CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director

Mayor Timothy M. Keller

October 1, 2018

Joel Hernandez, P.E.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM, 87109

RE: Overture Senior Active Adult
6410 Palomas Ave NE
Grading and Drainage Plan
Engineer's Stamp Date: 09/20/18
Hydrology File: D18D056A

Dear Mr. Hernandez:

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

Based upon the information provided in your submittal received 09/21/2018, the Grading and Drainage Plan **is not** approved for Building Permit and Grading Permit. The following comments need to be addressed for approval of the above referenced project:

1. The site currently shows more than 1 acre of disturbance is being proposed. An Erosion and Sediment Control Plan is required and has to be submitted to the storm water quality engineer (Curtis Cherne, PE, ccherne@cabq.gov). Hydrology's approval for Grading or Building Permit will not be given until the submittal of the ESC Plan.

2. Please provide the FIRM Map's effective date.

3. Please provide the benchmark information for the survey contour information provided.

4. Please provide a section of the proposed retaining wall along Paseo del Norte near the Northwest corner of the site and a section of the proposed retaining wall along the Western property line.

5. Please add a note requesting a waiver for the first flush volume requirement. Also add a note stating, "The required first flush volume for the 142,764.70 SF of impervious cover is 4,045 CF."

If you have any questions, please contact me at 924-3995 or rbrissette@cabq.gov .

Sincerely,

Renée C. Brissette

Renée C. Brissette, P.E. CFM
Senior Engineer, Hydrology
Planning Department

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: Overture Senior Building Permit #: _____ Hydrology File #: D18D056A

DRB#: 1010675 EPC#: _____ Work Order#: 532662

Legal Description: Lots 1-A and 2-A Paseo Market Place

City Address: 6401/6441 Palomas Ave NE Albuquerque NM 87109

Applicant: Tierra West, LLC Contact: Joel Hernandez

Address: 5571 Midway Park Place NE Albuquerque NM 87109

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: jdhernandez@tierrawestllc.com

Other Contact: _____ Contact: _____

Address: _____

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

TYPE OF DEVELOPMENT: ____ PLAT (# of lots) ____ RESIDENCE X DRB SITE ___ ADMIN SITE

IS THIS A RESUBMITTAL? ____ Yes X No

DEPARTMENT ____ TRANSPORTATION X HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

____ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
____ CONCEPTUAL G & D PLAN
X GRADING PLAN
X DRAINAGE REPORT
____ DRAINAGE MASTER PLAN
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ STREET LIGHT LAYOUT
____ OTHER (SPECIFY) _____
____ PRE-DESIGN MEETING?

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
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR
____ FLOODPLAIN DEVELOPMENT PERMIT
____ OTHER (SPECIFY) _____

DATE SUBMITTED: 9/19/2018 By: Joel Hernandez

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

DRAINAGE MANAGEMENT PLAN

For

Overture Senior Active Adult

NEC San Pedro Drive and Palomas Avenue
Albuquerque, New Mexico

Prepared by:

Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, New Mexico 87109

September 2018

I certify that this report was prepared under my supervision, and I am a registered Professional Engineer in the State of New Mexico in good standing.

Joel D. Hernandez
NO. 17839

TW Job No. 2017086

TABLE OF CONTENTS

Appendices

Map Pockets

Introduction

The purpose of this report is to provide a Drainage Management Plan for Development Review Board (DRB) approval of the Site Development Plan for Building Permit. This project consists of a proposed four-story apartment building for age-restricted housing and associated parking, and landscaped areas on a 4.07-acre site. The site is located at the northeast corner of San Pedro Drive and Palomas Ave, NE. The subject property is currently compromised of a portion of Lots 5-A, 28, 29 and 30 for which a Site Development Plan for Subdivision has been approved by the Environmental Planning Commission to reconfigure into five (5) Lots (this proposed subdivision also includes Lots 31 and 32). A concurrent request to DRB to amend the Site Plan for Subdivision to two lots is being processed. This Site Development Plan for Building Permit is for the east lot (proposed Lot 1A) of the project which proposes development of age restricted single family apartments on the easterly lot; commercial use on the westerly lot (proposed Lot 2A) will be addressed by a separate site development plan and drainage study by others.

As shown on the vicinity map below, the site is located at the northeast corner of San Pedro Drive and Palomas Ave, NE and bound by Paseo Del Norte on the north, an undeveloped portion of Hope Christian School property to the east, Palomas Avenue and developed office buildings to the south, and undeveloped property to the west proposed for commercial development as described above.

The site lies within Precipitation Zone 3 according to Section 22.2 of the DPM. As shown on FEMA Flood Map 35001C0137H, the site lies outside any flood hazard zone.

Exhibit A-Vicinity Map

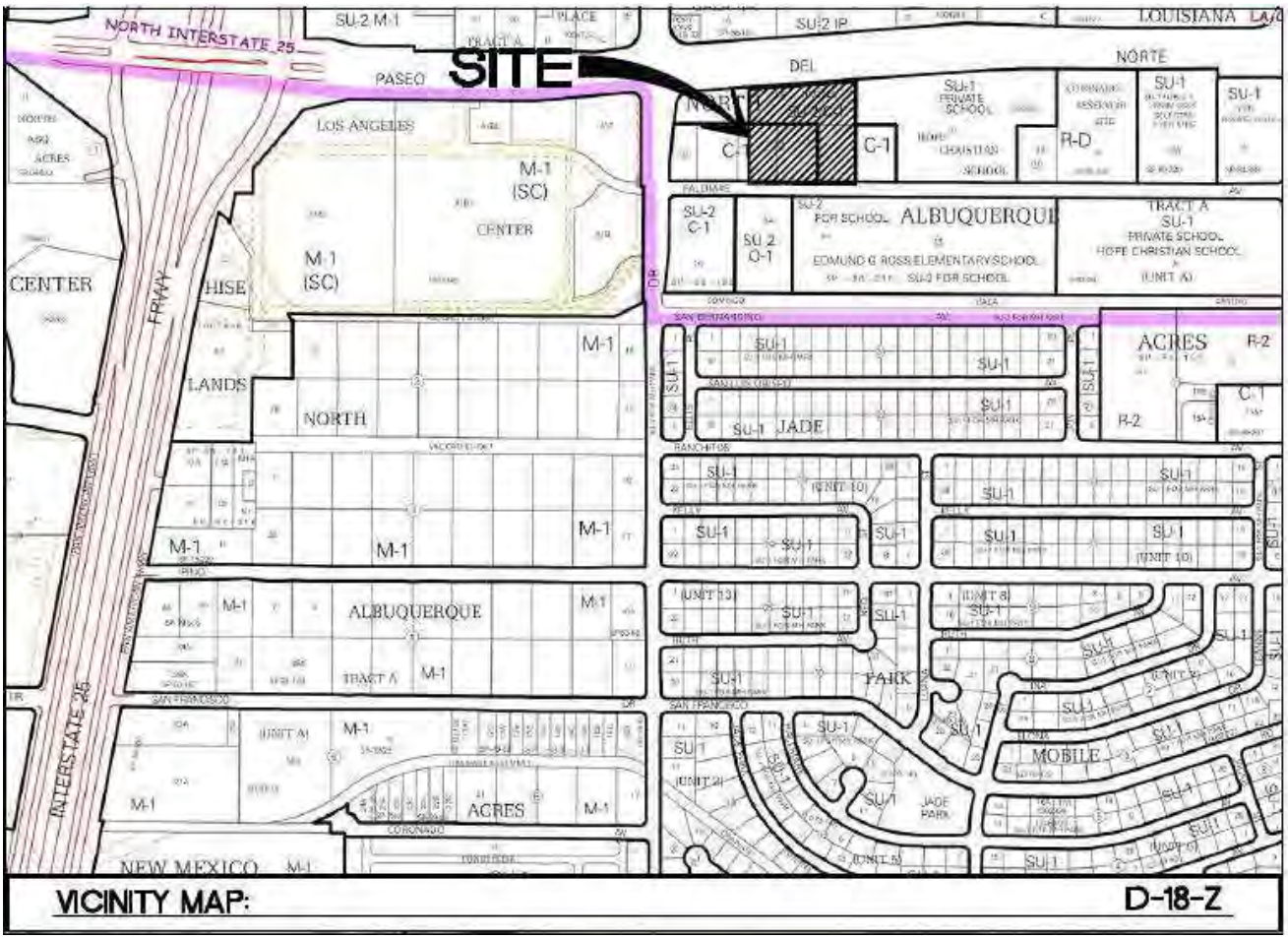


Exhibit B- Flood Insurance Rate Map

Pre-Developed Conditions

The overall site has been previously graded and mostly undeveloped with the exception of an existing single-story office building on the southeast portion of the property which is slated for demolition.

Surface runoff from the site generally flows from east to west and is conveyed to Palomas Avenue and San Pedro Drive where curb inlets intercept the flow into an existing 84-inch storm drain line. Offsite runoff calculated at 8.3 CFS from the property to the east drains onto the site by surface runoff. Existing runoff from the site is calculated at 13.9 CFS onto proposed Lot 2A (Basin EX-2) and 2.5 CFS onto Palomas Avenue (Basin EX-1) as indicated on the Pre-Development Drainage Basin map included in Appendix A.

Post Developed conditions

The intent of the drainage configuration is to provide a drainage solution consistent with the DPM and the approved Conceptual Master Drainage Master Plan prepared by RESPEC (stamp date 3/22/18, Appendix B) for the overall development. This is achieved by the grading and drainage design which will accept offsite flows in a proposed concrete V-ditch along the easterly property boundary upstream and convey them through the proposed private storm drain system which will discharge into the existing junction box on the 84" storm drain system. The total drainage from the site is calculated at 26.83 CFS which is in line with the 27.9 CFS anticipated by the Conceptual Master Drainage Master Plan referenced above. All drainage is conveyed via the proposed storm drain system with the exception of the 0.66 CFS from Basin B5 which will need to drain onto Palomas Avenue due to elevation constraints. The net flow onto Palomas Avenue will decrease from 2.5 CFS to 0.66 CFS.

The building design includes an interior courtyard which is designed to drain via an underground drain system and connecting to the proposed storm drain along the northerly building side ; roof drains will also interconnect into the private system.

First-Flush Water Quality Considerations

This project has elected to pay the in-lieu fee to address the first flush requirements. The total first flush volume was calculated to be 4,045 cubic feet. Calculations can be found in Appendix A.

Conclusion

This Drainage Management Plan provides for grading and drainage elements which are capable of safely conveying the 100-year, 6-hour storm which meet the City DPM requirements and is in conformance with the approved Conceptual Drainage Management Plan approved for this area. With this submittal, we request Drainage Report Approval for the Site Development Plan for Building Permit.

APPENDIX A

HYDROLOGY

AGE RESTRICTED SENIOR LIVING

Existing Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 3

BASIN	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (CFS)	V(100) (inches)	V(100) (CF)
EXISTING CONDITIONS										
EX1	28158	0.65	0.0%	0.0%	69.7%	30.3%	3.93	*2.54*	*1.61*	*3788*
EX2	149478	3.43	0.0%	0.0%	93.6%	16.4%	4.05	*13.91*	*1.59*	*19862*
OS1		3.30	60.0%		40.0%		2.50	*8.26*		
TOTAL		**7.38**						***16.44***	***1.61***	***23649***

OFFSITE BASIN (Not included in total)

Proposed Conditions Basin Data Tables

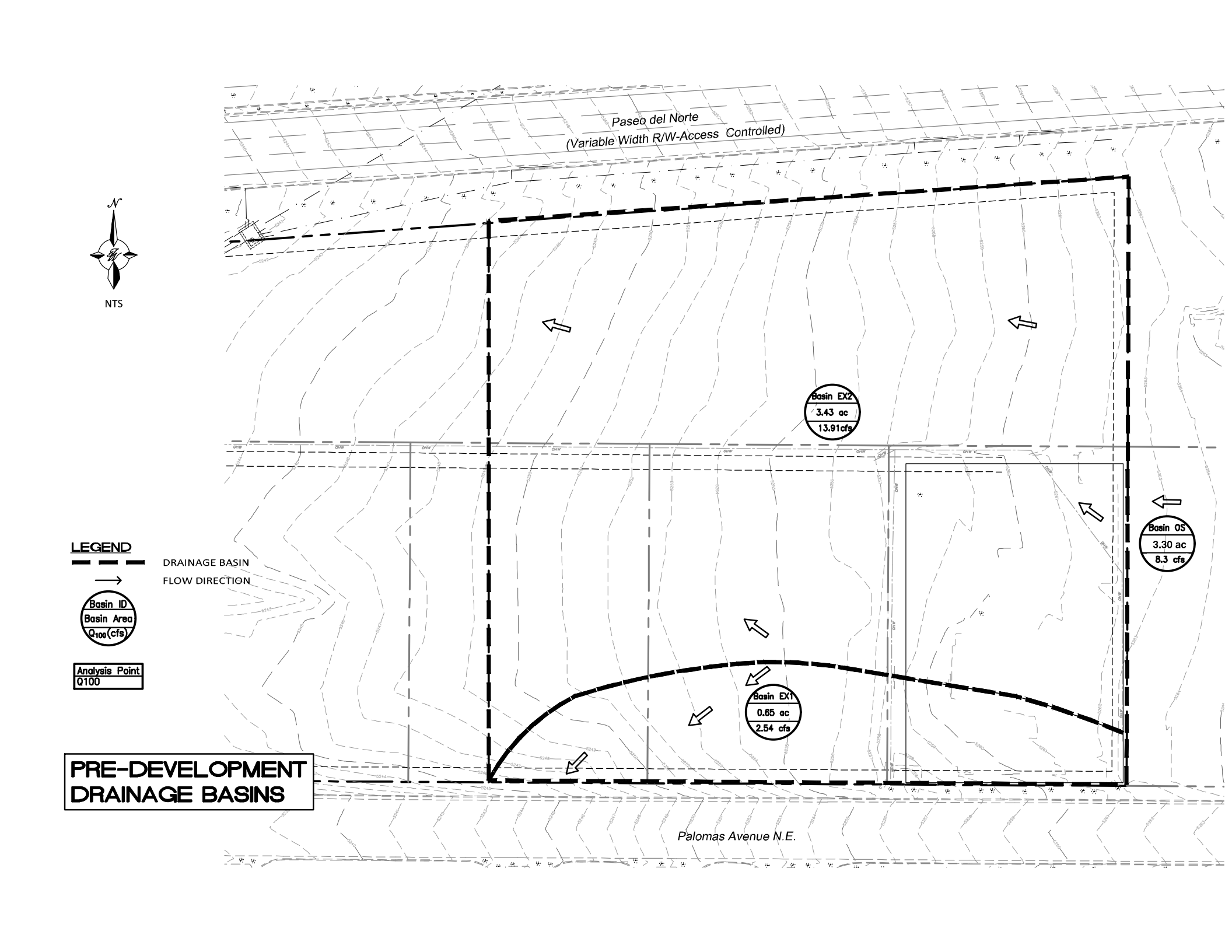
Parking Lot Basins

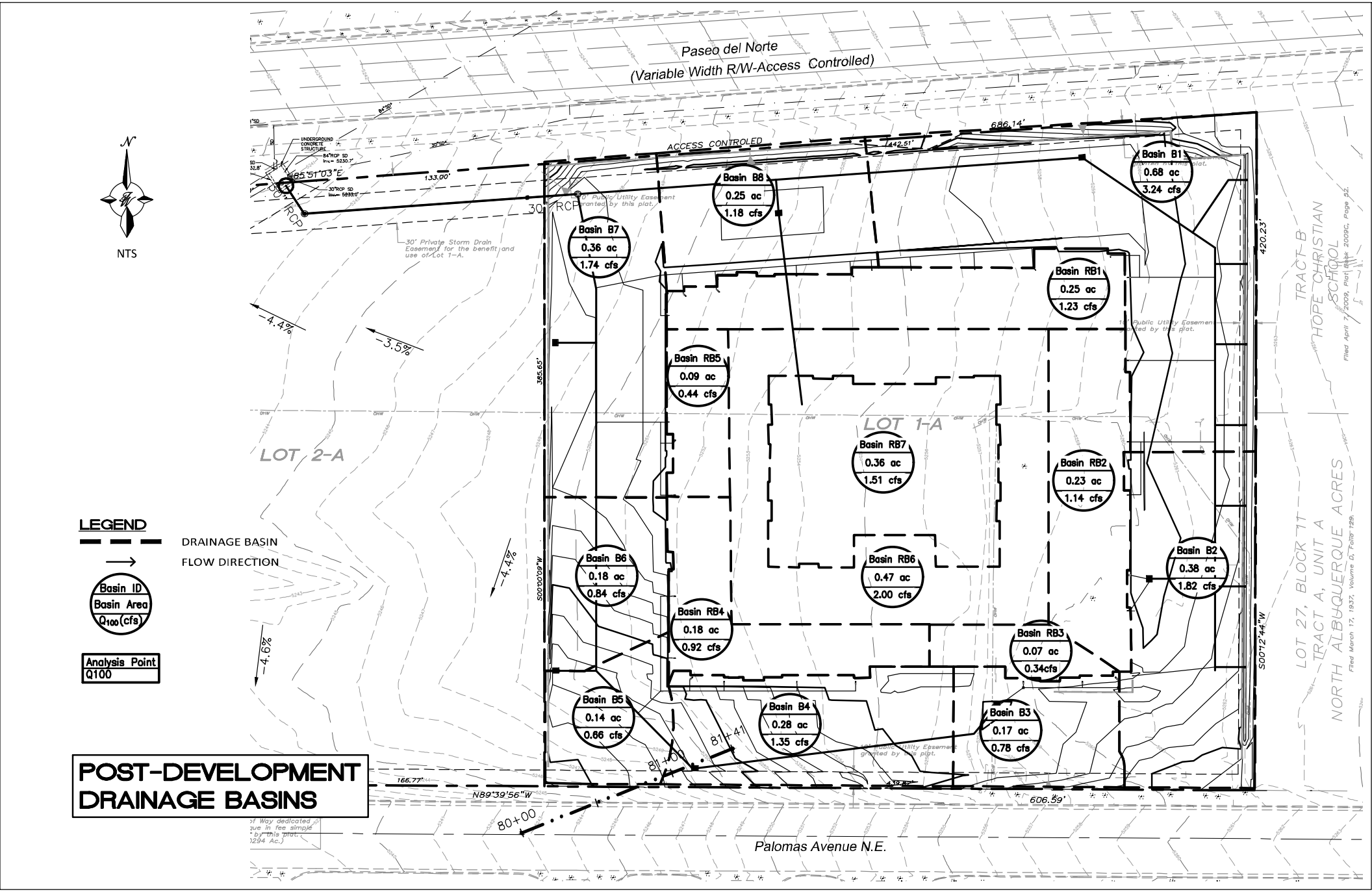
BASIN	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (CFS)	V(100) (inches)	V(100) (CF)	*1ST FLUSH (CF)*
PROPOSED CONDITIONS											
B1	29626	0.68	0.0%	0.0%	16.4%	83.6%	4.76	*3.24*	*2.18*	*5393*	702
B2	16683	0.38	0.0%	0.0%	17.2%	82.8%	4.75	*1.82*	*2.18*	*3025*	391
B3	7235	0.17	0.0%	0.0%	19.7%	80.3%	4.71	*0.78*	*2.15*	*1296*	165
B4	12183	0.28	0.0%	0.0%	11.6%	88.4%	4.84	*1.35*	*2.24*	*2270*	305
B5	6119	0.14	0.0%	0.0%	21.0%	79.0%	4.69	*0.66*	*2.14*	*1089*	137
B6	7637	0.18	0.0%	0.0%	14.3%	85.7%	4.80	*0.84*	*2.21*	*1405*	185
B7	15789	0.36	0.0%	0.0%	14.3%	85.7%	4.80	*1.74*	*2.21*	*2904*	383
B8	10720	0.25	0.0%	0.0%	13.1%	86.9%	4.81	*1.18*	*2.22*	*1983*	264
TOTAL		**2.19**						***11.62***	***15.29***	***17381***	**2533**

Building Basins

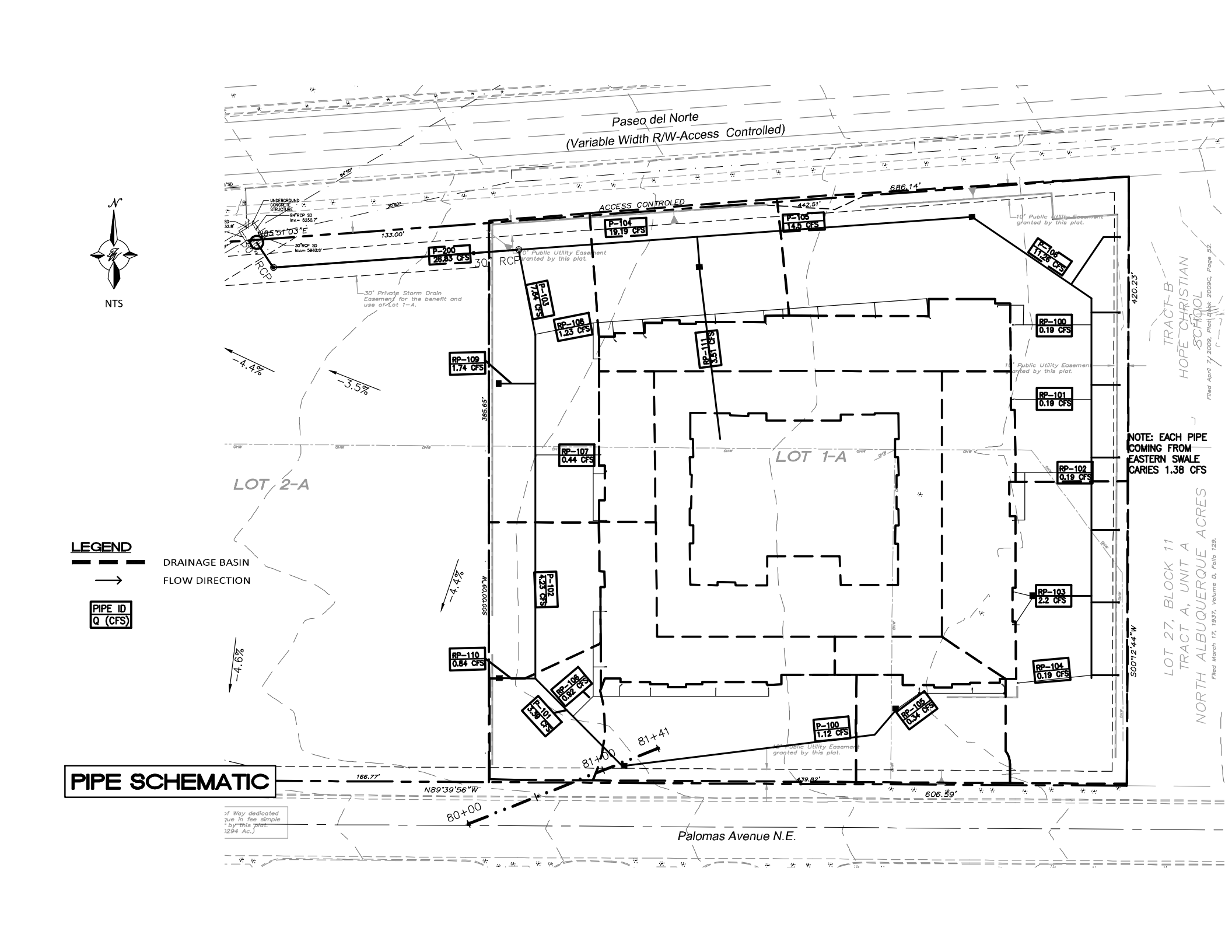
BASIN	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (CFS)	V(100) (inches)	V(100) (CF)	*1ST FLUSH (CF)*
PROPOSED CONDITIONS											
RB1	10689	0.25	0.0%	0.0%	0.0%	100.0%	5.02	*1.23*	*2.36*	*2102*	303
RB2	9930	0.23	0.0%	0.0%	0.0%	100.0%	5.02	*1.14*	*2.36*	*1953*	281
RB3	2913	0.07	0.0%	0.0%	0.0%	100.0%	5.02	*0.34*	*2.36*	*573*	83
RB4	7990	0.18	0.0%	0.0%	0.0%	100.0%	5.02	*0.92*	*2.36*	*1571*	226
RB5	3775	0.09	0.0%	0.0%	0.0%	100.0%	5.02	*0.44*	*2.36*	*742*	107
RB6	20577	0.47	0.0%	0.0%	50.0%	50.0%	4.24	*2.00*	*1.83*	*3129*	292
RB7	15544	0.36	0.0%	0.0%	50.0%	50.0%	4.24	*1.51*	*1.83*	*2364*	220
TOTAL		**1.64**						***7.58***	***15.45***	***12435***	**1512**

TOTAL REQUIRED FIRST FLUSH VOLUME **4044 CF**


Paseo del Norte
(Variable Width R/W-Access Controlled)
N
NTS
Basin EX2
3.43 ac
13.91cfs
Basin OS
3.30 ac
8.3 cfs
Basin EX1
0.65 ac
2.54 cfs
LEGEND
DRAINAGE BASIN
FLOW DIRECTION
Basin ID
Basin Area
Q100(cfs)
Analysis Point
Q100
PRE-DEVELOPMENT
DRAINAGE BASINS
Palomas Avenue N.E.



POST-DEVELOPMENT DRAINAGE BASINS


Paseo del Norte
(Variable Width R/W-Access Controlled)
ACCESS CONTROLED
686.14'
442.51'
133.00'
S85°51'03"E
30" RCP
30" Public Utility Easement granted by this plat.
30' Private Storm Drain Easement for the benefit and use of Lot 1-A.
P-200 28.83 CFS
P-104 19.19 CFS
P-105 14.5 CFS
P-106 11.28 CFS
P-103 7.84 CFS
RP-108 1.23 CFS
RP-111 3.51 CFS
RP-109 1.74 CFS
RP-100 0.19 CFS
RP-101 0.19 CFS
RP-107 0.44 CFS
RP-102 0.19 CFS
RP-103 2.2 CFS
RP-104 0.19 CFS
RP-110 0.84 CFS
RP-106 0.82 CFS
P-102 4.23 CFS
P-101 5.98 CFS
RP-105 0.34 CFS
P-100 1.12 CFS
LOT 1-A
LOT 2-A
TRACT B
HOPE CHRISTIAN SCHOOL
Filed April 7, 2009, Plat Book 2009C, Page 52.
LOT 27, BLOCK 11
TRACT A, UNIT A
NORTH ALBUQUERQUE ACRES
Filed March 17, 1937, Volume D, Folio 129.
420.23'
S00°12'44"W
325.65'
S00°00'09"W
4.4%
3.5%
4.4%
4.6%
81+41
81+00
80+00
166.77'
N89°39'56"W
439.82'
606.59'
Palomas Avenue N.E.
NOTE: EACH PIPE COMING FROM EASTERN SWALE CARIES 1.38 CFS
LEGEND
DRAINAGE BASIN
FLOW DIRECTION
PIPE ID
Q (CFS)
NTS
PIPE SCHEMATIC

Worksheet for Circular Pipe - P100

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.03500	ft/ft
Diameter	12	in
Discharge	1.12	ft³/s

Results

Normal Depth	2.91	in
Flow Area	0.15	ft²
Wetted Perimeter	1.03	ft
Hydraulic Radius	1.72	in
Top Width	0.86	ft
Critical Depth	0.45	ft
Percent Full	24.3	%
Critical Slope	0.00349	ft/ft
Velocity	7.60	ft/s
Velocity Head	0.90	ft
Specific Energy	1.14	ft
Froude Number	3.23	
Maximum Discharge	9.32	ft³/s
Discharge Full	8.66	ft³/s
Slope Full	0.00058	ft/ft
Flow Type	SuperCritical	

Worksheet for Circular Pipe - P101

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01200	ft/ft
Diameter	12	in
Discharge	3.39	ft³/s

Results

Normal Depth	7.18	in
Flow Area	0.49	ft²
Wetted Perimeter	1.77	ft

Hydraulic Radius		3.33	in
Top Width		0.98	ft
Critical Depth		0.79	ft
Percent Full		59.8	%
Critical Slope		0.00579	ft/ft
Velocity		6.92	ft/s
Velocity Head		0.74	ft
Specific Energy		1.34	ft
Froude Number		1.73	
Maximum Discharge		5.46	ft³/s
Discharge Full		5.07	ft³/s
Slope Full		0.00536	ft/ft
Flow Type	SuperCritical		

Worksheet for Circular Pipe - P102

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.02300	ft/ft
Diameter	12	in
Discharge	4.43	ft³/s

Results

Normal Depth	6.91	in
Flow Area	0.47	ft²
Wetted Perimeter	1.72	ft
Hydraulic Radius	3.26	in
Top Width	0.99	ft
Critical Depth	0.88	ft
Percent Full	57.6	%
Critical Slope	0.00821	ft/ft
Velocity	9.46	ft/s
Velocity Head	1.39	ft
Specific Energy	1.97	ft
Froude Number	2.42	
Maximum Discharge	7.56	ft³/s
Discharge Full	7.02	ft³/s
Slope Full	0.00915	ft/ft
Flow Type	SuperCritical	

Worksheet for Circular Pipe - P103

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.08700	ft/ft
Diameter	12	in
Discharge	7.64	ft³/s

Results

Normal Depth	6.42	in
Flow Area	0.43	ft²
Wetted Perimeter	1.64	ft
Hydraulic Radius	3.13	in
Top Width	1.00	ft
Critical Depth	0.98	ft
Percent Full	53.5	%
Critical Slope	0.02450	ft/ft
Velocity	17.88	ft/s
Velocity Head	4.97	ft
Specific Energy	5.50	ft
Froude Number	4.82	
Maximum Discharge	14.69	ft³/s
Discharge Full	13.66	ft³/s
Slope Full	0.02721	ft/ft
Flow Type	SuperCritical	

Worksheet for Circular Pipe - P104

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.02650	ft/ft
Diameter	18	in
Discharge	19.19	ft³/s

Results

Normal Depth	12.90	in
Flow Area	1.36	ft²
Wetted Perimeter	3.03	ft
Hydraulic Radius	5.37	in
Top Width	1.35	ft

Critical Depth		1.46	ft
Percent Full		71.7	%
Critical Slope		0.01751	ft/ft
Velocity		14.15	ft/s
Velocity Head		3.11	ft
Specific Energy		4.19	ft
Froude Number		2.49	
Maximum Discharge		23.91	ft³/s
Discharge Full		22.23	ft³/s
Slope Full		0.01975	ft/ft
Flow Type	SuperCritical		

Worksheet for Circular Pipe - P105

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient		0.010	
Channel Slope		0.02600	ft/ft
Diameter		18	in
Discharge		14.50	ft³/s

Results

Normal Depth		10.66	in
Flow Area		1.09	ft²
Wetted Perimeter		2.63	ft
Hydraulic Radius		4.96	in
Top Width		1.47	ft
Critical Depth		1.39	ft
Percent Full		59.2	%
Critical Slope		0.00976	ft/ft
Velocity		13.30	ft/s
Velocity Head		2.75	ft
Specific Energy		3.64	ft
Froude Number		2.73	
Maximum Discharge		23.68	ft³/s
Discharge Full		22.02	ft³/s
Slope Full		0.01128	ft/ft
Flow Type	SuperCritical		

Worksheet for Circular Pipe - P106

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01200	ft/ft
Diameter	18	in
Discharge	11.26	ft³/s

Results

Normal Depth	11.66	in
Flow Area	1.21	ft²
Wetted Perimeter	2.81	ft
Hydraulic Radius	5.18	in
Top Width	1.43	ft
Critical Depth	1.28	ft
Percent Full	64.8	%
Critical Slope	0.00635	ft/ft
Velocity	9.29	ft/s
Velocity Head	1.34	ft
Specific Energy	2.31	ft
Froude Number	1.78	
Maximum Discharge	16.09	ft³/s
Discharge Full	14.96	ft³/s
Slope Full	0.00680	ft/ft
Flow Type	SuperCritical	

Worksheet for 6" PVC Capacity Check (RB2 Laterals)

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Normal Depth	6.00	in
Diameter	6.00	in
Discharge	0.73	ft³/s

Results

Discharge	0.73	ft³/s
Normal Depth	6.00	in
Flow Area	0.20	ft²
Wetted Perimeter	1.57	ft

Hydraulic Radius		1.50	in
Top Width		0.00	ft
Critical Depth		0.43	ft
Percent Full		100.0	%
Critical Slope		0.00929	ft/ft
Velocity		3.71	ft/s
Velocity Head		0.21	ft
Specific Energy		0.71	ft
Froude Number		0.00	
Maximum Discharge		0.78	ft³/s
Discharge Full		0.73	ft³/s
Slope Full		0.01000	ft/ft
Flow Type	SubCritical		

-Flowmaster results show that each 6" PVC drain can convey 0.73 cfs at full capacity. The 1.14 cfs produced by basin RB2 is divided among 6 pipes -- 1.14cfs/7= 0.19 cfs. Therefore 6" PVC will be adequate to convey the flows from RB2 with redundancy.

Worksheet for Circular Pipe - RP103

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	12	in
Discharge	2.20	ft³/s

Results

Normal Depth	5.82	in
Flow Area	0.38	ft²
Wetted Perimeter	1.54	ft
Hydraulic Radius	2.94	in
Top Width	1.00	ft
Critical Depth	0.63	ft
Percent Full	48.5	%
Critical Slope	0.00423	ft/ft
Velocity	5.82	ft/s
Velocity Head	0.53	ft
Specific Energy	1.01	ft

Froude Number		1.67	
Maximum Discharge		4.98	ft³/s
Discharge Full		4.63	ft³/s
Slope Full		0.00226	ft/ft
Flow Type	SuperCritical		

Worksheet for Circular Pipe - RP111 –Internal Roof Basin and Courtyard Drain

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	15	in
Discharge	3.51	ft³/s

Results

Normal Depth	6.77	in
Flow Area	0.54	ft²
Wetted Perimeter	1.84	ft
Hydraulic Radius	3.50	in
Top Width	1.24	ft
Critical Depth	0.76	ft
Percent Full	45.1	%
Critical Slope	0.00377	ft/ft
Velocity	6.53	ft/s
Velocity Head	0.66	ft
Specific Energy	1.23	ft
Froude Number	1.75	
Maximum Discharge	9.03	ft³/s
Discharge Full	8.40	ft³/s
Slope Full	0.00175	ft/ft
Flow Type	SuperCritical	

Worksheet for Circular Pipe - RP109

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	12	in
Discharge	1.74	ft³/s

Results

Normal Depth	5.10	in
Flow Area	0.32	ft²
Wetted Perimeter	1.42	ft
Hydraulic Radius	2.69	in
Top Width	0.99	ft
Critical Depth	0.56	ft
Percent Full	42.5	%
Critical Slope	0.00386	ft/ft
Velocity	5.48	ft/s
Velocity Head	0.47	ft
Specific Energy	0.89	ft
Froude Number	1.70	
Maximum Discharge	4.98	ft³/s
Discharge Full	4.63	ft³/s
Slope Full	0.00141	ft/ft
Flow Type	SuperCritical	

Worksheet for Circular Pipe - RP110

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Diameter	12	in
Discharge	0.84	ft³/s

Results

Normal Depth	3.46	in
Flow Area	0.19	ft²
Wetted Perimeter	1.13	ft
Hydraulic Radius	1.99	in

Top Width		0.91	ft
Critical Depth		0.38	ft
Percent Full		28.9	%
Critical Slope		0.00338	ft/ft
Velocity		4.48	ft/s
Velocity Head		0.31	ft
Specific Energy		0.60	ft
Froude Number		1.73	
Maximum Discharge		4.98	ft³/s
Discharge Full		4.63	ft³/s
Slope Full		0.00033	ft/ft
Flow Type	SuperCritical		

Worksheet for 8" PVC Capacity Check (RP-105,106,107,108)

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01000	ft/ft
Normal Depth	8.00	in
Diameter	8.00	in
Discharge	1.57	ft³/s

Results

Discharge	1.57	ft³/s
Normal Depth	8.00	in
Flow Area	0.35	ft²
Wetted Perimeter	2.09	ft
Hydraulic Radius	2.00	in
Top Width	0.00	ft
Critical Depth	0.58	ft
Percent Full	100.0	%
Critical Slope	0.00907	ft/ft
Velocity	4.50	ft/s
Velocity Head	0.31	ft
Specific Energy	0.98	ft
Froude Number	0.00	
Maximum Discharge	1.69	ft³/s
Discharge Full	1.57	ft³/s
Slope Full	0.01000	ft/ft
Flow Type	SubCritical	

-The remaining roof drop pipes will be set at 8”. The largest flow to be conveyed by one of these pipes (RB1) is 1.23 cfs at the minimum slope of 1%. Therefore 8” PVC will be adequate for the remainder of the roof drains.

Worksheet for Circular Pipe - P200- Outfall Pipe

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.010	
Channel Slope	0.01200	ft/ft
Diameter	30	in
Discharge	26.83	ft³/s

Results

Normal Depth	14.27	in
Flow Area	2.30	ft²
Wetted Perimeter	3.81	ft
Hydraulic Radius	7.26	in
Top Width	2.50	ft
Critical Depth	1.77	ft
Percent Full	47.6	%
Critical Slope	0.00353	ft/ft
Velocity	11.65	ft/s
Velocity Head	2.11	ft
Specific Energy	3.30	ft
Froude Number	2.14	
Maximum Discharge	62.83	ft³/s
Discharge Full	58.41	ft³/s
Slope Full	0.00253	ft/ft
Flow Type	SuperCritical	

Capacity of Inlets Along Eastern Ditch

Orifice Equation

Q = CA SQRT(2gH)		
C =	0.6	
Diameter (in)	8	
Area (ft^2)=	0.349	
g =	32.2	
H (Ft) =	1	Max depth of water above center of orifice
Q (CFS)=	1.6807439	Capacity per inlet
Qtotal(CFS)=	11.765207	Total Available Capacity of 7 inlets
Qrequired(cfs)=	8.3	Total offsite runoff
		Total Available Capacity > Required Capacity
		therefore **OK**

EROSION CONTROL NOTES:

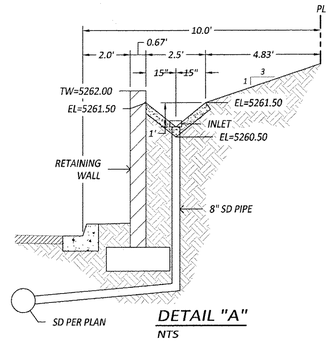
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES 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 (CITY) ACCEPTANCE OF ANY PROJECT.

KEYED NOTE:

(DS) DOWNSPOUT

KEYED NOTE:

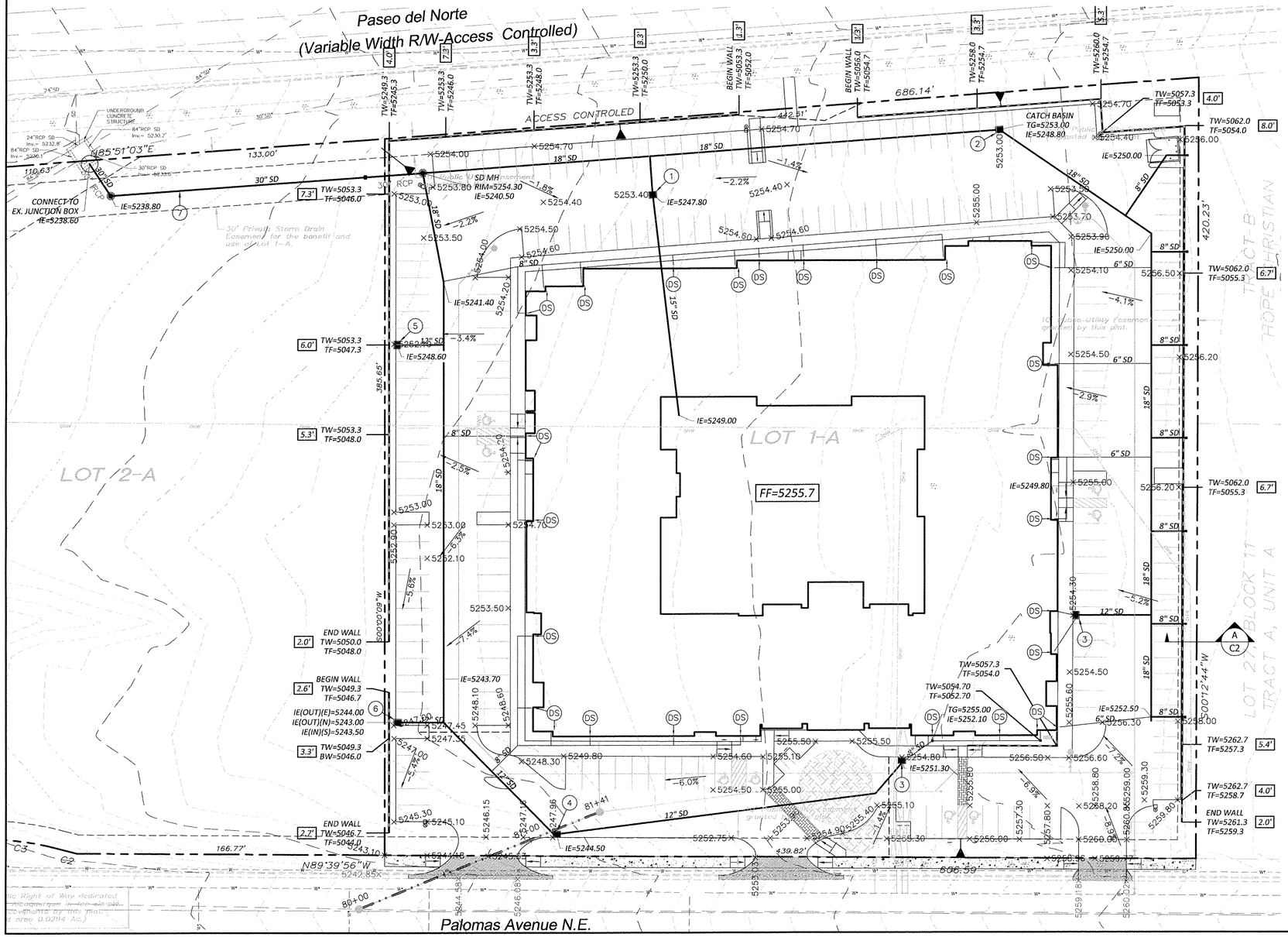
1. NYLOPLAST CATCH BASIN W/ 18" DROP IN GRATE
2. NYLOPLAST CATCH BASIN W/ 24" DROP IN GRATE & BIO SNOUT (SOUTH OUTLET)
3. NYLOPLAST CATCH BASIN W/ 2'X2' CURB INLET, STANDARD GRATE
4. NYLOPLAST CATCH BASIN W/ 2'X3' CURB INLET, DIAGONAL GRATE
5. NYLOPLAST CATCH BASIN W/ 2'X2' CURB INLET, STANDARD GRATE & BIO SNOUT
6. NYLOPLAST CATCH BASIN W/ 2'X2' CURB INLET, STANDARD GRATE & BIO SNOUT (NORTH OUTLET)
7. SEE DWG 532662 FOR STORM DRAIN PLAN AND PROFILE

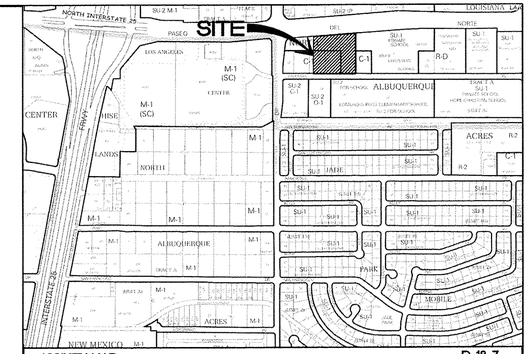


DETAIL "A"
NTS

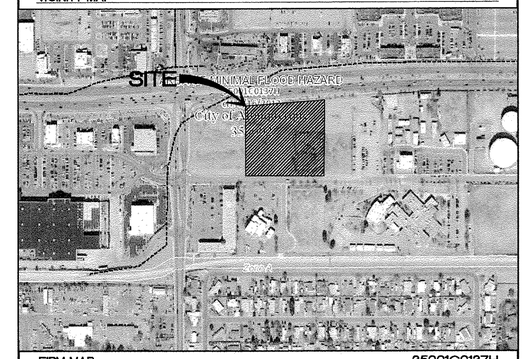
LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR
- x 5048.25 EXISTING SPOT ELEVATION





VICINITY MAP: D-18-Z



FIRM MAP: 35001C0137H

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. 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.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. 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.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED. 7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR		

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.

N

GRAPHIC SCALE
30 15 0 15 30
SCALE: 1"=30'

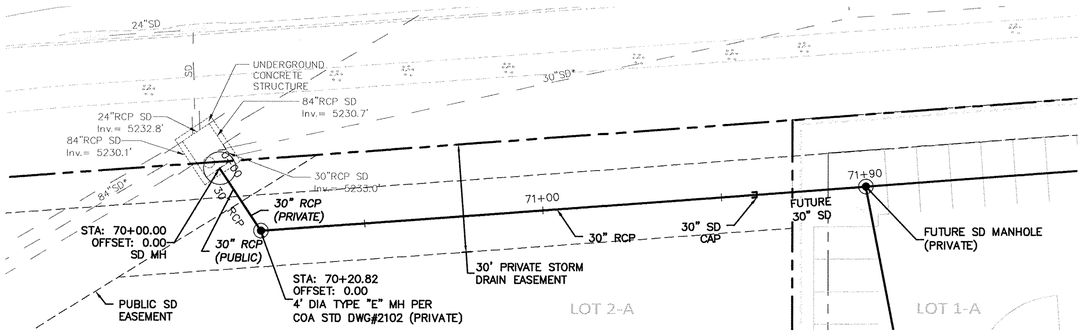
ENGINEER'S SEAL
JOEL D. HERNANDEZ NEW MEXICO 17893 PROFESSIONAL ENGINEER 9/20/18
JOEL D. HERNANDEZ P.E. #17893

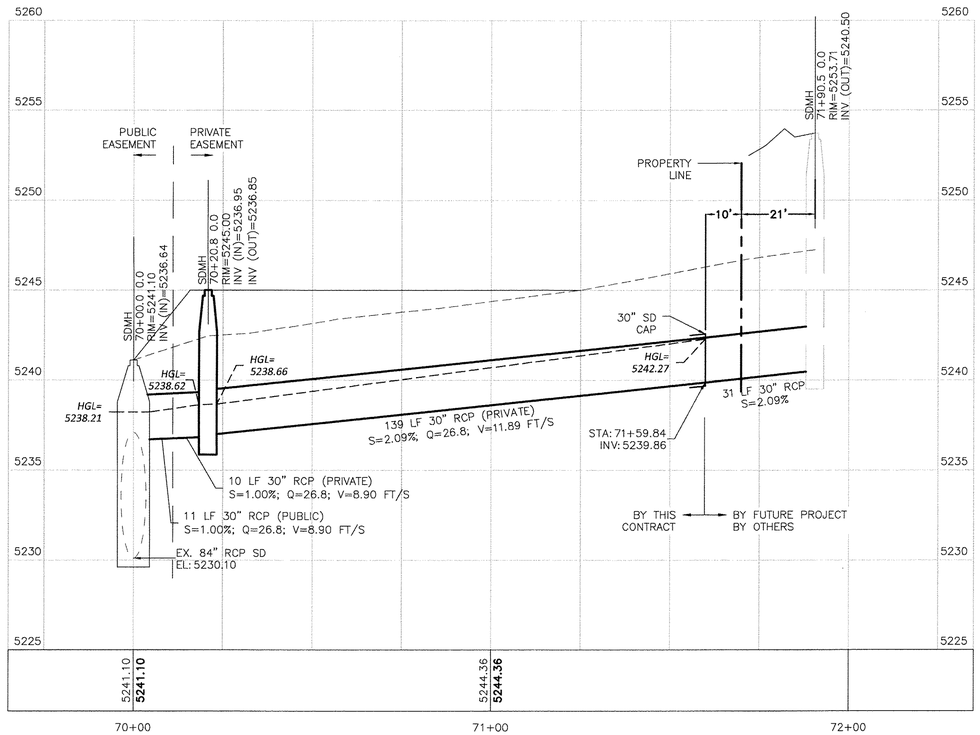
OVERTURE SENIOR ACTIVE ADULT

GRADING AND DRAINAGE PLAN

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

DRAWN BY: DY
DATE: 9/20/18
2017086-GRB
SHEET # C2
JOB # 2017086





AS BUILT INFORMATION

CONTRACTOR

	DATE
WORK STAKED BY	
INSPECTORS ACCEPTANCE BY	
FIELD VERIFICATION BY	
DRAWINGS CORRECTED BY	

BENCH MARKS

VALUE

CENTRAL STATION DATA

NM STATE PLANE COORDINATES

CENTRAL ZONE (NAD 27)

X=VALUE

Y=VALUE

MICRO-FILM INFORMATION

RECORDED BY DATE

G-G=VALUE

NO.

Dg=VALUE

Elev=VALUE

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

JOEL D. HERNANDEZ NEW MEXICO (17893) REGISTERED PROFESSIONAL ENGINEER 9/19/18

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGN

DESIGNED BY: JDH DATE: 9/19/2018

DRAWN BY: DY DATE: 9/19/2018

DRAWING NAME: 2017086-SH04-SD P&P JOB NO.: 2017086

CHECKED BY: JDH DATE: 9/19/2018

N

20 10 0 10 20

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: **OVERTURE SENIOR ACTIVE ADULT**
STORM DRAIN IMPROVEMENTS
STA: 70+00.00 TO 71+90.47

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL	LAST DESIGN UPDATE	MO./DAY/YR.	MO./DAY/YR.

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
532662	D-18--Z	4	4