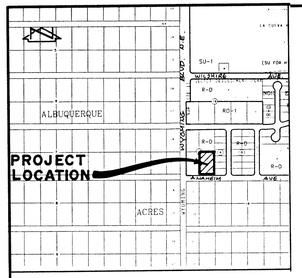


VICINITY MAP C-19

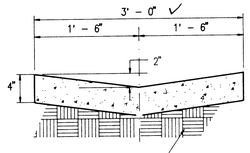
SCALE:1" = 800±

CONSTRUCTION NOTES:

1. Two (2) working days prior to any excavation, contractor must contact New Mexico One Call Service 266-1990, for location of existing utilities.
2. Prior to construction, the contractor shall excavate and verify the horizontal and vertical location of all potential obstructions. Should a conflict exist, the contractor shall notify the engineer in writing so that the conflict can be resolved with a minimum amount of delay.
3. All work on this project shall be performed in accordance with applicable federal, state and local laws, rules and regulations concerning construction safety and health.
4. All construction within public right-of-way shall be performed in accordance with applicable City of Albuquerque Standards and Procedures.
5. If any utility lines, pipelines, or underground utility lines are shown on these drawings, they are shown in an approximate manner only, and such lines may exist where none are shown. If any such existing lines are shown, the location is based upon information provided by the owner of said utility, and the information may be incomplete, or may be obsolete by the time construction commences. The engineer has conducted only preliminary investigation of the location, depth, size, or type of existing utility lines, pipelines, or underground utility lines. This investigation is not conclusive, and may not be complete, therefore, makes no representation pertaining thereto, and assumes no responsibility or liability therefor. The contractor shall inform itself of the location of any utility line, pipeline, or underground utility line in or near the area of the work in advance of and during excavation work. The contractor is fully responsible for any and all damage caused by its failure to locate, identify and preserve any and all existing utilities, pipelines, and underground utility lines. In planning and conducting excavation, the contractor shall comply with state statutes, municipal and local ordinances, rules and regulations, if any, pertaining to the location of these lines and facilities.
6. The design of planters and landscaped areas is not part of this plan. All planters and landscaped areas adjacent to the building(s) shall be provided with positive drainage to avoid any ponding adjacent to the structure. For construction details, refer to landscaping plan.

EROSION CONTROL MEASURES

1. The contractor shall ensure that no soil erodes from the site into public right-of-way or onto private property. This can be achieved by constructing temporary berms at the property lines and wetting the soil to keep it from blowing.
2. The contractor shall promptly clean up any material excavated within the public right-of-way so that the excavated material is not susceptible to being washed down the street.
3. The contractor shall secure "Topsoil Disturbance Permit" prior to beginning construction.



TRICKLE CHANNEL SECTION
SCALE: 1" = 1' - 0"

NOTE:
A BOUNDARY SURVEY WAS NOT PERFORMED. BOUNDARY INFORMATION GRAPHICALLY SUPERIMPOSED FROM RECORD DATA PROVIDED BY OWNER.

LEGAL DESCRIPTION

LOT 31, BLOCK 17,TRACT 2, UNIT 3, NORTH ALBUQUERQUE ACRES.

PROJECT BENCHMARK

CITY OF ALBUQUERQUE BENCHMARK & USC & GS BRASS TABLET STAMPED "HEAVEN 1969", SET IN TOP OF A CONCRETE POST FLUSH WITH THE GROUND LOCATED AT THE ENTRANCE WAY TO THE "GATE OF HEAVEN" CEMETARY 0.15 MILE WEST OF THE INTERSECTION OF PASEO DEL NORTE, N.E. AND WYOMING BLVD. N.E. STATION IS LOCATED ON THE SOUTH SIDE OF PASEO DEL NORTE. ELEVATION = 5378.78' (M.S.L.D.)

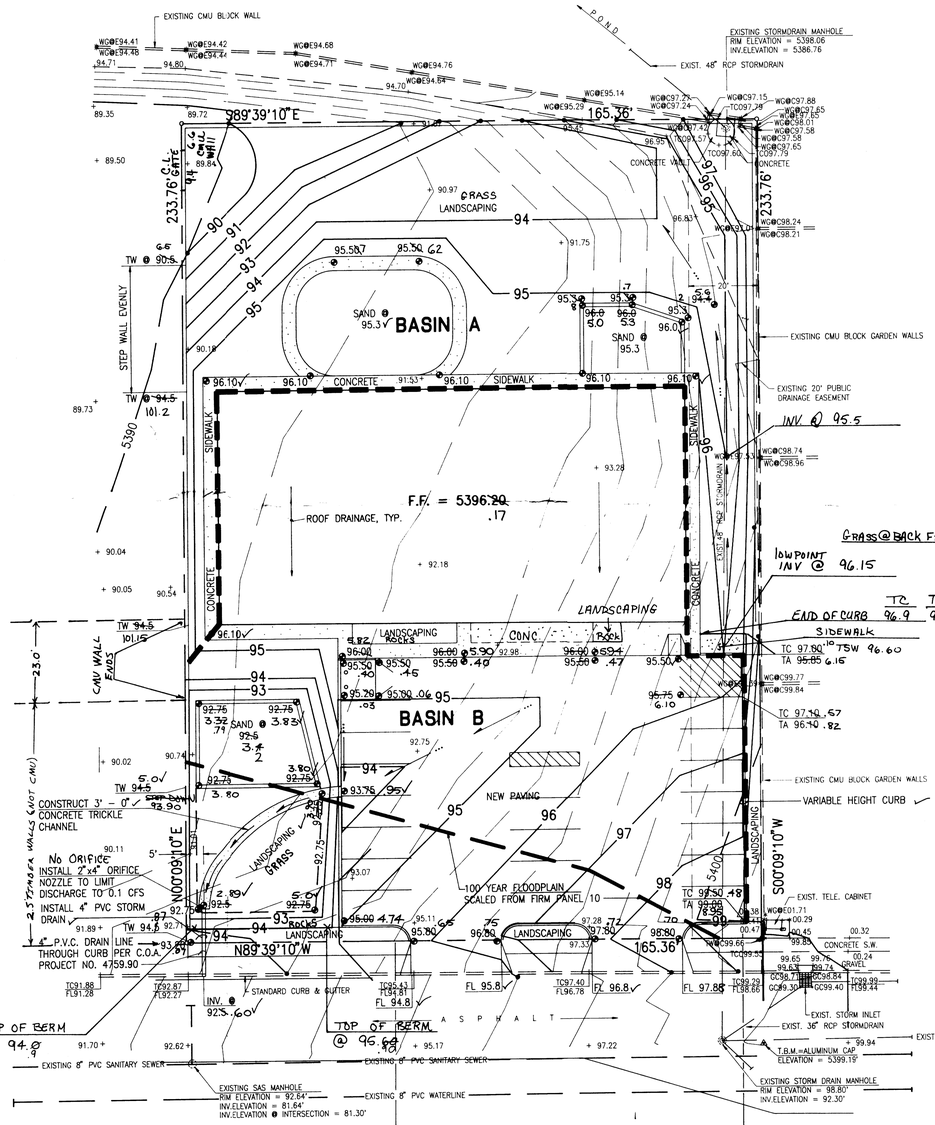
T.B.M.

ALUMINUM CAP LOCATED BY THE SOUTHEAST CORNER OF SITE AS SHOWN BELOW. ELEVATION = 5399.19' (M.S.L.D.)

LEGEND

TW	TOP OF WALL
TC	TOP CURB
FL	FLOW LINE
TCO	TOP CONCRETE
GC	GRATE CORNER
WG@C	WALL GROUND AT CORNER
WG@E	WALL GROUND AT EDGE
+ 89.84	EXIST. SPOT ELEVATION
95.3	EXIST. CONTOUR
94	PROPOSED SPOT ELEVATION
	PROPOSED CONTOUR
	PROPOSED DIRECTION OF FLOW
	EXIST. 100 YR. FLOODPLAIN
	PROPOSED BASIN BOUNDARY
(2)	HEC-2 ANALYSIS SECTION

SCALE: 1" = 20'
10' 0' 10' 20' 5'



DRAINAGE PLAN

The following items concerning the Bright Beginnings - Wyoming Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

As shown by the Vicinity Map, the site is located on the north side of Anaheim Avenue N.E. just east of its intersection with Wyoming Boulevard N.E. At present, the site is undeveloped. The adjacent lands to the north and east are currently undergoing rapid residential development.

As shown by Panel 10 of 50 of the National Flood Insurance Program Flood Insurance Rate Maps for the City of Albuquerque, New Mexico, dated October 14, 1983, this site lies partly within a designated flood hazard zone. The limits of the impact of that flood hazard zone are graphically shown on the Grading Plan. The flood zone will not adversely impact the proposed structure. In view of the recent street and public storm drain improvements, the flood zone may not impact this site at all. Nonetheless, the limits of the floodplain are shown on the plan and the construction of permanent buildings have been prohibited from this area.

The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1'0" intervals, 2) the limit and character of the existing proposed, 3) the limit of the 100-year floodplain, 4) developed drainage basin boundaries, 5) the limit and character of the proposed improvements, and 6) continuity between existing and proposed grades. As shown by this plan, the project consists of the development of a day care center complete with associated paving and landscaping. Presently, the site drains from southeast to northwest toward an existing public detention pond which ultimately discharges to the North Arroyo de Domingo Baca. The development of the site will create two drainage basins. Basin A will continue to drain in its historic pattern, however, that area will be significantly reduced in size and its drainage characteristics altered to create more landscaped area as opposed to native vegetation. Basin B will consist of the majority of the developed site. The runoff generated by Basin B will be directed to a detention pond to be constructed at the southwest corner of the site. The pond will control the discharge of runoff from the site to Anaheim Avenue N.E. Anaheim Avenue N.E. drains from east to west and outfalls to the North Arroyo de Domingo Baca. The discharge has been regulated in accordance with the approved grading and drainage plan for Nor Este Manor (C19/D6B). That plan restricts the release of developed runoff to 0.12 cfs per acre. This plan is consistent with the guidelines established by Nor Este Manor.

The Calculations which appear hereon analyze the existing and developed conditions for the 100-year, 6-hour rainfall event. The Procedure for 40-acre and Smaller Basins set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated August, 1991, has been used to compute both the peak discharge and volume of runoff generated by this site. As shown by these calculations, the proposed improvements will decrease the runoff generated by Basin A, while increasing the runoff generated by Basin B. As stated above, the runoff generated by Basin B will be controlled through a detention pond, thereby attenuating the peak and making the net effect of the peak discharge negligible. No offsite flows enter this site. A HEC-2 analysis has been performed to analyze the impact of the floodplain and flows associated with the North Arroyo de Domingo Baca which lies south of the project site. That analysis, based upon the hydrology established by the Nor Este Manor drainage plan(s), demonstrates that the 100 year flows do not enter the site and are confined south of the site by the constructed improvements of Anaheim Avenue N.E.

CALCULATIONS

Site Characteristics

1. Precipitation Zone: 3
2. $P_{6,100} = P_{360} =$ 2.60 in
3. Total Area (A_T): 38,655 sf/0.89 ac
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
C	38,655/0.89	100

5. Developed Land Treatment

A. Basin A

Treatment	Area (sf/ac)	%
B	15,640/0.36	92
D	1,390/0.03	08

B. Basin B

Treatment	Area (sf/ac)	%
B	5,060/0.12	24
D	16,565/0.38	76

Existing Condition

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = (1.29)(0.89)/(0.89) = 1.29$ in
$V_{100} = (E_W/12)A_T$
$V_{100} = (1.29/12)(0.89) = 0.096$ Ac-ft = 4,180 cf

2. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
$Q_p = Q_{100} = (3.45)(0.89) = 3.1$ cfs

Developed Condition

A. Basin A

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = [(0.92)(0.36) + (2.36)(0.03)]/(0.39) = 1.03$ in
$V_{100} = (E_W/12)A_T$
$V_{100} = (1.03/12)(0.39) = 0.033$ Ac-ft = 1,440 cf

2. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
$Q_p = Q_{100} = (2.60)(0.36) + (5.02)(0.03) = 1.1$ cfs

ANALYSIS

A HEC-2 analysis was performed on the North Domingo Baca Arroyo from 200 feet east of Barstow St. N.E. to approximately 100 feet east of Wyoming Blvd. N.E. Thirty cross sections were input into the system. Sections two and three are the only ones that are within the boundaries of the project site so as to insure that the site does not become flooded by the 100 year flood basin boundary. Data for these two cross sections along with site elevations are included below.

North Domingo Baca Arroyo Hydraulics

A. Normal Depth of 100 Year Flow

1. Input Criteria
   a. Manning's Number = 0.03
   b. Cross Sectional Geometry of 30 Sections
   c. Q_{100} at 30 Sections
2. HEC-2 Output*

SECNO	Q	CWSEL	CRIWS	EG	TOPWID	DEPTH	VCH
2.000	2320.00	93.96	93.96	94.61	268.40	1.96	6.46
3.000	2320.00	97.10	97.10	97.67	342.15	2.10	6.08

B. Basin B

1. Volume

$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D)/A_T$
$E_W = [(0.92)(0.36) + (2.36)(0.38)]/(0.50) = 2.01$ in
$V_{100} = (E_W/12)A_T$
$V_{100} = (2.01/12)(0.50) = 0.084$ Ac-ft = 3,660 cf

2. Peak Discharge

$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
$Q_p = Q_{100} = (2.60)(0.12) + (5.02)(0.38) = 2.2$ cfs

$V_{pond} = 1/2[(A_{92.5} + A_{92.75})(92.75 - 92.5) + (A_{92.75} + A_{93.0})(93.0 - 92.75) + (A_{93.0} + A_{93.75})(93.75 - 93.0) + (A_{93.75} + A_{94.0})(94.0 - 93.75)]$
$V_{pond} = 3,620$ cf $\doteq V_{100}$
$A_{92.5} = 810$ sf
$A_{92.75} = 2000$ sf
$A_{93.0} = 2490$ sf
$A_{93.75} = 2800$ sf
$A_{94.0} = 3010$ sf

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

Where:
C = 0.6
A = 0.0218 sf (2" dia. pipe)
g = 32.2 ft/sec^2
h = 94.00 - 92.5 + 1/12 = 1.4 ft.

q = 0.1 cfs ≈ q allow.
q allow = 7.42 cfs/6.16 Ac (per C19/D6B) = 0.12 cfs/acre

Comparison

A. Basin A

1. $\Delta V_{100} =$ 4,180 - 1,440 = 2,740 cf (decrease)
2. $\Delta Q_{100} =$ 3.1 - 1.1 = 2.0 cfs (decrease)

B. Basin B

1. $\Delta V_{100} =$ 3,660 - 0 = 3,660 cf (increase)
2. $\Delta Q_{100} =$ 0.1 - 0 = 0.1 cfs (increase)

B. Elevations at Top of Curb

SECNO	ELEVATION
2.000	95.43
3.000	99.29

* SECNO = Section Number
Q = 100 Year Flow

CRIWS = Critical Water Surface Elevation
EG = Energy Gradeline
TOPWID = Flow width at Top of Channel
Depth = Depth of Flow
VCH = Channel Velocity

DRAINAGE CERTIFICATION

As indicated by the as-built information shown hereon, Bright Beginnings - Wyoming, has been graded in substantial conformance with the approved plan. Private drainage improvements, garden walls, and fences have not been constructed within close tolerance to the approved grades. Modifications have been made, however, to satisfy the intent of the approved plan. From review of the as-built information, the project has been constructed in a manner approved which will satisfy the intent of the plan.

The as-built information shown hereon was obtained by me or under my supervision and is true and correct to the best of my knowledge and belief.

Jeffrey G. Mortensen — NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER — 07-21-94
Date

JUL 22 1994

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER 5-93

JEFF MORTENSEN & ASSOCIATES, INC.
6010-B MIDWAY PARK BLVD. N.E.
ALBUQUERQUE, NEW MEXICO 87109
ENGINEERS SURVEYORS (505) 345-4[illegible]

GRADING AND DRAINAGE PLAN
BRIGHT BEGINNINGS - WYOMING

DESIGNED BY J.G.M.
DRAWN BY S.G.H.
APPROVED BY J.G.M.

NO.	DATE	BY	REVISIONS

JOB NO. 930458
DATE 09-1993
SHEET 1 OF 1

159098

AS-BUILT CALCULATIONS - BASIN "B"

Pond Volume (Maximum Water Surface Elevation @ 94.0)

Elev	Area (sf)	Volume (cf)	Σ Volume (cf)
92.89	0		
		2	2
93.0	42		
		1271	1273
94.0	2500		

Pond design has a volume of 3620 cf. As-built volume is approximately 35% of the design volume.

Maximum Pipe Discharge

Orifice Restriction
$Q = CA(2gh)^{0.5}$
C = 0.6
A = 0.09 sf
g = 32.2 ft/sec^2
h = 94 - 92.89 - 0.17 = 0.94 ft

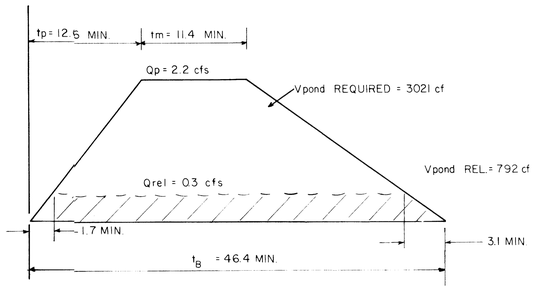
Therefore: Q = 0.4 cfs

Pipe Discharge Capacity - Gravity Flow
Using Feild's Hydraulic Calculator for Gravity Flow in Pipes
Let: S = 0.0145
n = 0.013
d = 4"
Therefore: Q = 0.2 cfs

Pipe Discharge Capacity - Pressure Flow
Using Haestad Methods Computer Model
Let: Pressure = 0.4 psi
S = 0.0145
C = 130
d = 4"
Therefore: Q = 0.7 cfs

Average Discharge from the Pond is Q = 0.3 cfs

AS-BUILT HYDROGRAPH



$t_B = 2.107 * E * A_T/Q_p - 0.25 (A_D/A_T)$
E = 2.01 in
A_T = 0.50 ac
Q_p = 2.2 cfs
A_D = 0.38 ac

Therefore: t_B = 46.4 min.

$t_p = 0.7 * t_c + (1.6 - A_D/A_T)/12$
t_c = 0.2 hr (per D.P.M.)
A_D = 0.38 ac
A_T = 0.50 ac

Therefore: t_p = 12.6 min

$t_m = 0.25 A_D/A_T$
A_D = 0.38 ac
A_T = 0.50 ac

Therefore: t_m = 11.4 min

$V_{pond\ required\ (As\text{-}Built)}$ = 3021 cf
$V_{pond\ As\text{-}Built}$ = 1273 cf
$V_{pond\ needed}$ = 1748 cf

Maximum water surface level needs to be at 94.50 for ponding volume. Therefore, two additional courses of CMU blocks need to be constructed on the western garden wall and the berm needs to be raised to 95.00 to have 0.5 foot freeboard on the pond.

NOTE:

IN LIEU OF RECONSTRUCTING THE POND PER THE APPROVED PLAN, THE ELEVATION OF PONDED RUNOFF WAS RAISED IN ORDER TO PROVIDE THE VOLUME OF PONDING REQUIRED BY THE APPROVED DESIGN. THESE MODIFICATIONS ARE REFLECTED ON THE AS-CONSTRUCTED PLAN WHICH APPEARS ON THE PRECEDING SHEET.

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER 7-22

JUL 22 1994

JEFF MORTENSEN & ASSOCIATES, INC.
6010-B MIDWAY PARK BLVD. N.E.
ALBUQUERQUE, NEW MEXICO 87109
ENGINEERS & SURVEYORS (505) 345-4250

DRAINAGE CERTIFICATION

BRIGHT BEGINNINGS - WYOMING

DESIGNED BY G.R.B.
DRAWN BY C.J.H.
APPROVED BY J.G.M.

NO.	DATE	BY	REVISIONS

JOB NO. 930458
DATE 05/1994
SHEET 1A OF 1