BMP, TYPICALLY WHEN DEPTH OF ACCUMULATED SEDIMENTS IS APPROXIMATELY ½ OF THE HEIGHT OF THE ROCK SOCK.

6. ROCK SOCKS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED AND APPROVED BY THE LOCAL JURISDICTION.

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

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

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

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CRITERIA PLAN 04/2020

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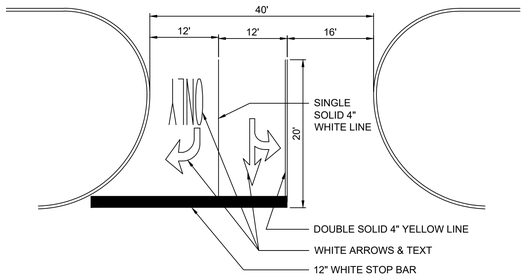
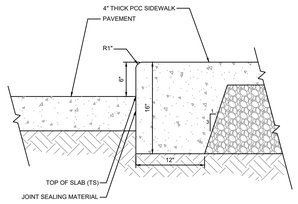
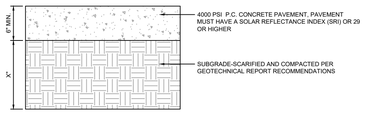


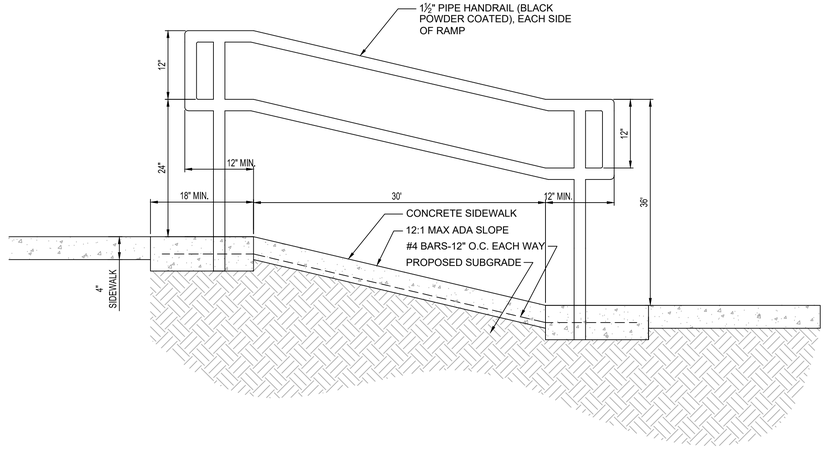
DRIVEWAY ENTRANCE MARKINGS



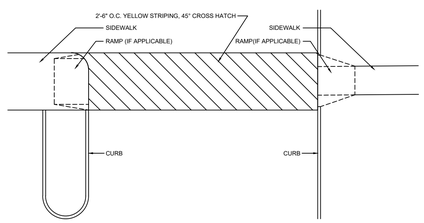
6" CURB/SIDEWALK DETAIL



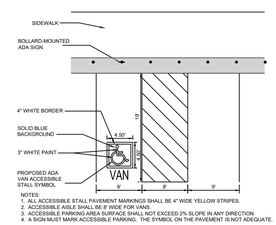
STANDARD DUTY CONCRETE PAVEMENT SECTION



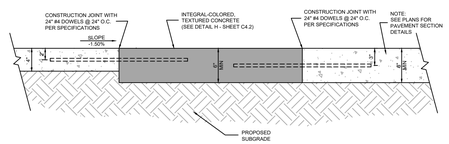
RAMP & HANDRAIL



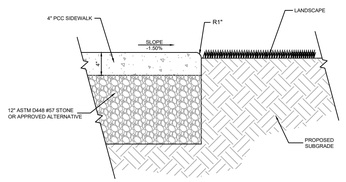
CROSSWALK



ACCESSIBLE FRONT PARKING STALL



SITE SIDEWALK TO PAVEMENT DETAIL



BUILDING SIDEWALK TO LANDSCAPE

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

CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

P:\KUM & GO\CO. EL PASO COUNTY - 2232_MAIN AND SECURITY\08 CAD\SDP\2232 - 03 - CIVIL DETAILS.DWG

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2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

CIVIL SITE DETAILS

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

△	DATE	REVISION DESCRIPTION

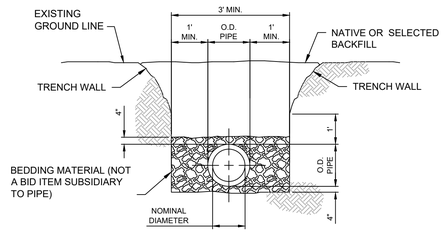
DATE: 04-26-2022

SHEET NUMBER: **8**

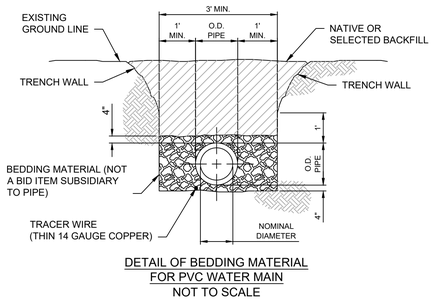
KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
COUNTY OF EL PASO, STATE OF COLORADO

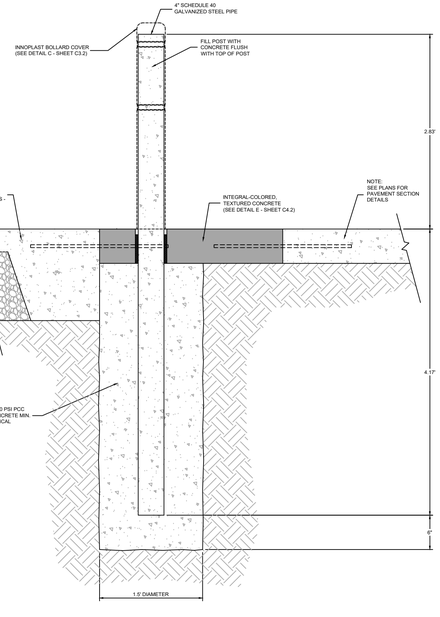
MAJOR SITE DEVELOPMENT PLAN



FOUNDATION & BEDDING
MATERIAL DETAIL FOR 4" - 8"
SANITARY SEWER
NOT TO SCALE

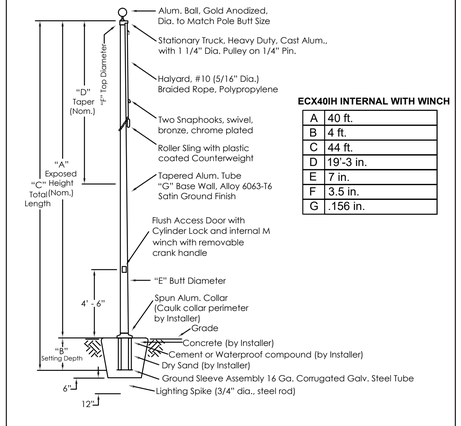


DETAIL OF BEDDING MATERIAL
FOR PVC WATER MAIN
NOT TO SCALE



BOLLARD DETAIL

NOTE:
FLAG POLES OWNER SUPPLIED-OWNER INSTALLED

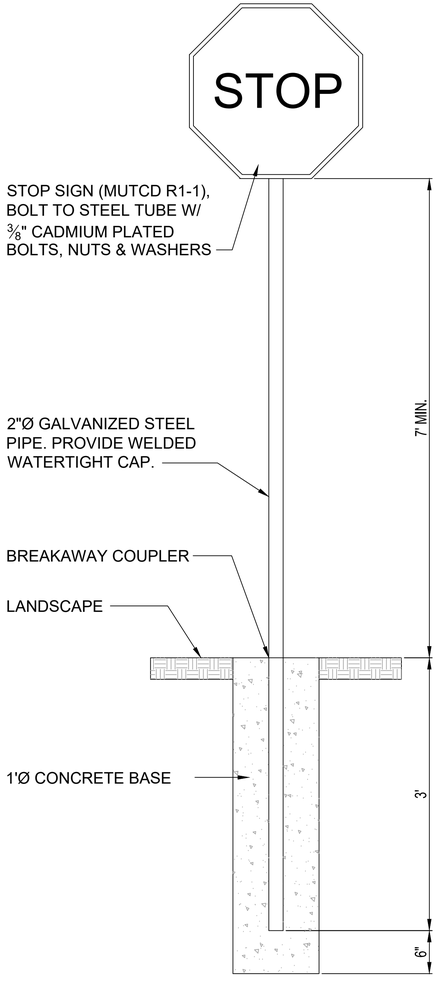


ECX40IH INTERNAL WITH WINCH

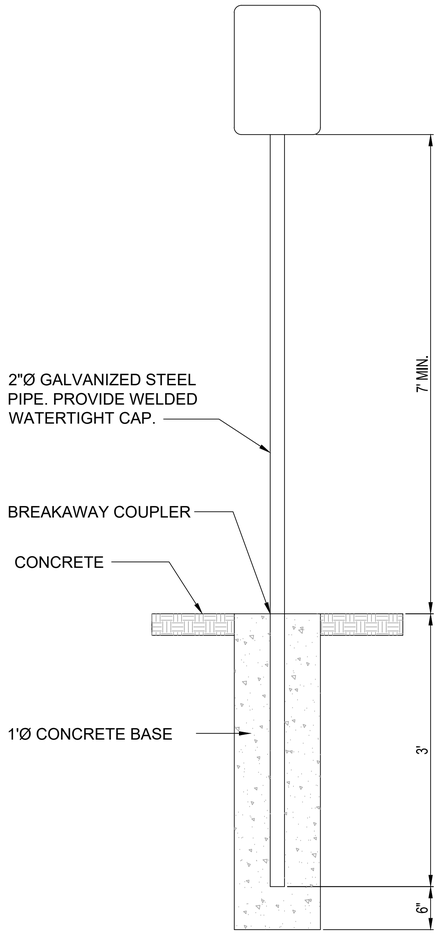
A	40 ft.
B	4 ft.
C	44 ft.
D	19'-3 in.
E	7 in.
F	3.5 in.
G	.156 in.

CUSTOMER NAME: Kum & Go DATE:
POLE SECTIONS: 2 QUANTITY: 1 FINISH: Satin Finish

40' FLAG POLE



SIGN IN LANDSCAPE



SIGN IN CONCRETE

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2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

CIVIL SITE DETAILS

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	REVISION DESCRIPTION	DATE
1		

DATE: 04-26-2022

SHEET NUMBER: **9**

KUM & GO GAS & C-STORE

PART OF THE SOUTHEAST 1/4 OF SECTION 11, TOWNSHIP 15 SOUTH, RANGE 66
WEST OF THE SIXTH PRINCIPAL MERIDIAN,
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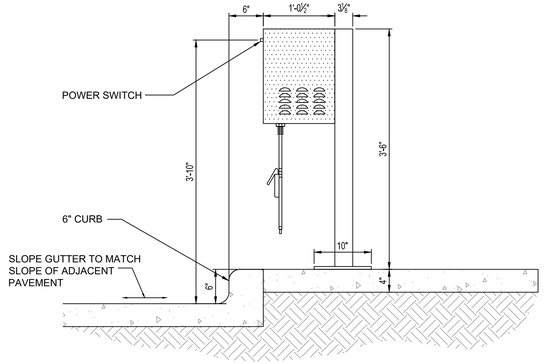
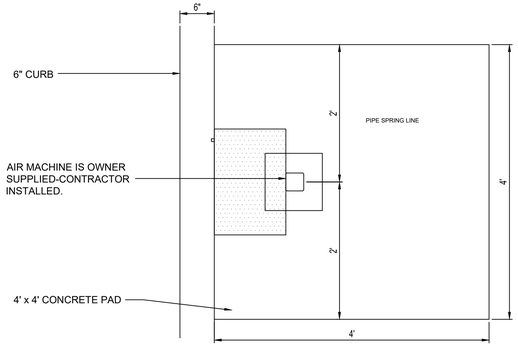
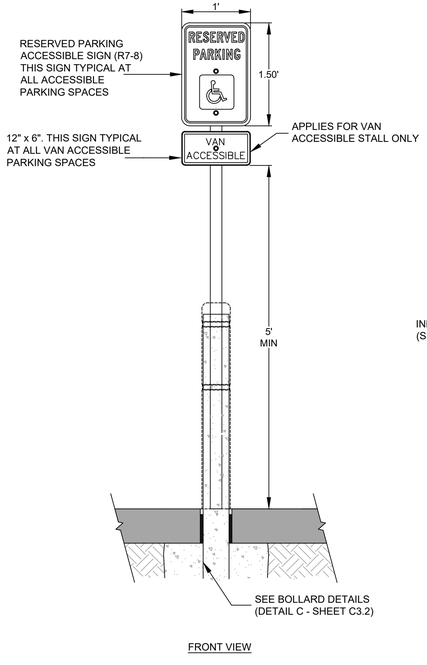
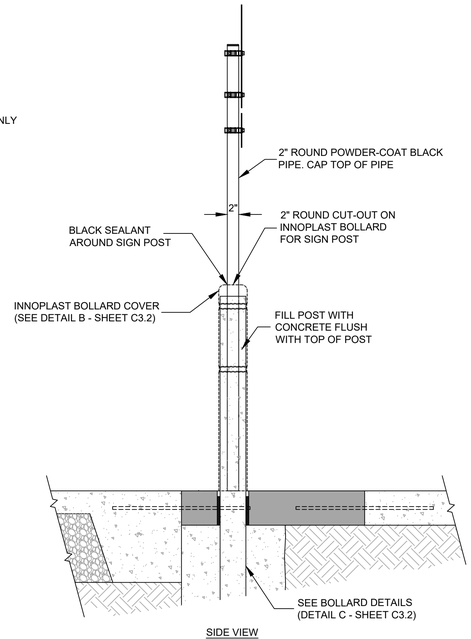
MAJOR SITE DEVELOPMENT PLAN





AIR MACHINE

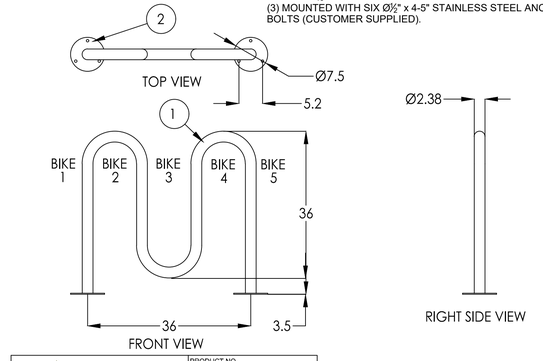




BOLLARD-MOUNTED ADA SIGN

NOTES:
1. BOLLARD SHALL HAVE A ONYX POWDER COAT FINISH.

MATERIALS LIST
(1) TUBING - Ø2 3/8" x .154" Wall Steel Tubing.
(2) SURFACE PLATE - Ø7½" x ¼" THICK STEEL PLATE WITH THREE Ø⅝" MOUNTING HOLES.
(3) MOUNTED WITH SIX Ø½" x 4-5" STAINLESS STEEL ANCHOR BOLTS (CUSTOMER SUPPLIED).



siteSCapes	PRODUCT NO. EC2-05-SM

NOTE:
BIKE RACKS OWNER
SUPPLIED-CONTRACTOR INSTALLED

WAVE BIKE RACK DETAIL

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CIVIL SITE DETAILS

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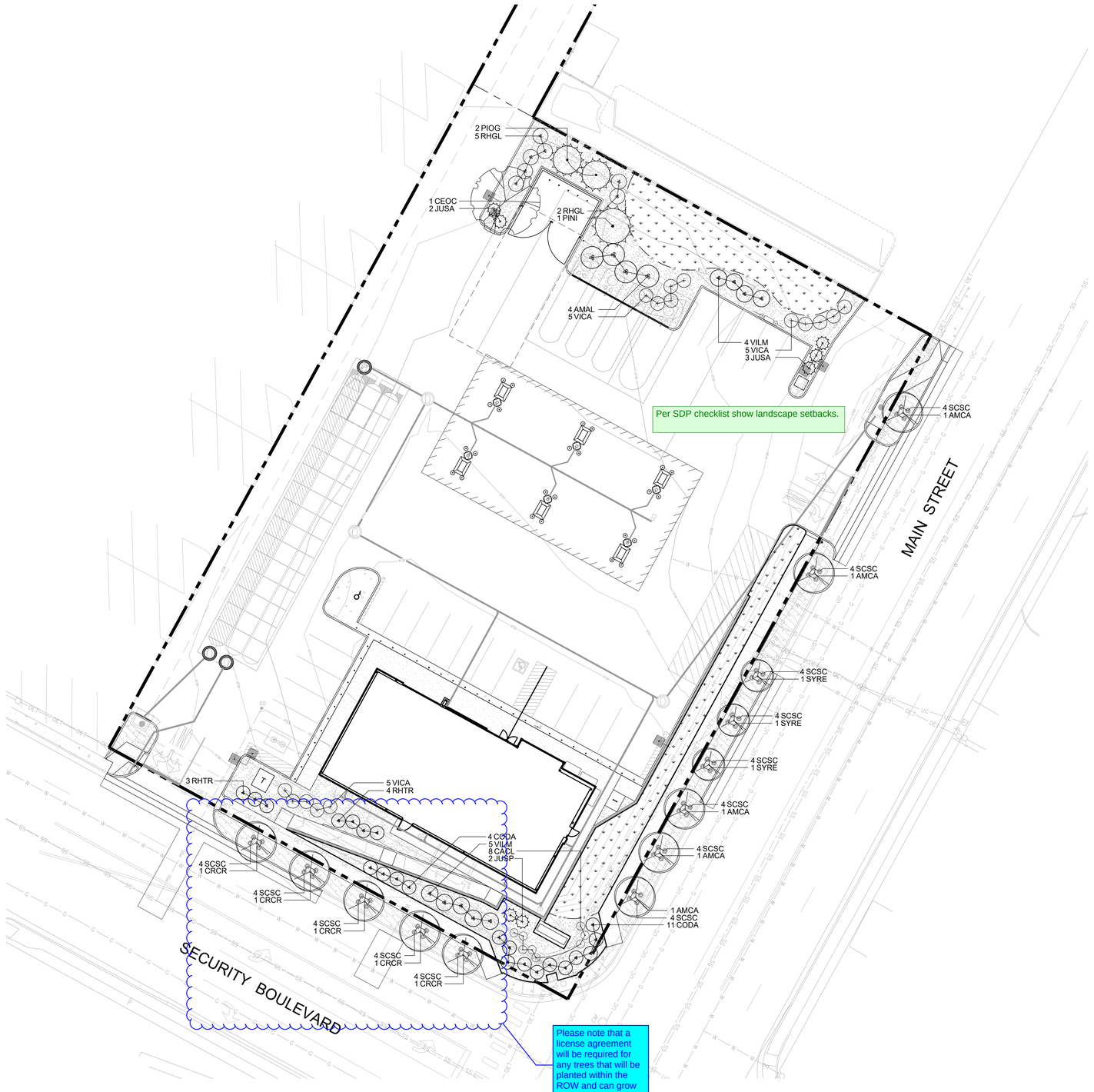
CPM:

REVISIONS

△	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **10**



1 LANDSCAPE PLAN

NORTH

0 20 40 60 feet

SCALE: 1" = 20'

LEGEND

Please provide the height and diameter of the trees

- DECIDUOUS TREE
- EVERGREEN TREE
- ORNAMENTAL TREE
- DECIDUOUS SHRUBS
- EVERGREEN SHRUBS
- ORNAMENTAL GRASS
- 2"-4" COBBLE ROCK MULCH
- 1" CHIPPED GRANITE ROCK MULCH
- LANDSCAPE EDGER

PLANT SCHEDULE

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT
CEOC	1	CELTIS OCCIDENTALIS	COMMON HACKBERRY	B & B

EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT
PINI	1	PINUS NIGRA	AUSTRIAN PINE	B & B
PIOG	2	PINUS NIGRA `OREGON GREEN`	OREGON GREEN PINE	B & B

ORNAMENTAL TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT
AMCA	5	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	B & B
CRCR	5	CRATAEGUS CRUS-GALLI `INERMIS`	THORNLESS HAWTHORN	B & B
SYRE	3	SYRINGA RETICULATA	JAPANESE TREE LILAC	B & B

DECIDUOUS SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT
AMAL	4	AMELANCHIER ALNIFOLIA	SASKATOON SERVICEBERRY	#5
CACL	8	CARYOPTERIS X CLANDONENSIS `BLUE MIST`	BLUE MIST SPIREA	#5
CODA	15	COTONEASTER DAMMERI `CORAL BEAUTY`	BEARBERRY COTONEASTER	#5
RHGL	7	RHUS GLABRA `CISMONTANA`	ROCKY MOUNTAIN SUMAC	#5
RHTR	7	RHUS TRILOBATA	THREE LEAF SUMAC	#5
VICA	15	VIBURNUM CARLESII	KOREAN SPICE VIBURNUM	#5
VILM	9	VIBURNUM LANTANA `MOHICAN`	MOHICAN WAYFARING TREE	#5

EVERGREEN SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	CONT
JUSP	2	JUNIPERUS CHINENSIS 'SPEARMINT'	SPEARMINT JUNIPER	#5
JUSA	5	JUNIPERUS SABINA `MONNA`	CALGARY CARPET JUNIPER	#5

ORNAMENTAL GRASSES	QTY	BOTANICAL NAME	COMMON NAME	CONT
SCSC	52	SCHIZACHYRIUM SCOPARIUM	BLAZE LITTLE BLUESTEM	#1

GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	CONT @
	3,051 SF	NATIVE SEED	EL PASO COUNTY ALL-PURPOSE LOW GROW MIX	SEED

EL PASO COUNTY ALL-PURPOSE LOW GROW MIX FOR UPLAND AREAS

COMMON NAME	SCIENTIFIC NAME	RECOMMENDED PLS LBS/AC	% OF SEED MIX
GRAMINOIDS			
BUFFALO GRASS	Buchloe dactyloides	9.6	25
BLUE GRAMA	BOUTELOUA GRACILIS	10.8	20
SIDEOATS GRAMA	BOUTELOUA CURTIPENDULA	5.6	29
GREEN NEEDLEGRASS	NASSELLA VIRIDULA	3.2	5
WESTERN WHEATGRASS	PASCOPYRUM SMITHII	12	20
SAND DROPSEED	SPOROBOLUS CRYPTANDRUS	0.8	1
	TOTAL	42.0	100.0

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2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

LANDSCAPE PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **11**

GENERAL NOTES:

1. VERIFY ALL EXISTING CONDITIONS PRIOR TO BEGINNING WORK. BE AWARE OF ANY UNDERGROUND UTILITIES. PROTECT ALL EXISTING SITE FEATURES TO REMAIN FROM POTENTIAL DAMAGE BY SITE CONSTRUCTION OPERATIONS. AVOID ANY WORK BEYOND SCOPE OF PROJECT AREA.
2. COORDINATE ALL DISCIPLINES AND SITE CONSTRUCTION THAT WILL BE NEEDED TO COMPLETE THE PROJECT IN THE TIME FRAME GIVEN AND WITHIN BUDGET. ALL ACCESS TO SITE, USE OF UTILITIES, STORAGE, AND OTHER REQUIREMENTS SHALL BE COORDINATED PRIOR TO BEGINNING WORK.
3. CONTRACTOR IS RESPONSIBLE TO INSPECT AND CONFIRM SITE CONDITIONS PRIOR TO BEGINNING WORK. COMMENCEMENT OF WORK SHALL SIGNIFY ALL CONDITIONS ARE ACCEPTABLE AND NO ALLOWANCE WILL BE MADE FOR UNRECOGNIZED CONDITIONS AFTER START OF WORK.
4. NOTIFY OWNER/LANDSCAPE ARCHITECT IMMEDIATELY UPON DISCOVERY OF UNFORESEEN SITE CONDITIONS OR PLAN DISCREPANCIES. NO CHANGE TO SPECIFIED WORK SHALL BE COMPLETED WITHOUT VERIFICATION OF EXISTING CONDITIONS AND WRITTEN APPROVAL OF MODIFICATION BY THE LANDSCAPE ARCHITECT.

CLEARING & GRADING:

1. ALL CONSTRUCTION MUST BE IN ACCORDANCE WITH ALL APPLICABLE MUNICIPAL CODES AND DEVELOPMENT STANDARDS; UNIFORM BUILDING CODES; PERMIT CONDITIONS; AND ALL OTHER APPLICABLE CODES, ORDINANCES, STANDARDS, AND POLICIES.
2. A COPY OF THE APPROVED PLANS MUST BE ON-SITE WHENEVER CONSTRUCTION IS IN PROGRESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY OTHER RELATED OR REQUIRED PERMITS PRIOR TO BEGINNING CONSTRUCTION.
4. ALL LOCATIONS OF EXISTING UTILITIES HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD, THEREFORE, BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR (1) TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS AND (2) TO DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.

SOIL SPECIFICATIONS:

1. ANY PLANTING AREA THAT DOES NOT MEET THE FOLLOWING SOIL PREPARATION REQUIREMENTS ARE SUBJECT TO REJECTION AT OWNER/OWNERS REPRESENTATIVES DISCRETION.
2. LANDSCAPE CONTRACTOR IS REQUIRED TO NOTIFY OWNER/OWNERS REPRESENTATIVE A MINIMUM OF 24 HOURS PRIOR TO BEGINNING SOIL PREP WORK. SOIL PREP NOT INSPECTED BY OWNER/OWNERS REPRESENTATIVE IS SUBJECT TO REJECTION AT ANYTIME PRIOR TO INITIAL ACCEPTANCE.
3. LANDSCAPE CONTRACTOR SHALL SUBMIT DELIVERY (TRIP) TICKETS TO OWNER/OWNERS REPRESENTATIVE FOR ALL ORGANIC SOIL AMENDMENTS WITHIN 24 HOURS AFTER DELIVERY .
4. IMPORTED TOPSOIL SHALL BE FERTILE, FRIABLE, SANDY LOAM FROM THE 'A' HORIZON AND SHALL BE FREE OF STONES OVER .75" IN DIAMETER, REFUSE, PLANTS OR THEIR ROOTS, STICKS, NOXIOUS WEEDS, SALTS, SOIL STERILANTS, OR OTHER MATERIAL WHICH WOULD BE DETRIMENTAL TO PLANT GROWTH.
5. ORGANIC SOIL AMENDMENT SHALL CONSIST OF DRY, WELL-ROTTED, PULVERIZED, AGED MINIMUM ONE YEAR ORGANIC COMPOST CLASS I TYPE SUCH AS AVAILABLE FROM A-1 COMPOST, JENSEN SALES. PULVERIZED HORSE, SHEEP OR DAIRY COW MANURE ***NOT ACCEPTABLE***. SUBMIT DATED RECENT MATERIAL ANALYSIS TO OWNER/OWNERS REPRESENTATIVE TO GUARANTEE PRODUCT CONDITION AND PROOF NO LIVE WEED SEEDS AND CHEMICAL ADDITIVES ARE PRESENT.
6. SOIL PREPARATION FOR AREAS TO BE SODDED SHALL INCLUDE TOPSOIL AND ORGANIC MATTER ADDED AT A RATE OF FIVE CUBIC YARDS PER ONE THOUSAND SQUARE FEET AND TILLED EIGHT (8) INCHES INTO THE SOIL.
7. PREPARED BACKFILL FOR TREE/SHRUB PLANTING SHALL BE A MIX OF 2/3 IMPORTED/ SALVAGED TOPSOIL AND 1/3 ORGANIC SOIL AMENDMENT. WHERE TREES AND SHRUBS ARE LOCATED IN LARGE BEDS PROVIDE SOIL AMENDMENT AT A RATE OF FIVE CUBIC YARDS PER ONE THOUSAND SQUARE FEET AND TILL EIGHT INCHES INTO THE SOIL THROUGHOUT THE ENTIRE PLANTING BED, NOT JUST IN EXCAVATED PLANTING HOLES.

EDGING:

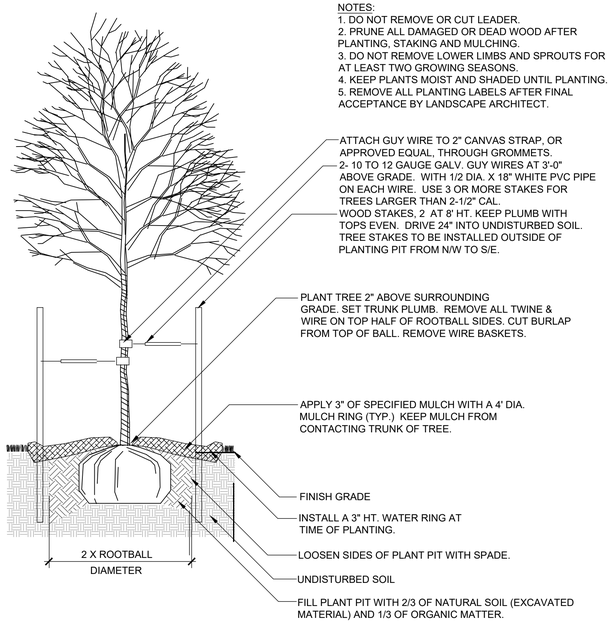
1. ALL EDGING SHALL BE 1/8" X 4" GREEN PAINTED "RYERSON TYPE" METAL EDGING W/ MILLED EDGE AND ANCHOR STAKES PER MANUFACTURE'S SPECIFICATIONS OR EQUAL

MULCH

1. PLANTING BEDS (AS SPECIFIED) SHALL CONTAIN 2"-4" RIVER ROCK COBBLE MULCH OVER FABRIC AT A MINIMUM DEPTH OF 3" WITH A DOUBLE SHREDDED CEDAR MULCH RING AROUND EACH TREE, SHRUB, GRASS, AND PERENNIAL. WOOD MULCH RING SHALL BE 1.5X THE CONTAINER SIZE OF THE SHRUB, GRASS OR PERENNIAL. TREE MULCH RING SHALL BE GREEN INDUSTRY STANDARD SIZE.
2. PLANTING BEDS (AS SPECIFIED) SHALL CONTAIN 1" GRAY CHIPPED GRANITE MULCH AT A MINIMUM DEPTH OF 3", DEPRESSED 2" BELOW SURROUNDING CURBS AND WALKS. PLACE WITH TIGHT JOINTS.
3. GEOTEXTILE FABRIC (FILTER FABRIC) UNDERLAYMENT SHALL BE MIRAFI, MIRASCAPE, DUPONT TYPAR 3301 OR APPROVED EQUAL (SUBMIT SAMPLE).

PLANTING NOTES:

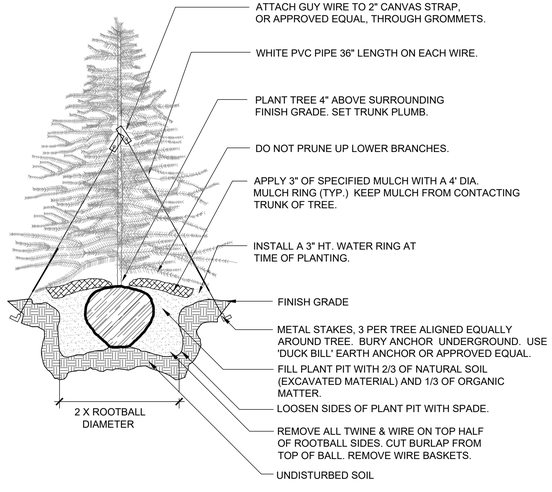
1. LANDSCAPE CONTRACTOR SHALL LOCATE ALL TREES, SHRUBS AND PLANTING BEDS ACCORDING TO LOCATIONS SHOWN ON DRAWINGS. ALL PLANTING LOCATIONS SHALL BE SUBJECT TO REVIEW AND APPROVAL BY LANDSCAPE ARCHITECT PRIOR TO THE START OF PLANTING OPERATIONS. LANDSCAPE CONTRACTOR SHALL MAKE MODIFICATIONS IN LOCATIONS AS DIRECTED BY LANDSCAPE ARCHITECT.
2. THE PLANT SCHEDULE IS FOR CONTRACTOR'S CONVENIENCE ONLY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING EXISTING CONDITIONS AND REPORTING IN WRITING TO THE LANDSCAPE ARCHITECT ANY CONFLICTS RELATIVE TO IMPLEMENTATION OF THE LANDSCAPE CONSTRUCTION DOCUMENTS. VALERIAN LLC. SHALL NOT ASSUME ANY ERRORS OR OMISSIONS IN THE PLANT SCHEDULE LISTED HEREIN. THE PLANT SYMBOLS SHOWN ON THE LANDSCAPE PLAN SHALL PREVAIL SHOULD THERE BE ANY DISCREPANCIES IN QUANTITIES BETWEEN THE PLAN AND PLANT SCHEDULE.
3. LANDSCAPE CONTRACTOR SHALL PROVIDE PLANT PROTECTION AND MAINTENANCE THROUGHOUT INSTALLATION AND UNTIL FINAL ACCEPTANCE OF LANDSCAPE INSTALLATION AS FOLLOWS:
   A) ALL PLANT MATERIAL SHALL BE PROTECTED, FROM TIME OF DIGGING TO TIME OF FINAL ACCEPTANCE, FROM INJURY, EXCESSIVE DRYING FROM WINDS, IMPROPER VENTILATION, OVER-WATERING, FREEZING, HIGH TEMPERATURES, OR ANY OTHER CONDITION DAMAGING TO PLANTS.
   B) PLANT MATERIAL SHALL BE PLANTED ON THE DAY OF DELIVERY IF POSSIBLE. ALL PLANTS NOT PLANTED ON THE DAY OF DELIVERY SHALL BE PLACED IN A TEMPORARY NURSERY AND KEPT MOIST, SHADED, AND PROTECTED FROM THE SUN AND WIND. EACH ROOTBALL SHALL BE COVERED ENTIRELY WITH MULCH. ALL PLANT MATERIALS SHALL BE INSTALLED PER THE PLAN DRAWINGS AND SPECIFICATIONS.
   C) LANDSCAPE CONTRACTOR SHALL PROVIDE PLANT MATERIALS THAT COMPLY WITH THE REQUIREMENTS OF THE MOST RECENT ANSI Z 60.1 "STANDARDS FOR NURSERY STOCK"' UNLESS OTHERWISE SPECIFIED. CALIPER OF B&B TREES SHALL BE TAKEN 6 INCHES ABOVE THE GROUND UP TO AND INCLUDING 4 INCH CALIPER SIZE, AND 12 INCHES ABOVE THE GROUND FOR LARGER SIZES.
   D) PLANTING MAINTENANCE SHALL INCLUDE WATERING, WEEDING, CULTIVATING, RESETTING PLANTS TO PROPER GRADES OR POSITION, REESTABLISHING SETTLED GRADES. HERBICIDE IS NOT RECOMMENDED FOR ONE YEAR FOLLOWING LANDSCAPE INSTALLATION.
   E) PLANT MAINTENANCE SHALL INCLUDE THOSE OPERATIONS NECESSARY TO PROPER GROWTH AND SURVIVAL OF ALL PLANT MATERIALS. CONTRACTOR SHALL PROVIDE THIS WORK IN ADDITION TO SPECIFIC WARRANTY/GUARANTEES.
4. CONTRACTOR SHALL VERIFY AND MAINTAIN ALL SETBACKS, CLEAR ZONES AND SIGHT TRIANGLES REQUIRED BY ALL LOCAL AND MUNICIPAL CODES WHERE APPLICABLE.
5. LANDSCAPE CONTRACTOR SHALL ENSURE THAT THE LANDSCAPE INSTALLATION IS COORDINATED WITH THE PLANS PREPARED BY OTHER CONSULTANTS SO THAT THE PROPOSED GRADING, STORM DRAINAGE OR OTHER PROPOSED CONSTRUCTION DOES NOT CONFLICT WITH NOR PRECLUDE INSTALLATION AND MAINTENANCE OF LANDSCAPE ELEMENTS AS DESIGNATED ON THIS PLAN.
6. ALL LANDSCAPE AREAS SHALL BE IRRIGATED BY AN AUTOMATIC UNDERGROUND IRRIGATION SYSTEM. THE SYSTEM SHALL BE PROPERLY ZONED TO SEPARATE PLANT MATERIAL BY WATER REQUIREMENT. ALL SHRUB BEDS AND TREES IN NATIVE SEED AREAS SHALL BE IRRIGATED BY USING LOW WATER/DRIP TECHNIQUES. ALL TURF AREAS SHALL BE IRRIGATED USING POP-UP SPRAY OR ROTOR APPLICATION.



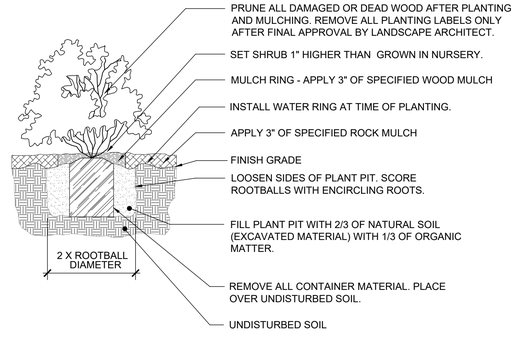
NOTES:
1. DO NOT REMOVE OR CUT LEADER.
2. PRUNE ALL DAMAGED OR DEAD WOOD AFTER PLANTING, STAKING AND MULCHING.
3. DO NOT REMOVE LOWER LIMBS AND SPROUTS FOR AT LEAST TWO GROWING SEASONS.
4. KEEP PLANTS MOIST AND SHADED UNTIL PLANTING.
5. REMOVE ALL PLANTING LABELS AFTER FINAL ACCEPTANCE BY LANDSCAPE ARCHITECT.

NOTE: ALL TREES LOCATED WITHIN SIGHT TRIANGLES OR WITHIN 100' APPROACHING A STOP SIGN ARE TO BE LIMBED TO 8'. AT ONSET OF WINTER FOR THE FIRST YEAR OF INSTALLATION, WRAP ENTIRE SURFACE OF TRUNK UP TO BRANCHES. SECURE AT TOP AND BOTTOM WITH DUCT TAPE. AT ONSET OF SPRING REMOVE ALL WRAPPING.

1 DECIDUOUS TREE PLANTING
1" = 1'-0" BLCC-03



2 EVERGREEN TREE PLANTING
1" = 1'-0" BLCC-04



NOTE: ANY PLANT NOT IN ACCORDANCE WITH COLORADO NURSERY ACT REQUIREMENTS WILL BE REJECTED. HOLD MULCH GRADE 1" BELOW EDGE OF WALK, EDGING AND CURB. JUNIPER PLANTS SHALL BE PLANTED WITH TOP OF ROOTBALL AT FINISH GRADE OF MULCH LAYER.

3 SHRUB / ORNAMENTAL GRASS PLANTING WITH MULCH RING
1" = 1'-0" 32 9333.13-11

EES ENTITLEMENT AND ENGINEERING SOLUTIONS, INC.
501 S Cherry St, Suite 300
Denver, CO 80246
303-572-7397 www.ees-us.com

Kum & Go

1459 Grand Ave
Des Moines, IA 50309
P: 888-458-6646

2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

LANDSCAPE NOTES & DETAILS

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS	DATE	REVISION DESCRIPTION
△		

DATE: 04-26-2022

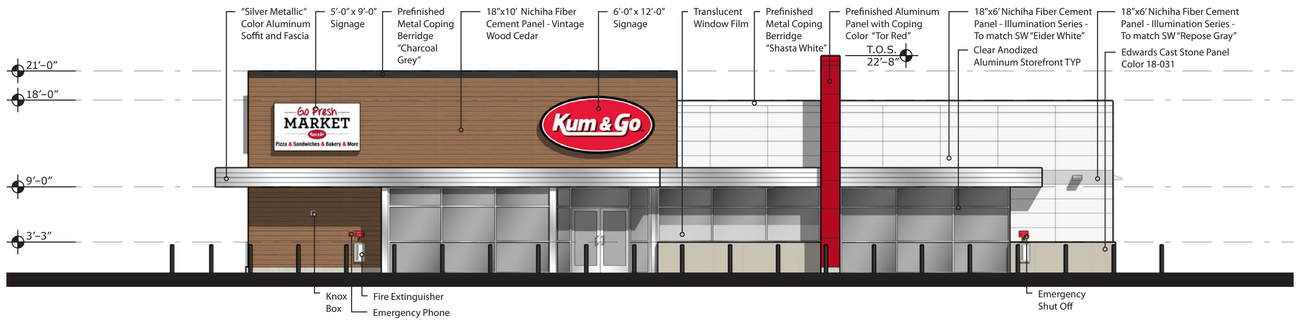
SHEET NUMBER: **12**

CRITERIA PLAN 04/2020

X:\DROPBOX (VALERIAN)\VALERIAN TEAM FOLDER\PROJECTS\21-074_EES_EL PASO MAIN STREET K&G 22322-WORKING\2022-04-25_LANDSCAPE SUBMITTAL_1ST\21-074_12_LANDSCAPE DETAILS & NOTES.DWG

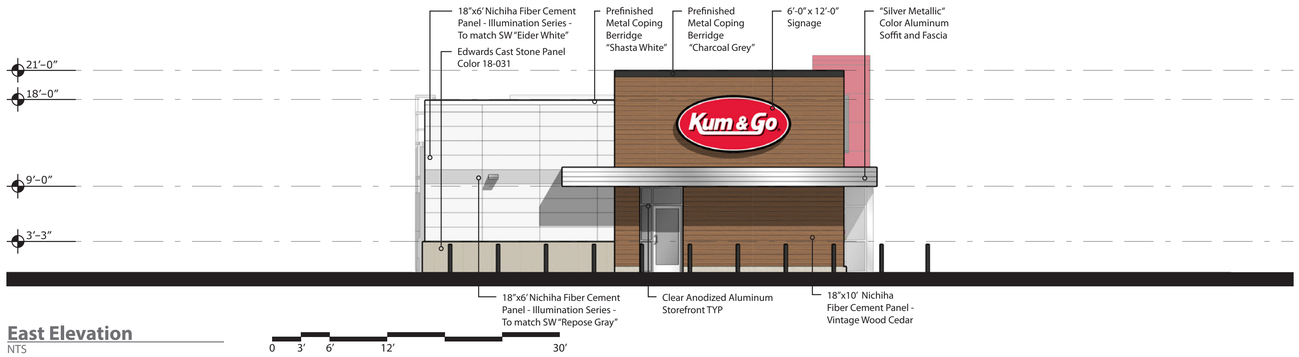
Proposed Building Signage

Location	Sign	Size	Area
North Elevation	"Kum & Go" Sign	6'x 12'	72 SF
	"Go Fresh Market" Sign	5'x 9'	45 SF
East Elevation	"Kum & Go" Sign	6'x 12'	72 SF
South Elevation	No Signage	---	0 SF
West Elevation	No Signage	---	0 SF
	Total		189 SF



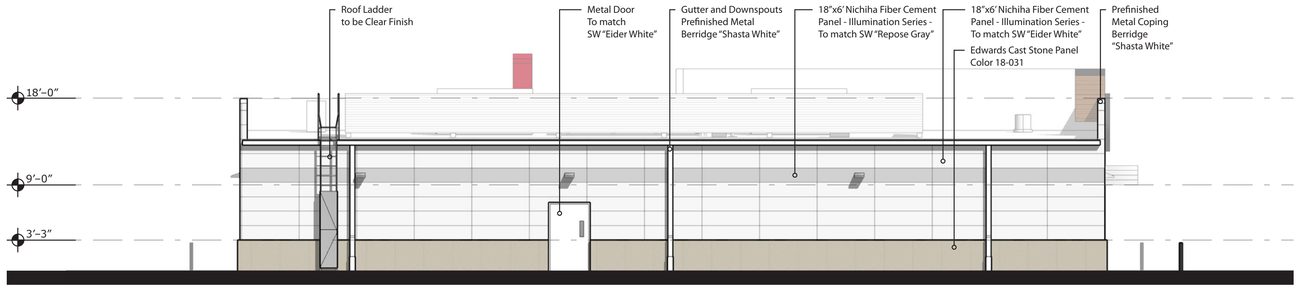
North Elevation
NTS

0 3' 6' 12' 30'



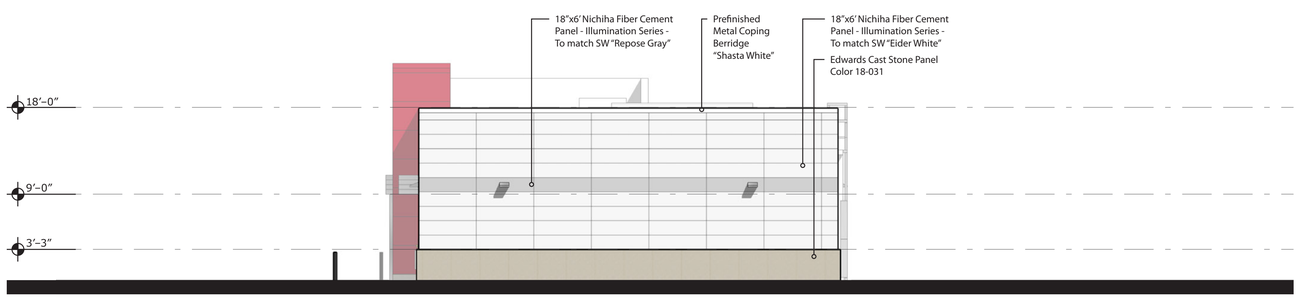
East Elevation
NTS

0 3' 6' 12' 30'



South Elevation
NTS

0 3' 6' 12' 30'



West Elevation
NTS

0 3' 6' 12' 30'

brr

ARCHITECT OF RECORD:
BRR ARCHITECTURE, INC
8131 METCALF AVENUE
SUITE 300
OVERLAND PARK, KS 66204

www.brrarch.com

TEL: 913-262-9095
FAX: 913-262-9044

SEAL

Kum & Go

1459 Grand Avenue
Des Moines, Iowa
50309
P:515-457-6247

EL PASO COUNTY, CO
MAIN ST. AND SECURITY BLVD.

EXTERIOR ELEVATIONS

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

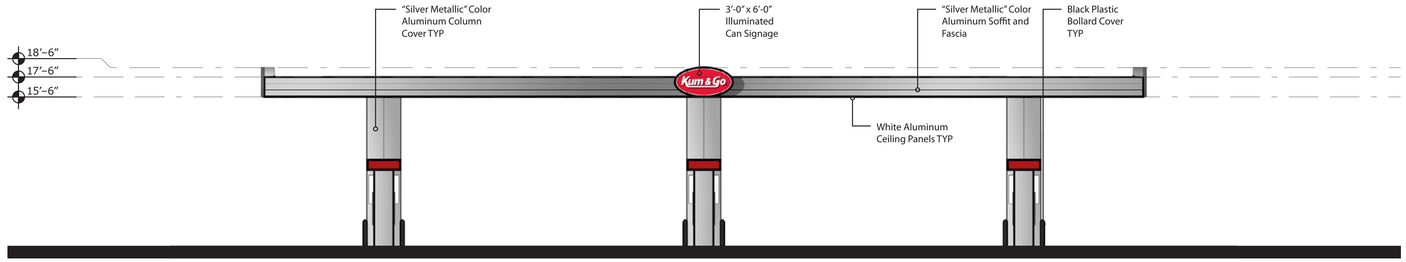
	DATE	REVISION DESCRIPTION
△		

DATE: 03/25/2022

SHEET NUMBER:
13

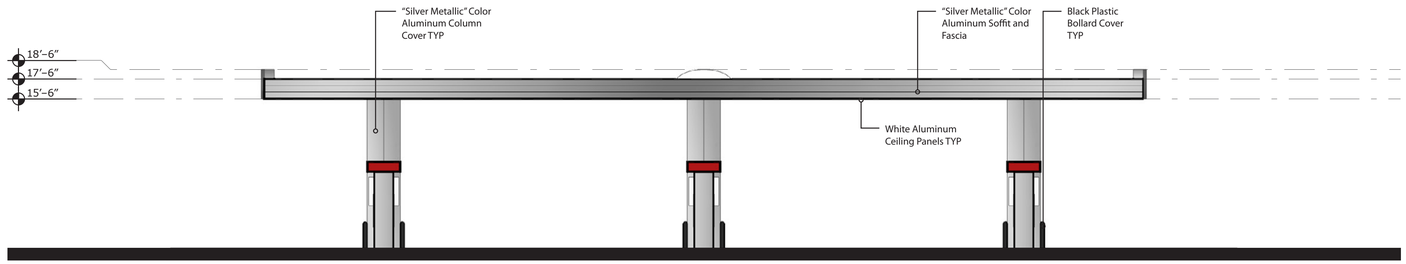
Proposed Canopy Signage

Location	Sign	Size	Area
North Elevation	"Kum & Go" Sign	3'x 6'	18 SF
South Elevation	No Signage	---	0 SF
East Elevation	"Kum & Go" Sign	3'x 6'	18 SF
West Elevation	"Kum & Go" Sign	3'x 6'	18 SF
	Total		54 SF



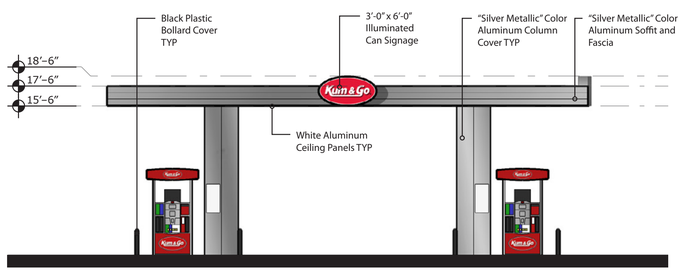
North Elevation
NTS

0 3' 6' 12' 30'



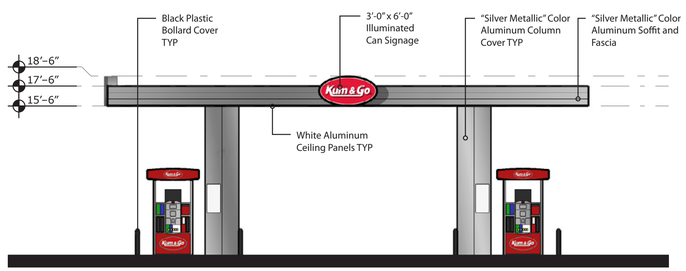
South Elevation
NTS

0 3' 6' 12' 30'



East Elevation
NTS

0 3' 6' 12' 30'



West Elevation
NTS

0 3' 6' 12' 30'

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SUITE 300
OVERLAND PARK, KS 66204

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FAX: 913-262-9044

SEAL

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Des Moines, Iowa
50309
P:515-457-6247

EL PASO COUNTY, CO
MAIN ST. AND SECURITY BLVD.

CANOPY ELEVATIONS

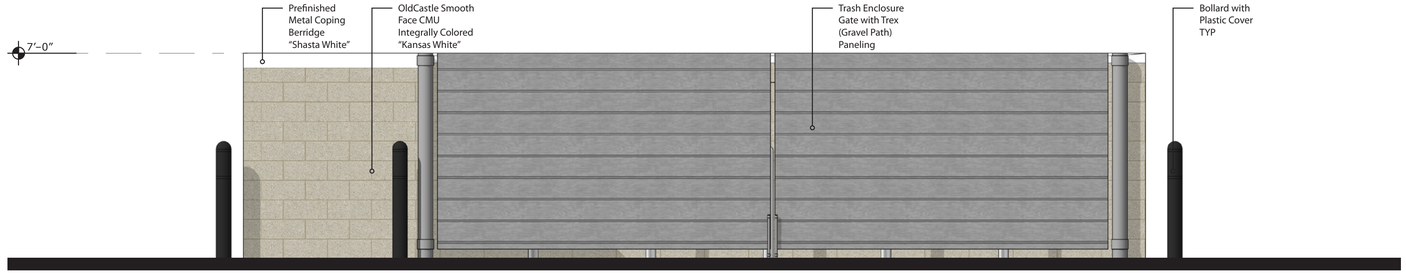
KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	DATE	REVISION DESCRIPTION
1		

DATE: 03/25/2022

SHEET NUMBER:
14

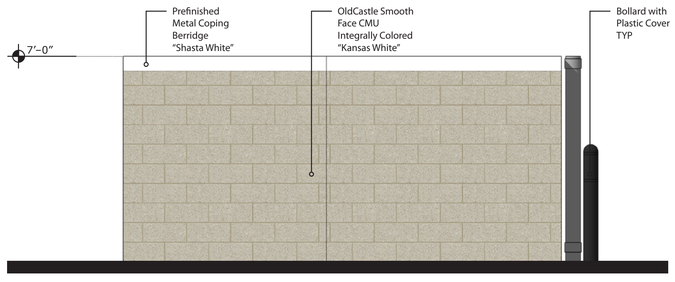


South Elevation
NTS

0 3' 6' 12'

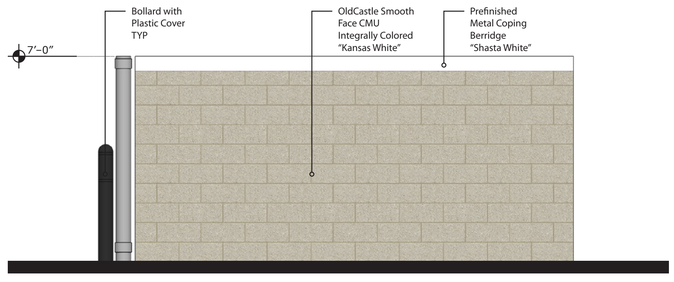
North Elevation
NTS

0 3' 6' 12'



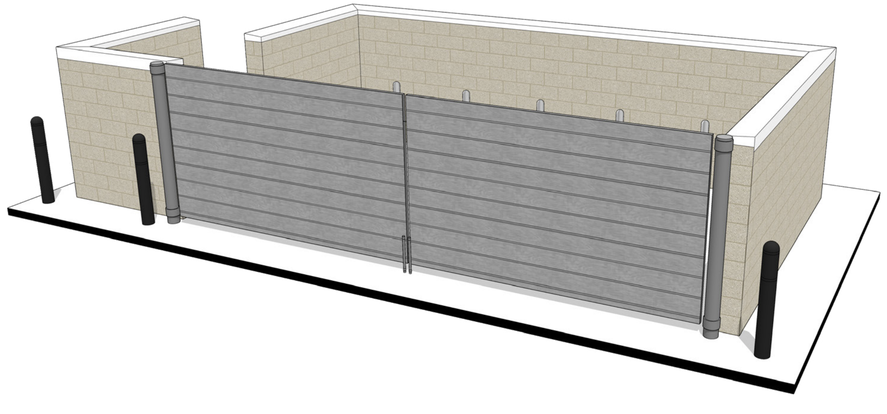
West Elevation
NTS

0 3' 6' 12'



East Elevation
NTS

0 3' 6' 12'



Perspective
NTS

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EL PASO COUNTY, CO
MAIN ST. AND SECURITY BLVD.

TRASH ENCLOSURE ELEVATIONS

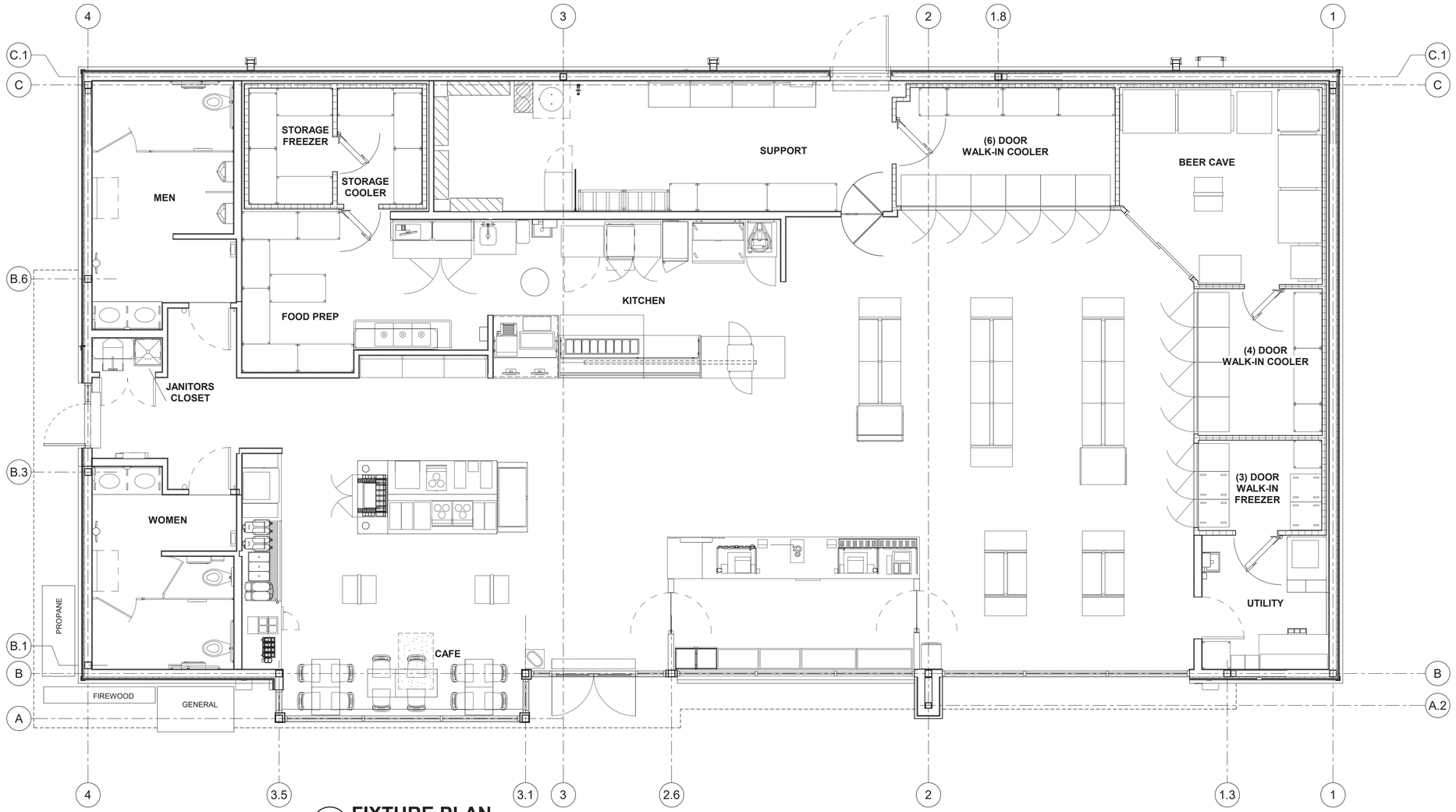
KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	DATE	REVISION DESCRIPTION
△		

DATE: 03/25/2022

SHEET NUMBER:
15



1 FIXTURE PLAN

1/4" = 1'-0"

brr

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OVERLAND PARK, KS 66204

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FAX: 913-262-9044

SEAL

Kum & Go

1459 Grand Avenue
Des Moines, Iowa
50309
P:515-457-6247

EL PASO COUNTY, CO
MAIN ST. AND SECURITY BLVD.

FIXTURE PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

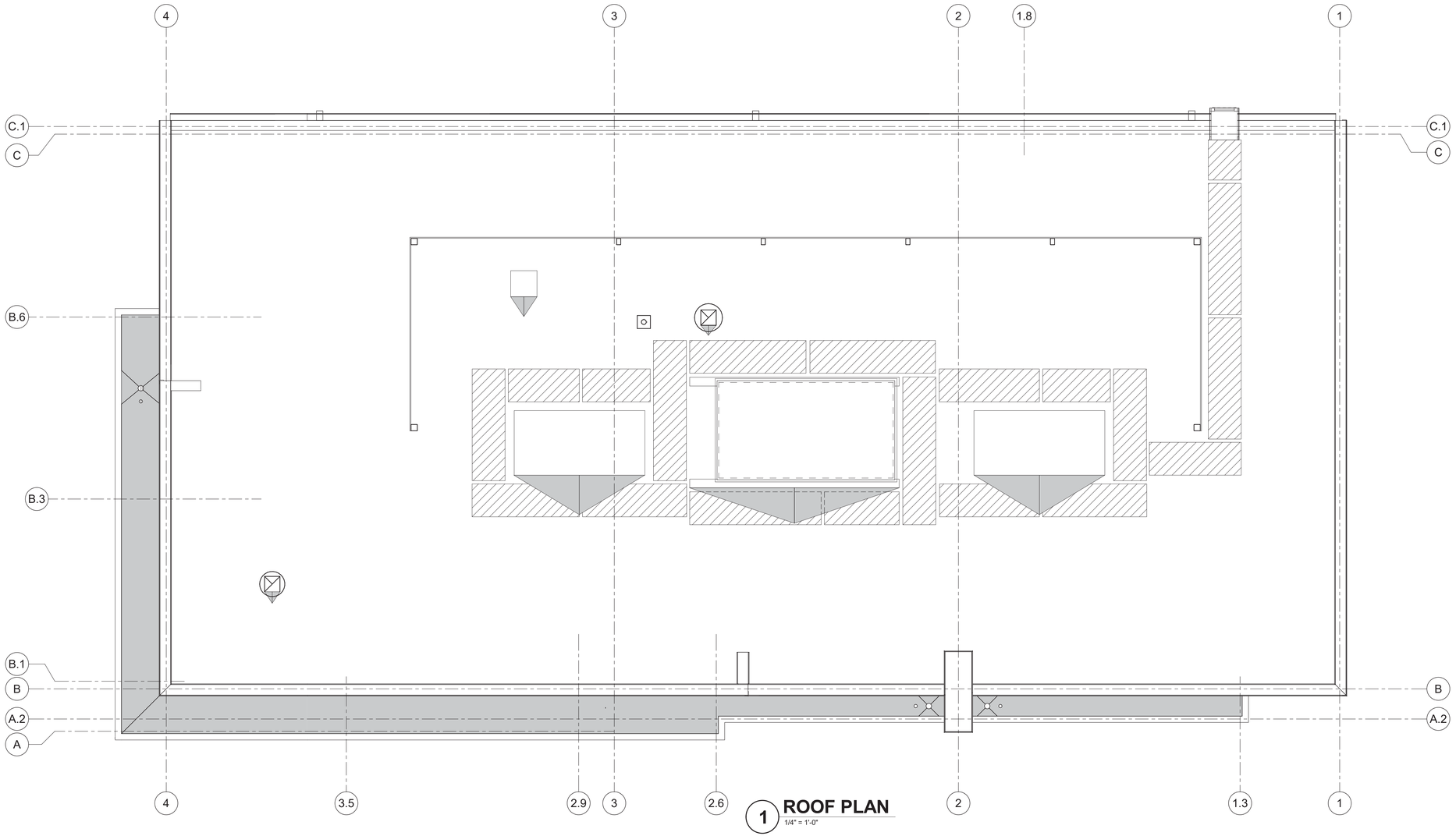
REVISIONS

	DATE	REVISION DESCRIPTION

DATE: 03/25/2022

SHEET NUMBER:

16



1 **ROOF PLAN**
1/4" = 1'-0"

ARCHITECT OF RECORD:
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8131 METCALF AVENUE
SUITE 300
OVERLAND PARK, KS 66204

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FAX: 913-262-9044

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50309
P:515-457-6247

EL PASO COUNTY, CO
MAIN ST. AND SECURITY BLVD.

ROOF PLAN

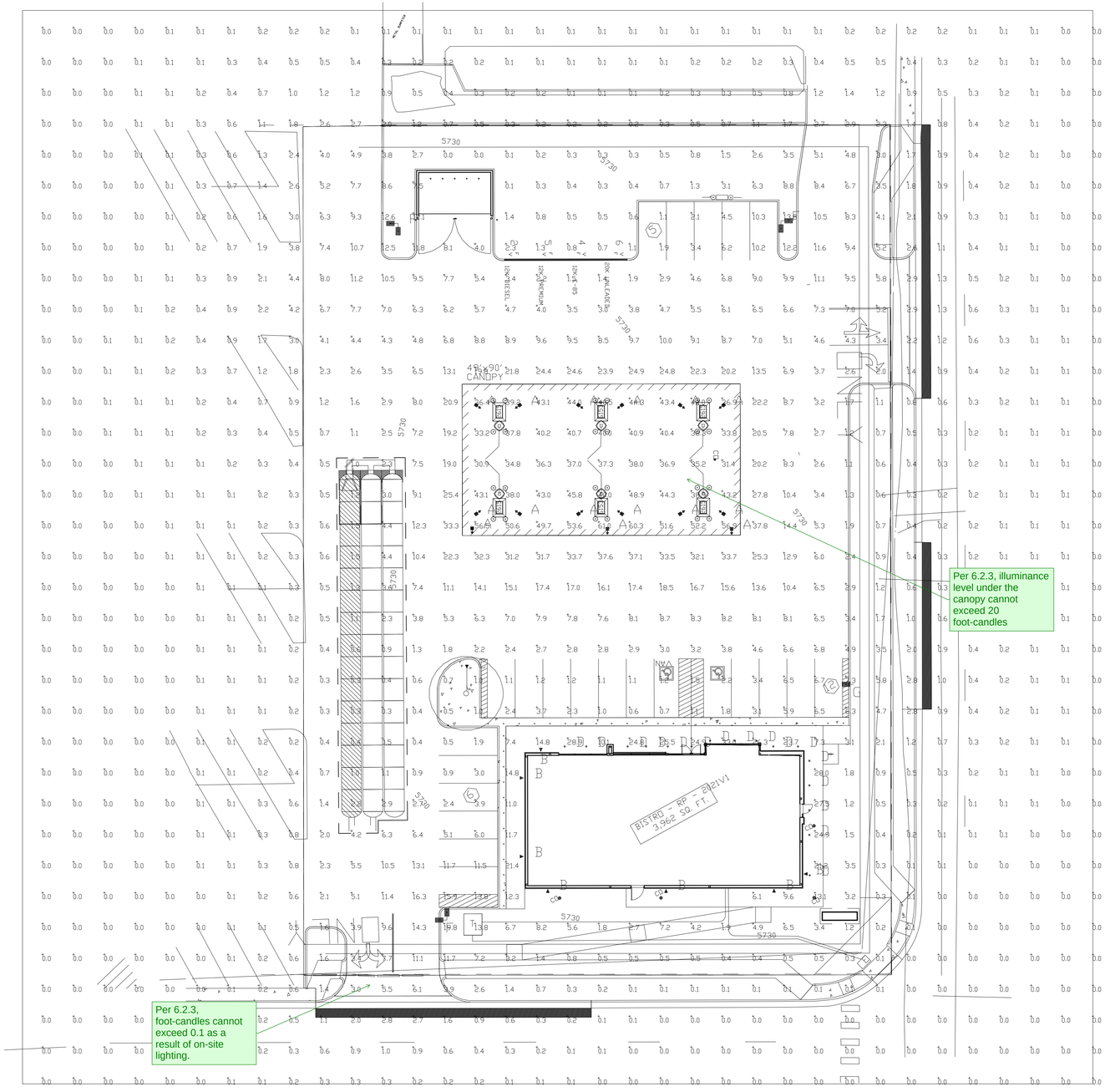
KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	DATE	REVISION DESCRIPTION

DATE: 03/25/2022

SHEET NUMBER:
17



N
W E
S

1" = 20'
0' 10' 20' 40'
SCALE IN FEET

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ALL CALCS @ GRADE	Illuminance	Fc	4.36	61.0	0.0	N.A.	N.A.
CANOPY	Illuminance	Fc	42.46	61.0	30.9	1.37	1.97
INSIDE CURB	Illuminance	Fc	7.52	37.8	0.3	25.07	126.00

Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	LLD	LDD	LLF	Arr. Lum. Lumens	Arr. Watts
	15	A	SINGLE	SCV-LED-23L-SCFT-50 MTD @ 15.5'	1.000	1.000	1.000	23101	188
	7	B	SINGLE	WST LED P2 40K VW MVOLT - 11' MH - FIXTURE BY LITHONIA LIGHTING	1.000	1.000	1.000	3512	25
	1	C	SINGLE	TLFL-LED-20L- 4' MH	1.000	1.000	1.000	18768	187.91
	16	D	SINGLE	DNR52609 LED6-40K - 9' MH - FIXTURE BY ATLANTIC LIGHTING	1.000	1.000	1.000	1579	23.8
	3	F	2 @ 90 DEGREES	SLM-LED-18L-SIL-FT-50-70CRI-D90-16'POLE+2.5'BASE	1.000	1.000	1.000	37808	270
	1	G	SINGLE	SLM-LED-18L-SIL-FT-50-70CRI-SINGLE-16'POLE+2.5'BASE	1.000	1.000	1.000	18904	135

Based on the information provided, all dimensions and luminaire locations shown represent recommended positions. The engineer and/or architect must determine the applicability of the layout to existing or future field conditions.

This lighting plan represents illumination levels calculated from laboratory data taken under controlled conditions in accordance with The Illuminating Engineering Society (IES) approved methods. Actual performance of any manufacturer's luminaires may vary due to changes in electrical voltage, tolerance in lamps/LED's and other variable field conditions. Calculations do not include obstructions such as buildings, curbs, landscaping, or any other architectural elements unless noted. Fixture nomenclature noted does not include mounting hardware or poles. This drawing is for photometric evaluation purposes only and should not be used as a construction document or as a final document for ordering product.

10000 ALLIANCE RD. CINCINNATI, OHIO 45242 USA
(513) 793-3200 • FAX (513) 793-6023

SEAL

6400 Westown Parkway
West Des Moines, Iowa
50266
P: 515-226-0128
F: 515-223-9873

#2232 - EL PASO COUNTY, CO
MAIN & SECURITY

LO-155702 - PHOTOMETRIC PLAN

KG PROJECT TEAM:
RDR:
SDM:
CPM:

REVISIONS

△	DATE	REVISION DESCRIPTION

DATE: 4/11/22

SHEET NUMBER:
18 OF 18

Dylan Jones

From: Brandon Bernard <b.bernard@securitywsd.com>
Sent: Thursday, August 4, 2022 8:15 AM
To: Dylan Jones
Subject: RE: Security Water and Sanitation Districts
Attachments: 08-16-19 SWD General Notes (For Cover Sheets) rev081619.pdf; 10-04-18 SSD General Dwg Notes-Collection System Construction.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Dylan:
My apologies for the late response.

Please see my answers below, in red.

Brandon Bernard
Operations Manager of Water and Wastewater
Security Water and Sanitation Districts
231 Security Blvd
Colorado Springs, CO 80911
Office- 719-392-3475
Cell- 719-464-2051

From: Dylan Jones <Dylan.Jones@ees.us.com>
Sent: Wednesday, July 27, 2022 11:01 PM
To: Brandon Bernard <b.bernard@securitywsd.com>
Subject: RE: Security Water and Sanitation Districts

Brandon,

The attached details are what I see us needing to reference with our domestic water line and sanitary sewer service line improvements indicated on the Utility Plan. I added these to a couple detail sheets for our plan set, let me know what we need to do from here. I can't remember if I supplied the General Notes, attached, for the drawing set. Please forward me plan and profile drawing sets for comment once they are complete. Thanks for the notes, we do not have a plan and profile for this project

A few questions:

1. There is an existing water service that ties into the water main in Main Street. We are not using this water service for new improvements. What is the SWSD standard for "killing" this service line? Plug at the main line in the road or at property line? The water service extends into the site and needs to be removed to a determined location/plugged. The existing corporation stop on the water main will need to be excavated, shut off, and capped. The water service line can be cut back approximately 3' from the main. The existing curb-stop valve box will need to be excavated and removed; however the existing curb-stop can be abandoned in place.
2. Proposed 1-1/2" water meter located inside the building (mechanical room), that's ok correct? That is correct and preferred.
3. For irrigation is it ok if we have the irrigation tap off domestic service line after it is inside the mechanical room? Tap being located after the water meter and before the backflow prevention device? We'd prefer the irrigation

Added note 12 on Existing Conditions / Demolition Plan. Sheet 3

meter be tapped prior to the domestic meter and then both services will need backflow devices after the meters. Added Note 5 on Utility Plan, sheet 21.

A couple of questions for you:

- Do you have a landscape plan and fixture count for this project?
- We would like for the water service to be tapped off Security Blvd, as suggested, and the sanitary service to be tapped off of Main Street. The water main on Security Blvd is a 12" DIP and the sanitary main on Main St is an 8" VCP.
- What size will the irrigation meter be?
- What size sanitary service line will you have?

Thanks for your time.

Dylan Jones
Project Manager
EES
O 303-572-7997, ext. 218
D 720-594-7648

From: Brandon Bernard <b.bernard@securitywsd.com>
Sent: Wednesday, July 27, 2022 11:19 AM
To: Dylan Jones <Dylan.Jones@ees.us.com>
Subject: RE: Security Water and Sanitation Districts

Hello:
I believe you should be applying for a permit through Pikes Peak Regional Building Authority; and from there the county and utilities will receive notifications that there are plans to be approved.

Feel free to reach out whenever.

Sincerely,

Brandon Bernard
Operations Manager of Water and Wastewater
Security Water and Sanitation Districts
231 Security Blvd
Colorado Springs, CO 80911
Office- 719-392-3475
Cell- 719-464-2051

From: Dylan Jones <Dylan.Jones@ees.us.com>
Sent: Tuesday, July 26, 2022 4:33 PM
To: Brandon Bernard <b.bernard@securitywsd.com>
Subject: RE: Security Water and Sanitation Districts

Brandon,

Thank you for getting back to me so quickly. I apologize for taking all day to get back to you. Called and left a voicemail before typing up this email.

The proposed project is a proposed Kum and Go Gas and C-Store located at 675 Security Blvd. We submitted SDP dwgs to El Paso County a while back and I am now working on review comments. How does it work with El Paso County and the water/sewer districts with submittals? Do they send out the drawings for review after they receive submittals or is it up to the consultant to send the plans to both county and SWSD? After I get a chance to dive into the materials you sent over I am sure I will have a follow up question or two and will be in touch.

Thanks again for your quick assistance, have a good one!

Dylan Jones, P.E.
Project Manager
Entitlement and Engineering Solutions, Inc.
501 S. Cherry Street, Suite 300 Glendale, CO 80246
O 303-572-7997, ext.

From: Brandon Bernard <b.bernard@securitywsd.com>
Sent: Tuesday, July 26, 2022 12:24 PM
To: Dylan Jones <Dylan.Jones@ees.us.com>
Subject: Security Water and Sanitation Districts

Hi Dylan:
Attached are the District's current specs and general notes. The Water District is in the process of updating their specifications, so please let me approve any of the drawings you might want to use from the SWD Regs and Specs – 2011. I might be able to provide updated drawings for you.

Can you let me know what project you are working on?

Thanks,

Brandon Bernard
Operations Manager of Water and Wastewater
Security Water and Sanitation Districts
231 Security Blvd
Colorado Springs, CO 80911
Office- 719-392-3475
Cell- 719-464-2051

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2022 Financial Assurance Estimate Form
(with pre-plat construction)

Added.

Please add PCD File PPR-2225

Updated: 11/4/2021

PROJECT INFORMATION		
Project Name: Kum and Go Gas and C-Store	**Date: 04-26-2022**	**PCD File No.**

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining	
SECTION 1 - GRADING AND EROSION CONTROL (Construction and Permanent BMPs)								
* Earthwork								*
less than 1,000; $5,300 min		CY	$ 8.00	=	$ -		$ -	*
1,000-5,000; $8,000 min	4,066	CY	$ 6.00	=	$ 24,396.00		$ 24,396.00	*
5,001-20,000; $30,000 min		CY	$ 5.00	=	$ -		$ -	*
20,001-50,000; $100,000 min		CY	$ 3.50	=	$ -		$ -	*
50,001-200,000; $175,000 min		CY	$ 2.50	=	$ -		$ -	*
greater than 200,000; $500,000 min		CY	$ 2.00	=	$ -		$ -	*
* Permanent Seeding (inc. noxious weed mgmnt.)	0	AC	$ 886.00	=	$ 194.92		$ 194.92	*
* Mulching	0	AC	$ 831.00	=	$ 182.82		$ 182.82	*
* Permanent Erosion Control Blanket		SY	$ 7.00	=	$ -		$ -	*
* Permanent Pond/BMP Construction		CY	$ 22.00	=	$ -		$ -	*
* Permanent Pond/BMP (provide engineer's estimate)		EA		=	$ -		$ -	*
		EA		=	$ -		$ -	*
Safety Fence	284	LF	$ 3.00	=	$ 852.00		$ 852.00	
Temporary Erosion Control Blanket	0	SY	$ 3.00	=	$ -		$ -	
Vehicle Tracking Control	2	EA	$ 2,625.00	=	$ 5,250.00		$ 5,250.00	
Silt Fence	581	LF	$ 3.00	=	$ 1,743.00		$ 1,743.00	
Temporary Seeding	0	AC	$ 695.00	=	$ 152.90		$ 152.90	
Temporary Mulch	0	AC	$ 831.00	=	$ 182.82		$ 182.82	
Erosion Bales	0	EA	$ 28.00	=	$ -		$ -	
Erosion Logs/Straw Wattles	0	LF	$ 6.00	=	$ -		$ -	
Rock Check Dams	0	EA	$ 554.00	=	$ -		$ -	
Inlet Protection	3	EA	$ 185.00	=	$ 555.00		$ 555.00	
Sediment Basin	1	EA	$ 1,952.00	=	$ 1,952.00		$ 1,952.00	
Concrete Washout Basin	1	EA	$ 997.00	=	$ 997.00		$ 997.00	
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	
MAINTENANCE (35% of Construction BMPs)				=	$ 3,791.45		$ 3,791.45	
Section 1 Subtotal				=	**$ 40,249.91**		**$ 40,249.91**	
SECTION 2 - PUBLIC IMPROVEMENTS *								
ROADWAY IMPROVEMENTS								*
Construction Traffic Control					$ -		$ -	*
Aggregate Base Course (135 lbs/cf)					$ -		$ -	*
Aggregate Base Course (135 lbs/cf)	434	CY	$ 56.00		$ 24,304.00		$ 24,304.00	*
Asphalt Pavement (3" thick)	132	SY	$ 16.00		$ 2,112.00		$ 2,112.00	*
Asphalt Pavement (4" thick)		SY	$ 21.00		$ -		$ -	*
Concrete Pavement (6" thick)	3,911	SY	$ 32.00		$ 125,152.00		$ 125,152.00	*
Asphalt Pavement (147 lbs/cf) __" thick		Tons	$ 97.00	=	$ -		$ -	*
Raised Median, Paved		SF	$ 9.00	=	$ -		$ -	*
Regulatory Sign/Advisory Sign		EA	$ 333.00	=	$ -		$ -	*
Guide/Street Name Sign		EA			$ -		$ -	*
Epoxy Pavement Marking		SF			$ -		$ -	*
Thermoplastic Pavement Marking		SF			$ -		$ -	*
Barricade - Type 3		EA			$ -		$ -	*
Delineator - Type I		EA			$ -		$ -	*
Curb and Gutter, Type A (6" Vertical)	141	LF			$ 4,512.00		$ 4,512.00	*
Curb and Gutter, Type B (Median)		LF	$ 32.00	=	$ -		$ -	*
Curb and Gutter, Type C (Ramp)		LF	$ 32.00	=	$ -		$ -	*
4" Sidewalk (common areas only)	559	SY	$ 53.00	=	$ 29,627.00		$ 29,627.00	*
5" Sidewalk		SY	$ 66.00	=	$ -		$ -	*
6" Sidewalk		SY	$ 80.00	=	$ -		$ -	*
8" Sidewalk		SY	$ 106.00		$ -		$ -	*
Pedestrian Ramp		EA	$ 1,273.00	=	$ -		$ -	*
Cross Pan, local (8" thick, 6' wide to include return)		LF	$ 67.00	=	$ -		$ -	*
Cross Pan, collector (9" thick, 8' wide to include return)		LF	$ 102.00		$ -		$ -	*
Curb Chase				=	$ -		$ -	*
Guardrail Type 3 (W-Beam)				=	$ -		$ -	*
Guardrail Type 7 (Concrete)				=	$ -		$ -	*
Guardrail End Anchorage				=	$ -		$ -	*
Guardrail Impact Attenuator		EA	$ 4,172.00	=	$ -		$ -	*
Sound Barrier Fence (CMU block, 6' high)		LF	$ 87.00		$ -		$ -	*
Sound Barrier Fence (panels, 6' high)		LF	$ 89.00	=	$ -		$ -	*
Electrical Conduit, Size =	216	LF	$ 18.00	=	$ 3,888.00		$ 3,888.00	*
Traffic Signal, complete intersection		EA	$ 470,666	=	$ -		$ -	*

* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)

Fill this out with estimate included in drainage report.

added underground facility

Note that section 2 is for public ROW improvements. Any improvements that are for the common areas within the lot should be moved to section 3.

moved all private items to section 3

revised to include Public curb, asphalt and sidewalk areas

If asphalt if for sections that will be cut out of Security Blvd., section will have to match what is existing.

Added Security Blvd and Main St

Added Public Curb and Gutter

Added Public Sidewalk

Provide quantities for sidewalk that will be required along Security Blvd.

red highlighted quantities moved to section 3.

PROJECT INFORMATION		
Project Name: Kum and Go Gas and C-Store	**Date: 04-26-2022**	**PCD File No.**

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining	
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	*
STORM DRAIN IMPROVEMENTS								*
Concrete Box Culvert (M Standard), Size (W x H)		LF		=	$ -		$ -	*
18" Reinforced Concrete Pipe	375	LF	$ 70.00	=	$ 26,250.00		$ 26,250.00	*
24" Reinforced Concrete Pipe		LF	$ 83.00	=	$ -		$ -	*
30" Reinforced Concrete Pipe		LF	$ 104.00	=	$ -		$ -	*
36" Reinforced Concrete Pipe		LF	$ 128.00	=	$ -		$ -	*
42" Reinforced Concrete Pipe		LF	$ 171.00	=	$ -		$ -	*
48" Reinforced Concrete Pipe		LF	$ 209.00	=	$ -		$ -	*
54" Reinforced Concrete Pipe		LF	$ 272.00	=	$ -		$ -	*
60" Reinforced Concrete Pipe	moved below	LF	$ 319.00	=	$ -		$ -	*
66" Reinforced Concrete Pipe		LF	$ 368.00	=	$ -		$ -	*
72" Reinforced Concrete Pipe		LF	$ 421.00	=	$ -		$ -	*
18" Corrugated Steel Pipe		LF	$ 90.00	=	$ -		$ -	*
24" Corrugated Steel Pipe		LF	$ 103.00	=	$ -		$ -	*
30" Corrugated Steel Pipe		LF	$ 131.00	=	$ -		$ -	*
36" Corrugated Steel Pipe		LF	$ 157.00	=	$ -		$ -	*
42" Corrugated Steel Pipe		LF	$ 180.00	=	$ -		$ -	*
48" Corrugated Steel Pipe		LF	$ 190.00	=	$ -		$ -	*
54" Corrugated Steel Pipe		LF	$ 278.00	=	$ -		$ -	*
60" Corrugated Steel Pipe		LF	$ 300.00	=	$ -		$ -	*
66" Corrugated Steel Pipe		LF	$ 364.00	=	$ -		$ -	*
72" Corrugated Steel Pipe		LF	$ 428.00	=	$ -		$ -	*
78" Corrugated Steel Pipe		LF	$ 492.00	=	$ -		$ -	*
84" Corrugated Steel Pipe		LF	$ 588.00	=	$ -		$ -	*
Flared End Section (FES) RCP Size = (unit cost = 6x pipe unit cost)		EA		=	$ -		$ -	*
Flared End Section (FES) CSP Size = (unit cost = 6x pipe unit cost)		EA		=	$ -		$ -	*
End Treatment- Headwall		EA		=	$ -		$ -	*
End Treatment- Wingwall		EA		=	$ -		$ -	*
End Treatment - Cutoff Wall		EA		=	$ -		$ -	*
Curb Inlet (Type R) L=5', Depth < 5'		EA	$ 6,138.00	=	$ -		$ -	*
Curb Inlet (Type R) L=5', 5' ≤ Depth < 10'	2	EA	$ 7,981.00	=	$ 15,962.00		$ 15,962.00	*
Curb Inlet (Type R) L =5', 10' ≤ Depth < 15'		EA	$ 9,242.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', Depth < 5'		EA	$ 8,447.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', 5' ≤ Depth < 10'		EA	$ 8,706.00	=	$ -		$ -	*
Curb Inlet (Type R) L =10', 10' ≤ Depth < 15'		EA	$ 10,898.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', Depth < 5'		EA	$ 10,984.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', 5' ≤ Depth < 10'		EA	$ 11,775.00	=	$ -		$ -	*
Curb Inlet (Type R) L =15', 10' ≤ Depth < 15'		EA	$ 12,876.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', Depth < 5'		EA	$ 11,706.00	=	$ -		$ -	*
Curb Inlet (Type R) L =20', 5' ≤ Depth < 10'		EA	$ 12,920.00	=	$ -		$ -	*
Grated Inlet (Type C), Depth < 5'		EA	$ 5,138.00	=	$ -		$ -	*
Grated Inlet (Type D), Depth < 5'		EA	$ 6,347.00	=	$ -		$ -	*
Storm Sewer Manhole, Box Base		EA	$ 12,876.00	=	$ -		$ -	*
Storm Sewer Manhole, Slab Base	6	EA	$ 7,082.00	=	$ 42,492.00		$ 42,492.00	*
Geotextile (Erosion Control)		SY	$ 7.00	=	$ -		$ -	*
Rip Rap, d50 size from 6" to 24"		Tons	$ 89.00	=	$ -		$ -	*
Rip Rap, Grouted		Tons	$ 105.00	=	$ -		$ -	*
Drainage Channel Construction, Size (W x H)		LF	$ -	=	$ -		$ -	*
Drainage Channel Lining, Concrete		CY	$ 631.00	=	$ -		$ -	*
Drainage Channel Lining, Rip Rap		CY	$ 124.00	=	$ -		$ -	*
Drainage Channel Lining, Grass		AC	$ 1,626.00	=	$ -		$ -	
Drainage Channel Lining, Other Stabilization				=	$ -		$ -	*
				=	$ -		$ -	
[insert items not listed but part of construction plans]				=	$ -		$ -	
* - Subject to defect warranty financial assurance. A minimum of 20% shall be retained until final acceptance (MAXIMUM OF 80% COMPLETE ALLOWED)		**Section 2 Subtotal**		=	**$ 274,299.00**		**$ 274,299.00**	

PROJECT INFORMATION		
Project Name: Kum and Go Gas and C-Store	Date: 04-26-2022	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	(with Pre-Plat Construction) Remaining
SECTION 3 - COMMON DEVELOPMENT IMPROVEMENTS (Private or District and NOT Maintained by EPC)**							
ROADWAY IMPROVEMENTS							
				=	$ -		$ -
				=	$ -		$ -
added all private quantity items				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
STORM DRAIN IMPROVEMENTS (Exception: Permanent Pond/BMP shall be itemized under Section 1)							
				=	$ -		$ -
				=	$ -		$ -
added pipes, inlets and manholes from above				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
				=	$ -		$ -
WATER SYSTEM IMPROVEMENTS							
Water Main Pipe (PVC), Size 8"		LF	$ 71.00	=	$ -		$ -
Water Main Pipe (Ductile Iron), Size 8"		LF	$ 83.00	=	$ -		$ -
Gate Valves, 8"		EA	$ 2,058.00	=	$ -		$ -
Fire Hydrant Assembly, w/ all valves		EA	$ 7,306.00	=	$ -		$ -
Water Service Line Installation, inc. tap and valves	1	EA	$ 1,466.00	=	$ 1,466.00		$ 1,466.00
Fire Cistern Installation, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
SANITARY SEWER IMPROVEMENTS							
Sewer Main Pipe (PVC), Size 8"		LF	$ 71.00	=	$ -		$ -
Sanitary Sewer Manhole, Depth < 15 feet		EA	$ 4,858.00	=	$ -		$ -
Sanitary Service Line Installation, complete	1	EA	$ 1,553.00	=	$ 1,553.00		$ 1,553.00
Sanitary Sewer Lift Station, complete		EA		=	$ -		$ -
				=	$ -		$ -
[insert items not listed but part of construction plans]				=	$ -		$ -
LANDSCAPING IMPROVEMENTS (For subdivision specific condition of approval, or PUD)							
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
		EA		=	$ -		$ -
** - Section 3 is not subject to defect warranty requirements		**Section 3 Subtotal**		**=**	**$ 3,019.00**		**$ 3,019.00**

Please update to include storm drain improvement quantities that includes the pump.

PROJECT INFORMATION		
Project Name: Kum and Go Gas and C-Store	Date: 04-26-2022	PCD File No.

Description	Quantity	Units	Unit Cost		Total	(with Pre-Plat Construction) % Complete	Remaining
AS-BUILT PLANS (Public Improvements inc. Permanent WQCV BMPs)		LS		=	$ -		$ -
POND/BMP CERTIFICATION (inc. elevations and volume calculations)		LS		=	$ -		$ -

added 2,000 for each

Please update to include amounts.

Total Construction Financial Assurance **$ 317,567.91**
(Sum of all section subtotals plus as-builts and pond/BMP certification)

Total Remaining Construction Financial Assurance (with Pre-Plat Construction) **$ 317,567.91**
(Sum of all section totals less credit for items complete plus as-builts and pond/BMP certification)

Total Defect Warranty Financial Assurance **$ 59,814.55**
(20% of all items identified as (*). To be collateralized at time of preliminary acceptance)

Approvals

I hereby certify that this is an accurate and complete estimate of costs for the work as shown on the Grading and Erosion Control Plan and Construction Drawings associated with the Project.

Engineer (P.E. Seal Required)

Approved by Owner / Applicant — Date

Approved by El Paso County Engineer / ECM Administrator — Date

Final Drainage Report

Kum & Go Store #2232

Pedrick-Eckerd Filing No. 3
Lot 2
El Paso County, Colorado

April 27, 2022

Prepared For:

Kum & Go L.C.
1459 Grand Avenue
Des Moines, IA 50309
Contact: Dan Garneau
Phone: 515-457-6392

Prepared By:

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Contact: David S. Iovinelli, PE
Dylan Jones
Email: David.iovinelli@ees.us.com
Dylan.Jones@ees.us.com

Please add PCD File No. PPR-2225

PCD File Number has been added to the cover sheet

KUM & GO AT PEDRICK-ECKERD

Verbiage has been updated for the engineer statement, developer statement, and to include the El Paso County signature block

ENGINEER'S STATEMENT

Please replace with the following:

"The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report."

DEVELOPER'S STATEMENT

Please replace with the following:

"I, the owner/developer have read and will comply with all of the requirements specified in this drainage report and plan."

_____
Name of Developer

_____
Authorized Signature Date

_____
Printed Name

_____
Title

_____
Address:

Please add the following signature block:

"El Paso County:

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

_____ _____
Joshua Palmer, P.E.Date
Interim County Engineer / ECM Administrator

Conditions: "

Please create a Table of Contents.

Table of Contents has been created

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General Location

The project site is located at the north corner of the intersection of Security Boulevard and Main Street, identified as Lot 2 of the Pedrick – Eckerd Filing No. 3 and located within part of the Southeast ¼ of Section 11, Township 15 South, Range 66 West of the 6th Principal Meridian, El Paso County, State of Colorado. Lot 2 is bounded by existing commercial developments consisting of Ross Dress for Less, Security Discount Liquor, H&R Block, Comfort Dental, Hair Therapy Hair Dresser, First Cash Pawn, Tobacco Shop, Laundromat, and Sonic Drive-In to the north and east, Main Street to the south, and Security Boulevard to the west. Refer to the Vicinity Map below for reference.

VICINITY MAP

Description of Property

Lot 2 is a 1.29-acre site with the proposed development disturbing 1.20 -acres. The site in the existing condition consists primarily of asphalt pavement, with a portion of the site consisting of an existing 166 sf drive-thru coffee shop. In general, the site slopes to the south and east at slopes ranging from 1-3%. The soil consists of Blendon sandy loam, identified as hydrological soil group B per the NRCS Soil survey. Refer to the Appendix for the NRCS Soil Survey Map. The site is located within the Little Johnson/ Security Drainage Basin. There are no irrigation facilities within or near the site. The site includes overhead utility lines that will need to be modified as part of the proposed development.

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The proposed development intends to be a Kum & Go Convenience Store, 6MPD gas canopy and associated drives, sidewalks and landscaping. The proposed development will also include utility services for the new building and an underground water quality and detention facility (Pond 1) with associated storm infrastructure.

Major Basin Description

The site is located within the Little Johnson/ Security Drainage Basin as outlined in the Little Johnson/ Security Drainage Basin Planning Study (1988) and ultimately discharges to Crews Gulch (Widefield Creek) to the southeast. The site is located within a portion of basin 41 and was modelled as commercial developments with 95 imperviousness. The existing downstream detention systems have a history of overtopping and improperly functioning and as such the proposed development will require onsite detention and water quality.

The site is located within a Special Flood Hazard Area with Base Flood Elevation of the Flood Plain, as designated on the Flood Insurance Rate Map (FIRM) exported 3/22/2022, map last revised October 2020. The Base Flood elevation is 5731.7'. Refer to the Appendix for the FIRMette. To accommodate for developing in the floodplain the finished floor of the building has been set a 5732.70', a minimum of 12" above base flood elevation. The southwest corner of the building will have an exposed foundation and stem wall to allow for a sidewalk that sits below the floodpain.

There are no known nearby irrigation facilities.

Sub-Basin Description

Historic Drainage Patterns

Drainage patterns in the existing condition generally drain to the south and east and flow patterns function as one basin (E1). Flows from Basin E1 are conveyed via sheet flow to the south where it is collected in an existing inlet at the north corner of the intersection of Main Street and Security Boulevard. Refer to the Appendix for the Historic Drainage Plan. See below for specifics into the basin.

Basin E1: Basin E1 is 1.29 acres and consists of hardscape and dirt for an impervious value of 79.07%. The 5-year and 100-year C values were determined to be 0.84 and 0.91, respectively; and anticipated 5-year runoff flows of 4.64 CFS and 100-year runoff flows of 10.70 CFS. Flows from basin E1 are directed via sheet flow to Main Street and Security Boulevard where they channelize flow to Design Point E1, an existing storm inlet and discharge into existing public storm infrastructure at the north corner of Main Street and Security Boulevard. There is also an offsite basin (OS1) that is tributary to the site.

It is just shown as Design Point "1" on the drainage map. Revise one or the other to remove discrepancy.

Existing drainage plan has been updated to reflect the narrative

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Basin description has been revised for clarity

So part or all of OS1 is tributary to E1? Clarify and describe flows in more detail.

Basin OS1: Basin OS1 is 1.77 acres and consists entirely of existing drives and walks for an impervious value of 100.00%. The 5-year and 100-year C values were determined to be 0.90 and 0.96, respectively; and anticipated 5-year runoff flows of 6.52 CFS and 100-year runoff flows of 14.79 CFS. Flows from basin OS1 are directed via sheet flow to the curb and gutter within Security Boulevard and Main Street and ultimately the existing storm infrastructure at the north corner of Main Street and Security Boulevard.

Which is at Design Point 1? Clarify.

Drainage Design Criteria

Verbiage updated to include Design Point E1

The Drainage Criteria Manual County of El Paso County Vol ... red to as the "Drainage Criteria". Additionally, the City of Colorado Springs Drainage Criteria Manual (DCM) Volumes 1 and 2, and the Mile High Flood District's Urban Storm Drainage Criteria Manual Volumes 1-3.

The site is located within the Little Johnson Drainage Basin as designated in the Little Johnson/Security Drainage Basin Planning Study. There are no previous drainage reports for Lot 2 of the Pedrick-Eckerd Filing No. 3.

Four Step Process

The proposed development will follow the "Four Step Process" as outlined below:

Step 1: Employ Runoff Reduction Practices

Runoff has been reduced by capturing flow from upstream on-site impervious areas and directing them to an underground water quality and detention facility (Pond 1) located at the north and west portion of the proposed development.

Step 2: Implement BMPs That Provide a Water Quality Capture Volume with Slow Release

All newly developed flows have been routed to the underground full spectrum detention and water quality basin being constructed as part of the development. Flows are directed to the underground basin via proposed storm sewer and on-site inlets.

Revise order and headings of each step per ECM Section I.7.2 BMP Selection:

1) Employ runoff reduction practices
2) Stabilize drainageways
3) Provide WQCV
4) Consider Need for Industrial and Commercial BMPs

Step 3: Stabilize Drainageways

There are no drainageways on-site to stabilize.

Step 4: Implement Site Specific and Other Source Control BMPs

During initial construction, erosion control measures (CCMs) i... stabilized staging area, construction fence, and silt fence will be ... of sediment within the site. During interim conditions, inlet p...

order and heading of each step of the 4 step process has been revised to reflect ECM Section I.7.2

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installed at proposed inlets and along the proposed curb and gutter within the site. The final condition will provide permanent seeding of all disturbed areas provided per permanent CCM requirements. No other potential pollutants are anticipated with this site post- construction.

Hydrologic Criteria

The design rainfall source for this project is the NOAA Atlas 14, one hour point rainfall data. The minor storm, 5-year rainfall value is 1.27 inches. The major storm, 100-year rainfall value is 2.70 inches.

The analysis and design of the Stormwater management system for this project was prepared in accordance with the criteria set forth by the El Paso County Drainage Criteria Manual (hereafter referred to as the DCM) and the Mile High Flood District (MHFD). The Rational Method was used to calculate runoff from the 5-year minor, and 100-year major design storm recurrence intervals. Peak runoff values were calculated using the rational method:

Q = CIA, where

Q = Storm runoff in cubic feet per second (cfs)
C = Rainfall coefficients – ratio runoff to rainfall
I = Rainfall intensity in inches per hour
A = Drainage area in acres

Table 6-6 of the El Paso County Drainage Criteria Manual was used for runoff coefficients.

The proposed storm sewers were modeled, and hydraulic grade lines generated, using Bentley StormCAD and FlowMaster software's. The user-defined design inputs for the software include peak flow runoff, pipe diameter, pipe slope & length, pipe material coefficient, and tailwater. For the onsite storm sewer system, the tailwater input was based on free outfall conditions. The hydraulic grade and energy lines have been designed to maintain a minimum of one foot below the final grade.

Inlet capacities for the proposed outlet structure calculations was based on utilizing the Mile High Flood District spreadsheet "MHFD_v5.01".

1 is this the plan set?

Water Quality and Detention storage volume and discharge calculations were based on utilizing the Mile High Flood District spreadsheet MHFD-Detention_v4-05

Drainage Facility Design – General Concept

Please resubmit DEV212 for the next round of review to resolve remainder of comments.

In the developed condition runoff will be conveyed throughout the site via surface flow and will be collected by proposed storm infrastructure and directed to the onsite water quality and detention facility (Pond 1) to the north and west of the proposed convenience store and gas

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canopy. The flow from the underground detention facility will discharge through a pump to the surface, where it will discharge into Security Boulevard below this historic rate and follow the historic drainage path.

Drainage Facility Design – Specific Details

The site in the proposed condition consists of five on-site basins (P1, P2, P3, P4, P5) of which four (P1, P2, P3, P4) are treated in an underground detention facility and released below historic rates and one off-site (P5) which sheet-flow off-site and are collected in existing storm infrastructure at the north corner of Main Street and Security Road. To accommodate the basins not treated in the underground detention system, the outlet structure has been designed to release at a reduced rate in addition to the historic rate. The following is a description of the proposed drainage basins.

Basin P1: Basin P1 is 0.09 acres and consists of roof for an impervious value of 90.00%. The 5-year and 100-year C values were determined to be 0.73 and 0.81, respectively; and anticipated 5-year runoff flows of 0.28 CFS and 100-year runoff flows of 0.67 CFS. Flows from basin P1 are captured by roof drains and conveyed by private 6" PVC and 18" RCP proposed storm infrastructure. The captured runoff is conveyed to and treated by the onsite underground water quality & detention facility (Pond 1). Ultimately the flows will be discharged by proposed storm infrastructure below historic rates to the surface where runoff will be captured by the existing storm infrastructure at the northwest corner of Main Street and Security Boulevard, following historic drainage patterns.

Basin P2: Basin P2 is 0.10 acres and consists entirely of roof for an impervious value of 90.00%. The 5-year and 100-year C values were determined to be 0.73 and 0.81, respectively; and anticipated 5-year runoff flows of 0.31 CFS and 100-year runoff flows of 0.74 CFS. Flows from basin P2 are canopy drains and conveyed by private 6" PVC and 18" RCP proposed storm infrastructure. The captured runoff is conveyed to and treated by the onsite underground water quality & detention facility (Pond 1). Ultimately the flows will be discharged by proposed storm infrastructure below historic rates to the surface where runoff will be captured by the existing storm infrastructure at the northwest corner of Main Street and Security Boulevard, following historic drainage patterns.

Basin P3: Basin P3 is 0.31 acres and consists of drives and walks and landscaping for an impervious value of 87.10%. The 5-year and 100-year C values were determined to be 0.79 and 0.88, respectively; and anticipated 5-year runoff flows of 1.06 CFS and 100-year runoff flows of 2.50 CFS. Flows from basin P3 surface drain to the north portion of the site where runoff is fully captured by a proposed 5' Type R Inlet in sump (Design Point 3). Captured runoff will be conveyed by private proposed 18" RCP storm infrastructure to the underground detention & water quality facility (Pond 1), where flows are treated and detained. Ultimately the flows will be discharged by proposed storm infrastructure below historic rates to the surface where runoff will

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be captured by the existing storm infrastructure at the northwest corner of Main Street and Security Boulevard, following historic drainage patterns.

Basin P4: Basin P4 is 0.64 acres and consists of drives and walks and landscaping for an impervious value of 90.63%. The 5-year and 100-year C values were determined to be 0.82 and 0.90, respectively; and anticipated 5-year runoff flows of 2.16 CFS and 100-year runoff flows of 5.03 CFS. Flows from basin P4 surface drain to the southwest corner where runoff is fully captured by a proposed 5'Type R inlet in sump (Design Point 4). Captured runoff will be conveyed by private proposed 18" RCP storm infrastructure to the underground detention & water quality facility (Pond 1), where flows are treated and detained. Ultimately the flows will be discharged by proposed storm infrastructure below historic rates to the surface where runoff will be captured by the existing storm infrastructure at the northwest corner of Main Street and Security Boulevard, following historic drainage patterns.

Basin P5: Basin P5 is 0.15 acres and consists of hardscape and landscape for an impervious value of 33.33%. The 5-year and 100-year C values were determined to be 0.35 and 0.55, respectively; and anticipated 5-year runoff flows of 0.21 CFS and 100-year runoff flows of 0.69 CFS. Flows from basin P5 are surface flow offsite undetained and into the public right-of-way as they do in the historic condition. Once in the public right-of-way, the runoff is conveyed via existing curb and gutter to an existing storm inlet located at the north corner of the intersection of Main Street and Security Boulevard, following historic drainage patterns.

Basin OS1: Flows from basin OS1 in the proposed condition are directed to a proposed inlet at design point 4 which drains to a proposed underground detention system. Flows not captured within the inlet follow historic conditions and discharge into the curb and gutter within Security Boulevard and ultimately the existing storm infrastructure at the north corn[illegible] Security Boulevard.

Clarify what percentage are not captured and/or under what circumstances this would occur.

Basin Description updated to include percentage of flow not captured and storm event

Refer to the Appendix for excerpts of the Master Drainage Study and the E[illegible] and Proposed Drainage Plan.

Verbiage updated to reflect conservative calculations

1.29ac is just the site alone. But it is implied in the Basin OS1 paragraph above that some flows are conveyed to the ADS system. And then runoff from Basin P5 (0.15ac) is apparently not tributary to the system. Revise this stated area as needed to be clear/accurate. For example, are you just being conservative to include the whole site area?

D[illegible]
D[illegible]

To meet stormwater detention requirements, an ADS Stormtech MC-3500 chamber system will be utilized, as well as an isolation row for water quality regulations. The proposed tributary area for the full spectrum detention & water quality pond (herein referred to as Pond 1) is 1.29 acres with 83.02% impervious and results in a 100-year required detention volume of 8,408 cu-ft (0.193 ac-ft). The proposed ADS full spectrum detention pond has been sized as 11,480 cu-ft (0.264 ac-ft), providing sufficient storage for the proposed site and existing off-site flows.

Basin P5 is not being captured by the proposed detention/WQ facility. Explain in the narrative the applicable WQ exclusion(s). Likely exclusion is per ECM Appendix I, Section 7.1.C.1 (which allows for 20% not to exceed 1 acre of the applicable development site area to not be captured/treated).

Basin Description has been updated to include WQ exclusion requirements

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portion of narrative above revised to clarify that entire site is being captured for conservative efforts.

Revise per comment on previous page.

Pond 1 utilizes an ADS Stormtech MC-3500 chamber system that has an isolation row for water quality and provides a total volume of 2,961 cu-ft; exceeding the 1,612 cu-ft requirements. The required 100YR detention volume is 0.193 acre-feet. The underground detention system will have an approximate footprint of 35' x 82' x 4' for a total volume of 0.264 acre-feet. A 1' freeboard has been included in the underground detention pond. The sizing of the underground system was completed using the MHFD-Detention, version 4-05. The watershed area is 1.29 acres and consists of a composite imperviousness of 83.02%. Runoff enters the system via flow captured within two on-site inlets as well as roof drain connections from the building and canopy. Runoff above the design year storm event will overtop the proposed outlet structure and continue south and west, consistent with runoff in the existing condition. All detention & water quality calculations have been provided within the Appendix.

For water quality sizing calculations, DCM Volume 1, Section 6.6, as well as the Underground BMP Fact Sheet within the USDCM Volume 3 were utilized. An ADS Stormtech MC-3500 for water quality is proposed for the water quality control will treat the entirety of the site within the isolation rows. 83.02%, resulting in the need for 1,612 cu-ft (or 0.037 ac-ft) of WQCV. The proposed full spectrum detention pond will b spillway proposed. If stormwater were to overtop the would sheetflow off-site to the west and discharge into Security Boulevard. All water ulations have been provided within the Appendix.

2

waiting on answer from pump designer. can we determine this if we have flow and velocity?

A description of the emergency overflow path has been included in the narrative

Will the pump be continuously running? Would there be ponding/spread at the area the pump is discharging to?

What mechanisms are being proposed for runoff to exit pond in case it overflows?

d stormwater infrastructure on-site will be private a by the e Lot. A maintenance guide has been provided with port for required schedule for maintenance of the ADS Underground System.

Provide sizing calcs that show that 2" is adequate.

The underground detention system will d that ultimately discharges to Security Boulevard, follow Zoeller Sewage Ejector Submersible Pump with a 2" disc ace float detector that will discharge flows out of the detention basin below allowable rates. Refer to the pump details in the appendix. The system will pump the detain r the proposed access on Security Boulevard be conditions, where all flow is undetained.

Pipe has been updated to 6" per updated pump calculations

Please discuss the constructability of tying into the existing storm inlet at the intersection of Main and Security. Why is that not being considered? If utilities are in the way please provide proof of locates. The pump will be considered if there is really no other option available. Per ECM 3.2.4 a suitable outfall is required for the ultimate discharge of runoff.

Narrative has been revised for clarity in the above paragraph

ructure

Revise per comment on previous page.

Per the DCM, Chapter 6, Section 4.2 – Allowable Releas be based on the Predevelopment peak flow for the minor MHFD-Detention_v4-05 spreadsheet. The site has been ac). A portion of the existing off-site basin to the north w underground detention system Based on spreadsheet, the 100-year is 0.20 cfs and 2.13 cfs, respectively. The proposed discharge from the full spectrum

Narrative has been revised to expand upon reasoning for pump design.

Please note, only water quality will be required for the site.

Acknowledged

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detention facility has been calculated to be 0.10 cfs and 1.43 cfs for the 5-year and the 100-year storms, respectively, falling below the allowed release rate. Additionally, The WQCV will discharge at a rate of 0.02 cfs and drain 99% of the inflow volume (0.037ac-ft) within 40 hours.

Include missing printouts of the MHFD spreadsheet that supports this statement.

Storm Sewer Improvement Cost Estimate

Refer to the table for a breakdown of costs a[illegible]rm sewer improvements.

Additional MHFD spreadsheet included in spreadsheet

Item	QUANTITY	UNIT	AVERAGE PRICE	COST
4' Manhole	6	EA	$4,000.00	$24,000
5' Type R Inlet	2	EA	$4,000.00	$8,000
Cleanout	6	EA	$300.00	$1,800
6" PVC	250	LF	$24.00	$6,000
18" RCP	350	LF	$65.00	$22,750
1 Underground Detention and Water Quality Pond	1	EA	$130,000.00	$130,000
Stormwater Pump Station	1	EA	$25,000	$25,000
10% Contingency				$21,755
TOTAL				$239,305

Drainage and Bridge Fees

The site is located within the Little Johnson Drainage Basin. The Little Johnson Drainage Basin requires fees for Drainage, Bridge, Pond Land and Pond Facility. These fees are charged on a per acre basis, are documented in the Final Drainage Report and are paid during the subdivision platting process. A summary of the 2022 fees that the site will be as follows:

Drainage: 1.29 ac x $15,396/ac = $19,861
Bridge: 1.29 ac x $0/ac = $0
Pond Land: 1.29 ac x $1,570/ac = $2,026
Pond Facility: 1.29 ac x $0/ac = $0
Total Fees: $21,887

Drainage fees will not be due with the site development plan. Please remove section.

These fees were taken from the 2022 Drainage, B

Drainage fees section has been removed

Conclusions & Recommendations

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The storm sewer and detention system as part of the Kum & Go development has been designed to the El Paso County and Mile High Flood District design standards, rules, and regulations. The underground detention system will treat developed flow from the site and discharge into the existing storm infrastructure below historic rates.

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REFERENCES

1. County of El Paso Drainage Criteria Manual, Volume 1, October 2018.

2. County of El Paso Drainage Criteria Manual Volume 2, October 2018.

3. USGS Soil Survey for El Paso County, Colorado, dated April 2022.

4. Little Johnson/Security Creek Drainage Basin Planning Study, prepared by Simons, Li & Associates, Inc., dated April, 1988.

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APPENDIX

- APPENDIX A
  - FEMA Firmette
  - NRCS Soil Survey
- APPENDIX B
  - Hydrology & Hydraulic Criteria
  - Hydrology Calculations
  - Hydraulic Calculations
- APPENDIX C
  - Little Johnson/Security Creek Drainage Basin Planning Study
- APPENDIX D
  - Existing Drainage Map
  - Developed Drainage Map

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APPENDIX A
FIRM, NRCS Soil Survey

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for El Paso County Area, Colorado

NRCS Soil Survey

March 22, 2022

Custom Soil Resource Report
Soil Map

Map Scale: 1:654 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 30 60 120 180

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 19, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 14, 2018—Sep 23, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
10	Blendon sandy loam, 0 to 3 percent slopes	0.9	100.0%
Totals for Area of Interest		**0.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Paso County Area, Colorado

10—Blendon sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3671
Elevation: 6,000 to 6,800 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Blendon and similar soils: 98 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blendon

Setting

Landform: Terraces, alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy alluvium derived from arkose

Typical profile

A - 0 to 10 inches: sandy loam
Bw - 10 to 36 inches: sandy loam
C - 36 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: R049XB210CO - Sandy Foothill
Hydric soil rating: No

Minor Components

Other soils

Percent of map unit: 1 percent
Hydric soil rating: No

Pleasant

Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

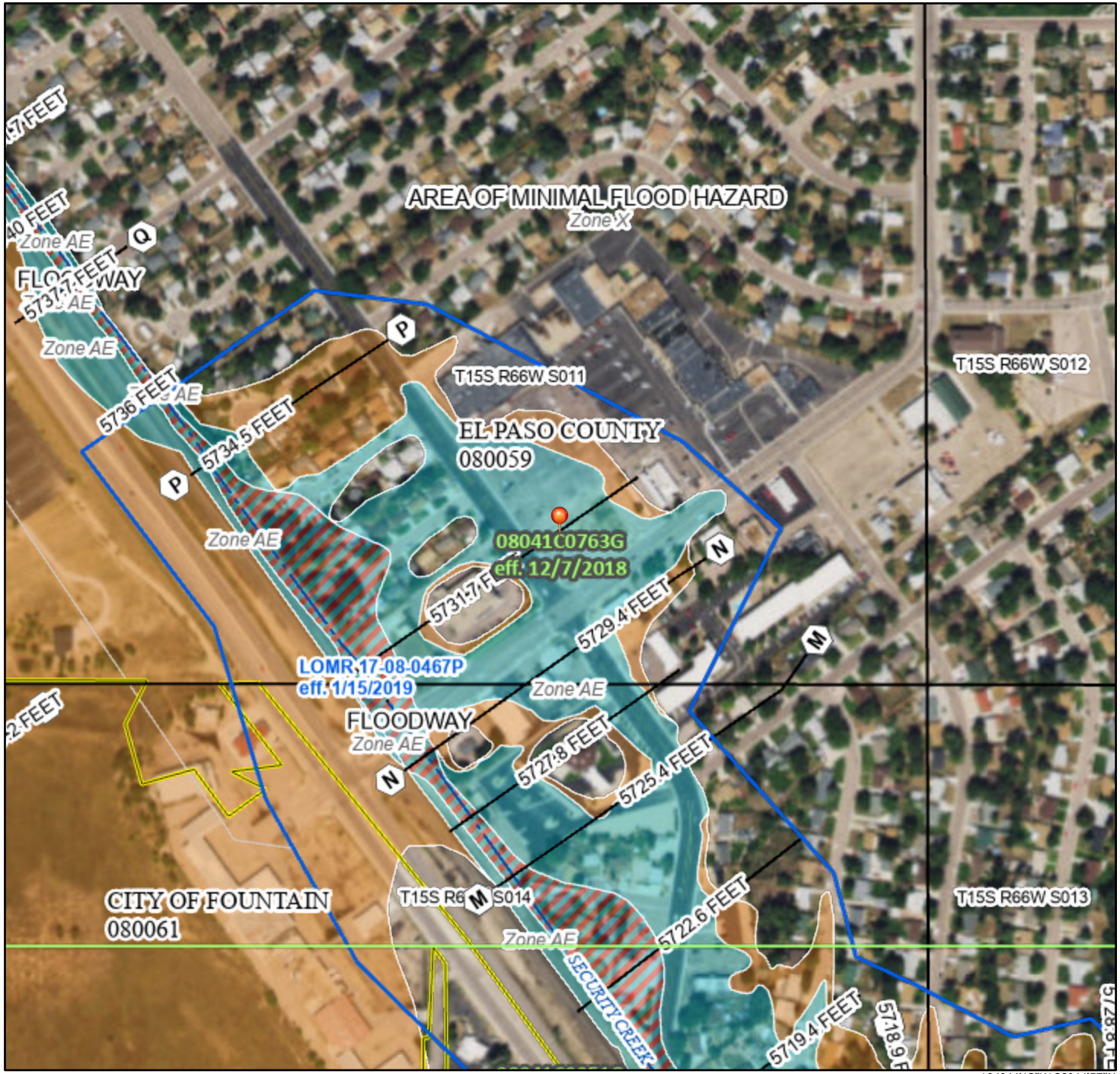
United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

National Flood Hazard Layer FIRMette

FEMA

104°44'50"W 38°45'25"N



104°44'13"W 38°44'57"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/22/2022 at 12:29 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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APPENDIX B
Hydrology & Hydraulic Criteria
Hydrology Calculations
Hydraulic Calculations

NOAA Atlas 14, Volume 8, Version 2
Location name: Colorado Springs, Colorado, USA*
Latitude: 38.7525°, Longitude: -104.7421°
Elevation: 5728.81 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.248 (0.203-0.306)	0.297 (0.244-0.367)	0.385 (0.315-0.477)	0.464 (0.377-0.578)	0.583 (0.459-0.764)	0.681 (0.521-0.905)	0.786 (0.578-1.07)	0.900 (0.631-1.27)	1.06 (0.711-1.54)	1.19 (0.772-1.74)
10-min	0.363 (0.298-0.447)	0.435 (0.357-0.538)	0.564 (0.461-0.698)	0.680 (0.552-0.846)	0.853 (0.672-1.12)	0.997 (0.763-1.33)	1.15 (0.847-1.57)	1.32 (0.924-1.85)	1.55 (1.04-2.25)	1.74 (1.13-2.55)
15-min	0.442 (0.363-0.546)	0.531 (0.435-0.656)	0.688 (0.562-0.852)	0.829 (0.673-1.03)	1.04 (0.820-1.36)	1.22 (0.931-1.62)	1.40 (1.03-1.92)	1.61 (1.13-2.26)	1.89 (1.27-2.74)	2.12 (1.38-3.11)
30-min	0.652 (0.535-0.804)	0.782 (0.641-0.965)	1.01 (0.827-1.25)	1.22 (0.991-1.52)	1.53 (1.21-2.01)	1.79 (1.37-2.38)	2.07 (1.52-2.83)	2.37 (1.66-3.34)	2.79 (1.88-4.05)	3.13 (2.04-4.59)
60-min	0.846 (0.695-1.04)	0.993 (0.815-1.23)	1.27 (1.04-1.57)	1.53 (1.25-1.91)	1.95 (1.54-2.58)	2.31 (1.77-3.08)	2.70 (1.99-3.71)	3.13 (2.21-4.43)	3.76 (2.53-5.48)	4.28 (2.78-6.27)
2-hr	1.04 (0.860-1.27)	1.21 (0.994-1.48)	1.53 (1.26-1.88)	1.85 (1.51-2.28)	2.36 (1.89-3.12)	2.82 (2.19-3.76)	3.33 (2.48-4.56)	3.90 (2.77-5.49)	4.73 (3.22-6.86)	5.42 (3.55-7.90)
3-hr	1.14 (0.944-1.39)	1.30 (1.07-1.59)	1.63 (1.34-2.00)	1.97 (1.62-2.43)	2.54 (2.06-3.38)	3.06 (2.39-4.09)	3.65 (2.74-5.00)	4.31 (3.09-6.08)	5.30 (3.63-7.69)	6.13 (4.04-8.90)
6-hr	1.30 (1.08-1.57)	1.46 (1.22-1.78)	1.82 (1.51-2.22)	2.21 (1.82-2.70)	2.87 (2.34-3.80)	3.47 (2.74-4.62)	4.16 (3.15-5.69)	4.96 (3.58-6.96)	6.14 (4.24-8.86)	7.14 (4.74-10.3)
12-hr	1.45 (1.22-1.75)	1.66 (1.39-2.00)	2.08 (1.74-2.52)	2.52 (2.09-3.06)	3.24 (2.66-4.25)	3.90 (3.09-5.14)	4.64 (3.54-6.28)	5.49 (3.99-7.63)	6.73 (4.69-9.63)	7.78 (5.21-11.1)
24-hr	1.63 (1.38-1.95)	1.89 (1.60-2.27)	2.40 (2.02-2.89)	2.89 (2.42-3.50)	3.68 (3.02-4.74)	4.37 (3.47-5.68)	5.13 (3.92-6.85)	5.98 (4.37-8.22)	7.21 (5.05-10.2)	8.23 (5.57-11.7)
2-day	1.85 (1.58-2.20)	2.18 (1.85-2.59)	2.77 (2.35-3.31)	3.33 (2.80-3.99)	4.18 (3.44-5.31)	4.91 (3.92-6.31)	5.70 (4.38-7.53)	6.56 (4.83-8.93)	7.80 (5.50-10.9)	8.81 (6.01-12.5)
3-day	2.02 (1.73-2.40)	2.38 (2.03-2.82)	3.03 (2.57-3.60)	3.62 (3.06-4.33)	4.53 (3.74-5.72)	5.30 (4.25-6.78)	6.13 (4.73-8.05)	7.03 (5.19-9.52)	8.32 (5.90-11.6)	9.37 (6.43-13.2)
4-day	2.17 (1.86-2.57)	2.55 (2.18-3.01)	3.22 (2.75-3.82)	3.84 (3.26-4.58)	4.79 (3.96-6.03)	5.59 (4.49-7.12)	6.45 (4.99-8.44)	7.38 (5.47-9.96)	8.72 (6.20-12.1)	9.80 (6.75-13.8)
7-day	2.56 (2.20-3.01)	2.95 (2.54-3.47)	3.67 (3.14-4.33)	4.32 (3.68-5.12)	5.32 (4.42-6.65)	6.16 (4.98-7.80)	7.07 (5.51-9.20)	8.05 (6.01-10.8)	9.46 (6.77-13.1)	10.6 (7.35-14.8)
10-day	2.89 (2.50-3.38)	3.31 (2.86-3.88)	4.06 (3.49-4.78)	4.75 (4.06-5.61)	5.79 (4.82-7.19)	6.66 (5.40-8.39)	7.59 (5.94-9.84)	8.61 (6.45-11.5)	10.0 (7.22-13.8)	11.2 (7.81-15.6)
20-day	3.78 (3.29-4.40)	4.33 (3.76-5.04)	5.28 (4.57-6.16)	6.10 (5.25-7.16)	7.29 (6.09-8.93)	8.26 (6.72-10.3)	9.26 (7.28-11.8)	10.3 (7.77-13.6)	11.8 (8.53-16.1)	12.9 (9.10-17.9)
30-day	4.52 (3.94-5.23)	5.20 (4.53-6.02)	6.32 (5.49-7.35)	7.27 (6.28-8.50)	8.60 (7.18-10.4)	9.64 (7.87-11.9)	10.7 (8.43-13.6)	11.8 (8.90-15.4)	13.3 (9.63-17.9)	14.4 (10.2-19.8)
45-day	5.47 (4.79-6.31)	6.30 (5.52-7.28)	7.65 (6.67-8.86)	8.76 (7.60-10.2)	10.3 (8.58-12.3)	11.4 (9.32-13.9)	12.5 (9.89-15.8)	13.6 (10.3-17.7)	15.1 (11.0-20.3)	16.2 (11.5-22.2)
60-day	6.29 (5.52-7.23)	7.25 (6.37-8.35)	8.79 (7.69-10.2)	10.0 (8.72-11.6)	11.7 (9.76-13.9)	12.9 (10.6-15.7)	14.1 (11.1-17.6)	15.2 (11.5-19.7)	16.7 (12.2-22.3)	17.7 (12.7-24.2)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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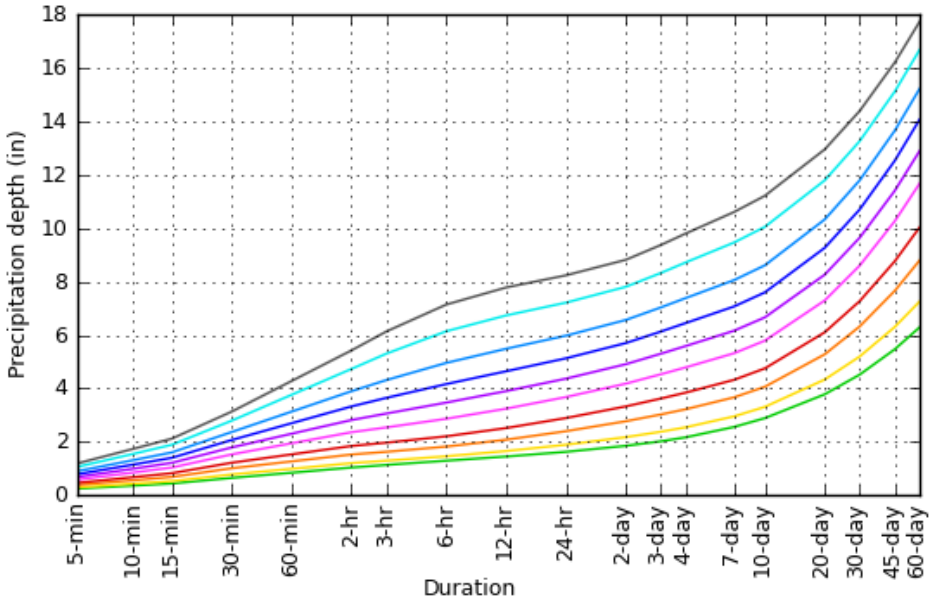
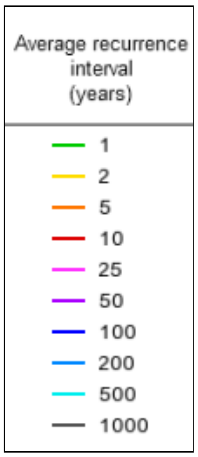
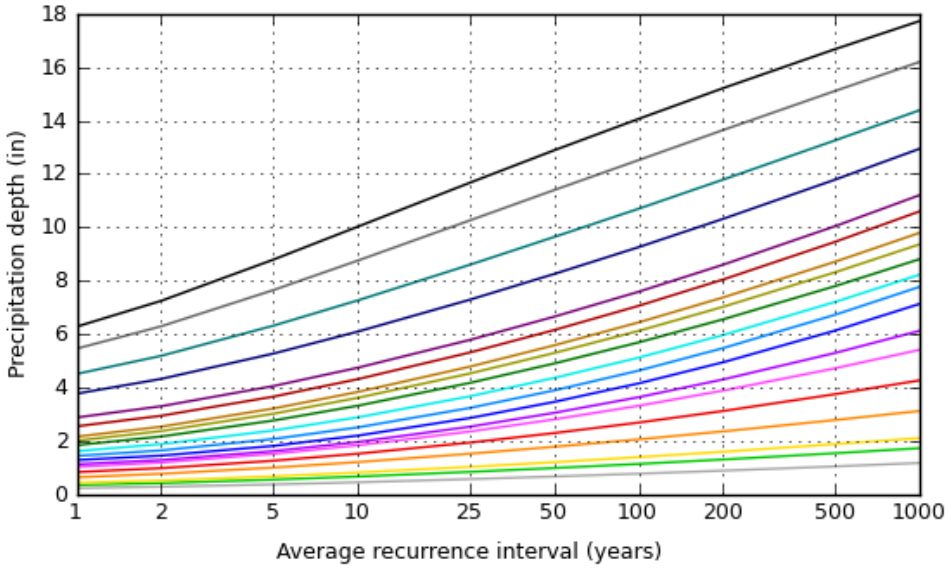
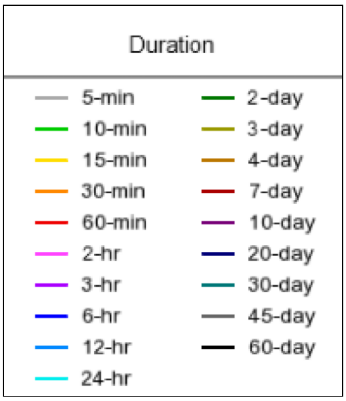
PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 38.7525°, Longitude: -104.7421°









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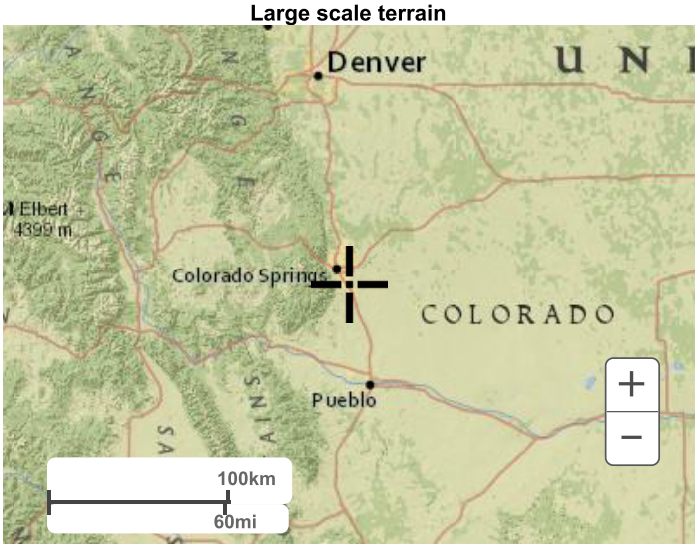
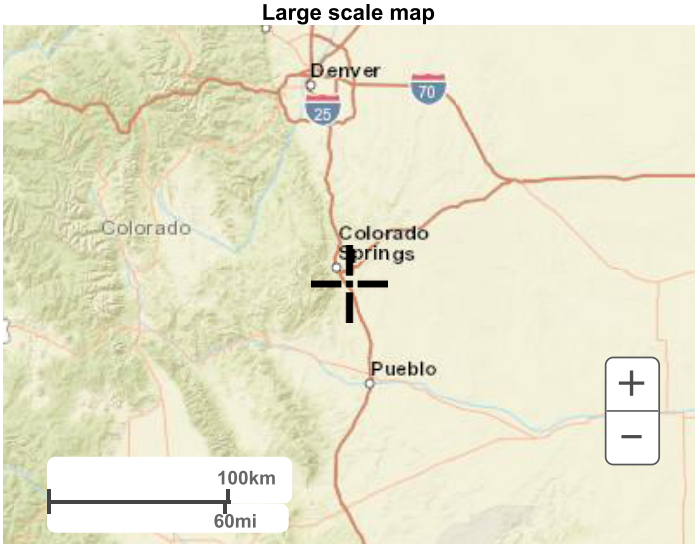
Maps & aerials

Small scale terrain

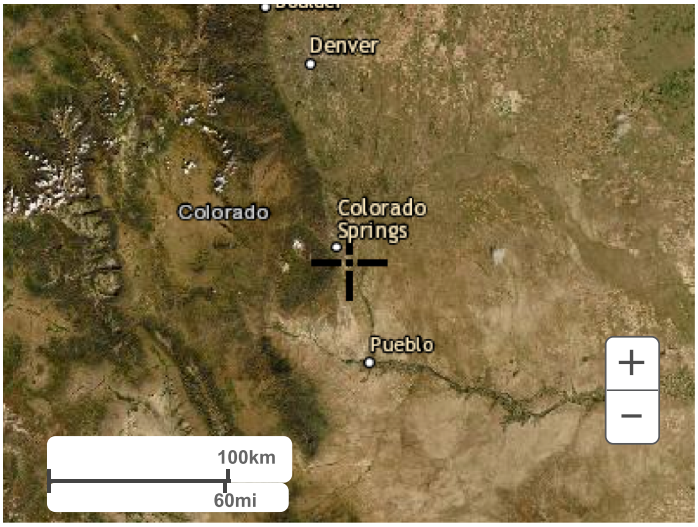
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
⅛ Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
¼ Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
⅓ Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
½ Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis—Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

Runoff Coefficients

Corridor / Design Package: Kum & Go - El Paso, Colorado
System Name: Existing Condition

Computed: DSI Date: 4/27/2022
Checked: Date:

Sub-Basin Data			Composite C			Sub Area (Drives & Walks)				Sub Area (Roof)				Sub Area(Gravel)			
Basin ID	Description	Total Area (ac)	C_5	C_{100}	i	C_5	C_{100}	i	Area (ac)	C_5	C_{100}	i	Area (ac)	C_5	C_{100}	i	Area (ac)
E1	C-STORE AND PARKING	1.29	0.84	0.91	79.07	0.90	0.96	100	1.02	0.73	0.81	90	0.00	0.59	0.70	0	0.27
OS1	OFF-SITE DRIVES & WALKS	1.77	0.90	0.96	100.00	0.90	0.96	100	1.77	0.73	0.81	90	0.00	0.59	0.70	0	0.00

Standard Form SF-1 . Time of Concentration

Corridor / Design Package: Kum & Go - El Paso, Colorado
System Name: Existing Condition

Computed: DSI Date: 4/27/2022
Checked: Date:

SUB-BASIN DATA				INITIAL/OVERLAND FLOW (t_i)			TRAVEL TIME (t_t)							Total	Tc CHECK (Urbanized basins)				FINAL Tc (min)
Basin ID	Description	C_5	Area (ac)	Length (ft)	Slope (ft/ft)	t_i (min)	Length (ft)	Slope (ft/ft)	Code	Description	Convey Coef (C_v)	V	t_t (min)	$t_c = t_i + t_t$ (min)	(Yes /No)	Length (ft)	$T_{c\,max}$ (min)	$Tc_{max} > t_c$	
E1	C-STORE AND PARKING	0.84	1.29	100	0.015	4.2	250.0	0.015	6	Paved areas and shallow paved swales	20.00	2.45	1.70	5.88	Yes	350	11.94	Regional Tc	5.00
OS1	OFF-SITE DRIVES & WALKS	0.90	1.77	100	0.015	3.2	535.0	0.015	6	Paved areas and shallow paved swales	20.00	2.45	3.64	6.80	Yes	635	13.53	Regional Tc	6.00

Notes:
t_i= (0.395*(1.1-C_5)*(L^0.5))/(S^0.33), from UDFCD Eqn 6-3
Velocity from V = C_v*S_w^0.5, from UDFCD Eqn 6-4, C_v from Table 6-2(See Sheet Design Info)
t_t=L/60V
t_i max = 10+L/180
Final Tc > 10 min for nonurban watersheds

UDFCD Table 6-2. NRCS Conveyance factors, K

Code	Type of Land Surface	Conveyance Factor, K
1	Heavy meadow	2.5
2	Tillage/field	5
3	Short pasture and lawns	7
4	Nearly bare ground	10
5	Grassed waterway	15
6	Paved areas and shallow paved swales	20

Standard Form SF-2 . Storm Drainage System Design (Rational Method Procedure)

Corridor / Design Package: Kum & Go - El Paso, Colorado
System Name: Existing Condition

Computed: DSI Date: 4/27/2022
Checked: Date:

Design Storm: Proposed 5-yr P = 1.27 in

	LOCATION	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
			AREA DESIGN	AREA (AC)	RUNOFF COEFF	t_c (MIN)	C.A. (AC)	I/N / HR	Q (CFS)	t_c (MIN)	SUM (C*A)(AC)	I/(N / HR)	Q(CFS)	SLOPE(%)	STREETFLOW	DESIGNFLOW	SLOPE(%)	PIPE SIZE(in)	LENGTH(FT)	VELOCITY(FPS)	t_t (MIN	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
E1	C-STORE AND PARKING	1	E1	1.29	0.84	5.00	1.08	4.31	4.64					--	--	--	--	--	--	--		
OS1	OFF-SITE DRIVES & WALKS	6	OS1	1.77	0.90	6.00	1.59	4.09	6.52					--	--	--	--	--	--	--		

Design Storm: Proposed 100-yr P = 2.70 in

	LOCATION	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
			AREA DESIGN	AREA (AC)	RUNOFF COEFF	t_c (MIN)	C.A. (AC)	I/N / HR	Q (CFS)	t_c (MIN)	SUM (C*A)(AC)	I/(N / HR)	Q(CFS)	SLOPE(%)	STREETFLOW	DESIGNFLOW	SLOPE(%)	PIPE SIZE(in)	LENGTH(FT)	VELOCITY(FPS)	t_t (MIN	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
E1	C-STORE AND PARKING	1	E1	1.29	0.91	5.00	1.17	9.16	10.70					--	--	--	--	--	--	--		
OS1	OFF-SITE DRIVES & WALKS	6	OS1	1.77	0.96	6.00	1.70	8.71	14.79					--	--	--	--	--	--	--		

(1) Basin Description linked to C-Value Sheet
(2) Basin Design Point
(3) Enter the Basin Name from C Value Sheet
(4) Basin Area linked to C-Value Sheet
(5) Composite C linked to C-Value Sheet
(6) Time of Concentration linked to C-Value Sheet
(7) =Column 4 x Column 5
(8) =28.5*P/(10+Column 6)^0.786
(9) =Column 7 x Column 8
(10) =Column 6 + Column 21
(11) Add the Basin Areas (7) to get the combined basin AC
(12) =28.5*P/(10+Column 10)^0.786
(13) Sum of Qs
(14) Additonal Street Overland Flow
(15) Additonal Street Overland Flow
(16) Design Pipe Flow
(17) Pipe Slope
(18) Pipe Size
(19) Additional Flow Length
(20) Velocity
(21) =Column 19 / Column 20 / 60

Runoff Coefficients

Corridor / Design Package: Kum & Go - El Paso, Colorado
System Name: Developed Condition

Computed: DSI Date: 3/22/2022
Checked: Date:

Sub-Basin Data			Composite C			Sub Area (Drives & Walks)				Sub Area (Roof)				Sub Area(Lawns B Group soils)			
Basin ID	Description	Total Area (ac)	C_5	C_{100}	i	C_5	C_{100}	i	Area (ac)	C_5	C_{100}	i	Area (ac)	C_5	C_{100}	i	Area (ac)
P1	C-STORE	0.09	0.73	0.81	90.00	0.90	0.96	100	0.00	0.73	0.81	90	0.09	0.08	0.35	0	0.000
P2	CANOPY	0.10	0.73	0.81	90.00	0.90	0.96	100	0.00	0.73	0.81	90	0.10	0.08	0.35	0	0.000
P3	DRIVES & WALKS	0.31	0.79	0.88	87.10	0.90	0.96	100	0.27	0.73	0.81	90	0.00	0.08	0.35	0	0.040
P4	DRIVES & WALKS	0.64	0.82	0.90	90.63	0.90	0.96	100	0.58	0.73	0.81	90	0.00	0.08	0.35	0	0.060
P5	NOT TREATED	0.15	0.35	0.55	33.33	0.90	0.96	100	0.05	0.73	0.81	90	0.00	0.08	0.35	0	0.100
	Composite	1.29	0.75	0.84	83.02	0.90	0.96	100	0.90	0.73	0.81	90	0.19	0.08	0.35	0	0.20
OS1	OFF-SITE DRIVES & WALKS	1.77	0.90	0.96	100.00	0.90	0.96	100	1.77	0.73	0.81	90	0.00	0.08	0.35	0	0.000

Standard Form SF-1 . Time of Concentration

Corridor / Design Package: Kum & Go - El Paso, Colorado
System Name: Developed Condition

Computed: DSI Date: 3/23/2022
Checked: Date:

SUB-BASIN DATA				INITIAL/OVERLAND FLOW (t_i)			TRAVEL TIME (t_t)							Total	Tc CHECK (Urbanized basins)				FINAL Tc (min)
Basin ID	Description	C_5	Area (ac)	Length (ft)	Slope (ft/ft)	t_i (min)	Length (ft)	Slope (ft/ft)	Code	Description	Convey Coef (C_v)	V	t_t (min)	$t_c = t_i + t_t$ (min)	(Yes /No)	Length (ft)	$T_{c\,max}$ (min)	$Tc_{max} > t_c$	
P1	C-STORE	0.73	0.09	30	0.02	2.9	10.0	0.02	6	Paved areas and shallow paved swales	20.00	2.83	0.06	2.97	Yes	40	10.22	Regional Tc	5.00
P2	CANOPY	0.73	0.10	25	0.02	2.7	10.0	0.02	6	Paved areas and shallow paved swales	20.00	2.83	0.06	2.72	Yes	35	10.19	Regional Tc	5.00
P3	DRIVES & WALKS	0.79	0.31	100	0.036	3.6	79.0	0.036	6	Paved areas and shallow paved swales	20.00	3.79	0.35	3.96	Yes	179	10.99	Regional Tc	5.00
P-4	DRIVES & WALKS	0.82	0.64	100	0.025	3.7	303.0	0.025	6	Paved areas and shallow paved swales	20.00	3.16	1.60	5.29	Yes	403	12.24	Regional Tc	6.00
P-5	NOT TREATED	0.35	0.15	15	0.33	1.6	10.0	0.33	3	Short pasture and lawns	7.00	4.02	0.04	1.69	Yes	25	10.14	Regional Tc	7.00
OS1	OFF-SITE DRIVES & WALKS	0.90	1.77	100	0.015	3.2	535.0	0.015	6	Paved areas and shallow paved swales	20.00	2.45	3.64	6.80	Yes	635	13.53	Regional Tc	6.00

Notes:
$t_i = (0.395*(1.1-C_5)*(L^0.5))/(S^0.33)$, from UDFCD Eqn 6-3
Velocity from $V = C_v*S_w^{0.5}$, from UDFCD Eqn 6-4, C_v from Table 6-2(See Sheet Design Info)
$t_t = L/60V$
t_i max = 10+L/180
Final Tc > 10 min for nonurban watersheds

UDFCD Table 6-2. NRCS Conveyance factors, K

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2	Tillage/field	5
3	Short pasture and lawns	7
4	Nearly bare ground	10
5	Grassed waterway	15
6	Paved areas and shallow paved swales	20

Standard Form SF-2 . Storm Drainage System Design (Rational Method Procedure)

Corridor / Design Package: Kum & Go - El Paso, Colorado

System Name: Developed Condition

Computed: DSI Date: 3/24/2022

Checked: Date:

Design Storm: Proposed 5-yr P = 1.27 in

	LOCATION	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
			AREA DESIGN	AREA (AC)	RUNOFF COEFF	t_c (MIN)	C.A. (AC)	I/IN / HR	Q (CFS)	t_c (MIN)	SUM (C*A)(AC)	I/(IN / HR)	Q(CFS)	SLOPE(%)	STREETFLOW	DESIGNFLOW	SLOPE(%)	PIPE SIZE(in)	LENGTH(FT)	VELOCITY(FPS)	t_t (MIN	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
P1	C-STORE	1	P1	0.09	0.73	5.00	0.07	4.31	0.28					--	--	--	--	--	--	--		
P2	CANOPY	2	P2	0.10	0.73	5.00	0.07	4.31	0.31					--	--	--	--	--	--	--		
P3	DRIVES & WALKS	3	P3	0.31	0.79	5.00	0.25	4.31	1.06					--	--	--	--	--	--	--		
P4	DRIVES & WALKS	4	P4	0.64	0.82	6.00	0.53	4.09	2.16					--	--	--	--	--	--	--		
P5	NOT TREATED	5	P5	0.15	0.35	7.00	0.05	3.90	0.21					--	--	--	--	--	--	--		
OS1	OFF-SITE DRIVES & WALKS	6	OS1	1.77	0.90	6.00	1.59	4.09	6.52					--	--	--	--	--	--	--		

Design Storm: Proposed 100-yr P = 2.70 in

	LOCATION	DESIGN POINT	DIRECT RUNOFF							TOTAL RUNOFF				STREET		PIPE			TRAVEL TIME			REMARKS
			AREA DESIGN	AREA (AC)	RUNOFF COEFF	t_c (MIN)	C.A. (AC)	I/IN / HR	Q (CFS)	t_c (MIN)	SUM (C*A)(AC)	I/(IN / HR)	Q(CFS)	SLOPE(%)	STREETFLOW	DESIGNFLOW	SLOPE(%)	PIPE SIZE(in)	LENGTH(FT)	VELOCITY(FPS)	t_t (MIN	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
P1	C-STORE	1	P1	0.09	0.81	5.00	0.07	9.16	0.67					--	--	--	--	--	--	--		
P2	CANOPY	2	P2	0.10	0.81	5.00	0.08	9.16	0.74					--	--	--	--	--	--	--		
P3	DRIVES & WALKS	3	P3	0.31	0.88	5.00	0.27	9.16	2.50					--	--	--	--	--	--	--		
P4	DRIVES & WALKS	4	P4	0.64	0.90	6.00	0.58	8.71	5.03					--	--	--	--	--	--	--		
P5	NOT TREATED	5	P5	0.15	0.55	7.00	0.08	8.30	0.69					--	--	--	--	--	--	--		
OS1	OFF-SITE DRIVES & WALKS	6	OS1	1.77	0.96	6.00	1.70	8.71	14.79					--	--	--	--	--	--	--		

(1) Basin Description linked to C-Value Sheet
(2) Basin Design Point
(3) Enter the Basin Name from C Value Sheet
(4) Basin Area linked to C-Value Sheet
(5) Composite C linked to C-Value Sheet
(6) Time of Concentration linked to C-Value Sheet
(7) =Column 4 x Column 5
(8) =28.5*P/(10+Column 6)^0.786
(9) =Column 7 x Column 8
(10) =Column 6 + Column 21
(11) Add the Basin Areas (7) to get the combined basin AC
(12) =28.5*P/(10+Column 10)^0.786
(13) Sum of Qs
(14) Additonal Street Overland Flow
(15) Additonal Street Overland Flow
(16) Design Pipe Flow
(17) Pipe Slope
(18) Pipe Size
(19) Additional Flow Length
(20) Velocity
(21) =Column 19 / Column 20 / 60

MILE HIGH FLOOD DISTRICT

DETENTION BASIN DESIGN WORKBOOK

MHFD-Detention, Version 4.05 (January 2022)
Mile High Flood District
Denver, Colorado
www.mhfd.org

Purpose:

This workbook aids in the estimation of stormwater detention basin sizing and outlet routing based on the modified puls routing method for urban watersheds. Several different BMP types and various outlet configurations can be sized.

Function:

1. Approximates the stage-area-volume relationship for a detention basin based on watershed parameters and basin geometry parameters. Also evaluates existing user-defined basin stage-area relationships.

2. Sizes filtration media orifice, outlet orifices, elliptical slots, weirs, trash racks, and develops stage-discharge relationships. Uses the Modified Puls method to route a series of hydrographs (i.e., 2-, 5-, 10-, 25-, 50-, 100- and 500-year) and calibrates the peak discharge out of the basin to match the pre-development peak discharges for the watershed.

Content: **This workbook consists of the following sheets:**

Basin	Tabulates stage-area-volume relationship estimates based on watershed parameters
Outlet Structure	Tabulates a stage-discharge relationship for the user-defined outlet structure (inlet control).
Reference	Provides reference equations and figures.
User Tips and Tools	Provides instructions and video links to assist in using this workbook. Includes a stage-area calculator.
BMP Zone Images	Provides images of typical BMP zone confirgurations corresponding with Zone pulldown selections.

Acknowledgements: ***Spreadsheet Development Team:***
Ken MacKenzie, P.E., Holly Piza, P.E.
Mile High Flood District

Derek N. Rapp, P.E.
Peak Stormwater Engineering, LLC

Dr. James C.Y. Guo, Ph.D., P.E.
Professor, Department of Civil Engineering, University of Colorado at Denver

Comments? Revisions?

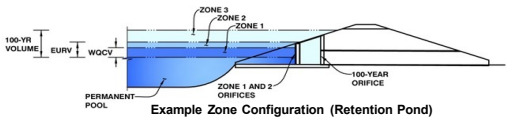
Direct all comments regarding this spreadsheet workbook to: **MHFD E-Mail**
Check for revised versions of this or any other workbook at: **Downloads**

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.05 (January 2022)

Project: _____

Basin ID: _____



Example Zone Configuration (Retention Pond)

Watershed Information

Selected BMP Type =	**EDB**	
Watershed Area =	1.29	acres
Watershed Length =	275	ft
Watershed Length to Centroid =	150	ft
Watershed Slope =	0.020	ft/ft
Watershed Imperviousness =	83.02%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User Overrides
Water Quality Capture Volume (WQCV) =	0.037	acre-feet	acre-feet
Excess Urban Runoff Volume (EURV) =	0.119	acre-feet	acre-feet
2-yr Runoff Volume (P1 = 0.99 in.) =	0.079	acre-feet	0.99 inches
5-yr Runoff Volume (P1 = 1.27 in.) =	0.106	acre-feet	1.27 inches
10-yr Runoff Volume (P1 = 1.53 in.) =	0.132	acre-feet	1.53 inches
25-yr Runoff Volume (P1 = 1.95 in.) =	0.178	acre-feet	1.95 inches
50-yr Runoff Volume (P1 = 2.31 in.) =	0.216	acre-feet	2.31 inches
100-yr Runoff Volume (P1 = 2.7 in.) =	0.258	acre-feet	2.70 inches
500-yr Runoff Volume (P1 = 3.76 in.) =	0.371	acre-feet	3.76 inches
Approximate 2-yr Detention Volume =	0.079	acre-feet	
Approximate 5-yr Detention Volume =	0.105	acre-feet	
Approximate 10-yr Detention Volume =	0.135	acre-feet	
Approximate 25-yr Detention Volume =	0.161	acre-feet	
Approximate 50-yr Detention Volume =	0.176	acre-feet	
Approximate 100-yr Detention Volume =	0.193	acre-feet	

Define Zones and Basin Geometry

Zone 1 Volume (WQCV) =	0.037	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.082	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	0.073	acre-feet
Total Detention Basin Volume =	0.193	acre-feet
Initial Surcharge Volume (ISV) =	user	ft^3
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H_{total}) =	user	ft
Depth of Trickle Channel (H_{TC}) =	user	ft
Slope of Trickle Channel (S_{TC}) =	user	ft/ft
Slopes of Main Basin Sides (S_{main}) =	user	H:V
Basin Length-to-Width Ratio ($R_{L/W}$) =	user	

Initial Surcharge Area (A_{ISV}) =	user	ft^2
Surcharge Volume Length (L_{ISV}) =	user	ft
Surcharge Volume Width (W_{ISV}) =	user	ft
Depth of Basin Floor (H_{FLOOR}) =	user	ft
Length of Basin Floor (L_{FLOOR}) =	user	ft
Width of Basin Floor (W_{FLOOR}) =	user	ft
Area of Basin Floor (A_{FLOOR}) =	user	ft^2
Volume of Basin Floor (V_{FLOOR}) =	user	ft^3
Depth of Main Basin (H_{MAIN}) =	user	ft
Length of Main Basin (L_{MAIN}) =	user	ft
Width of Main Basin (W_{MAIN}) =	user	ft
Area of Main Basin (A_{MAIN}) =	user	ft^2
Volume of Main Basin (V_{MAIN}) =	user	ft^3
Calculated Total Basin Volume (V_{total}) =	**user**	acre-feet

Without printout of the "Outlet Structure" tab of this spreadsheet, drain time cannot be confirmed. Please include it.

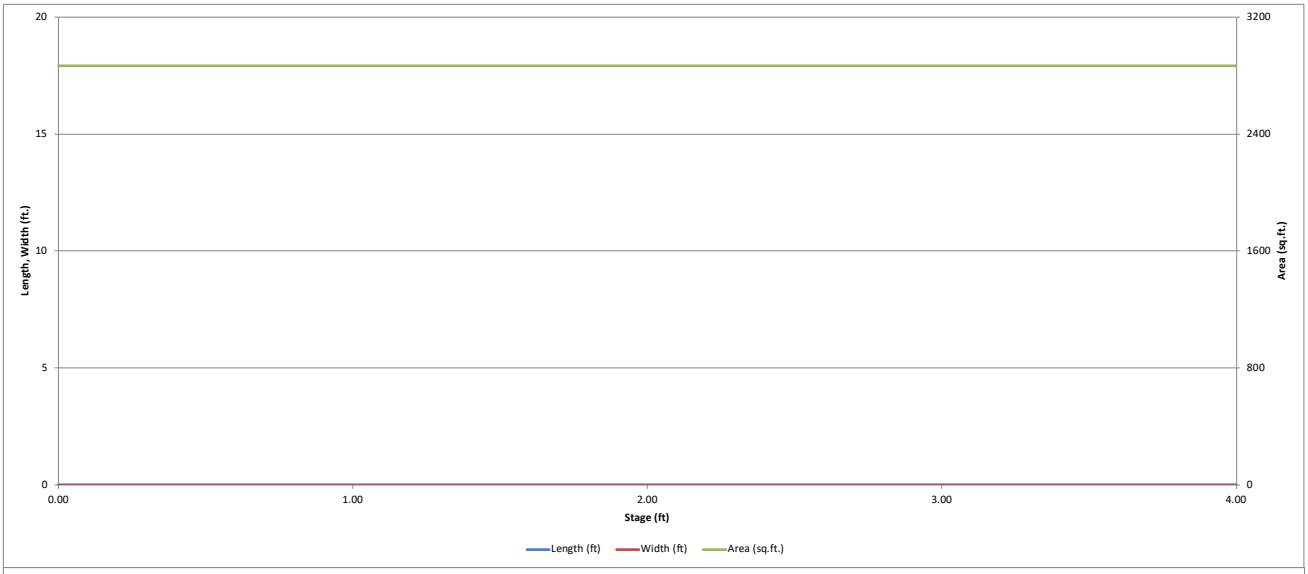
Outlet structure sheet included in this submittal

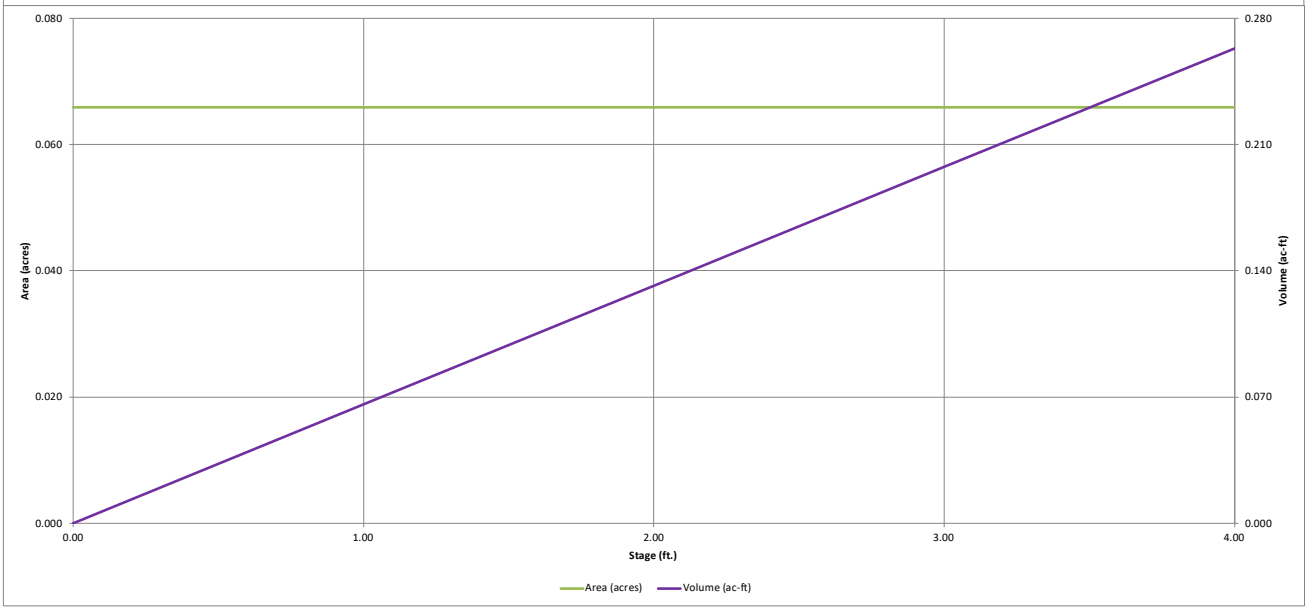
Depth Increment = 1.00 ft

Stage - Storage Description	Stage (ft)	Optional Override Stage (ft)	Length (ft)	Width (ft)	Area (ft^2)	Optional Override Area (ft^2)	Area (acre)	Volume (ft^3)	Volume (ac-ft)
Top of Micropool	--	0.00	--	--	--	2,870	0.066		
	--	1.00	--	--	--	2,870	0.066	2,870	0.066
	--	2.00	--	--	--	2,870	0.066	5,740	0.132
	--	3.00	--	--	--	2,870	0.066	8,610	0.198
	--	4.00	--	--	--	2,870	0.066	11,480	0.264

DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.05 (January 2022)





MHFD-Inlet, Version 5.01 (April 2021)

INLET MANAGEMENT

Worksheet Protected

INLET NAME	P3	P4
Site Type (Urban or Rural)	URBAN	URBAN
Inlet Application (Street or Area)	STREET	STREET
Hydraulic Condition	In Sump	In Sump
Inlet Type	CDOT Type R Curb Opening	CDOT Type R Curb Opening

USER-DEFINED INPUT

User-Defined Design Flows

Minor Q_{Known} (cfs)	1.1	2.2
Major Q_{Known} (cfs)	2.5	5.0

Bypass (Carry-Over) Flow from Upstream

Receive Bypass Flow from:	No Bypass Flow Received	No Bypass Flow Received
Minor Bypass Flow Received, Q_b (cfs)	0.0	0.0
Major Bypass Flow Received, Q_b (cfs)	0.0	0.0

Watershed Characteristics

Subcatchment Area (acres)		
Percent Impervious		
NRCS Soil Type		

Watershed Profile

Overland Slope (ft/ft)		
Overland Length (ft)		
Channel Slope (ft/ft)		
Channel Length (ft)		

Minor Storm Rainfall Input

Design Storm Return Period, T_r (years)		
One-Hour Precipitation, P_1 (inches)		

Major Storm Rainfall Input

Design Storm Return Period, T_r (years)		
One-Hour Precipitation, P_1 (inches)		

CALCULATED OUTPUT

Minor Total Design Peak Flow, Q (cfs)	**1.1**	**2.2**
Major Total Design Peak Flow, Q (cfs)	**2.5**	**5.0**
Minor Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A
Major Flow Bypassed Downstream, Q_b (cfs)	N/A	N/A

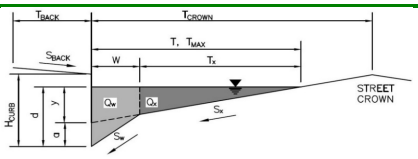
MHFD-Inlet, Version 5.01 (April 2021)

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Inlet ID: **P3**



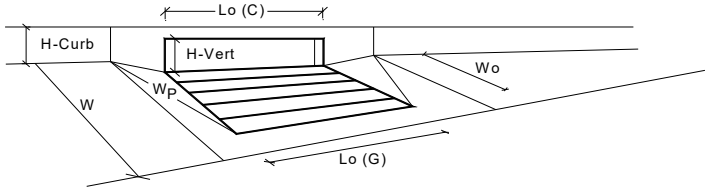
Gutter Geometry:			
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	24.0	ft
Gutter Width	W =	2.00	ft
Street Transverse Slope	S_X =	0.035	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	24.0	24.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



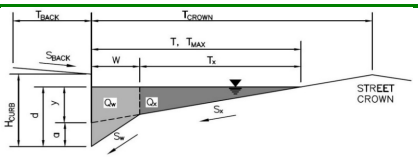
Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	2.00	2.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.33	0.33	ft
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.77	0.77	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.4**	**5.4**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	1.1	2.5	cfs

ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)

Project:

Inlet ID: **P4**



Gutter Geometry:

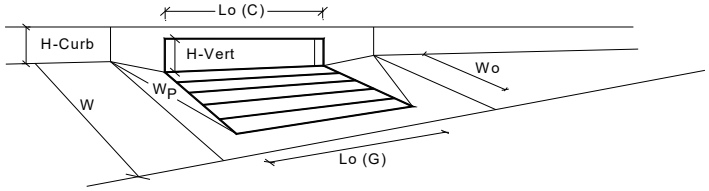
Maximum Allowable Width for Spread Behind Curb	T_{BACK} =	0.5	ft
Side Slope Behind Curb (leave blank for no conveyance credit behind curb)	S_{BACK} =		ft/ft
Manning's Roughness Behind Curb (typically between 0.012 and 0.020)	n_{BACK} =	0.020	
Height of Curb at Gutter Flow Line	H_{CURB} =	6.00	inches
Distance from Curb Face to Street Crown	T_{CROWN} =	50.0	ft
Gutter Width	W =	1.00	ft
Street Transverse Slope	S_X =	0.020	ft/ft
Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft)	S_W =	0.083	ft/ft
Street Longitudinal Slope - Enter 0 for sump condition	S_O =	0.000	ft/ft
Manning's Roughness for Street Section (typically between 0.012 and 0.020)	n_{STREET} =	0.012	

		Minor Storm	Major Storm	
Max. Allowable Spread for Minor & Major Storm	T_{MAX} =	50.0	50.0	ft
Max. Allowable Depth at Gutter Flowline for Minor & Major Storm	d_{MAX} =	6.0	6.0	inches
Check boxes are not applicable in SUMP conditions		☐	☐	

		Minor Storm	Major Storm	
MINOR STORM Allowable Capacity is based on Depth Criterion				
MAJOR STORM Allowable Capacity is based on Depth Criterion	**Q_{allow} =**	**SUMP**	**SUMP**	**cfs**

INLET IN A SUMP OR SAG LOCATION

MHFD-Inlet, Version 5.01 (April 2021)



Design Information (Input)		MINOR	MAJOR	
Type of Inlet	Type =	CDOT Type R Curb Opening		
Local Depression (additional to continuous gutter depression 'a' from above)	a_{local} =	3.00	3.00	inches
Number of Unit Inlets (Grate or Curb Opening)	No =	1	1	
Water Depth at Flowline (outside of local depression)	Ponding Depth =	6.0	6.0	inches
Grate Information		MINOR	MAJOR	☐ Override Depths
Length of a Unit Grate	L_o (G) =	N/A	N/A	feet
Width of a Unit Grate	W_o =	N/A	N/A	feet
Area Opening Ratio for a Grate (typical values 0.15-0.90)	A_{ratio} =	N/A	N/A	
Clogging Factor for a Single Grate (typical value 0.50 - 0.70)	C_f (G) =	N/A	N/A	
Grate Weir Coefficient (typical value 2.15 - 3.60)	C_w (G) =	N/A	N/A	
Grate Orifice Coefficient (typical value 0.60 - 0.80)	C_o (G) =	N/A	N/A	
Curb Opening Information		MINOR	MAJOR	
Length of a Unit Curb Opening	L_o (C) =	5.00	5.00	feet
Height of Vertical Curb Opening in Inches	H_{vert} =	6.00	6.00	inches
Height of Curb Orifice Throat in Inches	H_{throat} =	6.00	6.00	inches
Angle of Throat (see USDCM Figure ST-5)	Theta =	63.40	63.40	degrees
Side Width for Depression Pan (typically the gutter width of 2 feet)	W_p =	1.00	1.00	feet
Clogging Factor for a Single Curb Opening (typical value 0.10)	C_f (C) =	0.10	0.10	
Curb Opening Weir Coefficient (typical value 2.3-3.7)	C_w (C) =	3.60	3.60	
Curb Opening Orifice Coefficient (typical value 0.60 - 0.70)	C_o (C) =	0.67	0.67	
Low Head Performance Reduction (Calculated)		MINOR	MAJOR	
Depth for Grate Midwidth	d_{Grate} =	N/A	N/A	ft
Depth for Curb Opening Weir Equation	d_{Curb} =	0.42	0.42	ft
Combination Inlet Performance Reduction Factor for Long Inlets	$RF_{Combination}$ =	0.77	0.77	
Curb Opening Performance Reduction Factor for Long Inlets	RF_{Curb} =	1.00	1.00	
Grated Inlet Performance Reduction Factor for Long Inlets	RF_{Grate} =	N/A	N/A	
		MINOR	MAJOR	
Total Inlet Interception Capacity (assumes clogged condition)	**Q_a =**	**5.9**	**5.9**	**cfs**
Inlet Capacity IS GOOD for Minor and Major Storms(>Q PEAK)	$Q_{PEAK\ REQUIRED}$ =	2.2	5.0	cfs

501 S. Cherry Street, Suite 300
Glendale, CO 80246
303-572-7997
www.ees.us.com

APPENDIX C
Master Drainage Report Excerpts

LITTLE JOHNSON/SECURITY CREEK DRAINAGE BASIN PLANNING STUDY

Prepared for
El Paso County
Department of Public Works

Prepared by
SIMONS, LI & ASSOCIATES, INC.
in cooperation with
KIOWA ENGINEERING CORPORATION

APRIL, 1988

IV. HYDRAULIC ANALYSIS AND FLOODPLAIN DELINEATION

A hydraulic analysis for the study area has been conducted for the 10- and 100-year frequencies. This work consisted of analyzing the local storm sewer and street drainage systems and an analysis of the open channel (Security Creek) which drains the majority of the study area. A discussion of existing systems follows.

Description of Existing Storm Drainage Systems

Presented on Table 3 is an inventory of the existing storm drainage system(s) within the study area. The hydraulic capacities have been calculated using topographic mapping in combination with field inspections of these systems. The facilities listed in Table 3 lie within the Widefield, Security, and Little Johnson sub-basins. A discussion of each follows.

1. Little Johnson Basin

This portion of the study area lies within hydrologic group A, B, and C as shown on Figure 3 (See Map Pocket). The predominant features of the area are the Fountain Mutual Canal No. 4, and the Little Johnson Reservoir Basin. These two facilities have acted to keep the historic flows from crossing Bradley Road to very small amounts, and thereby protected the Security area. Urban development has placed an increasing storm drainage conveyance burden on the Fountain Mutual Canal No. 4. Developed flows entering the canal at times of high irrigation use have caused overtopping and maintenance problems at several locations along the canal's length. Future flows will only serve to worsen the flooding potential the canal represents, unless the canal is improved to meet the anticipated design flows.

The Little Johnson Reservoir is a former irrigation water storage facility that was taken out of operation in the 1970's. An outlet pipe exists under the embankment into a historic drainage path, however, the size and condition of this outlet has not been verified. The land underlying the reservoir is currently under consideration for residential development. Disregarding any stormwater diversion by the Canal No. 4, the Little Johnson Reservoir has adequate volume to store the historic runoff tributary to the Reservoir. The structural integrity of the embankment has not been investigated as part of this study.

An existing 36-inch storm sewer in Hancock collects flow from the Clearview Estates area, and the commercial industrial areas east of Hancock, to Yucatan. This system is highly dependent upon the hydraulic grade of the Canal No. 4, and has been calculated to be under capacity to serve the current development. Overtopping of this system forces flow west over Hancock, and is eventually picked up by Canal No. 4. The interaction between the Hancock storm sewer and Canal No. 4 is largely responsible for the local flooding problems along Bradley Road and in the northern portions of Security.

The areas tributary to Canal No. 4 east of Hancock Boulevard are conveyed to the Canal via a storm sewer system. The Canal has been reconstructed within this area, and eventually carries stormwater into the Windmill Gulch Basin.

A stormwater detention pond serves the Foxhills and Pinehurst Station Subdivisions. This pond is drained by two 24-inch outlet pipes, and was designed to control the design flow(s) to historic levels. The City of Colorado Springs has expressed an interest in abandoning this pond because of operation and maintenance concerns. A hydraulic review of the pond revealed that the pond volume is insufficient in capacity to lower the peak flow rate to match the outlet (for the hydrologic criteria applied in this report). The pond at the Foxhills Subdivision was therefore assumed to be eliminated for the purpose of estimating peak discharges and sizing of downstream facilities.

The balance of the Little Johnson Basin is drained by small culverts under roadways. A storm sewer system for State Highway 83 (Academy Boulevard) outfalls to the Fountain Creek, however, is of inadequate size to convey any additional runoff. Flows which do pass across Bradley enter the Security Creek via the street and storm sewer systems within Cody and Ivanhoe Drives.

2. Security Basin

This area has predominantly single-family residential development, and is drained by streets and small diameter storm sewers. The entire basin, bounded by Crawford Street on the south, is tributary to the Security Creek, which extends along the Denver and Rio Grande Western Railroad (D&RGWR) upstream to Cody Drive. The high impervious area in combination with the moderate-to-steep street slopes deliver stormwater to the lower portions of the basin at

too high a rate for the storm sewer system(s) and Security Creek to carry it away.

The two existing storm sewer systems, the Cassidy-Ivanhoe Drive storm sewer and the Main Street storm sewer have both been surcharged in recent years. These systems have been calculated to be over capacity, and unable to convey additional runoff without expansion. These systems are adversely impacted by the Security Creek hydraulic inadequacies. Structural damages to properties adjacent to these systems have been limited to the Main Street and Security Boulevard commercial areas.

The Security Creek begins at approximately Cody Drive, and extends south along the east side of the D&RGWR tracks to Main Street. The channel is poorly defined, and grasslined until approximately Sumac Drive. From this point a concrete lining extends up to Main Street. Two culverts cross the Security Creek. A recently constructed culvert near Kenny's Nursery has adequate capacity to handle existing condition flow rates. The Main Street crossing has an inadequate capacity. Relatively minor flooding has been calculated to be caused by the inadequate conveyance capacities of the Security Creek, the damage which does occur could be solved by reconstructing the Main Street culverts.

Two detention ponds have been constructed in the upper portions of the Security Basin. One pond serves the Pheasant Run Subdivision Filing No. 1, and the other pond serves Pheasant Run Filing No. 2. These ponds were constructed to limit flows originating within the subdivisions to historic levels. Both ponds have been overtopped in heavy rainstorms since their construction in 1986. The flows which have overtopped the ponds have moved into the Security area streets.

3. Widefield Basin

Similar to the Security Basin, the Widefield Basin has predominantly single-family development which is drained through mainly street and limited sections of storm sewers to Security Creek. The Security Creek is concrete-lined from Main Street to its outfall at Crews Gulch. The Fontaine Boulevard culvert at Security Creek has an inadequate capacity and forces flood flows west across Highway 85/87. The creek has an inadequate hydraulic capacity from Fontaine Street to Crews Gulch.

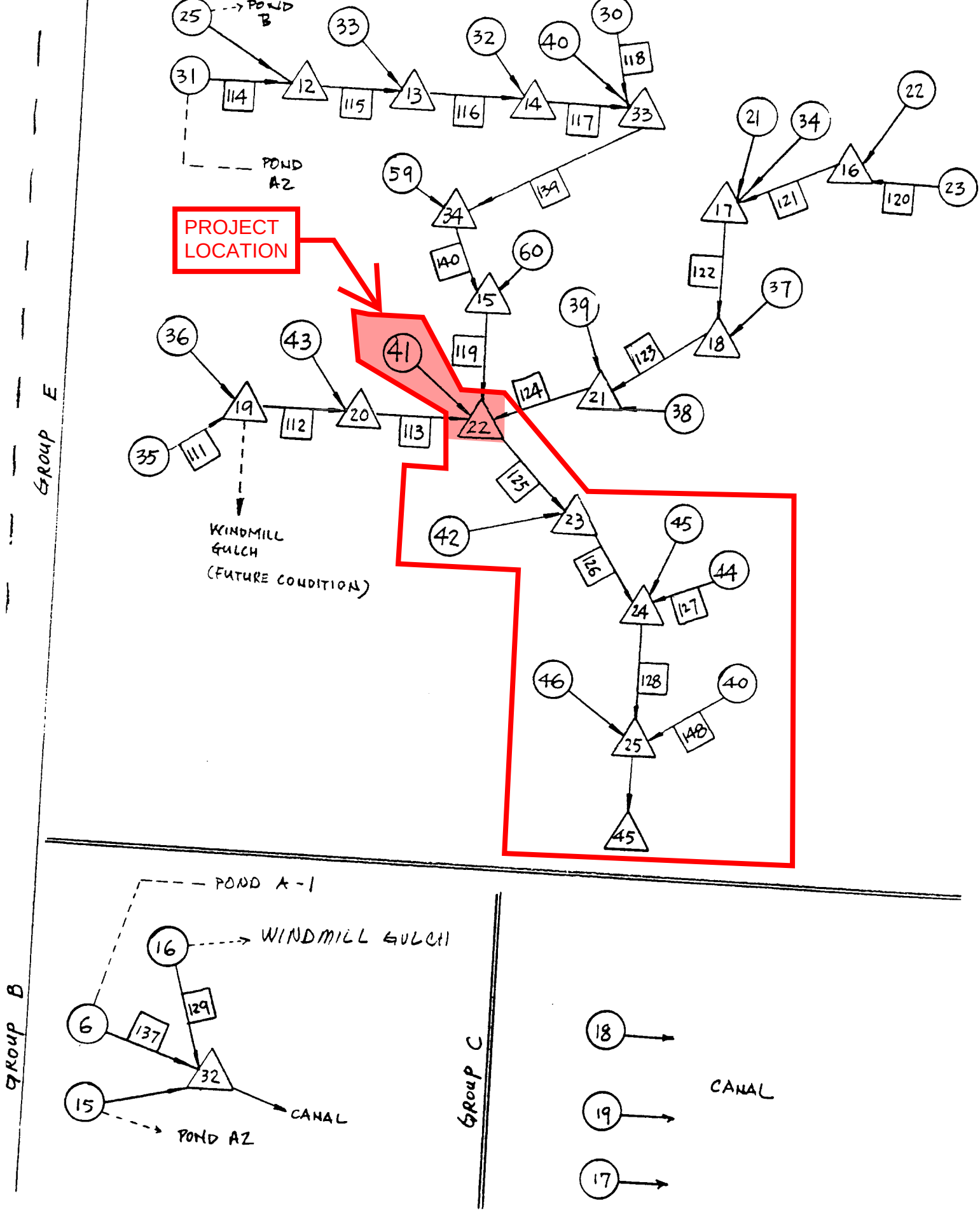


Figure 5. TR-20 Flow Diagram (continued).

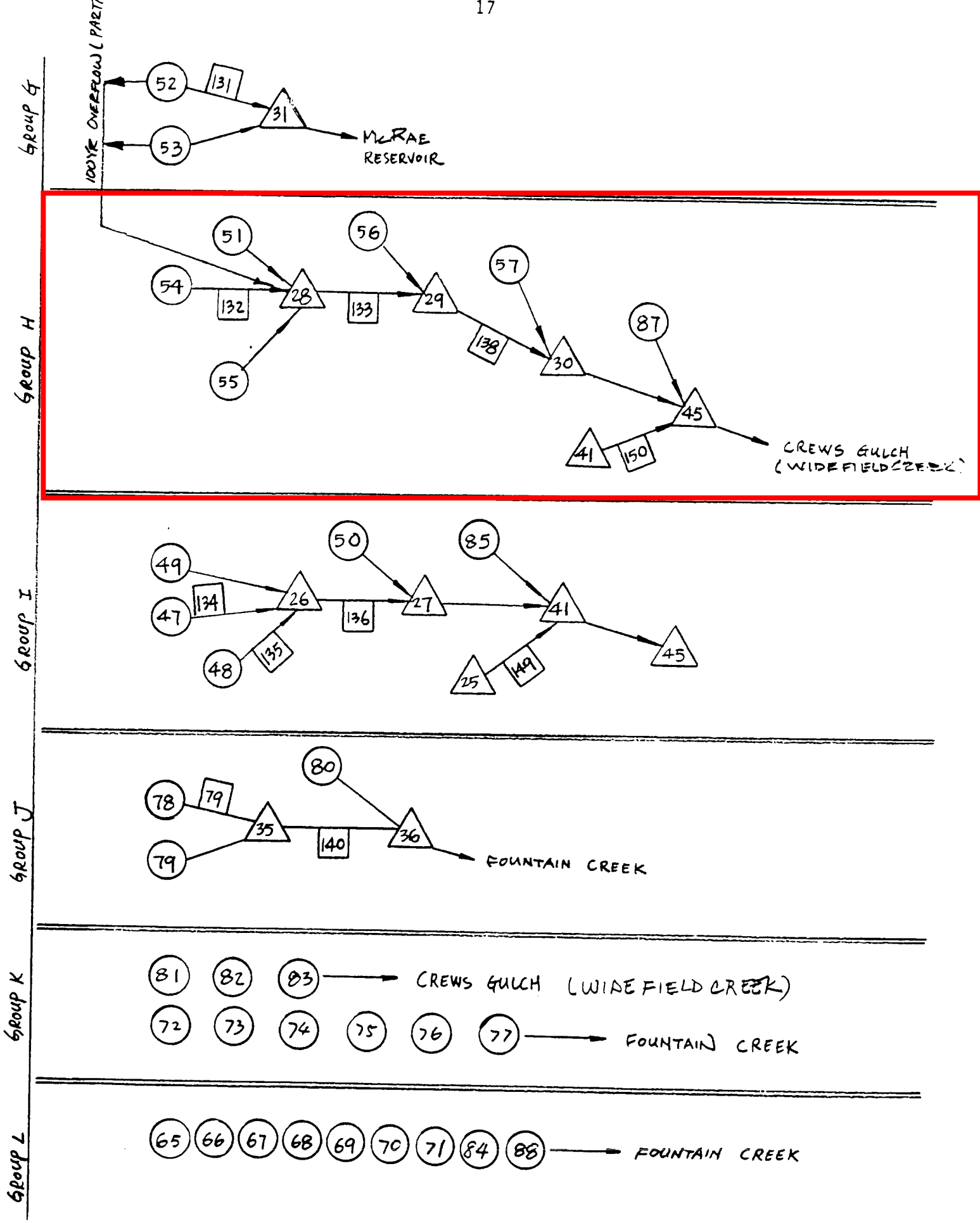


Figure 5. TR-20 Flow Diagram (continued).

Table 1. TR-20 Hydrologic Basin Parameter (continued).

Basin I.D.	% Imperviousness		Soil Type		Curve Number(CN)		Time of Concentration(Hr)	
	Existing	Future	Existing	Future	Existing	Future	Existing	Future
37	65	65	A	A	77	77	0.52	0.52
38	40	40	A	A	73	73	0.21	0.21
39	65	65	A	A	77	77	0.59	0.59
40	65	65	1/5 A 4/5 B	1/5 A 4/5 B	82	82	0.92	0.92
41	95	95	1/2 A 1/2 B	1/2 A 1/2 B	92	92	0.54	0.54
42	95	95	2/3 A 1/3 B	2/3 A 1/3 B	92	92	0.28	0.28
43	46	46	A	A	73	73	0.52	0.52
44	65	65	A	A	77	77	0.24	0.24
45	65	65	1/2 A 1/2 B	1/2 A 1/2 B	77	77	0.36	0.36
46	75	75	B	B	90	90	0.13	0.13
47	65	65	B	B	85	85	1.01	1.01
48	65	65	1/3 A 2/3 B	B	85	85	0.27	0.27
49	65	65	B	B	85	85	0.35	0.35
50	58	58	B	B	83	83	0.60	0.60
51	65	65	B	B	85	85	0.50	0.50
52	2	65	B	B	61	85	0.53	0.26
53	18	65	B	B	78	85	0.45	0.30
54	2	52	B	B	61	81	0.26	0.38
55	53	53	2/3 A 1/3 B	2/3 A 1/3 B	77	77	0.37	0.37
56	76	76	B	B	90	90	0.65	0.65
57	68	68	1/3 A 2/3 B	1/3 A 2/3 B	85	85	0.64	0.64
58	2	77	A	B	39	90	0.13	0.13
59	65	65	4/5 A 1/5 B	4/5 A 1/5 B	77	77	0.35	0.35
60	65	65	1/2 A 1/2 B	1/2 A 1/2 B	82	82	0.63	0.63
61	65	65	B	B	85	85	0.50	0.50
62	25	72	A	B	54	81	0.93	0.62
63	15	72	A	B	51	88	0.32	0.22
64	19	72	A	B	53	88	0.39	0.39
65	72	72	A	B	81	88	0.25	0.33
66	12	85	A	B	69	92	0.20	0.17
67	29	85	A	B	72	92	0.25	0.25
68	65	65	B	B	85	85	0.20	0.20
69	65	65	A	A	77	77	0.31	0.31
70	75	75	A	A	81	81	0.18	0.18

Table 2. Summary of Discharge.

Design Point				TR-20 24-Hour Storm (Type II-A)			
				100-Yr Peak Flow (cfs)		10-Yr Peak Flow (cfs)	
Basin No.	Design Point No.	Drainage Area (sq.mi.)	Location (Group)	Existing Condition	Future Condition	Existing Condition	Future Condition
1		0.09	A	6	251	0	140
2		0.08	A	178	178	92	92 *
3		0.02	A	51	51	26	26 *
4		0.09	A	6	253	0	146
5		0.11	A	1	294	0	163
6		0.18	A	45	340	5	188
7		0.05	A	97	133	50	72
8		0.03	D	0	83	0	50
9		0.06	A	1	162	0	90
10		0.02	A	0	46	0	25
11		0.13	D	1	217	0	114
12		0.10	A	1	239	0	134
13		0.02	D	0	58	0	33
14		0.12		1	220	0	116
15		0.05	B	56	113	23	63
16		0.10	B	169	169	88	88
17		0.08	B	102	102	46	46
18		0.08	C	110	151	50	80
19		0.04	C	0	96	0	53
21		0.04	E	83	83	41	41
22		0.04	E	1	128	0	72
23		0.03	E	58	67	31	40
24		0.07	D	2	119	0	70
25		0.06	E	0	68	0	38
26		0.04	D	86	86	46	46
27		0.06	D	95	116	47	62
28		0.05	D	22	127	2	73
29		0.06	D	54	54	26	26
30		0.05	E	63	63	31	31
31		0.01	E	0	26	0	14
32		0.04	E	102	102	51	51
33		0.08	E	140	140	67	67
34		0.04	E	63	63	30	30
35		0.04	E	70	70	34	34
36		0.05	E	0	80	0	40
37		0.09	E	117	117	53	53
38		0.02	E	30	30	13	13
39		0.03	E	36	36	16	16
40		0.12	E	136	136	67	67
41		0.05	E	119	119	71	71
42		0.02	E	71	71	43	43
43		0.05	E	77	77	34	34
44		0.03	E	53	53	26	26

Table 2. Summary of Discharge (continued).

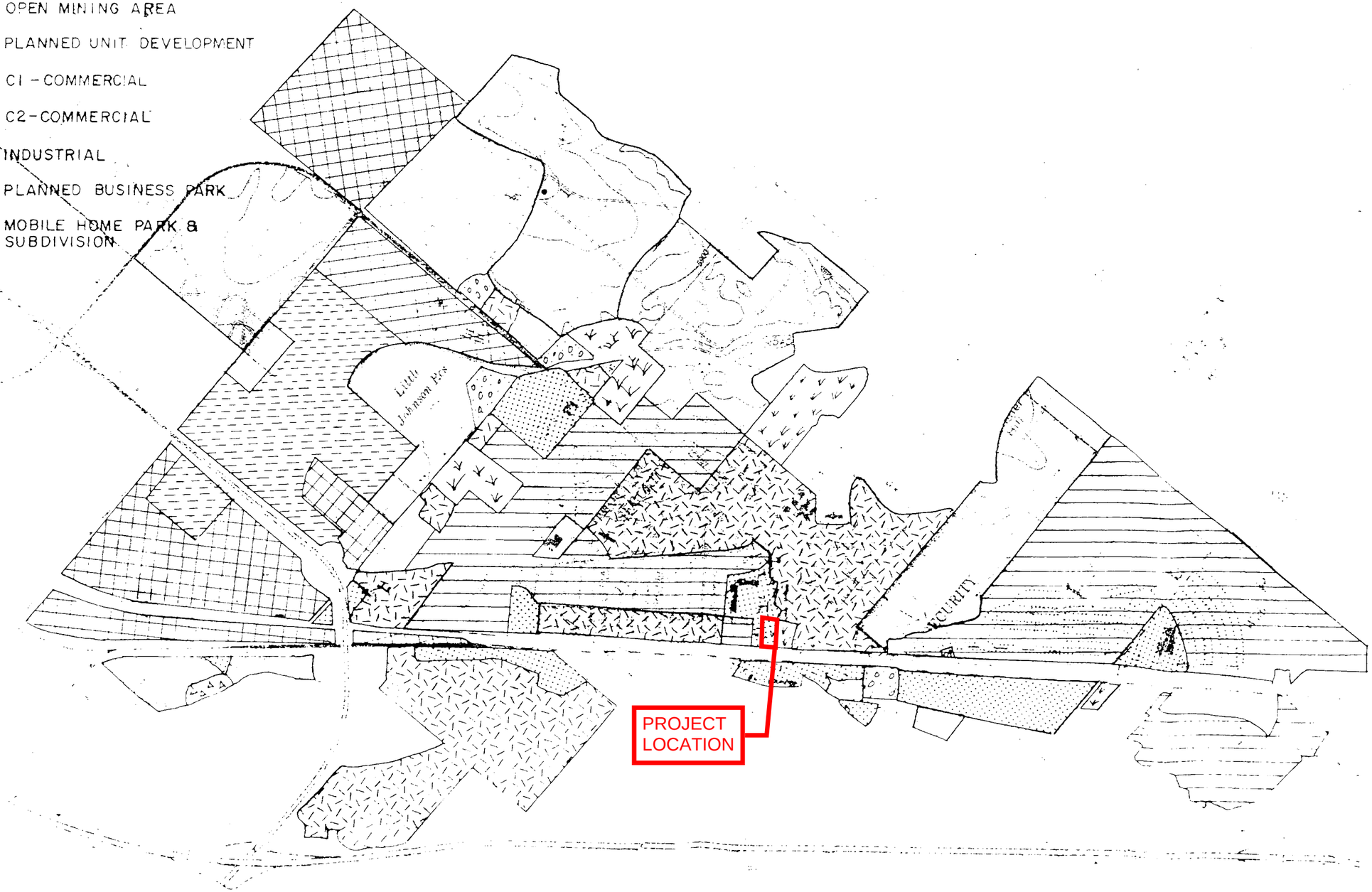
Design Point				TR-20 24-Hour Storm (Type II-A)			
				100-Yr Peak Flow (cfs)		10-Yr Peak Flow (cfs)	
Basin No.	Design Point No.	Drainage Area (sq.mi.)	Location (Group)	Existing Condition	Future Condition	Existing Condition	Future Condition
	3	0.11	A	1	279	0	155
	4	0.10	A	228	228	118	118
	5	0.22	A	228	495	115	259
	6	0.15	D	1	252	0	132
	7	0.19	D	86	333	46	176
	8	0.34	D	176	610	90	332
	9	0.41	D	194	629	98	340
	11	0.10	D	2	161	0	95
	12	0.07	E	1	72	0	41
	13	0.15	E	140	195	67	98
	14	0.19	E	215	258	103	120
	15	0.49	E	523	577	246	271
	16	0.07	E	58	188	31	107
	17	0.14	E	184	316	90	167
	18	0.23	E	270	395	126	199
	19	0.09	E	70	243	34	132
	20	0.13	E	148	310	67	159
	21	0.28	E	328	449	151	220
	22	0.95	E	1106	1154	529	557
	23	0.98	E	1174	1224	569	598
	24	1.09	E	1363	1413	658	686
	25	1.90	E	1733	2836	814	1375
	26	0.21	I	427	427	229	229
	27	0.27	I	499	499	264	264
	28	0.18	H	300	340	147	173
	29	0.28	H	479	519	250	276
	30	0.30	H	505	546	265	290
	31	0.50	G	495	1213	183	670
	32	0.40	B	349	710	156	377
	33	0.37	E	326	378	154	187
	34	0.46	E	483	536	227	253
	35	0.22	J	193	482	91	265
	36	0.31	J	291	529	142	298
	37	0.27	D	87	507	22	261
	38	0.31	D	104	632	23	334
	39	0.72	D	298	1253	100	670
	40	0.80	D	436	1412	172	747
	41	2.20	I	2303	3416	1122	1662
	43	0.10	A	7	298	0	169
	44	0.19	A	12	550	0	314
	45	2.52	H	2850	3996	1403	1976

* Assumes no attenuation due to the Foxhills Subdivision pond.

LEGEND

- PLANNED INDUSTRIAL DISTRICT
- R1 – RESIDENTIAL, 6,000 sq. ft
- R3 – RESIDENTIAL, 2,500 sq ft
- R2 – RESIDENTIAL, 4,500 sq ft (S) RESIDENTIAL, 7,000 sq ft (D)
- OPEN MINING AREA
- PLANNED UNIT DEVELOPMENT
- C1 – COMMERCIAL
- C2 – COMMERCIAL
- INDUSTRIAL
- PLANNED BUSINESS PARK
- MOBILE HOME PARK & SUBDIVISION

1" = 2,000'

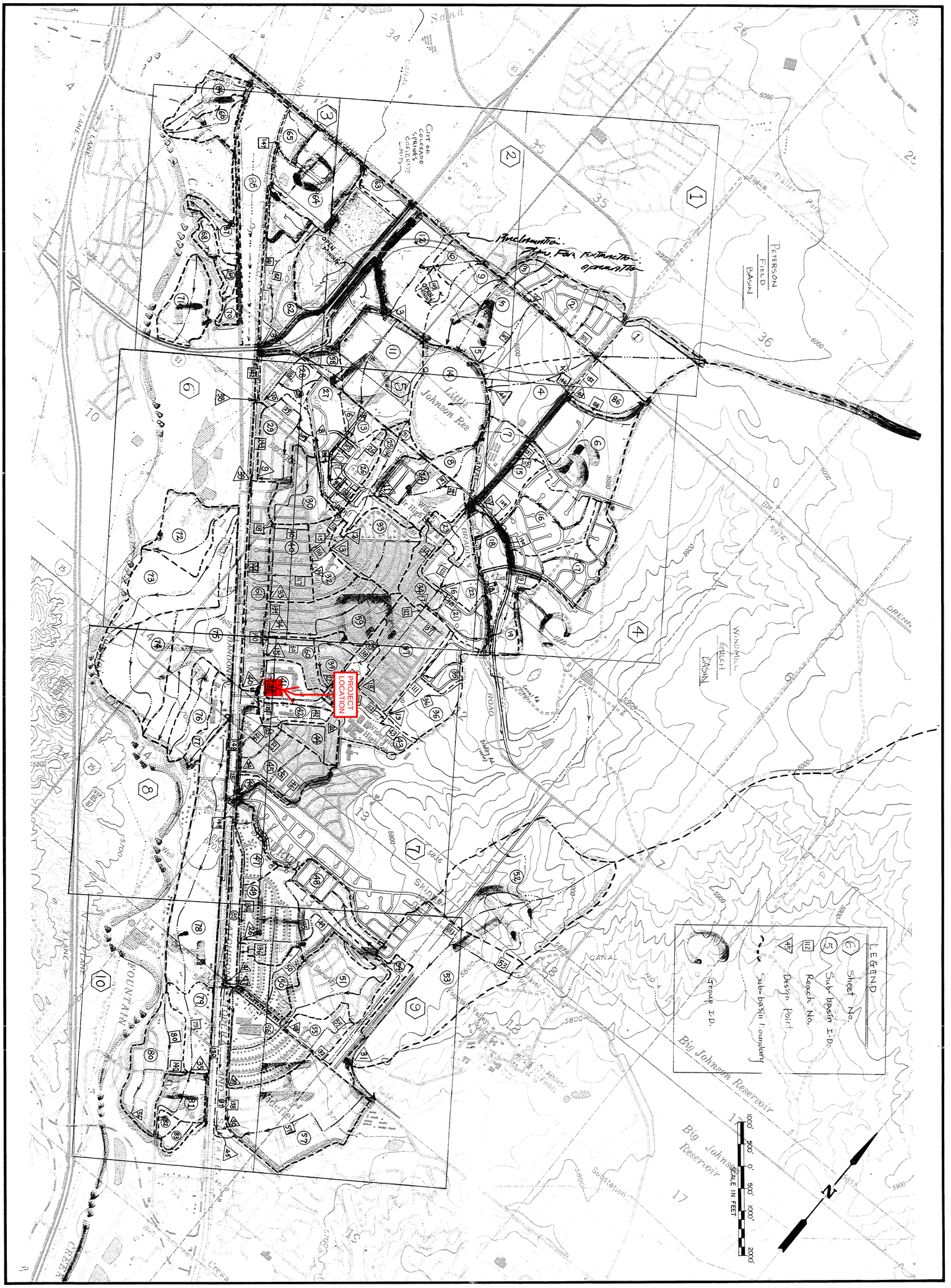


SIA SIMONS, LI & ASSOCIATES, INC.
419 WEST BIJOU STREET
COLORADO SPRINGS
COLORADO 80905

LITTLE JOHNSON / SECURITY CREEK
DRAINAGE BASIN PLANNING STUDY
LAND USE MAP

Project No. PC-[illegible]
Date [illegible]/78
Design [illegible]
Drawn EAK
Check [illegible]
Revisions

FIG 4



LITTLE JOHNSON / SECURITY CREEK

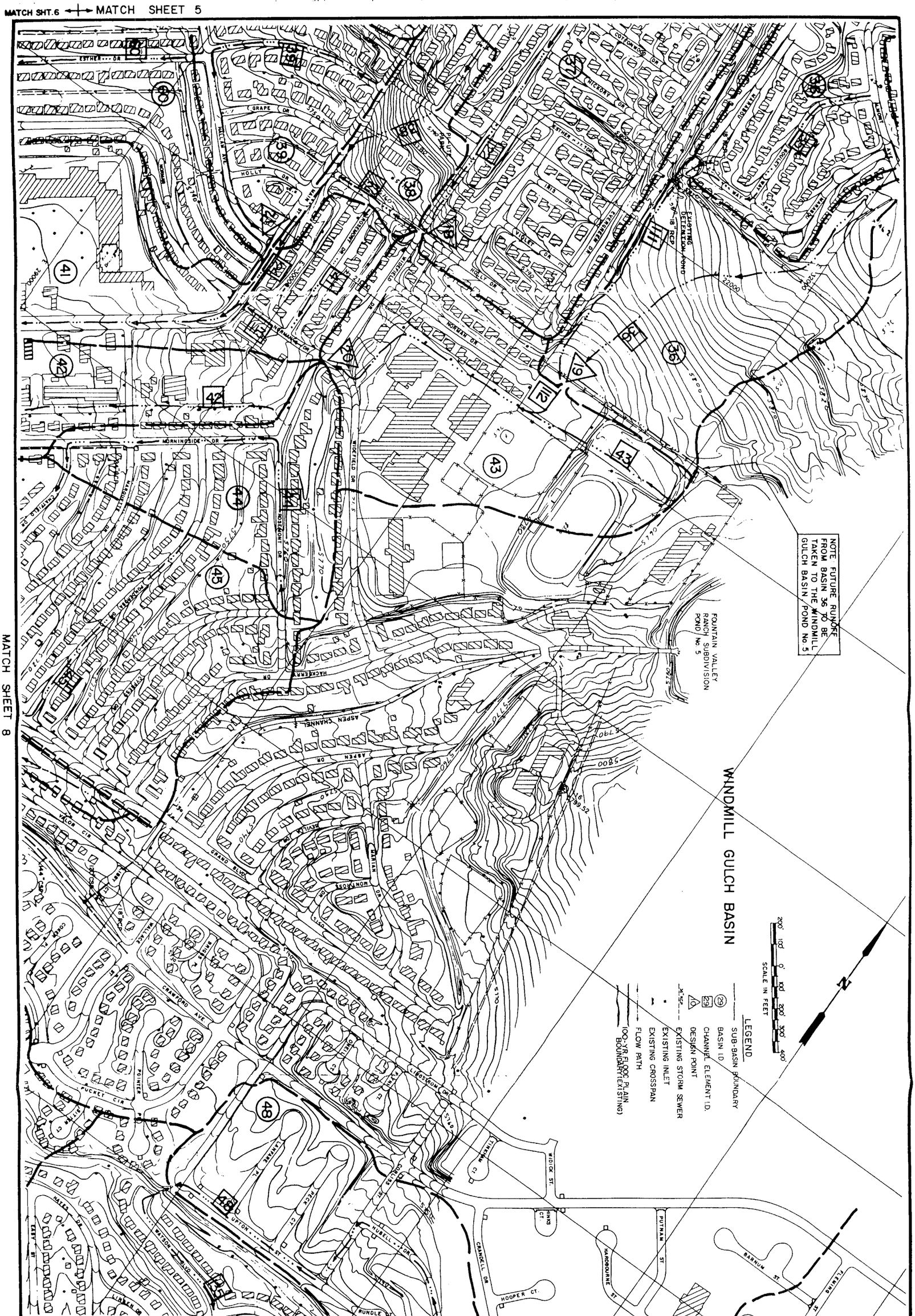
DRAINAGE BASIN PLANNING STUDY

HYDROLOGIC BASIN MAP

Project No: FOOEPC01
Date: SEPT., 1987
Design: EAK
Drawn: EAK
Check: JYC
Revisions:

sla SIMONS, LI & ASSOCIATES, INC.
419 WEST BIJOU STREET
COLORADO SPRINGS
COLORADO 80905

MATCH SHT.6 ← → MATCH SHEET 5



MATCH SHT.10 ← → MATCH SHEET 9

MATCH SHEET 8

SHEET 7

Project No.	PCO-EPC-01
Date:	10/87
Design:	JYC
Drawn:	EAK
Check:	JYC
Revisions:	

LITTLE JOHNSON/SECURITY CREEK

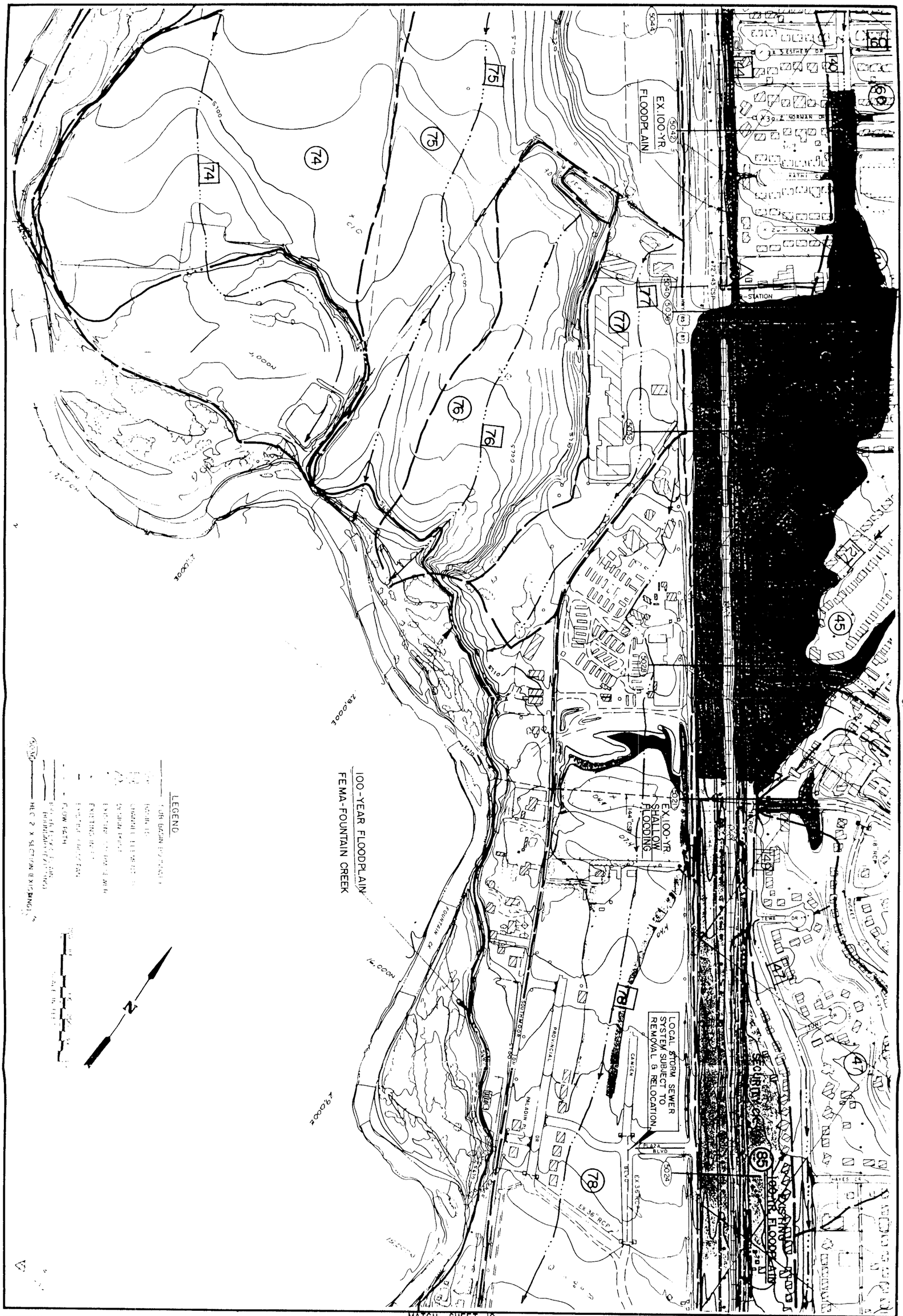
DRAINAGE BASIN PLANNING STUDY

PRELIMINARY DESIGN

HYDROLOGIC & FLOODPLAIN INFORMATION & EXISTING FACILITIES MAP

sla SIMONS, LI & ASSOCIATES, INC.
419 West Bijou, Colorado Springs, Colorado 80905

MATCH SHEET 6



MAP LIMIT

MATCH SHEET 7

MATCH SHEET 10

SHEET 8

Project No.
Date
Design
Drawn
Check
Revisions

LITTLE JOHNSON/SECURITY CREEK
DRAINAGE BASIN PLANNING STUDY
PRELIMINARY DESIGN
HYDROLOGIC & FLOODPLAIN INFORMATION & EXISTING FACILITIES MAP

sla Simons, Li & Associates, Inc.
419 West Bijou, Colorado Springs, Colorado 80905

501 S. Cherry Street, Suite 300
Glendale, CO 80246
303-572-7997
www.ees.us.com

APPENDIX D
Existing Drainage Map
Developed Drainage Map
Underground Detention System Details
Pump Details

BASIN SUMMARY RUNOFF TABLE						
BASIN	DESIGN POINT	CONTRIBUTING BASIN ACREAGE	5-YR C-VALUE	100-YR C-VALUE	5-YR RUNOFF (CFS)	100-YR RUNOFF (CFS)
E1	1	1.29	0.84	0.91	4.64	10.70
ON1	1	1.77	0.90	0.96	6.52	14.79

Typo, revise to "OS1"

Revised to OS1

Please move drainage maps to the end of the report contents.

Drainage Maps moved to end of report

DRAINAGE LEGEND

- PROPOSED PROPERTY LINE
- 5280 EXISTING MINOR CONTOUR
- 5280 EXISTING MAJOR CONTOUR
- 5280 MINOR CONTOUR
- 5280 MAJOR CONTOUR
- PROPOSED BASIN DELINEATION
- EXISTING FLOODPLAIN
- EXISTING STORM INLET AND MANHOLE
- EXISTING DRAINAGE FLOW ARROW
- 1 DESIGN POINT

Show arrows on adjacent properties as well to clarify where stormwater is running-on to the site.

Drainage arrows added to adjacent property

- A — BASIN DESIGNATION
- A-2 — 2-YEAR RUNOFF COEFFICIENT
- A-100 — 100-YEAR RUNOFF COEFFICIENT
- A — BASIN AREA IN ACRES

N W E S

SCALE IN FEET
0 40 80

IF BAR DOES NOT MEASURE 1 INCH THEN DRAWING IS NOT TO SCALE

BENCHMARK:

ELEVATIONS ARE BASED UPON COLORADO SPRINGS UTILITIES FIMS CONTROL MONUMENT SE09, BEING A 2-INCH DIAMETER ALUMINUM CAP STAMPED "CSU FIMS CONTROL SE09" ON THE EAST CORNER OF THE CONCRETE BASE OF A TELEPHONE RELAY BOX AT THE EAST CORNER OF 226 MAIN STREET, ABOUT 3 FEET NORTHWEST OF THE NORTHWEST CURB OF MAIN STREET, AND ABOUT 205 FEET SOUTHWEST OF THE SOUTHWEST CURB LINE OF SECURITY BOULEVARD. CITY ELEVATION: 5726.76 (NGVD 29)

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

CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

EES ENTITLEMENT AND ENGINEERING SOLUTIONS, INC.
501 S Cherry St, Suite 300
Glendale, CO 80246
303-572-7997 www.ees.us.com

Kum & Go

1459 Grand Ave
Des Moines, IA 50309
P: 888-458-6646

2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

EXISTING DRAINAGE PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS

	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

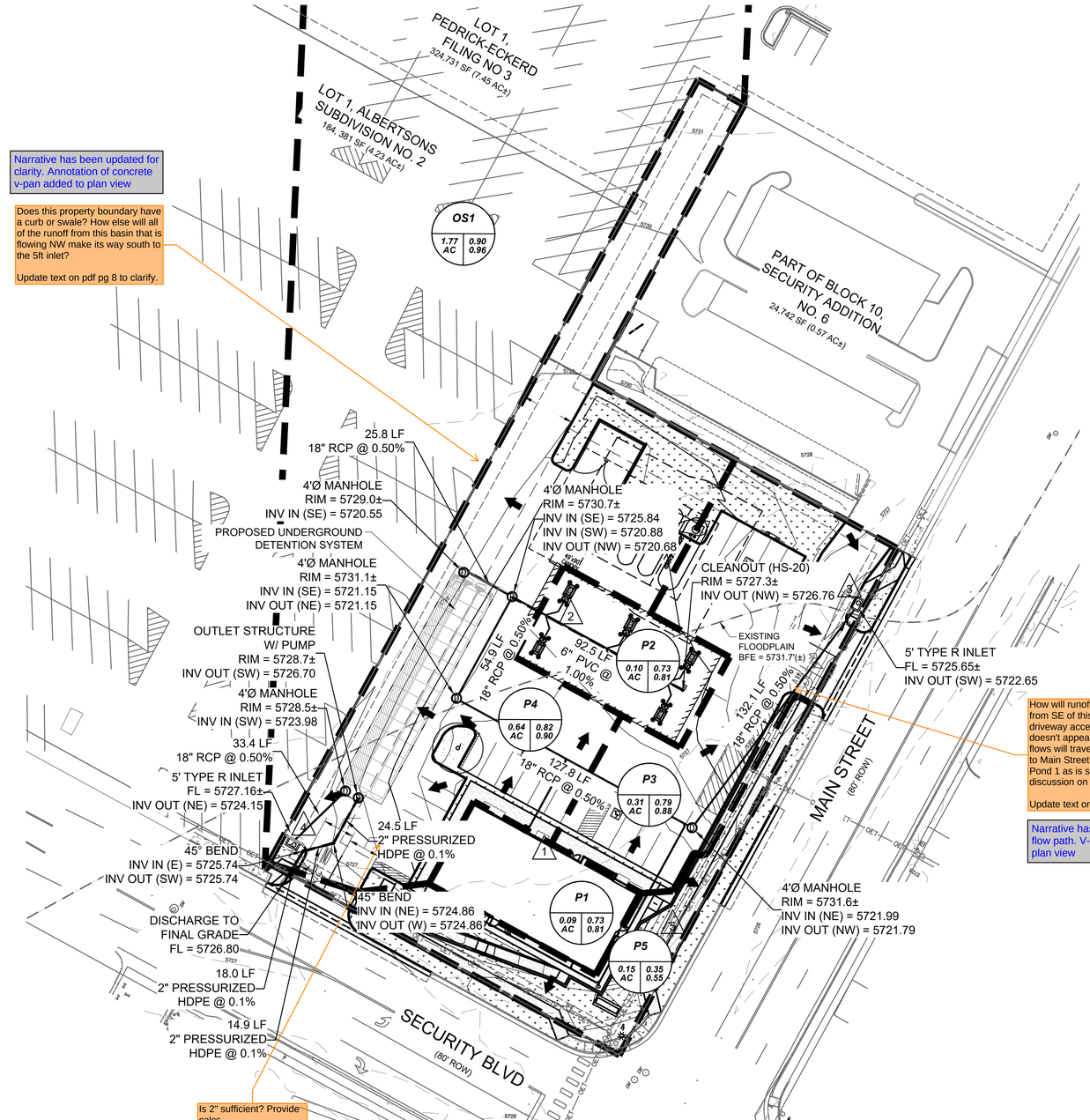
SHEET NUMBER:

D1

P:\KUM & GO\CO, EL PASO COUNTY_ 2232_MAIN AND SECURITY\08 CAD\DRAINAGE\D1 - EXISTING DRAINAGE PLAN.DWG

BASIN SUMMARY RUNOFF TABLE						
BASIN	DESIGN POINT	CONTRIBUTING BASIN ACREAGE	5-YR C-VALUE	100-YR C-VALUE	5-YR RUNOFF (CFS)	100-YR RUNOFF (CFS)
P1	1	0.09	0.73	0.81	0.28	0.67
P2	2	0.10	0.73	0.81	0.31	0.74
P3	3	0.31	0.79	0.88	1.06	2.50
P4	4	0.64	0.82	0.90	2.16	5.03
P5	5	0.15	0.35	0.55	0.21	0.69
ONSITE TOTAL		1.29	0.75	0.84		
OS1	4	1.77	0.90	0.96	6.52	14.79

DETENTION POND SUMMARY						
POND NUMBER	WQCV DETENTION VOLUME (CF)	100-YR DETENTION VOUME (CF)	PROVIDED VOLUME (CF)	100-YR RELEASE RATE (CFS)	WQCV WATER SURFACE ELEVATION (FT)	100-YR WATER SURFACE ELEVATION (FT)
1	1612	8407.04	11499.84	2.13	5721.11	5723.47



DRAINAGE LEGEND

- PROPOSED PROPERTY LINE
- EXISTING MINOR CONTOUR (5280)
- EXISTING MAJOR CONTOUR (5280)
- MINOR CONTOUR (5280)
- MAJOR CONTOUR (5280)
- PROPOSED BASIN DELINEATION
- PROPOSED STORM SEWER
- PROPOSED STORM INLET AND MANHOLE
- EXISTING STORM INLET AND MANHOLE
- PROPOSED DRAINAGE FLOW ARROW
- DESIGN POINT (1)
- PROPOSED DOWN SPOUT (DS)
- EXISTING FLOODPLAIN
- BASIN DESIGNATION (A)
- 5-YEAR RUNOFF COEFFICIENT (A-5)
- 100-YEAR RUNOFF COEFFICIENT (A-100)
- BASIN AREA IN ACRES (A)

Show arrows on adjacent properties as well to clarify where stormwater is running-on to the site.

Existing drainage arrow has been added to legend

N W E S

SCALE IN FEET
0 30 60

IF BAR DOES NOT MEASURE 1 INCH THEN DRAWING IS

Time of Concentration paths added to plan view

Show path of time of concentration.

Please move drainage maps to the end of the report contents.

Drainage Maps moved to end of report

BENCHMARK:

ELEVATIONS ARE BASED UPON COLORADO SPRINGS UTILITIES FIMS CONTROL MONUMENT SE09, BEING A 2-INCH DIAMETER ALUMINUM CAP STAMPED "CSU FIMS CONTROL SE09" ON THE EAST CORNER OF THE CONCRETE BASE OF A TELEPHONE RELAY BOX AT THE EAST CORNER OF 226 MAIN STREET, ABOUT 3 FEET NORHTWEST OF THE NORTHWEST CURB OF MAIN STREET, AND ABOUT 205 FEET SOUTHWEST OF THE SOUTHWEST CURB LINE OF SECURITY BOULEVARD. CITY ELEVATION: 5726.76 (NGVD 29)

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Kum & Go

1459 Grand Ave
Des Moines, IA 50309
P: 888-458-6646

2232 - EL PASO, COLORADO
SECURITY BLVD. AND MAIN ST.

PROPOSED DRAINAGE PLAN

KG PROJECT TEAM:
RDM:
SDM:
CPM:

REVISIONS	DATE	REVISION DESCRIPTION

DATE: 04-26-2022

SHEET NUMBER: **D2**

P:\KUM & GO\CO. EL PASO COUNTY - 2232_MAIN AND SECURITY\08 CAD\DRAINAGE\D2 - PROPOSED DRAINAGE PLAN.DWG

CRITERIA PLAN 04/2020

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
VISIT OUR APP

K&G

EL PASO, CO

MC-3500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

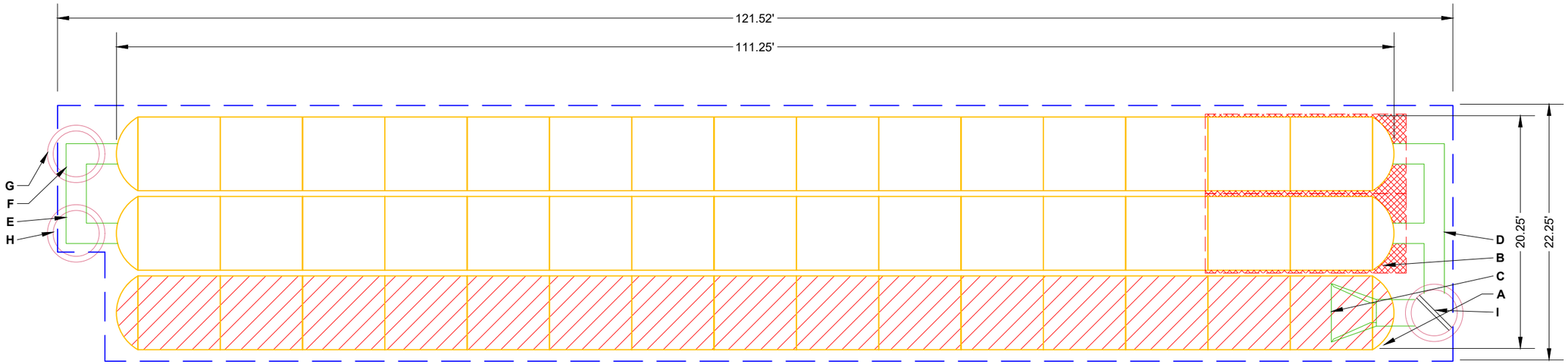
USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

PROPOSED LAYOUT		CONCEPTUAL ELEVATIONS	
45	STORMTECH MC-3500 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	12.50
6	STORMTECH MC-3500 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	6.50
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	6.00
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	6.00
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	6.00
8884	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	5.50
		TOP OF MC-3500 CHAMBER:	4.50
		24" ISOLATOR ROW PLUS INVERT:	0.92
		18" x 18" BOTTOM MANIFOLD INVERT:	0.90
2664	SYSTEM AREA (SF)	18" x 18" BOTTOM MANIFOLD INVERT:	0.90
287.5	SYSTEM PERIMETER (ft)	18" x 18" BOTTOM MANIFOLD INVERT:	0.90
		18" BOTTOM CONNECTION INVERT:	0.90
		18" BOTTOM CONNECTION INVERT:	0.90
		BOTTOM OF MC-3500 CHAMBER:	0.75
		BOTTOM OF STONE:	0.00

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED END CAP	A	24" BOTTOM CORED END CAP, PART#: MC3500IEPP24BC / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	2.06"	
PREFABRICATED END CAP	B	18" BOTTOM CORED END CAP, PART#: MC3500IEPP18BC / TYP OF ALL 18" BOTTOM CONNECTIONS	1.77"	
FLAMP	C	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: MC350024RAMP		
MANIFOLD	D	18" x 18" BOTTOM MANIFOLD, ADS N-12	1.77"	
MANIFOLD	E	18" x 18" BOTTOM MANIFOLD, ADS N-12	1.77"	
MANIFOLD	F	18" x 18" BOTTOM MANIFOLD, ADS N-12	1.77"	
CONCRETE STRUCTURE	G	OCS (DESIGN BY ENGINEER / PROVIDED BY OTHERS)		8.0 CFS OUT
CONCRETE STRUCTURE	H	OCS (DESIGN BY ENGINEER / PROVIDED BY OTHERS)		8.0 CFS OUT
CONCRETE STRUCTURE W/WEIR	I	(DESIGN BY ENGINEER / PROVIDED BY OTHERS)		11.0 CFS IN



ISOLATOR ROW PLUS (SEE DETAIL)

PLACE MINIMUM 17.50' OF ADSPLUS175 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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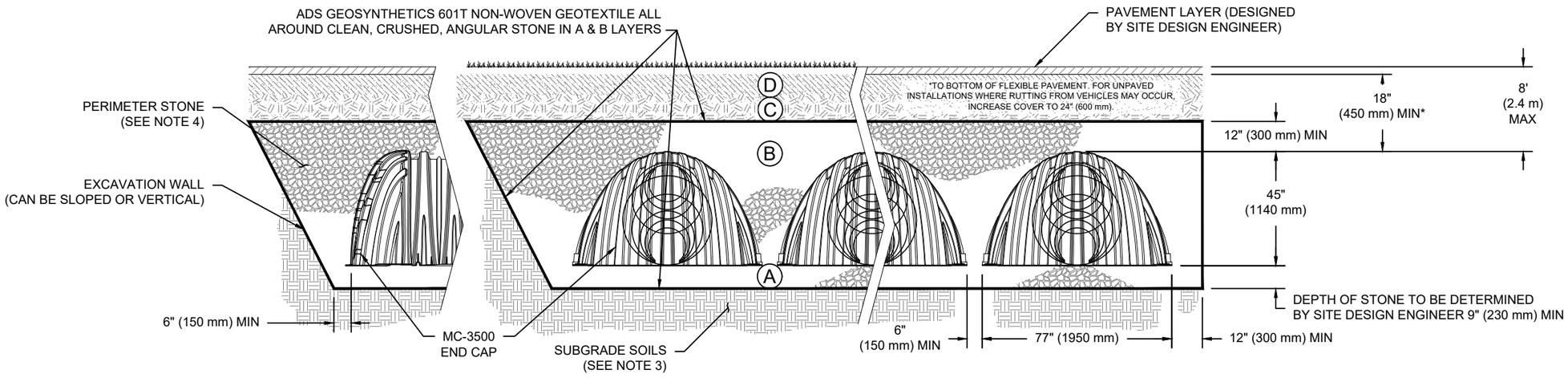
0 10' 20'

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
2. MC-3500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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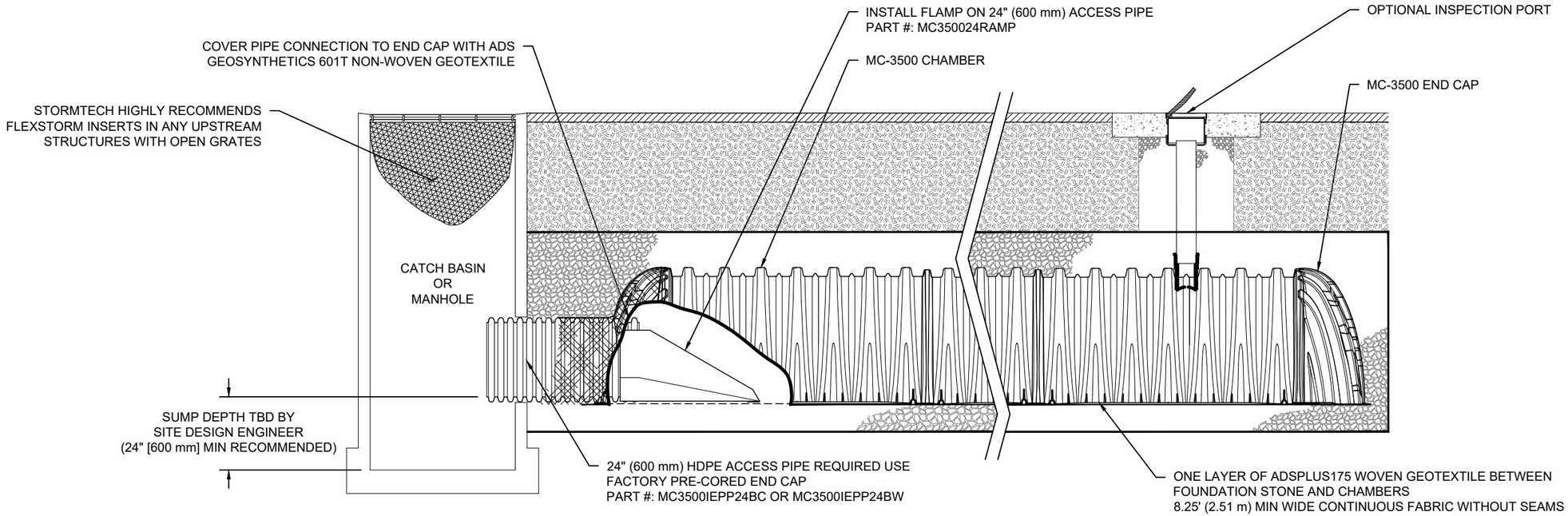

MC-3500 ISOLATOR ROW PLUS DETAIL
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INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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MC-3500 TECHNICAL SPECIFICATION

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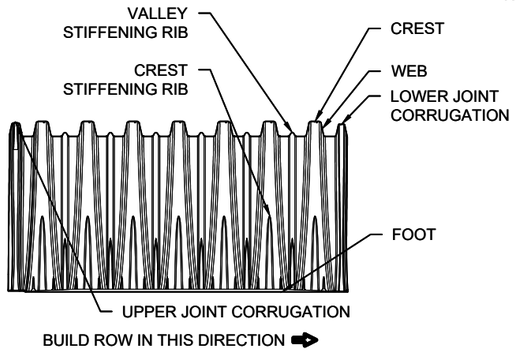

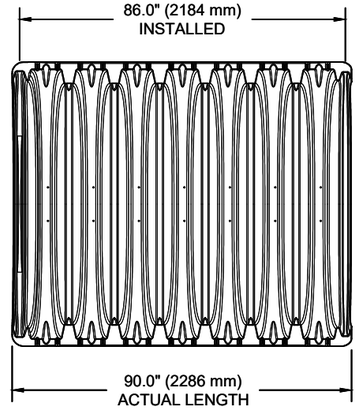

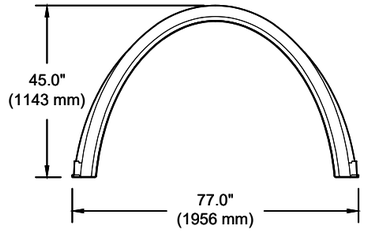

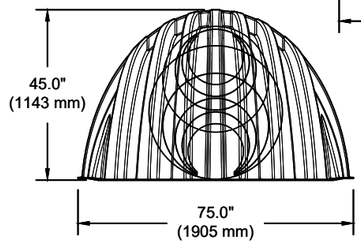

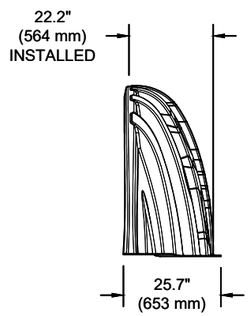

NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE*	175.0 CUBIC FEET	(4.96 m³)
WEIGHT	134 lbs.	(60.8 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	75.0" X 45.0" X 22.2"	(1905 mm X 1143 mm X 564 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	45.1 CUBIC FEET	(1.28 m³)
WEIGHT	49 lbs.	(22.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION, 6" SPACING BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY

MC-SERIES END CAP INSERTION DETAIL

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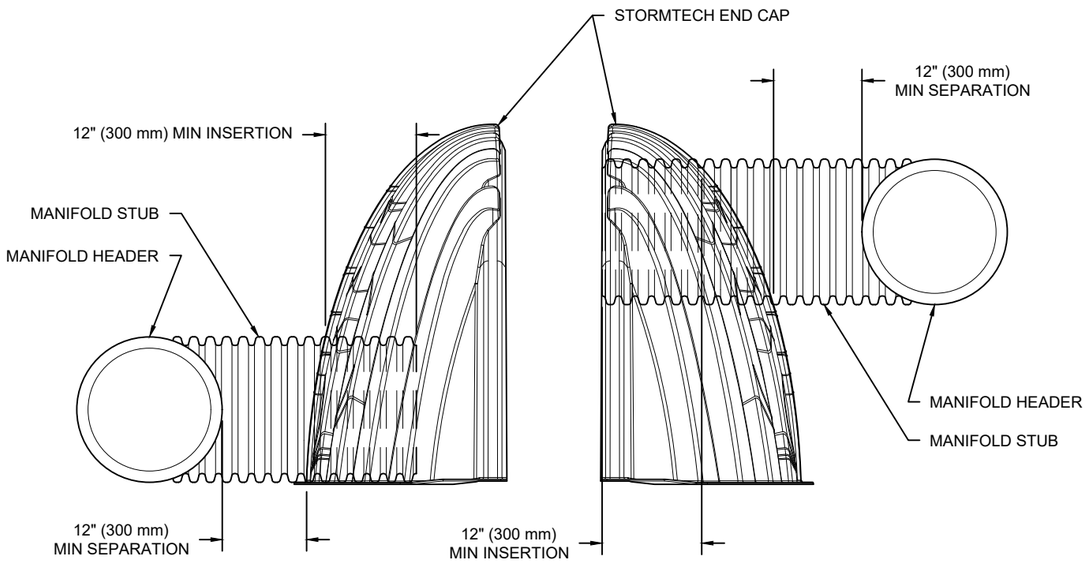
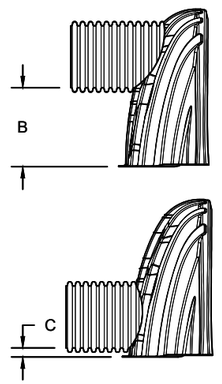


NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW			
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP18BW			
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW			
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PRECORED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-3500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

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- Corrosion resistant powder coated epoxy finish
- Upper & lower ball bearings running in bath of oil
- Square ring & gasket - neoprene
- All models pass 2" spherical solids
- Major width 12-7/8" • Height 19-5/16" (single seal)
- Automatic units available with float operated, submersible 2-pole mechanical switch. On point 15-3/4" - Off point 5-1/4"
- Specify 2" or 3" NPT female flanged vertical discharge.
- 100% computerized testing

MODELS 4292-4293-4294-4295 DOUBLE SEAL PUMPS (nonautomatic only)

- Gives motor extra protection from seal leaks
- Improved bearing lubrication
- Helps eliminate seal and bearing damage from dry runs
- Major width 12-7/8" Height 21-3/16"

Note: The sizing of effluent systems normally requires variable level float(s) controls and properly sized basins to achieve required pumping cycles or dosing timers with nonautomatic pumps.

292 - 293 - 294 - 295 Single Seal Series
4292 - 4293 - 4294 - 4295 Double Seal Series

(For Pump Prefix Identification see News & Views 0052)

Certified to CSA Standard C22.2 No.108

Tested to UL Standard UL778

HIGH HEAD "WASTE-MATE"
SUBMERSIBLE
SEWAGE
OR DEWATERING PUMP

DESIGNED • MACHINED • ASSEMBLED IN THE USA

SSPMA Certified PUMP

Nonautomatic models for variable level systems

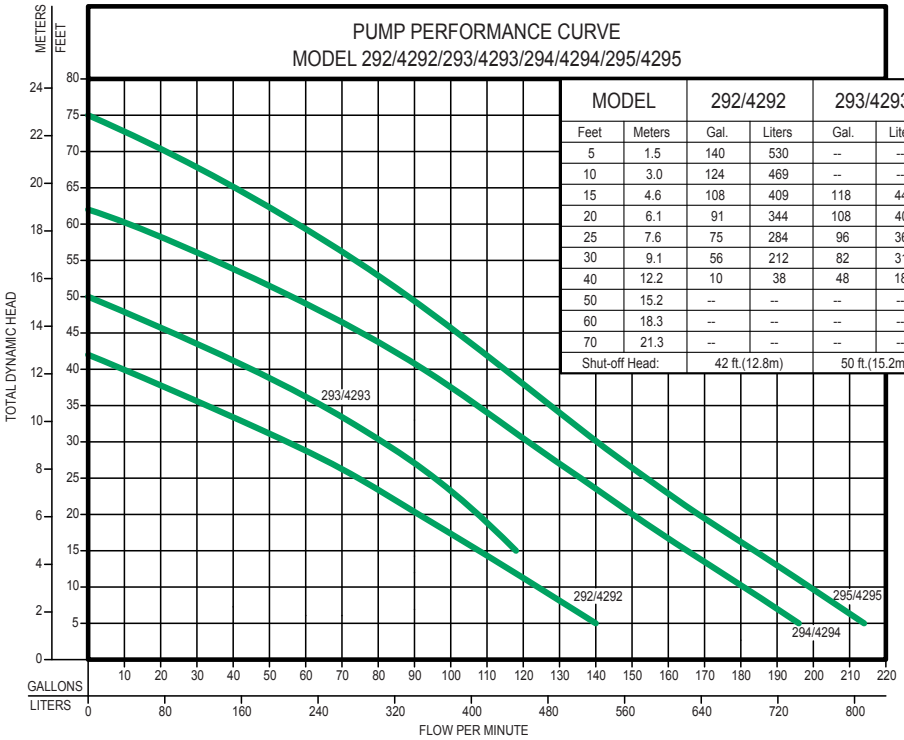
POWDER COATED TOUGH™

Double Seal Pump

Automatic units available in single phase 292, 293, 294 & 295 series

WD295 controlled by variable level float switch

*See back page for UL & CSA listings

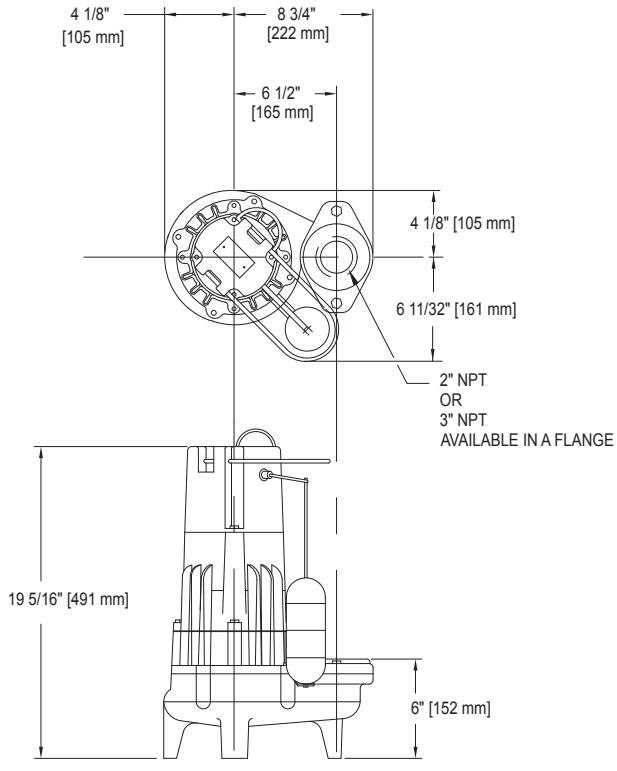


MODEL		292/4292		293/4293		294/4294		295/4295	
Feet	Meters	Gal.	Liters	Gal.	Liters	Gal.	Liters	Gal.	Liters
5	1.5	140	530	--	--	196	742	214	810
10	3.0	124	469	--	--	181	685	199	753
15	4.6	108	409	118	447	165	625	184	696
20	6.1	91	344	108	409	150	568	168	636
25	7.6	75	284	96	363	136	515	154	583
30	9.1	56	212	82	310	121	458	140	530
40	12.2	10	38	48	182	94	356	115	435
50	15.2	--	--	--	--	58	220	89	337
60	18.3	--	--	--	--	13	49	59	223
70	21.3	--	--	--	--	--	--	23	87
Shut-off Head:		42 ft.(12.8m)		50 ft.(15.2m)		62 ft.(18.9m)		75 ft.(22.9m)	

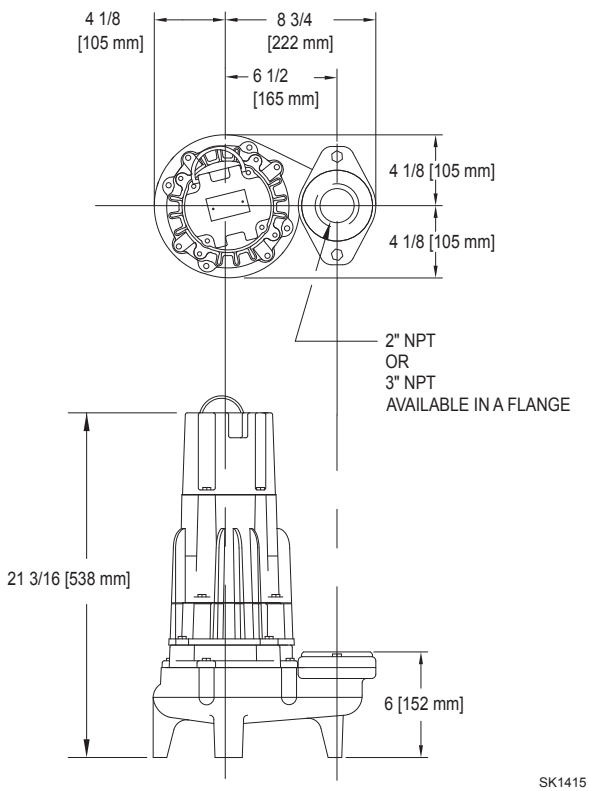
009919B

⚠ CAUTION
Model 293 should not be subjected to less than 15' TDH.

Single Seal Auto Design Weight 86-89 lbs.



Double Seal Design / Weight 92-95 lbs.



SELECTION GUIDE

1. Integral float operated mechanical switch, no external control required.
2. For automatic use single piggyback variable level float switch or double piggyback variable level float switch. Refer to FM0477.
3. See FM1228 for correct model of simplex control panel.
4. See FM0712 for correct model of duplex control panel.

⚠ CAUTION

All installation of controls, protection devices and wiring should be done by a qualified licensed electrician. All electrical and safety codes should be followed including the most recent National Electrical Code (NEC) and the Occupational Safety and Health Act (OSHA).

For information on additional Zoeller products refer to catalog on explosion-proof models, FM1702; Simplex controls, FM1596; Piggyback Variable Level Float Switches, FM0477; Electrical Alternator, FM0486; Mechanical Alternator, FM0495; Sump/Sewage Basins, FM0487; Alarm Systems, FM0732; Disconnect/Rail Systems, FM0787; and Junction Boxes FM1597.

292 MODELS	4292 MODELS	Standard all models - 20 ft. cord - ½ HP				Control Selection		Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	cCSAus	UL
M292	--	115	1	Auto	15.0	1	--	Y	Y(1)
N292	N4292	115	1	Non	15.0	2 or 3	2 or 4	Y	Y(1)
D292	--	230	1	Auto	7.5	1	--	Y	N
E292	E4292	230	1	Non	7.5	2 or 3	4	Y	N
* H292	--	200	1	Auto		1	--	Y	N
* I292	* I4292	200	1	Non		2 or 3	4	Y	N
* F292	* F4292	230	3	Non	5.2	3	4	Y	N
* J292	* J4292	200	3	Non	6.4	3	4	Y	N
* G292	* G4292	460	3	Non	2.9	3	4	Y	N
* BA292	* BA4292	575	3	Non	2.4	3	4	Y	N

293 MODELS	4293 MODELS	Standard all models - 20 ft. cord - 1 HP				Control Selection		Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	cCSAus	UL
D293	--	230	1	Auto	10.2	1	--	Y	Y
E293	E4293	230	1	Non	10.2	2 or 3	4	Y	Y
* H293	--	200	1	Auto	12.0	1	--	Y	N
I293	I4293	200	1	Non	12.0	2 or 3	4	Y	N
* F293	* F4293	230	3	Non	7.6	3	4	Y	Y
* J293	* J4293	200	3	Non	8.2	3	4	Y	Y
* G293	* G4293	460	3	Non	4.0	3	4	Y	Y
* BA293	--	575	3	Non	3.3	3	4	Y	N

294 MODELS	4294 MODELS	Standard all models -20 ft. cord -1½ HP				Control Selection		Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	cCSAus	UL
D294	--	230	1	Auto	13.7	1	--	Y	Y(1)
E294	E4294	230	1	Non	13.7	2 or 3	4	Y	Y(1)
* H294	--	200	1	Auto	17.8	1	--	Y	N
* I294	* I4294	200	1	Non	17.8	2 or 3	4	Y	N
* F294	* F4294	230	3	Non	9.5	3	4	Y	Y
* J294	* J4294	200	3	Non	10.8	3	4	Y	Y
* G294	* G4294	460	3	Non	4.8	3	4	Y	Y
* BA294	--	575	3	Non	3.8	3	4	Y	N

295 MODELS	4295 MODELS	Standard all models - 20 ft. cord - 2 HP				Control Selection		Listings	
Single Seal	Double Seal	Volts	Ph	Mode	Amps	Simplex	Duplex	cCSAus	UL
D295	--	230	1	Auto	17.1	1	--	Y(2)	Y
E295	E4295	230	1	Non	17.1	2 or 3	4	Y (2)	Y
WD295	--	230	1	Auto	17.1	**	4	Y	N
* H295	--	200	1	Auto	20.5	1	--	Y	N
* I295	* I4295	200	1	Non	20.5	2 or 3	4	Y	N
* F295	* F4295	230	3	Non	12.2	3	4	Y	Y
* J295	* J4295	200	3	Non	14.3	3	4	Y	Y
* G295	* G4295	460	3	Non	6.1	3	4	Y	Y
* BA295	--	575	3	Non	4.9	3	4	Y	N

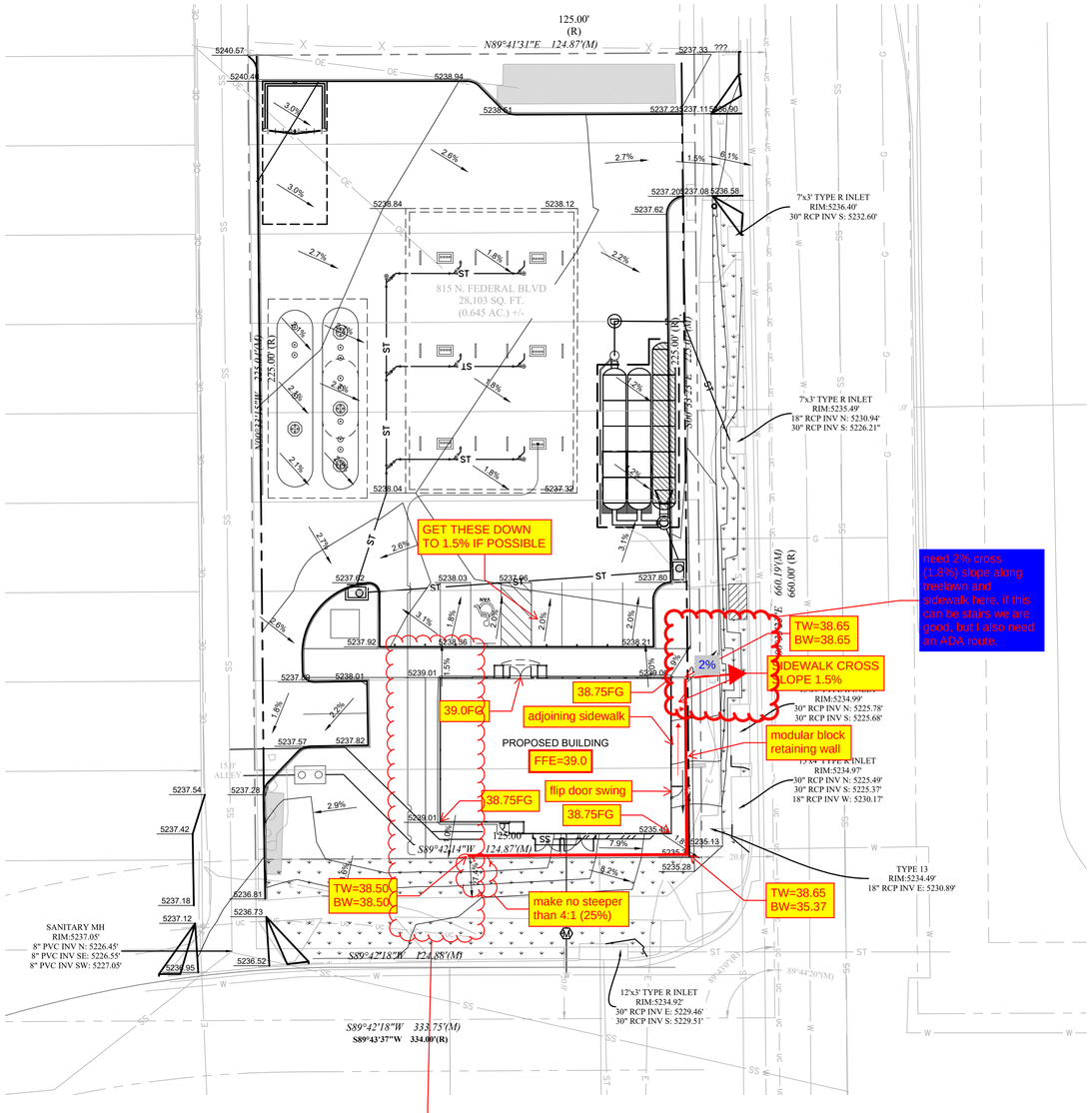
* No molded plug ** Single piggyback switch included (1) UL listed unit available with 20 amp plug (2) CSA approval with 20 amp plug

MURPHY GAS FUELING AND C-STORE

SITE DEVELOPMENT PLAN

LOCATED IN THE SOUTHWEST QUARTER OF SECTION 5, TOWNSHIP 4 SOUTH, RANGE 68 WEST OF THE SIXTH PRINCIPAL MERIDIAN, CITY AND COUNTY OF DENVER, STATE OF COLORADO

LOCATED AT 815 N. FEDERAL BOULEVARD



GRADING AND UTILITY PLAN LEGEND

- PROPOSED PROPERTY BOUNDARY
- PROPOSED EASEMENT
- PROPOSED 6" STANDARD CURB
- PROPOSED SIDEWALK
- W — PROPOSED WATER LINE
- SS — PROPOSED SANITARY SEWER
- PROPOSED STORM SEWER
- E — PROPOSED ELECTRIC SERVICE
- T — PROPOSED TELEPHONE
- W — EXISTING WATER LINE
- SS — EXISTING SANITARY SEWER
- ST — EXISTING STORM SEWER
- G — EXISTING GAS LINE
- E — EXISTING BURIED ELECTRIC
- OE — OE — EXISTING OVERHEAD ELECTRIC
- T — EXISTING TELEPHONE
- PROPOSED/EXISTING FIRE HYDRANT
- PROPOSED/EXISTING SANITARY MANHOLE
- PROPOSED/EXISTING CLEANOUT
- PROPOSED/EXISTING STORM MANHOLE
- PROPOSED/EXISTING STORM INLET
- PROPOSED/EXISTING UTILITY POLE
- PROPOSED/EXISTING LIGHT POLE
- PROPOSED/EXISTING SITE LIGHTING
- 5200 — EXISTING MAJOR CONTOUR
- 5200 — EXISTING MINOR CONTOUR
- 5200 — PROPOSED MAJOR CONTOUR
- 5200 — PROPOSED MINOR CONTOUR
- 5256.21 — PROPOSED FLOWLINE ELEVATION
- 5256.21 — PROPOSED EXTERIOR GRADE AT FOUNDATION
- 5256.21 SW — PROPOSED SIDEWALK ELEVATION
- 5256.21 ME — PROPOSED GRADE TO MATCH EXISTING
- 5256.21 FG — PROPOSED FINISHED GRADE
- 3.1% — FLOW ARROW AND GRADE
- 5256.21 EX — EXISTING GRADE AT PROPOSED BUILDING

UTILITY SCHEDULE

1. PROPOSED 4" SANITARY SEWER SERVICE CONNECTION TO MAIN.
2. PROPOSED 4" SANITARY SERVICE.
3. PROPOSED 4" SANITARY SEWER SERVICE CONNECTION TO BUILDING.
4. PROPOSED PRIVATE GREASE INTERCEPTOR.
5. PROPOSED SANITARY CLEANOUT
6. PROPOSED 2" DOMESTIC TAP.
7. PROPOSED 2" DOMESTIC SERVICE.
8. PROPOSED 2" DOMESTIC WATER CONNECTION TO BUILDING.
9. PROPOSED 2" WATER METER.
10. PROPOSED STORM TYPE R STORM INLET.
11. PROPOSED STORM CONNECTION TO EXISTING TYPE R INLET
12. PROPOSED UNDERGROUND ADS DETENTION SYSTEM.
13. PROPOSED STORM SEWER.
14. PROPOSED STORM SEWER MANHOLE.
15. PROPOSED STORM ROOF DRAIN CONNECTION.
16. PROPOSED STORM CLEANOUT
17. PROPOSED STORM CONNECTION TO UNDERGROUND DETENTION SYSTEM.
18. PROPOSED ELECTRIC SERVICE.
19. PROPOSED ELECTRIC TRANSFORMER.
20.
21. PROPOSED SITE LIGHTING. SEE PHOTOMETRIC PLAN.
22.
23.
24. EXISTING SANITARY SEWER MAIN & MANHOLES TO REMAIN.
25. EXISTING ELECTRIC PULL BOX TO REMAIN.
26. EXISTING STORM SEWER INFRASTRUCTURE TO REMAIN.
27. EXISTING GAS MAIN TO REMAIN.
28.
29. EXISTING OVERHEAD ELECTRIC TO REMAIN.
30. EXISTING WATER MAIN TO REMAIN
31. EXISTING UTILITY POLE/LIGHT POLE TO REMAIN
32. EXISTING ELECTRIC LINE TO REMAIN
33. EXISTING COMMUNICATIONS LINE TO REMAIN

FIRE HYDRANT INSET

SCALE: 1"=20'

BASE PLAN ELEVATION
5386.2' (AVERAGE OF ORIGINAL GRADES CORNER OF BUILDING = (5386.8+5386.8+ 5385.8+5385.2)/4=5386.2)

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

CALL 811 SEVENTY-TWO HOURS PRIOR TO DIGGING, GRADING OR EXCAVATING FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

FIRE FLOW DATA BLOCK

TOTAL FIRE FLOW REQUIRED FOR THIS SITE IS XXXX GPM
MINIMUM @ 20 PSI RESIDUAL PRESSURE FOR A DURATION OF 2 HOURS
THIS FLOW MUST BE PROVIDED FROM A MINIMUM OF 1 FIRE HYDRANTS

CODE USED FOR ANALYSIS: 2018 IFC
OCCUPANCY GROUP(S): A-2
CONSTRUCTION TYPE(S): V-B
FIRE FLOW CALCULATION AREA: 2,824 SF
THIS BUILDING IS NOT SPRINKLERED

DENVER WATER STANDARD NOTES

1. EACH FIRE HYDRANT MUST SUPPLY 1500 GPM MINIMUM AT 20 PSI RESIDUAL PRESSURE.
2. WATER PLANS FOR THIS PROJECT MUST BE SUBMITTED TO DENVER WATER FOR REVIEW APPROVAL SEPARATE OF THE DRC PROCESS.
3. AN APPROVED DENVER WATER BACKFLOW PREVENTER IS REQUIRED FOR FIRELINES, COMMERCIAL, MULTI-FAMILY DWELLINGS AND IRRITATION.
4. METER LOCATIONS MUST BE APPROVED BY DENVER WATER.
5. DEVELOPER IS RESPONSIBLE FOR ALL NECESSARY SYSTEM MODIFICATIONS NEEDED TO MEET THE REQUIRED FIRE FLOWS.
6. ALL EXISTING TAPS ON THE SITE THAT ARE NOT USED MUST BE CUT-OFF AT THE MAIN AND INSPECTED BY DENVER WATER. THIS WILL BE DONE AT THE DEVELOPER'S COST.
7. SYSTEM DEVELOPMENT VALVE FOR REPLACEMENT TAPS WILL BE GIVEN ACCORDING TO CURRENT OPERATING RULES.
8. IF A WATER EASEMENT IS REQUIRED ON A SITE, THIS EASEMENT WILL BE GRANTED TO DENVER WATER BY SEPARATE DOCUMENT.
9. LANDSCAPING DEPICTED IN FUTURE WATER EASEMENTS MUST COMPLY WITH RESTRICTIONS CONTAINED WITHIN THE STANDARD WATER EASEMENT AGREEMENT.
10. EACH INDEPENDENT STRUCTURE MUST HAVE ITS OWN SEPARATE TAP, SERVICE LINE & METER.
11. SOIL AMENDMENT IS REQUIRED ON ALL NEW WATER SERVICES. CERTIFICATE OF OCCUPANCY WILL NOT BE ISSUED WITHOUT A SOIL INSPECTION BY DENVER WATER.
12. PRE-SUBMITTAL REVIEW IS REQUIRED PRIOR TO THE FORMAL WATER PLAN SUBMITTAL TO DENVER WATER.

GENERAL NOTES

1. NO WORK IS TO BEGIN UNTIL ALL PERMITS HAVE BEEN OBTAINED.
2. FINAL GRADES ARE SUBJECT TO MINOR CHANGE BY CONTRACTOR. NO GRADE CHANGES IN EXCESS OF 0.05' WITHOUT ENGINEER APPROVAL.
3. ANY FILL MATERIAL REQUIRED TO BRING THE SITE TO GRADE SHALL BE CLEAN FILL APPROVED BY GEOTECHNICAL ENGINEER. SEE "SOIL PREPARATION NOTE" THIS SHEET.
4. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR MINIMIZING DEPOSITION OF ONSITE SEDIMENTS ONTO SURROUNDING PUBLIC STREETS DURING CONSTRUCTION.
5. SEE THE SITE SURVEY FOR SURVEY INFORMATION.
6. GRADES SHOWN ARE FLOWLINE UNLESS OTHERWISE NOTED.
7. GUTTER GRADES SHALL BE A MINIMUM 0.60%.
8. CONTRACTOR TO ENSURE SMOOTH TRANSITION BETWEEN PRIVATE DRIVE AND TRASH ENCLOSURE.

N

SCALE IN FEET
0 20 40

IF BAR DOES NOT MEASURE 1 INCH THEN DRAWING IS NOT TO SCALE

MURPHY (815 N. FEDERAL BLVD)
SDP# 2022-XX-XXXX

SITE DEVELOPMENT PLAN
MURPHY GAS - DENVER, COLORADO
815 N. FEDERAL BOULEVARD, DENVER, CO

GRADING AND UTILITY PLAN

REVISIONS		
	DATE	REVISION DESCRIPTION

DATE: 09/05/2022

SHEET NUMBER: 4 OF 9

P:\MURPHY\USA\CO, DENVER - FEDERAL & 81ST\08 CAD\SDP\P2.1 - GRADING AND UTILITY PLAN.DWG

3275 Akers Drive
Colorado Springs, CO 80922
Phone 719-520-6460
Fax 719-520-6879
www.elpasoco.com

Y - Satisfies criteria

N - Needs to be addressed

EL PASO COUNTY
STORMWATER MANAGEMENT PLAN CHECKLIST

1. added info to cover

all are Y now

EPC Project Number: PPR2225

Revised: October 2021

		Applicant	EPC
1. STORMWATER MANAGEMENT PLAN (in the "Applicant" column specify the page number for each item)			
1	Applicant (owner/designated operator), SWMP Preparer, Qualified Stormwater Manager, and Contractor Information. (On cover/title sheet) added both	Cover	N
2	Table of Contents	ii	Y
3	Site description and location to include: vicinity map with nearest street/crossroads description	1	Y
4	Narrative description of construction activities proposed (e.g., may include clearing and grubbing, temporary stabilization, road grading, utility / storm installation, final grading, final stabilization, and removal of temporary control measures)	1	Y
5	Phasing plan – may require separate drawings indicating initial, interim, and final site phases for larger projects. Provide "living maps" that can be revised in the field as conditions dictate	GESC	Y
6	Proposed sequence for major activities: Provide a construction schedule of anticipated starting and completion dates for each stage of land-disturbing activity depicting conservation measures anticipated, including the expected date on which the final stabilization will be completed	5	Y
7	Estimates of the total site area and area to undergo disturbance; current area of disturbance must be updated on the SWMP as changes occur	1	Y
8	Soil erosion potential and impacts on discharge that includes a summary of the data used to determine soil erosion potential	2	Y
9	A description of existing vegetation at the site and percent ground cover and method used to determine ground cover	2	Y
10	Location and description of all potential pollution sources including but not limited to: disturbed and stored soils; vehicle tracking; management of contaminated soils; loading and unloading operations; outdoor storage of materials; vehicle and equipment maintenance and fueling; significant dust generating process; routine maintenance activities involving fertilizers, pesticides, herbicides, detergents, fuels, solvents, oils, etc.; on-site waste management; concrete truck/equipment washing; dedicated asphalt, concrete batch plants and masonry mixing stations; non-industrial waste such as trash and portable toilets	GESC	Y
11	Material handling to include spill prevention and response plan and procedures	4	Y
12	Spill prevention and pollution controls for dedicated batch plants added statement bottom page 4	4	N
13	Other SW pollutant control measures to include waste disposal and off-site soil tracking	4	Y
14	Location and description of any anticipated allowable non-stormwater discharge (ground water, springs, irrigation, discharge covered by CDPHE Low Risk Guidance, etc.)	N/A	Y
15	Name(s) of ultimate receiving waters; size, type and location of stormwater outfall or storm sewer system discharge	2	Y
16	Description of all stream crossings located within the project area or statement that no streams cross the project area	2	Y

3275 Akers Drive
Colorado Springs, CO 80922
Phone 719-520-6460
Fax 719-520-6879
www.elpasoco.com

revised the description for LOD to include Construction per the comment on GESC plan sheet.

EL PASO COUNTY
STORMWATER MANAGEMENT PLAN CHECKLIST

should be Y now

EPC Project Number:

Revised: October 2021

		Applicant	EPC
17	SWMP Map to include:		
17a	construction site boundaries	GESC	N
17b	flow arrows to depict stormwater flow directions	GESC	Y
17c	all areas of disturbance	GESC	Y
17d	areas of cut and fill	GESC	Y
17e	areas used for storage of building materials, soils (stockpiles) or wastes	GESC	Y
17f	location of any dedicated asphalt / concrete batch plants	GESC	Y
17g	location of all structural control measures	GESC	Y
17h	location of all non-structural control measures	GESC	Y
17i	springs, streams, wetlands and other surface waters, including areas that require maintenance of pre-existing vegetation within 50 feet of a receiving water	N/A	Y
18	Narrative description of all structural control measures to be used. Modifications to EPC standard control measures must meet or exceed County-approved details	2-4	Y
19	Description of all non-structural control measures to be used including seeding, mulching, protection of existing vegetation, site watering, sod placement, etc. included required details per comments	3	Y
20	Technical drawing details for all control measure installation and maintenance; custom or other jurisdiction's details used must meet or exceed EPC standards ok task complete	GESC	N
21	Procedure describing how the SWMP is to be revised	6	Y
22	Description of Final Stabilization and Long-term Stormwater Quality (describe nonstructural and structural measures to control SW pollutants after construction operations have been completed, including detention, water quality control measure etc.) task complete	5	N
23	Specification that final vegetative cover density is to be 70% of pre-disturbed levels	5	N
24	Outline of permit holder inspection procedures to install, maintain, and effectively operate control measures to manage erosion and sediment	6	Y
25	Record keeping procedures identified to include signature on inspection logs and location of SWMP records on-site 25. added sentence at bottom of Record Keeping Section	6	N
26	If this project relies on control measures owned or operated by another entity, a documented agreement must be included in the SWMP that identifies location, installation and design specifications, and maintenance requirements and responsibility of the control measure(s)	5 N/A	N
	Please note: all items above must be addressed. If not applicable, explain why, simply identifying "not applicable" will not satisfy CDPHE requirement of explanation.		
2. ADDITIONAL REPORTS/PERMITS/DOCUMENTS			
a	Grading and Erosion Control Plan (signed)		
b	Erosion and Stormwater Quality Control Permit (ESQCP) (signed)		

All items in the SWMP Checklist must be addressed. If not applicable, explain in SWMP text and check box on SWMP Checklist. Do not use "N/A" on SWMP Checklist.

State in the report text that this is N/A because the existing site is mostly asphalt

23. added sentence about this at the bottom of the Final Stabilization Paragraph

26. added sentence in Maintenance section per comment on SWMP report document

3275 Akers Drive
Colorado Springs, CO 80922
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EL PASO COUNTY
STORMWATER MANAGEMENT PLAN CHECKLIST

EPC Project Number:

Revised: October 2021

		Applicant	EPC
3. APPLICANT COMMENTS			
a			
b			
c			
4. CHECKLIST REVIEW CERTIFICATIONS			
a	Applicant: The Stormwater Management Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County and State for Stormwater Management Plans. _____ _____ Engineer of Record and/or Date Qualified Stormwater Manager Signature	i	
b	Review Engineer: The Stormwater Management Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request. _____ _____ Review Engineer Date		

Grading, Erosion and Sediment Control Report

FOR

Kum & Go Gas & C-Store
675 Security Blvd.

Original Submittal: April 26, 2022

Owner/Developer/Applicant:
Kum & Go L.C.
1459 Grand Avenue
Des Moines, IA 50309
Contact: Dan Garneau
(515) 457-6392
Dan.garneau@kumandgo.com

Added this to cover with TBD in each Name/Company/Address

Prepared By:
Entitlement & Engineering Solutions, Inc.
501 S. Cherry Street, Suite 300
Glendale, Colorado 80246
(303) 572-7997

E.E.S. Job No. KUM014.01

Item 1. Add Qualified Stormwater Manager and Contractor Information to cover/title sheet. If unknown, add a placeholder to be updated prior to the pre-construction meeting:

QUALIFIED STORMWATER MANAGER
Name: _____
Company: _____
Address: _____

CONTRACTOR
Name: _____
Company: _____
Address: _____

Krysta M. Houtchens, P.E.
Registered Professional Engineer
State of Colorado No. 49550

Applicant:

The Stormwater Management Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County and State for Stormwater Management Plans.

_____ _____

Engineer of Record and/or Qualified Stormwater Manager Signature — Date

Review Engineer:

The Stormwater Management Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request.

_____ _____

Review Engineer — Date

TABLE OF CONTENTS

I. Project Description

The proposed Kum & Go Gas and C-Store project is located in Lot 2 of the Pedrick-Eckerd Filing No. 3. The site is located in part of the Southeast Quarter of Section 11, Township 15 South, Range 66 West of the 6th Principal Meridian, County of El Paso, State of Colorado. The site is bordered on the northwest by an existing parking lot for Ross Dress for Less, on the northeast by a curb island for Sonic Drive-In, on the southeast by Main Street (80-ft ROW), on the southwest by Security Boulevard (80' ROW).

VICINITY MAP

SCALE: 1" = 2000'

Proposed construction will consist of a one-story, 3,962 GSF convenience store (c-store) building and 6-MPD fueling canopy located on a 1.29 acres parcel within the Pedrick-Eckerd Filing No. 3. The area disturbed will be 1.20 acres with the remaining north flag portion of the lot remaining undisturbed. In addition to the c-store and fueling canopy, drive aisles, parking, landscaping, and utility services will also be constructed.

The project site currently consists of an existing parking lot with a coffee stand. The proposed improvements will require approximately 1.1 acres of impervious surfaces to be demolished including the coffee stand structure with utilities, parking lot, curb and gutter and sidewalk.

II. Existing Site Conditions

The project site is currently mostly covered with mostly asphalt pavement and consists of an existing coffee stand with drive-thru. The site is primarily existing asphalt with small patches of native grasses and weeds. The site sheet drains to the south where there is an existing inlet along the curb line at the Northwest corner of the Security Boulevard and Main Street intersection. The site is located within the Little Johnson/ Security Drainage Basin as outlined in the Little Johnson/ Security Drainage Basin Planning Study (1988) and ultimately discharges to Crews Gulch (Widefield Creek) to the southeast. No wetlands, streams, irrigation canals or ditches have been identified onsite.

III. Adjacent Areas

The site is bordered on the northwest by an existing parking lot for Ross Dress for Less, on the northeast by a curb island for Sonic Drive-In, on the southeast by Main Street (80-ft ROW), on the southwest by Security Boulevard (80' ROW). There are no ponds, lakes, or streams directly adjacent to the site. The parcel is in FEMA identified floodplain, Flood Zone AE, and is also located within a Special Flood Hazard Area with Base Flood Elevation of the Flood Plain, as designated on the Flood Insurance Rate Map (FIRM) exported 3/22/2022, map last revised October 2020. The Base Flood elevation is 5731.7. There are no known nearby irrigation facilities.

IV. Soils

A geotechnical investigation was performed by Olsson on December 7th, 2021. Ten (10) borings were completed as part of the investigation for depth varying 10-30'. Free water was not encountered in any of the ten borings, but very moist soils were encountered near the surface in many of the borings. Based on the U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) soil survey data, the project site is mapped in the Blendon sandy loam (0 to 3 percent slopes) soil complex. The Blendon sandy loam is described as alluvial fan terraces of sandy alluvium derived from the arkose with bedrock materials located at greater depths. The Blendon soil unit is categorized into hydrologic group B and the depth to the water table is reported to be greater than 80 inches. Soil erosion potential and impacts on discharge are not anticipated to be an issue for the subject project.

V. Areas and Volumes

The project will disturb approximately 1.20 acres and will require approximately 4,085 cubic yards of fill material for construction of the site. The site generates 1,870 cubic yards of unadjusted cut material after the excavation and installation of fuel tank and underground stormwater facility resulting resulting in an unadjusted fill import quantity to 2,271 cubic yards.

VI. Erosion and Sediment Control Measures

Numerous BMPs will be used as erosion and sediment control measures for the site. These BMPs used are outlined in the El Paso County Engineering and drainage Criteria Manual Volumes 1 and 2 Grading, Erosion and Sediment Control Section. There are ten elements of an effective GESC plan which are:

1. Preserve and Stabilize Drainageways by utilizing the following:

Not applicable, there are not drainageways existing or proposed for the project site.

2. Avoid the Clearing and Grading of Sensitive Areas by utilizing the following:

Construction Fence (CF): A construction fence consists of orange plastic fencing or other county-accepted material and is used to identify the limits of construction as well as control access to the site.

3. Balance Earthwork on Site- Site is a Fill site and fill material will be imported to the site as required.

4. Limit the Size of Grading Phase to Reduce Soil Exposure

5. Stabilize Exposed Soils in a Timely Manner by utilizing the following:

Surface Roughening (SR): Consists of creating a series of grooves or furrows on the contour in all disturbed, graded areas to trap rainfall and reduce the formation of rill and gully erosion.

Seeding and Mulching (SM): Seeding and mulching consists of drill seeding disturbed areas with the approved seed mix per the El Paso County Design Criteria Manual Volume 2 and crimping in straw mulch to provide immediate protection against raindrop and wind erosion and, as the grass cover becomes established, to provide long-term stabilization of exposed soils. No soils are to be exposed for a period greater than 30 days.

6. Implement Effective Perimeter Controls by utilizing the following:

Silt Fence (SF): Silt fence is a temporary sediment barrier constructed of woven fabric stretched across supporting posts. The bottom edge of the fabric is placed in an anchor trench that is backfilled with compacted soil.

Rock Socks (RS): Consists of gravel that has been wrapped by wire mesh or a geotextile to form an elongated cylindrical filter. Rock socks are typically used either as a perimeter control or as part of inlet protection. When placed at angles in the curb line, rock socks are typically referred to as curb socks. Rock socks are intended to trap sediment from stormwater runoff that flows onto roadways as a result of construction activities.

7. Use Sediment Basins for Areas Exceeding 1.0 Acre

Sediment Trap (ST): Sediment Trap is a temporary sediment collector that consists of a riprap berm with a small upstream basin that acts to trap coarse sediment particles. Sediment traps shall remain in place until the upstream disturbed area is stabilized and grass coverage is approved.

Diversion Ditch (DD): A diversion ditch is a small earth channel used to divert and convey runoff, generally to a sediment basin, check dam, or reinforced rock berm. Diversion ditch is utilized to direct runoff and sediment to Sediment Trap (ST).

8. Protect Inlets, Storm Sewer Outfalls, and Culverts by utilizing the following:

Inlet Protection (IP): Inlet protection consists of a small reinforced rock berm and cinder block frame placed in front of (but not blocking) a curb inlet or around an area inlet to reduce sediment in runoff entering the storm sewer.

9. Provide Access and General Construction Controls by utilizing the following:

Limits of Disturbance (LOD): Clearly identifies the limits of where construction activities will occur.

Vehicle Tracking Control (VTC): Vehicle tracking control consists of a 3 to 6 inch crushed rock pad 12 inches thick at all entrance/exit points for a site, that is intended to help strip mud from tires prior to vehicles leaving the construction site. Access to the site may only be taken at a permitted access point, as approved in the GESC Plans.

Concrete Washout Area (CWA): A concrete washout area is a shallow excavation with a small perimeter berm to isolate concrete truck washout operations.

Stabilized Staging Area (SSA): A stabilized staging area consists of stripping topsoil and spreading a layer of 3-inch minimum granular material, gravel or recycled concrete in the area to be used for a trailer, parking, storage, unloading and loading. A stabilized staging area reduces the likelihood that the vehicles most frequently entering a site are going to come in contact with mud. Construction parking would be accommodated within this area.

Street Sweeping shall be done during the day and at the end of the day during grading activities. Cleaning asphalt and concrete “tailings” from sawcut operations entailing Street Sweeping (SS) operations shall utilize a vacuum-type street sweeper, a brush style street sweeper, or manually using shovels and brooms. Pavement shall not be washed with water at any time unless all water is contained and collected and is not allowed to drain into existing storm conveyances, on or offsite.

Trucks transporting materials cannot exceed their weight limit.

10. Material Handling:

Port-o-lets/Sanitary Facilities: Sanitary facilities shall be provided for construction workers. Sanitary facilities shall be located in the stabilized staging area (SSA) away from drainageways. Sanitary facilities shall never be placed near storm sewer inlets. Port-o-lets shall be staked down to prevent tipping.

Spill Prevention: To the greatest extent possible, vehicle fueling and maintenance shall be completed off-site.

Storage, Handling, and Disposal of Construction Products, Materials and Wastes: Storage, handling and waste shall be located in the stabilized staging area. In storage areas either a cover to prevent these products from coming into contact with rainwater, or a similar effective designed to prevent the discharge of pollutants from these areas is required.

Trash/Debris Removal: For construction and domestic waste, waste containers of sufficient size and number to contain construction and domestic waste will be provided. On work day, waste will be cleaned up and disposed of in designated waste containers and cleaned up immediately if containers overflow.

Item 12. Note that this project does not anticipate utilizing batch plants in the SWMP text

added note

VII. Timing/Phasing Schedule

Construction is currently planned to begin in December of 2022 and be completed in July of 2023. The Phasing Schedule will be:

BMP Installation	12/01/22 to 12/10/22
Site Demo	12/11/22 to 12/20/22
Site Grading	12/21/22 to 2/09/23
Building Pad Construction	2/10/23 to 2/26/23
Site Utility Installation	2/26/23 to 3/12/23
Building Construction	3/12/23 to 6/01/23
Final Grading	4/01/23 to 5/01/23
Curb and Gutter Installation	5/01/23 to 6/01/23
Concrete Paving	6/01/23 to 6/15/23
Landscaping	6/01/23 to 7/01/23
BMP Removal	7/01/23 to 7/10/23

added note

Per Item 22, also discuss the permanent underground WQ/detention facility.

VIII. Permanent Stabilization

Permanent stabilization of disturbed land must be accomplished as described in the approved GESC plan. Areas not being immediately developed shall be stabilized upon completion of overlot grading and no longer than 30 days exposed. Application of the approved seed mix will be performed by the approved methods in the El Paso County Drainage Criteria Manual Volumes 1 and 2. All seeded areas shall be mulched after seeding on the same day. Erosion Control Blankets shall be placed on all slopes greater than 4:1 and on all drainage channels. Temporary stabilization will remain in-place until the approved landscaping is installed on the disturbed areas. Final landscaping for the site will also occur in phases, with each specific phase being required to complete its landscaping independently of future phases. Total landscape area for the development is 17 percent of the 1.29 acre parcel.

IX. Stormwater Management Considerations

During construction, stormwater management will be handled by mimicking the existing site conditions while trying to keep sediment runoff to a minimum. BMPs used to control runoff and improve stormwater quality during construction include diversion ditches that route runoff to sediment basins along with silt fences, seeding and mulching, and inlet protection. Runoff on site during the interim will be captured by the existing storm sewer system in the adjacent street and parcels after passing through a number of BMPs. Upon completion of the site grading, runoff will be slowed by Surface Roughening (SR) and will be captured by the site's proposed storm sewer improvements.

X. Maintenance

The project site and the adjacent streets impacted by the construction shall be kept neat, clean and free of debris. The control measures and facilities will be maintained in good working order. Any items that are not functioning properly or are inadequate will be promptly repaired or upgraded. The site will be inspected by responsible personnel who are familiar with the site. Inspection and monitoring will follow the procedures outlined in the GESC Plan Standard Notes and Details and outlined below.

Item 26. Add a note stating that this project does not rely on control measures owned or operated by another entity.

added this statement at the end of X. Maintenance paragraph

Self-Monitoring Inspections: Identify QSM in the SWMP and provide documentation of their credentials and/or state: "The QSM will be sufficiently qualified for the required duties per the ECM Appendix I.5.2.A"

XI. Record Keeping

This SWMP Plan will be implemented prior to the start of construction activities. The SWMP Plan will be kept accurate and up-to-date, and will reflect the onsite conditions. If this SWMP Report and the Erosion Control Plans are ineffective in controlling pollutants in stormwater discharge it will be revised. A copy of this SWMP Report will be retained at the contractor's construction office and copies will be kept onsite where active construction is taking place along the Project.

A copy of this SWMP Report will be provided upon request to local agency in charge of approving sediment and erosion plans, grading plans or stormwater management plans, and within a timely manner. If the GESC Plan is required to be submitted to any of these entities, it must include a signed certification in accordance with the General Permit, certifying that the GESC Plan is complete and meets all permit requirements.

Item 25 - state that a signature by the QSM is needed on the inspection logs.

added additional paragraph with one sentence after the 2nd paragraph.

Required Inspections and Maintenance

- Inspections shall be scheduled after installation of any construction BMP, after any runoff event that causes erosion, and/or at least once a week.
- Seeded and mulched areas shall be inspected monthly by the Permittee(s) for a period of two years following initial seeding. Repairs and reseeding and mulching shall be undertaken at least twice per year or as requested by the GESC Inspector for any areas failing to meet the required coverage
- Rill and gully erosion shall be filled with topsoil prior to reseeding. Approved reseeding methods included in the El Paso County Drainage Criteria Manual Volumes 1 and 2.
- Noxious weeds shall be controlled in a manner acceptable to El Paso County.
- Street sweeping shall be done during construction activities on all paved areas surrounding the site on an as-needed basis until completion of construction.
- Portable sanitary facilities shall be staked down to assist in preventing vandalism and being blown over.
- All trash materials, construction debris, and personal trash shall be contained and disposed of properly.
- No work, storage of equipment, stockpiling, or parking of vehicle shall be allowed outside of the approved limits of constructions as illustrated on the GESC plan.
- El Paso County encourages compliance by requiring self-monitoring inspections by the owner. The self-monitoring inspections require the owner to identify areas of noncompliance and take corrective actions. In addition, the City's inspection priority system provides for the rewarding of complying parties with less frequent inspections.

Appendix A – Soils

Appendix B – Engineer's Opinion of Probable Cost

Appendix C – GESC Drawing and Report Checklist

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track changes removed

Remove track changes from the letter.

Letter of Intent – Major Site Development Plan:

Entitlement and Engineering Solutions has prepared the attached Major Commercial Site Development Plan submittal on behalf of Kum and Go LC. The development is proposed on Lot 2 of the Pedrick – Eckerd Filing No. 3 and contains approximately 1.29 acres (56,190 sf) with an assigned address of 675 Security Boulevard, Colorado Springs, Colorado 80911. The property is zoned CC Cad-O and currently is a vacant commercial lot. The plan proposes for the development of a 3,962 SF Kum and Go Convenience Store Building with 6 MDP fueling canopy with its associated parking, landscaping, and drive aisles. The site is located at the north corner of the existing Security Boulevard and Main Street Intersection and aims to provide convenience store services with fueling capability for the surrounding neighborhoods. Three (3) to five (5) employees area anticipated per shift with hours of operation to be 24-hours.

In the existing condition the site consists primarily of an asphalt and a small drive-thru coffee stand. Lot 2 is bounded by existing commercial developments consisting of Ross Dress for Less, Security Discount Liquor, H&R Block, Comfort Dental, Hair Therapy, Hairdresser, First Cash Pawn, Tobacco Shop, Laundromat, and Sonic Drive-In to the north and east, Main Street to the south, and Security Boulevard to the west. A Kum & Go Convenience Store and Fueling Station is compatible with the other existing usese.

The site main circulation will come from two access points, one along Security Blvd and the second along Main Street. A deviation from Code is requested and currently under review for deviation request for the access locations and for the movements to be full movement. The development team will continue to work with County staff to address deviation request comments and incorporate any modifications to the design as a result.

Per the El Paso County General Development Standards, the parking requirement for the Gasoline Station/Convenience uses is 1 space per employee on maximum shift + 3 spaces per fueling stall. Based on this requirement the required parking is 23 parking stalls. The proposed development provides a total of 23 stalls with 22 standard and 1 ADA Van Accessible parking stalls.

The proposed site improvements comply with historic drainage patterns and provide onsite water quality and detention. The proposed water quality and detention facility is proposed to be an underground system and require a pump for release due to lack of surrounding storm infrastructure. A deviation request for the use of underground water quality is under review with the County. The development team will continue to work with County staff to address deviation request comments and incorporate any modifications to the design as a result.

The project site is located within a 100-year floodplain. As a result, the site has been designed to place the structure finished floor a minimum of 12” above the base flood plain elevation. It has also been confirmed with PPRBD floodplain manager that a CLOMR/LOMR is NOT a requirement of this project since we will not be within a floodway.

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Landscaping is proposed in conformance with the El Paso County LDC and is comprised of a mixture of native and naturalized evergreen and deciduous plantings. An automatic irrigation system will also be provided with efficient spray heads for the seeded areas and drip lines for the shrub and perennial areas.

New utilities services will be required for the proposed structure including a 1.5" domestic water service, gas and electric service, and a 4" sanitary service with 1,000-gallon grease interceptor.

This project shall confirm to all applicable standards and shall be compatible with the surrounding properties.

Please contact us if there are any additional questions.

Sincerely,
Entitlement & Engineering Solutions, Inc.

Krysta M. Houtchens, P.E.
Senior Civil Engineer
P: 970-380-7054
E: khoutchens@ees.us.com

List associated deviation request applications.

Also, note road impact fees might be applicable at building permit.

deviation requests listed.
tasks complete

Post Construction Stormwater Management Applicability Evaluation Form

This form is to be used by the Engineer of Record to evaluate applicable construction activities to determine if the activities are eligible for an exclusion to permanent stormwater quality management requirements. Additionally Part III of the form is used to identify and document which allowable control measure design standard is used for the structure.

Part I. Project Information	
1. Project Name: Kum and Go Gas and C-Store	
2. El Paso County Project #: 21-146 Kum and Go	**3. ESQCP #:**
4. Project Location: 675 Security Blvd, Colorado Springs, El Paso County, CO 80911	**Project Location in MS4 Permit Area (Y or N):** Y
5. Project Description: Kum & Go convenience store with 6 MDP fueling canopy and it's associated parking, landscape and drive aisles.	
If project is located within the El Paso County MS4 Permit Area, please provide copy of this completed form to the Stormwater Quality Coordinator for reporting purposes; and save completed form with project file.	

Part II. Exclusion Evaluation: Determine if Post-Construction Stormwater Management exclusion criteria are met. Note: Questions A thru K directly correlate to the MS4 permit Part I.E.4.a.i (A) thru (K). If Yes, to any of the following questions, then mark Not Applicable in Part III, Question 2.

Questions	Yes	No	Not Applicable	Notes:
A. Is this project a "Pavement Management Site" as defined in Permit Part I E.4.a.i.(A)?			N/A	This exclusion applies to "roadways" only. Areas used primarily for parking or access to parking are not included.
B. Is the project "Excluded Roadway Development"?				
• Does the site add less than 1 acre of paved area per mile?			N/A	
• Does the site add 8.25 feet or less of paved width at any location to the existing roadway?			N/A	
C. Does the project increase the width of the existing roadway by less than 2 times the existing width?			N/A	For redevelopment of existing roadways, only the area of the existing roadway is excluded from post-construction requirements when the site does not increase the width by two times or more. ***This exclusion only excludes the original roadway area it does NOT apply to entire project.***
D. Is the project considered an aboveground and Underground Utilities activity?		No		Activity can NOT permanently alter the terrain, ground cover or drainage patterns from those present prior to the activity
E. Is the project considered a "Large Lot Single-Family Site"?		No		Must be a single-residential lot or agricultural zoned land, ≥ 2.5 acres per dwelling and total lot impervious area < 10 percent.

Questions (cont'd)	Yes	No	Not Applicable	Notes
F. Do Non-Residential or Non-Commercial Infiltration Conditions exist? Post-development surface conditions do not result in concentrated stormwater flow or surface water discharge during an 80th percentile stormwater runoff event.		No		Exclusion does not apply to residential or commercial sites for buildings. A site specific study is required and must show: rainfall and soil conditions; allowable slopes; surface conditions; and ratios of imperviousness area to pervious area.
G. Is the project land disturbance to Undeveloped Land where undeveloped land remains undeveloped following the activity?		No		Project must be on land with no human made structures such as buildings or pavement.
H. Is the project a Stream Stabilization Site?		No		Standalone stream stabilization projects are excluded.
I. Is the project a bike or pedestrian trail?		No		Bike lanes for roadways are not included in this exclusion, but may qualify if part of larger roadway activity is excluded in A, B or C above.
J. Is the project Oil and Gas Exploration?		No		Activities and facilities associated with oil and gas exploration are excluded.
K. Is the project in a County Growth Area?				Note, El Paso County does not apply this exclusion. All Applicable Construction Activity in El Paso County must comply the Post-Construction Stormwater Management criteria.

Part III. Post Construction (Permanent) Stormwater Control Determination		
Questions	**Yes**	**No**
1. Is project an Applicable Construction Activity?	Yes	
2. Do any of the Exclusions (A-K in Part II) apply?		No
If the project is an Applicable Construction Activity and no Exclusions apply then Post-Construction (Permanent) Stormwater Management is required. Complete the applicable sections of Part IV below and then coordinate signatures for form and place in project file. If the project is not an Applicable Construction Activity, or Exclusion(s) apply then Post-Construction (Permanent) Stormwater Management is NOT required. Coordinate signatures for form and place in project file.		

Part IV: Onsite PWQ Requirements, Documentation and Considerations	Yes	No
1. Check which Design Standard(s) the project will utilize. Standards align with Control Measure Requirements identified in permit Part I.E.4.a.iv.		
A. Water Quality Capture Volume (WQCV) Standard	X	
B. Pollutant Removal/80% Total Suspended Solids Removal (TSS)		X
C. Runoff Reduction Standard		X
D. Applicable Development Site Draining to a Regional WQCV Control Measure		X
E. Applicable Development Site Draining to a Regional WQCV Facility		X
F. Constrained Redevelopment Sites Standard		X
G. Previous Permit Term Standard		X
2. Will any of the project permanent stormwater control measure(s) be maintained by another MS4? If Yes, you must obtain a structure specific maintenance agreement with the other MS4 prior to advertisement.		X?
3. Will any of the project permanent stormwater control measures be maintained by a private entity or quasi-governmental agency (e.g. HOA or Special District, respectively)? If Yes, a Private Detention Basin/Stormwater Quality Best Management Practice Maintenance Agreement and Easement must be recorded with the El Paso County Clerk and Recorder.	X?	

Part V Notes (attach an additional sheet if you need more space)

Project design is complete to include the project design, construction plans, drainage report, specifications, and maintenance and access agreements as required. The engineering, drainage considerations and information used to complete these documents is complete, true, and accurate to the best of my belief and knowledge.

Signature and Stamp of Engineer of Record _____ Date _____

Post-Construction Stormwater Management Applicability Form has been reviewed and the project design, construction plans, drainage report, specifications, and maintenance and access agreements as required, have been reviewed for compliance with the Post Construction Stormwater Management process and MS4 Permit requirements.

Signature of El Paso County Project Engineer _____ Date _____