

CITY OF ALBUQUERQUE

Hydrology Section Planning Department
David S. Campbell, Director



Timothy M. Keller, Mayor

June 29, 2018

Ron Bohannon, P.E.
Tierra West, LLC
5571 Midway Park Place, NE
Albuquerque, NM 87109

RE: **Los Pastores Shopping Center
Montgomery/Wyoming
Revised Drainage Report
Engineers Stamp Date: 6/11/2018
Hydrology File: F19D013C**

Dear Mr. Bohannon,

Based on the information provided in your submittal received on 6/11/2018, the Revised Drainage Report shows that the 100 year flows will be contained in the alley without spilling into the residential lots west of the alley, but the cooperation of the residential lot owners must be demonstrated prior to Hydrology approval of the Revised Report for Work Order. The Hydrology Section approval is further conditioned on approval of the plan by the Transportation Section.

The following additional comments must be addressed prior to Hydrology approval of the Revised Report for Work Order.

1. Permanent Public Easements must be recorded to contain the curbs, drive pads, and any necessary grading on the private residential lots west of the alley.
2. An Agreement and covenant must be recorded for maintenance of the curbs, drive pads, and grading on the lots west of the alley.
3. A Drainage Covenant is required for the maintenance of the storm water quality/detention pond.

PO Box 1293

Albuquerque

NM 87103

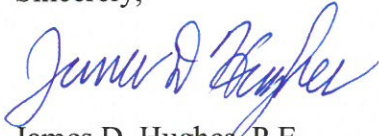
www.cabq.gov

Prior to approval of the McDonalds G&D Plan for Amended Site Plan for Building Permit the following comments must be addressed:

4. It is unclear whether these changes are to be constructed as part of the current Los Pastores Shopping Center Work Order or if they are to be constructed by separate Work Order associated with the McDonalds redevelopment project. Either way the improvements should be shown on the McDonalds G&D Plan with references to which Work Order will be constructing the improvements. If the McDonalds redevelopment is responsible for the improvements then they must be listed on an Infrastructure List and approved by the DRB.
5. If the improvements are to be constructed as part of the Los Pastores Shopping Center Work Order, then revised plans must be submitted to DRC for all of the members to review and approve. Then a formal Change Order must be processed thru DRC.
6. If the McDonalds redevelopment increases flows in the alley they will have to demonstrate capacity for that increased flow rate. Coordination with that separate project is encouraged.

If you have any questions, you can contact me at 924-3686 or jhughes@cabq.gov .

Sincerely,



James D. Hughes, P.E.
Principal Engineer, Planning Dept.
Development and Review Services



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 3/2018)

Project Title: Los Pastores Shopping Center
(NWC Montgomery & Wyoming) **Building Permit #:** _____ **Hydrology File #:** F19D013C
DRB#: _____ **EPC#:** 15EPC-40032 **Work Order#:** _____
Legal Description: Tract A-1 Redivision of TR A (Now Compromising TRS A1 & A2) Los Pastores Shopping Center
City Address: NWC Montgomery & Wyoming Shopping Center

Applicant: Tierra West, LLC **Contact:** Joel Hernandez, PE
Address: 5571 Midway Park Place NE Albuquerque, NM 87109
Phone#: 505-858-3100 **Fax#:** 505-858-1118 **E-mail:** jdherandez@tierrawestllc.com
Other Contact: W&M Company **Contact:** Bill Gunter
Address: 8220 La Mirada Rd. NE, Suite 300 Albuquerque NM
Phone#: 505-296-4146 **Fax#:** 505-296-0907 **E-mail:** billg5469@aol.com

Check all that Apply:

IS THIS A RESUBMITTAL?: ☐ Yes ☐ No

DEPARTMENT:

☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION

TYPE OF SUBMITTAL:

☐ ENGINEER/ARCHITECT CERTIFICATION
☐ PAD CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☐ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☒ DRAINAGE REPORT
☐ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
☐ ELEVATION CERTIFICATE
☐ CLOMR/LOMR

☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)

☒ OTHER (SPECIFY) Drainage Report Addendum
☐ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY

☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☐ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL

☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☐ GRADING PERMIT APPROVAL
☐ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☒ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ FLOODPLAIN DEVELOPMENT PERMIT
☐ OTHER (SPECIFY) _____

DATE SUBMITTED: 6/11/2018 **By:** Joel Hernandez

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

Drainage Management Plan Addendum

Los Pastores Shopping Center

Introduction

The purpose of this Drainage Management Plan Addendum is to address the drainage capacity of the public alley west of the McDonalds parcel. This portion of the alley is located west of Drainage Basin EX-4 and south of Basins PR-1 and PR-2, and was existing public improvement prior to the subdivision of the Los Pastores Shopping Center subdivision and Grading & Drainage Plan approval (Engineer's Stamp Date 5/1/16). The approved grading and drainage design was configured to maintain historic flows (28 CFS at AP#1) to this portion of the alley. At the request of the City, additional improvements are proposed to provide drainage carrying capacity of the historic flows within the public alley. This DMP addendum provides a design for a curb and concrete driveways at gate locations to be processed as a Change Order to drawings per City Project No. 719880 and the hydraulic analysis to demonstrate capacity.

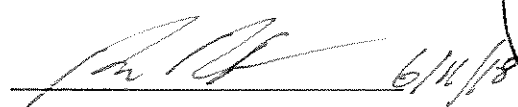
Hydraulic Analysis Methodology

A hydraulic analysis was developed to determine the water surface elevation at 50-foot intervals and determine the minimum required curb and/or driveway elevation the corresponding points along the alley and the limits of improvements upstream. Using survey data as a basis for analysis, cross sections were modeled using FlowMaster for irregular sections.

Included in this report is an "Alley Hydraulics Map" which depicts the survey data used in the analysis, the FlowMaster hydraulic computations, and the improvement plan sheet for construction.

Conclusion

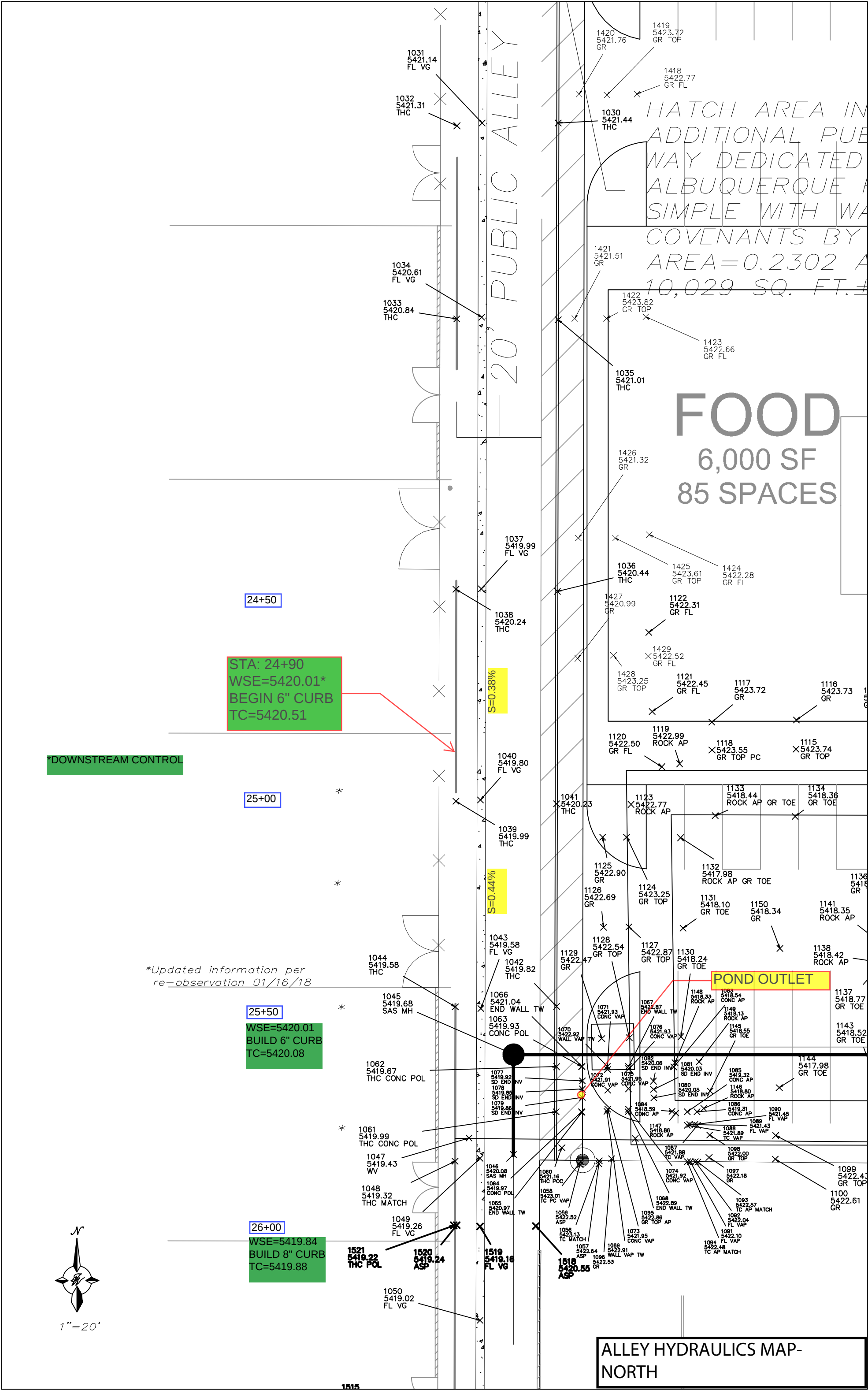
This Drainage Management Plan Addendum provides for additional improvements to the public alley which are capable of safely conveying the 100-year, 6-hour storm with meets the City requirements.

 6/16/18

Ronald R. Bohannon, PE

NO. 7868





ALLEY HYDRAULICS MAP-
NORTH

25+50

WSE=5420.01
BUILD 6" CURB
TC=5420.08

26+00

WSE=5419.84
BUILD 8" CURB
TC=5419.88

26+50

WSE=5419.77
BUILD 9" CURB
TC=5419.85

27+00

WSE=5419.74
BUILD 10" CURB
TC=5419.77

27+50

WSE=5419.55 *
BUILD 8" CURB
TC=5419.55

*Updated information per
re-observation 01/16/18

*DOWNSTREAM CONTROL

28+00

WSE=5419.50
BUILD 8" CURB
TC=5419.55



1"=20'

Tract A-

EXISTING
MCDONALD

ALLEY HYDRAULICS MAP-
SOUTH

Project Description

Input Data

Station (ft)	Elevation (ft)
0+00	20.50
0+00	19.58
0+06	19.58
0+20	19.82

Start Station	Ending Station	Roughness Coefficient
(0+00, 20.50)	(0+20, 19.82)	0.017

Options

Results

Worksheet for 25+50

Results

Velocity	4.02	ft/s
Velocity Head	0.25	ft
Specific Energy	0.68	ft
Froude Number	1.20	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.43	ft
Critical Depth	0.48	ft
Channel Slope	0.00900	ft/ft
Critical Slope	0.00602	ft/ft

Cross Section for 25+50

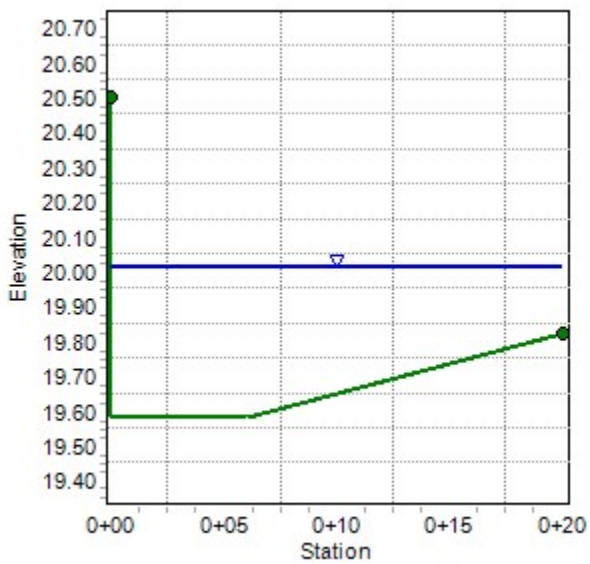
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00900	ft/ft
Normal Depth	0.43	ft
Discharge	28.00	ft ³ /s

Cross Section Image



Worksheet for 26+00

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00650 ft/ft
Discharge 28.00 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00	20.00
0+00	19.24
0+06	19.16
0+20	20.55

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 20.00)	(0+20, 20.55)	0.017

Options

Current Roughness Weighted Method Pavlovskii's Method
Open Channel Weighting Method Pavlovskii's Method
Closed Channel Weighting Method Pavlovskii's Method

Results

Normal Depth 0.71 ft
Elevation Range 19.16 to 20.55 ft
Flow Area 6.54 ft²
Wetted Perimeter 13.80 ft
Hydraulic Radius 0.47 ft
Top Width 13.14 ft
Normal Depth 0.71 ft
Critical Depth 0.73 ft
Critical Slope 0.00562 ft/ft

WSE=5419.87

Worksheet for 26+00

Results

Velocity	4.28	ft/s
Velocity Head	0.29	ft
Specific Energy	0.99	ft
Froude Number	1.07	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.71	ft
Critical Depth	0.73	ft
Channel Slope	0.00650	ft/ft
Critical Slope	0.00562	ft/ft

Cross Section for 26+00

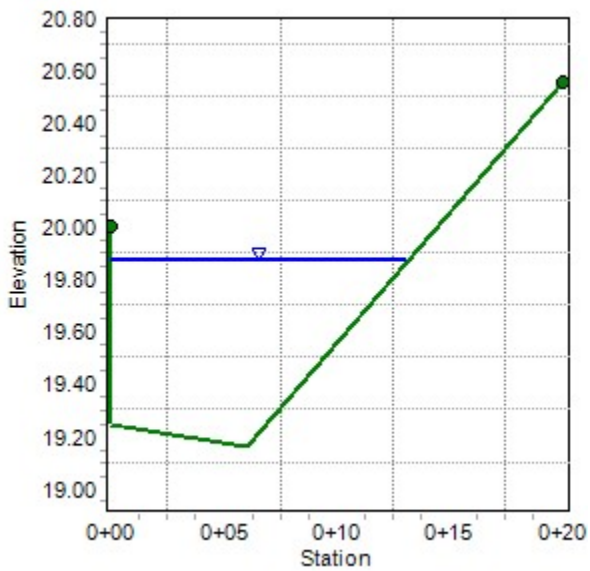
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00650	ft/ft
Normal Depth	0.71	ft
Discharge	28.00	ft ³ /s

Cross Section Image



Worksheet for 26+50

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00260	ft/ft
Discharge	28.00	ft ³ /s
Section Definitions		

Station (ft)	Elevation (ft)
0+00	20.00
0+00	19.10
0+06	18.83
0+20	20.29

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 20.00)	(0+20, 20.29)	0.017

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.94	ft
Elevation Range	18.83 to 20.29 ft	WSE=5419.77
Flow Area	9.07	ft ²
Wetted Perimeter	15.74	ft
Hydraulic Radius	0.58	ft
Top Width	15.02	ft
Normal Depth	0.94	ft
Critical Depth	0.79	ft
Critical Slope	0.00557	ft/ft

Worksheet for 26+50

Results

Velocity	3.09	ft/s
Velocity Head	0.15	ft
Specific Energy	1.09	ft
Froude Number	0.70	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.94	ft
Critical Depth	0.79	ft
Channel Slope	0.00260	ft/ft
Critical Slope	0.00557	ft/ft

Cross Section for 26+50

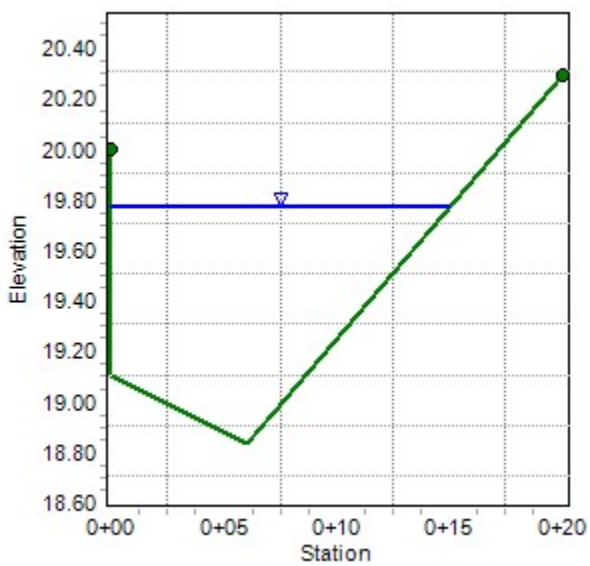
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00260	ft/ft
Normal Depth	0.94	ft
Discharge	28.00	ft ³ /s

Cross Section Image



Project Description

Input Data

Worksheet for 27+00

Results

Velocity	2.75	ft/s
Velocity Head	0.12	ft
Specific Energy	1.16	ft
Froude Number	0.59	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.04	ft
Critical Depth	0.80	ft
Channel Slope	0.00180	ft/ft
Critical Slope	0.00554	ft/ft

Cross Section for 27+00

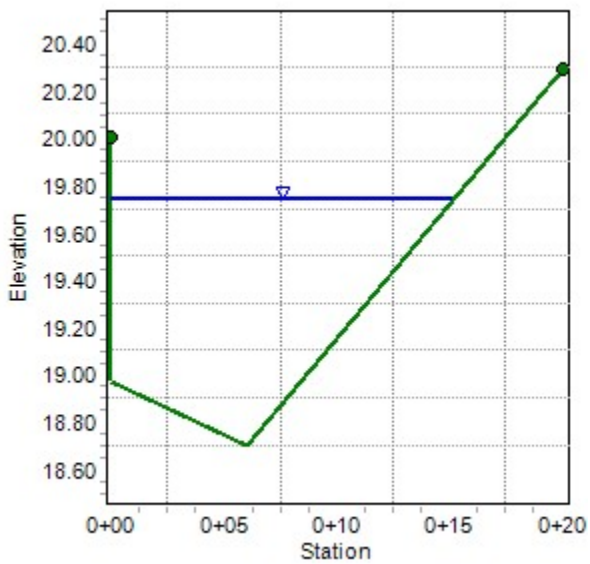
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00180	ft/ft
Normal Depth	1.04	ft
Discharge	28.00	ft ³ /s

Cross Section Image



Worksheet for 27+50

Project Description

Friction Method	Manning Formula
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Solve For	Normal Depth
Q	$Q = 1.486 A R^{2/3} S^{1/2}$
A	$A = \frac{Q}{1.486 R^{2/3} S^{1/2}}$
R	$R = \left(\frac{Q}{1.486 A S^{1/2}} \right)^{3/2}$
S	$S = \left(\frac{Q}{1.486 A R^{2/3}} \right)^2$

Input Data

Channel Slope	0.00420	ft/ft
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Discharge	28.00	ft ³ /s
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Section Definitions

Station (ft)	Elevation (ft)
0+00	20.00
0+00	18.94
0+06	18.61
0+20	19.95

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 20.00)	(0+20, 19.95)	0.017

Options

Current Roughness Weighted Method Pavlovskii's Method

Open Channel Weighting Method Pavlovskii's Method

Closed Channel Weighting Method Pavlovskii's Method

Results

Normal Depth 0.84 ft

Elevation Range 18.61 to 20.00 ft WSE=5419.45

Flow Area	7.78	ft ²
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Wetted Perimeter	15.37	ft
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Hydraulic Radius	0.51	ft
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Top Width	14.81	ft
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Normal Depth 0.84 ft

Critical Depth	0.79	ft
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Critical Slope	0.00559	ft/ft
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Worksheet for 27+50

Results

Velocity	3.60	ft/s
Velocity Head	0.20	ft
Specific Energy	1.04	ft
Froude Number	0.87	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.84	ft
Critical Depth	0.79	ft
Channel Slope	0.00420	ft/ft
Critical Slope	0.00559	ft/ft

Cross Section for 27+50

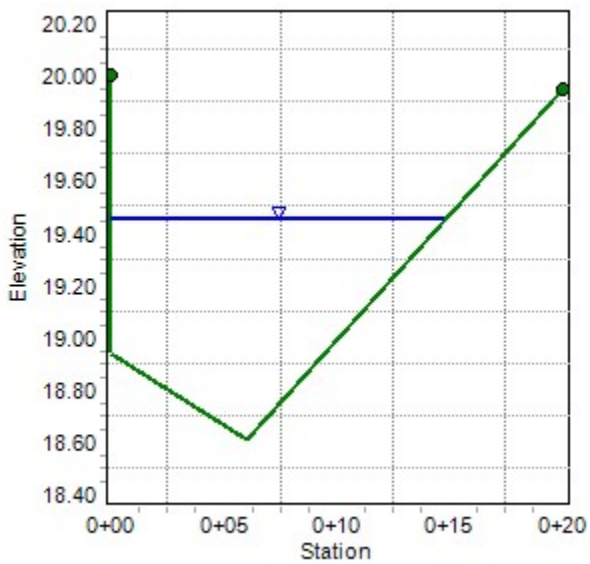
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00420	ft/ft
Normal Depth	0.84	ft
Discharge	28.00	ft ³ /s

Cross Section Image



Worksheet for 28+00

Project Description

Friction Method Manning Formula
Solve For Normal Depth

Input Data

Channel Slope 0.00160 ft/ft
Discharge 28.00 ft³/s
Section Definitions

Station (ft)	Elevation (ft)
0+00	20.00
0+00	18.88
0+06	18.40
0+20	19.87

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 20.00)	(0+20, 19.87)	0.017

Options

Current Roughness Weighted Method Pavlovskii's Method
Open Channel Weighting Method Pavlovskii's Method
Closed Channel Weighting Method Pavlovskii's Method

Results

Normal Depth 1.10 ft
Elevation Range 18.40 to 20.00 ft
Flow Area 10.85 ft² WSE=5419.50
Wetted Perimeter 17.13 ft
Hydraulic Radius 0.63 ft
Top Width 16.44 ft
Normal Depth 1.10 ft
Critical Depth 0.84 ft
Critical Slope 0.00553 ft/ft

Worksheet for 28+00

Results

Velocity	2.58	ft/s
Velocity Head	0.10	ft
Specific Energy	1.20	ft
Froude Number	0.56	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.10	ft
Critical Depth	0.84	ft
Channel Slope	0.00160	ft/ft
Critical Slope	0.00553	ft/ft

Cross Section for 28+00

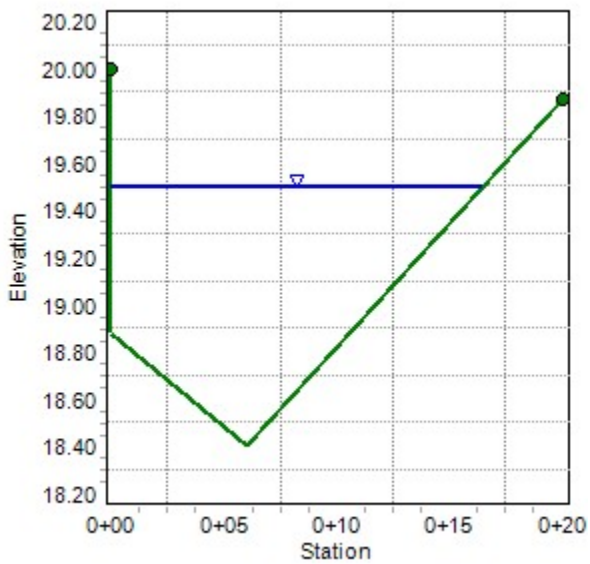
Project Description

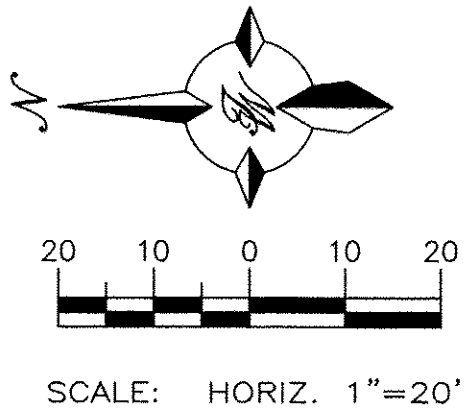
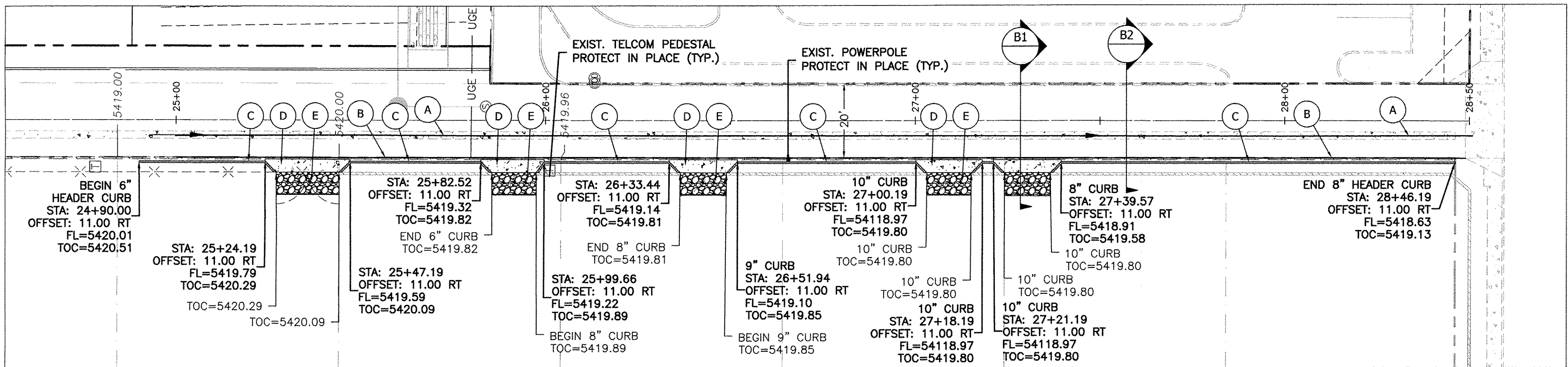
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00160	ft/ft
Normal Depth	1.10	ft
Discharge	28.00	ft ³ /s

Cross Section Image



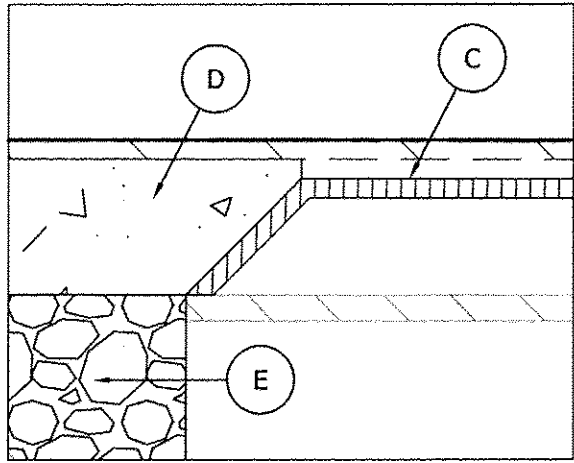


LEGEND

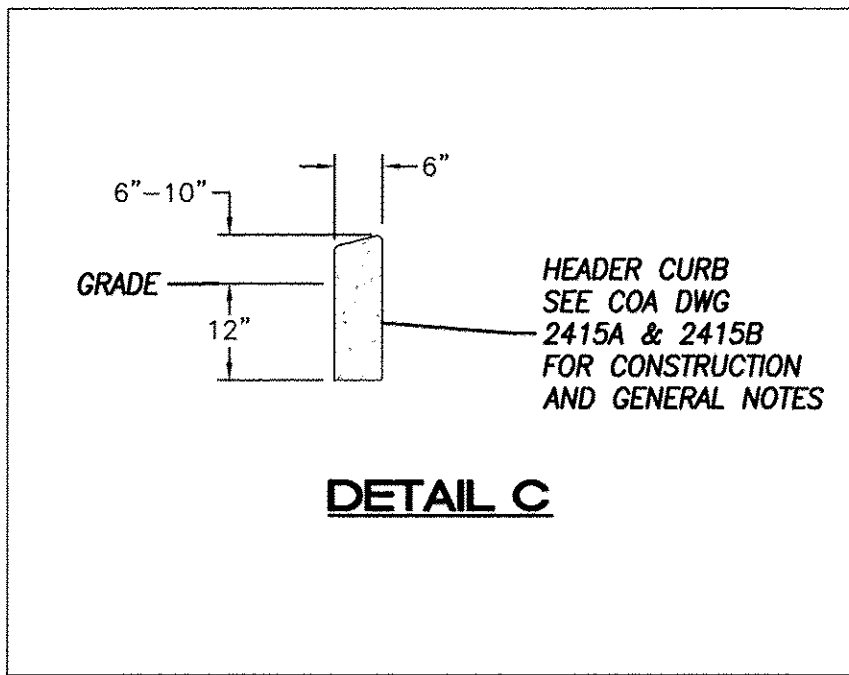
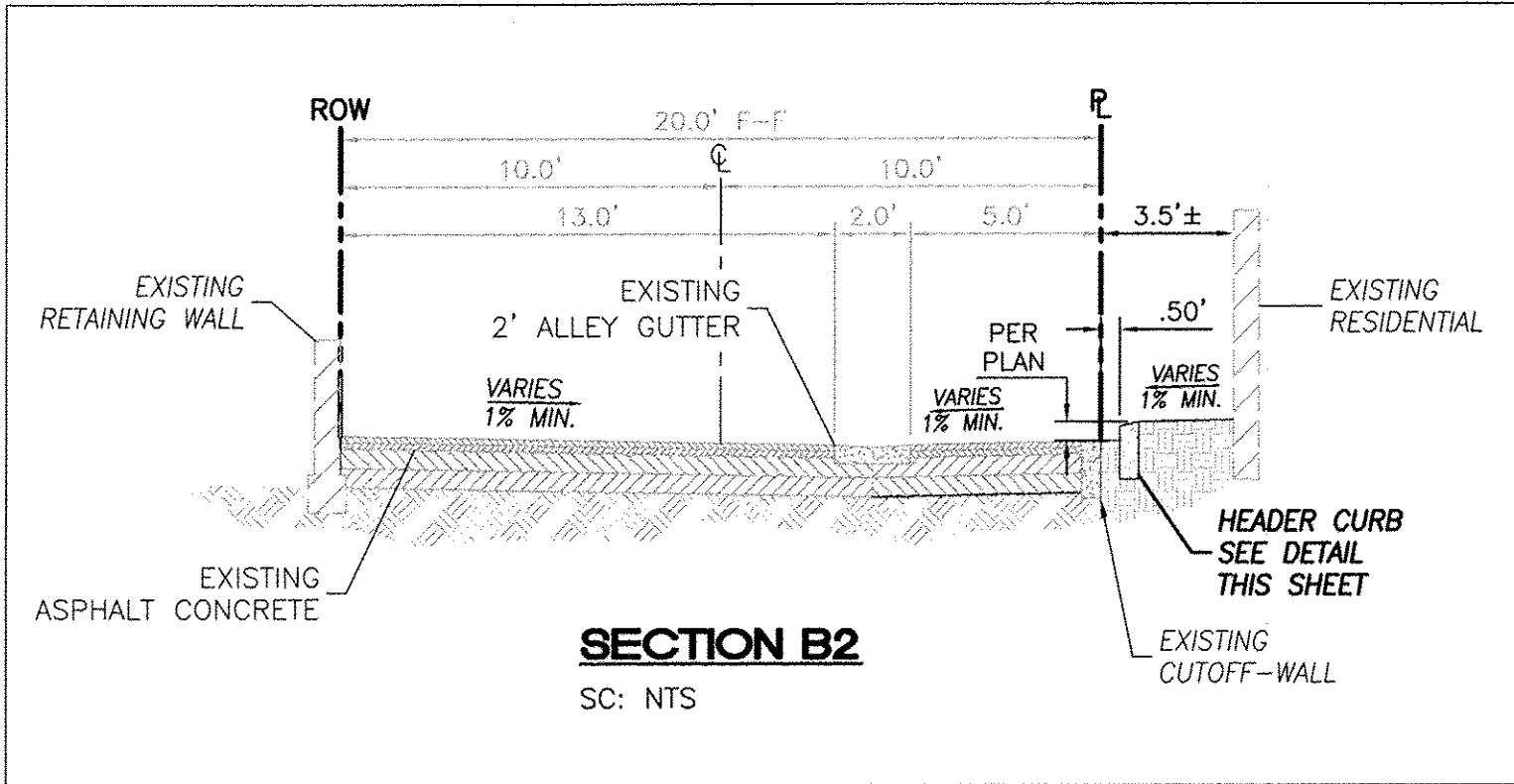
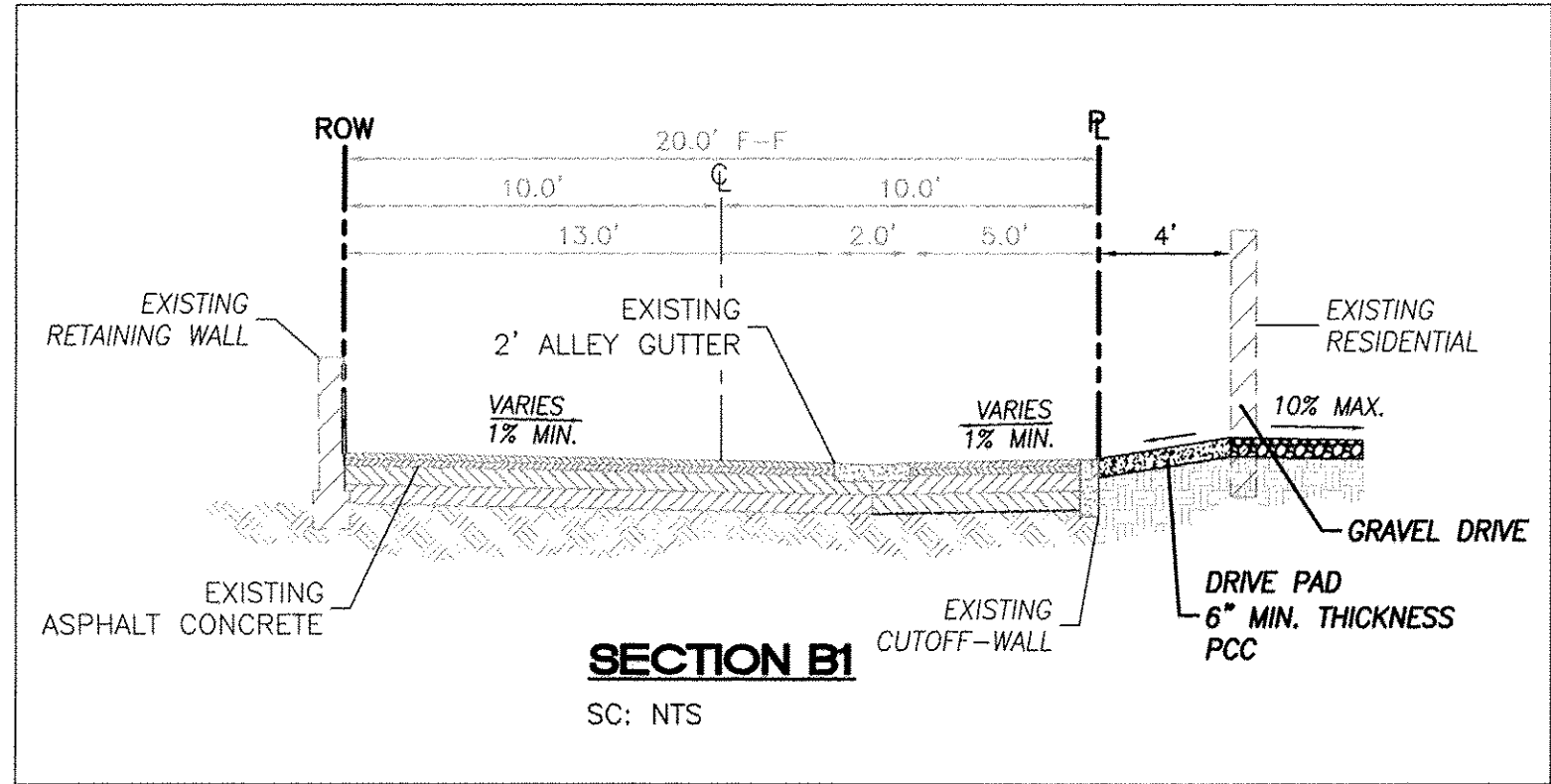
- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- SIDEWALK
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- PROPOSED CONCRETE VALLEY GUTTER
- PROPOSED ASPHALT

KEYED NOTE:

- (A) EXISTING ALLEY 2' VALLEY GUTTER
- (B) EXISTING CUTOFF WALL
- (C) 6" HEADER CURB (SEE DETAIL THIS SHEET)
- (D) DRIVE PAD, PCC, 6" MIN. THICKNESS
- (E) GRAVEL DRIVE



BLOWUP A



CAUTION:

ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

NOTICE TO CONTRACTORS

- AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
- ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HERON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
- TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONNECTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
- BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
- MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
- WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrowestllc.com

CITY OF ALBUQUERQUE PUBLIC WORKS DEPARTMENT ENGINEERING GROUP	
TITLE: LOS PASTORES SHOPPING CENTER PAVING IMPROVEMENTS ALLEY "B" (WEST): STA: 25+15.00 TO 28+46.19	
DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL
LAST DESIGN UPDATE	
CITY PROJECT NO. 719880	
ZONE MAP NO. F-19-Z	
SHEET 8-1 OF 15	