2013075
Drainage

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: FedEx Ground City Drainage #: _____

DRB#: _____ EPC#: 14EPC-40012 (Project#1009982) Work Order#: _____

Legal Description: A portion of Tract 12, Tract 13 and Tract 14A, Town of Atrisco Grant Unit 5

City Address: _____

Engineering Firm: Tierra West, LLC Contact: Vince Carrica

Address: 5571 Midway Park Place NE Albuquerque NM 87109

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: vcarrica@tierrawestllc.com

Owner: I-40 South , LLC c/o Thomas Keleher Contact: Thomas Keleher

Address: P.O. Box AA, Albuquerque, NM 87103

Phone#: 505-346-4646 Fax#: _____ E-mail: tfk@keleher-law.com

Architect: Castle Design Group Contact: Larry L. Christian

Address: 3801 Kirby Drtive, Suite 600, Houston, TX 77098

Phone#: 713-664-7974 Fax#: _____ E-mail: lchristian@castledesigngroup.com

Surveyor: Precision Surveys Contact: Larry Medrano

Address: 5571 Midway Park Place NE Albuquerque NM 87109

Phone#: _____ Fax#: _____ E-mail: _____

Contractor: W&G Construction Company Contact: Chris White

Address: 470 Central Road, Fredericksburg, VA 22401

Phone#: 5403682688 Fax#: _____ E-mail: cwhite@wandgconstruction.com

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
X DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
___ GRADING PLAN
___ EROSION & SEDIMENT CONTROL PLAN (ESC)
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT (TCL)
___ ENGINEER'S CERT (TCL)
___ ENGINEER'S CERT (DRB SITE PLAN)
___ ENGINEER'S CERT (ESC)
___ SO-19
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

___ SIA/FINANCIAL GUARANTEE RELEASE
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
___ FOUNDATION PERMIT APPROVAL
X BUILDING PERMIT APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
___ GRADING CERTIFICATION

___ SO-19 APPROVAL
___ ESC PERMIT APPROVAL
___ ESC CERT. ACCEPTANCE
___ OTHER (SPECIFY)

RECEIVED
SEP 19 2014
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: ___ Yes ___ No ___ Copy Provided

DATE SUBMITTED: 09/09/2014 By: Vince Carrica

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

TIERRA WEST, LLC

5571 Midway Park Place NE Albuquerque, NM 87109
(505) 858-3100 Fax (505) 858-1118 1-800-245-3102
tierrawestllc.com

September 19, 2014

Ms. Amy L. D. Niese, P.E.
Senior Engineer, Hydrology
Planning Department
PO Box 1293
Albuquerque, NM 87103

RE: FedEx Ground ABQ Drainage Report and Grading Plan and Drainage Plan Engineer's Stamp Date 8-12-14 (K09D026A)

Dear Ms. Niese:

Per correspondence from your office dated September 2, 2014, please find the following responses addressing the drainage comments listed below:

1. Provide contours for the western portion of the Pre and Post Developed Drainage Basin Maps. Show the current layout of the Daytona ROW going through the western basins on the Basin Map. Show the desilting pond and storm drain west of Daytona Road on the Post Developed Drainage Basin Map. West of Daytona, construct desilting pond slopes outside of the ROW and extend the proposed storm drain as necessary. Provide the updated Daytona Road Grading and Drainage Improvements sheet, GR-6, which was submitted with the previous submittal but not this one.

   Response: The basin maps have been updated with the requested information. The Daytona Road grading and drainage improvements sheet is included.

2. In your report under Developed Drainage Conditions, include the basins and flows with your description of the offsite acreage and directions of flows to clarify which flows specifically are being discussed.

   Response: Basin and flow information has been added to the written report.

3. On the Post Developed Drainage Basin Map, Basin C-4D is shown with a shading indicating the flows will go to Daytona Road and eventually Pond 6. However, the report says the flow from Basin C-4D will go east eventually to Los Volcanos Road. The Daytona Road Storm Drain Master Plan for the West Side Transit Facility by Smith Engineering shows that area should go to Daytona Road. Please revise the report.

Response: The report has been revised to reflect that until Basin C-4D is developed it will drain to Los Volcanes. After it is developed, it will drain to Daytona as programed in the master drainage plan for the area.

4. Analysis Point 18 indicates the flow going into the 30 inch storm drain is 85.72 cfs. In another paragraph, the report states the flow to the 30 inch storm drain is approximately 80cfs. Which is correct? Are basins C-1D1 and C-2D2 surface draining into Los Volcanos or draining to the 30 inch storm drain at Analysis Point 18? Where is Analysis Point 18 exactly? Is it in the pond, in the first section of the 30 inch storm drain, or later? Analysis point 18 includes the 85.72 cfs flows to the 30 inch storm drain, but the report states D1D1 and C-2D2 are surface draining to Los Volcanos. The 30 inch storm drain should be sized for the developed flows for basins C-2D1, C-1D2, C-2D2, and C-1D1 but it needs to be clear if C-2D2 and C-1D1 are going directly to the road or storm drain. Revise your report/map/tables accordingly.

   Response: 18 is a pipe run number for the pipe running from the desilting pond to the proposed Los Volcanes storm drain. This pipe will convey flow from undeveloped basins as an interim condition until they are later developed. At that point the desilting basin will be eliminated and developed flows will be conveyed directly to Los Volcanes and the roadway storm drain extended west. A section for "interim conditions" was added to the report to help clarify this.

5. What is the total surface flow in Los Volcanos including the existing conditions of the off-site basins that contribute to it once this site is developed? Provide the street capacity for the flow in Los Volcanos Road once this site is developed. Provide the calculations for inlets 11 and 14. Show inlet 14 on the Post Developed Drainage Basin Map. On GR-3, show what storm drains will be abandoned with CPN 655784.

   Response: Street and inlet capacity calculations were added to the report. Inlet 14 was added. The maximum flows in Los Volcanes after this development are 8.7 cfs for the half street section which is below the street capacity. Storm drain laterals that will be abandoned with CPN 655784 are noted on the plans.

6. What is the total surface flow in Daytona Road after this site is developed? Provide the street capacity for the proposed flow in Daytona Road. Provide the calculations for inlet 13.

   Response: Street and inlet capacity calculations were added to the report. The maximum flows in Daytona after this development are 2.87 cfs for the half street section which is below the street capacity.

7. Provide the calculations for inlet 2 also.

   Response: Inlet capacity calculations were added to the report for DI #2. It was increased from a single to a double inlet to keep runoff from topping the adjacent 6" curb.

8. The Storm Drain Pipes Table indicates all pipes are sized appropriately using Manning's equation. However, based on the parameters provided, the capacities for analysis points 5, 8, 18, and 20 do not seem to be adequate. Provide calculations showing the storm drains are adequately sized or resize them.

   Response: The table has been updated and plans have been updated with minor changes in grades to provide required storm drain capacities.

9. Provide headwall details for the four headwalls called out on the plans. What are the inverts of the storm drains going into Pond 5? What is the invert of the storm drain in the small pond north of the proposed building? Include riprap for the design of the desiltation pond north of Los Volcanos since a significant amount of flow will be entering that pond. Have the pond slopes outside the 5 foot PUE.

   Response: A headwall detail and inverts for were added to the plans. Riprap was added at the desilting pond at Los Volcanes and the pond slopes were moved outside the 5' PUE.

10. On GR-5, what is the invert of the 24 inch entering the existing outlet structure? What is the length of the 24 inch storm drain? Show one foot of cover minimum over the 24 inch storm drain. Instead of plugging the existing 3 orifices in the existing outlet structure, provide an opening for the new 24 inch pipe.

    Response: Requested information was added to the outlet structure detail.

11. An Interim Grading and Drainage Plan dated May 19, 2014 was approved for grading permit. A revised Interim Grading and Drainage Plan was submitted with the last submittal. Since you have already received approval of it for the grading permit, remove the Interim Grading and Drainage Plan from the next submittal.

    Response: The interim G&D plan was removed from this submittal.

12. The project has received a Floodplain Permit for the grading. Please submit a Floodplain Permit application for the building. A blank permit is attached for your use.

    Response: The floodplain permit application will be completed and emailed to you.

13. An easement for Floodway and Storm Drainage Works is on the east side of Track 5-A of Avalon Subdivision Unit 5. A vacation has been submitted for that easement. Complete the vacation by having it plated through DRB. Apply for the platting action prior to Building Permit approval by Hydrology. The platting action should be complete prior to the Certificate of Occupancy for this site.

    Response: The plat eliminating the noted easement will be submitted to DRB the first part of next week to be heard on the October 1st hearing.

If you have any questions or need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Vincent Carrica, P.E.

Enclosure/s

JN: 2013075
VPC/sc

Z:\2013\2013075 Daytona Blvd Distribution Center\Working Documents\2013075 14-09-19 FedEx Ground Response Letter - Amy L. D. Niese.docx

DRAINAGE REPORT

For

FEDEX GROUND ABQ
ALBUQUERQUE, NEW MEXICO

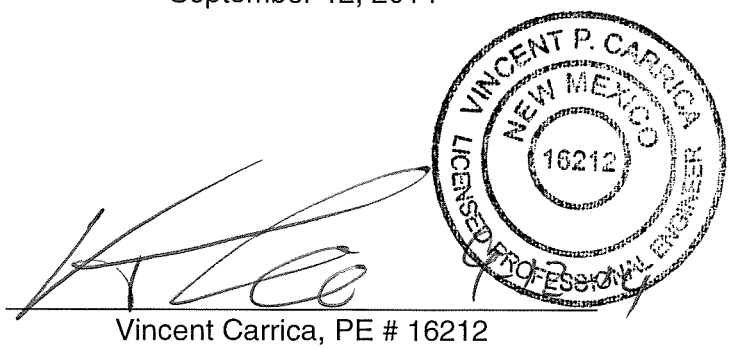
Prepared by

Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, New Mexico 87109

Prepared for

W&G Construction Company
470 Central Rd.
Fredericksburg, VA 22401

September 12, 2014



Vincent Carrica, PE # 16212

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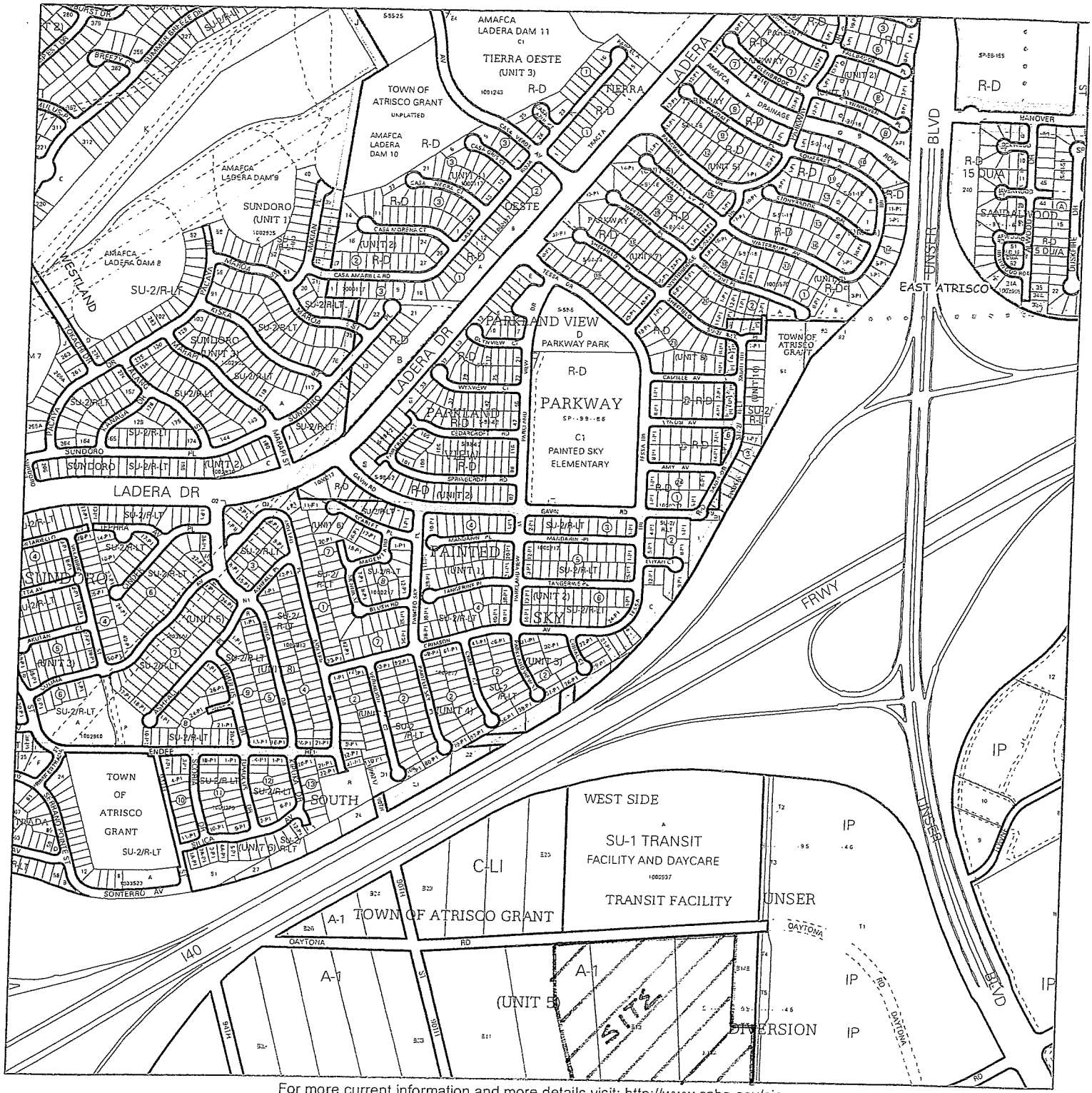
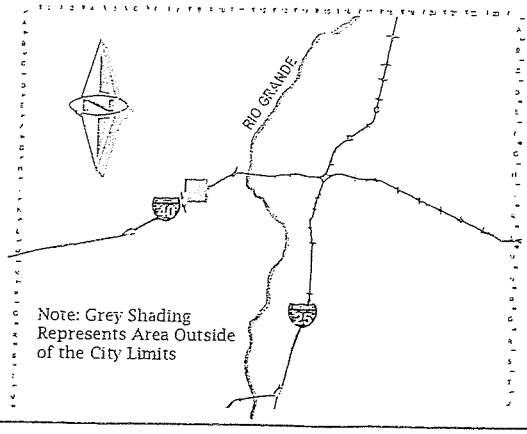


For more current information and more details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System

Map amended through: 2/4/2010



Note: Grey Shading Represents Area Outside of the City Limits

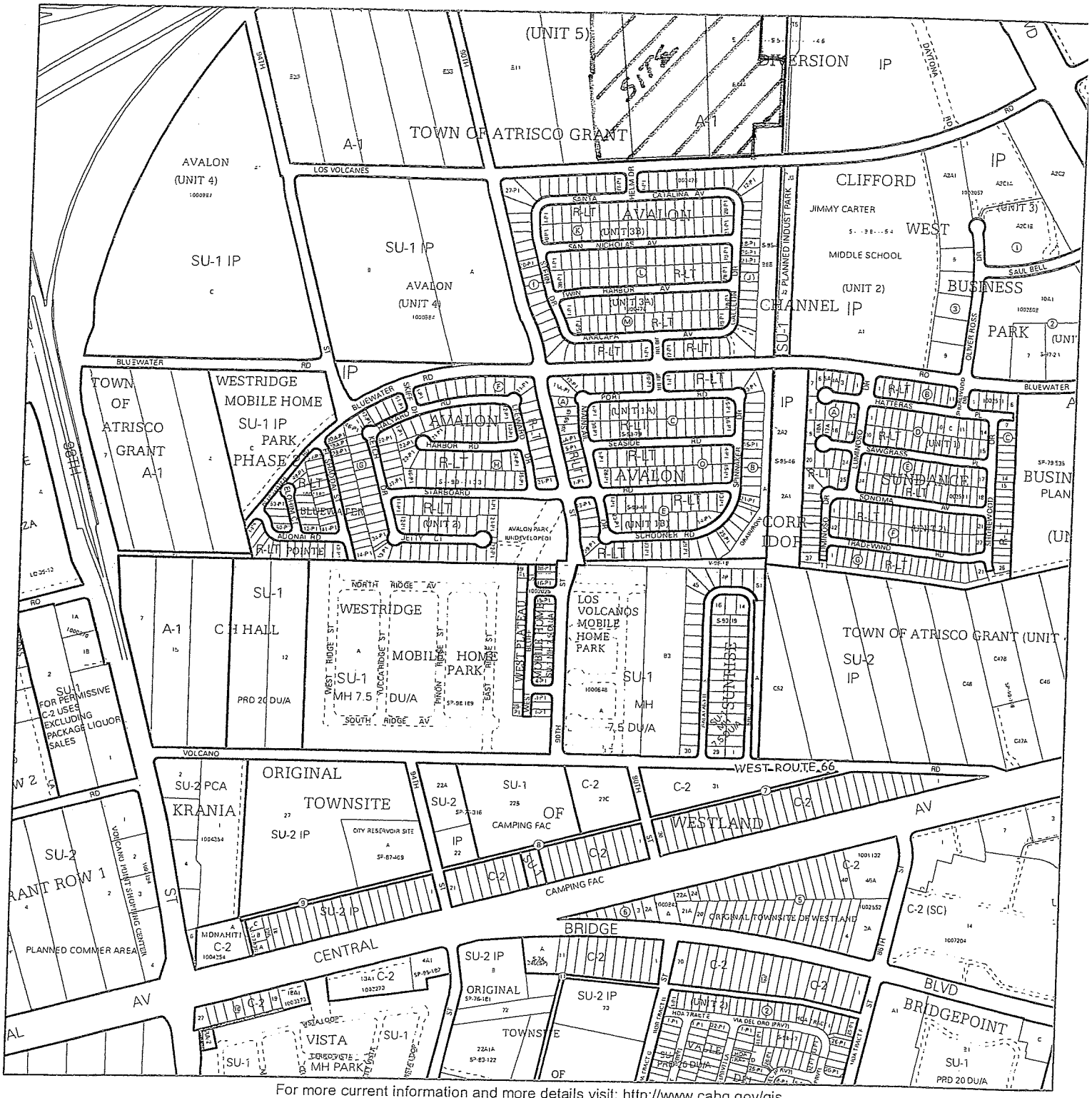
Zone Atlas Page:

J-09-Z

Selected Symbols

SECTOR PLANS
Design Overlay Zones
City Historic Zones
H-1 Buffer Zone
Petroglyph Mon.
Escarpment
2 Mile Airport Zone
Airport Noise Contours
Wall Overlay Zone

0 750 1,500 Feet



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CITY OF ALBUQUERQUE

AGIS

Albuquerque Geographic Information System

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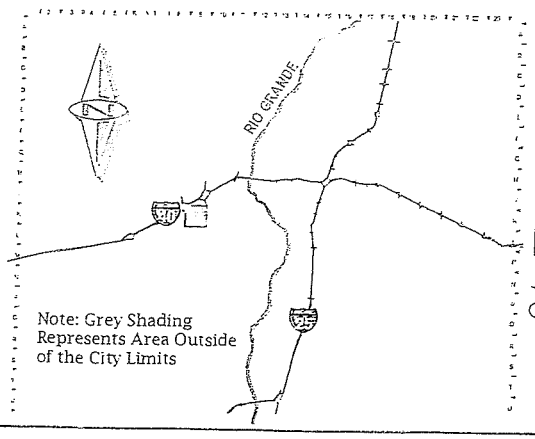


Zone Atlas Page:

K-09-Z

Selected Symbols

SECTOR PLANS
Design Overlay Zones
City Historic Zones
H-1 Buffer Zone
Petroglyph Mon.
Escarpment
2 Mile Airport Zone
Airport Noise Contours
Wall Overlay Zone

0 750 1,500 Feet

LOCATION

The proposed commercial development, FedEx Ground ABQ, is comprised of approximately 21.86 acres zoned SU-1 For IP and C-2 Uses and is located in the City of Albuquerque, in Bernalillo County. The site is bordered by Daytona Road to the north, Los Volcanes Road to the south, undeveloped property to the west and storm drain ponds and undeveloped property to the east. An existing ABCWUA water well facility exists adjacent to the southeast corner of the site. The subject property is currently undeveloped with an existing arroyo bisecting the site from northwest to south east.

This report represents a drainage management and grading plan for approval by the City of Albuquerque, for Site Plan for Building Permit submittal.

DRAINAGE BASIN DESIGNATION

The drainage basins for proposed conditions are as indicated on the BASIN MAP included in this report. On-site basins are designated as "A-xx". Off-site upstream basins are designated as "C-xDx". Basins within Daytona right-of-way are designated as "D-1x". Basins within Los Volcanes right-of-way are designated as "LV-x".

EXISTING DRAINGE CONDITIONS

The site is currently undeveloped and drains from northwest to southeast with an existing slope ranging between two to five percent. The northernmost portion of the site is captured in the Mirehaven Arroyo and drains into the temporary Pond 5 of the Unser Diversion Pond system. The remaining southern portion of the site currently drains via surface flow to Los Volcanes Road and into the existing Pond 4 of the Unser Diversion Pond system via curb inlets and storm drain pipes located at the low point in Los Volcanes Road.

FIRM MAP AND SOIL CONDITIONS

The FedEx Ground Albuquerque is currently partially located in a designated Flood Hazard Zone AO per FEMA – (Firm Map 35001C0328H – See Attached Map). Per the USDA Soil Conservation Services (SCS), the soils type for this site is Bluepoint Loamy fine sand and

Pajarito loamy fine sand and consists largely of undulating excessively drained soils at 1 to 9 percent slopes. Runoff is medium, the hazard of soil blowing is moderate and the hazard of water erosion is slight.

DESIGN-CRITERIA

The drainage plan presented in this report was prepared in accordance with the City of Albuquerque Drainage Ordinances and Chapter 22 of the Development Process Manual DPM. The hydrological analysis is based on the 100-year frequency, 6-hour duration storm, as Represented in Section 22, Part A, Hydrology, of the Development Process Manual. Storage detention ponds are sized for the 100-year, 24-hour storm and ultimately will drain in less than 24 hours.

Rainfall intensities per this report are as follows:

FREQ	ZONE	P60	P360	P1440
100YR	1	1.87	2.20	2.66

Land Treatments:

Proposed Subdivision:

The proposed commercial developed land use values were calculated as follows:

Commercial

A = 0% (Under fully developed conditions, no undisturbed naturally vegetated areas will remain.)

B = 0 % (Under fully developed conditions, no irrigated lawns will be provided)

C = Varies 25% to 100% depending on individual basin which will be landscaped to varying degrees with gravel and Xeriscaping

D= Varies 70% to 100% depending on individual basin which will be paved or covered by buildings

INTERIM DRAINGE CONDITIONS

The current landowner worked with AMAFCA to cut off flows to the Mirehaven Arroyo from the north side of Interstate-40, which will now be routed in the North I-40 Diversion system. This diversion greatly reduces flows that impact this site. AMAFCA will also cause to have a LOMR completed and submitted to FEMA to adjust the flood plain from what is currently mapped. This adjustment to the flood plain will show the proposed site as being removed from the flood plain.

The existing Mirehaven Arroyo that traverses the site from northwest to northeast will be filled in order to construct the proposed improvements including a building, drive aisles and parking facilities. An updated master drainage plan for the area is being prepared by Easterling Consultants, LLC for the City.

Under Interim conditions all upland basins designated as "C-xDx" will remain undeveloped. Basin C-3D will continue to drain to Daytona right-of-way where it will be routed through a desilting pond, captured in a storm drain that will be extended from in front of the existing Bruckner's facility and conveyed east to Pond 6 of the Unser Diversion Pond system. Basins C-1D2, C-2D1 and C-4D (approximately 16.1 cfs) will drain to a proposed desilting pond and into a storm drain lateral that will direct the flows into the proposed Los Volcanes storm drain that will run east and connect into an existing 48" storm drain and into Pond 4 of the Unser Diversion Pond System. The desilting pond and storm drain lateral are intended to be temporary until such time as the applicable basins are develop where at that point the lateral can be used for a future storm drain curb drop inlet outfall.

Basins C-1D1 and C-2D2 (approximately 5.2 cfs) will continue to drain into the Los Volcanes right-of-way where they will surface flow along with Basin LV-1 thru LV-5 down the roadway to proposed and existing curb drop inlets and into Pond 4 of the Unser Diversion Pond system.

Also under interim drainage conditions, the FedEx Ground site will be developed including all on-site basins designated as "A-xx" along with the north half of Los Volcanes Rd and the south half of Daytona Rd along the frontage of the FedEx property. All on-site basins

with the exception of Basins A-16 and A-17 will drain to an on-site detention pond formerly designated as Pond 5 of the Unser Diversion Pond system. The out flow of this on-site detention pond will be tied to the existing storm drain line that caries flows to Pond 4 of the Unser Diversion Pond system. Basins A-16 and A-17 will drain to an area Inlet (12) that will be tied to the proposed storm drain in Los Volcanes which will be tied to the existing storm drain that runs into Pond 4 of the Unser Diversion Pond system.

Former Pond 5 of the Unser Diversion System will be a private pond, which will act as a detention pond with an outfall to the Unser Diversion System of less than 10 cfs maximum. An emergency overflow structure exists and will remain on the pond. The overflow directs flows in excess of the pond's capacity to the east along the arroyo's historic route.

The drainage plan for routing flows from the site and from the upland basins is per the I-40 South and Unser Mini Drainage Master Plan prepared by Easterling Consultants LLC as Revision #1 dated April 2014. The existing outlet structure in Pond 5 will be revised to include a ported outlet riser that will restrict the flow rate out of the pond to less than 10 cfs for the 100-year, 24-hour design storm. The proposed maximum flow rate out of Pond 5 will be far less than the allowable flow rate as provided for in the Daytona Road Storm Drain Master Plan prepared for the West Side Transit Facility by Smith Engineering, February 2001. The proposed Pond 5 volume will be 5.66 ac-ft. The required volume at a maximum 10 cfs outflow is 2.39 ac-ft. The bottom of the pond will be one foot lower than the outfall invert to account for the first flush volume and any future sediment build up. Minor on-site ponding is provided in addition to this main detention pond. This minor ponding volume was not included in the calculations for required volumes and outflow from the main pond.

ULTIMATE DRAINAGE CONDITIONS

Under ultimate drainage conditions the on-site drainage basins will continue to drain as described above. Pond 5 will be a private detention pond and will continue to outfall to the existing storm drain culvert that ties Pond 6 to Pond 4 of the Unser Diversion Pond system. The upland off-site basins designated as "C-xDx" will be developed. Basins C-3D and C-4D will drain to Daytona and will be conveyed east to Pond 6 of the Unser Diversion Pond system. Basins C-1D1, C-1D2, C-2D1 and C-2D2 will drain south to Los Volcanes where the proposed storm drain that is constructed under interim conditions will be extended west to accept the developed flows

(approximately 85.7 cfs). These flows will be conveyed to Pond 4 of the Unser Diversion Pond system.

Basins D-1A, D-1B and D-1C will drain to existing or proposed drop inlets in Daytona Road and will be conveyed to Pond 6 of the Unser Diversion Pond system. Basins LV-1 through LV-5 will continue to drain down Los Volcanes either as surface flow in the roadway or be intercepted by existing and proposed drop inlets, eventually being routed into Pond 4 of the Unser Diversion Pond system.

A LOMR will be completed to adjust the flood plain and FEMA maps from what is currently mapped. This adjustment to the flood plain will show the proposed site as well as the parcels to the west as having been removed from the flood plain.

SUMMARY

The proposed grading and drainage plan for the FedEx Ground Albuquerque site provides the grading and drainage elements which are capable of safely passing the 100-year storm and meet the COA DPM requirements. Development of the site will take place after the flows into the Mirehaven Arroyo from north of Interstate-40 were cut off, greatly reducing the upland flows from west of the site and effectively removing the site from the existing flood plain. The remaining upland flows and onsite developed flows will be routed via surface flow and underground storm drains to the existing detention pond which in turn is tied to the Unser Diversion Pond system. The proposed drainage plan for developed conditions follows the I-40 South and Unser Mini Drainage Master Plan.

N

GRAPHIC SCALE

100 50 0 50 100

SCALE: 1"=100'

ENGINEER'S SEAL	FEDEX GROUND ALBUQUERQUE, NM	DRAWN BY DY
		DATE 9-10-14
	PRE DEVELOPED DRAINAGE BASIN MAP	2013075-BASINS
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # C2
VINCENT P. CARRICA P.E. #16212		JOB # 2013075

FEDEX GROUND ALBUQUERQUE

Interim Post Developed FedEX Ground Drainage Calculations

FedEx Developed and Upstream Basins Undeveloped

This table is based on the COA DPM Section 22.2, Zone: 1

BASIN	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	WT E	$V(100)_{360}$	$V(100)_{1440}$	$V(100)_{10day}$	Comments
	(SQ. FT)	(AC.)	A	B	C	D	(cts/ac.)	(CFS)	(inches)	(CF)	(CF)	(CF)	
C-1D1	120225	2.76	100.0%	0.0%	0.0%	0.0%	1.29	*3.56*	*0.44*	*4408*	*4408*	*20438*	To Los Volcanes and Pond 4 (Public)
C-1D2	165963	3.81	100.0%	0.0%	0.0%	0.0%	1.29	*4.91*	*0.44*	*6085*	*6085*	*28214*	To Temp Swale, Los Volcanes and Pond 4 (Public)
C-2D.1	544591	12.50	100.0%	0.0%	0.0%	0.0%	1.29	*16.13*	*0.44*	*19968*	*19968*	*92580*	To Temp Swale, Los Volcanes and Pond 4 (Public)
C-2D.2	54001	1.24	100.0%	0.0%	0.0%	0.0%	1.29	*1.60*	*0.44*	*1980*	*1980*	*9180*	To Los Volcanes and Pond 4 (Public)
C-3D	497104	11.41	100.0%	0.0%	0.0%	0.0%	1.29	*14.72*	*0.44*	*18227*	*18227*	*84508*	To Daytona and Pond 6 (Public)
C-4D	246344	5.66	100.0%	0.0%	0.0%	0.0%	1.29	*7.30*	*0.44*	*9033*	*9033*	*41878*	To Temp Swale, Los Volcanes and Pond 4 (Public)
D-1A	45518	1.04	0.0%	0.0%	10.0%	90.0%	4.22	*4.41*	*1.87*	*7101*	*9968*	*13170*	To Pond 6 (Public)
D-1B	29635	0.68	0.0%	0.0%	10.0%	90.0%	4.22	*2.87*	*1.87*	*4623*	*6490*	*8574*	To Pond 6 (Public)
D-1C	7360	0.17	0.0%	50.0%	10.0%	40.0%	3.05	*0.52*	*1.22*	*749*	*956*	*1731*	To Pond 6 (Public)
D-1D	12710	0.29	0.0%	90.0%	10.0%	0.0%	2.11	*0.62*	*0.70*	*744*	*744*	*2438*	To Pond 4 (Public)
A-1	19495	0.45	0.0%	0.0%	100.0%	0.0%	2.87	*1.28*	*0.99*	*1608*	*1608*	*4208*	To Pond 5 (Private)
A-2	126940	2.91	0.0%	0.0%	25.0%	75.0%	4.00	*11.64*	*1.73*	*18248*	*24912*	*35173*	To Pond 5 (Private)
A-3	35097	0.81	0.0%	0.0%	0.0%	100.0%	4.37	*3.52*	*1.97*	*5762*	*8219*	*10441*	To Pond 5 (Private)
A-4	94094	2.16	0.0%	0.0%	25.0%	75.0%	4.00	*8.63*	*1.73*	*13526*	*18466*	*26072*	To Pond 5 (Private)
A-5	46006	1.06	0.0%	0.0%	0.0%	100.0%	4.37	*4.62*	*1.97*	*7553*	*10773*	*13687*	To Pond 5 (Private)
A-6	22899	0.53	0.0%	0.0%	0.0%	100.0%	4.37	*2.30*	*1.97*	*3759*	*5362*	*6812*	To Pond 5 (Private)
A-7	22898	0.53	0.0%	0.0%	0.0%	100.0%	4.37	*2.30*	*1.97*	*3759*	*5362*	*6812*	To Pond 5 (Private)
A-8	22896	0.53	0.0%	0.0%	0.0%	100.0%	4.37	*2.30*	*1.97*	*3759*	*5361*	*6812*	To Pond 5 (Private)
A-9	20854	0.48	0.0%	0.0%	0.0%	100.0%	4.37	*2.09*	*1.97*	*3424*	*4883*	*6204*	To Pond 5 (Private)
A-10	62390	1.43	0.0%	0.0%	10.0%	90.0%	4.22	*6.04*	*1.87*	*9733*	*13663*	*18052*	To Pond 5 (Private)
A-11	129032	2.96	0.0%	0.0%	25.0%	75.0%	4.00	*11.83*	*1.73*	*18548*	*25323*	*35753*	To Pond 5 (Private)
A-12	67194	1.54	0.0%	0.0%	90.0%	10.0%	3.02	*4.66*	*1.09*	*6092*	*6563*	*15051*	To Pond 5 (Private)
A-13	30790	0.71	0.0%	0.0%	25.0%	75.0%	4.00	*2.82*	*1.73*	*4426*	*6043*	*8531*	To Pond 5 (Private)
A-14	18000	0.41	0.0%	0.0%	100.0%	0.0%	2.87	*1.19*	*0.99*	*1485*	*1485*	*3885*	To Pond 5 (Private)
A-15	195109	4.48	0.0%	0.0%	30.0%	70.0%	3.92	*17.56*	*1.68*	*27250*	*36811*	*53265*	To Pond 5 (Private)
A-16	49958	1.15	0.0%	0.0%	100.0%	0.0%	2.87	*3.29*	*0.99*	*4122*	*4122*	*10783*	To Los Volcanes and Pond 4 (Public)
A-17	8538	0.20	0.0%	0.0%	100.0%	0.0%	2.87	*0.56*	*0.99*	*704*	*704*	*1843*	To Los Volcanes and Pond 4 (Public)
P-5	66622	1.53	0.0%	0.0%	100.0%	0.0%	2.87	*4.39*	*0.99*	*5496*	*5496*	*14379*	To Pond 5 (Private)
LV-1	29565	0.68	0.0%	0.0%	10.0%	90.0%	4.22	*2.86*	*1.87*	*4612*	*6475*	*8554*	To Pond 4 (Public)
LV-2	31842	0.73	0.0%	0.0%	10.0%	90.0%	4.22	*3.08*	*1.87*	*4967*	*6973*	*9213*	To Pond 4 (Public)
LV-3	13271	0.30	0.0%	0.0%	10.0%	90.0%	4.22	*1.29*	*1.87*	*2070*	*2906*	*3840*	To Pond 4 (Public)
LV-4	7680	0.18	0.0%	50.0%	10.0%	40.0%	3.05	*0.54*	*1.22*	*782*	*997*	*1806*	To Pond 4 (Public)
LV-5	13253	0.30	0.0%	90.0%	10.0%	0.0%	2.11	*0.64*	*0.70*	*775*	*775*	*2542*	To Pond 4 (Public)
TOTAL	2857874	65.61						*156.07*		*225380*	*281142*	*606430*	

Ultimate Post Developed FedEX Ground Drainage Calculations

FedEx Developed and Upstream Basins Developed

This table is based on the COA DPM Section 22.2, Zone: 1

BASIN	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	WT E	$V(100)_{360}$	$V(100)_{1440}$	$V(100)_{10day}$	Comments
	(SQ. FT)	(AC.)	A	B	C	D	(cfs/ac.)	(CFS)	(inches)	(CF)	(CF)	(CF)	
C-1D1	120225	2.76	0.0%	0.0%	10.0%	90.0%	4.22	*11.65*	*1.87*	*18755*	*26329*	*34785*	To Los Volcanes and Pond 4 (Public)
C-1D2	165963	3.81	0.0%	0.0%	10.0%	90.0%	4.22	*16.08*	*1.87*	*25890*	*36346*	*48019*	To Los Volcanes and Pond 4 (Public)
C-2D.1	544591	12.50	0.0%	0.0%	10.0%	90.0%	4.22	*52.76*	*1.87*	*84956*	*119265*	*157568*	To Los Volcanes and Pond 4 (Public)
C-2D.2	54001	1.24	0.0%	0.0%	10.0%	90.0%	4.22	*5.23*	*1.87*	*8424*	*11826*	*15624*	To Los Volcanes and Pond 4 (Public)
C-3D	497104	11.41	0.0%	0.0%	10.0%	90.0%	4.22	*48.16*	*1.87*	*77548*	*108866*	*143829*	To Daytona and Pond 6 (Public)
C-4D	246344	5.66	0.0%	0.0%	10.0%	90.0%	4.22	*23.87*	*1.87*	*38430*	*53949*	*71276*	To Daytona and Pond 6 (Public)
D-1A	45518	1.04	0.0%	0.0%	10.0%	90.0%	4.22	*4.41*	*1.87*	*7101*	*9968*	*13170*	To Pond 6 (Public)
D-1B	29635	0.68	0.0%	0.0%	10.0%	90.0%	4.22	*2.87*	*1.87*	*4623*	*6490*	*8574*	To Pond 6 (Public)
D-1C	7360	0.17	0.0%	0.0%	10.0%	90.0%	4.22	*0.71*	*1.87*	*1148*	*1612*	*2129*	To Pond 6 (Public)
D-1D	12710	0.29	0.0%	0.0%	10.0%	90.0%	4.22	*1.23*	*1.87*	*1983*	*2783*	*3677*	To Pond 6 (Public)
A-1	19495	0.45	0.0%	0.0%	100.0%	0.0%	2.87	*1.28*	*0.99*	*1608*	*1608*	*4208*	To Pond 5 (Private)
A-2	126940	2.91	0.0%	0.0%	25.0%	75.0%	4.00	*11.64*	*1.73*	*18248*	*24912*	*35173*	To Pond 5 (Private)
A-3	35097	0.81	0.0%	0.0%	0.0%	100.0%	4.37	*3.52*	*1.97*	*5762*	*8219*	*10441*	To Pond 5 (Private)
A-4	94094	2.16	0.0%	0.0%	25.0%	75.0%	4.00	*8.63*	*1.73*	*13526*	*18466*	*26072*	To Pond 5 (Private)
A-5	46006	1.06	0.0%	0.0%	0.0%	100.0%	4.37	*4.62*	*1.97*	*7553*	*10773*	*13687*	To Pond 5 (Private)
A-6	22899	0.53	0.0%	0.0%	0.0%	100.0%	4.37	*2.30*	*1.97*	*3759*	*5362*	*6812*	To Pond 5 (Private)
A-7	22898	0.53	0.0%	0.0%	0.0%	100.0%	4.37	*2.30*	*1.97*	*3759*	*5362*	*6812*	To Pond 5 (Private)
A-8	22896	0.53	0.0%	0.0%	0.0%	100.0%	4.37	*2.30*	*1.97*	*3759*	*5361*	*6812*	To Pond 5 (Private)
A-9	20854	0.48	0.0%	0.0%	0.0%	100.0%	4.37	*2.09*	*1.97*	*3424*	*4883*	*6204*	To Pond 5 (Private)
A-10	62390	1.43	0.0%	0.0%	10.0%	90.0%	4.22	*6.04*	*1.87*	*9733*	*13663*	*18052*	To Pond 5 (Private)
A-11	129032	2.96	0.0%	0.0%	25.0%	75.0%	4.00	*11.83*	*1.73*	*18548*	*25323*	*35753*	To Pond 5 (Private)
A-12	67194	1.54	0.0%	0.0%	90.0%	10.0%	3.02	*4.66*	*1.09*	*6092*	*6563*	*15051*	To Pond 5 (Private)
A-13	30790	0.71	0.0%	0.0%	25.0%	75.0%	4.00	*2.82*	*1.73*	*4426*	*6043*	*8531*	To Pond 5 (Private)
A-14	18000	0.41	0.0%	0.0%	100.0%	0.0%	2.87	*1.19*	*0.99*	*1485*	*1485*	*3885*	To Pond 5 (Private)
A-15	195109	4.48	0.0%	0.0%	30.0%	70.0%	3.92	*17.56*	*1.68*	*27250*	*36811*	*53265*	To Pond 5 (Private)
A-16	49958	1.15	0.0%	0.0%	100.0%	0.0%	2.87	*3.29*	*0.99*	*4122*	*4122*	*10783*	To Los Volcanes and Pond 4 (Public)
A-17	8538	0.20	0.0%	0.0%	100.0%	0.0%	2.87	*0.56*	*0.99*	*704*	*704*	*1843*	To Los Volcanes and Pond 4 (Public)
P-5	66622	1.53	0.0%	0.0%	100.0%	0.0%	2.87	*4.39*	*0.99*	*5496*	*5496*	*14379*	To Pond 5 (Private)
LV-1	29565	0.68	0.0%	0.0%	10.0%	90.0%	4.22	*2.86*	*1.87*	*4612*	*6475*	*8554*	To Pond 4 (Public)
LV-2	31842	0.73	0.0%	0.0%	10.0%	90.0%	4.22	*3.08*	*1.87*	*4967*	*6973*	*9213*	To Pond 4 (Public)
LV-3	13271	0.30	0.0%	0.0%	10.0%	90.0%	4.22	*1.29*	*1.87*	*2070*	*2906*	*3840*	To Pond 4 (Public)
LV-4	7680	0.18	0.0%	0.0%	10.0%	90.0%	4.22	*0.74*	*1.87*	*1198*	*1682*	*2222*	To Pond 4 (Public)
LV-5	13253	0.30	0.0%	0.0%	10.0%	90.0%	4.22	*1.28*	*1.87*	*2067*	*2902*	*3835*	To Pond 4 (Public)
TOTAL	2857874	65.61						*267.25*		*423028*	*583530*	*804078*	

FEDEX GROUND ABQ

STORM DRAIN PIPES

Pipe #	Size in.	Slope %	Capacity cfs	Actual Flow cfs	Pipe Length ft	Contributing Basins	Comments
1	18	1.07	11.71	*1.28*	140.00	A-1	
2	18	1.10	11.88	*11.64*	85.00	A-2	
3	24	0.60	18.84	*12.92*	260.00	A-1, A-2	
4	18	4.25	10.75	*8.63*	102.00	A-4	
5	12	1.00	3.57	*3.52*	101.00	A-3	
6	30	0.70	34.41	*25.07*	70.00	A-1, A-2, A-3, A-4	
7	30	0.70	34.41	*30.90*	80.00	A-1, A-2, A-3, A-4, A-5, Part A-10	
8	30	0.70	34.41	*34.41*	80.00	A-1, A-2, A-3, A-4, A-5, Part A-10, A-6	
9	36	0.60	55.48	*37.92*	80.00	A-1, A-2, A-3, A-4, A-5, Part A-10, A-6, A-7	
10	36	0.60	55.48	*41.43*	80.00	A-1, A-2, A-3, A-4, A-5, Part A-10, A-6, A-7, A-8	
11	36	0.60	55.48	*44.73*	25.00	A-1, A-2, A-3, A-4, A-5, Part A-10, A-6, A-7, A-8, A-9	
12	36	1.60	84.59	*44.73*	130.00	A-1, A-2, A-3, A-4, A-5, Part A-10, A-6, A-7, A-8, A-9	
13	18	2.65	18.26	*16.49*	110.00	A-11, A-12	
14	36	10.73	234.60	*61.22*	115.00	A-1, A-2, A-3, A-4, A-5, A-10, A-6, A-7, A-8, A-9, A-11, A-12	
15	24	0.60	18.84	*17.56*	40.00	A-15	
16	24	0.60	18.84	*17.56*	330.00	A-15	
17	24	7.34	65.88	*17.56*	155.00	A-15	
18	30	2.12	59.88	*28.34*	40.00	C-1D1, C-2D.1, C-1D2, C-2D2	Interim Conditions
19	30	4.50	87.24	*87.00*	400.00	C-1D1, C-2D.1, C-1D2, C-2D2, LV-5	Ultimate Conditions
20	36	1.70	87.20	*87.00*	400.00	C-1D1, C-2D.1, C-1D2, C-2D2, LV-5	Ultimate Conditions
21	18	17.73	43.47	*3.85*	15.00	A-16, A-17	
22	18	23.00	59.43	*8.48*	5.00	A-16, A-17, 1/2 LV	
23	42	1.00	100.88	*89.86*	179.00	C-1D1, C-2D.1, C-1D2, C-2D2, A-16, A-17, LV-5, LV-1	Ultimate Conditions

Pipe capacities are based on gravity flow using manning's equation with n=0.013

LOS VOLCANES STREET CAPACITY

Worksheet for Irregular Section - Full Width

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.01470	ft/ft ←
Normal Depth	0.57	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48
0+38	100.13
0+40	100.00
0+40	100.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+40, 100.67)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge		56.63	ft³/s ← ½ Section $Q_{CAP.}$ = 28.31 cfs
Elevation Range	100.00 to 100.67 ft		
Flow Area		11.66	ft² ≥ Q_{MAX} = 8.70 cfs
Wetted Perimeter		41.15	ft
Hydraulic Radius		0.28	ft
Top Width		40.00	ft

Worksheet for Irregular Section - Full Width

Results

Normal Depth		0.57	ft
Critical Depth		0.67	ft
Critical Slope		0.00531	ft/ft
Velocity		4.86	ft/s
Velocity Head		0.37	ft
Specific Energy		0.94	ft
Froude Number		1.59	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.57	ft
Critical Depth	0.67	ft
Channel Slope	0.01470	ft/ft
Critical Slope	0.00531	ft/ft

LOS VOLCANES STREET CAPACITY

Worksheet for Irregular Section - Full Width

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.05190	ft/ft ←
Normal Depth	0.47	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48
0+38	100.13
0+40	100.00
0+40	100.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+40, 100.67)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge		53.96	ft³/s ← ½ Section Q_{CAP} = 26.98 cfs
Elevation Range	100.00 to 100.67 ft		≥ Q_{MAX} = 8.70 cfs
Flow Area		7.67	ft²
Wetted Perimeter		39.94	ft
Hydraulic Radius		0.19	ft
Top Width		38.99	ft

Worksheet for Irregular Section - Full Width

Results

Normal Depth		0.47	ft
Critical Depth		0.66	ft
Critical Slope		0.00536	ft/ft
Velocity		7.04	ft/s
Velocity Head		0.77	ft
Specific Energy		1.24	ft
Froude Number		2.80	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.47	ft
Critical Depth	0.66	ft
Channel Slope	0.05190	ft/ft
Critical Slope	0.00536	ft/ft

LOS VOLCANES STREET CAPACITY

Worksheet for Irregular Section - Full Width

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.02440	ft/ft
Normal Depth	0.52	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48
0+38	100.13
0+40	100.00
0+40	100.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+40, 100.67)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge		53.41	ft³/s
Elevation Range	100.00 to 100.67 ft		
Flow Area		9.66	ft²
Wetted Perimeter		41.05	ft
Hydraulic Radius		0.24	ft
Top Width		40.00	ft

$\frac{1}{2}$ Section $Q_{CAP} = 26.7$ cfs

$\geq Q_{MAX} = 8.70$ cfs

Worksheet for Irregular Section - Full Width

Results

Normal Depth		0.52	ft
Critical Depth		0.66	ft
Critical Slope		0.00537	ft/ft
Velocity		5.53	ft/s
Velocity Head		0.48	ft
Specific Energy		1.00	ft
Froude Number		1.98	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth		0.00	ft
Length		0.00	ft
Number Of Steps		0	

GVF Output Data

Upstream Depth		0.00	ft
Profile Description			
Profile Headloss		0.00	ft
Downstream Velocity		Infinity	ft/s
Upstream Velocity		Infinity	ft/s
Normal Depth		0.52	ft
Critical Depth		0.66	ft
Channel Slope		0.02440	ft/ft
Critical Slope		0.00537	ft/ft

DAYTONA STREET CAPACITY

Worksheet for Irregular Section - Full Width

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.04050	ft/ft
Normal Depth	0.49	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48
0+38	100.13
0+40	100.00
0+40	100.67

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+40, 100.67)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge		55.22	ft³/s
Elevation Range	100.00 to 100.67 ft		
Flow Area		8.46	ft²
Wetted Perimeter		40.99	ft
Hydraulic Radius		0.21	ft
Top Width		40.00	ft

½ SECTION Q_{CAP} = 27.61 cfs
≥ Q_{MAX} = 2.87 cfs

Worksheet for Irregular Section - Full Width

Results

Normal Depth		0.49	ft
Critical Depth		0.67	ft
Critical Slope		0.00534	ft/ft
Velocity		6.53	ft/s
Velocity Head		0.66	ft
Specific Energy		1.15	ft
Froude Number		2.50	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.49	ft
Critical Depth	0.67	ft
Channel Slope	0.04050	ft/ft
Critical Slope	0.00534	ft/ft

LOS VOLCANES @ DI #14

Worksheet for Irregular Section - Half Width

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01470	ft/ft
Discharge	8.70	ft³/s ← BASINS: C-1D1, C-2D.2 & LV-5 UNDEV. LV-1 DEVELOPED
Section Definitions		

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+20, 100.48)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		0.40	ft ←
Elevation Range	100.00 to 100.67 ft		
Flow Area		2.63	ft²
Wetted Perimeter		16.46	ft
Hydraulic Radius		0.16	ft
Top Width		16.05	ft
Normal Depth		0.40	ft
Critical Depth		0.45	ft ←
Critical Slope		0.00672	ft/ft

Worksheet for Irregular Section - Half Width

Results

Velocity		3.31	ft/s
Velocity Head		0.17	ft
Specific Energy		0.57	ft
Froude Number		1.44	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.40	ft
Critical Depth	0.45	ft
Channel Slope	0.01470	ft/ft
Critical Slope	0.00672	ft/ft

Cross Section for Irregular Section - Half Width

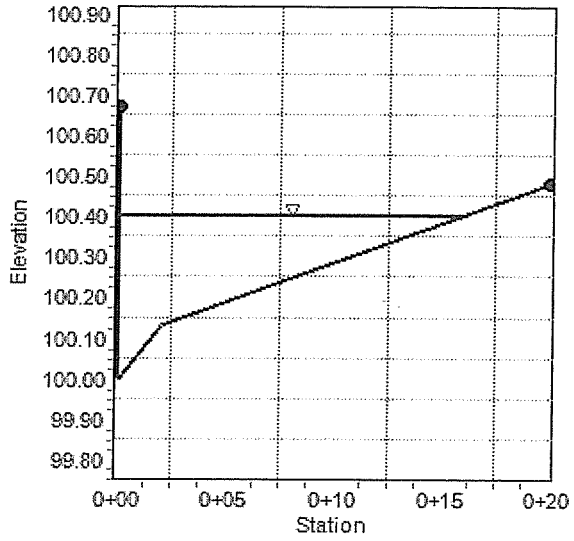
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01470	ft/ft
Normal Depth	0.40	ft
Discharge	8.70	ft^3/s

Cross Section Image



LOS VOLCANES @ DI#11

Worksheet for Irregular Section - Half Width

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01470	ft/ft
Discharge	3.67	ft³/s
Section Definitions		

← BASINS: C-1D1, C-2D.2 & LV-5 UNDER LV-1 DEVELOPED
LESS FLOW TO INLET #14

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+20, 100.48)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		0.31	ft ←
Elevation Range	100.00 to 100.67 ft		
Flow Area		1.37	ft²
Wetted Perimeter		11.71	ft
Hydraulic Radius		0.12	ft
Top Width		11.39	ft
Normal Depth		0.31	ft
Critical Depth		0.34	ft ←
Critical Slope		0.00753	ft/ft

Worksheet for Irregular Section - Half Width

Results

Velocity		2.69	ft/s
Velocity Head		0.11	ft
Specific Energy		0.42	ft
Froude Number		1.37	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.31	ft
Critical Depth	0.34	ft
Channel Slope	0.01470	ft/ft
Critical Slope	0.00753	ft/ft

DAYTONA @ DI #13

Worksheet for Irregular Section - Half Width

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01570	ft/ft
Discharge	2.87	ft³/s ← D-18 Developed

Section Definitions

Station (ft)	Elevation (ft)
0+00	100.67
0+00	100.00
0+02	100.13
0+20	100.48

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 100.67)	(0+20, 100.48)	0.016

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.29	ft ←
Elevation Range	100.00 to 100.67 ft	
Flow Area	1.10	ft²
Wetted Perimeter	10.45	ft
Hydraulic Radius	0.11	ft
Top Width	10.16	ft
Normal Depth	0.29	ft
Critical Depth	0.32	ft ←
Critical Slope	0.00778	ft/ft

Worksheet for Irregular Section - Half Width

Results

Velocity		2.60	ft/s
Velocity Head		0.11	ft
Specific Energy		0.39	ft
Froude Number		1.39	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.29	ft
Critical Depth	0.32	ft
Channel Slope	0.01570	ft/ft
Critical Slope	0.00778	ft/ft

TIERRA WEST, LLC

Project FedEx Ground ALB Date

Project No. Inlet Capacity

Meeting Purpose Sheet No 1 of 1

Attendees

SUMP INLET #2 CAPACITY ANALYSIS

GRATE OPENING (AREA) (PER COA STD DWG #2220, SINGLE GRATE)

GROSS AREA PER GRATE = (25 in/12)(40 in/12) = 6.94 sf

LESS BEARING BARS = (0.5 in/12)(3.33 ft)(13) = 1.80 sf

LESS CROSS BARS = (0.5 in/12)(7)(25 in/12) - 13(0.5 in/12) = 0.45 sf

NET GRATE OPEN AREA = 4.69 sf

GRATE AREA OPENING @ 50% CLOGGING FACTOR = 2.35 sf

USE GRATE AREA OPENING FOR DOUBLE 6" INLET = 4.70 sf

ORIFICE EQUATION:

$$Q = CA(2gh)^{1/2}$$

$C = 0.67$

$g = 32.2 \text{ ft/sec}^2$

$A = 2.35 \text{ ft}^2 (2 \text{ GRATES}) = 4.70 \text{ ft}^2$

h = height of WATER Above GRATE

where $h = 6''$ (height of CURB) $\Rightarrow Q = 0.67(4.70)[(2)32.2(.5)]^{1/2}$

$Q = 17.87 \text{ cfs}$

BASIN A-2

AREA = 2.91 AC

$Q_{MAX} = 11.64 \text{ cfs} \leq Q_{CAPACITY} = 17.87 \text{ cfs}$ OK

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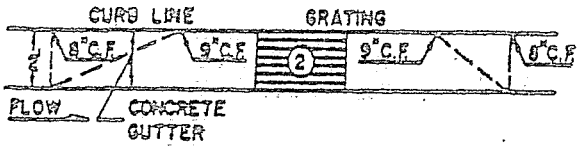
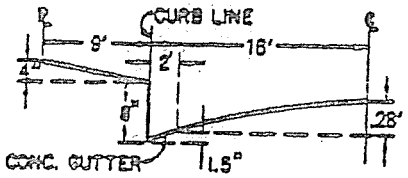
GRATING CAPACITIES FOR TYPE "A" , "C" and "D"



GRATING & GUTTER PLAN



TYPICAL HALF STREET SECTION
(ABOVE BASIN)

FedEx Ground ABQ
Los Volcanes Rd.
Slope = 1.47%

PLATE 22.3 D-5

VOLUME CALCULATIONS

Pond 5 - Proposed Conditions

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
59.00	0	0	0.000
60.00	1.00	0.2646	2.745
65.00	6.00	2.1906	8.002
70.00	11.00	5.2846	10.979
70.50	11.50	5.6666	11.233

Emergency Overflow

Orifice Equation

Q = CA SQRT(2gH)

C = 0.6

Diameter (in) 8 Two Each

Area (ft^2)= 0.34906585

g = 32.2

H (Ft) = Depth of water above center of orifice

Q (CFS)= Flow

FedEx Ground, Albuquerque

Pond #5

Detention Pond Volume Calculation

Elev	Area	Elev Change	Avg Area	Volume	Cumulative Volume	
	SF	FT	SF	CU.FT.	CU.FT.	ACRE-FT
5159	10648					
5160	12400	1	11524	11524	11524	0.264555
5165	21160	5	16780	83900	95424	2.190634
5170	32750	5	26955	134775	230199	5.284642
5170.5	33800	0.5	33275	16637.5	246836.5	5.666586

```
**********************************************************************
*          FEDEX GROUND ALBUQUERQUE, NM                              *
**********************************************************************
* 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ routing *
**********************************************************************
*
START                TIME=0.0
*
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.05 HR
*DEVELOPED CONDITIONS
*
*BASIN A1
*
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00070 SQ MI
                     PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*BASIN A2
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.00363 SQ MI
                     PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
*
*BASIN A3
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.00126 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=3 CODE=1
*
*
*BASIN A4
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.00389 SQ MI
                     PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=4 CODE=1
*
*BASIN A5
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.00165 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=5 CODE=1
*
*BASIN A6
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.00082 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=6 CODE=1
*
*
*BASIN A7
*
COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.00082 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1
```

```
 PRINT HYD            ID=7 CODE=1
 *
 *BASIN A8
 *
 COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.00082 SQ MI
                      PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                      TP=-0.1333 HR MASS RAINFALL=-1
 PRINT HYD            ID=8 CODE=1
 *
 *BASIN A9
 *
 COMPUTE NM HYD       ID=9 HYD NO=100.9 AREA=0.00075 SQ MI
                      PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                      TP=-0.1333 HR MASS RAINFALL=-1
 PRINT HYD            ID=9 CODE=1
 *
 *
 *BASIN A10
 *
 COMPUTE NM HYD       ID=10 HYD NO=100.10 AREA=0.00224 SQ MI
                      PER A=0.00 PER B=0.00 PER C=10.0 PER D=90.00
                      TP=-0.1333 HR MASS RAINFALL=-1
 PRINT HYD            ID=10 CODE=1
 *
 *BASIN A11
 *
 COMPUTE NM HYD       ID=11 HYD NO=100.11 AREA=0.00433 SQ MI
                      PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                      TP=-0.1333 HR MASS RAINFALL=-1
 PRINT HYD            ID=11 CODE=1
 *
 *BASIN A12
 *
 COMPUTE NM HYD       ID=12 HYD NO=100.12 AREA=0.00241 SQ MI
                      PER A=0.00 PER B=0.00 PER C=90.0 PER D=10.00
                      TP=-0.1333 HR MASS RAINFALL=-1
 PRINT HYD            ID=12 CODE=1
 *
 *
 *BASIN A13
 *
 COMPUTE NM HYD       ID=13 HYD NO=100.13 AREA=0.00110 SQ MI
                      PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                      TP=-0.1333 HR MASS RAINFALL=-1
 PRINT HYD            ID=13 CODE=1
 *
 *BASIN A14
 *
 COMPUTE NM HYD       ID=14 HYD NO=100.14 AREA=0.00065 SQ MI
                      PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                      TP=-0.1333 HR MASS RAINFALL=-1
 PRINT HYD            ID=14 CODE=1
 *
 *BASIN A15
 *
 COMPUTE NM HYD       ID=15 HYD NO=100.15 AREA=0.00700 SQ MI
                      PER A=0.00 PER B=0.00 PER C=30.0 PER D=70.00
                      TP=-0.1333 HR MASS RAINFALL=-1
 PRINT HYD            ID=15 CODE=1
 *
 *
 *BASIN P5
 *
```

```
COMPUTE NM HYD      ID=16 HYD NO=100.16 AREA=0.00239 SQ MI
                    PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=16 CODE=1
*
*
ADD HYD             ID=50 HYD NO=100.5 ID=1 ID=2
ADD HYD             ID=50 HYD NO=100.6 ID=50 ID=3
ADD HYD             ID=50 HYD NO=100.8 ID=50 ID=4
ADD HYD             ID=50 HYD NO=100.9 ID=50 ID=5
ADD HYD             ID=50 HYD NO=100.10 ID=50 ID=6
ADD HYD             ID=50 HYD NO=100.11 ID=50 ID=7
ADD HYD             ID=50 HYD NO=100.12 ID=50 ID=8
ADD HYD             ID=50 HYD NO=100.13 ID=50 ID=9
ADD HYD             ID=50 HYD NO=100.14 ID=50 ID=10
ADD HYD             ID=50 HYD NO=100.15 ID=50 ID=11
ADD HYD             ID=50 HYD NO=100.16 ID=50 ID=12
ADD HYD             ID=50 HYD NO=100.17 ID=50 ID=13
ADD HYD             ID=50 HYD NO=100.18 ID=50 ID=14
ADD HYD             ID=50 HYD NO=100.19 ID=50 ID=15
ADD HYD             ID=50 HYD NO=100.20 ID=50 ID=16
*
PRINT HYD           ID=50 CODE=1
*
*
*ROUTE THROUGH DETENTION POND NO 1
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24
                    OUTFLOW (CFS)  STORAGE(AC-FT)  ELEVATION(FT)
                    0.0            0.0             59.00
                    2.745          0.2646          60.00
                    8.002          2.1906          65.00
                    10.979         5.2846          70.00
                    11.233         5.6666          70.50
*
PRINT HYD           ID=55  CODE=1
*
*
FINISH
```

```
      AHYMO PROGRAM (AHYMO-S4)                        - Version: S4.01a - Rel: 01a
            RUN DATE (MON/DAY/YR) = 06/25/2014
            START TIME (HR:MIN:SEC) = 15:34:11      USER NO.=
AHYMO_Temp_User:20122010
            INPUT FILE = C:\Users\vince.TWLLC\Desktop\hymo .txt

    ***************************************************************
    *           FEDEX GROUND ALBUQUERQUE, NM                      *
    ***************************************************************
    * 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ routing *
    ***************************************************************
    *
    START                 TIME=0.0
    *
    *
    RAINFALL              TYPE=2 RAIN QUARTER=0.0 IN
                          RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                          RAIN DAY=2.66 IN DT=0.05 HR

                  24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
                  DT =   0.050000 HOURS       END TIME =    24.000002 HOURS
                    0.0000  0.0022  0.0045  0.0069  0.0096  0.0123  0.0154
                    0.0197  0.0264  0.0336  0.0412  0.0494  0.0578  0.0664
                    0.0753  0.0844  0.0946  0.1052  0.1168  0.1387  0.1657
                    0.2020  0.2430  0.2937  0.3614  0.4375  0.5689  0.7733
                    1.1234  1.3695  1.5635  1.6610  1.7465  1.8079  1.8568
                    1.8994  1.9306  1.9592  1.9828  1.9979  2.0087  2.0183
                    2.0273  2.0352  2.0426  2.0499  2.0568  2.0625  2.0659
                    2.0692  2.0724  2.0754  2.0784  2.0813  2.0842  2.0870
                    2.0896  2.0923  2.0949  2.0974  2.0999  2.1023  2.1046
                    2.1069  2.1092  2.1115  2.1136  2.1158  2.1179  2.1199
                    2.1220  2.1240  2.1260  2.1280  2.1299  2.1318  2.1337
                    2.1356  2.1374  2.1392  2.1411  2.1428  2.1446  2.1463
                    2.1481  2.1498  2.1514  2.1531  2.1548  2.1564  2.1580
                    2.1596  2.1612  2.1628  2.1643  2.1658  2.1674  2.1689
                    2.1704  2.1718  2.1733  2.1747  2.1762  2.1776  2.1790
                    2.1804  2.1818  2.1832  2.1845  2.1859  2.1872  2.1885
                    2.1899  2.1912  2.1925  2.1937  2.1950  2.1963  2.1975
                    2.1988  2.2000  2.2013  2.2026  2.2038  2.2051  2.2064
                    2.2077  2.2089  2.2102  2.2115  2.2128  2.2141  2.2153
                    2.2166  2.2179  2.2192  2.2204  2.2217  2.2230  2.2243
                    2.2256  2.2268  2.2281  2.2294  2.2307  2.2319  2.2332
                    2.2345  2.2358  2.2371  2.2383  2.2396  2.2409  2.2422
                    2.2434  2.2447  2.2460  2.2473  2.2486  2.2498  2.2511
                    2.2524  2.2537  2.2549  2.2562  2.2575  2.2588  2.2601
                    2.2613  2.2626  2.2639  2.2652  2.2664  2.2677  2.2690
                    2.2703  2.2716  2.2728  2.2741  2.2754  2.2767  2.2779
                    2.2792  2.2805  2.2818  2.2831  2.2843  2.2856  2.2869
                    2.2882  2.2894  2.2907  2.2920  2.2933  2.2946  2.2958
                    2.2971  2.2984  2.2997  2.3009  2.3022  2.3035  2.3048
                    2.3061  2.3073  2.3086  2.3099  2.3112  2.3124  2.3137
                    2.3150  2.3163  2.3176  2.3188  2.3201  2.3214  2.3227
                    2.3239  2.3252  2.3265  2.3278  2.3291  2.3303  2.3316
                    2.3329  2.3342  2.3354  2.3367  2.3380  2.3393  2.3406
                    2.3418  2.3431  2.3444  2.3457  2.3469  2.3482  2.3495
                    2.3508  2.3521  2.3533  2.3546  2.3559  2.3572  2.3584
                    2.3597  2.3610  2.3623  2.3636  2.3648  2.3661  2.3674
                    2.3687  2.3699  2.3712  2.3725  2.3738  2.3750  2.3763
                    2.3776  2.3789  2.3802  2.3814  2.3827  2.3840  2.3853
                    2.3865  2.3878  2.3891  2.3904  2.3917  2.3929  2.3942
```

2.3955	2.3968	2.3980	2.3993	2.4006	2.4019	2.4032
2.4044	2.4057	2.4070	2.4083	2.4095	2.4108	2.4121
2.4134	2.4147	2.4159	2.4172	2.4185	2.4198	2.4210
2.4223	2.4236	2.4249	2.4262	2.4274	2.4287	2.4300
2.4313	2.4325	2.4338	2.4351	2.4364	2.4377	2.4389
2.4402	2.4415	2.4428	2.4440	2.4453	2.4466	2.4479
2.4492	2.4504	2.4517	2.4530	2.4543	2.4555	2.4568
2.4581	2.4594	2.4607	2.4619	2.4632	2.4645	2.4658
2.4670	2.4683	2.4696	2.4709	2.4722	2.4734	2.4747
2.4760	2.4773	2.4785	2.4798	2.4811	2.4824	2.4837
2.4849	2.4862	2.4875	2.4888	2.4900	2.4913	2.4926
2.4939	2.4952	2.4964	2.4977	2.4990	2.5003	2.5015
2.5028	2.5041	2.5054	2.5067	2.5079	2.5092	2.5105
2.5118	2.5130	2.5143	2.5156	2.5169	2.5182	2.5194
2.5207	2.5220	2.5233	2.5245	2.5258	2.5271	2.5284
2.5297	2.5309	2.5322	2.5335	2.5348	2.5360	2.5373
2.5386	2.5399	2.5412	2.5424	2.5437	2.5450	2.5463
2.5475	2.5488	2.5501	2.5514	2.5527	2.5539	2.5552
2.5565	2.5578	2.5590	2.5603	2.5616	2.5629	2.5642
2.5654	2.5667	2.5680	2.5693	2.5705	2.5718	2.5731
2.5744	2.5757	2.5769	2.5782	2.5795	2.5808	2.5820
2.5833	2.5846	2.5859	2.5872	2.5884	2.5897	2.5910
2.5923	2.5935	2.5948	2.5961	2.5974	2.5987	2.5999
2.6012	2.6025	2.6038	2.6050	2.6063	2.6076	2.6089
2.6102	2.6114	2.6127	2.6140	2.6153	2.6165	2.6178
2.6191	2.6204	2.6217	2.6229	2.6242	2.6255	2.6268
2.6280	2.6293	2.6306	2.6319	2.6332	2.6344	2.6357
2.6370	2.6383	2.6395	2.6408	2.6421	2.6434	2.6447
2.6459	2.6472	2.6485	2.6498	2.6510	2.6523	2.6536
2.6549	2.6562	2.6574	2.6587	2.6600		

```
 *DEVELOPED CONDITIONS
 *
 *BASIN A1
 *
 COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00070 SQ MI
                      PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                      TP=-0.1333 HR MASS RAINFALL=-1

       K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE
CONSTANT, N =  4.514592
       UNIT PEAK =   2.0382    CFS   UNIT VOLUME =   0.9961       B =   388.14
 P60 = 1.8700
       AREA =     0.000700 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
       RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

   PRINT HYD           ID=1 CODE=1

                                    PARTIAL HYDROGRAPH   100.10

      RUNOFF VOLUME =     1.08591 INCHES      =       0.0405 ACRE-FEET
      PEAK DISCHARGE RATE =       1.41 CFS  AT   1.500 HOURS   BASIN AREA =
0.0007 SQ. MI.


   *
   *BASIN A2
   *
   COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.00363 SQ MI
```

PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 10.749 CFS UNIT VOLUME = 0.9981 B = 526.28 P60 = 1.8700
AREA = 0.002723 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.105867HR TP = 0.133300HR K/TP RATIO = 0.794199 SHAPE CONSTANT, N = 4.514593
UNIT PEAK = 2.6424 CFS UNIT VOLUME = 0.9970 B = 388.14 P60 = 1.8700
AREA = 0.000908 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=2 CODE=1

PARTIAL HYDROGRAPH 100.20

RUNOFF VOLUME = 2.08322 INCHES = 0.4033 ACRE-FEET
PEAK DISCHARGE RATE = 9.63 CFS AT 1.500 HOURS BASIN AREA = 0.0036 SQ. MI.

*
*BASIN A3
*
COMPUTE NM HYD ID=3 HYD NO=100.3 AREA=0.00126 SQ MI
PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 4.9745 CFS UNIT VOLUME = 0.9971 B = 526.28 P60 = 1.8700
AREA = 0.001260 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=3 CODE=1

PARTIAL HYDROGRAPH 100.30

RUNOFF VOLUME = 2.41566 INCHES = 0.1623 ACRE-FEET
PEAK DISCHARGE RATE = 3.61 CFS AT 1.500 HOURS BASIN AREA = 0.0013 SQ. MI.

*
*
*BASIN A4

```
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.00389 SQ MI
                     PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                     TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000    SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   11.518    CFS   UNIT VOLUME =   0.9981       B =   526.28
 P60 = 1.8700
        AREA =     0.002918 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


        K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199    SHAPE
CONSTANT, N =  4.514593
        UNIT PEAK =   2.8317    CFS   UNIT VOLUME =   0.9977       B =   388.14
 P60 = 1.8700
        AREA =     0.000973 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD          ID=4 CODE=1

                                       PARTIAL HYDROGRAPH   100.40

        RUNOFF VOLUME =     2.08322 INCHES      =       0.4322 ACRE-FEET
        PEAK DISCHARGE RATE =      10.32 CFS  AT   1.500 HOURS   BASIN AREA =
0.0039 SQ. MI.


    *
    *BASIN A5
    *
    COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.00165 SQ MI
                         PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                         TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000    SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   6.5143    CFS   UNIT VOLUME =   0.9975       B =   526.28
 P60 = 1.8700
        AREA =     0.001650 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD          ID=5 CODE=1

                                       PARTIAL HYDROGRAPH   100.50

        RUNOFF VOLUME =     2.41566 INCHES      =       0.2126 ACRE-FEET
        PEAK DISCHARGE RATE =      4.73 CFS  AT   1.500 HOURS   BASIN AREA =
0.0017 SQ. MI.


*
```

```
*BASIN A6
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.00082 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   3.2374    CFS   UNIT VOLUME =   0.9959       B =   526.28
 P60 = 1.8700
        AREA =     0.000820 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD          ID=6 CODE=1

                                        PARTIAL HYDROGRAPH   100.60

        RUNOFF VOLUME =     2.41566 INCHES     =       0.1056 ACRE-FEET
        PEAK DISCHARGE RATE =       2.35 CFS  AT   1.500 HOURS   BASIN AREA =
0.0008 SQ. MI.


    *
    *
    *BASIN A7
    *
    COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.00082 SQ MI
                         PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                         TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   3.2374    CFS   UNIT VOLUME =   0.9959       B =   526.28
 P60 = 1.8700
        AREA =     0.000820 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD          ID=7 CODE=1

                                        PARTIAL HYDROGRAPH   100.70

        RUNOFF VOLUME =     2.41566 INCHES     =       0.1056 ACRE-FEET
        PEAK DISCHARGE RATE =       2.35 CFS  AT   1.500 HOURS   BASIN AREA =
0.0008 SQ. MI.


    *
    *BASIN A8
    *
    COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.00082 SQ MI
                         PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                         TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
```

UNIT PEAK = 3.2374 CFS UNIT VOLUME = 0.9959 B = 526.28
P60 = 1.8700
AREA = 0.000820 SQ MI IA = 0.10000 INCHES INF = 0.04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 100.80

RUNOFF VOLUME = 2.41566 INCHES = 0.1056 ACRE-FEET
PEAK DISCHARGE RATE = 2.35 CFS AT 1.500 HOURS BASIN AREA =
0.0008 SQ. MI.

```
*
*BASIN A9
*
COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.00075 SQ MI
                    PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                    TP=-0.1333 HR MASS RAINFALL=-1
```

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE
CONSTANT, N = 7.106428
UNIT PEAK = 2.9610 CFS UNIT VOLUME = 0.9959 B = 526.28
P60 = 1.8700
AREA = 0.000750 SQ MI IA = 0.10000 INCHES INF = 0.04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

PRINT HYD ID=9 CODE=1

PARTIAL HYDROGRAPH 100.90

RUNOFF VOLUME = 2.41566 INCHES = 0.0966 ACRE-FEET
PEAK DISCHARGE RATE = 2.15 CFS AT 1.500 HOURS BASIN AREA =
0.0008 SQ. MI.

```
*
*
*BASIN A10
*
COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.00224 SQ MI
                    PER A=0.00 PER B=0.00 PER C=10.0 PER D=90.00
                    TP=-0.1333 HR MASS RAINFALL=-1
```

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE
CONSTANT, N = 7.106428
UNIT PEAK = 7.9593 CFS UNIT VOLUME = 0.9978 B = 526.28
P60 = 1.8700
AREA = 0.002016 SQ MI IA = 0.10000 INCHES INF = 0.04000
INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

K = 0.105867HR TP = 0.133300HR K/TP RATIO = 0.794199 SHAPE CONSTANT, N = 4.514592
UNIT PEAK = 0.65223 CFS UNIT VOLUME = 0.9821 B = 388.14 P60 = 1.8700
AREA = 0.000224 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 100.10

RUNOFF VOLUME = 2.28268 INCHES = 0.2727 ACRE-FEET
PEAK DISCHARGE RATE = 6.24 CFS AT 1.500 HOURS BASIN AREA = 0.0022 SQ. MI.

*
*BASIN A11
*
COMPUTE NM HYD ID=11 HYD NO=100.11 AREA=0.00433 SQ MI
PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 12.821 CFS UNIT VOLUME = 0.9983 B = 526.28 P60 = 1.8700
AREA = 0.003248 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.105867HR TP = 0.133300HR K/TP RATIO = 0.794199 SHAPE CONSTANT, N = 4.514593
UNIT PEAK = 3.1520 CFS UNIT VOLUME = 0.9977 B = 388.14 P60 = 1.8700
AREA = 0.001083 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=11 CODE=1

PARTIAL HYDROGRAPH 100.11

RUNOFF VOLUME = 2.08322 INCHES = 0.4811 ACRE-FEET
PEAK DISCHARGE RATE = 11.49 CFS AT 1.500 HOURS BASIN AREA = 0.0043 SQ. MI.

*
*BASIN A12
*
COMPUTE NM HYD ID=12 HYD NO=100.12 AREA=0.00241 SQ MI
PER A=0.00 PER B=0.00 PER C=90.0 PER D=10.00
TP=-0.1333 HR MASS RAINFALL=-1

```
          K =  0.072649HR     TP =  0.133300HR     K/TP RATIO =  0.545000      SHAPE
CONSTANT, N =  7.106428
          UNIT PEAK =  0.95148     CFS    UNIT VOLUME =    0.9891        B =    526.28
 P60 = 1.8700
          AREA =       0.000241 SQ MI     IA =    0.10000 INCHES     INF =    0.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


          K =  0.105867HR     TP =  0.133300HR     K/TP RATIO =  0.794199      SHAPE
CONSTANT, N =  4.514593
          UNIT PEAK =    6.3156     CFS    UNIT VOLUME =    0.9999        B =    388.14
 P60 = 1.8700
          AREA =       0.002169 SQ MI     IA =    0.35000 INCHES     INF =    0.83000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

     PRINT HYD            ID=12 CODE=1

                                          PARTIAL HYDROGRAPH    100.12

          RUNOFF VOLUME =      1.21889 INCHES      =        0.1567 ACRE-FEET
          PEAK DISCHARGE RATE =        5.06 CFS  AT    1.500 HOURS    BASIN AREA =
0.0024 SQ. MI.


     *
     *
     *BASIN A13
     *
     COMPUTE NM HYD       ID=13 HYD NO=100.13 AREA=0.00110 SQ MI
                          PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                          TP=-0.1333 HR MASS RAINFALL=-1

          K =  0.072649HR     TP =  0.133300HR     K/TP RATIO =  0.545000      SHAPE
CONSTANT, N =  7.106428
          UNIT PEAK =    3.2571     CFS    UNIT VOLUME =    0.9959        B =    526.28
 P60 = 1.8700
          AREA =       0.000825 SQ MI     IA =    0.10000 INCHES     INF =    0.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


          K =  0.105867HR     TP =  0.133300HR     K/TP RATIO =  0.794199      SHAPE
CONSTANT, N =  4.514593
          UNIT PEAK =  0.80073     CFS    UNIT VOLUME =    0.9874        B =    388.14
 P60 = 1.8700
          AREA =       0.000275 SQ MI     IA =    0.35000 INCHES     INF =    0.83000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

     PRINT HYD            ID=13 CODE=1

                                          PARTIAL HYDROGRAPH    100.13
```

RUNOFF VOLUME = 2.08322 INCHES = 0.1222 ACRE-FEET
PEAK DISCHARGE RATE = 2.93 CFS AT 1.500 HOURS BASIN AREA = 0.0011 SQ. MI.

*
*BASIN A14
*
COMPUTE NM HYD ID=14 HYD NO=100.14 AREA=0.00065 SQ MI
PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.105867HR TP = 0.133300HR K/TP RATIO = 0.794199 SHAPE CONSTANT, N = 4.514592
UNIT PEAK = 1.8926 CFS UNIT VOLUME = 0.9952 B = 388.14 P60 = 1.8700
AREA = 0.000650 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 100.14

RUNOFF VOLUME = 1.08591 INCHES = 0.0376 ACRE-FEET
PEAK DISCHARGE RATE = 1.31 CFS AT 1.500 HOURS BASIN AREA = 0.0007 SQ. MI.

*
*BASIN A15
*
COMPUTE NM HYD ID=15 HYD NO=100.15 AREA=0.00700 SQ MI
PER A=0.00 PER B=0.00 PER C=30.0 PER D=70.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 19.345 CFS UNIT VOLUME = 0.9986 B = 526.28 P60 = 1.8700
AREA = 0.004900 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.105867HR TP = 0.133300HR K/TP RATIO = 0.794199 SHAPE CONSTANT, N = 4.514592
UNIT PEAK = 6.1147 CFS UNIT VOLUME = 0.9999 B = 388.14 P60 = 1.8700
AREA = 0.002100 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=15 CODE=1

PARTIAL HYDROGRAPH 100.15

RUNOFF VOLUME = 2.01673 INCHES = 0.7529 ACRE-FEET
PEAK DISCHARGE RATE = 18.26 CFS AT 1.500 HOURS BASIN AREA = 0.0070 SQ. MI.

```
*
*
*BASIN P5
*
COMPUTE NM HYD       ID=16 HYD NO=100.16 AREA=0.00239 SQ MI
                     PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                     TP=-0.1333 HR MASS RAINFALL=-1
```

K = 0.105867HR TP = 0.133300HR K/TP RATIO = 0.794199 SHAPE CONSTANT, N = 4.514592
UNIT PEAK = 6.9591 CFS UNIT VOLUME = 0.9999 B = 388.14 P60 = 1.8700
AREA = 0.002390 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

```
PRINT HYD            ID=16 CODE=1
```

PARTIAL HYDROGRAPH 100.16

RUNOFF VOLUME = 1.08591 INCHES = 0.1384 ACRE-FEET
PEAK DISCHARGE RATE = 4.81 CFS AT 1.500 HOURS BASIN AREA = 0.0024 SQ. MI.

```
*
*
ADD HYD              ID=50 HYD NO=100.5 ID=1 ID=2
ADD HYD              ID=50 HYD NO=100.6 ID=50 ID=3
ADD HYD              ID=50 HYD NO=100.8 ID=50 ID=4
ADD HYD              ID=50 HYD NO=100.9 ID=50 ID=5
ADD HYD              ID=50 HYD NO=100.10 ID=50 ID=6
ADD HYD              ID=50 HYD NO=100.11 ID=50 ID=7
ADD HYD              ID=50 HYD NO=100.12 ID=50 ID=8
ADD HYD              ID=50 HYD NO=100.13 ID=50 ID=9
ADD HYD              ID=50 HYD NO=100.14 ID=50 ID=10
ADD HYD              ID=50 HYD NO=100.15 ID=50 ID=11
ADD HYD              ID=50 HYD NO=100.16 ID=50 ID=12
ADD HYD              ID=50 HYD NO=100.17 ID=50 ID=13
ADD HYD              ID=50 HYD NO=100.18 ID=50 ID=14
```

ADD HYD ID=50 HYD NO=100.19 ID=50 ID=15

ADD HYD ID=50 HYD NO=100.20 ID=50 ID=16

*

PRINT HYD ID=50 CODE=1

PARTIAL HYDROGRAPH 100.20

RUNOFF VOLUME = 1.97292 INCHES = 3.6259 ACRE-FEET
PEAK DISCHARGE RATE = 89.04 CFS AT 1.500 HOURS BASIN AREA = 0.0345 SQ. MI.

*
*
*ROUTE THROUGH DETENTION POND NO 1
ROUTE RESERVOIR ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24

OUTFLOW (CFS)	STORAGE(AC-FT)	ELEVATION(FT)
0.0	0.0	59.00
2.745	0.2646	60.00
8.002	2.1906	65.00
10.979	5.2846	70.00
11.233	5.6666	70.50

* * * * * * * * * * * * * * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	59.00	0.000	0.00
1.20	10.40	59.41	0.110	1.14
2.40	2.77	65.18	2.303	8.11
3.60	0.13	63.54	1.630	6.47
4.80	0.20	62.12	1.081	4.97
6.00	0.35	61.06	0.674	3.86
7.20	0.38	60.28	0.371	3.03
8.40	0.38	59.62	0.163	1.69
9.60	0.38	59.31	0.082	0.85
10.80	0.38	59.20	0.053	0.55
12.00	0.38	59.16	0.042	0.44
13.20	0.38	59.15	0.039	0.40
14.40	0.38	59.14	0.037	0.39
15.60	0.38	59.14	0.037	0.38
16.80	0.38	59.14	0.037	0.38
18.00	0.38	59.14	0.037	0.38
19.20	0.38	59.14	0.037	0.38
20.40	0.38	59.14	0.037	0.38
21.60	0.38	59.14	0.037	0.38
22.80	0.38	59.14	0.037	0.38
24.00	0.38	59.14	0.037	0.38
25.20	0.00	59.06	0.015	0.16
26.40	0.00	59.02	0.005	0.06
27.60	0.00	59.01	0.002	0.02
28.80	0.00	59.00	0.001	0.01
30.00	0.00	59.00	0.000	0.00

```
 PEAK DISCHARGE =         8.196 CFS - PEAK OCCURS AT HOUR     2.10
 MAXIMUM WATER SURFACE ELEVATION =        65.325
 MAXIMUM STORAGE =         2.3919 AC-FT       INCREMENTAL TIME=     0.050000HRS

*
PRINT HYD            ID=55  CODE=1

                                        PARTIAL HYDROGRAPH    200.10

      RUNOFF VOLUME =      1.97292 INCHES      =        3.6259 ACRE-FEET
      PEAK DISCHARGE RATE =        8.20 CFS  AT    2.100 HOURS    BASIN AREA =
0.0345 SQ. MI.


*
*
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 15:34:11
```