

DRAINAGE/GRADING PLAN

The following items concerning Parcel "F" of Parcels A thru H of Paseo Del Norte Industrial Park Subdivision, Bernalillo County, Albuquerque, New Mexico are contained hereon:

1. Vicinity Map
2. FEMA Flood Map
3. Drainage Calculations

EXISTING CONDITIONS

As shown by the vicinity map, the site contains .8537 acres and is located south of El Pueblo Rd on Lorraine Court NE. The site has been graded per the Master Drainage Plan prepared by Jeff Mortensen & Associates. The topography slopes from east to west. According to the flood Insurance Rate Map Panel 0136D, dated September 20, 1996, the site is not located within a 100-year flood zone.

PROPOSED CONDITIONS

As shown by the Drainage/Grading Plan, the project will consist of a 10,085 sf OFFICE/WAREHOUSE building along with associated paved parking and landscaped areas. On-site flows will be routed to the north property line and into a detention pond and then onto the 10' private drainage easement at a controlled rate of 1.4 cfs per the Master Drainage Plan. A hydrograph has been provided to indicate the required ponding volume. The calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The procedure for 40 acres and smaller basins, as set forth in the revision of Section 22.2 Hydrology of the Development Process Manual volume 2, Design Criteria dated 1997, has been used to quantify the peak rate of discharge and volume of run-off generated.

DOWN STREAM CAPACITY

Per the approved Master Drainage Plan for Paseo Del Norte Industrial Park, Parcel F has an allowable discharge rate of 1.4 cfs. A 10' private drainage easement has been provided to serve Parcel F. The developed volume will be stored in a pond located along the north property line with a run down and weir that will discharge 1.4 cfs into the easement.

Office/Warehouse Boydston Electric ZONE 2	AREA = 0.85 ac.
PRECIPITATION:	
360 =	2.35 in.
1440 =	2.75 in.
10day =	3.95 in.

EXCESS PRECIPITATION:	PEAK DISCHARGE:
TREATMENT A	0.53 in. 1.56 cfs/ac.
TREATMENT B	0.78 in. 2.28 cfs/ac.
TREATMENT C	1.13 in. 3.14 cfs/ac.
TREATMENT D	2.12 in. 4.70 cfs/ac.

EXISTING CONDITIONS:	PROPOSED CONDITIONS:
TREATMENT A	0 ac. 0 ac.
TREATMENT B	0 ac. 0 ac.
TREATMENT C	0.85 ac. 0.286 ac.
TREATMENT D	0 ac. 0.588 ac.

EXISTING EXCESS PRECIPITATION:

$$\text{Weighted E} = (0.53)(0.00) + (0.78)(0.00) + (1.13)(0.85) + (2.12)(0.00) = 0.95 \text{ in.}$$

$$\text{V100-360} = (1.13)(0.85) / 12 = 0.080390 \text{ ac-ft} = 3502 \text{ cf}$$

EXISTING PEAK DISCHARGE:

$$\text{Q100} = (1.56)(0.00) + (2.28)(0.00) + (3.14)(0.85) + (4.70)(0.00) = 2.68 \text{ cfs}$$

PROPOSED EXCESS PRECIPITATION:

$$\text{Weighted E} = (0.53)(0.00) + (0.78)(0.00) + (1.13)(0.27) + (2.12)(0.59) = 1.81 \text{ in.}$$

$$\text{V100-360} = (1.81)(0.85) / 12.0 = 0.128875 \text{ ac-ft} = 5814 \text{ cf}$$

$$\text{V100-1440} = (0.13)(0.59)(2.75 - 2.35) / 12 = 0.148465 \text{ ac-ft} = 6467 \text{ cf}$$

$$\text{V100-10day} = (0.13)(0.59)(3.95 - 2.35) / 12 = 0.207235 \text{ ac-ft} = 9027 \text{ cf}$$

PROPOSED PEAK DISCHARGE:

$$\text{Q100} = (1.56)(0.00) + (2.28)(0.00) + (3.14)(0.27) + (4.70)(0.59) = 3.62 \text{ cfs}$$

SYMBOL LEGEND

EXISTING CONTOUR	--- 5102 ---
PROPOSED CONTOUR	--- (26) ---
DESIGNED SPOT ELEVATION	27.50 TC 27.00 TA
PROPERTY LINE	-----
EASEMENT LINE	-----
FLOW DIRECTION	←
EXISTING SPOT ELEVATION	+85.1
DOWN SPOUT	□
AS-BUILT ELEV.	90.47 90.40

ABBREVIATION LEGEND

TOP OF CON. PAD	- TCP
TOP OF CURB	- TC
TOP OF ASPHALT	- TA
FLOWLINE	- FL
TOP OF WALL	- TW

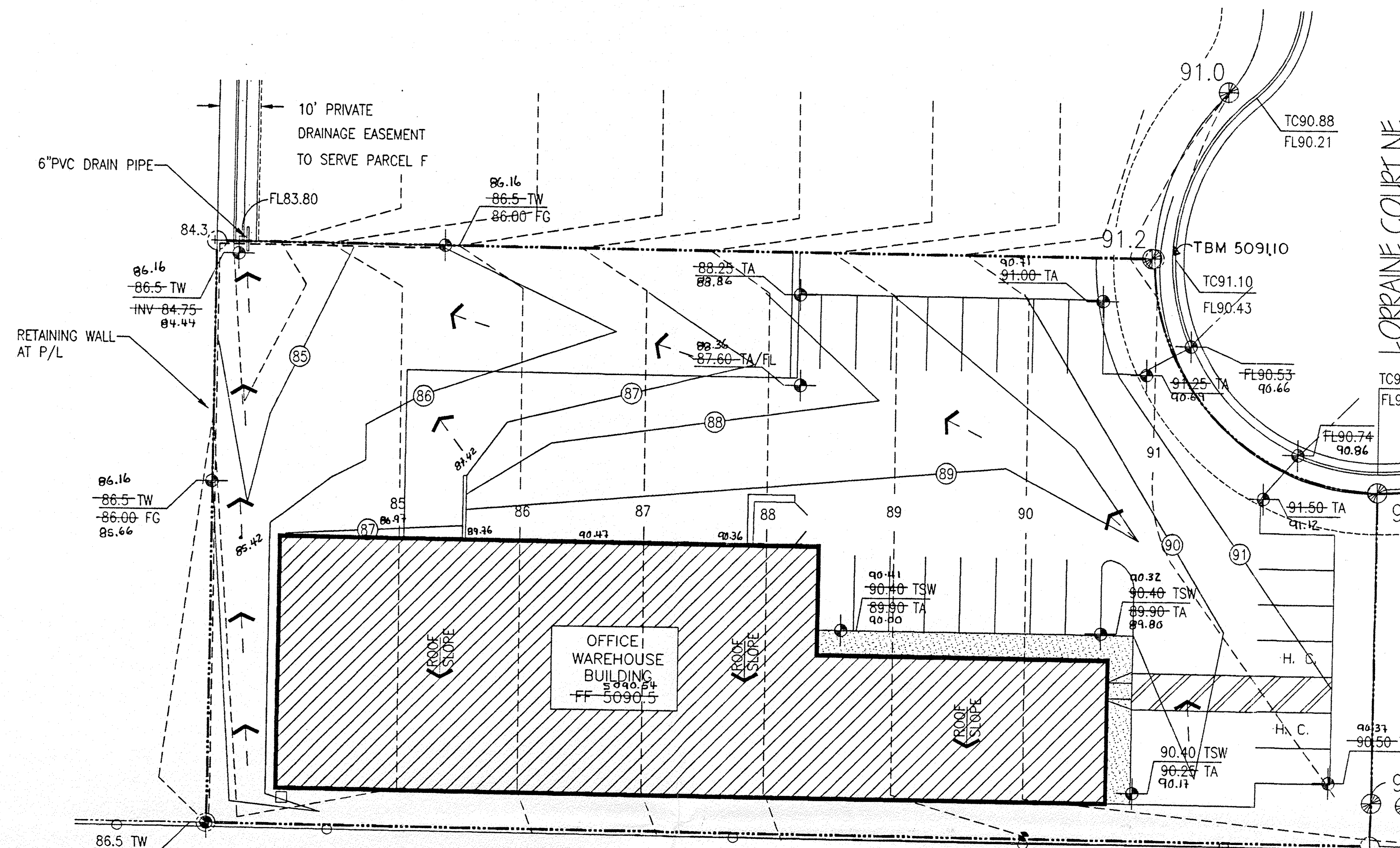
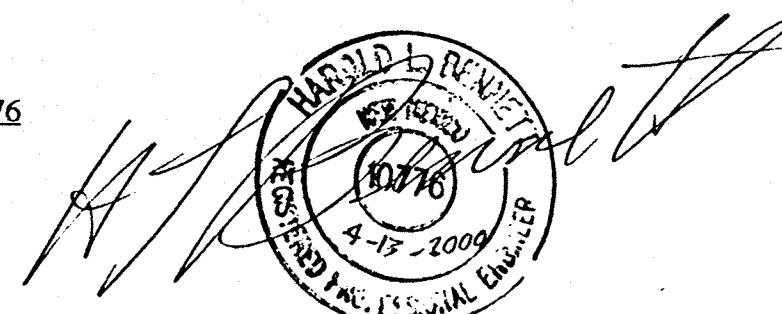
NOTE TO CONTRACTOR

1. An excavation/construction permit will be required before beginning any work within the City right-of-way. Approved copy of this plan must be submitted at the time of application for permit.
2. All work detailed in this plan to be performed, except as otherwise stated or provided hereon, shall be constructed in accordance with City of Albuquerque Standard Specification for Public Works Construction.
3. Two working days prior to any excavation, contractor must contact line locating Services at (505) 260-1990 for locating existing utilities.
4. Prior to construction, the contractor shall excavate and verify the horizontal and vertical location of all construction. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.

HAROLD L. BENNETT NMPE # 10776

ENGINEER CERTIFICATION FOR PARCEL "F" OF PASEO DEL NORTE INDUSTRIAL PARK

AS INDICATED BY THE AS-BUILT INFORMATION SHOWN HEREON: THE ABOVE REFERENCED SITE HAS BEEN GRADED AND DRAINED IN SUBSTANTIAL COMPLIANCE WITH THE APPROVED DATED NOVEMBER 12, 1999. THEREFORE, A PERMANENT CERTIFICATE OF OCCUPANCY IS HEREBY RECOMMENDED. THE AS-BUILT INFORMATION SHOWN HEREON WAS OBTAINED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.



Circular Channel Analysis & Design
Solved with Manning's Equation
Open Channel - Uniform flow

Worksheet Name: Boydston Electric

Comment: Discharge Pipe From Ponding Area 1.4 cfs

Solve For Full Flow Diameter

Given Input Data:
Slope: 0.0522 ft/ft
Manning's n: 0.015
Discharge: 1.40 cfs

Computed Results:
Full Flow Diameter: 0.55 ft
Full Flow Depth: 0.55 ft
Velocity: 6.00 fps
Flow Area: 0.23 sf
Critical Depth: 0.53 ft
Critical Slope: 0.0457 ft/ft
Percent Full: 100.00 %
Full Capacity: 1.40 cfs
QMAX @ 94D: 1.51 cfs
Froude Number: FULL

BENCHMARK: "ACS" NAA-9 LOCATED 113' SOUTH OF PASEO DEL NORTE AND 72' EAST OF THE NORTH DIVERSION CHANNEL ELEVATION: 5069.27

T.B.M.: TOP OF CURB IN THE PROJECTION OF THE NORTHEAST PROPERTY CORNER (SEE PLAN) ELEVATION: 5091.10

HYDROGRAPH CALCULATIONS

$$\text{Q}_p = 1.4 \text{ cfs} \quad \text{A} = .85 \text{ acres} \quad \text{A}_p = .59 \text{ acres} \quad \text{t}_p = .2 \text{ hrs.}$$

$$\text{Q}_p = 3.62 \text{ cfs} \quad \text{E} = 1.82$$

$$\text{t}_p = 2.107 \times \text{E} \times \text{A}_p / \text{Q}_p = .25 \times \text{A}_p / \text{A}_r$$

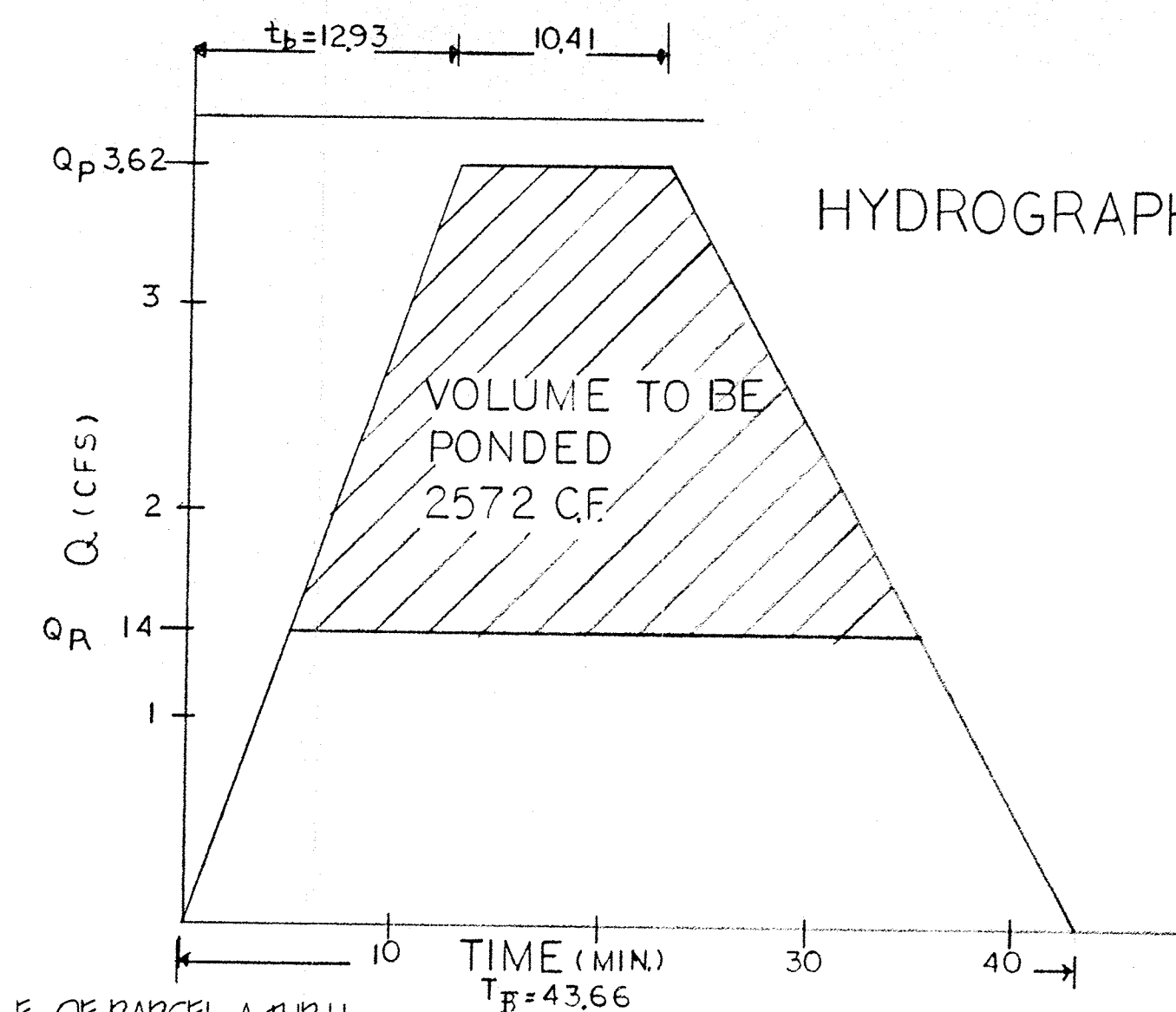
$$\text{t}_p = 2.107 \times 1.82 \times .85 / 3.62 = .25 \times .59 / .85 \times 60 = 43.66 \text{ min.}$$

$$\text{t}_p = 0.7 \times \text{t} + (1.6 - \text{A}_p / \text{A}_r) / 12$$

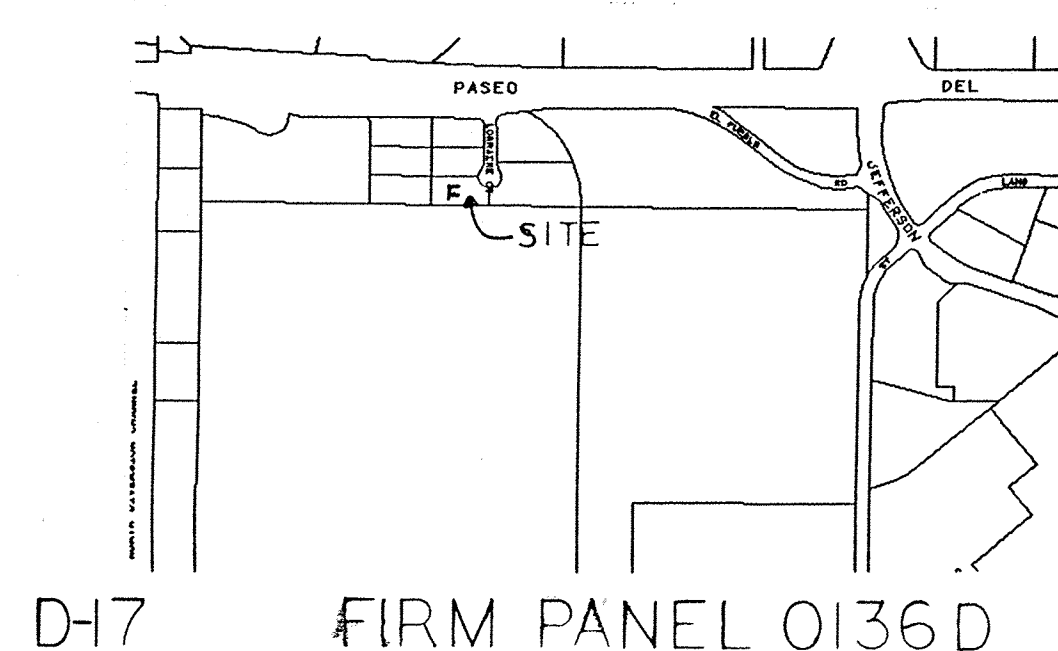
$$\text{t}_p = 0.7 \times .2 + (1.6 - .59 / .85) / 12 \times 60 = 12.93 \text{ min.}$$

$$.25 \times \text{A}_p / \text{A}_r$$

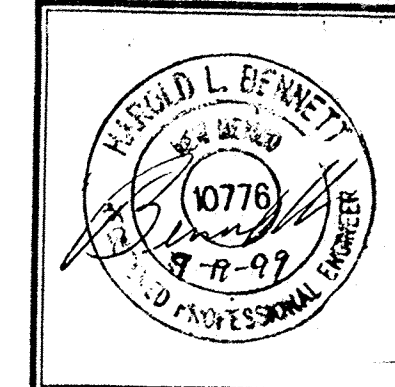
$$.25 \times .59 / .85 \times 60 = 10.41 \text{ min.}$$



LEGAL
PARCEL F, OF PARCEL A THRU H
OF PASEO DEL NORTE INDUSTRIAL PARK
ALBUQUERQUE, BERNALILLO COUNTY
NEW MEXICO



D-17 FIRM PANEL 0136D



JOB NO.	9520
DATE:	02 JUNE 1999
REVISIONS	

Sheet Title
GRADING + DRAINAGE PLAN

Checked By: BLM
Drawn By: BLM

BUM DEVELOPMENT CONSULTANT
DESIGN - PLANNER
Albuquerque, New Mexico

Project Name
BOYDSTON ELECTRIC OFFICE WAREHOUSE
ALBUQUERQUE, NEW MEXICO

SHEET NO.
RECEIVED
APR 12 2000
HYDROLOGY SECTION