Hydrology H15/D23 Waffle House

H15-D23

WAFFLE HOUSE

1 PLAN

GRADING AND DRAINAGE PLAN

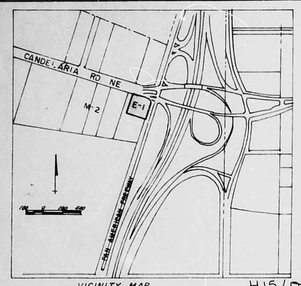
FOR

WAFFLE HOUSE, INC.

TRACT E-1-B

OF SUNDT'S INDUSTRIAL AREA

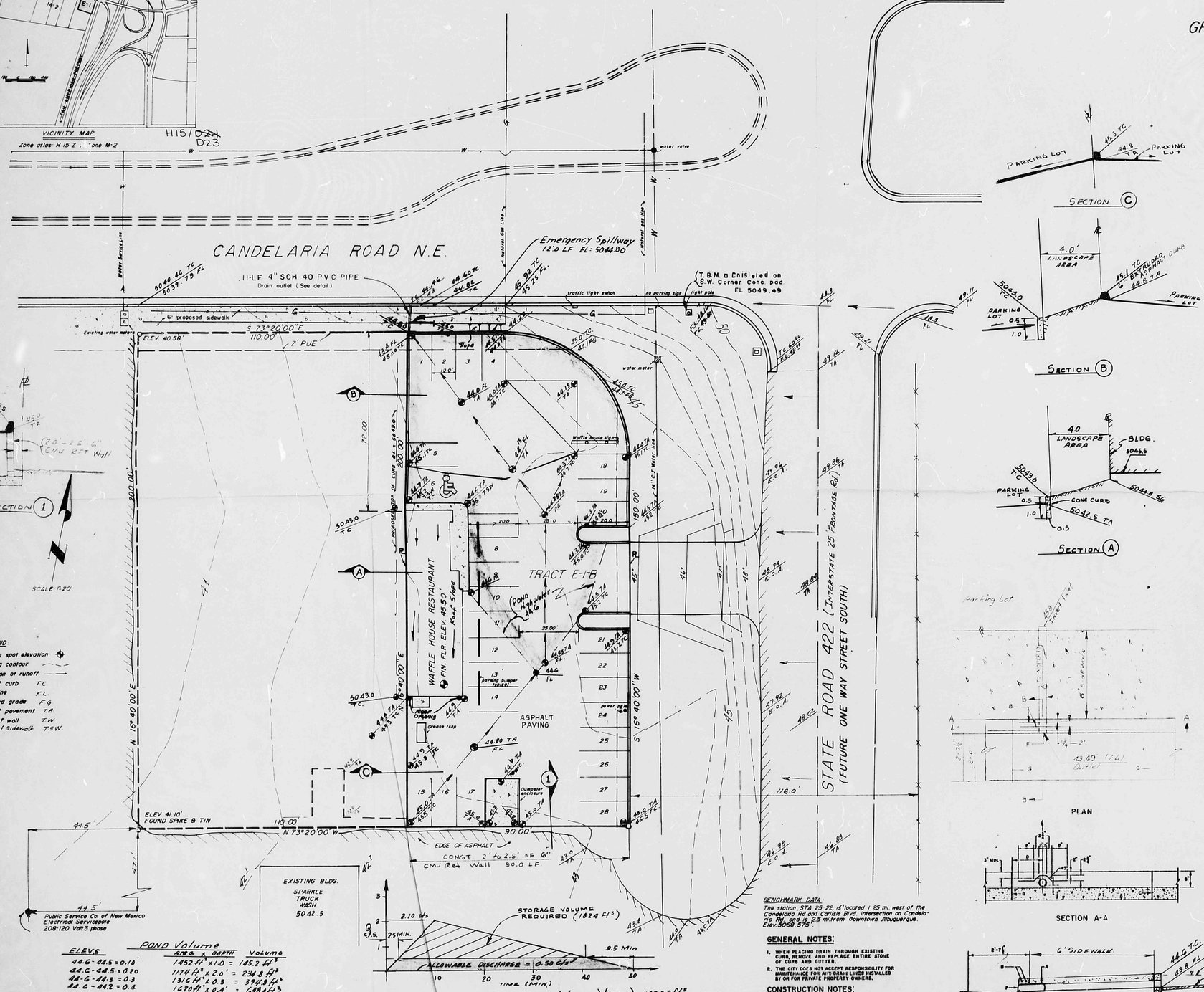
APRIL 1983

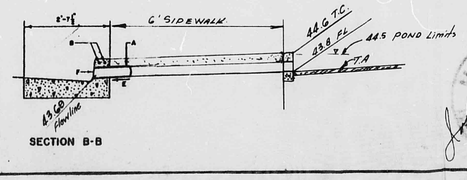


VICINITY MAP

Zone atlas: H 15 Z, Zone M-2

H15/~~D24~~ D23





DRAINAGE PLAN

The following items required by the city of Albuquerque Drainage Section concerning the drainage plan for Tract E-1-B of Sundt's Industrial Area and contained hereon:

A. Vicinity Map
B. Flood Hazard Map
C. Grading & Drainage Plan
D. Calculations

The site is located on the southwest corner of the intersection of I-25 and Candelaria Rd. NE. The site is presently undeveloped and its terrain slopes from east to west at about a 1.5% slope. There is no significant offsite runoff affecting this tract of land. The subject site will accept and will allow offsite flows to continue to flow as they are in their present condition. The parcel to the south is the Sparkle Truck Wash and is paved and it does not contribute any runoff onto the site. The parcel to the west is Tract E-1-A of Sundt's Industrial Area is undeveloped and its runoff does not affect this site. The area to the north is Candelaria Rd. and it is an improved street and its runoff does not affect this site. The area to the east is the West Frontage Road of I-25 where only one-half drains into this parcel and also the west slope of said road.

The site does not lie within a designated flood hazard zone as shown by Flood Hazard Map.

The grading/drainage plan shows one drainage area "A". Drainage area "A" consists of the entire site as well as the Frontage Road. The plan also shows that the total runoff for area "A" or this project is ponded along the north portion of the front parking lot, having positive discharge by means of 4" drain pipes draining under the curb and gutter into Candelaria Rd. all in conformance with the city of Albuquerque standards.

The plan shown:

A. Existing contours at one foot intervals.
B. Proposed grades indicated by contours and spot elevations.
C. Swales as indicated by the legend shown.
D. Spot elevations as indicated by the legend shown.

CALCULATIONS

Soil Type: Cu (SCS Soil Map Page 21)
Hydrologic Soil Group "A"

Offsite flows

Offsite Area = 0.44 Acres
C = 0.21 for Soil Group "A" (DPM Plate 22.2 C-1)
I = (2.2) (2.20) = 4.84"/hr.
(DPM Plate 22.2 D-1 and 22.2 D-2)
Q = CIA = 0.21 (4.84) (0.44) = 0.45 cfs.

Undeveloped Site Conditions

Site Area = 0.40 Acres
% imperviousness = 10%
C = 0.21 for Soil Group "A"
I = 4.84"/hr.
Q = CIA = (0.21) (4.84) (0.40) = 0.41

Developed Site Conditions To Pond

16,063 ft^2 imperviousness divided by 17,463 ft^2

Total = $\frac{16,063}{17,463}$ = 92% imperviousness

C = 0.80 (DPM Plate 22.2 C-1)
A = 0.37 Acres, I = 4.84
Q = CIA = (0.80) (4.84) (0.37) = 1.43 cfs.
Tc = Tp = 10 min. (5) (10) = 50 min. duration
Volume = $\frac{1}{2}$ (50) (60) (1.88 ft./sec.) = 2820 $ft.^3$

Q_{100} into pond will also include the offsite runoff
Total Q_{100} = 1.43 + 0.45 = 1.88 cfs.

Use 2.10 cfs. for Hydrograph

Emergency Spillway Calculations

$Q = CLH^{3/2}$
C = 3.33
L = 12.0
Q = 2.07 cfs.

$H = \left[\frac{Q}{CL}\right]^{2/3} = \left[\frac{2.07}{3.33\ (12.0)}\right]^{2/3}$ = 0.136 ft. of 1.62"

Note:
Elevation top of water surface over weir is 44.80 + 0.14 = 44.94
(Freeboard = 2" or 0.16)
Freeboard elevation = 45.00. The Finish Floor Elevation of Building is 5045.50.

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ELEVS	POND Volume Area	x DEPTH	Volume
44.6 - 44.5 = 0.10	1452 ft^2 x 1.0	=	145.2 ft^3
44.6 - 44.5 = 0.20	1174 ft^2 x 2.0	=	234.8 ft^3
44.6 - 44.3 = 0.3	1316 ft^2 x 0.3	=	394.8 ft^3
44.6 - 44.2 = 0.4	1670 ft^2 x 0.4	=	668 ft^3
44.6 - 44.1 = 0.5	1940 ft^2 x 0.5	=	970.0 ft^3
44.6 - 44.0 = 0.6	894 ft^2 x 0.6	=	536.4 ft^3
44.6 - 43.9 = 0.7	132 ft^2 x 0.7	=	92.4 ft^3

TOTAL POND Vol. = 3041.6 ft^3

Required Vol. = 1824.0 ft^3

Storage Volume Required = $\frac{1}{2}$ (2.1 - 0.5) cfs (38 min) $\left(\frac{60 \text{ sec}}{\text{min}}\right)$ = 1824.0 $ft.^3$

HYDROGRAPH

BENCHMARK DATA:
The station, STA 25-22, is located 1.25 mi. west of the Candelaria Rd and Carlisle Blvd. intersection on Candelaria Rd. and is 2.3 mi. from downtown Albuquerque. Elev. 5068.375'.

GENERAL NOTES:

1. WHEN PLACING DRAIN THROUGH EXISTING CURB, REMOVE AND REPLACE ENTIRE STOKE OF CURB AND GUTTER.
2. THE CITY DOES NOT ACCEPT RESPONSIBILITY FOR MAINTENANCE FOR ANY DRAIN LINES INSTALLED BY OR FOR PRIVATE PROPERTY OWNERS.

CONSTRUCTION NOTES:

A. DRAIN, D.I. OR SCH. 40 P.V.C. PIPE, 4" NOM. SIZE (MIN.) TO PROPERTY.
B. 2-NO. 3 BARS, 2'-6" LONG, PLACED AS SHOWN.
C. COLD JOINT.
D. DISTANCE FROM ℄ OF DRAIN TO NEAREST JOINT, VARIABLE WITH 18" MIN.
E. SLOPE ↓ PER FT. WITHIN R.O.W.
F. DRAIN PIPE NOT TO PROTRUDE BEYOND CURB FACE.
G. JOINT NEAREST TO DRAIN TO BE AN EXPANSION JOINT.

Revised Oct. 5, 1983
Revised Sept. 29, 1983

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