## DRAINAGE REPORT

For

# KIRKPATRICK WAREHOUSE TRACT B1A5, CLIFFORD INDUSTRIAL PARK 8610 PRESIDENTS PLACE Albuquerque, New Mexico

Prepared by

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Map Pocket Site Grading and Drainage Plan

## URPOSE

The purpose of this report is to provide the Drainage Management Plan for the levelopment of a platted lot located at 8610 President Place Northeast. This plan was prepared n accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

## INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 1.01-acre parcel of land located on the east side of President Place south of Alameda Boulevard Northeast. The legal description of this site is tract B-1-a-5 Clifford Industrial Park. As shown on FIRM map35013C0136G, the entire site is located within Flood Zone X. The site is located within the drainage master plan for Clifford industrial park C17D1U9

## **EXISTING CONDITIONS**

The site is currently a vacant parcel. It appears minor grading may have occurred in the past yet the native grasses make this appear to be close to native conditions. The site is located in basin D of the Clifford west drainage plan. The site accepts 12.9 cfs from the upland lots. The flow is accepted at the southeast corner and conveyed across the site within a 6' asphalt swale. The flow is discharged to President Place via two sidewalk culverts. The flow drains to the southern terminus and is accepted by a concrete lined channel and ultimately conveyed to the AMAFCA north diversion channel west of the site.



Tract B-1-A-5, Clifford Industrial Park

#### ROPOSED CONDITIONS

The proposed improvements consist of a new building with paved and gravel parking reas. The proposed site development will create three onsite basins, Basin a is the majority of he building and the northern paved parking field. This basin will drain to a water quality swale where 720 cubic feet of water is harvested, prior to the attenuation provided by the ponds, the beak flow will be 2.24 cfs. Basin C is the front porch and landscape area, this area will sheet flow .13 cfs to the street. Basin B consists of a portion of the building and the southern parking and dock area. This basin generates 1.77 cfs and 2677 cubic feet of storm water during the 100-year. 6 hour event. This basin drains to the southwest corner of the site. Due to the master plan requirement of 2.3 cfs per acre, as well as the water quality volume of 1235 cfs, the entire volume generated by this basin will be captured onsite and harvested via 34-Stormtech infiltrator chambers. The upland flows will continue to be accepted on site yet they will be contained within the 5' landscape buffer swale. As shown in appendix A, the channel and pond overflow improvements are adequately sized. The existing sidewalk culverts will not see increased flow from our site so they will remain in existing condition. Appendix B includes the details of the drainage inlet and infiltration systems.

## SUMMARY AND RECOMMENDATIONS

This project is a development of a parcel located within a master plan industrial park. The development of this site is in conformance to the master drainage study. The site will discharge 2.36 cfs. Due to the harvest ponds on the north the attenuated flow will be less than calculated. The site development allows the upland flow to continue to enter unimpeded and discharge the site thru the existing inlet. The site development meets the water quality requirements. Since the effected area site encompasses and area greater that 1 acre, a NPDES permit should be required prior to any construction activity. An Erosion Control Plan will also be required.

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# **SITE ΗΥDROLOGY**

A XIGN399A



## KIRKPATRICK

### Existing Developed Basins

									100-Year, 6-h	٢			
Basin	Area	Area	Treatment	A	Treatment	B	Treatmen	nt C	Treatmen	t D	Weighted E	Volume	Flow
[	(sf)	(acres)	%	(acres)	%	(acres)	%	(acres)	%	(acres)	(ac-ft)	(ac-ft)	cfs
BASIN A	22068	0.507	0%	0	8.0%	0.041	6.0%	0.0304	86%	0.436	1.953	0.082	2.24
BASIN B	19880	0.456	0%	0	11.0%	0.050	36.0%	0.1643	53%	0.242	1.616	0.061	1.77
BASIN C	1636	0.038	0%	0	7.0%	0.003	75.0%	0.02817	18%	0.007	1.284	0.004	0.13
TOTAL	43584	1.001	0%	0		0.093		0.223	45%	0.684		0.148	4.129

### Equations:

i

1

Weighted E = Ea\*Aa + Eb\*Ab + Ec\*Ac + Ed\*Ad / (Total Area)

Volume = Weighted D \* Total Area

Flow = Qa \* Aa + Qb \* Ab + Qc \* Ac + Qd \* Ad

Where for 100-year, 6-hour storm (zone 3)								
	Ea= 0.53	Qa= 1.57						
	Eb= 0.78	Qb= 2.28						
	Ec= 1.13	Qc= 3.14						
	Ed= 2.12	Qd= 4.7						
to reduce to below sub master plan		2677.50 POND BA	SIN B					
water quality requirement		1234.88		C				
total required		2677.505 cf						
provided in infiltrator system		2677.505 cf						
number of s780 chambers		34.1518 120.9839	long					
site discharge		2.36	2.359431 cfs/acres					
THE SUBJECT PROPERTY IS LOCA	TED WITHIN BASIN D OF	THE C-17D1U9 GRAD	DING PLAN. THIS SITE IS A	ALLOWED TO FREE DISCHARGE 2.3CFS PER ACRE.				
THE SITE ACCEPTS 12.9 CFS FRO	W THE UPLAND LOTS. THE	E FLOW SHALL PASS	THRU THE SITE. TO RED	UCE FLOW TO ALLOWED AN UNDERGROUNG STORM TECH				
CHAMBER WILL BE USED TO CAP	FURE THE ADDITIONAL FL	.OW.						

## landscape pond overflows

## Weir Equation:

 $Q=CLH^{3/2}$ 

Q= 1.85 & 1.48 C = 2.95 H = 0.5 ft L = Length of weir

Q=2.95x6x.5^(1.5)

Q allowable = 6.25 ft > Q required=2.28

### Channel Capacity

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)	(ft/s)
CAPACITY	5	0.25	1.5	3.94	5.87	0.6710064	2	21.20	12.90	3.28

## **APPENDIX B**

## **SUIATOR DETAILS**



- 1 GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
- 2 FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
- 3 DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84° DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
  - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO
- TECHNICAL INFORMATION SHOWN HEREIN REPRODUCTION OF THIS PRINT OR ANY INFORMATION

THIS PRINT DISCLOSES SUBJECT MATTER IN WHICH

NYLOPLAST HAS PROPRIETARY RIGHTS. THE RECEIPT

OR POSSESSION OF THIS PRINT DOES NOT CONFER,

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DATE 04-03-00		Nyl
REVISED BY CCA	PROJECT NO NAME	
		TITLE



## **DC-780 TECHNICAL SPECIFICATION**

NTS



ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.



DC-780 ISOLATOR ROW DETAIL

### **INSPECTION & MAINTENANCE**

#### STEP 1) INSPECT ISOLATOR ROW 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
- A4. LOWER A CAMERA INTO ISOLATOR ROW 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 ROWS
- B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
- B.2 USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
  - I) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - I) 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 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.



## ACCEPTABLE FILL MATERIALS: STORMTECH DC-780 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL FILL NATERIAL FOR LAVER OF STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOITTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE OF 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.
с	NITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EVBEDMENT STONE (B' LAYER) TO 16' (450 mm) ABOVE THE TOP OF THE CHANBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER	GRANULAR WELL-GRADED SOL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE, MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M1451 A-1, A-2-4, A-3 OR AASHTO M431 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (200 mm) OF MATERIAL OVER THE CHANBERS IS REACHED, COMPACT ADDITIONAL LAVERS IN 6" (500 mm) MAX LIFTS TO A MIN, 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS, ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 Ibs (63 kN), DYNAMIC FORCE NOT TO EXCEED 20,000 Ibs (69 kN).
в	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 34-2 INCH (20-50 mm)	AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER	CLEAN. CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 34-2 INCH (20-50 mm)	AASHTO M431 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE **

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 N43) STONE".

2. STORMITECH 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.

 WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAVING OR DRAGGING WITHOUT COMPACTION EQUIPMENT, FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



### NOTES:

- 1. DC-780 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- 2. DC-780 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAVBERS".
- 3. \*ACCEPTABLE FILL MATERIALS\* TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- 4. THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
- 5. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOLS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOL MOISTURE CONDITIONS.
- 8. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- 7. 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.







1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.

2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING

3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.

4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF ANY PROJECT.



LEGAL DESCRIPTION:

Tract B-1-A-5, Clifford Industrial Park

NOTES:

- 1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED. 2. TOPOGRAPHIC SURVEY INFORMATION SHOWN ON THIS PLAN WAS OBTAINED BY
- Christopher J. Dehler, NMLS 7923 3. ONSITE CURB SHALL BE 6" UNLESS OTHERWISE NOTED
- 4. ALL POND SHALL BE LINED WITH 6-8" FRACTURED ROCK. LANDSCAPING SHALL BE INSTALLED WITHIN ROCK.



