

# DRAINAGE/GRADING PLAN PARCEL "B"

THE FOLLOWING ITEMS CONCERNING PARCEL "B" OF PARCELS A THRU H OF PASEO DEL NORTE INDUSTRIAL PARK SUBDIVISION, BERNALILLO COUNTY, ALBUQUERQUE, NEW MEXICO ARE CONTAINED HEREON:

- VICINITY MAP
- FIRM FLOOD MAP
- DRAINAGE CALCULATIONS

## EXISTING CONDITIONS

AS SHOWN BY THE VICINITY MAP, THE SITE CONTAINS 0.80 ACRES AND IS LOCATED SOUTH OF EL PUEBLO RD. NE. ON A PRIVATE RD. WEST OF LORRAINE CT. NE. THE SITE HAS BEEN GRADED PER THE MASTER PLAN PREPARED BY JEFF MORTENSEN AND ASSOCIATES. THE TOPOGRAPHY SLOPES FROM EAST TO WEST. ACCORDING TO THE FLOOD INSURANCE RATE MAP PANEL 01360, DATED SEPTEMBER 20,1996, THE SITE IS NOT LOCATED WITHIN A DESIGNATED 100-YEAR FLOOD ZONE.

## PROPOSED CONDITIONS

AS SHOWN BY THE DRAINAGE/GRADING PLAN, THE PROJECT WILL CONSIST OF TWO OFFICE/WAREHOUSE BUILDINGS TOTALING 10,100 SQUARE FEET ALONG WITH ASSOCIATED PAVED PARKING AND LANDSCAPE AREAS. ON-SITE RUN-OFF WILL BE LOCATED WITHIN THE COMMON ACCESS-DRAINAGE EASEMENT, FROM THAT POINT THE PROPOSED INLET WILL BE CONNECTED TO AN EXISTING "A" INLET LOCATED WITHIN THE PRIVATE ROAD. AN ALLOWABLE DISCHARGE RATE OF 1.3 CFS IS ALLOWED BY THE MASTER DRAINAGE PLAN. BOTH PARCEL B AND C WILL BE DRAINED TO THE PROPOSED DROP INLET WITH AN ALLOWABLE DISCHARGE OF 2.6 CFS. A HYDROGRAPH HAS BEEN PROVIDED INDICATING THE REQUIRED PONDING. THE CALCULATION WHICH APPEARS 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 REVISIONS 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.

## DOWNSTREAM CAPACITY

PER THE APPROVED MASTER PLAN FOR PASEO DEL NORTE INDUSTRIAL PARK, PARCEL "B" IS ALLOWED 1.3 CFS FREE DISCHARGE IS ALLOWED. A MEETING WITH BRAD BINGHAM ON 5/23/2000 ALLOWED 1.6 CFS.

## DRAINAGE/GRADING PLAN PARCEL "C"

THE FOLLOWING ITEMS CONCERNING PARCEL "C" OF PARCELS A THRU H OF PASEO DEL NORTE INDUSTRIAL PARK SUBDIVISION, BERNALILLO COUNTY, ALBUQUERQUE, NEW MEXICO ARE CONTAINED HEREON:

- VICINITY MAP
- FIRM FLOOD MAP
- DRAINAGE CALCULATIONS

## EXISTING CONDITIONS

AS SHOWN BY THE VICINITY MAP, THE SITE CONTAINS 0.80 ACRES AND IS LOCATED SOUTH OF EL PUEBLO RD. NE. ON A PRIVATE RD. WEST OF LORRAINE CT. NE. THE SITE HAS BEEN GRADED PER THE MASTER PLAN PREPARED BY JEFF MORTENSEN AND ASSOCIATES. THE TOPOGRAPHY SLOPES FROM EAST TO WEST. ACCORDING TO THE FLOOD INSURANCE RATE MAP PANEL 01360, DATED SEPTEMBER 20,1996, THE SITE IS NOT LOCATED WITHIN A DESIGNATED 100-YEAR FLOOD ZONE.

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## DOWNSTREAM CAPACITY

PER THE APPROVED MASTER PLAN FOR PASEO DEL NORTE INDUSTRIAL PARK, PARCEL "C" IS ALLOWED 1.3 CFS FREE DISCHARGE. A MEETING WITH BRAD BINGHAM ON 5/23/2000 ALLOWED 1.6 CFS.

PASEO DEL NORTE AREA =0.75ac.

PARCEL B

ZONE 2

PRECIPITATION: 360= 2.35in.  
1440= 2.75in.  
10da= 3.95in.

EXCESS PRECIPITATION: PEAK DISCHARGE:

TREATMENT A 0.53in. 1.56 cfs/ac.  
TREATMENT B 0.78in. 2.28 cfs/ac.  
TREATMENT C 1.13in. 3.14 cfs/ac.  
TREATMENT D 2.12in. 4.70 cfs/ac.

EXISTING CONDITIONS: AREA 0ac.  
TREATMENT A 0ac.  
TREATMENT B 0ac.  
TREATMENT C 0.75ac.  
TREATMENT D 0ac.  
PROPOSED CONDITIONS: AREA 0ac.  
TREATMENT A 0ac.  
TREATMENT B 0ac.  
TREATMENT C 0.169ac.  
TREATMENT D 0.583ac.

EXISTING EXCESS PRECIPITATION:

Weighted E = 0.53(x0.00)+ 0.78(x0.00)+1.13(x0.75)+2.12(x0.00)0.75ac.  
= 1.13  
V100-360 = 1.13(x0.75)/12 = 0.0708ac=-f= 3085 cf

EXISTING PEAK DISCHARGE:

Q100 = 1.56(x0.00)+ 2.28(x0.00)+3.14(x0.75)+4.70(x0.00)=2.36cfs

PROPOSED EXCESS PRECIPITATION:

Weighted E = 0.53(x0.00)+ 0.78(x0.00)+1.13(x0.17)+2.12(x0.58)0.75ac.  
= 1.90  
V100-360 =1.90(x0.75)/ 12.0= 0.1189ac=-f= 5181 cf

V100-1440 = 0.12(+0.58)x 2.75- 2.35)/12 = 0.1383ac=-f= 6028 cf

V100-10day = 0.12(+0.58)x 3.95- 2.35)/12 = 0.1967ac=-f= 8569 cf

PROPOSED PEAK DISCHARGE:

Q100 = 1.56(x0.00)+ 2.28(x0.00)+3.14(x0.17)+4.70(x0.58)=3.30cfs

PASEO DEL NORTE AREA =0.76ac.

PARCEL C

ZONE 2

PRECIPITATION: 360= 2.35in.  
1440= 2.75in.  
10da= 3.95in.

EXCESS PRECIPITATION: PEAK DISCHARGE:

TREATMENT A 0.53in. 1.56 cfs/ac.  
TREATMENT B 0.78in. 2.28 cfs/ac.  
TREATMENT C 1.13in. 3.14 cfs/ac.  
TREATMENT D 2.12in. 4.70 cfs/ac.

EXISTING CONDITIONS: AREA 0ac.  
TREATMENT A 0ac.  
TREATMENT B 0ac.  
TREATMENT C 0.76ac.  
TREATMENT D 0ac.  
PROPOSED CONDITIONS: AREA 0ac.  
TREATMENT A 0ac.  
TREATMENT B 0ac.  
TREATMENT C 0.143ac.  
TREATMENT D 0.618ac.

EXISTING EXCESS PRECIPITATION:

Weighted E = 0.53(x0.00)+ 0.78(x0.00)+1.13(x0.76)+2.12(x0.00)0.76ac.  
= 1.13  
V100-360 =1.13(x0.76)/12 = 0.0716ac=-f= 3120 cf

EXISTING PEAK DISCHARGE:

Q100 = 1.56(x0.00)+ 2.28(x0.00)+3.14(x0.76)+4.70(x0.00)=2.37cfs

PROPOSED EXCESS PRECIPITATION:

Weighted E = 0.53(x0.00)+ 0.78(x0.00)+1.13(x0.14)+2.12(x0.62)0.76ac.  
= 1.93  
V100-360 =1.93(x0.76)/ 12.0= 0.1228ac=-f= 5341 cf

V100-1440 =0.12(+0.62)x 2.75- 2.35)/12 = 0.1432ac=-f= 6239 cf

V100-10day = 0.12(+0.62)x 3.95- 2.35)/12 = 0.2050ac=-f= 8931 cf

PROPOSED PEAK DISCHARGE:

Q100 =1.56(x0.00)+ 2.28(x0.00)+3.14(x0.14)+4.70(x0.62)=3.35cfs

THE PRIVATE ROAD AREA WILL GENERATE AN ADDITIONAL 1.63 CFS

RECTANGULAR CHANNEL ANALYSIS & DESIGN  
OPEN CHANNEL - UNIFORM FLOW

WORK SHEET NAME : PARCEL B & C  
COMMENT : CONCRETE TROUGH FOR ROOF DISCHARGE FOR B  
SOLVE FOR BOTTOM WIDTH

GIVEN INPUT DATA :

MANNING'S n..... 0.014  
CHANNEL SLOPE..... 0.0100 FT/FT  
DEPTH..... 0.50 FT  
DISCHARGE ..... 1.09 CFS

COMPUTED RESULTS :

BOTTOM WIDTH..... 0.62 FT  
VELOCITY..... 3.52 fps  
FLOW AREA..... 0.31 sf  
FLOW TOP WIDTH..... 0.62 FT  
WETTED PERIMETER..... 1.62 FT  
CRITICAL DEPTH..... 0.46 FT  
CRITICAL SLOPE..... 0.0125 FT/FT  
FROUDE NUMBER..... 0.88 (FLOW IS SUBCRITICAL)

CIRCULAR CHANNEL ANALYSIS & DESIGN  
SOLVED WITH MANNING'S EQUATION

OPEN CHANNEL - UNIFORM FLOW

WORK SHEET NAME : PARCEL B & C  
COMMENT : ALLOWABLE DISCHARGE OF 3.2 CFS  
SOLVE FOR FULL FLOW DIAMETER

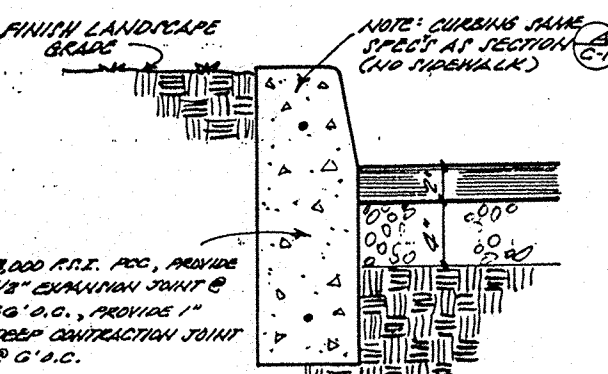
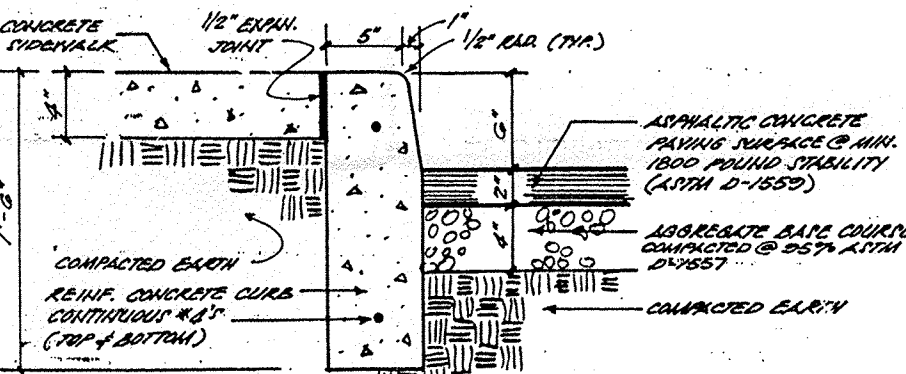
GIVEN INPUT DATA :

MANNING'S n..... 0.013  
PIPE SLOPE..... 0.0250 FT/FT  
DISCHARGE ..... 3.2 CFS

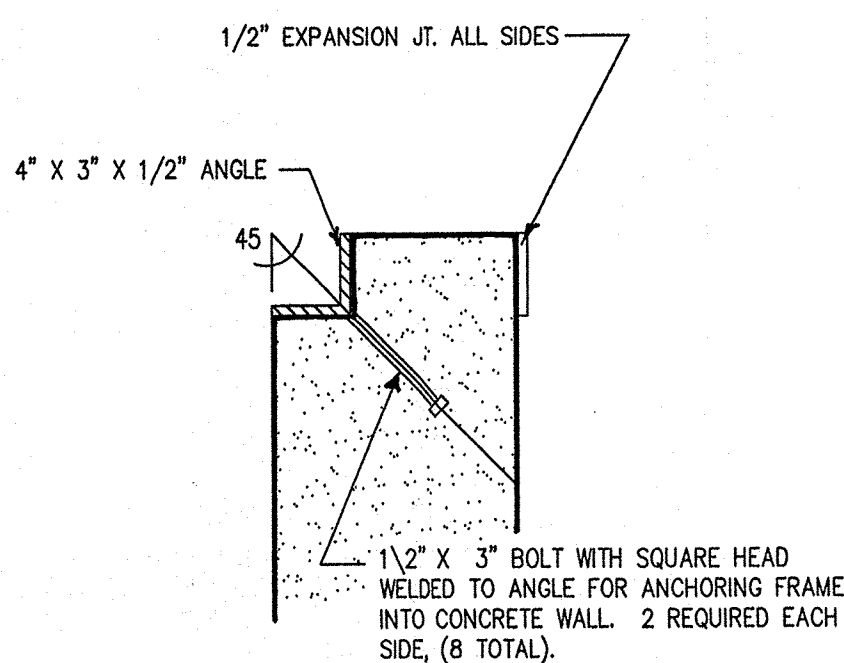
COMPUTED RESULTS :

FULL FLOW DIAMETER..... 0.81 FT  
FULL FLOW DEPTH..... 0.81 FT  
VELOCITY..... 6.23 fps  
FLOW AREA..... 0.51 FT  
PERCENT FULL..... 100.00%  
CRITICAL DEPTH..... 0.70 FT  
CRITICAL SLOPE..... 0.0216 FT/FT  
FROUDE NUMBER..... FULL

USE 10" PVC



1/2" EXPANSION JT. ALL SIDES



INLET WALL DETAIL "A"  
NO SCALE

RECTANGULAR CHANNEL ANALYSIS & DESIGN  
OPEN CHANNEL - UNIFORM FLOW

WORK SHEET NAME : PARCEL B & C  
COMMENT : CONCRETE TROUGH FOR ROOF DISCHARGE FOR C  
SOLVE FOR BOTTOM WIDTH

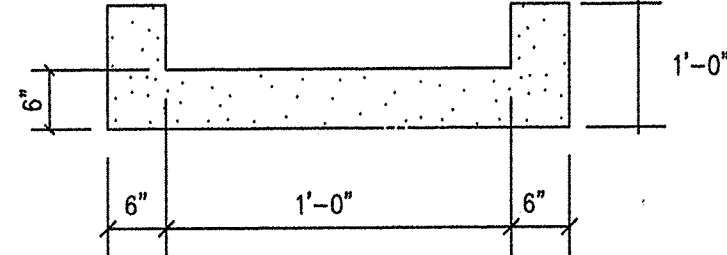
GIVEN INPUT DATA :

MANNING'S n..... 0.014  
CHANNEL SLOPE..... 0.0100 FT/FT  
DEPTH..... 0.50 FT  
DISCHARGE ..... 1.21 CFS

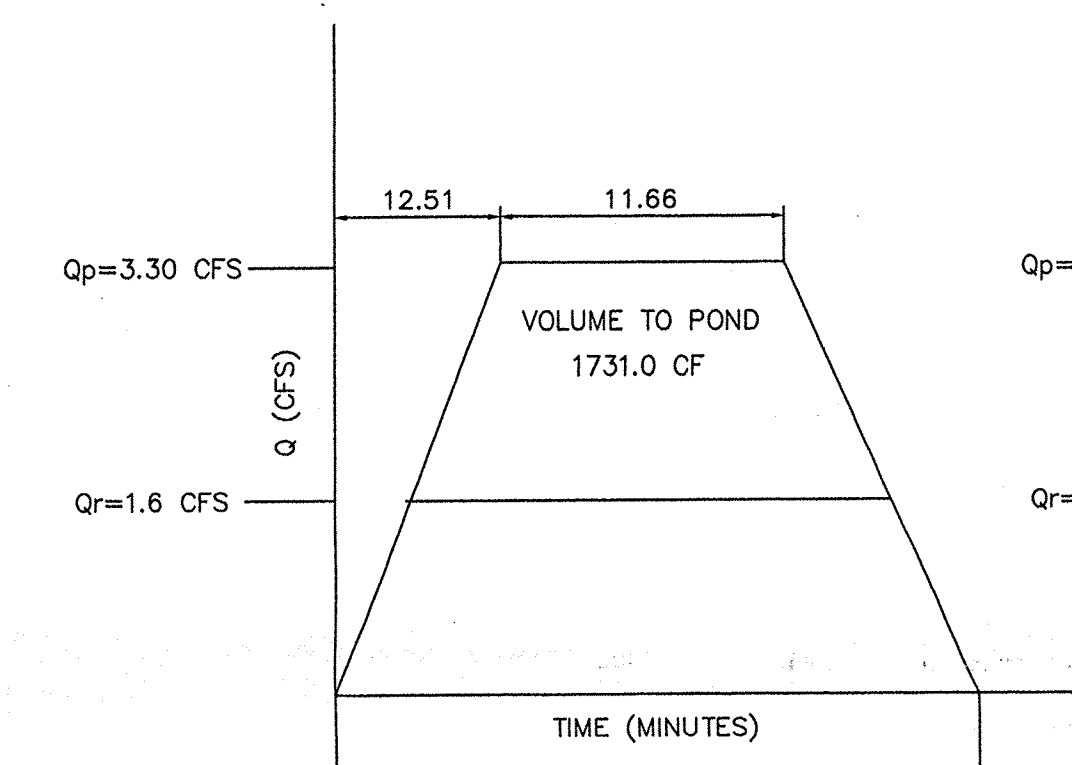
COMPUTED RESULTS :

BOTTOM WIDTH..... 0.67 FT  
VELOCITY..... 3.63 fps  
FLOW AREA..... 0.33 sf  
FLOW TOP WIDTH..... 0.67 FT  
WETTED PERIMETER..... 1.67 FT  
CRITICAL DEPTH..... 0.47 FT  
CRITICAL SLOPE..... 0.0119 FT/FT  
FROUDE NUMBER..... 0.90 (FLOW IS SUBCRITICAL)

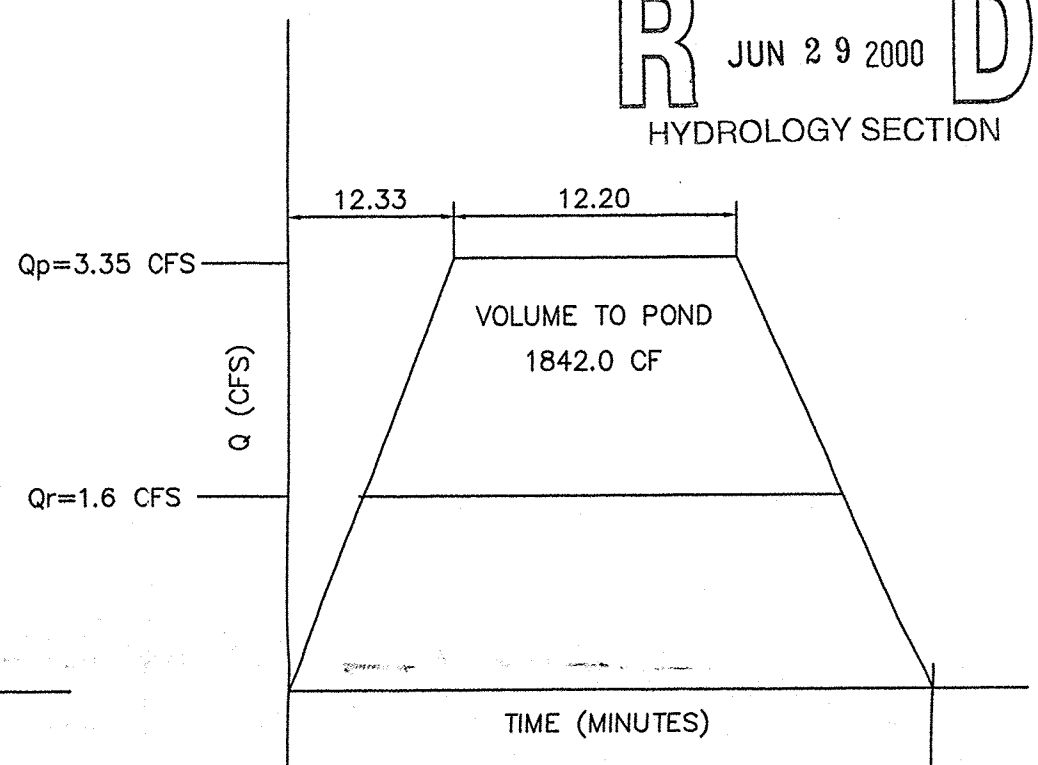
USE 1'-0" CONCRETE TROUGH



TROUGH DETAIL  
NO SCALE



HYDROGRAPH FOR PARCEL "B"



HYDROGRAPH FOR PARCEL "C"

REQUIRED PONDING : 3573.0 CF

PONDING PROVIDED : 4035.0 CF

FREEBOARD : 462.0 CF

## NOTE:

PER A MEETING WITH BRAD BINGHAM ON MAY 23,2000 IT WAS DETERMINED THAT AN ALLOWABLE DISCHARGE RATE OF 1.6 CFS PER PARCEL WAS ACCEPTABLE COMPARED TO THE 1.3 CFS ALLOWED PER THE MASTER DRAINAGE PLAN THEREFORE EACH PARCEL WILL BE ALLOWED 1.6 CFS WITH A TOTAL OF 3.2 CFS FOR BOTH PARCELS.

## EROSION CONTROL MEASURES

THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR MANAGEMENT OF STORM RUN-OFF DURING CONSTRUCTION, HE SHALL ASSURE THAT THE FOLLOWING MEASURES ARE TAKEN:

- ADJACENT PROPERTY SHALL BE PROTECTED AT ALL TIMES BY TEMPORARY BERMS, DIKES, SWALES, AND OTHER TEMPORARY GRADING AS REQUIRED TO PREVENT STORM RUN-OFF FROM LEAVING THE SITE AND ENTERING ADJACENT PROPERTY.
- ADJACENT PUBLIC RIGHT-OF-WAY SHALL BE PROTECTED AT ALL TIMES FROM STORM WATER RUN-OFF FROM THE SITE. NO SEDIMENT BEARING WATER SHALL BE PERMITTED TO ENTER THE PUBLIC STREETS.
- THE CONTRACTOR SHALL IMMEDIATELY AND THOROUGHLY REMOVE ANY OR ALL SEDIMENT WITHIN THE PUBLIC STREETS THAT HAVE BEEN ERODED FROM THE SITE AND DEPOSITED THERE.

## SYMBOL LEGEND

EXISTING CONTOUR  
PROPOSED CONTOUR  
DESIGNED SPOT ELEVATION  
PROPERTY LINE

EXISTING SPOT ELEVATION 82.5

DOWN SPOUT

EASEMENT LINE

## ABBREVIATION LEGEND

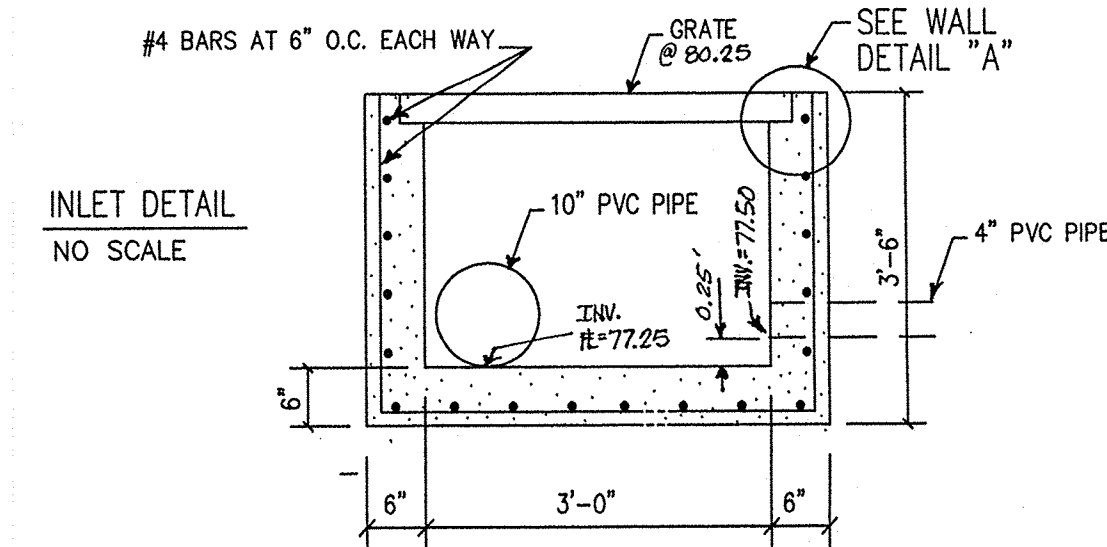
TOP OF CON. PAD - TCP  
TOP OF CURB - TC  
TOP OF ASPHALT - TA  
FLOWLINE - FL  
TOP OF WALL - TW  
ROOF FLOWS - RF

## LEGAL DESCRIPTION

PARCEL "B" AND "C" OF PARCELS "A" THRU "H" OF PASEO DEL NORTE INDUSTRIAL PARK SUBDIVISION, ALBUQUERQUE, NEW MEXICO

## BENCHMARK:

A SQUARE CUT CHISLED ON TOP OF CURB  
SEE DRAINAGE PLAN: ELEVATION 5080.70



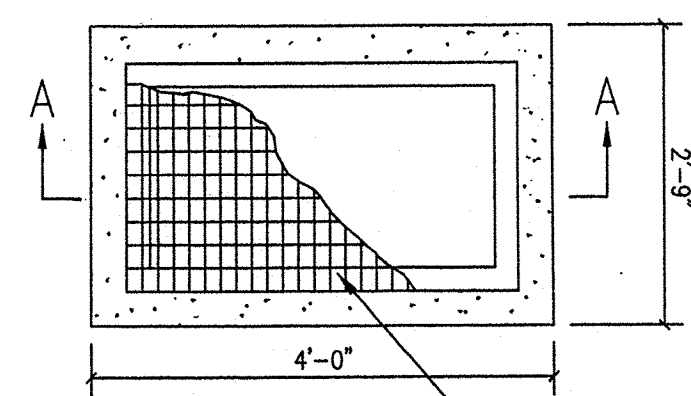
INLET SECTION A-A  
NO SCALE

## RECTANGULAR GRATE DROP INLET (SUMP CONDITION)

PARCEL B & C PASEO DEL NORTE INDUS. PARK

Flow depth, y..... 0.50 feet  
Grate open area, A..... 6.00 sq. ft.  
Grate perimeter, P... 10.00 feet  
Clogging percentage.... 25%

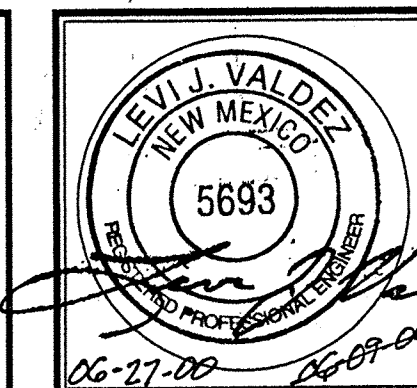
Weir flow...7.95cfs  
Orifice flow...17.10 cfs  
17.10 CFS > 6.65 CFS OK



INLET PLAN  
NO SCALE

GRATE IS STD. COA INLET GRATE  
SEE STD. DETAIL 2220

- CONCRETE FOR NEW INLET STRUCTURE SHALL BE 4000#-28-DAY STRENGTH. REBAR SHALL BE GRADE 40 BARS.
- ALL SMALL DIAMETER PVC PIPE SHALL BE SDR 26 PIPE.



JOB NO:
DATE: MAY 13,2000
REVISIONS

Sheet Title  
GRADING & DRAINAGE PLAN  
Drawn By: BJM  
Checked By:

BJM DEVELOPMENT CONSULTANT  
DESIGN - PLANNER  
Albuquerque, New Mexico

Project Name  
PARCEL B & C PASEO DEL NORTE  
INDUSTRIAL PARK  
ALBUQUERQUE, NEW MEXICO

SHEET NO. 1 OF 2  
GD



**ENGINEER CERTIFICATION FOR PARCEL "B" PASEO DEL NORTE INDUS. PARK**

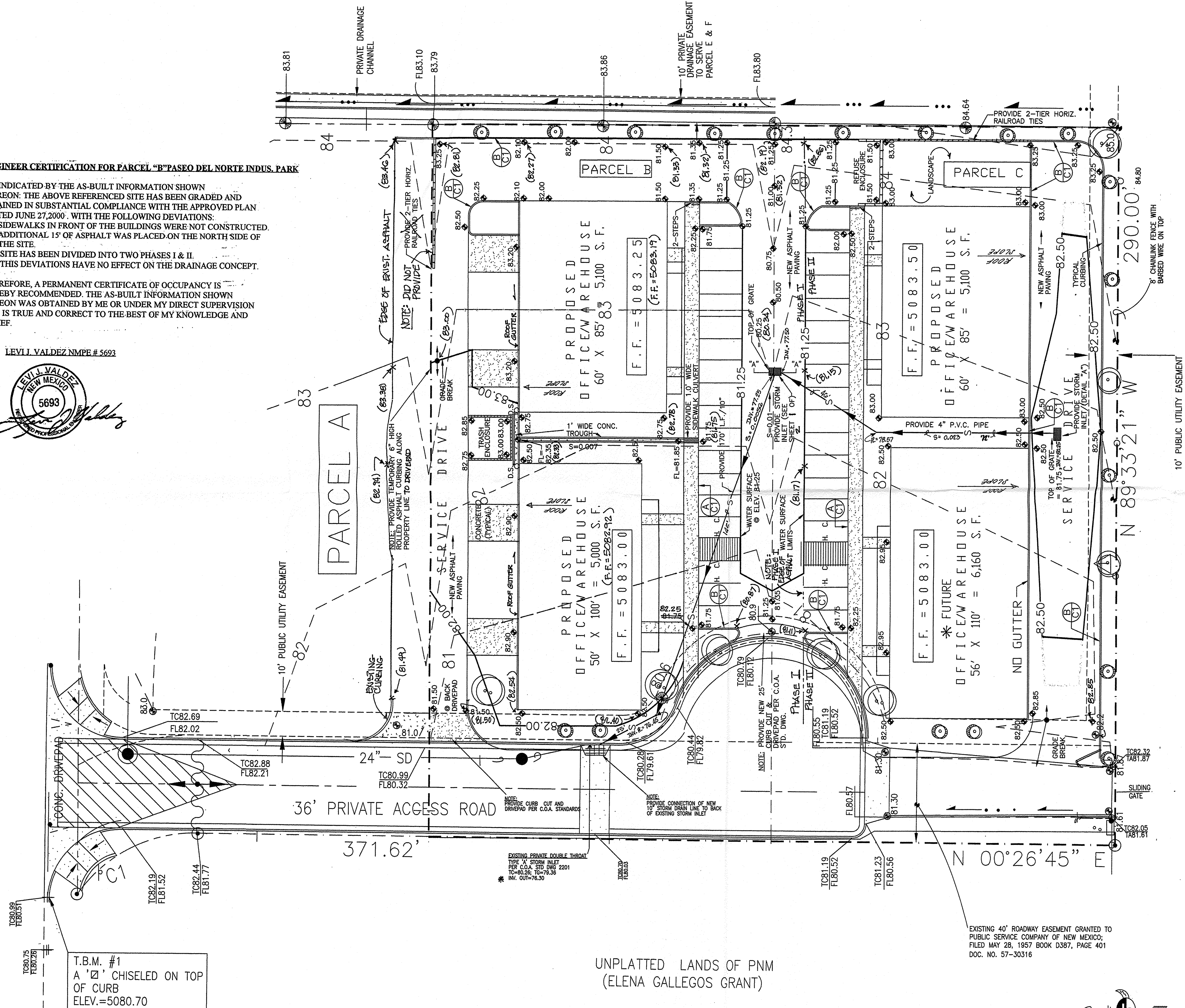
AS INDICATED BY THE AS-BUILT INFORMATION SHOWN HEREON, THE ABOVE REFERENCED SITE HAS BEEN GRADED AND DRAINED IN SUBSTANTIAL COMPLIANCE WITH THE APPROVED PLAN DATED JUNE 27, 2000, WITH THE FOLLOWING DEVIATIONS:

1. SIDEWALKS IN FRONT OF THE BUILDINGS WERE NOT CONSTRUCTED.
2. ADDITIONAL 15' OF ASPHALT WAS PLACED ON THE NORTH SIDE OF THE SITE.
3. SITE HAS BEEN DIVIDED INTO TWO PHASES I & II.

THIS DEVIATIONS HAVE NO EFFECT ON THE DRAINAGE CONCEPT.

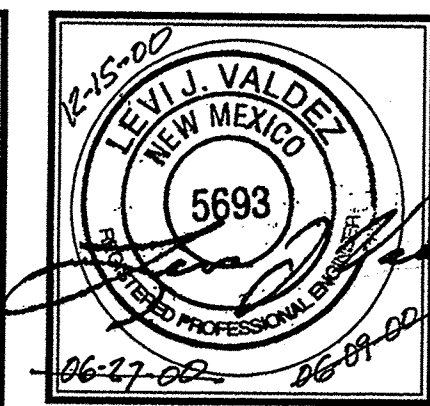
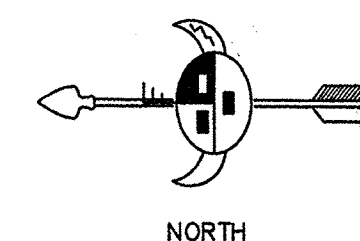
THEREFORE, A PERMANENT CERTIFICATE OF OCCUPANCY IS HEREBY RECOMMENDED. THE AS-BUILT INFORMATION SHOWN HEREON WAS OBTAINED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

LEVI L. VALDEZ NMPE # 5693



UNPLATTED LANDS OF PNM  
(ELENA GALLEGOS GRANT)

GRADING/DRAINAGE PLAN SCALE 1" = 20'



JOB NO.	
DATE	JUNE, 2000
REVISIONS	

Sheet Title	GRADING & DRAINAGE PLAN
Drawn By	BJM
Checked By	

Project Name	PARCEL B & C PASEO DEL NORTE INDUSTRIAL PARK
Design - Planner	BJM DEVELOPMENT CONSULTANT
Albuquerque, New Mexico	

Project Name	PARCEL B & C PASEO DEL NORTE INDUSTRIAL PARK
Design - Planner	BJM DEVELOPMENT CONSULTANT
Albuquerque, New Mexico	

SHEET NO. 2 OF 2	GD
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# DRAINAGE/GRADING PLAN PARCEL "B"

THE FOLLOWING ITEMS CONCERNING PARCEL "B" OF PARCELS A THRU H OF PASEO DEL NORTE INDUSTRIAL PARK SUBDIVISION, BERNALILLO COUNTY, ALBUQUERQUE, NEW MEXICO ARE CONTAINED HEREON:

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AS SHOWN BY THE VICINITY MAP, THE SITE CONTAINS 0.80 ACRES AND IS LOCATED SOUTH OF EL PUEBLO RD. NE ON A PRIVATE RD. WEST OF LORRAINE CT. NE. THE SITE HAS BEEN GRADED PER THE MASTER PLAN PREPARED BY JEFF MORTENSEN AND 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 DESIGNATED 100-YEAR FLOOD ZONE.

## PROPOSED CONDITIONS

AS SHOWN BY THE DRAINAGE/GRADING PLAN, THE PROJECT WILL CONSIST OF TWO OFFICE/WAREHOUSE BUILDINGS TOTALING 10,100 SQUARE FEET ALONG WITH ASSOCIATED PAVED PARKING AND LANDSCAPE AREAS. ON-SITE RUN-OFF WILL BE LOCATED WITHIN THE COMMON ACCESS-DRAINAGE EASEMENT, FROM THAT POINT THE PROPOSED INLET WILL BE CONNECTED TO AN EXISTING "A" INLET LOCATED WITHIN THE PRIVATE ROAD. AN ALLOWABLE DISCHARGE RATE OF 1.3 CFS IS ALLOWED BY THE MASTER DRAINAGE PLAN. BOTH PARCEL B AND C WILL BE DRAINED TO THE PROPOSED DROP INLET WITH AN ALLOWABLE DISCHARGE OF 2.6 CFS. A HYDROGRAPH HAS BEEN PROVIDED INDICATING THE REQUIRED PONDING, THE CALCULATION WHICH APPEARS 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 REVISIONS 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.

## DOWNSTREAM CAPACITY

PER THE APPROVED MASTER PLAN FOR PASEO DEL NORTE INDUSTRIAL PARK, PARCEL "B" IS ALLOWED 1.3 CFS FREE DISCHARGE IS ALLOWED. A MEETING WITH BRAD BINGHAM ON 5/23/2000 ALLOWED 1.6 CFS.

# DRAINAGE/GRADING PLAN PARCEL "C"

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- DRAINAGE CALCULATIONS

## EXISTING CONDITIONS

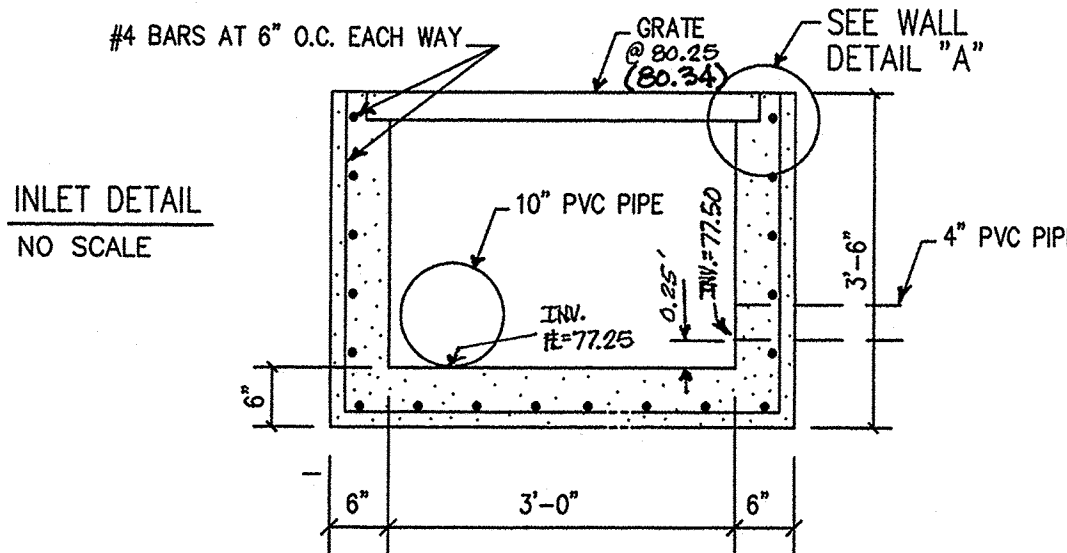
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## DOWNSTREAM CAPACITY

PER THE APPROVED MASTER PLAN FOR PASEO DEL NORTE INDUSTRIAL PARK, PARCEL "C" IS ALLOWED 1.3 CFS FREE DISCHARGE. A MEETING WITH BRAD BINGHAM ON 5/23/2000 ALLOWED 1.6 CFS.



INLET SECTION A-A  
NO SCALE

RECTANGULAR GRATE DROP INLET (SUMP CONDITION)	
PARCEL B & C PASEO DEL NORTE INDUS. PARK	
Flow depth, y.....	0.50 feet
Grate open area, A.....	6.00 sq. ft.
Grate perimeter, P....	10.00 feet
Clogging percentage....	25%
Weir flow.....	7.95cfs
Office flow.....	17.10 cfs
	17.10 CFS > 6.65 CFS OK

PASEO DEL NORTE AREA = 0.75ac.  
PARCEL B  
ZONE 2  
PRECIPITATION: 360= 2.35in.  
1440= 2.75in.  
10da= 3.95in.

## EXCESS PRECIPITATION: PEAK DISCHARGE:

TREATMENT A	0.53in.	1.56 cfs/ac.
TREATMENT B	0.78in.	2.28 cfs/ac.
TREATMENT C	1.13in.	3.14 cfs/ac.
TREATMENT D	2.12in.	4.70 cfs/ac.

EXISTING CONDITIONS:	PROPOSED CONDITIONS:
TREATMENT A AREA	AREA
TREATMENT B 0ac.	0ac.
TREATMENT C 0.75ac.	0.169ac.
TREATMENT D 0ac.	0.583ac.

## EXISTING EXCESS PRECIPITATION:

$$\text{Weighted E} = 0.53(x0.00) + 0.78(x0.00) + 1.13(x0.75) + 2.12(x0.00) = 0.75ac. = 1.13$$

$$V100-360 = 1.13(x0.75)/12 = 0.0708ac-f = 3085 cf$$

## EXISTING PEAK DISCHARGE:

$$Q100 = 1.56(x0.00) + 2.28(x0.00) + 3.14(x0.75) + 4.70(x0.00) = 2.36cfs$$

## PROPOSED EXCESS PRECIPITATION:

$$\text{Weighted E} = 0.53(x0.00) + 0.78(x0.00) + 1.13(x0.17) + 2.12(x0.58) = 0.75ac. = 1.90$$

$$V100-360 = 1.90(x0.75)/12.0 = 0.1189ac-f = 5181 cf$$

$$V100-1440 = 0.12(x0.58) \times 2.75 - 2.35/12 = 0.1383ac-f = 6028 cf$$

$$V100-10day = 0.12(x0.58) \times 3.95 - 2.35/12 = 0.1967ac-f = 8569 cf$$

## PROPOSED PEAK DISCHARGE:

$$Q100 = 1.56(x0.00) + 2.28(x0.00) + 3.14(x0.17) + 4.70(x0.58) = 3.30cfs$$

PASEO DEL NORTE AREA = 0.76ac.  
PARCEL C  
ZONE 2  
PRECIPITATION: 360= 2.35in.  
1440= 2.75in.  
10da= 3.95in.

## EXCESS PRECIPITATION: PEAK DISCHARGE:

TREATMENT A	0.53in.	1.56 cfs/ac.
TREATMENT B	0.78in.	2.28 cfs/ac.
TREATMENT C	1.13in.	3.14 cfs/ac.
TREATMENT D	2.12in.	4.70 cfs/ac.

EXISTING CONDITIONS:	PROPOSED CONDITIONS:
TREATMENT A AREA	AREA
TREATMENT B 0ac.	0ac.
TREATMENT C 0.76ac.	0.143ac.
TREATMENT D 0ac.	0.618ac.

## EXISTING EXCESS PRECIPITATION:

$$\text{Weighted E} = 0.53(x0.00) + 0.78(x0.00) + 1.13(x0.76) + 2.12(x0.00) = 0.76ac. = 1.13$$

$$V100-360 = 1.13(x0.76)/12 = 0.0716ac-f = 3120 cf$$

## EXISTING PEAK DISCHARGE:

$$Q100 = 1.56(x0.00) + 2.28(x0.00) + 3.14(x0.76) + 4.70(x0.00) = 2.37cfs$$

## PROPOSED EXCESS PRECIPITATION:

$$\text{Weighted E} = 0.53(x0.00) + 0.78(x0.00) + 1.13(x0.14) + 2.12(x0.62) = 0.76ac. = 1.93$$

$$V100-360 = 1.93(x0.76)/12.0 = 0.1226ac-f = 5341 cf$$

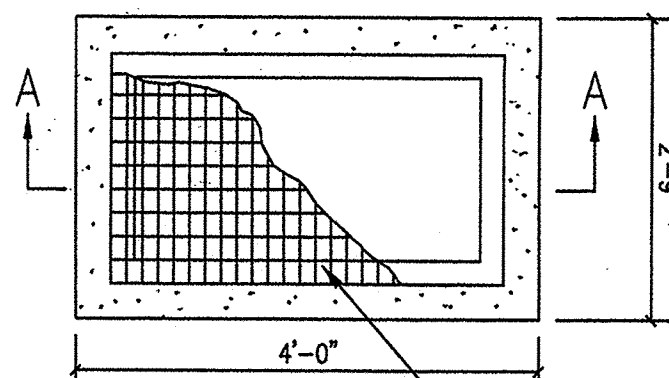
$$V100-1440 = 0.12(x0.62) \times 2.75 - 2.35/12 = 0.1432ac-f = 6239 cf$$

$$V100-10day = 0.12(x0.62) \times 3.95 - 2.35/12 = 0.2050ac-f = 8931 cf$$

## PROPOSED PEAK DISCHARGE:

$$Q100 = 1.56(x0.00) + 2.28(x0.00) + 3.14(x0.14) + 4.70(x0.62) = 3.35cfs$$

THE PRIVATE ROAD AREA WILL GENERATE AN ADDITIONAL 1.63 CFS



INLET PLAN  
NO SCALE

GRATE IS STD. COA INLET GRATE  
SEE STD. DETAIL 2220

# RECTANGULAR CHANNEL ANALYSIS & DESIGN OPEN CHANNEL - UNIFORM FLOW

WORK SHEET NAME : PARCEL B & C  
COMMENT : CONCRETE TROUGH FOR ROOF DISCHARGE FOR B  
SOLVE FOR BOTTOM WIDTH

## GIVEN INPUT DATA :

MANNING'S n.....	0.014
CHANNEL SLOPE.....	0.0100 FT/FT
DEPTH.....	0.50 FT
DISCHARGE .....	1.09 CFS

## COMPUTED RESULTS :

BOTTOM WIDTH.....	0.62 FT
VELOCITY.....	3.52 fps
FLOW AREA.....	0.31 sf
FLOW TOP WIDTH.....	0.62 FT
WETTED PERIMETER.....	1.62 FT
CRITICAL DEPTH.....	0.46 FT
CRITICAL SLOPE.....	0.0125 FT/FT
FROUDE NUMBER.....	0.88 (FLOW IS SUBCRITICAL)

# CIRCULAR CHANNEL ANALYSIS & DESIGN SOLVED WITH MANNING'S EQUATION

## OPEN CHANNEL - UNIFORM FLOW

WORK SHEET NAME : PARCEL B & C  
COMMENT : ALLOWABLE DISCHARGE OF 3.2 CFS  
SOLVE FOR FULL FLOW DIAMETER

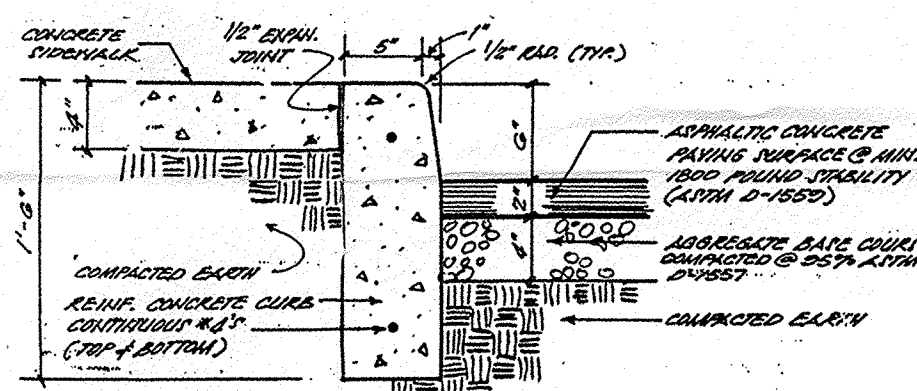
## GIVEN INPUT DATA :

MANNING'S n.....	0.013
PIPE SLOPE.....	0.0250 FT/FT
DISCHARGE .....	3.2 CFS

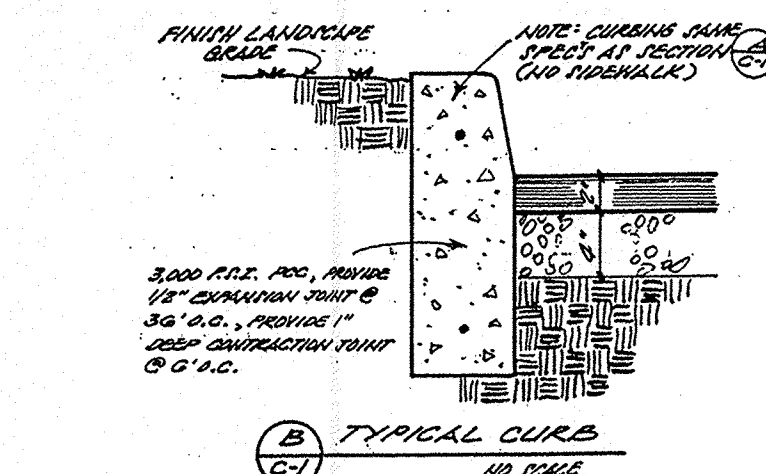
## COMPUTED RESULTS :

FULL FLOW DIAMETER.....	0.81 FT
FULL FLOW DEPTH.....	0.81 FT
VELOCITY.....	6.23 fps
FLOW AREA.....	0.51 FT
PERCENT FULL.....	100.00%
CRITICAL DEPTH.....	0.70 FT
CRITICAL SLOPE.....	0.0216 FT/FT
FROUDE NUMBER.....	FULL

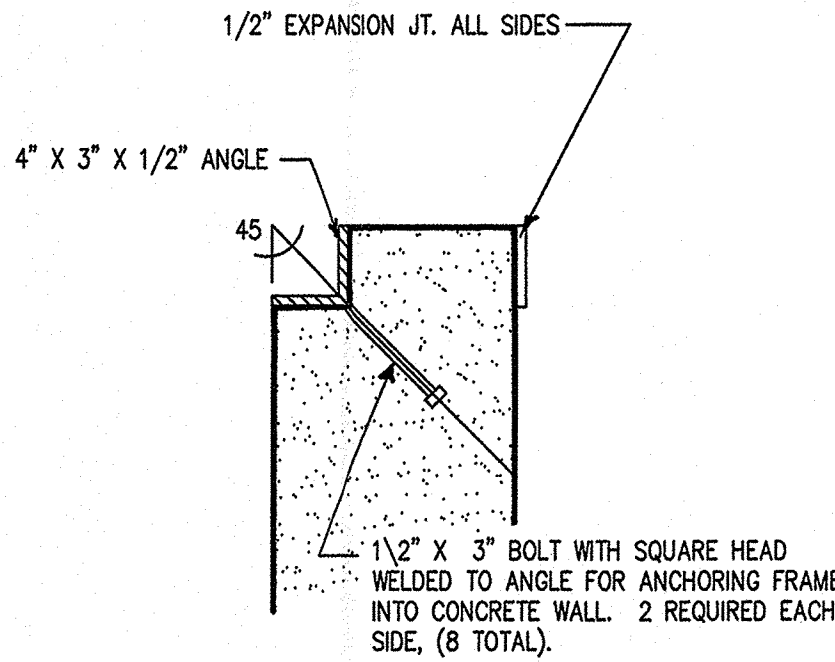
## USE 10" PVC



CURB AT CONCRETE WALK  
NO SCALE



TYPICAL CURB  
NO SCALE



INLET WALL DETAIL "A"  
NO SCALE

# RECTANGULAR CHANNEL ANALYSIS & DESIGN OPEN CHANNEL - UNIFORM FLOW

WORK SHEET NAME : PARCEL B & C  
COMMENT : CONCRETE TROUGH FOR ROOF DISCHARGE FOR C  
SOLVE FOR BOTTOM WIDTH

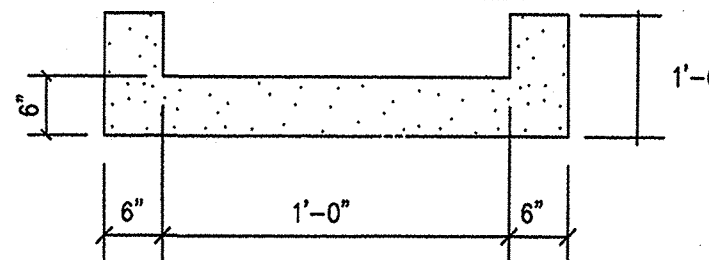
## GIVEN INPUT DATA :

MANNING'S n.....	0.014
CHANNEL SLOPE.....	0.0100 FT/FT
DEPTH.....	0.50 FT
DISCHARGE .....	1.21 CFS

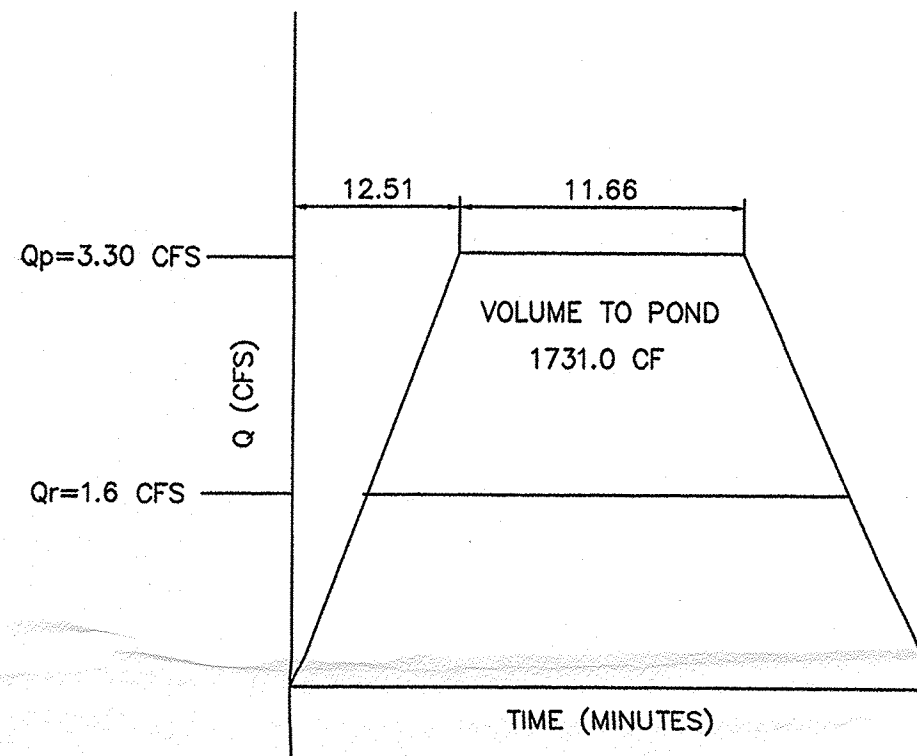
## COMPUTED RESULTS :

BOTTOM WIDTH.....	0.67 FT
VELOCITY.....	3.63 fps
FLOW AREA.....	0.33 sf
FLOW TOP WIDTH.....	0.67 FT
WETTED PERIMETER.....	1.67 FT
CRITICAL DEPTH.....	0.47 FT
CRITICAL SLOPE.....	0.0119 FT/FT
FROUDE NUMBER.....	0.90 (FLOW IS SUBCRITICAL)

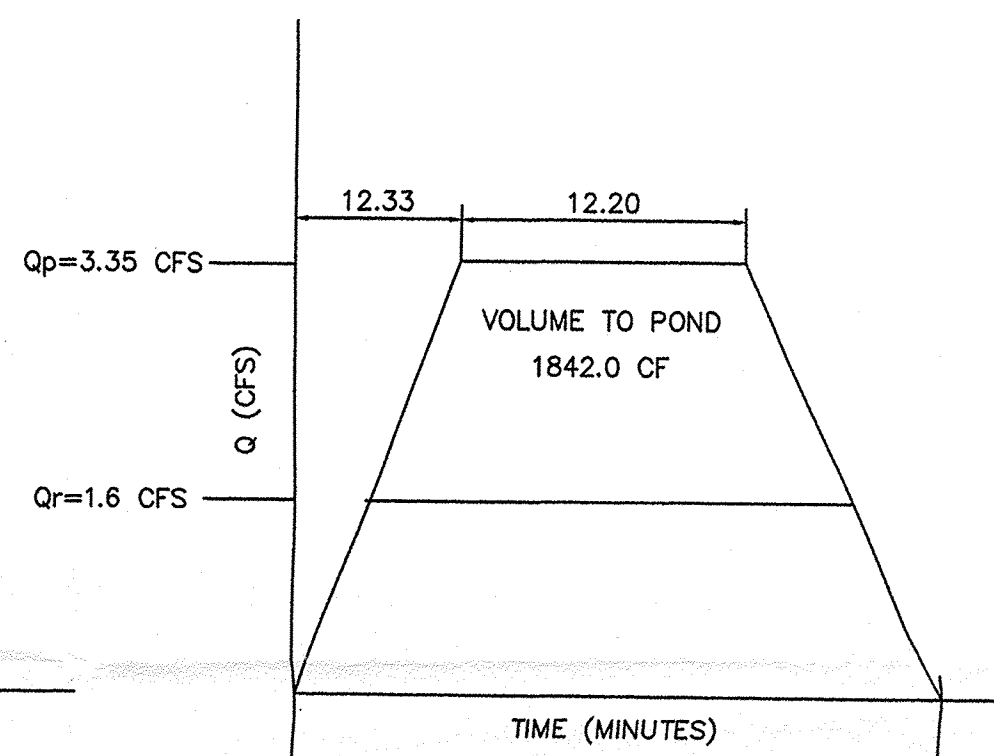
## USE 1'-0" CONCRETE TROUGH



TROUGH DETAIL  
NO SCALE



HYDROGRAPH FOR PARCEL "B"



HYDROGRAPH FOR PARCEL "C"

REQUIRED PONDING : 3573.0 CF  
PONDING PROVIDED : 4035.0 CF  
FREEBOARD : 462.0 CF

## NOTE:

PER A MEETING WITH BRAD BINGHAM ON MAY 23,2000 IT WAS DETERMINED THAT AN ALLOWABLE DISCHARGE RATE OF 1.6 CFS PER PARCEL WAS ACCEPTABLE COMPARED TO THE 1.3 CFS ALLOWED PER THE MASTER DRAINAGE PLAN THEREFORE EACH PARCEL WILL BE ALLOWED 1.6 CFS WITH A TOTAL OF 3.2 CFS FOR BOTH PARCELS.

## EROSION CONTROL MEASURES

THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR MANAGEMENT OF STORM RUN-OFF DURING CONSTRUCTION, HE SHALL ASSURE THAT THE FOLLOWING MEASURES ARE TAKEN:

- ADJACENT PROPERTY SHALL BE PROTECTED AT ALL TIMES BY TEMPORARY BERMS, DIKES, SWALES, AND OTHER TEMPORARY GRADING AS REQUIRED TO PREVENT STORM RUN-OFF FROM LEAVING THE SITE AND ENTERING ADJACENT PROPERTY.
- ADJACENT PUBLIC RIGHT-OF-WAY SHALL BE PROTECTED AT ALL TIMES FROM STORM WATER RUN-OFF FROM THE SITE. NO SEDIMENT BEARING WATER SHALL BE PERMITTED TO ENTER THE PUBLIC STREETS.
- THE CONTRACTOR SHALL IMMEDIATELY AND THOROUGHLY REMOVE ANY OR ALL SEDIMENT WITHIN THE PUBLIC STREETS THAT HAVE BEEN ERODED FROM THE SITE AND DEPOSITED THERE.

## SYMBOL LEGEND

EXISTING CONTOUR	83
PROPOSED CONTOUR	83
DESIGNED SPOT ELEVATION	80.99 80.32
PROPERTY LINE	

EXISTING SPOT ELEVATION 82.5

DOWN SPOUT O

EASEMENT LINE

## ABBREVIATION LEGEND

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

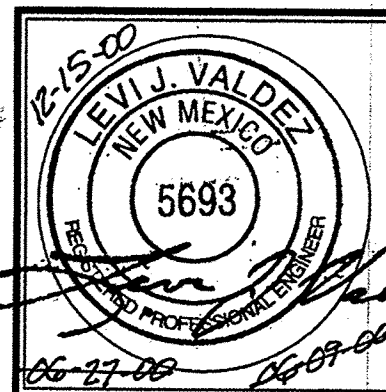
NOTE: "AS-BUILT" ELEVATIONS SHOWN THUS (80.34)

## LEGAL DESCRIPTION

PARCEL "B" AND "C" OF PARCELS "A" THRU "H" OF PASEO DEL NORTE INDUSTRIAL PARK SUBDIVISION, ALBUQUERQUE, NEW MEXICO

## BENCHMARK:

A SQUARE CUT CHISLED ON TOP OF CURB  
SEE DRAINAGE PLAN: ELEVATION 5080.70



JOB NO.	
DATE:	MAY 13,2000
REVISIONS	

Sheet Title  
GRADING & DRAINAGE PLAN  
Drawn By: B.M.  
Checked By:

B.M. DEVELOPMENT CONSULTANT  
DESIGN - PLANNER  
Albuquerque, New Mexico

Project Name  
PARCEL B & C PASEO DEL NORTE  
INDUSTRIAL PARK  
ALBUQUERQUE, NEW MEXICO

SHEET NO. 1 OF 2  
GD