CITY OF ALBUQUERQUE

June 15, 2015

Bruce Stidworthy
Bohannan-Huston, Inc.
7500 Jefferson St. NE Courtyard 1
Albuquerque, NM 87109

RE: **Paseo del Norte Sports Complex, Tract A, Loop Industrial Park**
Grading and Drainage Plan
Engineer's Stamp Date 6-11-2015 (File: C17-D008)

Dear Mr. Stidworthy:

Based upon the information provided in your submittal received 6-11-15, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan in the construction sets when submitting for a building permit. Also, please have an Erosion and Sediment Control Plan approved prior to Building Permit approval.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM Checklist will be required. Additionally, it will be required to submit any construction work within COA right-of-way through the DRC Process.

If you have any questions, you can contact me at 924-3924.

Sincerely,

Jeanne Wolfenbarger, P.E.
Senior Engineer, Planning Dept.
Development Review Services

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

C17D008_BP_Appr

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: Paseo Del Norte Sports Complex Building Permit #: City Drainage #: C17-D008

DRB#: 1004205 EPC#: Work Order#:

Legal Description: Lot 1 Loop Industrial Park

City Address: North of PDN between North Diversion Channel and Washington Street

Engineering Firm: Bohannan Huston, Inc. Contact: Bruce Stidworthy or Matt Satches

Address: 7500 Jefferson St NE Courtyard 1

Phone#: (505) 823-1000 Fax#: (505) 798-7988 E-mail: msatches@bhinc.com

Owner: Loop Industrial, LLC Contact: Scott Grady

Address: P.O. Box 1443 Corrales NM, 87048

Phone#: 505-233-0413 Fax#: E-mail: RVSG7@rayleehomes.com

Architect: Contact:

Address:

Phone#: Fax#: E-mail:

Surveyor: Contact:

Address:

Phone#: Fax#: E-mail:

Contractor: Contact:

Address:

Phone#: Fax#: E-mail:

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL
- X DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL G & D PLAN
- X 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)

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

DATE SUBMITTED: June 11, 2015 By: Matt Satches

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

Bohannan Huston

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Albuquerque, NM
87109-4335

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voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

June 11, 2015

Ms. Jeanne Wolfenbarger, PE
Senior Engineer
City of Albuquerque
600 2nd St NW
Albuquerque, NM 87102

Re: Paseo Del Norte Sportsplex, Hydrology Re-Submittal

Dear Ms. Wolfenbarger:

Enclosed for your review is a copy of the revised grading plan and drainage management plan. The revisions are based on comments received in your letter dated June 2, 2015 and our meeting on June 8, 2015. Below is a brief description of how the comments were addressed:

1. The AHYMO Model has been modified to reflect approximately 10 minute increments and is cut off at 10 hours. The updated model has been provided with this submittal. The Storage Discharge Tables for both ponds have been updated and are now shown on the Drainage Management Plan (C-002).

2. The water surface elevations on the AHYMO Model and Drainage Management Plan now match. As mentioned above, the Storage Discharge Tables showing how outflow was determined are now shown on the Drainage Management Plan (C-002).

3. A few additional spot elevations have been provided on the Grading Plan for clarity. A "Top of Pond" boundary (shown as a dashed line) for Pond "A" and Pond "B" has been provided on the Drainage Management Plan (C-001).

4. The storm drain reach north of the building is undersized. A note explaining how the field is intended to drain is provided in a narrative on sheet C-002.

5. A column showing actual flows has been added to the Basin Data Table on the Drainage Management Plan (sheet C-002).

6. The flow produced from Basins B2-A, B2-B, B2-C, and B2-D does not include any runoff from the building. The storm drain reach on the East side of the building has more than enough capacity for the runoff produced by the baseball field.

   The runoff from the building drains entirely to the South. More information showing the direction the roof drains has been provided on the Drainage Management Plan (sheet C-001).

7. A new detail for the large 16' concrete rundown has been provided on sheet C-102. All rundowns are now referenced by the same designation.

8. Type "VL" Angular Riprap per COA Standard Specification 109 has a mean particle size of 6". The Riprap details on sheet C-102 have been updated to reference a 12" thickness which is 2.0 times the aforementioned mean particle size of 6".

9. Onsite sidewalk culverts have a small capacity and are intended to convey small storms. The larger onsite storms will flow over the top of the sidewalk culverts in the direction of our intended flow path. This has been added to the drainage narrative on sheet C-002.

10. The Inlet capacities are based off the Nyloplast Manufacturer's Nomographs. This has been noted on the "Inlet Table" (sheet C-002). The applicable Manufacturer's Nomographs have been provided with this resubmittal.

11. The existing storm drain information for the offsite flows has been provided on the Grading Plans (sheets C-100, C-101, and C-102). Please note that 10 LF of the existing Eastern storm drain will be removed and disposed to properly daylight into a proposed rundown (Sheet C-102, Detail "M").

12. The new design of the swale north of the building (SW-2) will now include a concrete rundown. The new detail has been included on sheet C-102. All associated drainage calculations have been included on the Drainage Management Plan (sheet C-002).

13. A new spot elevation has been provided on the water block. See sheet C-101 for more details.

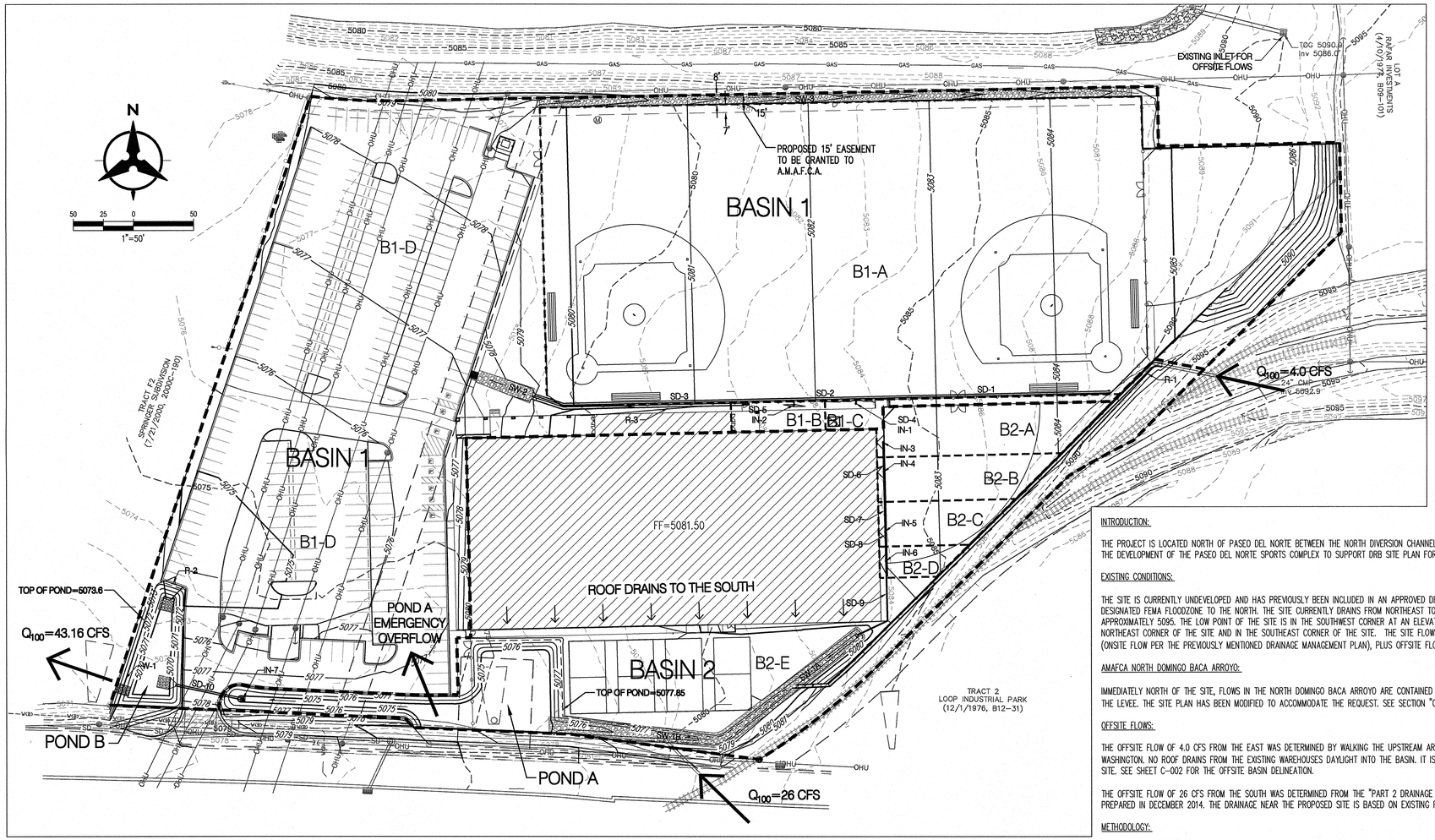
14. The sand volleyball courts are set at a finished grade elevation of 79.00. Additional detail has been provided to show the extents.

With this resubmittal, we are requesting Hydrology Building Permit Approval. If you have any questions or require further information, please feel free to contact me.

Sincerely,

Matthew Satches, EI
Engineer Intern
Community Development & Planning

MHS/jcm
Enclosures



LEGEND

- PROPERTY LINE
- 5301 EXISTING CONTOURS
- S=2.0% PROPOSED DIRECTION OF FLOW
- WATER BLOCK
- PROPOSED RETAINING WALL
- 5305 PROPOSED INDEX CONTOURS
- PROPOSED INTER CONTOURS
- PROPOSED CURB & GUTTER
- EASEMENT
- BASIN BOUNDARY
- SD PROPOSED STORM DRAIN LINE

INTRODUCTION:

THE PROJECT IS LOCATED NORTH OF PASEO DEL NORTE BETWEEN THE NORTH DIVERSION CHANNEL AND WASHINGTON ST. THE PURPOSE OF THIS SUBMITTAL IS TO PROVIDE A DRAINAGE MANAGEMENT PLAN FOR THE DEVELOPMENT OF THE PASEO DEL NORTE SPORTS COMPLEX TO SUPPORT DRB SITE PLAN FOR BUILDING PERMIT APPROVAL AND FINAL BUILDING PERMIT APPROVAL.

EXISTING CONDITIONS:

THE SITE IS CURRENTLY UNDEVELOPED AND HAS PREVIOUSLY BEEN INCLUDED IN AN APPROVED DRAINAGE PLAN (C-17 / D019 OFFICE WAREHOUSE DATED 10/22/1997). THE SITE IS BORDERED BY A DESIGNATED FEMA FLOODZONE TO THE NORTH. THE SITE CURRENTLY DRAINS FROM NORTHEAST TO THE SOUTHWEST. THE HIGHEST POINT OF THE SIGHT IS IN THE NORTHEAST CORNER AT AN ELEVATION OF APPROXIMATELY 5095. THE LOW POINT OF THE SITE IS IN THE SOUTHWEST CORNER AT AN ELEVATION OF APPROXIMATELY 5071.50. TWO EXISTING STORM DRAINS OUTFALL ONTO THE SITE NEAR THE NORTHEAST CORNER OF THE SITE AND IN THE SOUTHEAST CORNER OF THE SITE. THE SITE FLOWS ONTO THE ADJACENT PROPERTY TO THE WEST AT AN UNDEVELOPED FLOW OF APPROXIMATELY 16.01 CFS (ONSITE FLOW PER THE PREVOUSLY MENTIONED DRAINAGE MANAGEMENT PLAN), PLUS OFFSITE FLOWS OF 30 CFS (SEE "OFFSITE FLOWS"BELOW) FOR A TOTAL OF 46 CFS.

AMAFCA NORTH DOMINGO BACA ARROYO:

IMMEDIATELY NORTH OF THE SITE, FLOWS IN THE NORTH DOMINGO BACA ARROYO ARE CONTAINED VIA A LEVEE. AMAFCA HAS REQUESTED A 15' ACCESS EASEMENT TO ALLOW FOR INSPECTION OF THE TOE OF THE LEVEE. THE SITE PLAN HAS BEEN MODIFIED TO ACCOMMODATE THE REQUEST. SEE SECTION "C" ON GRADING PLAN FOR MORE DETAIL.

OFFSITE FLOWS:

THE OFFSITE FLOW OF 4.0 CFS FROM THE EAST WAS DETERMINED BY WALKING THE UPSTREAM AREA TO IDENTIFY THE DRAINAGE BASIN. THE BASIN RUNS BETWEEN THE RAILROAD TRACKS FROM THE SITE TO WASHINGTON. NO ROOF DRAINS FROM THE EXISTING WAREHOUSES DAYLIGHT INTO THE BASIN. IT IS CLEAR FROM THE EXISTING CONDITION OF THE 24" CULVERT THAT NOT MUCH FLOW IS CONVEYED ONTO OUR SITE. SEE SHEET C-002 FOR THE OFFSITE BASIN DELINEATION.

THE OFFSITE FLOW OF 26 CFS FROM THE SOUTH WAS DETERMINED FROM THE "PART 2 DRAINAGE REPORT FOR THE I-25 / PASEO DEL NORTE INTERCHANGE RECONSTRUCTION DESIGN BUILD PROJECT" PREPARED IN DECEMBER 2014. THE DRAINAGE NEAR THE PROPOSED SITE IS BASED ON EXISTING FLOWS AND FLOW PATTERNS.

METHODOLOGY:

THE HYDROLOGIC ANALYSIS PROVIDED WITH THIS DRAINAGE MANAGEMENT PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 22.2 OF THE DPM. THE SITE IS LOCATED WEST OF THE RIO GRANDE WITHIN PRECIPITATION ZONE 2. ALTHOUGH THE SITE IS SMALL ENOUGH TO USE THE "SMALL WATERSHEDS" PROCEDURE GIVEN IN SECTION A.6, WE ELECTED TO USE AHYMO IN ORDER TO MODEL THE STORMWATER FLOWS THROUGH THE TWO PROPOSED PONDS ON THE SITE. LAND TREATMENT PERCENTAGES WERE CALCULATED BASED ON THE ACTUAL CONDITIONS IN EACH ONSITE BASIN AND ARE SUMMARIZED IN THE "AHYMO SUMMARY DATA TABLE" AND "BASIN DATA TABLE" SHEET C-002. PIPE SIZING BETWEEN POND "A" AND POND "B" WAS BASED ON THE ORIFICE EQUATION. THE WEIR OUTLET FOR POND "B" WAS BASED ON THE WEIR EQUATION.

PROPOSED CONDITIONS:

IT WAS DETERMINED THAT THE MAXIMUM ALLOWABLE DISCHARGE FROM OUR SITE IS APPROXIMATELY 46.0 CFS. THIS IS DERIVED FROM EXISTING ONSITE CONDITIONS PLUS THE ADDITIONAL OFFSITE FLOWS. THE OFFSITE FLOWS WILL BE CONVEYED THROUGH OUR SITE. BASIN 2 ALONG WITH THE OFFSITE FLOWS ARE CONVEYED TO POND "A" VIA A SWALE ALONG THE SOUTHERN PORTION OF THE SITE. POND "A" ULTIMATELY OUTFALLS INTO A 24" PIPE WHERE IT IS ROUTED TO POND "B". EMERGENCY OVERFLOW FROM POND "A" IS TO THE NORTH OVER THE CURB INTO THE PAVED PARKING LOT. THE LENGTH OF OVERFLOW WEIR IS GREATER THAN 100' AND THE OVERFLOW CAPACITY FAR EXCEEDS THE PEAK INFLOW TO THE POND. POND "B" MITIGATES THE DISCHARGE FROM BASIN 1 AND POND "A". A WEIR ON THE WEST SIDE POND "B" OUTFALLS TO THE ADJACENT PROPERTY AT A MAXIMUM DISCHARGE RATE OF 43.16 CFS WHICH IS LESS THAN EXISTING CONDITIONS. THE FIRST FLUSH DEVELOPED BY THE IMPERVIOUS AREA IS RETAINED IN POND "B". THE EMERGENCY OVERFLOW CAPACITY OF THE POND "B" WEIR IS APPROXIMATELY 57.7 CFS WHICH EXCEEDS THE PEAK INFLOW. ONCE THE SITE OUTFALLS ONTO THE ADJACENT PROPERTY, IT WILL CONTINUE ON ITS HISTORIC FLOW PATH.

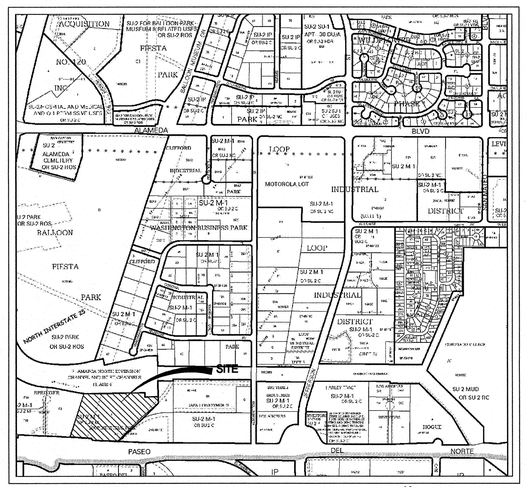
POND "A":
BOTTOM OF POND: 5074.50 FT
TOP OF POND: 5077.85
MAXIMUM WATER SURFACE ELEVATION: 5077.30 FT

POND "B"
BOTTOM OF POND: 5070.00 FT
TOP OF POND: 5073.60
MAXIMUM WATER SURFACE ELEVATION: 5072.60 FT

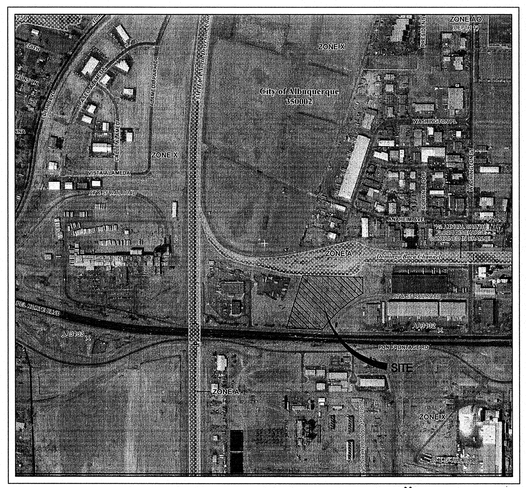
FIRST FLUSH
IMPERVIOUS AREA = 110,794 SF
REQUIRED VOLUME = 4,062 CF
PROVIDED VOLUME (POND "A") = 2,554 CF
PROVIDED VOLUME (POND "B") = 1,849 CF
TOTAL PROVIDED VOLUME = 4,403 CF

CONCLUSION:

THE PEAK DISCHARGE FROM OUR SITE IS 43.16 CFS WHICH IS LESS THAN THE ALLOWABLE DISCHARGE OF 46.0 CFS. FURTHERMORE, THE GRADING PLAN AND THIS DRAINAGE MANAGEMENT PLAN DEMONSTRATE THAT WE ARE IN CONFORMANCE WITH THE CITY OF ALBUQUERQUE HYDROLOGY REQUIREMENTS. WE REQUEST BUILDING PERMIT APPROVAL.



ZONE ATLAS PAGE C-17
NTS



FEMA FLOODPLAIN MAP 35001C0136G
NTS

Bohannan Huston
www.bhinc.com 800.877.5332

SPORTSPLEX

tract A,
loop industrial park
Albuquerque, New Mexico

Stagleherr
413 second st sw
albuquerque nm
87102
505 246 0870
slagleherr.com

drainage management plan

BRUCE J. STIDWORTHY NEW MEXICO 14623 REGISTERED PROFESSIONAL ENGINEER
6/10/15

revisions

date
6—10—15
sheet
c001

Thu, 11-Jun-2015 - 9:22:am, Plotted by: MSATCHES
P:\20150146\CDP\Plans\General\CD's\20150146_DMP01.dwg

PASEO DEL NORTE SPORTSPLEX *Developed Conditions Basin Data Table* This table is based on the DPM Section 22.2, Zone: 2								
Basin ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100yr) (cfs/ac.)	Q(100yr) (CFS)
PROPOSED BASINS								
B1-A	146368	3.36	0.0%	0.0%	100.0%	0.0%	3.14	*10.55*
B1-B	1881	0.04	0.0%	0.0%	25.0%	75.0%	4.31	*0.19*
B1-C	2318	0.05	0.0%	0.0%	12.0%	88.0%	4.51	*0.24*
B1-D	131192	3.01	0.0%	0.0%	60.0%	40.0%	3.76	*11.34*
B2-A	7134	0.16	0.0%	0.0%	98.0%	2.0%	3.17	*0.52*
B2-B	4954	0.11	0.0%	0.0%	96.0%	4.0%	3.20	*0.36*
B2-C	3511	0.08	0.0%	0.0%	94.0%	6.0%	3.23	*0.26*
B2-D	1586	0.04	0.0%	0.0%	93.0%	7.0%	3.25	*0.12*
B2-E	98554	2.26	0.0%	0.0%	45.0%	55.0%	4.00	*9.05*
TOTAL	**397498**	**9.125**	-	-	-	-	-	-

BASIN & SUBBASIN DATA TABLE

INLET TABLE					
Inlet #	Inlet Type	Basin	Actual Flow	Avail Head ft	Capacity CFS
IN1	1-10" NYLOPLAST (DOME GRT)*	B1-C	0.24	0.30	1.00
IN2	1-10" NYLOPLAST (DOME GRT)*	B1-B	0.19	0.30	1.00
IN3	1-10" NYLOPLAST (DROP IN GRT)*	B2-A	0.52	0.20	0.55
IN4	1-10" NYLOPLAST (DROP IN GRT)*	B2-B	0.36	0.20	0.55
IN5	1-10" NYLOPLAST (DROP IN GRT)*	B2-C	0.26	0.20	0.55
IN6	1-10" NYLOPLAST (DROP IN GRT)*	B2-D	0.12	0.20	0.55
IN7	1-30" NYLOPLAST (DOME GRT)*	B2-E	SEE POND "A" STORAGE DISCHARGE TABLE		
* - NYLOPAST INLET CAPACITIES BASED ON MANUFACTURER NOMOGRAPHS					

INLET TABLE

STORM DRAIN PIPE TABLE					
PIPE #	INLET/SD/BASIN	Size in.	Slope	Capacity* cfs	ACTUAL FLOW cfs
SD1	B1-A	18	0.50%	7.43***	10.55
SD2	SD-1, SD-4	18	0.50%	7.43***	10.79
SD3	SD-2, SD-5	18	0.50%	7.43***	10.98
SD4	IN-1	10	1.50%	2.68	0.24
SD5	IN-2	10	1.50%	2.68	0.19
SD6	IN-3	10	0.50%	1.55	0.52
SD7	IN-4, SD-6	10	0.50%	1.55	0.88
SD8	IN-5, SD-7	10	0.50%	1.55	1.14
SD9	IN-6, SD-8	10	0.50%	1.55	1.26
SD10	IN-7	24	2.00%	31.99	22.9**
*Capacity Based on Manning's Eq w/ N=0.013 **See AHYMO Analysis For Peak Discharge From POND "A" ***Storm Drain Under Capacity. See Narrative (This Sheet) For Explanation.					

STORM DRAIN PIPE TABLE

CONCRETE RUNDOWN TABLE										
Rundown #	Basin ID	Rundown Type	Required Flow	Weir Height ft	Weir Length ft	Weir Capacity**	Channel Width ft	Channel Height ft	Minimum Slope	Capacity* CFS
R-1	EAST STORM DRAIN	Rectangle	4.00	N/A			2.00	0.50	1.00%	5.50
R-2	Basin 1	Rectangle	22.31	0.67	16.00	24.00	6.00	0.50	33.00%	111.98
R-3	EXCESS B1-A FLOW	Rectangle	3.55	N/A			2.00	0.50	1.00%	5.50
Capacity Based on Manning's Eq w/ N=0.013 - *										
Weir Eq: Q=2.65L(h^1.5) - **										

RUNDOWN TABLE

SWALE CAPACITY TABLE					
SWALE #	Contributing Basins & Flows	Required Flow	Manning's Coefficient	Channel Slope	Stream Capacity*
SW-1A	B2-A, B2-B, B2-C, B2-D, 1/2-B2-E, OS-E	9.79	0.035	0.50%	29.29
SW-1B	B2-A, B2-B, B2-C, B2-D, B2-E, OS-E, OS-S	40.31	0.035	1.30%	47.22
SW-2	B1-A, B1-B, B1-C	10.98	0.035	0.50%	14.66
SW-3	MINIMAL OFFSITE FLOWS	1.11	0.035	1.50%	4.11
Capacity Based on Manning's Eq - *					
Weir Coefficient = 2.65 - **					

SWALE CAPACITY TABLE

WEIR CAPACITY TABLE					
WEIR #	Contributing Basins & Flows	Required Flow	Weir Height (FT)	Weir Length (FT)	Weir Capacity*
EMERGENCY OVERFLOW	BASIN 2, OFFSITE SOUTH, OFFSITE EAST	31.60	0.40	250.0	168.00
W1	ENTIRE SITE	42.83	2.00	8.00	60.00
Weir Coefficient = 2.65 - *					

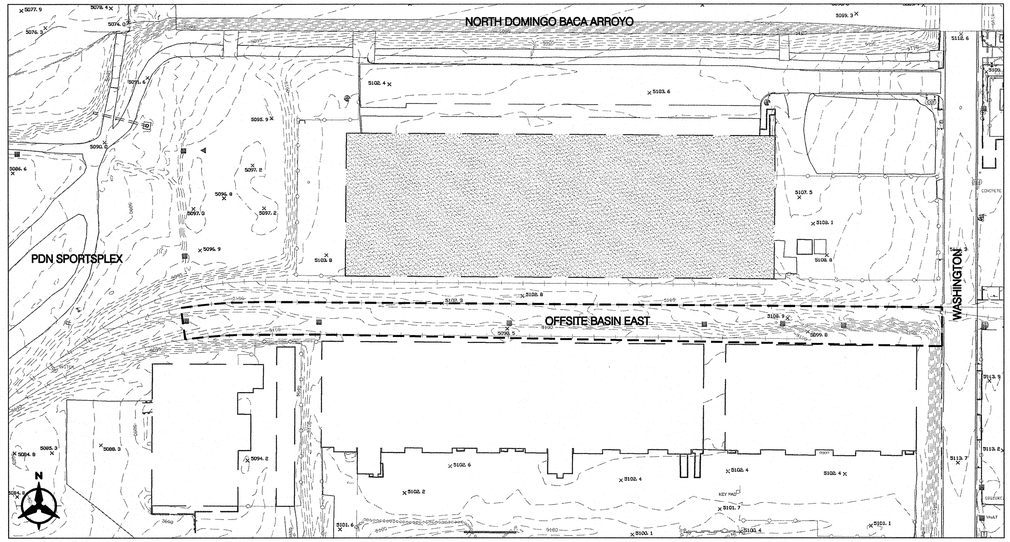
WEIR CAPACITY TABLE

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.01a, Rel: 01a RUN DATE (MON/DAY/YR) =06/11/2015

INPUT FILE = P:\20150146\CDP\HYDRO\Building Permit\100YR-BP.HYM USER NO.= AHYMO_Temp_User:20122010

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.		TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
*S AHYMO FILE FOR ALBUQUERQUE SPORTS COMPLEX - ALBUQUERQUE,NM , BH PROJ # 20150146											
*S 100 YEAR - 6 HOUR STORM											
*S											
*S INPUT FILE -- P:\20150146\CDP\HYDRO\Building Permit\100YR-BP.HYM											
*S OUTPUT FILE -- P:\20150146\CDP\HYDRO\Building Permit\100YR-BP.OUT											
START	TIME= 0										
LOCATION	ALBUQUERQUE										
RAINFALL TYPE= 1 NOAA 14											
*S**********											
*S	----------										
S COMPUTE BASIN DEVELOPED CONDITIONS											
*S	----------										
*S BASIN 1											
COMPUTE NM HYD		B1	-	1	0.01011	23.87	0.748	1.38795	1.5	3.639 PER IMP= 19.80	
*S BASIN 2											
COMPUTE NM HYD		B2	-	2	0.00425	11.12	0.372	1.63935	1.5	4.087 PER IMP= 47.90	
*S**********											
*S ADDITION OF OFFSITE SOUTH TO BASIN 2											
ADD HYD		SOUTHB2	-	20	0.01284	37.19	1.316	1.92121	1.5		
*S ADDITION OF OFFSITE EAST TO BASIN 2											
ADD HYD		EASTB2	-	21	0.01468	41.22	1.434	1.83216	1.5		
*S ROUTE BASIN 2 & OFFSITE EAST & SOUTH TO POND "A". OUTFLOW BASED ON 30" NYLOPLAST DOME GRATE.											
ROUTE RESERVOIR		PONDA	-	10	0.01468	22.91	1.404	1.79308	1.65	MAX VOLUME = 0.473 AC-FT	
*S ADDITION OF POND "A" TO BASIN 1											
ADD HYD		PAB1	-	22	0.02479	44.42	2.152	1.62784	1.55		
*S ROUTE BASIN 1 TO POND "B". OUTFLOW BASED ON WEIR CALCULATIONS											
ROUTE RESERVOIR		PONDB	-	11	0.02479	43.16	2.125	1.60731	1.55	MAX VOLUME = 0.144 AC-FT	

AHYMO SUMMARY DATA TABLE



EASTERN OFFSITE BASIN MAP

SCALE 1"=100'

Storage - Outflow Table

POND "A"

Outflow Capacity based on Manufacturer provided Nomographs

Inlet Type: 30" Nyloplast Dome Inlet

Outflow (cfs)	Storage Volume* (ft^3)	Storage Volume (Ac-ft)	Elev.	Head (ft)
0.001	0.000	0.0000	5074.50	-0.50
0.002	2554.00	0.0586	5075.00	0.00
9.250	5184.00	0.1190	5075.50	0.50
13.500	8694.00	0.1996	5076.00	1.00
17.000	12621.00	0.2897	5076.50	1.50
21.250	17010.00	0.3905	5077.00	2.00
24.000	22950.00	0.5269	5077.50	2.50
26.5000	32454.00	0.7450	5078.00	3.00

* AutoCAD Civil 3D Volumes

STORAGE DISCHARGE TABLE (POND "A")

Storage - Outflow Table

POND "B"

Outflow Based On Weir Equation

Weir Coef: 2.65 Weir Equation

Invert of Weir: 5071 ft Q=2.65*L*(h^1.5)

Width of Weir: 8 ft

Outflow (cfs)	Storage Volume* (ft^3)	Storage Volume (Ac-ft)	Elev.	WSEL (ft)
0.001	0.000	0.0000	5070.00	-1.00
0.002	668.52	0.0153	5070.50	-0.50
0.003	1849.50	0.0425	5071.00	0.00
7.495	3022.92	0.0694	5071.50	0.50
21.200	4375.08	0.1004	5072.00	1.00
38.947	5914.62	0.1358	5072.50	1.50
59.963	7651.53	0.1757	5073.00	2.00
83.80	10890.00	0.2500	5073.50	2.50

* AutoCAD Civil 3D Volumes

STORAGE DISCHARGE TABLE (POND "B")

BASIN AND SUB-BASIN HYDROLOGIC ANALYSIS:

THE HYDROLOGIC ANALYSIS PROVIDED WITH THIS DRAINAGE MANAGEMENT PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTION 22.2 OF THE DPM. BASIN AND SUB-BASIN BOUNDARIES ARE DELINEATED PER SHEET C001. SUB-BASINS WERE DEFINED FOR ANALYSIS ON STORM DRAINS, INLETS, RUNDOWNS, AND SWALES. ANALYSIS OF THESE DRAINAGE STRUCTURES CAN BE FOUND ON THIS SHEET.

AHYMO ANALYSIS:

SEE NARRATIVE SHEET C001.

INLET TABLE:

STORM DRAIN INLETS HAVE BEEN DESIGNED IN SUMP CONDITION. ALL NYLOPLAST INLET CAPACITIES ARE BASED ON NOMOGRAPHS PROVIDED BY THE MANUFACTURER SEE TABLE THIS SHEET FOR CAPACITIES AND CONTRIBUTING FLOWS.

INLET 3 IS UNDERSIZED FOR THE SUB-BASIN IT IS INTENDED TO CONTAIN. ONCE CAPACITY IS REACHED, EXCESS FLOW WILL CONTINUE SOUTH TO INLET 4 WHICH HAS ENOUGH CAPACITY TO ACCEPT THE ADDITIONAL FLOWS.

STORM DRAIN TABLE:

STORM DRAINS WERE SIZED BASED ON MANNING'S EQUATION AND GRAVITY FLOW. SIZE OF STORM DRAINS RANGE FROM 10" TO 24". SEE TABLE THIS SHEET FOR ALL STORM DRAIN REACH ANALYSIS.

THE 18" STORM DRAIN REACH NORTH OF THE BUILDING IS UNDERSIZED. A MAJORITY OF THE RUNOFF FROM THE ATHLETIC FIELD WILL CONTINUE WEST INTO THE PARKING LOT AND WON'T REACH THE PIPE. THE PORTION OF RUNOFF THAT IS UNABLE TO FLOW TO THIS PIPE WILL CONTINUE SOUTH INTO A RIPRAP SWALE THAT WAS SIZED WITH ENOUGH CAPACITY TO COMPENSATE FOR THE EXCESS RUNOFF. SEE SWALE CAPACITY TABLE THIS SHEET FOR MORE INFORMATION.

RUNDOWN TABLE:

CONCRETE RUNDOWN HAVE BEEN DESIGNED USING MANNING'S EQUATION AND THE WEIR EQUATION. RUNDOWN "R1" IS DESIGNED TO CONTAIN THE OFFSITE FLOWS FROM THE EAST. RUNDOWN "R2" IS WEIR CONTROLLED AND ULTIMATELY OUTFALLS INTO POND "B".

SWALE CAPACITY TABLE:

ALL RIPRAP SWALES HAVE BEEN DESIGNED USING MANNING'S EQUATION. SEE TABLE THIS SHEET FOR CAPACITIES AND CONTRIBUTING FLOWS.

WEIR CAPACITY TABLE:

ALL WEIR CAPACITIES HAVE BEEN DESIGNED USING A WEIR COEFFICIENT OF 2.65. SEE TABLE THIS SHEET FOR CAPACITIES AND CONTRIBUTING FLOWS.

ONSITE SIDEWALK CULVERTS:

A SIDEWALK CULVERT CAPACITY TABLE HAS NOT BEEN PROVIDED. ALL ONSITE SIDEWALK CULVERTS ARE INTENDED TO CONVEY SMALL STORM EVENTS. DURING A LARGE STORM EVENT, RUNOFF WILL FLOW OVER THE TOP OF THE SIDEWALK CULVERTS IN THE DIRECTION OF THEIR INTENDED FLOWPATH.

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drainage management plan

BRUCE J. STIDWORTHY NEW MEXICO 14525 REGISTERED PROFESSIONAL ENGINEER

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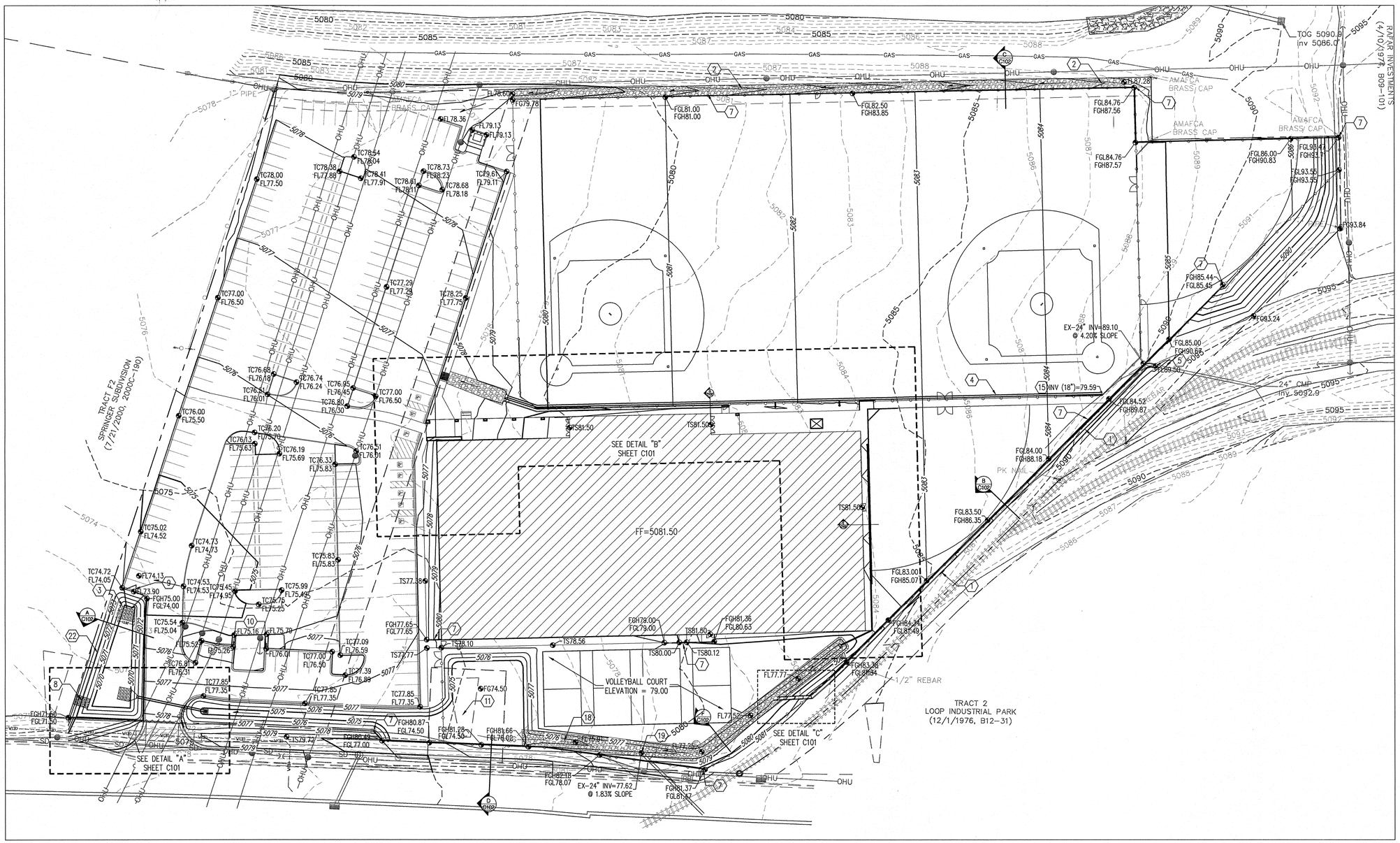

GRADING KEYED NOTES

1. INSTALL NEW CONCRETE RIBBON CHANNEL PER DETAIL "I" SHEET C102.
2. INSTALL NEW RIP RAP SWALE PER DETAIL "J" SHEET C102.
3. INSTALL NEW RIP RAP BLANKET PER DETAIL "L" SHEET C102.
4. INSTALL NEW STORM DRAIN. SEE PLAN FOR SIZE. TIE FIELD SUBDRAINS TO STORM DRAIN PER SUBDRAIN MANUFACTURER'S RECOMMENDATIONS
5. DAYLIGHT EXISTING CULVERT INTO NEW CONCRETE RIBBON CHANNEL. SEE DETAIL "M" SHEET C102.
6. INSTALL CMP STORM DRAIN END SECTION SEE PLAN FOR SIZE.
7. INSTALL RETAINING WALL, SEE STRUCTURAL SHEETS FOR DETAILS.
8. INSTALL NEW POND WEIR PER DETAIL "H" SHEET C102.
9. INSTALL NEW 16' WIDE CONCRETE RUNDOWN PER DETAIL "N" SHEET C102..
10. INSTALL CURB OPENING PER DETAIL "K" SHEET C102.
11. EXISTING BILLBOARD TO REMAIN. MATCH EXISTING GRADE WITHIN 5' OF BILLBOARD FOUNDATION. SEE DETAIL "D" SHEET C102.
12. INSTALL NEW 10" NYLOPLAST DOME INLET OR APPROVED EQUAL.
13. INSTALL NEW 10" NYLOPLAST DROP-IN INLET OR APPROVED EQUAL.
14. INSTALL NEW 30" NYLOPLAST DOME INLET OR APPROVED EQUAL.
15. INSTALL STORM DRAIN CAP.
16. INSTALL PRE-FABRICATED STORM DRAIN FITTING WITH WATER-TIGHT GASKET, SEE PLAN FOR SIZE.
17. CONSTRUCT NEW 24" SIDEWALK CULVERT PER COA STD DWG. 2236.
18. INSTALL NEW RIP RAP SWALE PER DETAIL "F" SHEET C102.
19. DAYLIGHT EXISTING STORM DRAIN INTO SWALE.
20. INSTALL PRE-FABRICATED STORM DRAIN BEND. SEE PLAN FOR SIZE.
21. CONSTRUCT NEW DOUBLE 24" SIDEWALK CULVERT PER COA STD DWG. 2236.
22. INSTALL CONCRETE HEADER CURB PER COA STD DWG. 2415.

* NOT ALL KEYED NOTES USED ON THIS SHEET

** FOR TYPICAL CROSS-SECTIONS SEE SHEET C102

PROJECT BENCHMARK

Intersection of PDN &
North Diversion Channel @
Southwest Quadrant of
Bridge Abutment
3-1/4" Alum Disc
ACS Monument "13_D16 "
NAD 1983CENTRAL ZONE
X=1534181.325
Y=1518996.001
Z=5073.471 (NAVD 1988)
G-G=0.999673570
Mapping Angle=-00°12'17.26"

GRADING NOTES

1. EXCEPT AS PROVIDED HEREIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.
2. THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST.
3. ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE "GEOTECHNICAL INVESTIGATION". ALL OTHER WORK SHALL, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT, (FIRST PRIORITY) SPECIFICATIONS, AND/OR THE CITY OF ALBUQUERQUE (COA) STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY).
4. EARTH SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.
5. IT IS THE INTENT OF THESE PLANS THAT THIS CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE OF THE PROPERTY BOUNDARIES EXCEPT AS REQUIRED BY THIS PLAN.
6. THE CONTRACTOR IS TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY OR PUBLIC RIGHT-OF-WAY.
7. A DISPOSAL SITE FOR ANY & ALL EXCESS EXCAVATION MATERIAL, AND UNSUITABLE MATERIAL AND/OR A BORROW SITE CONTAINING ACCEPTABLE FILL MATERIAL SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE OBSERVER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL OR BORROW SITE AND HAUL TO OR FROM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.
8. PAVING AND ROADWAY GRADES SHALL BE +/- 0.1' FROM PLAN ELEVATIONS. PAD ELEVATION SHALL BE +/- 0.05' FROM BUILDING PLAN ELEVATION.
9. ALL PROPOSED CONTOURS REFLECT TOP OF PAVEMENT ELEVATIONS IN THE PARKING AREA AND MUST BE ADJUSTED FOR MEDIANS AND ISLANDS.
10. VERIFY ALL ELEVATIONS SHOWN ON PLAN FROM BASIS OF ELEVATION CONTROL STATION PRIOR TO BEGINNING CONSTRUCTION.

LEGEND

- PROPERTY LINE
- 5301 EXISTING CONTOURS
- 65.23 PROPOSED SPOT ELEVATION
  TC=TOP OF CURB, FL=FLOW LINE
  FGH=FINISHED GRADE HIGH,
  FGL=FINISHED GRADE LOW
  EX=EXISTING, TG=TOP OF GRATE
  FG=FINISHED GRADE
- S=2.0% PROPOSED DIRECTION OF FLOW
- WATER BLOCK
- PROPOSED RETAINING WALL
- 5305 PROPOSED INDEX CONTOURS
- PROPOSED INTER CONTOURS
- PROPOSED CURB & GUTTER
- EASEMENT
- SD PROPOSED STORM DRAIN LINE

N

40 20 0 40
1"=40'

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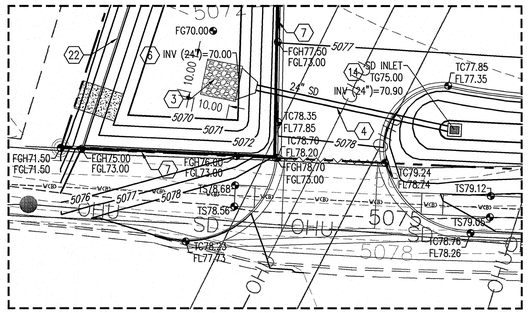
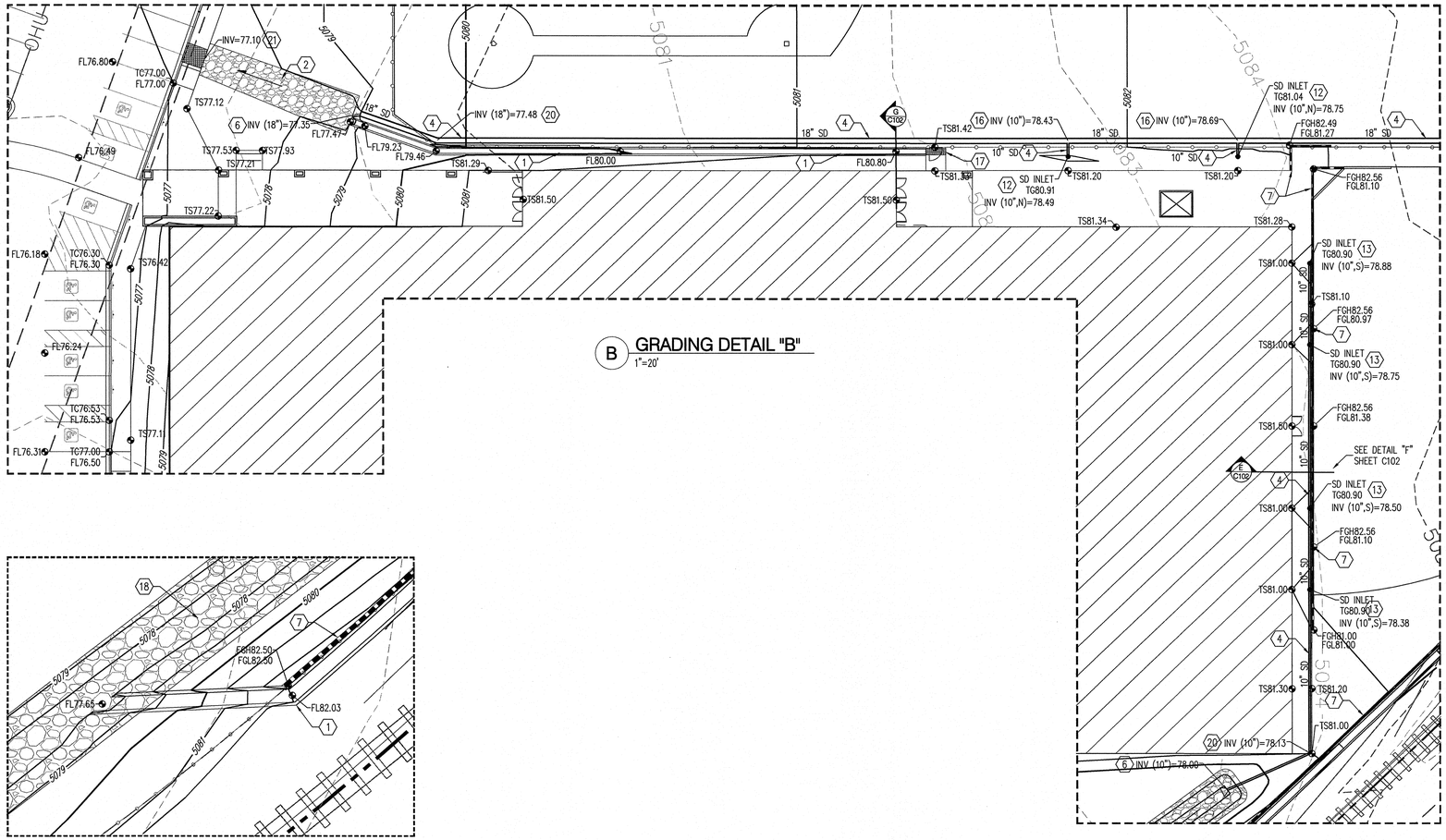


A GRADING DETAIL "A"
1"=20'



B GRADING DETAIL "B"
1"=20'

C GRADING DETAIL "C"
1"=10'

GRADING KEYED NOTES

1. INSTALL NEW CONCRETE RIBBON CHANNEL PER DETAIL "I" SHEET C102.
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* NOT ALL KEYED NOTES USED ON THIS SHEET

** FOR TYPICAL CROSS-SECTIONS SEE SHEET C102

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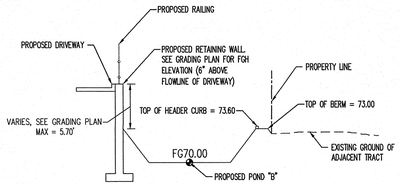

A CROSS-SECTION "A"
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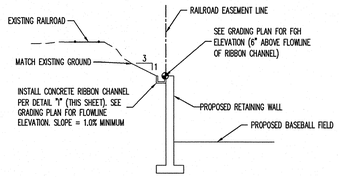

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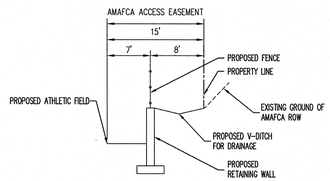

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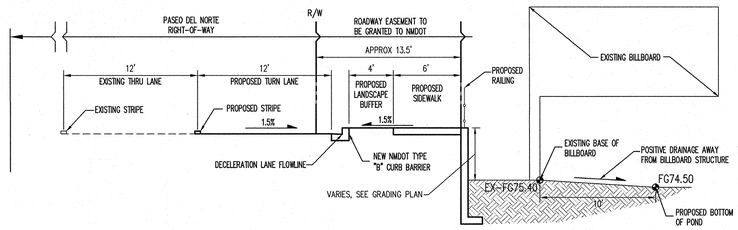

D CROSS-SECTION "D"
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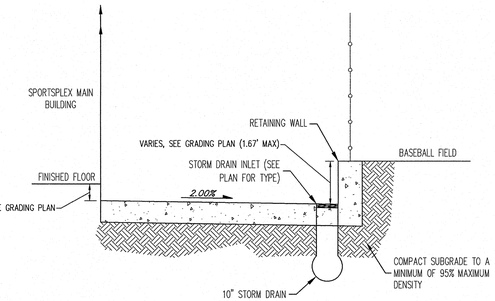

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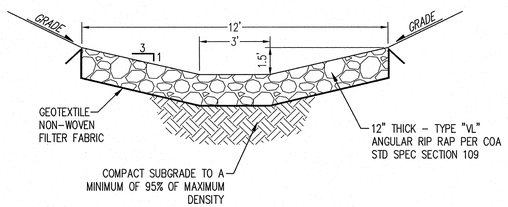

F CROSS-SECTION "F"
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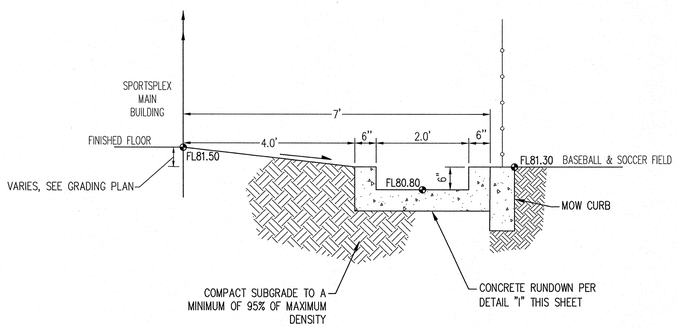

G CROSS-SECTION "G"
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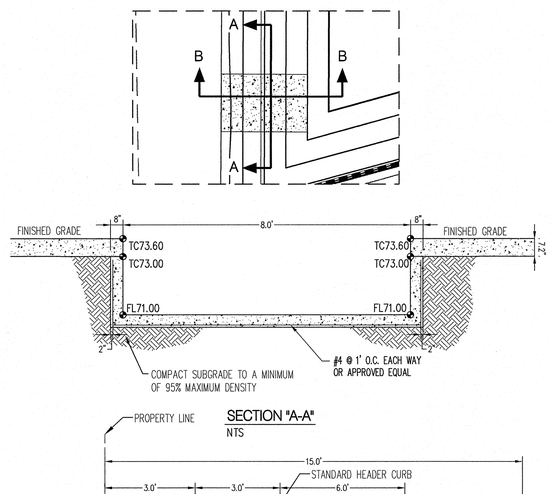
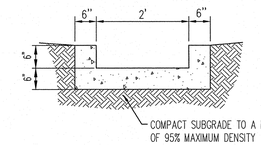


SECTION "A-A"
NTS



I CONCRETE RIBBON CHANNEL
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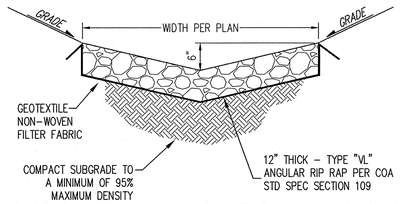

J RIP-RAP SWALE DETAIL
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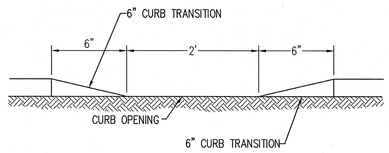
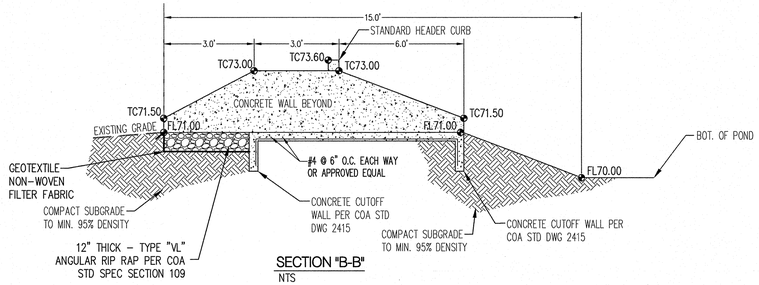
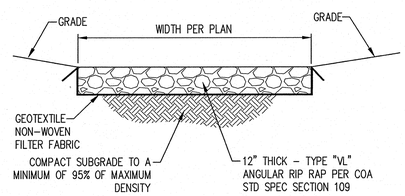


K TYPICAL CURB OPENING
N.T.S

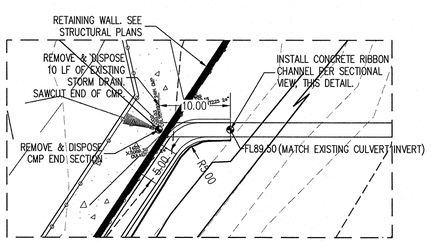


SECTION "B-B"
NTS

H WEIR DETAIL
N.T.S.



L RIP-RAP BLANKET DETAIL
N.T.S.



PLAN VIEW
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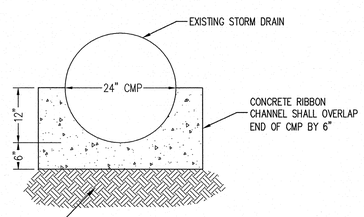
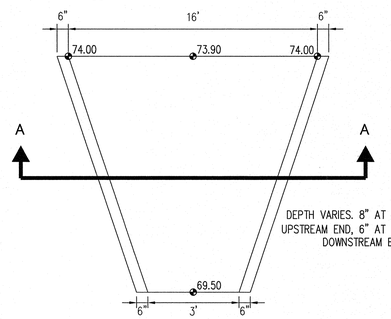


SECTIONAL VIEW
NTS

M STORM DRAIN & RUNDOWN CONNECTION
N.T.S



PLAN VIEW
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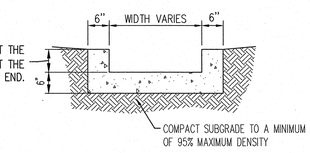

SECTION "A-A"
NTS

N 16' RUNDOWN DETAIL
N.T.S

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```
*S  AHYMO FILE FOR ALBUQUERQUE SPORTS COMPLEX -  ALBUQUERQUE,NM , BH PROJ # 20150146
*S  100 YEAR - 6 HOUR STORM
*S
*S  INPUT FILE -- P:\20150146\CDP\HYDRO\AHYMO\100YR-BP-SUB.HYM
*
*S  OUTPUT FILE -- P:\20150146\CDP\HYDRO\AHYMO\100YR-BP-SUB.OUT
*
*AHYMO FOR PROPOSED AND RESERVOIR ROUTING CONDITION.
*
*
START                  TIME=0.0 HR  PUNCH CODE=0
**********************************************************
LOCATION        ALBUQUERQUE, NEW MEXICO
*
**********************************************************
*
*  6 HR RAINFALL TABLE
*
**********************************************************
*100 YEAR - 6 HOUR
RAINFALL               TYPE=1  RAIN QUARTER=0.0
                       RAIN ONE=2.01 IN  RAIN SIX=2.35 IN
                       RAIN DAY=2.75 IN  DT=0.05 HRS
*S
*
*
*S*************************************************************************
*S ------------------------------------------------------------------------
*S ------------------------------------------------------------------------
*S*  COMPUTE BASIN DEVELOPED CONDITIONS
*S ------------------------------------------------------------------------
*S ------------------------------------------------------------------------
*S
*S BASIN 1
*
COMPUTE NM HYD          ID=1  HYD=B1  AREA=.01011SQ MI
                        PER A=0  PER B=0  PER C=80.2  PER D=19.8
                        TP=0.1333 HR  MASS RAIN=-1
PRINT HYD               ID=1     CODE=20
*
*
*S BASIN 2
*
*
COMPUTE NM HYD          ID=2  HYD=B2  AREA=.00425SQ MI
                        PER A=0  PER B=0  PER C=52.1  PER D=47.9
                        TP=0.1333 HR  MASS RAIN=-1
PRINT HYD               ID=2     CODE=20
*
*
*S OFFSITE SOUTH
*
*
COMPUTE NM HYD          ID=3  HYD=B3  AREA=.00859SQ MI
                        PER A=0  PER B=0  PER C=5  PER D=95
                        TP=0.1333 HR  MASS RAIN=-1
PRINT HYD               ID=3     CODE=20
*
*
*S OFFSITE EAST
*
*
COMPUTE NM HYD          ID=4  HYD=B4  AREA=.00184SQ MI
```

```
                                100YR-BP.HYM
                        PER A=0  PER B=0  PER C=100  PER D=0
                        TP=0.1333 HR  MASS RAIN=-1
PRINT HYD               ID=4     CODE=20
*
*
*
*
*S ADDITION OF OFFSITE SOUTH TO BASIN 2
ADD HYD     ID=20  HYD=SOUTHB2 ID I=3 ID II=2 CODE=20
PRINT HYD               ID=20  CODE=20
*
*
*S ADDITION OF OFFSITE EAST TO BASIN 2
ADD HYD     ID=21  HYD=EASTB2 ID I=4 ID II=20 CODE=20
PRINT HYD               ID=21  CODE=20
*
*
*S ROUTE BASIN 2 & OFFSITE EAST & SOUTH TO POND "A". OUTFLOW BASED ON 30" NYLOPLAST
DOME GRATE.
ROUTE RESERVOIR     ID=10  HYD=PONDA  INFLOW ID=21 CODE=3
        OUTFLOW (CFS)   STORAGE(AC-FT)  ELEV (FT)
        0.001           0.0000          5074.50
        0.002           0.0586          5075.00
        9.250           0.1190          5075.50
        13.500          0.1996          5076.00
        17.000          0.2897          5076.50
        21.250          0.3905          5077.00
        24.000          0.5269          5077.50
        26.500          0.7450          5078.00
*
*
*S ADDITION OF POND "A" TO BASIN 1.
ADD HYD     ID=22  HYD=PAB1 ID I=1 ID II=10 CODE=20
PRINT HYD               ID=22  CODE=20
*
*
*S ROUTE BASIN 1 TO POND "B". OUTFLOW BASED ON WEIR CALCULATIONS.
ROUTE RESERVOIR     ID=11  HYD=PONDB  INFLOW ID=22 CODE=3
        OUTFLOW (CFS)   STORAGE(AC-FT)  ELEV (FT)
        0.001           0.0000          5070.00
        0.002           0.0154          5070.50
        0.003           0.0425          5071.00
        7.495           0.0694          5071.50
        21.200          0.1004          5072.00
        38.947          0.1358          5072.50
        59.963          0.1757          5073.00
*
*
*******
FINISH
*
```

```
       AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
            RUN DATE (MON/DAY/YR) = 06/10/2015
            START TIME (HR:MIN:SEC) = 14:40:42     USER NO.=
AHYMO_Temp_User:20122010
            INPUT FILE = P:\20150146\CDP\Hydro\Building Permit\10 Minute
Increment\100YR-BP.HYM

    *S  AHYMO FILE FOR ALBUQUERQUE SPORTS COMPLEX -  ALBUQUERQUE,NM , BH PROJ # 2015
    *S  100 YEAR - 6 HOUR STORM
    *S
    *S  INPUT FILE -- P:\20150146\CDP\HYDRO\AHYMO\100YR-BP-SUB.HYM
    *
    *S  OUTPUT FILE -- P:\20150146\CDP\HYDRO\AHYMO\100YR-BP-SUB.OUT
    *
    *AHYMO FOR PROPOSED AND RESERVOIR ROUTING CONDITION.
    *
    *
    START                  TIME=0.0 HR  PUNCH CODE=0
    ***********************************************************
    LOCATION            ALBUQUERQUE, NEW MEXICO
         City of Albuquerque soil infiltration values (LAND FACTORS) used for
computations.
         Land Treatment     Initial Abstr.(in)    Unif. Infilt.(in/hour)
              A             0.65                  1.67
              B             0.50                  1.25
              C             0.35                  0.83
              D             0.10                  0.04

    *
    ***********************************************************
    *
    *  6 HR RAINFALL TABLE
    *
    ***********************************************************
    *100 YEAR - 6 HOUR
    RAINFALL               TYPE=1  RAIN QUARTER=0.0
                                       RAIN ONE=2.01 IN  RAIN SIX=2.35 IN

                                       RAIN DAY=2.75 IN  DT=0.05 HRS


                    6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
                    DT =   0.050000 HOURS       END TIME =     6.000000 HOURS
                      0.0000  0.0023  0.0046  0.0071  0.0099  0.0127  0.0159
                      0.0203  0.0272  0.0347  0.0424  0.0509  0.0595  0.0684
                      0.0776  0.0870  0.0974  0.1084  0.1204  0.1437  0.1728
                      0.2117  0.2559  0.3104  0.3831  0.4649  0.6062  0.8258
                      1.2021  1.4666  1.6752  1.7800  1.8719  1.9379  1.9905
                      2.0362  2.0697  2.1005  2.1259  2.1418  2.1530  2.1629
                      2.1722  2.1803  2.1879  2.1953  2.2025  2.2084  2.2118
                      2.2152  2.2186  2.2217  2.2247  2.2278  2.2307  2.2336
                      2.2363  2.2391  2.2417  2.2443  2.2469  2.2494  2.2518
                      2.2542  2.2565  2.2588  2.2611  2.2633  2.2654  2.2676
                      2.2697  2.2717  2.2738  2.2758  2.2778  2.2798  2.2817
                      2.2837  2.2856  2.2874  2.2893  2.2911  2.2930  2.2948
                      2.2965  2.2983  2.3000  2.3017  2.3034  2.3051  2.3068
                      2.3084  2.3100  2.3117  2.3133  2.3148  2.3164  2.3180
                      2.3195  2.3210  2.3225  2.3240  2.3255  2.3269  2.3284
                      2.3298  2.3313  2.3327  2.3341  2.3355  2.3368  2.3382
                      2.3396  2.3409  2.3422  2.3436  2.3449  2.3462  2.3474
                      2.3487  2.3500
```

```
    *S
    *
    *
    *S**************************************************************************
    *S --------------------------------------------------------------------------
    *S --------------------------------------------------------------------------
    *S*  COMPUTE BASIN DEVELOPED CONDITIONS
    *S --------------------------------------------------------------------------
    *S --------------------------------------------------------------------------
    *S
    *S BASIN 1
    *
    COMPUTE NM HYD              ID=1  HYD=B1  AREA=.01011SQ MI
                                        PER A=0  PER B=0  PER C=80.2  PER D=19.8
                                        TP=0.1333 HR  MASS RAIN=-1

          K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
          UNIT PEAK =   7.9031    CFS   UNIT VOLUME =   0.9978       B =   526.28
 P60 = 2.0100
          AREA =     0.002002 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

          K =  0.107446HR    TP =  0.133300HR    K/TP RATIO =  0.806046     SHAPE
CONSTANT, N =  4.440407
          UNIT PEAK =   23.329    CFS   UNIT VOLUME =    1.001       B =   383.54
 P60 = 2.0100
          AREA =     0.008108 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=20

                                          HYDROGRAPH FROM AREA B1

          TIME      FLOW           TIME      FLOW           TIME      FLOW
TIME      FLOW           TIME      FLOW
          HRS       CFS            HRS       CFS            HRS       CFS
HRS       CFS            HRS       CFS
          0.000      0.0           2.000      2.4           4.000      0.0
6.000       0.0
          1.000      0.3           3.000      0.1           5.000      0.0

         RUNOFF VOLUME =     1.38795 INCHES     =       0.7484 ACRE-FEET
          PEAK DISCHARGE RATE =      23.87 CFS  AT   1.500 HOURS   BASIN AREA =
0.0101 SQ. MI.


    *
    *
    *S BASIN 2
    *
```

```
*
COMPUTE NM HYD                ID=2  HYD=B2  AREA=.00425SQ MI
                                        PER A=0  PER B=0  PER C=52.1  PER D=47.9
                                        TP=0.1333 HR  MASS RAIN=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   8.0372    CFS   UNIT VOLUME =   0.9978       B =   526.28
 P60 = 2.0100
        AREA =     0.002036 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

        K =  0.107446HR    TP =  0.133300HR    K/TP RATIO =  0.806046     SHAPE
CONSTANT, N =  4.440407
        UNIT PEAK =   6.3710    CFS   UNIT VOLUME =   0.9998       B =   383.54
 P60 = 2.0100
        AREA =     0.002214 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=20

                                        HYDROGRAPH FROM AREA B2

        TIME      FLOW          TIME      FLOW          TIME      FLOW
TIME      FLOW          TIME      FLOW
        HRS       CFS           HRS       CFS           HRS       CFS
HRS       CFS           HRS       CFS
        0.000      0.0          2.000      1.3          4.000      0.0
6.000      0.0
        1.000      0.3          3.000      0.0          5.000      0.0

       RUNOFF VOLUME =     1.63935 INCHES     =      0.3716 ACRE-FEET
       PEAK DISCHARGE RATE =      11.12 CFS  AT   1.500 HOURS   BASIN AREA =
0.0043 SQ. MI.


    *
    *
    *S OFFSITE SOUTH
    *
    *
    COMPUTE NM HYD            ID=3  HYD=B3  AREA=.00859SQ MI
                                        PER A=0  PER B=0  PER C=5  PER D=95
                                        TP=0.1333 HR  MASS RAIN=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   32.218    CFS   UNIT VOLUME =   0.9988       B =   526.28
 P60 = 2.0100
```

AREA = 0.008161 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.107446HR TP = 0.133300HR K/TP RATIO = 0.806046 SHAPE CONSTANT, N = 4.440407
UNIT PEAK = 1.2358 CFS UNIT VOLUME = 0.9924 B = 383.54 P60 = 2.0100
AREA = 0.000430 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=3 CODE=20

HYDROGRAPH FROM AREA B3

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	2.000	3.7	4.000	0.1
6.000	0.1				
1.000	1.1	3.000	0.1	5.000	0.1

RUNOFF VOLUME = 2.06074 INCHES = 0.9441 ACRE-FEET
PEAK DISCHARGE RATE = 26.08 CFS AT 1.500 HOURS BASIN AREA = 0.0086 SQ. MI.

*
*
*S OFFSITE EAST
*
*
COMPUTE NM HYD ID=4 HYD=B4 AREA=.00184SQ MI
PER A=0 PER B=0 PER C=100 PER D=0
TP=0.1333 HR MASS RAIN=-1

K = 0.107446HR TP = 0.133300HR K/TP RATIO = 0.806046 SHAPE CONSTANT, N = 4.440407
UNIT PEAK = 5.2941 CFS UNIT VOLUME = 0.9995 B = 383.54 P60 = 2.0100
AREA = 0.001840 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=20

HYDROGRAPH FROM AREA B4

TIME	FLOW	TIME	FLOW	TIME	FLOW

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	1.000	0.0	2.000	0.3
3.000	0.0				

RUNOFF VOLUME = 1.21081 INCHES = 0.1188 ACRE-FEET
PEAK DISCHARGE RATE = 4.02 CFS AT 1.500 HOURS BASIN AREA = 0.0018 SQ. MI.

```
*
*
*
*
*S ADDITION OF OFFSITE SOUTH TO BASIN 2
ADD HYD                 ID=20  HYD=SOUTHB2 ID I=3 ID II=2 CODE=20
PRINT HYD                    ID=20  CODE=20
```

HYDROGRAPH FROM AREA SOUTHB2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	2.000	5.1	4.000	0.1
6.000	0.2				
1.000	1.3	3.000	0.1	5.000	0.1

RUNOFF VOLUME = 1.92121 INCHES = 1.3156 ACRE-FEET
PEAK DISCHARGE RATE = 37.19 CFS AT 1.500 HOURS BASIN AREA = 0.0128 SQ. MI.

```
*
*
*S ADDITION OF OFFSITE EAST TO BASIN 2
ADD HYD                 ID=21  HYD=EASTB2 ID I=4 ID II=20 CODE=20
PRINT HYD                    ID=21  CODE=20
```

HYDROGRAPH FROM AREA EASTB2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	2.000	5.4	4.000	0.1
6.000	0.2				
1.000	1.3	3.000	0.2	5.000	0.1

RUNOFF VOLUME = 1.83216 INCHES = 1.4344 ACRE-FEET
PEAK DISCHARGE RATE = 41.22 CFS AT 1.500 HOURS BASIN AREA = 0.0147 SQ. MI.

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*
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*

*S ROUTE BASIN 2 & OFFSITE EAST & SOUTH TO POND "A". OUTFLOW BASED ON 30" NYLOPL

ROUTE RESERVOIR ID=10 HYD=PONDA INFLOW ID=21 CODE=3

OUTFLOW (CFS)	STORAGE(AC-FT)	ELEV (FT)
0.001	0.0000	5074.50
0.002	0.0586	5075.00
9.250	0.1190	5075.50
13.500	0.1996	5076.00
17.000	0.2897	5076.50
21.250	0.3905	5077.00
24.000	0.5269	5077.50
26.500	0.7450	5078.00

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	5074.00	-0.059	0.00
0.15	0.00	5074.50	0.000	0.00
0.30	0.00	5074.50	0.000	0.00
0.45	0.00	5074.50	0.000	0.00
0.60	0.00	5074.50	0.000	0.00
0.75	0.00	5074.50	0.000	0.00
0.90	0.27	5074.51	0.001	0.00
1.05	2.17	5074.62	0.014	0.00
1.20	5.01	5074.99	0.058	0.00
1.35	13.71	5075.44	0.112	8.14
1.50	41.22	5076.58	0.305	17.65
1.65	24.76	5077.30	0.473	22.91
1.80	11.89	5077.07	0.410	21.64
1.95	6.63	5076.46	0.282	16.69
2.10	3.42	5075.79	0.165	11.69
2.25	2.01	5075.27	0.091	4.96
2.40	1.30	5075.11	0.072	2.02
2.55	0.66	5075.06	0.065	1.02
2.70	0.39	5075.03	0.062	0.55
2.85	0.25	5075.02	0.061	0.33
3.00	0.16	5075.01	0.060	0.21
3.15	0.10	5075.01	0.059	0.13
3.30	0.08	5075.00	0.059	0.09
3.45	0.07	5075.00	0.059	0.07
3.60	0.06	5075.00	0.059	0.07
3.75	0.06	5075.00	0.059	0.06
3.90	0.07	5075.00	0.059	0.07
4.05	0.07	5075.00	0.059	0.07
4.20	0.08	5075.00	0.059	0.07
4.35	0.08	5075.00	0.059	0.08
4.50	0.09	5075.00	0.059	0.08
4.65	0.09	5075.00	0.059	0.09
4.80	0.10	5075.00	0.059	0.10
4.95	0.11	5075.01	0.059	0.10
5.10	0.11	5075.01	0.059	0.11
5.25	0.12	5075.01	0.059	0.12

5.40	0.13	5075.01	0.059	0.12
5.55	0.13	5075.01	0.059	0.13
5.70	0.14	5075.01	0.060	0.14
5.85	0.15	5075.01	0.060	0.15
6.00	0.16	5075.01	0.060	0.16
6.15	0.07	5075.01	0.059	0.12
6.30	0.02	5075.00	0.059	0.04
6.45	0.01	5075.00	0.059	0.02
6.60	0.00	5075.00	0.059	0.01
6.75	0.00	5075.00	0.059	0.00

PEAK DISCHARGE = 22.915 CFS - PEAK OCCURS AT HOUR 1.65
MAXIMUM WATER SURFACE ELEVATION = 5077.303
MAXIMUM STORAGE = 0.4731 AC-FT INCREMENTAL TIME= 0.050000HRS

```
*
*
*S ADDITION OF POND "A" TO BASIN 1.
ADD HYD                 ID=22  HYD=PAB1 ID I=1 ID II=10 CODE=20
PRINT HYD                   ID=22  CODE=20
```

HYDROGRAPH FROM AREA PAB1

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
0.000	0.0	40.000	0.0	80.000	0.0
120.000	0.0	160.000	0.0		
1.000	0.3	41.000	0.0	81.000	0.0
121.000	0.0	161.000	0.0		
2.000	17.5	42.000	0.0	82.000	0.0
122.000	0.0	162.000	0.0		
3.000	0.3	43.000	0.0	83.000	0.0
123.000	0.0	163.000	0.0		
4.000	0.1	44.000	0.0	84.000	0.0
124.000	0.0	164.000	0.0		
5.000	0.1	45.000	0.0	85.000	0.0
125.000	0.0	165.000	0.0		
6.000	0.2	46.000	0.0	86.000	0.0
126.000	0.0	166.000	0.0		
7.000	0.0	47.000	0.0	87.000	0.0
127.000	0.0	167.000	0.0		
8.000	0.0	48.000	0.0	88.000	0.0
128.000	0.0	168.000	0.0		
9.000	0.0	49.000	0.0	89.000	0.0
129.000	0.0	169.000	0.0		
10.000	0.0	50.000	0.0	90.000	0.0
130.000	0.0	170.000	0.0		
11.000	0.0	51.000	0.0	91.000	0.0
131.000	0.0	171.000	0.0		
12.000	0.0	52.000	0.0	92.000	0.0
132.000	0.0	172.000	0.0		
13.000	0.0	53.000	0.0	93.000	0.0
133.000	0.0	173.000	0.0		
14.000	0.0	54.000	0.0	94.000	0.0
134.000	0.0	174.000	0.0		
15.000	0.0	55.000	0.0	95.000	0.0
135.000	0.0	175.000	0.0		
16.000	0.0	56.000	0.0	96.000	0.0
136.000	0.0	176.000	0.0		
17.000	0.0	57.000	0.0	97.000	0.0

137.000	0.0	177.000	0.0				
	18.000	0.0	58.000	0.0	98.000	0.0	
138.000	0.0	178.000	0.0				
	19.000	0.0	59.000	0.0	99.000	0.0	
139.000	0.0	179.000	0.0				
	20.000	0.0	60.000	0.0	100.000	0.0	
140.000	0.0	180.000	0.0				
	21.000	0.0	61.000	0.0	101.000	0.0	
141.000	0.0	181.000	0.0				
	22.000	0.0	62.000	0.0	102.000	0.0	
142.000	0.0	182.000	0.0				
	23.000	0.0	63.000	0.0	103.000	0.0	
143.000	0.0	183.000	0.0				
	24.000	0.0	64.000	0.0	104.000	0.0	
144.000	0.0	184.000	0.0				
	25.000	0.0	65.000	0.0	105.000	0.0	
145.000	0.0	185.000	0.0				
	26.000	0.0	66.000	0.0	106.000	0.0	
146.000	0.0	186.000	0.0				
	27.000	0.0	67.000	0.0	107.000	0.0	
147.000	0.0	187.000	0.0				
	28.000	0.0	68.000	0.0	108.000	0.0	
148.000	0.0	188.000	0.0				
	29.000	0.0	69.000	0.0	109.000	0.0	
149.000	0.0	189.000	0.0				
	30.000	0.0	70.000	0.0	110.000	0.0	
150.000	0.0	190.000	0.0				
	31.000	0.0	71.000	0.0	111.000	0.0	
151.000	0.0	191.000	0.0				
	32.000	0.0	72.000	0.0	112.000	0.0	
152.000	0.0	192.000	0.0				
	33.000	0.0	73.000	0.0	113.000	0.0	
153.000	0.0	193.000	0.0				
	34.000	0.0	74.000	0.0	114.000	0.0	
154.000	0.0	194.000	0.0				
	35.000	0.0	75.000	0.0	115.000	0.0	
155.000	0.0	195.000	0.0				
	36.000	0.0	76.000	0.0	116.000	0.0	
156.000	0.0	196.000	0.0				
	37.000	0.0	77.000	0.0	117.000	0.0	
157.000	0.0	197.000	0.0				
	38.000	0.0	78.000	0.0	118.000	0.0	
158.000	0.0	198.000	0.0				
	39.000	0.0	79.000	0.0	119.000	0.0	
159.000	0.0	199.000	0.0				

RUNOFF VOLUME = 1.62784 INCHES = 2.1522 ACRE-FEET
PEAK DISCHARGE RATE = 44.42 CFS AT 1.550 HOURS BASIN AREA = 0.0248 SQ. MI.

```
*
*
*S ROUTE BASIN 1 TO POND "B". OUTFLOW BASED ON WEIR CALCULATIONS.
ROUTE RESERVOIR        ID=11  HYD=PONDB  INFLOW ID=22 CODE=3
                    OUTFLOW (CFS)   STORAGE(AC-FT)  ELEV (FT)

                    0.001           0.0000          5070.00

                    0.002           0.0154          5070.50

                    0.003           0.0425          5071.00
```

7.495	0.0694	5071.50
21.200	0.1004	5072.00
38.947	0.1358	5072.50
59.963	0.1757	5073.00

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	5069.50	-0.015	0.00
0.15	0.00	5070.00	0.000	0.00
0.30	0.00	5070.00	0.000	0.00
0.45	0.00	5070.00	0.000	0.00
0.60	0.00	5070.00	0.000	0.00
0.75	0.00	5070.00	0.000	0.00
0.90	0.05	5070.00	0.000	0.00
1.05	0.43	5070.09	0.003	0.00
1.20	1.07	5070.38	0.012	0.00
1.35	14.77	5071.57	0.074	9.32
1.50	41.52	5072.47	0.134	37.87
1.65	37.71	5072.51	0.137	39.55
1.80	27.69	5072.22	0.116	29.04
1.95	19.61	5071.99	0.100	20.82
2.10	13.32	5071.76	0.085	14.53
2.25	5.96	5071.50	0.069	7.46
2.40	2.65	5071.22	0.055	3.36
2.55	1.39	5071.11	0.049	1.71
2.70	0.77	5071.06	0.046	0.92
2.85	0.47	5071.04	0.044	0.54
3.00	0.30	5071.02	0.044	0.34
3.15	0.19	5071.01	0.043	0.22
3.30	0.13	5071.01	0.043	0.15
3.45	0.10	5071.01	0.043	0.11
3.60	0.08	5071.01	0.043	0.09
3.75	0.08	5071.00	0.043	0.08
3.90	0.08	5071.00	0.043	0.08
4.05	0.08	5071.01	0.043	0.08
4.20	0.09	5071.01	0.043	0.09
4.35	0.09	5071.01	0.043	0.09
4.50	0.10	5071.01	0.043	0.10
4.65	0.11	5071.01	0.043	0.10
4.80	0.11	5071.01	0.043	0.11
4.95	0.12	5071.01	0.043	0.12
5.10	0.13	5071.01	0.043	0.13
5.25	0.14	5071.01	0.043	0.14
5.40	0.15	5071.01	0.043	0.15
5.55	0.16	5071.01	0.043	0.16
5.70	0.17	5071.01	0.043	0.17
5.85	0.18	5071.01	0.043	0.18
6.00	0.19	5071.01	0.043	0.19
6.15	0.14	5071.01	0.043	0.16
6.30	0.05	5071.00	0.043	0.07
6.45	0.02	5071.00	0.043	0.03
6.60	0.01	5071.00	0.043	0.01
6.75	0.00	5071.00	0.043	0.00

PEAK DISCHARGE = 43.160 CFS - PEAK OCCURS AT HOUR 1.55
MAXIMUM WATER SURFACE ELEVATION = 5072.600

```
 MAXIMUM STORAGE =        0.1438 AC-FT      INCREMENTAL TIME=    0.050000HRS

*
*
*******
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 14:40:42
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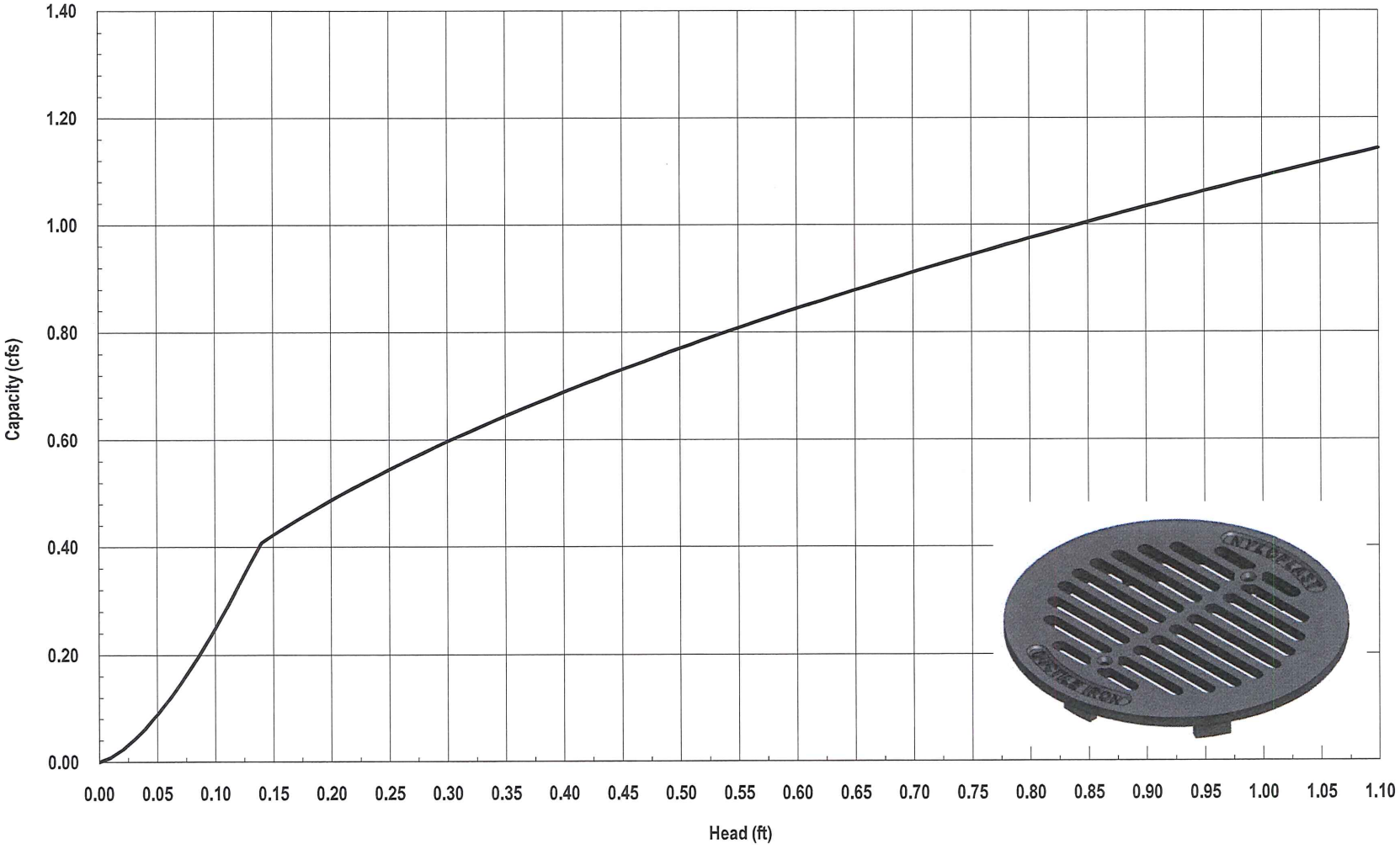
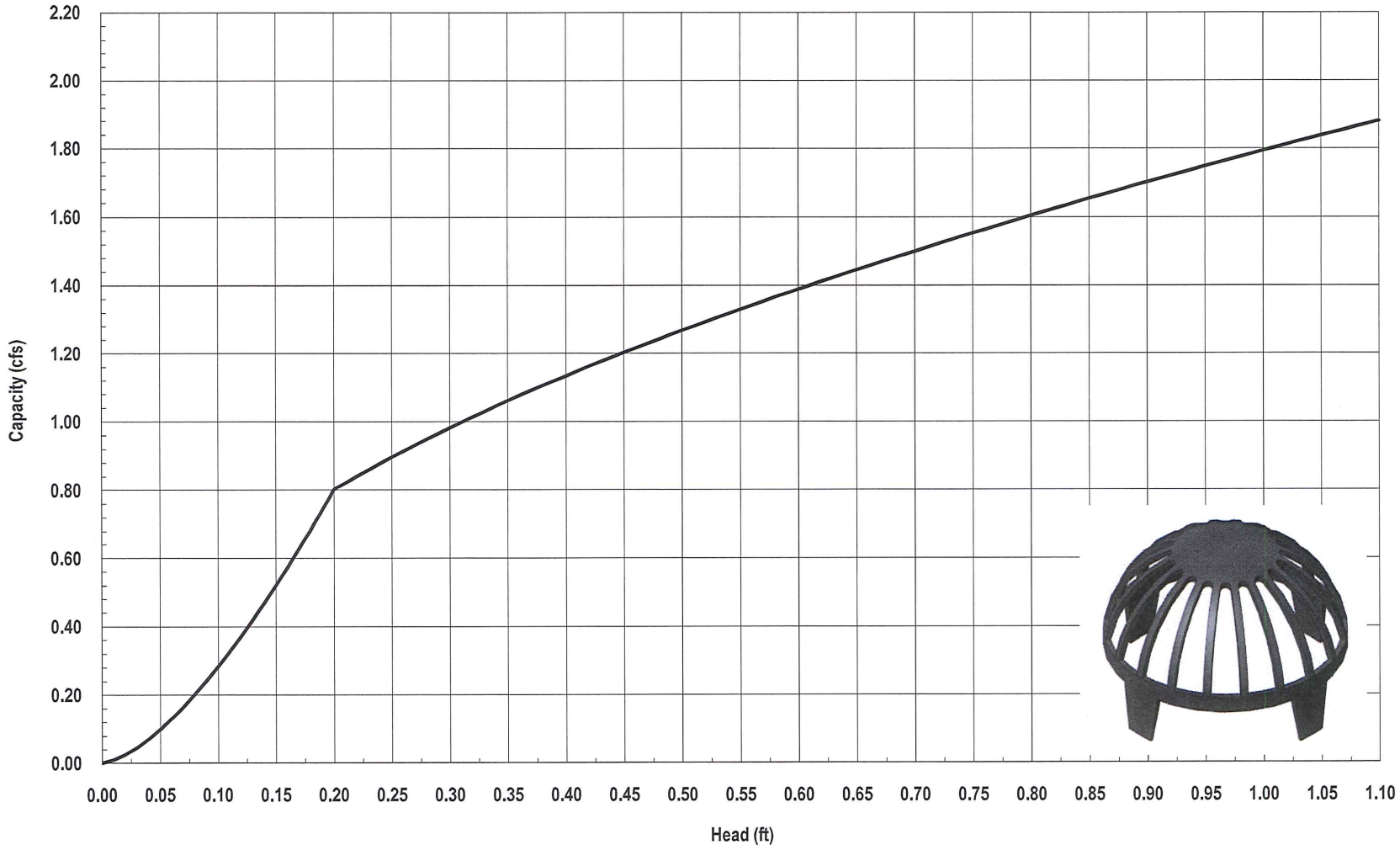
Nyloplast 10" Drop In Grate Inlet Capacity Chart



Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490

Nyloplast 10" Dome Grate Inlet Capacity Chart



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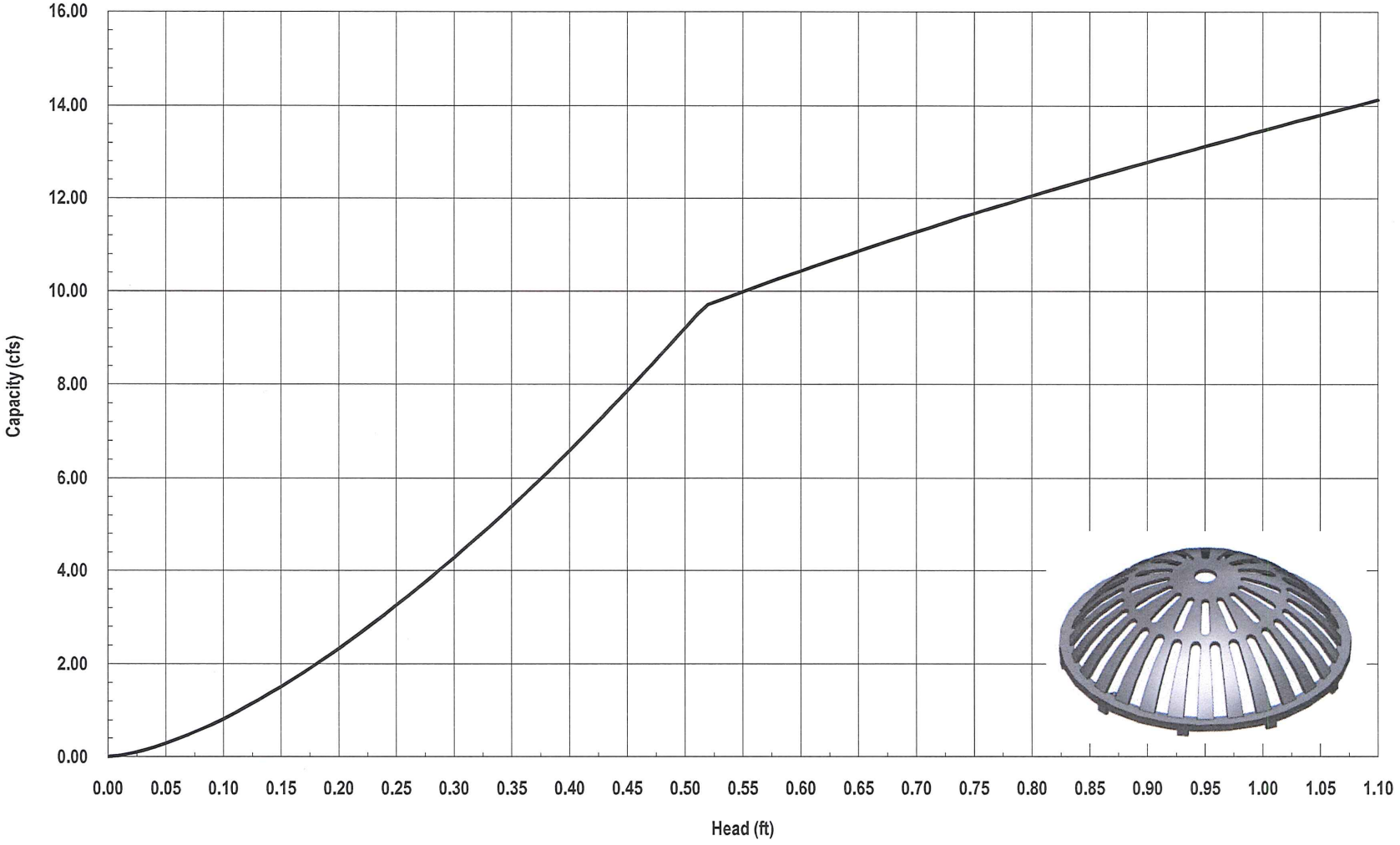
Nyloplast 30" Dome Grate Inlet Capacity Chart



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CITY OF ALBUQUERQUE

March 10, 2005

David Soule, PE
Rio Grande Engineering
1606 Central SE, Ste 201
Albuquerque, NM 87106

Re: Paseo del Norte Sportsplex Drainage Report
Engineer's Stamp dated 12-29-04

Dear Mr. Soule,

Based upon the information provided in your submittal dated 12-29-04, the above referenced report is approved for Site Development Plan. Prior to Building Permit approval, please address the following comments.

- Please direct the emergency spillway toward Paseo del Norte.
- How does the runoff leave the pond? Does it daylight to the existing grade?
- Please check the volumes of the pond – they appear small. This will probably affect the AHYMO run.
- Pipes 7 and 8 are undersized. Also, please check your weir calculation.
- Please include exhibit from the previous report (C17-D19) showing allowable discharge to the property to the west.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: file

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

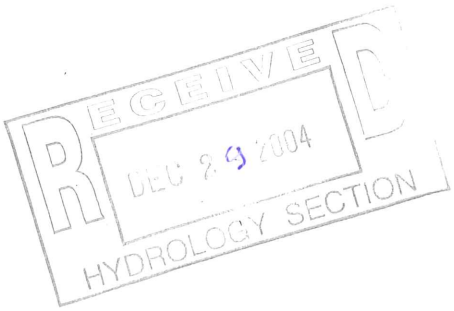
DRAINAGE REPORT

for

Paseo Del Norte Sportsplex Albuquerque, New Mexico

Prepared by
Rio Grande Engineering
1606 Central Ave. SE, Suite 201
Albuquerque, New Mexico 87106

December 2004



David Soule P.E. No. 14522

PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the development of indoor/ outdoor sports complex. The proposed development will consist of an approximately 56,000 square foot building, 11outdoor volley-ball courts, a miniature baseball field and their associated parking lot. The site contains 9.48 acres. This plan will identify the upstream and downstream hydraulic constraints affecting the subject property. This plan was prepared in accordance with the City of Albuquerque's Development Process Manual Drainage Criterion. This report will demonstrate that the proposed improvements do not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A - vicinity map, is a 9.48-acre parcel of land located on the north side of Paseo Del Norte Avenue west of Washington Avenue NE. The site is currently undeveloped. The legal description of the parcel is tracts 1 & 2 Loop Industrial Park. The site is bounded by an inlet to the North AMAFCA Diversion Channel on the North, the Paseo Del Norte Frontage Road on the south, a railroad spur to the east and a partially developed parcel to the west. Due to the surrounding improvements, this site is not impacted by any significant offsite flow. The site currently discharges 21.16 cfs directly to the adjacent tract of land to the west of the site. A drainage plan (C17-D19) was completed for the adjacent tract which allows for 16.01cfs to leave enter this site from the subject site. Due to the existing drainage facilities and the fact the site is significantly lower than the adjacent AMAFCA channel and Paseo Del Norte, the existing patterns will be maintained and the development of this site shall be in conformance to the approved plan for the adjacent tract.

EXISTING CONDITIONS

This site is currently undeveloped. It appears this site has never been developed. The site is covered by native grasses and indigenous plants. The site drains from northeast to the southwest with general grades between 2-3 %. As shown in appendix A, the site currently discharges 21.16 cfs upon the adjacent westerly tract at the southwest corner of the site. This site and the adjacent site to the west are significantly lower than the adjacent roadway. Once the flow enters the adjacent tract, it combines with the developed flows and enters the North Diversion channel just west of the adjacent tract. Due to the existing grades, the adjacent site was designed to accommodate 16.01 cfs from this site. This report was prepared by BHI with a stamp date of April 22, 1998 and is located in C17-D19. This report defines this site as offsite basin B-1 and accounts for 16.01 cfs to discharge at the southern boundary. There no visual evidence that the existing drainage patterns have any negative impacts onsite or offsite.

PROPOSED CONDITIONS

As shown in Map Pocket A, the site contains a 15 drainage basin. Each basin drains to an underground storm drainage system. As shown in Appendix A, the weighted E method was used to quantify the peak rates generated within each basin. The underground drainage system drains to a detention pond located at the historical low point of the site. As shown in Appendix B, the inlets and drainage conduit are adequately sized. The proposed detention pond discharge 16.295 cfs via a 24" outfall pipe with a 16.5" orifice plate. This pond was modeled using AHYMO and the pond routing function. The input and output files of the model are included within Appendix C. As shown from the hydraulic pond model, the peak discharge leaving the site is throttled to 16.3 cfs during a 100-year, six hour storm event. A 24' wide emergency overflow has been included should the outlet become plugged. The proposed discharge rate leaving the site is

slightly greater than the rate of 16.01 cfs accounted for within the drainage plan for the westerly site. This increase of less than 0.3 cfs is insignificant and will be not have any adverse impact on the adjacent tract.

SUMMARY AND RECOMMENDATIONS

This project consists of the development of an undeveloped site. The site is surrounded by streets that are fully developed. No significant offsite flows impact the site. The site currently discharges 21.16 cfs to the adjacent tract during a 100-year, 6-hour storm event. This flow passes through the adjacent site where it is captured by an permanent drainage structure and conveyed to the North Diversion Channel. The proposed development will discharge a peak rate of 16.3 cfs, while maintaining the existing drainage patterns. The adjacent tract was designed and approved to accept the flow from this site. The grading plan and drainage report was prepared in conformance with the City of Albuquerque Development Process Manual's drainage criteria. The existing and proposed storm discharge rates have been calculated using the City of Albuquerque's Weighted E method as prescribed in the DPM. The pond function was modeled using AHYMO 97. Since the proposed redevelopment of an existing site as shown within this plan do not adversely affects the upstream or downstream facilities, we recommend approval of the site-grading plan. Since this site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity.

Weighted E Method

Existing Basins

											100-Year		
Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
			%	(acres)	%	(acres)	%	(acres)	%	(acres)			
ONSITE	412805.05	9.48	64%	6.0672	15%	1.422	6%	0.5688	15%	1.422	0.861	0.680	21.18
Total	412805.05	9.48		6.0672		1.422		0.5688		1.422		0.680	21.18

Proposed Developed Basins

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
			%	(acres)	%	(acres)	%	(acres)	%	(acres)				
A	35518.82	0.815	5%	0.04077	10%	0.082	5%	0.04077	80%	0.652	1.859	0.126	3.44	0.213
B	15424.60	0.354	2%	0.007082	3%	0.011	5%	0.01771	90%	0.319	1.999	0.059	1.59	0.101
C	25234.31	0.579	2%	0.011586	5%	0.029	6%	0.03476	87%	0.504	1.962	0.095	2.56	0.162
D	7623.00	0.175	2%	0.0035	6%	0.011	8%	0.014	84%	0.147	1.929	0.028	0.76	0.048
E	36024.12	0.827	10%	0.0827	20%	0.165	20%	0.1654	50%	0.414	1.498	0.103	2.97	0.158
F	7104.64	0.163	8%	0.013048	12%	0.020	20%	0.03262	60%	0.098	1.636	0.022	0.63	0.035
G	19514.88	0.448	1%	0.00448	4%	0.018	5%	0.0224	90%	0.403	2.001	0.075	2.01	0.128
G-1	30823.06	0.708	30%	0.21228	30%	0.212	20%	0.14152	20%	0.142	1.052	0.062	1.92	0.081
H(FUTURE)	95919.12	2.202	5%	0.1101	10%	0.220	10%	0.2202	75%	1.652	1.809	0.332	9.13	0.552
I	15472.51	0.355	30%	0.10656	20%	0.071	10%	0.03552	40%	0.142	1.285	0.038	1.11	0.057
J	66337.52	1.523	20%	0.30458	30%	0.457	25%	0.38073	25%	0.381	1.159	0.147	4.50	0.198
J-1	16282.73	0.374	0%	0	5%	0.019	5%	0.01869	90%	0.336	2.004	0.062	1.68	0.107
K	16674.77	0.383	0%	0	5%	0.019	5%	0.01914	90%	0.345	2.004	0.064	1.72	0.110
L	8842.68	0.203	8%	0.01624	18%	0.037	16%	0.03248	58%	0.118	1.596	0.027	0.76	0.043
M	16030.08	0.368	0%	0	5%	0.018	5%	0.0184	90%	0.331	2.004	0.061	1.66	0.106
Total	412826.83	9.48		0.91		1.39		1.19		5.98		1.30	36.45	2.10

Equations:

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

Ea= 0.56	Qa= 1.56
Eb= 0.78	Qb= 2.28
Ec= 1.13	Qc= 3.14
Ed= 2.12	Qd= 4.7

VOLUME CALCULATIONS

DETENTION POND

Ab - Bottom Of The Pond Surface Area
At - Top Of The Pond Surface Area
D - Water Depth
Dt - Total Pond Depth
C - Change In Surface Area / Water Depth

Volume = Ab * D + 0.5 * C * D^2
C = (At - Ab) / Dt

Ab =	2,080.00
At =	5,269.00
Dt =	6.25
C =	510.24

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
68.75	0	0	0.000
70.00	1.25	0.0597	3.997
70.75	2.00	0.0988	7.370
71.25	2.50	0.1285	8.937
71.75	3.00	0.1612	10.268
72.25	3.50	0.1968	11.445
72.75	4.00	0.2353	12.512
73.25	4.50	0.2767	13.495
73.75	5.00	0.3211	14.411
74.25	5.50	0.3684	15.272
74.75	6.00	0.4186	16.087
75.00	6.25	0.4449	16.479

CHECK VOLUME & FLOW CALCS

0.5272 16.863

Orifice Equation
Q = CA SQRT(2gH)

C =	0.6
Diameter (in)	16.5
Area (ft^2)=	1.4848934
g =	32.2
H (Ft) =	Depth of water above center of orifice
Q (CFS)=	Flow

Existing Condition

Discharge to adjacent tract 21.18 cfs

Developed Conditons	PIPE		CONTRIBUTING PIPES	CONTRIBUTING BASINS		CALCULATED Q
	PIPE	1	13,1A	E	2.97	27.33
	PIPE	1A	2,3	C	2.56	22.01
	PIPE	2	10	A	3.44	5.10
	PIPE	10	14			1.66
	PIPE	14		M	1.66	1.66
	PIPE	13	12	D	0.76	2.35
	PIPE	12		B	1.59	1.59
	PIPE	3	4,6	F	0.63	14.34
	PIPE	4		G-1	1.92	1.92
	PIPE	6	7	I,G	3.12	11.79
	PIPE	7	8			8.67
	PIPE	8	9	J	4.50	8.67
	PIPE	9	11	J1,L	2.45	4.17
	PIPE	11		K	1.72	1.72
	PIPE	5		H	9.13	9.13
	TOTAL FLOW TO POND					36.45

Pipe Capacity

Pipe	D	Slope	Area	R	Q Provided	Q Required	Velocity
	(in)	(%)	(ft^2)		(cfs)	(cfs)	(ft/s)
1	30	0.6	4.91	0.625	31.86	27.33	5.57
1A	30	0.6	4.91	0.625	31.86	22.01	4.48
2	18	0.6	1.77	0.375	8.16	5.10	2.89
10	12	0.6	0.79	0.25	2.77	1.66	2.11
14	12	0.6	0.79	0.25	2.77	1.66	2.11
13	15	0.6	1.23	0.3125	5.02	2.35	1.91
12	12	0.6	0.79	0.25	2.77	1.59	2.02
3	24	0.6	3.14	0.5	17.57	14.34	4.56
4	12	0.6	0.79	0.25	2.77	1.92	2.44
6	24	0.6	3.14	0.5	17.57	11.79	3.75
7	18	0.6	1.77	0.375	8.16	8.67	4.91
8	18	0.6	1.77	0.375	8.16	8.67	4.91
9	15	0.6	1.23	0.3125	5.02	4.17	3.40
11	12	0.6	0.79	0.25	2.77	1.72	2.19
5	21	0.6	2.41	0.4375	12.31	9.13	3.80

} UNDER SIZED

Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area
R = D/4
S = Slope
n = 0.013

DROP INLET CALCULATIONS

INLET	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
ALL	Single 'D'	5.92	4.5	0.0249	0.5

ORIFICE EQUATION

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

Overflow Channel

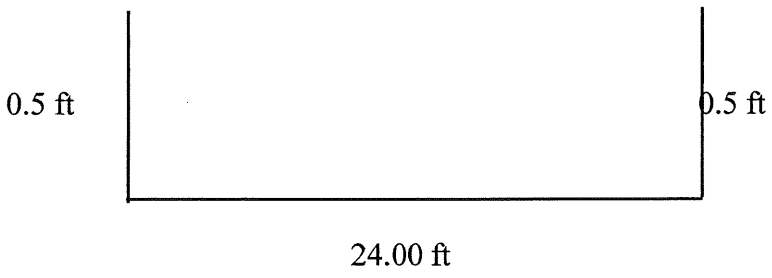
Weir Equation:

$$Q = CLH^{3/2}$$

Q= 36.45 cfs
C = 2.95
H = 0.5 ft
L = Length of weir

$$L = \frac{36.45}{2.95(0.5)^{3/2}} = 34.95'$$

L = 23.98 ft
Use 24.00 feet for length of weir



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**************************************************************
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* ROUTE 1
*
* OVERALL SITE*
RAINFALL             TYPE=1 RAIN QUARTER=0.0 IN
                     RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                     RAIN DAY=2.75 IN DT=0.03333 HR
COMPUTE NM HYD       ID=1 HYD NO=101.1 AREA=0.0148125 SQ MI
                     PER A=10.0 PER B=14.0 PER C=12.0 PER D=64.0
                     TP=-0.1333 HR MASS RAINFALL=-1
* BASIN 1 PONDING
*
ROUTE RESERVOIR      ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                     OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                        0.0000            0.0000          68.75
                         3.997            0.0597          70.00
                         7.370            0.0988          70.75
                         8.937            0.1285          71.25
                        10.268            0.1612          71.75
                        11.445            0.1968          72.25
                        12.512            0.2353          72.75
                        13.495            0.2767          73.25
                        14.411            0.3211          73.75
                        15.272            0.3684          74.25
                        16.087            0.4186          74.75
                        16.479            0.4449          75.00

*
*
FINISH
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              START TIME (HR:MIN:SEC) = 17:27:31     USER NO.= AHYMO-S-
9702d2TierraW-AH
              INPUT FILE = C:\DOCUME~1\David\Desktop\2453\POND.txt

     ************************************************************
     *                  PASEO DEL NORTE SPORTS PLEX                *
     ************************************************************
     *          100-YEAR, 6-HR STORM  (PONDING CALCULATIONS)       *
     ************************************************************
     START               TIME=0.0
     *
     * ROUTE 1
     *
     * OVERALL SITE*
     RAINFALL            TYPE=1 RAIN QUARTER=0.0 IN
                         RAIN ONE=2.01 IN RAIN SIX=2.35 IN
                         RAIN DAY=2.75 IN DT=0.03333 HR

                    COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
- PEAK AT 1.40 HR.
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                       .0000   .0016   .0033   .0049   .0066   .0084   .0102
                       .0120   .0139   .0158   .0178   .0199   .0219   .0241
                       .0263   .0286   .0309   .0333   .0358   .0384   .0411
                       .0439   .0467   .0497   .0529   .0561   .0596   .0631
                       .0669   .0709   .0751   .0807   .0866   .0930   .1066
                       .1371   .1840   .2514   .3434   .4644   .6186   .8106
                      1.0449  1.2624  1.3533  1.4300  1.4982  1.5602  1.6174
                      1.6704  1.7200  1.7664  1.8102  1.8514  1.8904  1.9273
                      1.9622  1.9953  2.0268  2.0566  2.0850  2.0915  2.0976
                      2.1033  2.1088  2.1140  2.1191  2.1239  2.1285  2.1329
                      2.1373  2.1414  2.1454  2.1494  2.1531  2.1568  2.1604
                      2.1639  2.1673  2.1706  2.1739  2.1771  2.1802  2.1832
                      2.1862  2.1891  2.1919  2.1947  2.1975  2.2002  2.2028
                      2.2054  2.2080  2.2105  2.2130  2.2154  2.2178  2.2202
                      2.2225  2.2248  2.2270  2.2293  2.2315  2.2336  2.2358
                      2.2379  2.2399  2.2420  2.2440  2.2460  2.2480  2.2500
                      2.2519  2.2538  2.2557  2.2576  2.2594  2.2612  2.2631
                      2.2648  2.2666  2.2684  2.2701  2.2718  2.2735  2.2752
                      2.2769  2.2785  2.2802  2.2818  2.2834  2.2850  2.2866
                      2.2881  2.2897  2.2912  2.2928  2.2943  2.2958  2.2973
                      2.2987  2.3002  2.3017  2.3031  2.3045  2.3060  2.3074
                      2.3088  2.3102  2.3115  2.3129  2.3143  2.3156  2.3169
                      2.3183  2.3196  2.3209  2.3222  2.3235  2.3248  2.3261
                      2.3273  2.3286  2.3298  2.3311  2.3323  2.3335  2.3348
                      2.3360  2.3372  2.3384  2.3396  2.3408  2.3419  2.3431
                      2.3443  2.3454  2.3466  2.3477  2.3488  2.3500

     COMPUTE NM HYD      ID=1 HYD NO=101.1 AREA=0.0148125 SQ MI
                         PER A=10.0 PER B=14.0 PER C=12.0 PER D=64.0
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          K =    .072649HR    TP =    .133300HR    K/TP RATIO =    .545000
SHAPE CONSTANT, N =  7.106420
```

```
          UNIT PEAK =   37.428    CFS   UNIT VOLUME =    .9991       B =
526.28      P60 = 2.0100
          AREA =      .009480 SQ MI    IA =    .10000 INCHES    INF =    .04000
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
=   .033330


          K =   .131670HR    TP =   .133300HR    K/TP RATIO =   .987773
SHAPE CONSTANT, N =  3.574608
          UNIT PEAK =   13.031    CFS   UNIT VOLUME =    .9993       B =
325.73      P60 = 2.0100
          AREA =      .005333 SQ MI    IA =    .49167 INCHES    INF =   1.22667
INCHES PER HOUR
          RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
=   .033330

     * BASIN 1 PONDING
     *
     ROUTE RESERVOIR     ID=2 HYD NO=501.1 INFLOW ID=1 CODE=24
                         OUTFLOW(CFS)      STORAGE(AC-FT)  ELEVATION(FT)
                            0.0000            0.0000          68.75
                            3.997             0.0597          70.00
                            7.370             0.0988          70.75
                            8.937             0.1285          71.25
                           10.268             0.1612          71.75
                           11.445             0.1968          72.25
                           12.512             0.2353          72.75
                           13.495             0.2767          73.25
                           14.411             0.3211          73.75
                           15.272             0.3684          74.25
                           16.087             0.4186          74.75
                           16.479             0.4449          75.00


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

         TIME      INFLOW    ELEV      VOLUME    OUTFLOW
         (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

          .00        .00     68.75       .000       .00
          .80        .00     68.75       .000       .00
         1.60      25.87     74.51       .394     15.69
         2.40       1.48     70.47       .084      6.11
         3.20        .29     68.89       .007       .46
         4.00        .17     68.81       .003       .19
         4.80        .16     68.80       .002       .16
         5.60        .18     68.81       .003       .18
         6.40        .02     68.77       .001       .07
         7.20        .00     68.75       .000       .00
      PEAK DISCHARGE =       16.295 CFS - PEAK OCCURS AT HOUR    1.70
      MAXIMUM WATER SURFACE ELEVATION =       74.883
      MAXIMUM STORAGE =         .4325 AC-FT      INCREMENTAL TIME=
.033330HRS

     *
     *
```

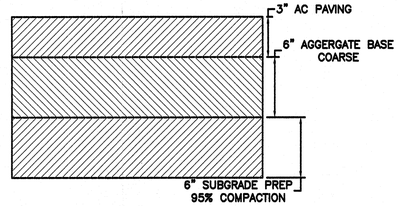
```
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 17:27:31
```

MAP POCKET A

DRAINAGE BASIN MAP

STORM DRAIN LINE TABLE				
LINE	LENGTH	BEARING	SIZE	SLOPE
L1	178.35	N41°55'19"E	30" HDPE	0.60%
L1A	110.76	N41°55'19"E	30" HDPE	0.60%
L2	127.89	N14°00'08"W	18" HDPE	0.60%
L3	107.76	S86°57'15"E	24" HDPE	0.60%
L4	82.58	N03°02'45"E	12" HDPE	0.60%
L5	144.23	N86°06'33"E	21" HDPE	0.57%
L6	260.39	S82°56'08"E	24" HDPE	0.60%
L7	140.35	S84°56'21"E	18" HDPE	0.60%
L8	62.76	N32°31'14"E	18" HDPE	0.60%
L9	259.69	N00°00'00"E	15" HDPE	0.60%
L10	233.13	N44°01'09"E	12" HDPE	0.60%
L11	110.97	S90°00'00"W	12" HDPE	0.60%
L12	93.01	S12°20'42"W	12" HDPE	0.60%
L13	91.43	N48°04'41"W	15" HDPE	0.60%
L14	279.51	S90°00'00"W	12" HDPE	0.60%

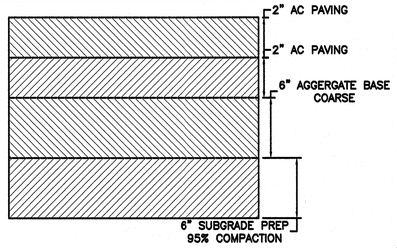
ROOF DRAIN LINE TABLE		
LINE	SIZE	INV @ MAIN SD LINE
RD-1	6" PVC	5073.88
RD-2	6" PVC	5074.13
RD-3	6" PVC	5074.35
RD-4	6" PVC	5074.71
RD-5	6" PVC	5075.00
RD-6	6" PVC	5075.29
RD-7	6" PVC	5075.80
RD-8	6" PVC	5075.52
RD-9	6" PVC	5074.41
RD-10	6" PVC	5074.41
RD-11	6" PVC	5074.41
RD-12	6" PVC	5071.89
RD-14	6" PVC	5071.89
RD-15	6" PVC	5071.89
RD-16	6" PVC	5071.89
RD-17	6" PVC	5071.89
RD-18	6" PVC	5074.41
RD-19	6" PVC	5074.10



PAVING SECTION–FOR DRIVEWAY AND PARKING AREA

NTS

FOR BIDDING PURPOSES ONLY SEE GEOTECH REPORT FOR SECTION



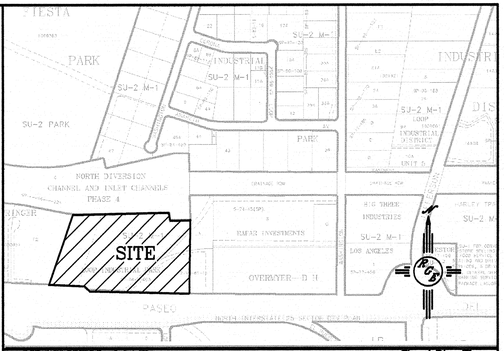
PAVING SECTION–FOR DECELERATION LANE

NTS

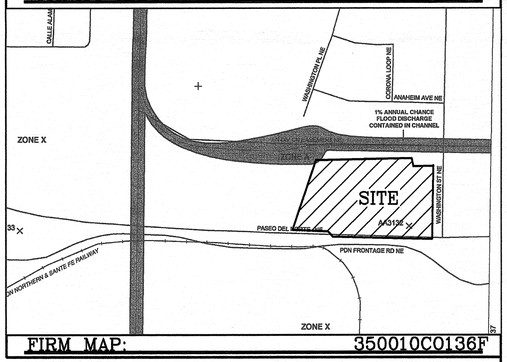
FOR BIDDING PURPOSES ONLY SEE NMDOT REQUIREMENTS FOR SECTION

EROSION CONTROL NOTES:

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 CONSTRUCTION.
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.



VICINITY MAP: C-17-Z



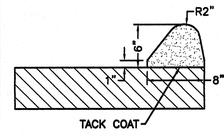
FIRM MAP: 350010C0136F

LEGAL DESCRIPTION:

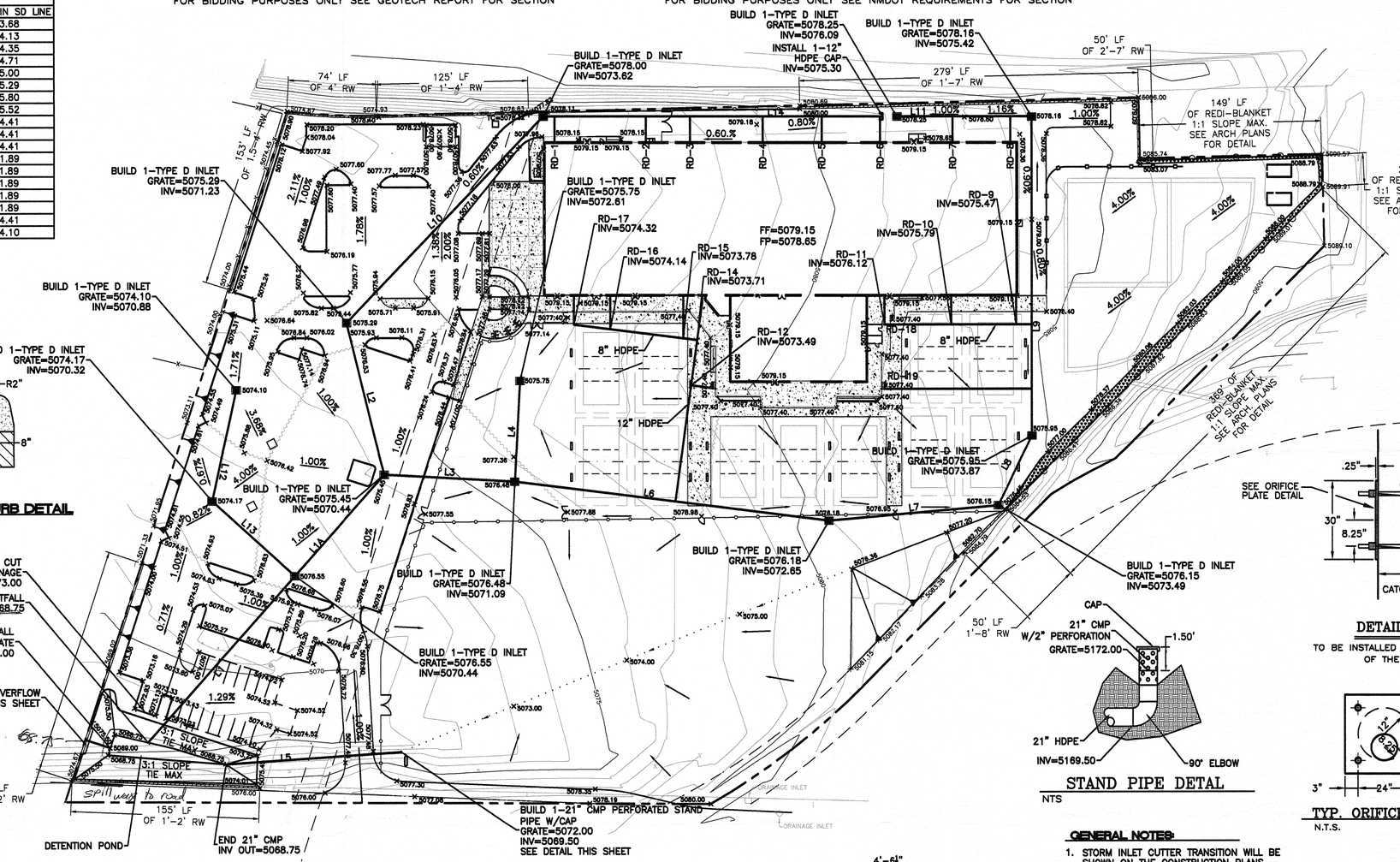
TRACT 1 AND 2, LOOP INDUSTRIAL PARK

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL RETAINING WALLS TO BE DESIGNED BY OTHERS.

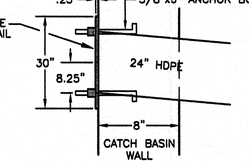


ASPHALT CURB DETAIL



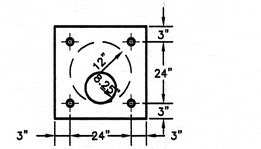
STAND PIPE DETAL

NTS



DETAIL A

TO BE INSTALLED @ THE OUTFLOW OF THE POND

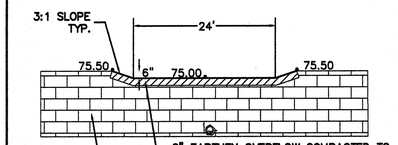


TYP. ORIFICE PLATE DETAIL

N.T.S.

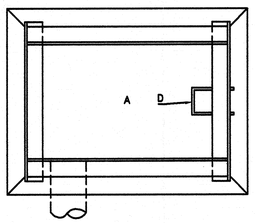
LEGEND

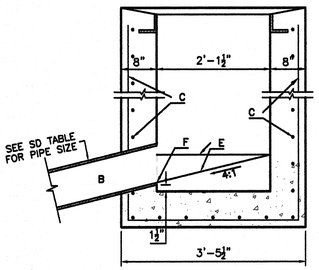
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET
- EX. 24" RCP — EXISTING STORM SEWER LINE
- 6" PVC — PROPOSED STORM SEWER LINE
- EXISTING FENCE
- EXISTING CURB & GUTTER
- PROPOSED CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- PROPOSED PERIMETER WALL
- PROPOSED RETAINING WALL
- 5411 EXISTING CONTOUR
- 5410 EXISTING INDEX CONTOUR
- FLOW ARROW
- SLOPE TIE
- 5048.25 PROPOSED SPOT ELEVATION
- 5048.25 EXISTING SPOT ELEVATION
- CENTERLINE
- RIGHT–OF–WAY
- PROPOSED POND

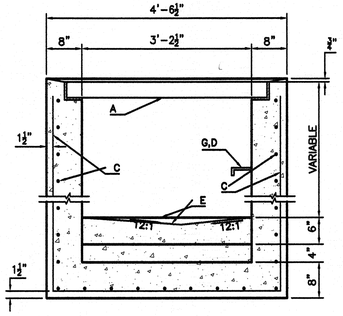


EMERGENCY SPILLWAY DETAIL

NTS







D INLET DETAIL

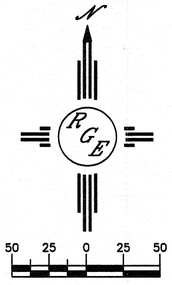
NTS

GENERAL NOTES:

1. STORM INLET CUTTER TRANSITION WILL BE SHOWN ON THE CONSTRUCTION PLANS.
2. OUTLET PIPE, PER DESIGN REQUIREMENT.
3. FOR FRAME & GRATING, SEE DWG. 2216, 2220 & 2221

CONSTRUCTION NOTES:

A. FRAME & GRATE
B. CUT ONE HORIZONTAL AND ONE VERTICAL BAR MAX. AT PIPE OPENING.
C. NO. 4 BARS @ 6" O.C. EACH WAY
D. USE STANDARD STEPS, SEE DWG 2229.
E. CONC. FILL, SEE NOTE C DWG 2201
F. INVERT PER DESIGN
G. INSTALL STEPS ON DOWNSTREAM FACE
H. CENTER SUPPORT ASSEMBLY



CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.

3- provide excerpts from (C17-D19) denote allowable runoff
1. point spill to road
2. ~~Route~~ How deep
Water get out of pond?

RECEIVED
DEC 29 2004
FEB 0 5 2005
HYDROLOGY SECTION

ROUGH GRADING APPROVAL DATE

ENGINEER'S SEAL

DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER

DAVID SOULE P.E. #14522

PASEO SPORTS COMPLEX

GRADING AND DRAINAGE PLAN

Rio Grande Engineering
1606 CENTRAL AVENUE SE SUITE 201
ALBUQUERQUE, NM 87106
(505) 872-0999

DRAWN BY	WCWJ
DATE	1-27-05
	2453-GRB-9-09-04X
SHEET #	—
JOB #	2453

4B