CITY OF ALBUQUERQUE

August 11, 2017

David Soule, PE
Rio Grande Engineering
1606 Central SE Suite 201
Albuquerque, NM 87106

Re: Del Norte Baptist Church
5800 Montgomery Blvd. NE
Grading & Drainage Plan Engineer's Stamp Dated 8/1/17
(G18D010)

Dear Mr. Soule,

Based upon the information provided in the submittal received on 8/2/17 the above-referenced plan cannot be approved for Grading, SO-19, and Paving Permits.

- Correct the Legal description "Lots B, C, and C2B"
- Add the SO-19 notes so that this plan can be used to obtain an SO-19 Permit for the sidewalk culverts, driveways in the public right of ways.
- Clearly indicate limits of removal and disposal on separate sheet.
- Clearly indicate new paving and sidewalks with hatch patterns and curb and gutter types to be constructed this project. Resolve discrepancy between legend and plan view.
- Topo survey needs work. Show existing drive pads, retaining walls, and slope paving more clearly on grading plan.
- Show existing elevation of adjacent properties at least 10' beyond the limits of this site, both contours and elevations.
- Add existing spot elevations all around perimeter next to each proposed elevations. Spots should be spaced about every 50'.
- Add Driveway and HC ramp detail per City Standard Specifications. Provide 0.87' water block height along Montgomery Blvd.
- Sidewalk Easement may be necessary if sidewalk jogs into private property at driveway locations.
- Proposed driveways need to be shown in greater detail with ramps, and construction notes.
- Add more typical sections around perimeter of site. More retaining walls may be needed particularly along the west side of lots C and B. Show existing walls/slopes in sections.

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

- Typical section DD needs more dimensions, show footer, existing ground distance to property line, and max height of retaining. Offset the wall far enough from property line so that the neighbor's property will not be disturbed during construction.
- Add existing ground and dimensions to Section BB
- Provide more sections and details for grading in landscape areas northeast of the building.
- Provide HGL calculations for onsite storm drain and add profile of pipe to the plans showing HGL and label HGL elevations, Q, and V.
- Provide actual flow depth & elevation at inlets. Add emergency overflow depth & elevation calculations for sump inlets and verify freeboard to building floor elevations.
- Provide section, profile, and details of ponds F and G. Make sure they do not drain into the private property west of this site. Provide outfall details.

If you have any questions, you can contact me at 924-3986.

Sincerely,

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

DH
C: email Serna, Yvette; Fox, Debi; Tena, Victoria; Sandoval, Darlene M.

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Del Norte Baptist Church repave project Building Permit #: _____ City Drainage #: _____

DRB#: _____ EPC#: _____ Work Order#: _____

Legal Description: tract b and lot c2b unit 6 alta mont addition

City Address: 5800 Montgomery NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: Del Norte Baptist Church Contact: _____

Address: 5800 Montomery NE alb 87109

Phone#: _____ Fax#: _____ E-mail: _____

Architect: Weller Architects Contact: _____

Address: 401 Alvarado SW alb nm 87103

Phone#: _____ Fax#: _____ E-mail: _____

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

x HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN

x GRADING PLAN

_____ DRAINAGE MASTER PLAN

_____ DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

x 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

x GRADING PERMIT APPROVAL

_____ SO-19 APPROVAL

x PAVING PERMIT APPROVAL

_____ GRADING/ PAD CERTIFICATION

_____ WORK ORDER APPROVAL

_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: _____ Yes x No

DATE SUBMITTED: 8/1/17 By: _____

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

DRAINAGE REPORT

For

DEL NORTE BAPTIST CHURCH

5800 MONTGOMERY BLVD NE

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

SEPTEMBER 2016

David Soule P.E. No. 14522

TABLE OF CONTENTS

Appendix

Map

PURPOSE

The purpose of this report is to provide the Drainage Management Plan for the Re-pavement and pedestrian improvement of a 3.4 acre Church located at 5800 Montgomery NE. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

The subject of this report, as shown on the Exhibit A, is a 3.4 acre parcel of land located on the south side of Montgomery between San Pedro Boulevard and Madeira Drive. The legal description of this site is tract B and lot C2B Unit 6 Altamont Addition. The scope of the project also includes repaving the parking lot at 6100 Montgomery. As shown on FIRM map35013C0139G, the entire site is located within Flood Zone X. The site is a completely developed lot with large parking fields. The site is not impacted by upland flows due to curbs and walls upstream. The site is surrounded by fully developed sites on all sides. The site currently free discharges as sheet flow to Hendrix and Montgomery. The repaving and pedestrian improvements will correct some adverse drainage affecting the building while maintaining existing drainage patterns and incorporating the first flush ordinance requirements. The plan shows the grades for the tract at 6100 Montgomery, but no changes to the drainage are proposed, therefore no analysis of this parcel is proposed.

EXISTING CONDITIONS

The site is currently fully developed and is not impacted by upland flows. The site is located in flood zone x. The site currently discharged flow from east to west. The flow splits around the existing building. The site discharges 5.37 cfs to Montano and 10.30 cfs to Hendrix.

PROPOSED CONDITIONS

The proposed improvements consist of pulverizing the existing asphalt, correcting a poorly draining area on the east entrance to the Church, and adding pedestrian features. In addition to the main building an adjacent conference hall is being milled and overlaid with deteriorated flatwork replaced. The conference center drainage will not change so no analysis is being done and existing conditions will remain. A drainage sub-basin map and hydraulic spread sheet is included in Appendix A. The proposed development will continue to drain from east to west with the same sub basins as existing. An underground drainage system is proposed to correct the drainage issues at the east entrance to the church. The flow from each sub basin A-F are captured by inlets and conveyed to a discharge point at Hendrix. The flow will pass thru sidewalk culverts at the historical locations. Basins G-H will exit to Montgomery via the existing driveway. As shown in Appendix B, the inlets have capacity to capture the peak flow. The storm drain pipe capacity has been shown to covey the entire flow, without flowing under pressure. The outfalls will be constructed utilizing the SO-19 process. The first flush requirement for this site is 3224 cubic feet. The site design provides for 3446 cubic feet. As shown the total discharge to Hendrix is 10.35 which is a .05 cfs increase while the discharge to Montgomery is 5.11 cfs which is a 0.26 cfs reduction. In function, the peak flows will be less due to the harvest ponds and the routing through inlets and pipes, so the .05 cfs increase will be negligible.

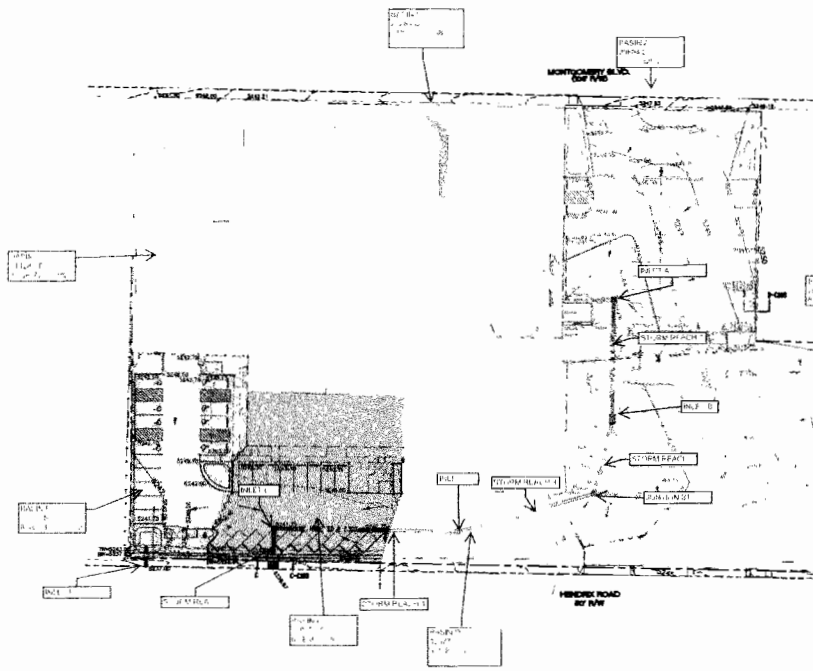
SUMMARY AND RECOMMENDATIONS

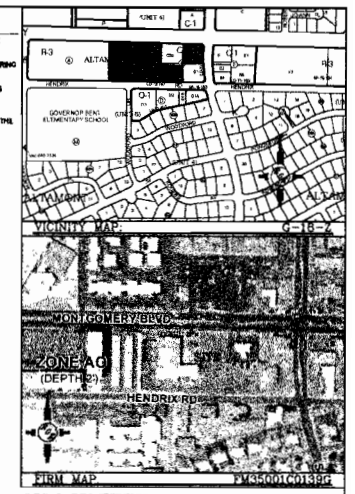
This project is a redevelopment of an existing fully developed lot within fully developed water shed. This site currently has free discharge to both Montgomery and Hendrix. The historical drainage patterns remain, a storm drain has been added to correct a problematic drainage area that affects the existing building. The improvements incorporate water quality ponds to comply with the first flush ordinance. The discharge points will be constructed such that the sidewalk culverts will pass the flow. The development of this site will not negatively impact the upstream

CAUTION:
EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS

EROSION CONTROL NOTES

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT





VICINITY MAP

FIRM MAP

LEGAL DESCRIPTION:

NOTES:
1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.
3. ALL CURB AND GUTTER SHALL BE 6" CURB W/1' GUTTER PAN UNLESS OTHERWISE NOTED. SEE ARCH PLANS FOR DETAILS (SHEET 2)
4. EXISTING PAVEMENT AND CURBS SHALL BE REMOVED. EXISTING ASPHALT SHALL BE MILLED AND INCORPORATED INTO THE 12" SUBGRADE PREPARATION. NEW 3" TYPE B ASPHALT SHALL BE PLACED OVER 9" ABC, PER GEOTECHNICAL REPORT BY GEOTEST. (1/28/2015)

LEGEND
- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED DRAINAGE EASEMENT
- PROPOSED STANDARD CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SCREEN WALL (36" MAX RETAINING)
- PROPOSED RETAINING WALL (HEIGHT VARIES--DESIGN BY OTHERS)
- EXISTING SCREEN WALL

ENGINEER'S SEAL
CHAD SOULE P.E. #14523

Rio Grande Engineering
1006 CENTRAL AVENUE SE
ALBUQUERQUE, NM 87106
(505) 877-1960

DRAWN BY: MCM
DATE: 11-25-16
JOB #: 21435

REV	DATE	DESCRIPTION	BY

Weiler Architects
401 Silverado Circle SE, Suite D, Albuquerque, New Mexico 87102
tel: 505 266 6379 fax: 505 266 6439

DEL NORTE BAPTIST CHURCH
BASIN SHEET

Albuquerque, New Mexico — 11.28.2016

SHEET #

Weighted E Method

Basin	Area (sf)	Area (acres)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	100-Year, 6-hr. Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
EXISTING	147174.00	3.379	0%	0	10%	0.338	9%	0.30408	81%	2.737	2.120	0.597	15.67
EXISTING TO MONT	50412.00	1.157	0%	0	10%	0.116	9%	0.10416	81%	0.937	2.120	0.204	5.37
EXISTING TO HENDRIX	96762.00	2.221	0%	0	10%	0.222	9%	0.19992	81%	1.799	2.120	0.392	10.30
PROPOSED A	20604.00	0.473	0%	0	0%	0.000	18%	0.08514	82%	0.388	2.167	0.085	2.24
PROPOSED B	26295.00	0.604	0%	0	0%	0.000	9%	0.05433	91%	0.549	2.264	0.114	2.95
PROPOSED C	15301.00	0.351	0%	0	0%	0.000	17%	0.05971	83%	0.292	2.178	0.064	1.67
PROPOSED D	12377.00	0.284	0%	0	38%	0.108	10%	0.02841	52%	0.148	1.706	0.040	1.12
PROPOSED E	12015.00	0.276	0%	0	6%	0.017	8%	0.02207	86%	0.237	2.188	0.050	1.31
PROPOSED F	10170.00	0.233	0%	0	8%	0.019	13%	0.03035	79%	0.184	2.106	0.041	1.08
PROPOSED G	21128.00	0.485	0%	0	16%	0.078	7%	0.03395	77%	0.373	2.055	0.083	2.19
PROPOSED H	29284.00	0.672	0%	0	21%	0.141	11%	0.07395	68%	0.457	1.940	0.109	2.92
TOTAL PROPOSED	147174.00	3.379	0%	0	11%	0.362	11%	0.388	78%	2.629			15.48
change		0.000		0.000		0.024		0.084		-0.108			-0.19

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm

Ea=	0.66	Qa=	1.87
Eb=	0.92	Qb=	2.6
Ec=	1.29	Qc=	3.45
Ed=	2.36	Qd=	5.02

FLOW RATE LEAVING SITE	PROPOSED	EXISTING
HENDRIX	10.37 CFS	10.30
MONTGOMERY	5.11 CFS	5.37

	REQUIRED	PROVIDED
WATER HARVEST	3244 CF	3446 CF

	FLOW	CAPACITY
INLET A	2.24 CFS	11.20
REACH 1	2.24 CFS	3.55
INLET B	2.95 CFS	32.04
REACH 2	5.19 CFS	5.77
REACH 3	5.19 CFS	5.77
INLET D	1.12 CFS	2.39
REACH 4	6.31 CFS	8.70
INLET E	1.31 CFS	2.22
REACH 5	7.62 CFS	8.70
INLET F	1.08 CFS	2.39

DROP INLET CALCULATIONS

INLET	TYPE OF INLET	AREA (SF)	Q (CFS)	H (FT)	H ALLOW (FT)
INLET A	SINGLE	3.84	4.48	0.0587	0.37
INLET B	DOUBLE	7.68	5.9	0.0255	0.75

ORIFICE EQUATION

Q = CA sqrt(2gH)

C = 0.6

g = 32.2

FLOW RATES ARE DOUBLED

CHANNEL CAPACITY

	Top Width	Bottom Width	Depth	Area	WP	R	Slope	Q Provided	Q Required	Velocity
	(ft)	(ft)	(ft)	(ft^2)	(ft)		(%)	(cfs)	(cfs)*	(ft/s)
east culvert	2	2	0.67	1.34	3.34	0.4011976	2	4.39	2.90	2.16
west culdrt	2	2	0.67	1.34	3.34	0.4011976	2	4.39	2.39	1.78

Manning's Equation:

Q = 1.49/n * A * R^(2/3) * S^(1/2)

A = Area

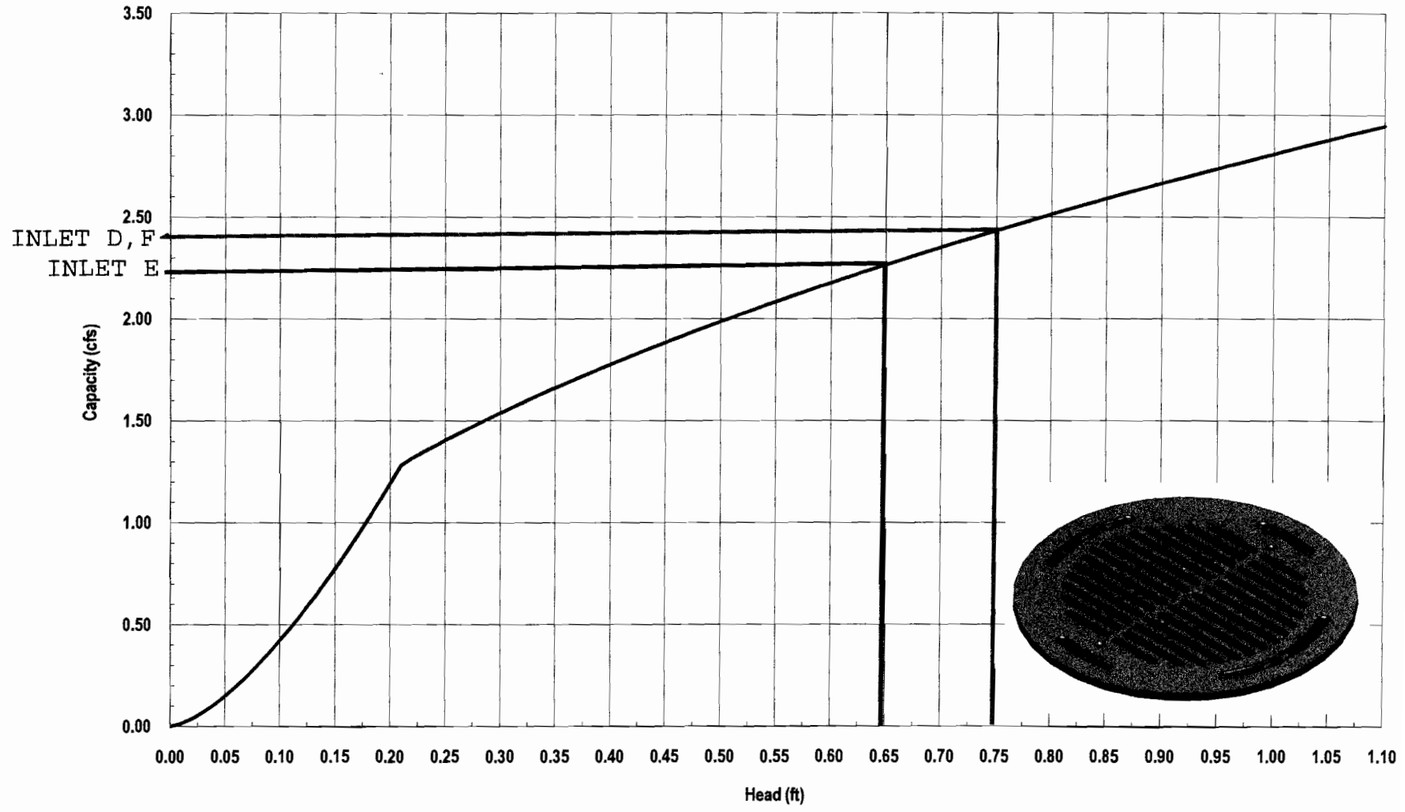
R = D/4

S = Slope

n = 0.035

* flow divided equally into each culvert

Nyloplast 18" Drop In Grate Inlet Capacity Chart



INLET CAPACITY
A=2.22 CFS
D,F=2.39 CFS

Nyloplast®
3130 Verona Avenue • Buford, GA 30518
(866) 888-8479 / (770) 932-2443 • Fax: (770) 932-2490

CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.

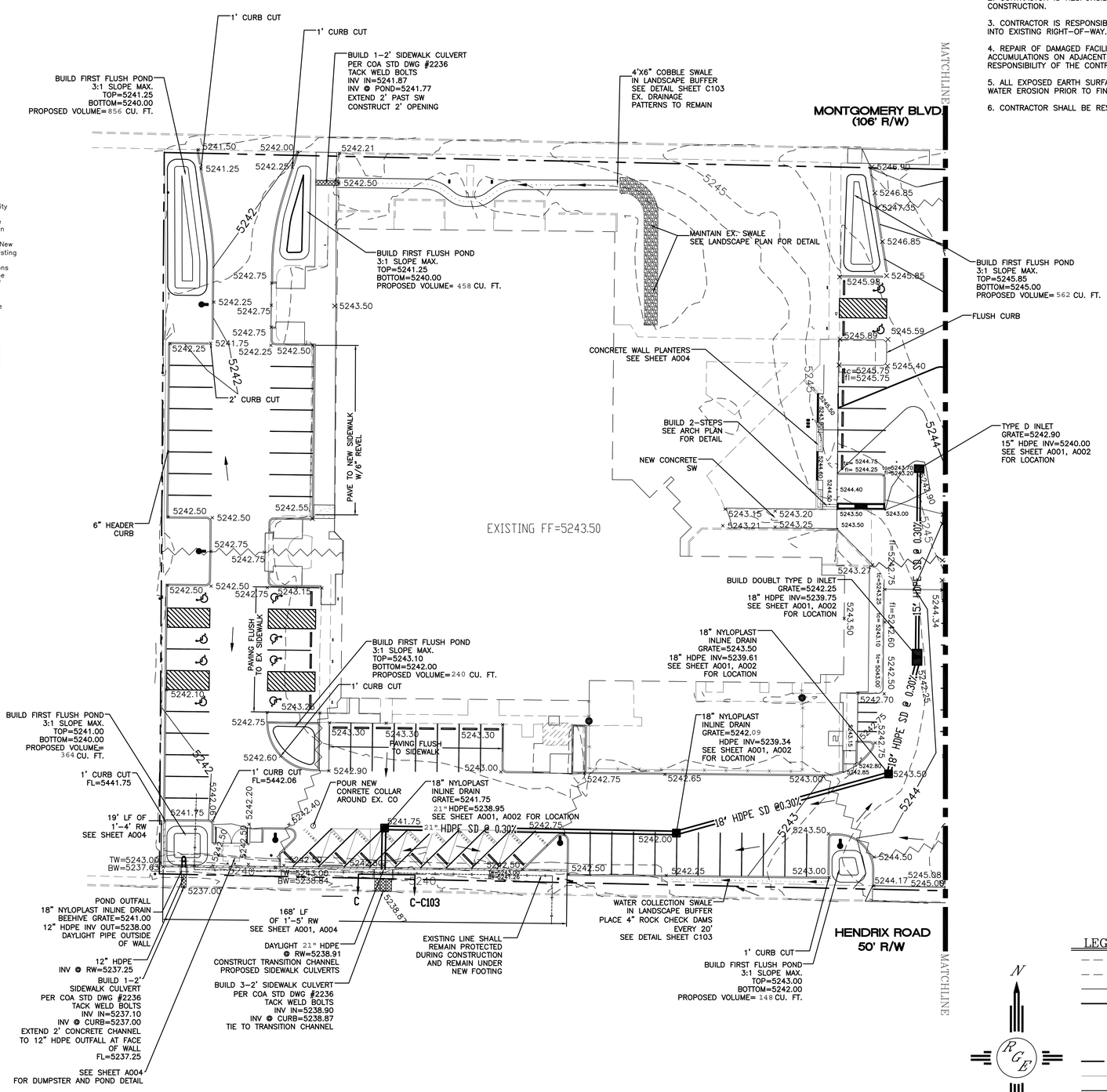
PRIVATE DRAINAGE IMPROVEMNET IN PUBLIC ROW

NOTICE TO CONTRACTORS

Notice to Contractor
(Special Order 19 ~ "SO-19")

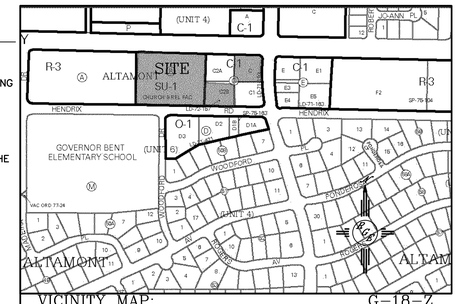
1. An excavation permit will be required before beginning any work within City Right-Of-Way.
2. All work on this project shall be performed in accordance with applicable federal, state and local laws, rules and regulations concerning construction safety and health.
3. Two working days prior to any excavation, the contractor must contact New Mexico One Call, dial "811" [or (505) 260-1990] for the location of existing utilities.
4. Prior to construction, the contractor shall excavate and verify the locations of all obstructions. Should a conflict exist, the contractor shall notify the engineer so that the conflict can be resolved with a minimum amount of delay.
5. Backfill compaction shall be according to traffic/street use.
6. Maintenance of the facility shall be the responsibility of the owner of the property being served.
7. Work on arterial streets shall be performed on a 24-hour basis.
8. Prior to pouring concrete, contractor shall notify the storm drain inspector, 857-8074, to inspect reinforcement.

APPROVAL	NAME	DATE
INSPECTOR		



EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.
6. CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN AND MAINTAIN SWPPP.



VICINITY MAP: G-18-Z

FIRM MAP: FM35001C0139G

LEGAL DESCRIPTION:

lot 8 and c2b altamont addition

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.
2. ALL RETAINING WALL DESIGN SHALL BE BY ARCHITECT.
3. ALL CURB AND GUTTER SHALL BE 6" CURB, UNLESS OTHERWISE NOTED. SEE SHEET C103 FOR DETAIL.
4. EXISTING PAVMENTS AND CURBS SHALL BE REMOVED, UNLESS OHTERWISE NOTED
5. SEE ARCHITECTURAL SITE PLAN FOR ALL PLANTER AND PATTERN CONCRETE LOCATIONS AND DETAILS.
6. EXISTING ASPHALT PAVEMENT SHALL BE CRUSHED AND SCREENED FOR USE AS A PART OF THE GRADED MIXTURE FOR BASE COURSE. NEW 4 TO 5 INCH THICKNESS OF COMPACTED BASE COURSE SHALL BE A GRADED MIXTURE OF CRUSHED EXISTING ASPHALT AND EXISTING SUBGRADE SOILS. NEW 3 INCH TYPE B ASPHALT PAVEMENT SHALL BE PLACED OVER THE PREPARED BASE COURSE.

LEGEND

- EXISTING CONTOUR
- EXISTING INDEX CONTOUR
- PROPOSED CONTOUR
- PROPOSED INDEX CONTOUR
- SLOPE TIE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED DRAINAGE EASEMENT
- PROPOSED STANDARD CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SCREEN WALL (18" MAX RETAINAGE)
- PROPOSED RETAINING WALL (HEIGHT VARIES-DESIGN BY OTHERS)
- EXISTING SCREEN WALL

REV	DATE	DESCRIPTION	BY

Rio Grande Engineering
1606 CENTRAL AVENUE SE SUITE 201 ALBUQUERQUE, NM 87106 (505) 972-0999

ENGINEER'S SEAL
DAVID SOULE P.E. #14522

Weller Architects
401 Alvarado Drive SE, Suite D Albuquerque, New Mexico 87108
tel 505 255 8270 fax 505 255 8830

DEL NORTE BAPTIST CHURCH
SITE IMPROVEMENTS
Albuquerque New Mexico

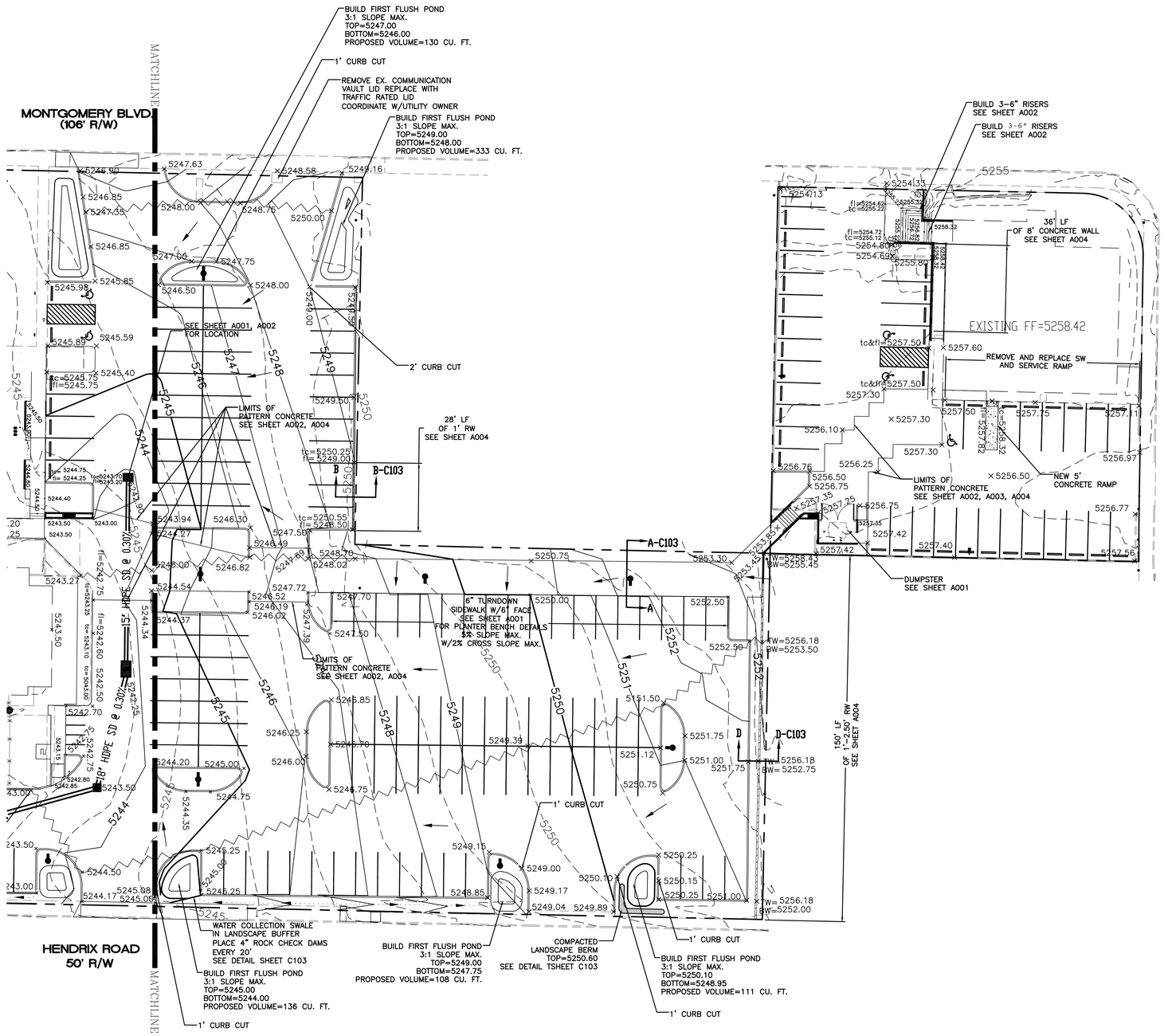
RGE Project No: 21635
Drawn By: WOWJ
Checked By: ds
Date: 05.26.2017

GRADING AND DRAINAGE PLAN WEST

Sheet No. C101
SHEET OF

CAUTION:

EXISTING UTILITIES ARE NOT SHOWN. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO ANY EXCAVATION TO DETERMINE THE ACTUAL LOCATION OF UTILITIES & OTHER IMPROVEMENTS.



EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.

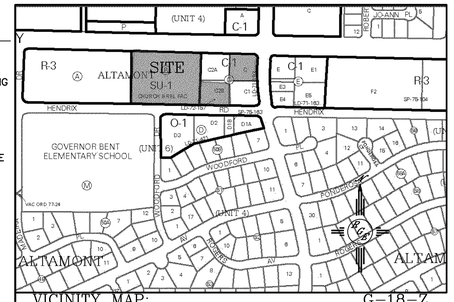
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.

3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.

4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WIND AND WATER EROSION PRIOR TO FINAL ACCEPTANCE OF ANY PROJECT.

6. CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN AND MAINTAIN SWPPP.



VICINITY MAP: G-18-Z

FIRM MAP: FM35001C0139G

LEGAL DESCRIPTION:

lot 8 and c2b altamont addition

NOTES:

1. ALL SPOT ELEVATIONS REPRESENT FLOWLINE ELEVATION UNLESS OTHERWISE NOTED.

2. ALL RETAINING WALL DESIGN SHALL BE BY ARCHITECT.

3. ALL CURB AND GUTTER SHALL BE 6" CURB, UNLESS OTHERWISE NOTED. SEE SHEET C103 FOR DETAIL.

4. EXISTING PAVMENTS AND CURBS SHALL BE REMOVED, UNLESS OHTERWISE NOTED

5. SEE ARCHITECTURAL SITE PLAN FOR ALL PLANTER AND PATTERN CONCRETE LOCATIONS AND DETAILS.

6. EXISTING ASPHALT PAVEMENT SHALL BE CRUSHED AND SCREENED FOR USE AS A PART OF THE GRADED MIXTURE FOR BASE COURSE. NEW 4 TO 5 INCH THICKNESS OF COMPACTED BASE COURSE SHALL BE A GRADED MIXTURE OF CRUSHED EXISTING ASPHALT AND EXISTING SUBGRADE SOILS. NEW 3 INCH TYPE B ASPHALT PAVEMENT SHALL BE PLACED OVER THE PREPARED BASE COURSE.

N

20 10 0 10 20

SCALE: 1"=20'

LEGEND

- EXISTING CONTOUR (5414)
- EXISTING INDEX CONTOUR (5415)
- PROPOSED CONTOUR (5414)
- PROPOSED INDEX CONTOUR (5415)
- SLOPE TIE
- EXISTING SPOT ELEVATION (× 4048.25)
- PROPOSED SPOT ELEVATION (× 4048.25)
- BOUNDARY
- CENTERLINE
- RIGHT-OF-WAY
- PROPOSED DRAINAGE EASEMENT
- PROPOSED STANDARD CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SCREEN WALL (18" MAX RETAINAGE)
- PROPOSED RETAINING WALL (HEIGHT VARIES-DESIGN BY OTHERS)
- EXISTING SCREEN WALL

REV	DATE	DESCRIPTION	BY

Rio Grande Engineering
1606 CENTRAL AVENUE SE SUITE 201 ALBUQUERQUE, NM 87106 (505) 872-0999

ENGINEER'S SEAL
DAVID SOULE P.E. #14522

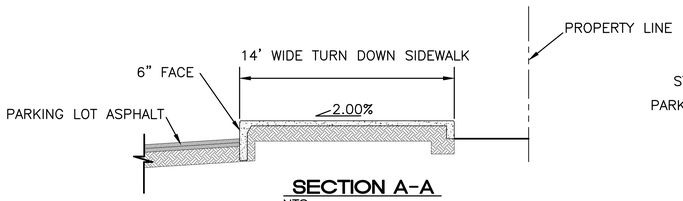
Weller Architects
401 Alvarado Drive SE, Suite D Albuquerque, New Mexico 87108
tel 505 255 8270 fax 505 255 8830

DEL NORTE BAPTIST CHURCH
SITE IMPROVEMENTS
Albuquerque New Mexico

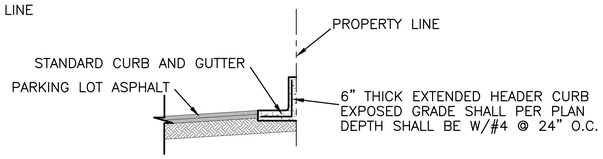
RGE Project No.: 21635
Drawn By: WCWJ
Checked By: ds
Date: 05.26.2017

GRADING AND DRAINAGE PLAN EAST

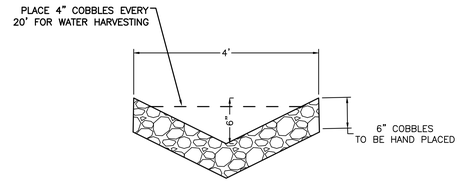
Sheet No.: C102
SHEET OF



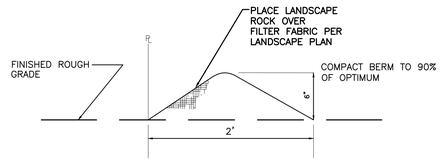
SECTION A-A
NTS



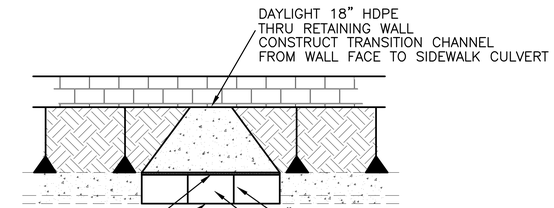
SECTION B-B
NTS



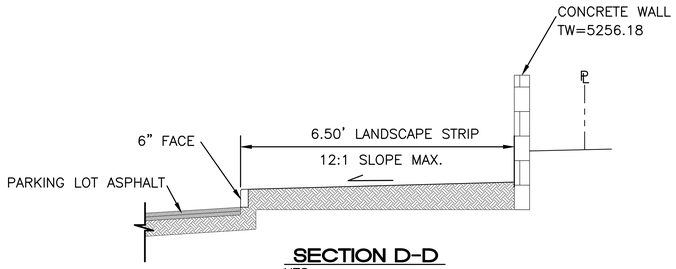
WATER COLLECTION SWALE DETAIL
NTS



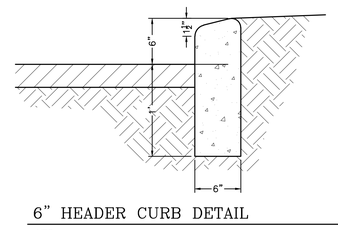
LANDSCAPE BERM DETAIL
NTS



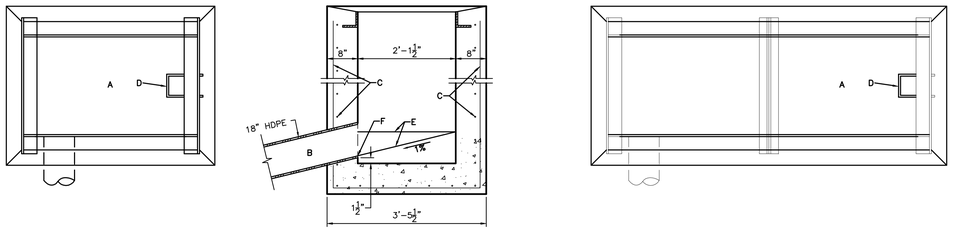
SECTION C-C
NTS



SECTION D-D
NTS



6" HEADER CURB DETAIL
NTS



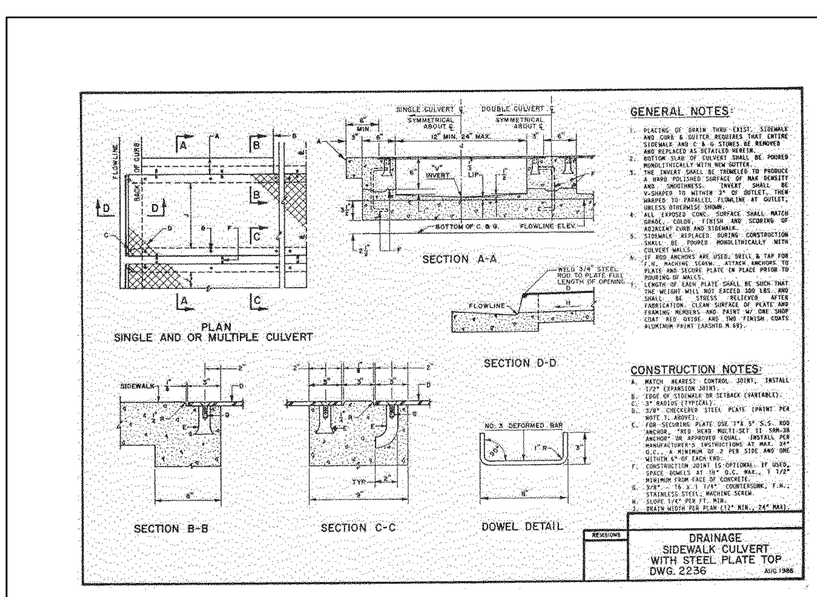
GENERAL NOTES:

1. STORM INLET CUTTER TRANSITION WILL BE SHOWN ON THE CONSTRUCTION PLANS.
2. OUTLET PIPE, PER DESIGN REQUIREMENT.
3. FOR FRAME & GRATING, SEE DWG. 2216, 2220 & 2221
3. SEE GD PLAN FOR PIPE AND GRATE ORIENTATION

CONSTRUCTION NOTES:

A. FRAME & GRATE
B. CUT ONE HORIZONTAL AND ONE VERTICAL BAR MAX. AT PIPE OPENING.
C. NO. 4 BARS @ 6" O.C. EACH WAY
D. USE STANDARD STEPS, SEE DWG 2229.
E. CONC. FILL, SEE NOTE C DWG 2201
F. INVERT PER DESIGN
G. INSTALL STEPS ON DOWNSTREAM FACE
H. CENTER SUPPORT ASSEMBLY

TYPE D INLET
SEE COA STD DWGS UPDATE 9



REV	DATE	DESCRIPTION	BY

Rio Grande Engineering
1606 CENTRAL AVENUE SE
SUITE 101
ALBUQUERQUE, NM 87106
(505) 872-0999

ENGINEER'S SEAL
DAVID SOULE
P.E. #14522

Weller Architects
401 Alvarado Drive SE, Suite D
Albuquerque, New Mexico 87108
tel 505 255 8270
fax 505 255 8830

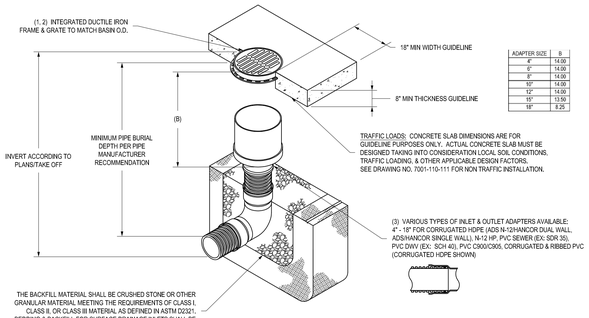
DEL NORTE BAPTIST CHURCH
STORM DRAIN ME

Albuquerque New Mexico

RGE Project No. 21635
Drawn By: WOWJ
Checked By: ds
Date: 05.26.2017

Sheet No.
C103
SHEET OF

NYLOPLAST 18" INLINE DRAIN: 2718AG _ _ X



ADAPTER SIZE	B
4"	14.00
6"	14.00
8"	14.00
10"	14.00
12"	14.00
15"	13.56
18"	8.25

GRATE OPTIONS	LOAD RATING	PART #	DRAWING #
PEDESTRIAN	MEETS H-10	1899CGP	7001-110-212
STANDARD	MEETS H-20	1899CGS	7001-110-213
SOLID COVER	MEETS H-20	1899CGC	7001-110-214
DOME	N/A	1899CGD	7001-110-215
DROP IN GRATE	LIGHT DUTY	1801CI	7001-110-074

1 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
3 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12®/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.
4 - DIMENSIONS ARE FOR REFERENCE ONLY. ACTUAL DIMENSIONS MAY VARY.
5 - DIMENSIONS ARE IN INCHES
6 - SEE DRAWING NO. 7001-110-275 FOR ADS N-12 & HANCOR DUAL WALL BELL INFORMATION & DRAWING NO. 7001-110-369 FOR N-12 HP BELL INFORMATION.

DRAWN BY	EBC	MATERIAL	
DATE	04-03-06		
REVISED BY	MWH	PROJECT NO./NAME	
DATE	03-15-16		
DWG SIZE	A	SCALE 1:30	SHEET 1 OF 1

Nyloplast
3126 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplastusa.com

TITLE: 18 IN INLINE DRAIN QUICK SPEC INSTALLATION DETAIL

DWG NO. 7003-110-027 REV E

Section 2722

Engineered Surface Drainage Products

GENERAL
PVC surface drainage inlets shall be of the inline drain type as indicated on the contract drawing and referenced within the contract specifications. The ductile iron grates for each of these fittings are to be considered an integral part of the surface drainage inlet and shall be furnished by the same manufacturer. The surface drainage inlets shall be as manufactured by Nyloplast a division of Advanced Drainage Systems, Inc., or prior approved equal.

MATERIALS
The inline drain required for this contract shall be manufactured from PVC pipe stock, utilizing a thermo-molding process to reform the pipe stock to the furnished configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The flexible elastomeric seals shall conform to ASTM F477. The pipe bell spigot shall be joined to the inline drain body by use of a **swage mechanical joint**. The raw material used to manufacture the pipe stock that is used to manufacture the inline drain body and pipe stubs of the surface drainage inlets shall conform to ASTM D1784 cell class 12454.

The grates furnished for all surface drainage inlets shall be ductile iron grates for sizes 8", 10", 12", 15", 18", 24" and 30" shall be made specifically for each fitting so as to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Grates for inline drains shall be capable of supporting H-20 wheel loading for traffic areas or H-10 loading for pedestrian areas. 12" and 15" square grates will be hinged to the frame using pins. Metal used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05 for ductile iron. Grates shall be provided painted black.

INSTALLATION
The specified PVC surface drainage inlet shall be installed using conventional flexible pipe backfill materials and procedures. The backfill material shall be crushed stone or other granular material meeting the requirements of class 1, class 2, or class 3 material as defined in ASTM D2321. Bedding and backfill for surface drainage inlets shall be well placed and compacted uniformly in accordance with ASTM D2321. The drain basin body will be cut at the time of the final grade. No brick, stone or concrete block will be required to set the grate to the final grade height. For H-20 load rated installations, a concrete ring will be poured under and around the grate and frame. The concrete slab must be designed taking into consideration local soil conditions, traffic loading, and other applicable design factors. For other installation considerations such as migration of fines, ground water, and soft foundations refer to ASTM D2321 guidelines.

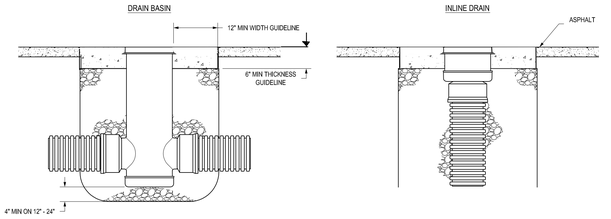
DRAWN BY	CJA	MATERIAL	
DATE	03-10-05		
REVISED BY	MWH	PROJECT NO./NAME	
DATE	03-15-16		
DWG SIZE	A	SCALE 1:1	SHEET 1 OF 1

Nyloplast
3126 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplastusa.com

TITLE: 8 IN - 30 IN INLINE DRAIN SPECIFICATIONS

DWG NO. 7003-110-009 REV H

ASPHALT INSTALLATION



STRUCTURE SIZE	N-10 GRATE OPTIONS
12"	PEDESTRIAN
15"	PEDESTRIAN
18"	PEDESTRIAN
24"	PEDESTRIAN

1 - THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I, CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321, BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.
2 - MEDIUM DUTY TRAFFIC LOADS: CONCRETE SLAB DIMENSIONS ARE FOR GUIDELINE PURPOSES ONLY. ACTUAL CONCRETE SLAB MUST BE DESIGNED TAKING INTO CONSIDERATION LOCAL SOIL CONDITIONS, TRAFFIC LOADING, & OTHER APPLICABLE DESIGN FACTORS.

DRAWN BY	EBC	MATERIAL	
DATE	03-14-16		
REVISED BY	MWH	PROJECT NO./NAME	
DATE	03-14-16		
DWG SIZE	A	SCALE 1:25	SHEET 1 OF 1

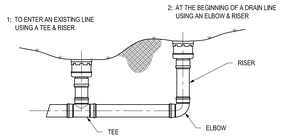
Nyloplast
3126 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplastusa.com

TITLE: DRAIN BASIN & INLINE DRAIN (N-12 TRAFFIC LOAD) ASPHALT INSTALLATION DETAIL

DWG NO. 7001-110-392 REV D

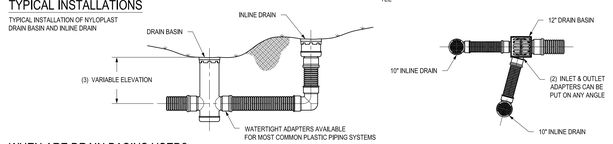
WHEN ARE INLINE DRAINS USED?

2708AG _ _ X
2710AG _ _ X
2712AG _ _ X
2715AG _ _ X
2718AG _ _ X
2724AG _ _ X
2730AG _ _ X



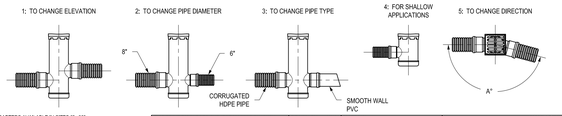
TYPICAL INSTALLATIONS

TYPICAL INSTALLATION OF NYLOPLAST DRAIN BASIN AND INLINE DRAIN



WHEN ARE DRAIN BASINS USED?

2808AG _ _ X
2810AG _ _ X
2812AG _ _ X
2815AG _ _ X
2818AG _ _ X
2824AG _ _ X
2830AG _ _ X



1 - STRUCTURES & ADAPTERS AVAILABLE IN SIZES 8" - 30"
2 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS SEE DRAWING NO. 7001-110-065

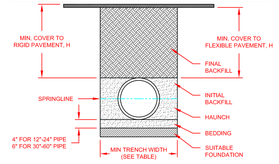
DRAWN BY	AWA	MATERIAL	
DATE	8-15-00		
REVISED BY	EBC	PROJECT NO./NAME	
DATE	1-6-10		
DWG SIZE	A	SCALE 1:40	SHEET 1 OF 1

Nyloplast
3126 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplastusa.com

TITLE: 8 IN - 30 IN TYPICAL INSTALLATION OPTIONS

DWG NO. 7001-110-042 REV D

HP STORM TRENCH INSTALLATION DETAIL



NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS". LATEST ADDITION, WITH THE EXCEPTION THAT THE INITIAL BACKFILL MAY EXTEND TO THE CROWN OF THE PIPE. SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION OF ASTM D2321. CLASS IVB MATERIALS (MH, CH) AS DEFINED IN PREVIOUS VERSIONS OF ASTM D2321 ARE NOT APPROPRIATE BACKFILL MATERIALS.
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, III, OR IV. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 12"-24" (300mm-600mm) DIAMETER PIPE; 6" (150mm) FOR 30"-60" (750mm-1500mm) DIAMETER PIPE. THE MIDDLE 1/3 BENEATH THE PIPE INVERT SHALL BE LOOSELY PLACED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT: USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, III, OR IV IN THE PIPE ZONE EXTENDING TO THE CROWN OF THE PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. COMPACTION SHALL BE SPECIFIED BY THE ENGINEER IN ACCORDANCE WITH TABLE 3 FOR THE APPLICABLE FILL HEIGHTS LISTED. PLEASE NOTE, CLASS IV MATERIAL HAS LIMITED APPLICATION AND CAN BE DIFFICULT TO PLACE AND COMPACT; USE ONLY WITH THE APPROVAL OF A SOIL EXPERT.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" (300mm) FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOTATION. FOR TRAFFIC APPLICATIONS; CLASS I OR II MATERIAL COMPACTED TO 90% SPD AND CLASS III COMPACTED TO 95% SPD IS REQUIRED FOR TRAFFIC APPLICATIONS. MINIMUM COVER, H, IS 12" (300mm) UP TO 48" (1200mm) DIAMETER PIPE AND 24" (600mm) OF COVER FOR 60" (1500mm) DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.
7. FOR ADDITIONAL INFORMATION SEE TECHNICAL NOTE 2.04.

TABLE 1, RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
12" (300mm)	30" (762mm)
15" (375mm)	34" (864mm)
18" (450mm)	39" (991mm)
24" (600mm)	48" (1219mm)
30" (750mm)	56" (1422mm)
36" (900mm)	64" (1626mm)
42" (1050mm)	72" (1829mm)
48" (1200mm)	80" (2032mm)
60" (1500mm)	96" (2438mm)

TABLE 2, MINIMUM RECOMMENDED COVER BASED ON VEHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48" (300mm - 1200mm)	12" (305mm)	48" (1219mm)
60" (1500mm)	24" (610mm)	60" (1524mm)

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

TABLE 3, MAXIMUM COVER FOR ADS HP STORM PIPE, ft

	CLASS I		CLASS II		CLASS III		CLASS IV
PIPE DIA	COMPACTED	95%	90%	85%	95%	90%	95%
12" (300mm)	41 (12.5m)	28 (8.5m)	21 (6.4m)	16 (4.9m)	20 (6.1m)	16 (4.9m)	16 (4.9m)
15" (375mm)	42 (12.8m)	29 (8.8m)	21 (6.4m)	16 (4.9m)	21 (6.4m)	16 (4.9m)	16 (4.9m)
18" (450mm)	44 (13.4m)	30 (9.1m)	21 (6.4m)	16 (4.9m)	22 (6.7m)	17 (5.2m)	16 (4.9m)
24" (600mm)	37 (11.3m)	26 (7.9m)	18 (5.5m)	14 (4.3m)	19 (5.8m)	14 (4.3m)	14 (4.3m)
30" (750mm)	39 (11.9m)	27 (8.2m)	19 (5.8m)	14 (4.3m)	19 (5.8m)	15 (4.6m)	14 (4.3m)
36" (900mm)	28 (8.5m)	20 (6.1m)	14 (4.3m)	10 (3.0m)	14 (4.3m)	11 (3.4m)	10 (3.0m)
42" (1050mm)	30 (9.1m)	21 (6.4m)	14 (4.3m)	10 (3.0m)	15 (4.6m)	11 (3.4m)	10 (3.0m)
48" (1200mm)	29 (8.8m)	20 (6.1m)	14 (4.3m)	9 (2.7m)	14 (4.3m)	10 (3.0m)	10 (3.0m)
60" (1500mm)	29 (8.8m)	20 (6.1m)	14 (4.3m)	9 (2.7m)	14 (4.3m)	10 (3.0m)	9 (2.7m)

FILL HEIGHT TABLE GENERATED USING AASHTO SECTION 12, LOAD RESISTANCE FACTOR DESIGN (LRFD) PROCEDURE WITH THE FOLLOWING ASSUMPTIONS:
NO HYDROSTATIC PRESSURE
UNIT WEIGHT OF SOIL (γs) = 120 PCF

REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
4	REV., MAXIMUM COVER HEIGHTS	RWG	01/11/17	

TRENCH INSTALLATION DETAIL (HP STORM)
DRAWING NUMBER: STD-101D

ADS
4640 TRUEMAN BLVD
HILLIARD, OHIO 43026
ADVANCED DRAINAGE SYSTEMS, INC.

DRN BY: JAB
DATE: 2/22/9/09
SCALE: NTS
SHEET: 1 OF 1

REV	DATE	DESCRIPTION	BY

Rio Grande Engineering
1606 CENTRAL AVENUE SE
SUITE 201
ALBUQUERQUE, NM 87106
(505) 872-0999

ENGINEER'S SEAL
DAVID SOULE
P.E. #14522

Weller Architects
401 Alvarado Drive SE, Suite D
Albuquerque, New Mexico 87108
tel 505 255 8270
fax 505 255 8830

DEL NORTE BAPTIST CHURCH
SITE IMPROVEMENTS
Albuquerque New Mexico

RGE Project No.: 21635
Drawn By: WCWJ
Checked By: ds
Date: 05.26.2017

STORM DRAIN DETAILS

Sheet No.: C104
SHEET OF