CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director

Mayor Timothy M. Keller

October 21, 2021

Dean Cardwell, P.E.
Bohler
6017 Main St.
Frisco, TX 75034

RE: **KABQ Cargo Facility**
3724 Spirit Dr. SE
Grading and Drainage Plan Stamp Date: 10/18/21
Drainage File: P15D004

Dear Mr. Cardwell:

Based on the submittal received on 10/20/21 the above-referenced Grading and Drainage Plan cannot be approved until the following are corrected:

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

1. Per the DPM, the following must be on the Grading Plan (you have provided some of these items, but please ensure all the items are included).
    a. Please provide an engineer's stamp with a signature and date.
    b. Please use 1" = 20' for the scale.
    c. Please provide a Vicinity Map.
    d. Please provide the Benchmark information (location, description and elevation) for the survey contour information provided.
    e. Please provide the FIRM Map and flood plain note with effective date.
    f. Please provide a legal Description of the property.

2. Please provide a vicinity map showing the location of the site. Typically this is the Zone Atlas. This can be downloaded in pdf format from the City of Albuquerque's website. If you choose to use a vicinity map rather than the Zone map, please include the Zone Atlas number (P-15).

3. Please provide spot elevations along the boundary of the Cargo Apron (by others) to show how this ties in. Also indicate whether drainage flows are currently or will be crossing from this apron onto this site.

4. Please ensure that the survey that the Grading Plan is based on is a recent survey and not contours from older airport projects, as older survey information may no longer be accurate.

5. When preparing the package for Hydrology review please separate any information that is not for Hydrology's use from the submittal. The Hydrology sheets must be able to stand on their own without the need to refer to paving plans, general notes, etc. The only sheets in your package that I need are the Grading and Drainage plan and the Pond Detail sheets (and any Hydrology sheets you may add based on these comments). So make sure the G&D makes note of and shows the impervious surfaces.

6. It would help if you added a narrative to the plan to explain existing conditions and proposed condition. Also add any references to any surrounding projects that affect this site such as the ABQ Airport Master Drainage Plan (M16D024).

DOWNSTREAM CAPACITY & HYDROLOGY

7. The site must demonstrate adequate downstream capacity per § 14-5-2-12(G) of the Albuquerque Code of Ordinances. Based on a review of the ABQ Master Drainage Plan (M16D024-see attached excerpts) this site has an allowable discharge rate of 0.48 cfs/acre for the 100 year-6 hour storm. What you have designed is in excess of this which will require more detention on-site.

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

8. Please use the procedure for 40 acre and smaller basins as outlined in Development Process Manual (DPM) Article 6-2(a). Please provide both the existing conditions and proposed conditions for the 100 year-6 hour storm event. I did not see calculations for the existing conditions.

9. Please show and number drainage basins and show how drainage basins flow to ponds or outfalls. Calculate runoff for basins individually. Looking at the Grading Plan it appears as if the loading dock area in front of the warehouse is draining directly to an opening between retaining walls, down a slope directly to Spirit Drive without reaching the ponds. All flows must account for Storm Water Quality Volume (see comment 13).

10. Please add a note to the plans stating "Stabilize all pond slopes with native seed and aggregate mulch or equal (must meet CGP 2.2.14b).

11. On your pond sections also show two foot of freeboard (not one), the 100 year-6 hour water surface elevation (WSE), Storm Water Quality Volume WSE, spillway (at the 100 year-6

hour WSE) and a riser in the pond (if you choose to use one rather than the manhole with weir plates you currently have as it may be a cheaper solution for you).

12. Please use the following parameters in HEC_HMS per the City DPM to analyze routing for the ponds and their outlets and include the model in your resubmittal.

    - The use of just four Curve Number (CN) values, one for each of the land treatments already described in the DPM: A=76, B=80, C=85 and D=98. This way the hydrologic soil groups don't need to be determined to select the CN and the soil maps do not need to be consulted.
    - These CNs are for a 24 hour precipitation distribution using NOAA Atlas 14 with the peak at 6 hours.
    - Lag=0.6Tc where Tc is calculated using the procedure already in the DPM

STORMWATER QUALITY VOLUME

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

13. Provide management onsite for the Stormwater Quality Volume (SWQV) in accordance with the new drainage ordinance, § 14-5-2-6 (H) enacted 10/2/18 (Council Bill C/S O-18-2). Please show the top and bottom of the ponds along with the volume for each pond. The onsite drainage should be directed to these ponds prior to being collected in a private unground drainage system or allowed to outlet. Please follow the DPM (signed 06/08/20) Article 6-12 Stormwater Quality and Low-Impact Development for the sizing calculations. To calculate the required SWQV, multiply the impervious area draining to the BMP by 0.42 inches for new development sites. The calculations of both the required and the provided volume of each BMP must be shown on the Grading and Drainage Plan. Each BMP should be labeled on the Grading and Drainage Plan with the required SWQV and associated water surface elevation and the 100-year water surface elevation. Landscaping of surface BMPs is also required to be noted on the Grading and Drainage Plan.

14. Please number the ponds and include a label on each with the SWQV and elevation, the 100-year volume and elevation, the peak 100 year inflow and outflow, the spillway crest elevation, the spillway flow depth, and the dam top elevation. The invert of the outlet pipe for each pond must be above the elevation of the SWQV.

15. Please provide the SWQV calculations for each basin draining to each pond. The stormwater quality ponds need to be sized for the areas draining to them.

16. As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Doug Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

I am sending you separately some examples of G&D plans done in the City that may give you an idea of what we are looking for.

If you have any questions, please contact me at 924-3986 or earmijo@cabq.gov.

Sincerely,

PO Box 1293

Ernest Armijo, P.E.
Principal Engineer, Planning Dept.
Albuquerque Development Review Services

NM 87103

www.cabq.gov

LEGEND

- MAJOR DRAINAGE BASIN
- DRAINAGE SUB-BASIN
- 601 DRAINAGE SUB-BASIN NUMBER
- EXISTING STORM DRAINS
- NEW STORMDRAINS ASSUMED FOR DRAINAGE COMPUTATIONS.

MAGNETIC DECLINATION 11° 06' EAST

0 500 1000 SCALE IN FEET

CITY GOLF COURSE

GENEVA'S ARROYO

GIBSON BLVD.

CARLISLE BLVD.

NEW DISCHARGE TO SOUTH DIVERSION CHANNEL

RE-ALIGNED KIRTLAND CHANNEL

NEW JUNCTION BOX

2-42" CMP
1-60" CMP

KIRTLAND CHANNEL

ALAMO

PARKING STRUCTURE

SUNPORT BLVD.

STORM

PLUG

2-80" CULVERTS AND INLET

PROPOSED AIRPORT SUPPORT AREA

UNIVERSITY BLVD.

UNM BUSINESS PARK

UNIVERSITY OF NEW MEXICO SOUTH GOLF COURSE

RIO BRAVO BLVD.

ETHICON

DETENTION POND

MILITARY RESERVATION BOUNDARY

LANDS OF UNM

TIJERAS ARROYO

RAILROAD (DOE)

MIDDLE

KIRTLAND AIR FORCE BASE

APRON A

APRON B

APRON C

KIRTLAND ROAD

EENDD

AIR GUARD

NEW MEXICO AIR NATIONAL GUARD

FAR EAST END

KIRTLAND ROAD

N 17

G 17

K C

S P

W E

G A

N/I

M 3

SE 3

SW 3

U E

PROPOSED AIRPORT SUPPORT AREA

PROPOSED RUNWAY

RUNWAY 17-35

AIR CARGO CENTER

TAXIWAY E

TAXIWAY F

RUNWAY 3-21 DRAINAGE IMPROVEMENTS

NOTE

1. LINES SHOWN ILLUSTRATE RUNWAY 3-21 DESIGN. "AHYMO" RUNS NOT ADJUSTED SINCE DESIGN CONCEPTS ARE IN LINE WITH MASTERPLAN CONCEPTS.

JOHN M. PROVINE 10782 REGISTERED PROFESSIONAL ENGINEER

CITY OF ALBUQUERQUE — NEW MEXICO

DRAINAGE BASIN MAP
PROPOSED FUTURE DEVELOPMENT

ALBUQUERQUE INTERNATIONAL AIRPORT

MOLZEN-CORBIN & Associates

ENGINEERS/PLANNERS/CONSULTANTS Albuquerque • New Mexico • Las Cruces

Designed	Drawn	Checked	Sheet of
	HC-A/JSL	JMP	PLATE 4
File		Date	
		JAN. 1995	

PLT4REV 1" = 1000' 02/07/95

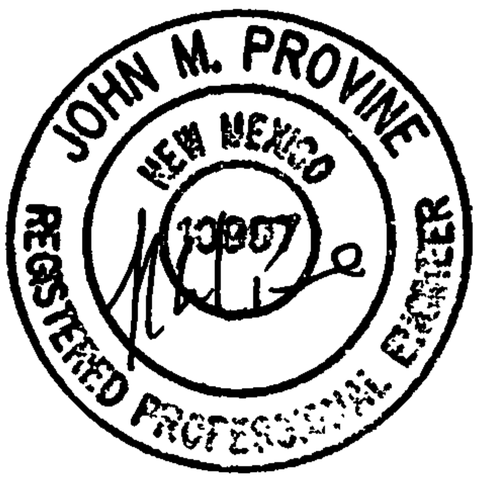
ALBUQUERQUE
INTERNATIONAL AIRPORT

STORM DRAINAGE MASTER PLAN

Project No. 4255.01

City of Albuquerque, NM
Aviation Department

May 1995



MOLZEN-CORBIN & Associates

SECTION II

CRITERIA

A. **General.** Selection of specific design criteria is difficult for a project of this complexity. As discussed in Section I of this report, there are numerous agencies directly affected by the AIA drainage system, each with their own specific drainage design criteria. However, the criteria used in this study has been specifically tailored for the conditions at the AIA, but based upon a combination of both FAA and City of Albuquerque Criteria. While this criteria development entails a complex combination of variables, **simply stated, the criteria used was to contain the 10-year event in underground networks (pipes) and contain the 100-year event with storage.** The 10-year event was used to size all pipes and then checked against the 100 year event. If the pipes could not keep the 100 year event from ponding on paved surfaces, pipe sizes were increased to avoid ponding on paved areas when considering future development.

As stated, both FAA and City of Albuquerque criteria were used and modified in developing the criteria for the AIA DMP. Neither of these two criteria were directly useable in and of themselves. Therefore, a combination of these criteria, along with an understanding of the nature of the AIA area and operations was necessary.

City of Albuquerque storm drainage criteria states that the 10 year event should be handles in storm sewers. In addition, this criteria further states that the 100 year event shall be conveyed in the storm sewer and the street section such that one traffic lane in each direction remain dry during the 100 year event. The AIA has adopted this same criteria for the 10 year event. However, for the 100 year event some modifications were necessary. Obviously, on airports there is no curb and gutter, thereby eliminating the surface conveyance system available on city streets. On airports, the pavement surfaces must remain free of runoff. However, it must be noted that the airport does contain some street sections and furthermore, some runoff from the airport does enter City of Albuquerque street sections such as on Gibson Boulevard. Therefore, this criteria cannot be totally cast aside.

Drainage on airport areas is dictated by FAA Advisory Circular 150\5320-5B, "Airport Drainage". This AC does not give mandatory requirements, but rather provides suggestions for a reasonable approach to airport drainage design. Most of the AC is dedicated to charts, nomographs and formulas to aid designers in drainage design. However, it is prudent at this point to review some of the recommendations given in the AC since FAA funding is crucial in future airport development. Following the FAA criteria is important to ensure that this funding is not jeopardized. Some important points provided in the AC are listed here.

1. Airports shall have smooth, well drained operations areas to permit safe movement of aircraft under all weather conditions. In drainage design, there area two basic purposes, to permit movement of air traffic and to maintain stable pavement. It is important to remember that not only does drainage affect traffic but it is crucial in protecting the life of pavement areas. This is particularly difficult on airports due to the fact that airport

airside development is, by design, very flat. These flat grades, by their nature are difficult to drain.

2. Proper drainage does not assure an all-weather airport but it does shorten the interval of non-use. This requires an economically designed system to realize the full value of the investment made. More frequent storms are by definition less severe and require smaller, less expensive drainage systems. Conversely, less frequent storms are much more severe (for example, the 100 year event) and require significantly larger, more expensive storm drainage facilities. The challenge in drainage design is to properly locate the optimal point in terms of storm frequency, severity and cost of the systems.

3. Inlets are the principal problem on airports because there is normally differential settlement around the inlet. This can be prevented by careful compaction in these areas and use of expansion joints if located in concrete pavement. Medium or high head ponding will be unacceptable to personnel servicing aircraft with baggage, fuel, food, etc. This could also obscure pavement markings and thus inhibit parking of aircraft at gate positions. Aprons serving instrument or all weather air carrier operations warrant a head limitation of 0.4 feet. also airports where continuing operations are regularly conducted in severe weather conditions would warrant use of a similar limitation.

4. There are a few important points to remember in using the FAA AC in drainage design. This AC is intended to be used for all airports, from general aviation to air carrier. The AIA operates continuously on a 24 hour a day schedule and in adverse weather conditions. Therefore, FAA criteria should be followed as closely as possible but should most importantly be tailored to the specific needs of the AIA.

B. **Hydrology.** The FAA AC suggests using the 2, 5, or 10 year event for design. Storm sewers should be designed to drain ponding areas based on total storm volume and keeping the maximum water surface elevation out of pavement areas in order to keep water from infiltrating pavement bases which would cause pavement failures. This design should then be modified in order to ensure that ponding areas drain in the shortest time possible. Furthermore, the FAA AC also recommends using rainfall events of 30 minutes, 1 hour or 2 hour intensities. These are much shorter storm durations than are normally used in New Mexico.

City of Albuquerque criteria requires use of the 10 year and 100 year events as stated in previous sections of this report. In addition, these events are based on rainfall 6 hours in duration. This is not a great departure from the FAA design suggestions. While the events used by the City are less frequent and more severe than those suggested by FAA, they are also of longer duration which balances the differences. In other words, the 5 year 30 minute storm is roughly equivalent to a 10 year 6 hour storm when comparing the resulting peak flows from a watershed. Again, when considering the critical nature of operations at the AIA, the City of Albuquerque criteria can be justified to ensure maximum use of the airport, minimization of non-use times, and reasonable cost of drainage facilities.

The criteria used for this study is therefore the 10 year 6 hour event for storm sewer design, the 100 year 6 hour event for ponding and storm sewers (keeping the pavement dry) and the 100 year 24 hour event for sizing detention ponds (which is necessary for NM SOE

SECTION III

EXISTING CONDITIONS

A. General. This study began with an analysis of existing conditions at the AIA. Existing conditions for the purpose of this study includes the completion of the reconstruction of Taxiways A and E which were completed in 1994. Existing conditions does not include reconstruction of Runway 3-21 to air carrier standards and abandonment of Runway 17-35. Existing conditions includes Runway 3-21 as general aviation and the freight apron located west of Runway 3-21. It further includes completion of Spirit Drive. A basic description of the major basins is given in the following sections.

B. <u>Basin G17.</u> This 0.10140 square mile basin encompasses the northern end of Runway 17-35 and developed areas west of the runway end. Drainage from the US Customs area ramps is collected in a storm sewer, routed around the north end of the runway and through developed commercial areas west of the runway end and just south of Gibson Blvd. The system experiences problems just south of Gibson Blvd. near the old potato chip factory where the storm sewer makes a 90 degree bend to connect to the 36 inch storm sewer in Gibson. Because of this bend, the hydraulic grade line surfaces and flows leave the storm sewer and surface in the street.

TABLE III-1
Basin G17

[illegible]	[illegible]	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
101	0.0284	32.42	54.60	1.3824	2.394	18" SD	US Customs Apron
102	0.0566	33.74	63.21	2.267	4.221	18" SD	E. of R/W 17-35 N. End
103	0.0622	34.00	65.13	2.504	4.652	24" SD	N. of R/W 17-35
104	0.0710	38.05	72.59	2.921	5.384	24" SD	W. of R/W 17-35 N. End
105	0.0820	36.55	75.76	3.461	6.319	27" SD	Offices NW of R/W 17-35
106	0.0727	32.77	68.80	2.982	5.502	Surface	Columbia Drive
107	0.0894	47.40	81.72	3.835	6.971	30" SD	Offices (SAIC) NW of R/W 17-35
108	0.0087	15.82	24.74	0.5433	0.890	21" SD	Commercial area on Gibson
Σ	0.1014	66.97	102.89	4.599	8.215	30"SD	to Gibson Blvd. Storm Drain

channels on undeveloped property. These flows then eventually reach the South Diversion Channel. There are no identified problems within this basin relating to airport development.

L. **Basin W3.** This 0.13 square mile basin includes the southern most end of Runway 3-21 including most of the existing freight apron. The upper reaches of this basin includes the concrete freight apron. This apron contains several drop inlets and a 36" storm sewer. A second storm sewer exists between Runway 3-21 and the parallel taxiway and these two systems connect near the south end of the runway where a 48" storm sewer conveys flows beneath the runway to the southeast, eventually discharging the flows to the Tijeras Arroyo. No problems exist with capacity but erosion problems do occur at the discharge point on the escarpment where flows are directed to the Tijeras Arroyo.

TABLE III-10
Basin W3

SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
1101	0.0140	26.71	41.19	0.936	1.506	36" SD	Freight Apron
1102	0.0037	7.39	9.51	0.260	0.417	24" SD	Freight Apron to TW F
1103	0.0591	37.10	67.92	2.437	4.508	48" SD	Runway 3-21
1104	0.0500	28.33	56.03	1.422	3.056	48" SD	SE of Runway
1105	0.0516	29.38	54.83	2.006	3.786	48" SD	R/W 3-21 to T/W F
1106	0.0376	17.81	34.40	1.443	2.723	36" SD	S of Freight apron
1107	0.0590	28.90	54.61	0.987	3.015	surface	S of Freight apron
1108	0.0805	45.15	76.62	2.997	5.759	24" SD	R/W 3 overrun
Σ	0.1305	73.04	131.31	4.419	8.815	66" SD	to Tijeras Arroyo

M. **Basin UE.** This 0.36680 square mile basin includes areas between the west airport boundary and the South Diversion Channel in the Ethicon Plant area. No airport area flows reach these watersheds and almost all drainage is conveyed through culverts. The higher reaches of the watershed include those areas adjacent to the University/Spirit Drive intersection. Flows are directed to this intersection where they are collected by several drop inlets and a short segment of storm sewer. These flows are then discharged through a 48" culvert beneath University into a natural channel. Several more drainage areas between the airport boundary and University are currently undeveloped and flows are conveyed beneath University through a series of culvert pipes. The middle portion of the basin includes the Ethicon plant area. Flows are then conveyed under I-25 through culvert pipes discharging to natural channels. Finally all flows discharge to the South Diversion Channel just north of Rio Bravo.

The character of this area will change significantly in the very near future. A grading and drainage plan for this area, known as the UNM Business Park has been submitted for approval to develop the areas adjacent to the Spirit Drive/University Intersection.

TABLE III-11
Basin UE

SUB-BASIN NO.	AREA (sq mi)	Q10 (cfs)	Q100 (cfs)	V10 (ac-ft)	V100 (ac-ft)	OUTFALL	DESCRIPTION
1201	0.0459	20.48	58.95	0.584	1.713	DI	Spirit Drive to University
1202	0.0692	32.90	91.38	0.946	2.673	DI	AIA Boundary to Spirit Drive
1203	0.0970	35.77	111.64	1.328	3.728	48" CLV	AIA Boundary to University
1204	0.0544	23.80	68.13	0.748	2.064	42" CLV	AIA Boundary to University
1205	0.2015	72.10	205.16	2.999	8.071	54" CLV	University to I-25
1206	0.0625	32.10	78.46	1.152	2.785	SDC	I-25 to Broadway
1207	0.3043	57.06	132.46	4.621	12.263	42" CLV 36" CLV 48" CLV	University to I-25
Σ	0.3668	71.83	189.7	5.773	15.048	Open Chan.	to South Diversion Channel

N. **Basin RB.** This basin includes areas immediately adjacent to Rio Bravo Boulevard from the south side of Ethicon, along Broadway to the South Diversion Channel. This area was included in the computer models for this AIA DMP, however, this is not an area of great concern as no airport property flows reach this basin. There are no known problems in this basin.

O. **Middle Basin.** This 1.454 square mile basin is the largest basin in this design project and includes approximately 60 percent of the Runway 8-26 area to the east of Runway 17-35 and the area north to Gibson Boulevard. Developed areas within KAFB make up roughly 80 percent of the basin. The existing drainage situation consists of several collection systems within KAFB and along Runway 8-26 that drain to a 60" (84 cfs capacity) and parallel 2-24" outfalls (22 cfs capacity). Under the 10 year 6 hour design storm, these outfalls have insufficient capacity to handle the runoff from the various collection system. The outfalls discharge to the area south of the control tower through a system of channels and a 66" culvert at Kirtland Road. Below Kirtland Road, the existing arroyo carries the runoff to the Tijeras Arroyo. Including the local runoff from the areas south of the airport, the existing peak discharge reaching Kirtland Road is 117 cfs and 60.4 AF of runoff volume.

The master planned system includes new collection branches to provide drainage capacity along the reconstructed taxiway E, a parallel 72" outfall will collect the flows from the various collection systems and carry the combined flow to the detention facility. The proposed detention facility consists of an excavated reservoir on KAFB just north of Kirtland Road with the road serving as the embankment for the structure. Under the master plan flows, the facility is

SECTION IV

PROPOSED CONDITIONS

A. **General.** The proposed development at AIA considered in this study is based on recommendations contained in the Albuquerque International Airport Master Plan, December 1993, prepared by Coffman Associates, Inc. In addition, several improvements to the storm drainage system are analyized in this study to relieve several problems found with the existing system. The improvements recommended to relieve the existing problems are identified in-depth in Section III, Existing Conditions.

B. **Proposed Improvements - Master Plan.** Several major changes to Albuquerque International Airport are recommended in the 1993 master plan update that will significantly affect the storm drainage systems over the planning period. The proposed improvements are illustrated on Plate 3 in Appendix G. In summary the major improvements are listed below:

1. Upgrade of Runway 3-21 to air carrier status including construction of new connector taxiways and upgrade of existing taxiways.

2. Closure of Runway 17-35 and expansion of the terminal to the east of the existing parking structure.

3. Construction of new Air Cargo Facility south east of Runway 3-21.

4. Development of airport support areas generally on the west side of the airport property and east of University Blvd.

In addition to development on AIA property, it is expected that UNM will continue to develop the property west and south of Spirit Drive. Drainage impacts from this development will be seen in the GA Basin discharge and in the crossing at University Blvd. and Spirit Drive. UNM has addressed the impacts from development that affects the University Blvd/Spirit Drive crossing in the UNM Business Park Drainage Report, February 1993. Impact from additional flow and volume discharging through GA Basin will be addressed in this study.

C. **Basins East of Runway 17-35.** Far East End, Air Guard, Eend, and Middle Basins are considered to be at full development with the existing conditions. There is no expansion planned by the Airport in these areas within City property. KAFB and the NMANG may develop the areas to the north of the airfield contained in these basins but the existing storm systems, upgraded recently under the Taxiway E and A projects, have been designed and constructed to limit discharges to existing values.

The discharge from the Middle Basin is controlled at 81cfs and 64.4 AF for the 100-year, 6-hour storm. These values assume the KAFB will improve their collection system in the future, tieing onto the AIA system at connection points constructed in the Taxiway A Reconstruction project.

TABLE IV-3
Improvements to M3 Basin

SUBBASIN NO.	PIPE DIAMETER	FLOWS, 10 and 100 year, cfs	COMMENTS
609-608	60-inch	56.3 (10) 82.9 (100)	Drain for SE35
608-607	66-inch	113.4 (10) 171.6 (100)	Across new taxiway. Carries flow to new Air Cargo Apron
607-616	72-inch	442 (10) 676 (100)	GA diversion, SE35 diversion, most of 616
616-Pond	84-inch	442 (10) 700 (100)	East branch discharge to pond
1104-1103	30-inch	19.4 (10)	Collector in 1104 and 1103
1103-pond	60-inch	144 (10) 179 (100)	Discharge from west branch to pond

There are three branches in M3 Basin. SE35 and SW35 along with diversion from a portion of the north side of GA Basin make up the east branch. The middle branch contains the diversion from the southeastern portion of GA Basin as well as M3 Basin and a portion of W3 Basin. The south branch contains SE3 and a portion of W3.

The location of the detention pond is conceptually selected for its central location and because it is currently a major discharge point for existing flows from M3 and W3 Basins. The detention pond is sized to accept 100-year, 6-hour flows and volumes. The volume of the pond should accept approximately 75 a-f of storm water at a peak flow of approximately 1000 cfs. Discharge from the detention pond will be controlled at approximately 95.2 cfs with a volume of approximately 83 a-f. This discharge is equivalent to the 10-year flow for the existing outfalls combined. Consolidation of five discharge points in the existing basins will also allow more efficient storm water discharge monitoring.

I. **UE, SW3 Basin.** The UE and SW3 Basins within airport property lie off of the airfield on steep terrain. Future development is restricted in these basins due to the terrain and proximity to the protected zones for Runway 3-21 after it has been upgraded to air carrier status. UE Basin does contain developable property which is owned by UNM and identified as subbasins 1201, 1202 and 1203 on Plate 1. Subbasins are addressed as Basin C1 in Drainage Report and Conceptual Grading Plan for UNM Business Park, Jan. 1993, Bohannon-Huston Inc. This report indicates that the existing 48-inch crossing under University Blvd. has sufficient capacity to handle developed flows from this basin.

Subbasin 1201 is identified as Basins A-4, A-3 and C-2 in the Bohannon-Huston report. Flows from these A-3 and A-4, the most northern portion of subbasin 1201, will be carried by a storm drain to University Blvd. then to a detention basin located to the northwest of the existing 48-

inch crossing. The drain system will designed to accommodate the 100-year runoff. Discharge from the pond will be controlled to a level less than existing. Pond capacity is proposed at 4 a-f.

J. **Middle, Eend, Air Guard, Far East End Basins.** These basins, which lie to the east of Runway 17-35 and discharge to the south through KAFB property, were analyzed under the Taxiway E and A improvement projects in order that systems which would handle fully developed flows from KAFB and the airfield were constructed while Runway 8-26, Taxiway A and Taxiway E were closed. This study does not address additional development or future conditions for these basins due to the capacity of the upgraded systems constructed. Section III, Existing Conditions, contains as-constructed information on these basins. The existing systems are considered adequate to accommodate foreseeable future conditions.

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: _____ Building Permit #: 2021-43107 Hydrology File #: _____

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: A 5.00 ACRE PARCEL KNOW AS A PORTION OF TRACT A-1 OF SUNPORT MUNICIPAL GROUND LEASE WITHIN THE TRACT A-1, SUNPORT MUNICIPAL ADDITION, IN BERNALILLO COUNTY, STATE OF NEW MEXICO

City Address: 2200 Sunport Boulevard, Albuquerque, NM 87106 3724 Spirit Dr.

Applicant: Bohler Contact: Dean Cardwell

Address: 6017 Main Street, Frisco TX 75034

Phone#: 469-458-7300 Fax#: _____ E-mail: dcardwell@bohlereng.com

Other Contact: Method Architecture Contact: Tom Bartoo

Address: 2140 Rossville Avenue, Suite 101, Chattanooga, TN 37408

Phone#: 423-718-8663 Fax#: _____ E-mail: tbartoo@method-architecture.com

TYPE OF DEVELOPMENT: _____ PLAT (# of lots) _____ RESIDENCE _____ DRB SITE _X_ ADMIN SITE

IS THIS A RESUBMITTAL? _____ Yes _X_ No

DEPARTMENT _____ TRANSPORTATION _X_ HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

____ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
____ CONCEPTUAL G & D PLAN
_X_ GRADING PLAN
____ DRAINAGE REPORT
____ DRAINAGE MASTER PLAN
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ STREET LIGHT LAYOUT
____ OTHER (SPECIFY) _____
____ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY

____ PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
____ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL

____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
_X_ GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR
____ FLOODPLAIN DEVELOPMENT PERMIT
____ OTHER (SPECIFY) _____

DATE SUBMITTED: 10/19/2021 By: Bohler (Dean Cardwell)

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

NOTE:

SEE PLAN SHEET C-700 FOR DETENTION POND CROSS-SECTIONS.

CONTRACTOR TO OBTAIN SEPARATE PERMIT FOR RETAINING WALL CONSTRUCTION.

SPIRIT DR.
(PUBLIC R.O.W. VARIES)

PROP 24" HEADWALL
OUTFALL INV = 5298.00

PROP 24" HDPE
22 LF @ 3.68%

PROP DIVERSION BOX MANHOLE
INV. IN = 5298.81
INV. OUT = 5298.81
(SEE DETAIL SHEET C-700)

PROP 24" HDPE
19 LF @ 1.00%

PROP 24" HEADWALL
OUTFALL INV = 5299.00

PROP 24" HEADWALL
OUTFALL INV = 5300.00

PROP 24" HDPE
15 LF @ 2.33%

PROP DIVERSION BOX MANHOLE
INV. IN = 5300.35
INV. OUT = 5300.35
(SEE DETAIL SHEET C-700)

PROP 24" HDPE
15 LF @ 1.00%

PROP 24" HEADWALL
OUTFALL INV = 5300.50

DETENTION POND #1

DETENTION POND #2

WAREHOUSE
30,750 SF
FF= 5310.50

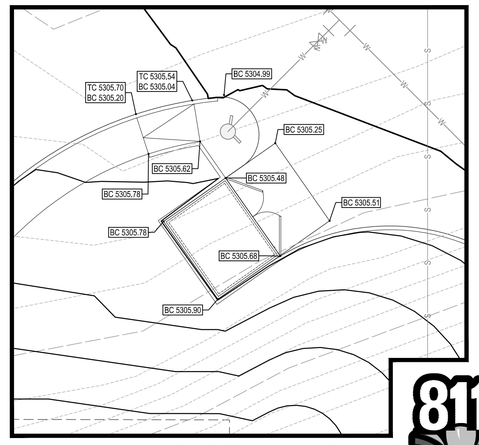
CARGO APRON EXTENSION
(BY OTHERS)
775'x450' (CONCRETE)

VICINITY MAP

SCALE: 1" : 1000'

LEGEND

PROPERTY LINE/LEASE LINE	
PROPOSED CONTOURS	85
MAJOR EXISTING CONTOUR	85
MINOR EXISTING CONTOUR	84
GROUND SPOT ELEVATION	G 84.00
LOW/HIGH POINT ELEVATION	HP 83.00 LP 83.00
MATCH EXST. GRADE	MATCH EX. G 527.1+/-
TOP CURB / BOTTOM CURB	TC 83.00 BC 83.00
DRAINAGE ARROW	
SWALE	



10 5 2.5 0 10
1"= 10'

811
CALL NM ONE-CALL
SYSTEM SEVEN (7) DAYS
PRIOR TO ANY EXCAVATION

40 20 10 0 40
1"= 40'

CONSULTANTS

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

KABQ CARGO FACILITY

2200 Sunport Blvd,
Albuquerque, NM 87106

BENCH MARKS

BM#1
TOP OF SANITARY SEWER MANHOLE
ELEVATION = 5284.30'

SEAL

DEAN O. CARDWELL
NEW MEXICO
24039
PROFESSIONAL ENGINEER
10.18.21

NO.	DATE	DESCRIPTION	BY
1	10/18/21	CITY COMMENTS	
		AS-BUILT INFORMATION	
		CONTRACTOR:	
		WORK STAKED BY: DATE:	
		INSPECTOR'S ACCEPTANCE BY: DATE:	
		FIELD VERIFICATION BY: DATE:	
		DRAWINGS CORRECTED BY: DATE:	

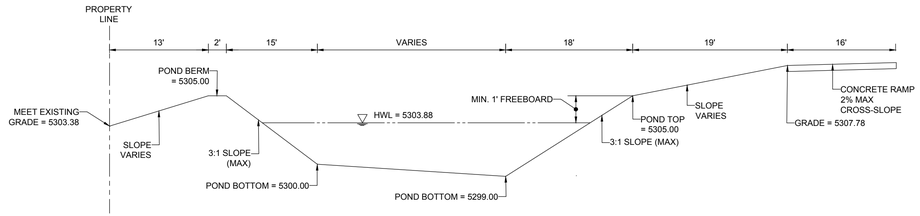
DESIGNED BY:	AAA
DRAWN BY:	AAA
CHECKED BY:	DOC
DATE	10/2021

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

GRADING & DRAINAGE PLAN

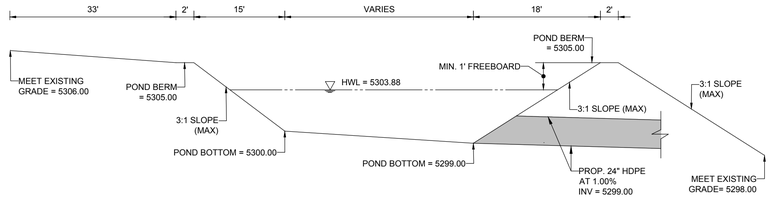
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO.	NR-SU
CITY PROJECT NO.	000000
SHEET NO.	C-400



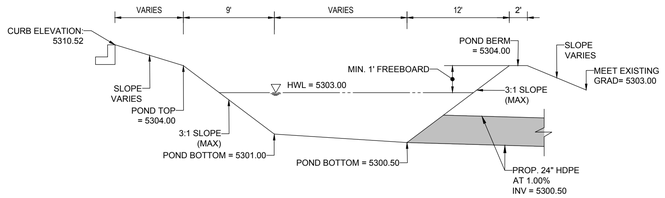
DETENTION POND #1, SECTION A-A

NOT TO SCALE



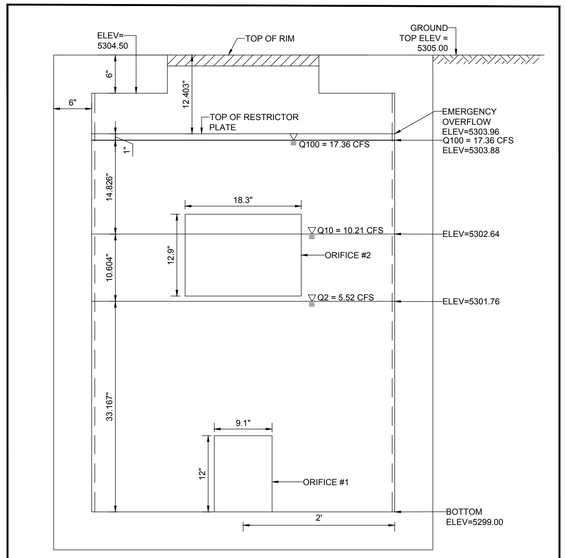
DETENTION POND #1, SECTION B-B

NOT TO SCALE



DETENTION POND #2, SECTION A-A

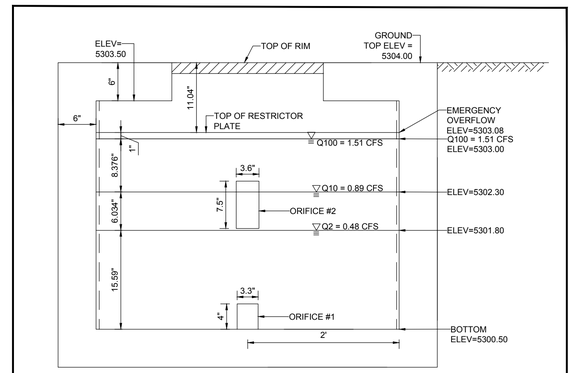
NOT TO SCALE



SECTION 'A' VIEW

DIVERSION BOX MANHOLE DETAIL - POND #1

NOT TO SCALE



SECTION 'A' VIEW

DIVERSION BOX MANHOLE DETAIL - POND #2

NOT TO SCALE

KABQ DRAINAGE ANALYSIS

Hydrologic Site Details (From DPM Ch. 6):

Section 6-1(A) Where Basin Area < 40ac

Precipitation Zone 2

Land Treatments

Treatment	Area (ac)
A	0.00
B	0.00
C	2.19
D	2.81
Total	**5.00**

Initial Abstraction:	0.35	in
Infiltration:	0.83	in/hr

Excess Precipitation (E):

Treatment (in)	C	D
100y	1.03	2.33
10y	0.48	1.51
2y	0.16	0.98

Weighted 'E':

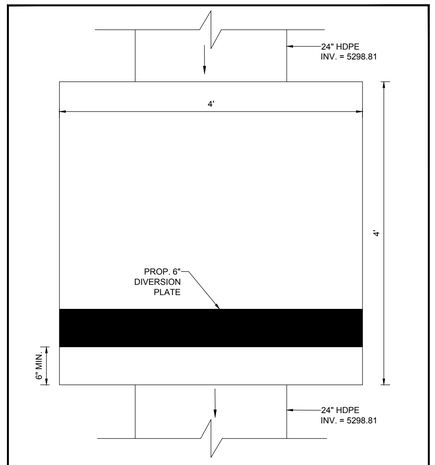
100y	1.76	in
10y	1.06	in
2y	0.62	in

Volume (V100):	**0.73**	**ac-ft**
Volume (V10):	**0.44**	**ac-ft**
Volume (V2):	**0.26**	**ac-ft**

Discharge Rate

Rate (csf/acre)	C	D
100y	3.05	4.34
10y	1.59	2.71
2y	0.61	1.66

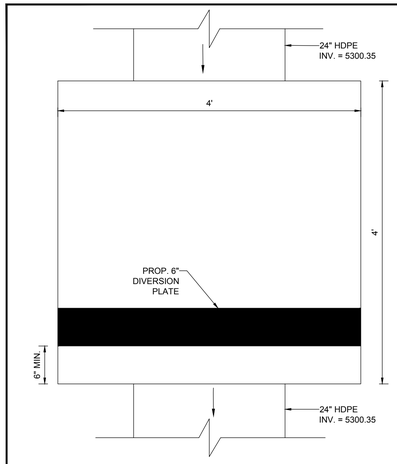
Peak Discharge		
100y	18.87	cfs
10y	11.10	cfs
2y	6.00	cfs



DIVERSION PLATE DETAIL - POND #1

NOT TO SCALE

NOTE:
FINAL DESIGN TO BE PROVIDED BY STRUCTURAL ENGINEER.



DIVERSION PLATE DETAIL - POND #2

NOT TO SCALE

NOTE:
FINAL DESIGN TO BE PROVIDED BY STRUCTURAL ENGINEER.

Detention Pond #2 - Volume Computations

Elevation	Depth	Area (sf)	Storage (cf)	Total Storage (cf)	
5300.500	0	35.0	0.0	0.0	Outfall
5301.000	0.50	696.3	183	183	
5301.250	0.25	826.5	190	373	
5301.500	0.25	956.7	223	596	
5301.750	0.25	1086.8	255	851	
5301.799	0.05	1112.4	54	906	**2-Year**
5302.000	0.20	1217.0	234	1,139	
5302.250	0.25	1361.3	322	1,462	
5302.302	0.05	1391.3	72	1,533	**10-Year**
5302.500	0.20	1505.5	287	1,820	
5302.750	0.25	1649.8	394	2,215	
5303.000	0.25	1794.0	430	2,645	**100-Year**
		Total Volume Provided		**2,645**	

Detention Pond #1 - Volume Computations

Elevation	Depth	Area (sf)	Storage (cf)	Total Storage (cf)	
5299.000	0	82	0.00	0.0	Outfall
5300.000	1.00	1,508	795	795	
5301.000	1.00	6,763	4,136	4,931	
5301.250	0.25	7,040	1,725	6,656	
5301.500	0.25	7,316	1,794	8,450	
5301.750	0.25	7,593	1,864	10,314	
5301.764	0.01	7,660	106	10,420	**2-Year**
5302.000	0.24	7,869	1,833	12,253	
5302.250	0.25	8,160	2,004	14,257	
5302.500	0.25	8,451	2,076	16,333	
5302.648	0.15	9,170	1,300	17,633	**10-Year**
5302.750	0.10	8,741	917	18,550	
5303.000	0.25	9,032	2,222	20,772	
5303.250	0.25	9,337	2,296	23,068	
5303.500	0.25	9,641	2,372	25,440	
5303.750	0.25	9,946	2,448	27,889	
5303.883	0.13	10,594	1,367	29,255	**100-Year**
5304.000	0.12	10,250	1,218	30,474	**Top Pond**
		Total Volume Provided		**30,474**	

1

CONSULTANTS

BOHLER™

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

KABQ CARGO FACILITY

2200 Sunport Blvd,
Albuquerque, NM 87106

BENCH MARKS

BM#1
TOP OF SANITARY SEWER MANHOLE
ELEVATION = 5284.30'

SEAL

DEAN O. CARDWELL
NEW MEXICO
24039
PROFESSIONAL ENGINEER
10.18.21

NO.	DATE	DESCRIPTION	BY
1	10/18/21	CITY COMMENTS	

AS-BUILT INFORMATION
CONTRACTOR:
WORK STAKED BY: DATE:
INSPECTOR'S ACCEPTANCE BY: DATE:
FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

811
CALL NM ONE-CALL SYSTEM SEVEN (7) DAYS PRIOR TO ANY EXCAVATION

DESIGNED BY: AAA
DRAWN BY: AAA
CHECKED BY: DOC
DATE 10/2021

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

DETENTION POND DETAILS

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. NR-SU
CITY PROJECT NO. 000000
SHEET NO. C-700

Detention Pond #1

Storage Requirement		Allowable Release Rate		
V_{100} =	29255 cf	Q_{100} =	17.36	cfs
		Q_{10} =	10.21	cfs
		Q_2 =	5.52	cfs

ORIFICE DESIGN CALCULATIONS

Orifice 1 Inputs		Orifice 2 Inputs	
Rectangular		Rectangular	
W =	9.1 in	W =	18.3 in
H =	12.0 in	H =	12.9 in
Area =	109.680 in^2	Area =	235.155 in^2
Circular		Circular	
R =	0 in	R =	0 in
Area =	0.000 in^2	Area =	0 in^2
Orifice 1 Outputs		**Orifice 2 Outputs**	
Area =	109.680 in^2	Area =	235.155 in^2
Area =	0.762 ft^2	Area =	1.633 ft^2
Weir Length =	9.1 in	Weir Length =	18.3 in
Effective Height =	12.0 in	Effective Height =	12.9 in
Orifice FL above bottom =	0.0 in	Orifice FL above bottom =	34.00 in
Cetroid =	6.0 in	Cetroid =	40.4 in
Top of Orifice above bottom =	12.0 in	Top of Orifice above bottom =	46.9 in

Depth (in)	Orifice 1 Flow Rate (cfs)			Orifice 2 Flow Rate (cfs)			Total Release Rate (cfs)	Notes
	Weir	H_1 (in)	Submerged	Weir	H_2 (in)	Submerged		
0.0	0.000	0.0	0.000	0.000	0.0	0.000	**0.000**	
1.0	0.060	0.0	0.000	0.000	0.0	0.000	**0.060**	
2.0	0.171	0.0	0.000	0.000	0.0	0.000	**0.171**	
3.0	0.314	0.0	0.000	0.000	0.0	0.000	**0.314**	
4.0	0.483	0.0	0.000	0.000	0.0	0.000	**0.483**	
5.0	0.676	0.0	0.000	0.000	0.0	0.000	**0.676**	
6.0	0.888	0.0	0.000	0.000	0.0	0.000	**0.888**	
7.0	1.119	1.0	0.000	0.000	0.0	0.000	**1.119**	
8.0	1.368	2.0	0.000	0.000	0.0	0.000	**1.368**	
9.0	1.632	3.0	0.000	0.000	0.0	0.000	**1.632**	
10.0	1.912	4.0	0.000	0.000	0.0	0.000	**1.912**	
11.0	2.205	5.0	0.000	0.000	0.0	0.000	**2.205**	
12.0	0.000	6.0	2.594	0.000	0.0	0.000	**2.594**	
13.0	0.000	7.0	2.802	0.000	0.0	0.000	**2.802**	
14.0	0.000	8.0	2.995	0.000	0.0	0.000	**2.995**	
15.0	0.000	9.0	3.177	0.000	0.0	0.000	**3.177**	
16.0	0.000	10.0	3.349	0.000	0.0	0.000	**3.349**	
17.0	0.000	11.0	3.512	0.000	0.0	0.000	**3.512**	
18.0	0.000	12.0	3.669	0.000	0.0	0.000	**3.669**	
19.0	0.000	13.0	3.818	0.000	0.0	0.000	**3.818**	
20.0	0.000	14.0	3.962	0.000	0.0	0.000	**3.962**	
21.0	0.000	15.0	4.102	0.000	0.0	0.000	**4.102**	
22.0	0.000	16.0	4.236	0.000	0.0	0.000	**4.236**	
23.0	0.000	17.0	4.366	0.000	0.0	0.000	**4.366**	
24.0	0.000	18.0	4.493	0.000	0.0	0.000	**4.493**	
25.0	0.000	19.0	4.616	0.000	0.0	0.000	**4.616**	
26.0	0.000	20.0	4.736	0.000	0.0	0.000	**4.736**	
27.0	0.000	21.0	4.853	0.000	0.0	0.000	**4.853**	
28.0	0.000	22.0	4.967	0.000	0.0	0.000	**4.967**	
29.0	0.000	23.0	5.079	0.000	0.0	0.000	**5.079**	
30.0	0.000	24.0	5.188	0.000	0.0	0.000	**5.188**	
31.0	0.000	25.0	5.295	0.000	0.0	0.000	**5.295**	
32.0	0.000	26.0	5.400	0.000	0.0	0.000	**5.400**	
33.0	0.000	27.0	5.503	0.000	0.0	0.000	**5.503**	
33.167	0.000	27.2	5.520	0.000	0.0	0.000	**5.520**	Q_2 Max Release
34.0	0.000	28.0	5.604	0.000	0.0	0.000	**5.604**	
35.0	0.000	29.0	5.703	0.121	0.0	0.000	**5.824**	
36.0	0.000	30.0	5.801	0.342	0.0	0.000	**6.143**	
37.0	0.000	31.0	5.897	0.629	0.0	0.000	**6.526**	
38.0	0.000	32.0	5.991	0.968	0.0	0.000	**6.959**	
39.0	0.000	33.0	6.084	1.353	0.0	0.000	**7.437**	
40.0	0.000	34.0	6.175	1.779	0.0	0.000	**7.954**	
41.0	0.000	35.0	6.266	2.242	0.6	0.000	**8.508**	
42.0	0.000	36.0	6.354	2.739	1.6	0.000	**9.093**	
43.0	0.000	37.0	6.442	3.268	2.6	0.000	**9.710**	
43.771	0.000	37.8	6.509	3.697	3.3	0.000	**10.206**	Q_{10} Max Release
44.0	0.000	38.0	6.529	3.828	3.6	0.000	**10.357**	
45.0	0.000	39.0	6.614	4.416	4.6	0.000	**11.030**	
46.0	0.000	40.0	6.698	5.032	5.6	0.000	**11.730**	
47.0	0.000	41.0	6.781	0.000	6.6	5.820	**12.601**	
48.0	0.000	42.0	6.864	0.000	7.6	6.247	**13.111**	
49.0	0.000	43.0	6.945	0.000	8.6	6.646	**13.591**	
50.0	0.000	44.0	7.025	0.000	9.6	7.023	**14.048**	
51.0	0.000	45.0	7.105	0.000	10.6	7.381	**14.486**	
52.0	0.000	46.0	7.183	0.000	11.6	7.722	**14.905**	
53.0	0.000	47.0	7.261	0.000	12.6	8.049	**15.310**	
54.0	0.000	48.0	7.338	0.000	13.6	8.362	**15.700**	
55.0	0.000	49.0	7.414	0.000	14.6	8.665	**16.079**	
56.0	0.000	50.0	7.489	0.000	15.6	8.957	**16.446**	
57.0	0.000	51.0	7.563	0.000	16.6	9.240	**16.803**	
58.0	0.000	52.0	7.637	0.000	17.6	9.515	**17.152**	
58.597	0.000	52.6	7.681	0.000	18.2	9.675	**17.356**	Q_{100} Max Release
59.0	0.000	53.0	7.710	0.000	18.6	9.782	**17.492**	
60.0	0.000	54.0	7.783	0.000	19.6	10.042	**17.825**	
61.0	0.000	55.0	7.854	0.000	20.6	10.295	**18.149**	
62.0	0.000	56.0	7.925	0.000	21.6	10.543	**18.468**	
63.0	0.000	57.0	7.996	0.000	22.6	10.784	**18.780**	
64.0	0.000	58.0	8.066	0.000	23.6	11.020	**19.086**	
65.0	0.000	59.0	8.135	0.000	24.6	11.252	**19.387**	
66.0	0.000	60.0	8.204	0.000	25.6	11.478	**19.682**	
67.0	0.000	61.0	8.272	0.000	26.6	11.701	**19.973**	
68.0	0.000	62.0	8.339	0.000	27.6	11.919	**20.258**	
69.0	0.000	63.0	8.406	0.000	28.6	12.133	**20.539**	
70.0	0.000	64.0	8.473	0.000	29.6	12.343	**20.816**	
71.0	0.000	65.0	8.539	0.000	30.6	12.550	**21.089**	
72.0	0.000	66.0	8.604	0.000	31.6	12.754	**21.358**	Emergency Overflow

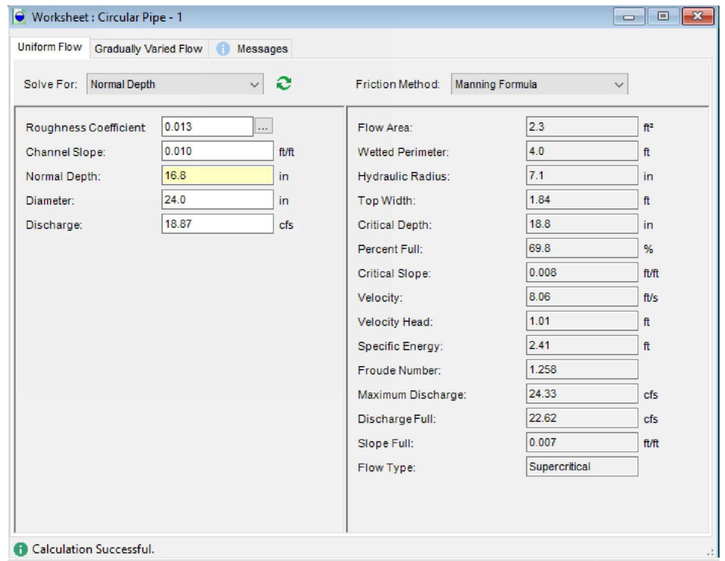
Detention Pond #2

Storage Requirement		Allowable Release Rate		
V_{100} =	2645 cf	Q_{100} =	1.51	cfs
		Q_{10} =	0.89	cfs
		Q_2 =	0.48	cfs

ORIFICE DESIGN CALCULATIONS

Orifice 1 Inputs		Orifice 2 Inputs	
Rectangular		Rectangular	
W =	3.3 in	W =	3.6 in
H =	4.0 in	H =	7.5 in
Area =	13.200 in^2	Area =	26.820 in^2
Circular		Circular	
R =	in	R =	in
Area =	0.000 in^2	Area =	0 in^2
Orifice 1 Outputs		**Orifice 2 Outputs**	
Area =	13.200 in^2	Area =	26.820 in^2
Area =	0.092 ft^2	Area =	0.186 ft^2
Weir Length =	3.3 in	Weir Length =	3.6 in
Effective Height =	4.0 in	Effective Height =	7.5 in
Orifice FL above bottom =	0.0 in	Orifice FL above bottom =	16.00 in
Cetroid =	2.0 in	Cetroid =	19.7 in
Top of Orifice above bottom =	4.0 in	Top of Orifice above bottom =	23.5 in

Depth (in)	Orifice 1 Flow Rate (cfs)			Orifice 2 Flow Rate (cfs)			Total Release Rate (cfs)	Notes
	Weir	H_1 (in)	Submerged	Weir	H_2 (in)	Submerged		
0.0	0.000	0.0	0.000	0.000	0.0	0.000	**0.000**	
1.0	0.021	0.0	0.000	0.000	0.0	0.000	**0.021**	
2.0	0.061	0.0	0.000	0.000	0.0	0.000	**0.061**	
3.0	0.113	1.0	0.000	0.000	0.0	0.000	**0.113**	
4.0	0.000	2.0	0.180	0.000	0.0	0.000	**0.180**	
5.0	0.000	3.0	0.221	0.000	0.0	0.000	**0.221**	
6.0	0.000	4.0	0.255	0.000	0.0	0.000	**0.255**	
7.0	0.000	5.0	0.285	0.000	0.0	0.000	**0.285**	
8.0	0.000	6.0	0.313	0.000	0.0	0.000	**0.313**	
9.0	0.000	7.0	0.338	0.000	0.0	0.000	**0.338**	
10.0	0.000	8.0	0.361	0.000	0.0	0.000	**0.361**	
11.0	0.000	9.0	0.383	0.000	0.0	0.000	**0.383**	
12.0	0.000	10.0	0.404	0.000	0.0	0.000	**0.404**	
13.0	0.000	11.0	0.424	0.000	0.0	0.000	**0.424**	
14.0	0.000	12.0	0.442	0.000	0.0	0.000	**0.442**	
15.0	0.000	13.0	0.461	0.000	0.0	0.000	**0.461**	
15.59	0.000	13.6	0.471	0.000	0.0	0.000	**0.471**	Q_2 Max Release
16.0	0.000	14.0	0.478	0.000	0.0	0.000	**0.478**	
17.0	0.000	15.0	0.495	0.023	0.0	0.000	**0.518**	
18.0	0.000	16.0	0.511	0.067	0.0	0.000	**0.578**	
19.0	0.000	17.0	0.527	0.123	0.0	0.000	**0.650**	
20.0	0.000	18.0	0.542	0.190	0.3	0.000	**0.732**	
21.0	0.000	19.0	0.557	0.266	1.3	0.000	**0.823**	
21.624	0.000	19.6	0.566	0.317	1.9	0.000	**0.883**	Q_{10} Max Release
22.0	0.000	20.0	0.571	0.350	2.3	0.000	**0.921**	
23.0	0.000	21.0	0.586	0.441	3.3	0.000	**1.027**	
24.0	0.000	22.0	0.599	0.000	4.3	0.534	**1.133**	
25.0	0.000	23.0	0.613	0.000	5.3	0.593	**1.206**	
26.0	0.000	24.0	0.626	0.000	6.3	0.647	**1.273**	
27.0	0.000	25.0	0.639	0.000	7.3	0.697	**1.336**	
28.0	0.000	26.0	0.652	0.000	8.3	0.743	**1.395**	
29.0	0.000	27.0	0.664	0.000	9.3	0.787	**1.451**	
30.0	0.000	28.0	0.676	0.000	10.3	0.828	**1.504**	Q_{100} Max Release
31.0	0.000	29.0	0.688	0.000	11.3	0.868	**1.556**	
32.0	0.000	30.0	0.700	0.000	12.3	0.905	**1.605**	
33.0	0.000	31.0	0.711	0.000	13.3	0.941	**1.652**	
34.0	0.000	32.0	0.723	0.000	14.3	0.976	**1.699**	
35.0	0.000	33.0	0.734	0.000	15.3	1.010	**1.744**	
36.0	0.000	34.0	0.745	0.000	16.3	1.042	**1.787**	
37.0	0.000	35.0	0.756	0.000	17.3	1.074	**1.830**	
38.0	0.000	36.0	0.767	0.000	18.3	1.105	**1.872**	
39.0	0.000	37.0	0.777	0.000	19.3	1.135	**1.912**	
40.0	0.000	38.0	0.788	0.000	20.3	1.164	**1.952**	
41.0	0.000	39.0	0.798	0.000	21.3	1.192	**1.990**	
42.0	0.000	40.0	0.808	0.000	22.3	1.220	**2.028**	Emergency Overflow



CALL NM ONE-CALL
SYSTEM SEVEN (7) DAYS
PRIOR TO ANY EXCAVATION

CONSULTANTS

BOHLER

SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LANDSCAPE ARCHITECTURE
SUSTAINABLE DESIGN
PERMITTING SERVICES
TRANSPORTATION SERVICES

KABQ CARGO FACILITY

2200 Sunport Blvd,
Albuquerque, NM 87106

BENCH MARKS

BM#1
TOP OF SANITARY
SEWER MANHOLE
ELEVATION = 5284.30'

SEAL

DEAN O. CARDWELL
NEW MEXICO
24039
PROFESSIONAL ENGINEER
10.18.21

NO.	DATE	DESCRIPTION	BY
1	10/18/21	CITY COMMENTS	

AS-BUILT INFORMATION
CONTRACTOR:
WORK STAKED BY: DATE:
INSPECTOR'S ACCEPTANCE BY: DATE:
FIELD VERIFICATION BY: DATE:
DRAWINGS CORRECTED BY: DATE:

DESIGNED BY: AAA
DRAWN BY: AAA
CHECKED BY: DOC
DATE 10/2021

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

DETENTION POND DETAILS

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

ZONE MAP NO. NR-SU
CITY PROJECT NO. 000000
SHEET NO. C-701

1