



VICINITY MAP
SCALE: 1" = 800' (APPROX)

H-16

SCALE: 1" = 20'

LEGAL DESCRIPTION
LOT 2, BLOCK Q, MENAUL DEVELOPMENT AREA.
PROJECT BENCHMARK = TBM
ACS BRASS TABLE STAMPED "12-HIG 1979" SET
FLUSH WITH THE CURB LOCATED AT THE INTERSECTION
OF CANDELARIA ROAD N.E. AND PRINCETON DRIVE N.E.
ELEVATION: 5088.32 FEET (M.S.L.D.)

NEATLY SAWCUT, REMOVE & DISPOSE
EXIST. CURB & GUTTER & DRIVEPAD;
CONSTRUCT STD. CURB & GUTTER PER
C.O.A. STD. DWG. 2415

REMOVE, DISPOSE & REPLACE
EXIST. ASPHALT PAVING

LEGEND

- ♦ EXIST. SPOT ELEVATION
- ♦ PROPOSED SPOT ELEVATION
- 92 --- EXIST. CONTOUR LINE
- 92 --- PROPOSED CONTOUR LINE
- EXIST. FLOWLINE
- PROPOSED FLOWLINE
- DRAINAGE BASIN BOUNDARY
- ♦ PROPOSED HIGH POINT
- PROPOSED CONCRETE
- PROPOSED ASPHALT
- TC TOP OF CURB
- FL FLOWLINE
- TW TOP OF WALL

DRAINAGE PLAN

The following items concerning the Clarklift 2108 Candelaria N.E. 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 south side of Candelaria Road N.E. between Princeton Drive N.E. and Stanford Drive N.E. At present, the site is developed. Other sites in the area are also developed, making this a modification to an existing site within an infill area. The predominant development surrounding this site is commercial.

As shown by Panel 23 of 50 of the National Flood Insurance Flood Insurance Rate Maps for the City of Albuquerque, New Mexico, dated October 14, 1983, this site does not lie within a designated flood hazard zone. The site is characterized by two drainage basins. Basin A discharges its runoff north onto Candelaria Road N.E. Basin B, which is the southerly portion of the site, discharges its runoff to an existing paved alley. Both the alley and Candelaria Road N.E. drain from east to west. Review of Panel 23 of 50 of the National Flood Insurance Program Flood Boundary and Floodway Maps for the City of Albuquerque, New Mexico, supported by visual observation in the field, indicate that both Candelaria Road N.E. and the alley drain to Princeton Drive N.E. Princeton Drive N.E. then drains in a southerly direction to a sump condition at Phoenix Avenue N.E. Existing public storm drain facilities exist at this location which accept and convey street runoff in an underground system to eventually discharge to the Menaul Detention Pond. The Menaul Detention Pond is thereby the outfall for this site.

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 improvements, 3) the limit and character of the proposed improvements, 4) continuity between existing and proposed grades. As shown by this plan, there are two existing buildings located on the site. No building additions are proposed as part of this plan. The area surrounding these buildings consist of existing asphalt paving and gravel heavily compacted by the storage and passage of heavy construction equipment. For all intents and purposes, the site is impervious in its current state. The proposed improvements will consist of removing and replacing and overlaying existing asphalt paving, and constructing new asphalt paving over the existing gravel areas. The existing drainage patterns will be maintained. Basin A will continue to discharge to Candelaria Road N.E., while Basin B will continue to discharge to the existing paved alley. The free discharge of runoff from this site is appropriate due to the fact that this is a modification to an existing site within an infill area, the existing drainage pattern will not be altered, the proximity of the site to downstream public storm drain facilities, the fact that the site can be considered impervious in its current condition, and the minor increase in runoff estimated by the calculations below.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The peak discharge and volume of runoff were both calculated using the Procedure for 40-Acre and Smaller Basins as set forth in Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated August, 1991. As shown by these calculations, a negligible increase in runoff is anticipated. The calculations also include hydraulic computations which quantify the hydraulic capacity of the existing paved alley. As shown by these calculations, the alley has ample capacity to receive the runoff from this site, as well as the adjacent five upstream parcels of land. Those sites, similar to this site, discharge the majority of their runoff to Candelaria Road N.E. with minor, if any discharges, to the alley.

CALCULATIONS**Site Characteristics**

1. Precipitation Zone 2
2. $P_{6,100} = P_{360} = 2.35$
3. Total Area (A_T) 47,785 Sf/1.10 Ac
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
A. Basin A		
C	15,710/0.36	54
D	13,385/0.31	46
B. Basin B		
C	7,420/0.17	40
D	11,270/0.26	60

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
A. Basin A		
D	29,095/0.67	100
B. Basin B		
D	18,690/0.43	100

Existing Condition

1. Volume
 - A. Basin A

$$E_w = (E_{A_A} + E_{B_B} + E_{C_C} + E_{D_D}) / A_T$$

$$E_w = [(1.13)(0.36) + (2.12)(0.31)] / 0.67 = 1.59 \text{ in}$$

$$V_{100} = (E_w / 12) A_T$$

$$V_{100} = (1.59 / 12) (0.67) = 0.09 \text{ ac ft} = 3,920 \text{ cf}$$
 - B. Basin B

$$E_w = (E_{A_A} + E_{B_B} + E_{C_C} + E_{D_D}) / A_T$$

$$E_w = [(1.13)(0.17) + (2.12)(0.26)] / 0.43 = 1.73 \text{ in}$$

$$V_{100} = (E_w / 12) A_T$$

$$V_{100} = (1.73 / 12) (0.43) = 0.06 \text{ ac ft} = 2,610 \text{ cf}$$
2. Peak Discharge
 - A. Basin A

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$

$$Q_p = (3.14)(0.36) + (4.70)(0.31) = 2.6 \text{ cfs}$$
 - B. Basin B

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$

$$Q_p = (3.14)(0.17) + (4.70)(0.26) = 1.8 \text{ cfs}$$

Developed Condition

1. Volume
 - A. Basin A

$$E_w = (E_{A_A} + E_{B_B} + E_{C_C} + E_{D_D}) / A_T$$

$$E_w = (0.67)(2.12) / (0.67) = 2.12 \text{ in}$$

$$V_{100} = (E_w / 12) A_T$$

$$V_{100} = (2.12 / 12) (0.67) = 0.12 \text{ ac ft} = 5,230 \text{ cf}$$
 - B. Basin B

$$E_w = (E_{A_A} + E_{B_B} + E_{C_C} + E_{D_D}) / A_T$$

$$E_w = (0.43)(2.12) / (0.43) = 2.12 \text{ in}$$

$$V_{100} = (E_w / 12) A_T$$

$$V_{100} = (2.12 / 12) (0.43) = 0.08 \text{ ac ft} = 3,480 \text{ cf}$$
2. Peak Discharge
 - A. Basin A

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$

$$Q_p = (0.67)(4.70) = 3.1 \text{ cfs}$$
 - B. Basin B

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$

$$Q_p = (0.43)(4.70) = 2.0 \text{ cfs}$$

Comparison

- A. Basin A
 1. $\Delta V_{100} = 5,230 - 3,920 \text{ cf} = 1,310 \text{ cf (increase)}$
 2. $\Delta Q_{100} = 3.1 - 2.6 = 0.5 \text{ cfs (increase)}$
- B. Basin B
 1. $\Delta V_{100} = 3,480 - 2,610 = 870 \text{ cf (increase)}$
 2. $\Delta Q_{100} = 2.0 - 1.8 = 0.2 \text{ cfs (increase)}$

Alley Capacity (Manning's Equation)

- A. Section A-A

$$\text{Area} = 2[(12.5)(0.6)(0.5)] = 7.5 \text{ sf}$$

$$R = A/W_p = 7.5/25 = 0.3$$

$$S = 0.07$$

$$Q_{cap} = (1.49/0.017)(0.3^{2/3})(0.007^{1/2})(7.5)$$

$$Q_{cap} = 24.6 \text{ cfs}$$
- B. Section B-B

$$\text{Area} = 2[(11)(0.8)(0.5)] = 8.8 \text{ sf}$$

$$R = A/W_p = 8.8/22 = 0.4$$

$$S = 0.010$$

$$Q_{cap} = (1.49/0.017)(0.4^{2/3})(0.010^{1/2})(8.8)$$

$$Q_{cap} = 41.9 \text{ cfs}$$

- C. Comparison

$$\Delta Q = 41.9 - 24.6 = 17.3 \text{ cfs}$$

$$\Delta Q \gg Q_{100,B} = 2.0 \text{ cfs}$$

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 therefore. 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.

**GRADING & DRAINAGE PLAN****CLARKLIFT 2108 CANDELARIA N.E.**

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DESIGNED BY	NO.	DATE	BY	REVISIONS	JOB NO.
JGM					930231
DRAWN BY					DATE
CEN					03/93
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