City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: American Toyota Building Permit #: _____ City Drainage #: C18d012

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

Legal Description: Tracts A1 and B-1, American Toyota and lots 15-18 tract a unit b NAA

City Address: 5995 Alameda 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: miller family group Contact: _____

Address: _____

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

Architect: john mahony Contact: _____

Address: _____

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

Surveyor: CONSTRUCTION SURVEY INCORPORATED Contact: JOHN GALLEGOS

Address: _____

Phone#: 917.8921 Fax#: _____ E-mail: _____

Contractor: _____ Contact: _____

Address: _____

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

TYPE OF SUBMITTAL:

- ____ DRAINAGE REPORT
- ____ DRAINAGE PLAN 1st SUBMITTAL
- XX DRAINAGE PLAN RESUBMITTAL
- ____ CONCEPTUAL G & D PLAN
- ____ GRADING PLAN
- ____ EROSION & SEDIMENT CONTROL PLAN (ESC)
- ____ ENGINEER'S CERT (HYDROLOGY)
- ____ CLOMR/LOMR
- ____ TRAFFIC CIRCULATION LAYOUT (TCL)
- ____ ENGINEER'S CERT (TCL)
- ____ ENGINEER'S CERT (DRB SITE PLAN)
- ____ ENGINEER'S CERT (ESC)
- ____ SO-19
- ____ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ____ SIA/FINANCIAL GUARANTEE RELEASE
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D APPROVAL
- s S. DEV. FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY (PERM)
- ____ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ____ FOUNDATION PERMIT APPROVAL
- X BUILDING PERMIT APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ WORK ORDER APPROVAL
- ____ GRADING CERTIFICATION

- ____ SO-19 APPROVAL
- ____ ESC PERMIT APPROVAL
- ____ ESC CERT. ACCEPTANCE
- ____ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED: ____ Yes X No ____ Copy Provided

DATE SUBMITTED: 12/1/14 By: _____

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location, and scope to the proposed development defines the degree of drainage detail. One or more of the following levels of submittal may be required based on the followin

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

February 3, 2015

Ms. Amy Niese
Senior Engineer
Hydrology Department
Public Works Department
City of Albuquerque

RE: Revised Grading Plan (C-18D012)
American Toyota
Albuquerque, New Mexico

Dear Ms. Niese:

The purpose of this letter is to accompany the enclosed revised grading plan. The plan has been revised to accommodate your written comments dated 12/23/14. The following is a summary of your comment and the narrative as to how we addressed

1. Flood zone AE should be AO.
   I have corrected this in the report
2. First flush should be .34 inches multiplied by impervious area.
   We have added this calculation the calculation sheet. The retained volumes to reduce the flow to less than allowed is greater than the 'first-flush' amount
3. What are the flows identified in the DMP.
   We have included excerpts of the NAADMP.
4. Indicate on the existing basin map where the existing discharges are the flow and pipe sizes
   We have added this information on the basin map
5. On the proposed basin map, show the allowable and proposed area, flow and volume for each basin. For each Stormtech system, show the flow and volume in and out. show proposed flow and volume being discharged off site. Show allowable and volume at each location. label basins and roads.
   We have added more detail onto the proposed basin map. In addition we have shown existing flow for each discharge point and a comparison of allowed flow to existing and proposed.
6. Retention volumes should be based uopn100-year 10-day not 6 hour
   In calculating the resultant discharge based upon the captured volume. We utilize the 10- day volumes as requested
7. Include calculation for the design of the stormtech systems
   We have included details and calculations for each system,
8. Provide a detail sheet for storm tech system specific to this site
   We have included the details from the manufacturer.
9. How will the storm tech manifold system be done. Provide detail of how to be built
   We have included details of system and layout.

10. In south west corner what is the size of outlet pipe

    We have added the size on grading plan

11. In the southwest corner what is size of outlet pip and how will flow go into stormtech and into alameda system

    We have added the size of the outlet pipe. The existing pipe will be maintained. A 4' manhole is proposed down stream with a baffle that will force the water into the chambers until they are full then they will discharge to the existing storm drain.

12. for south two systems how do excess flows discharge

    One of the systems has been removed. This portion is designed to fill to capacity and overflow within the pavement. This basin will discharge thru a 6' rundown and discharge from the site at the historical location within the driveway..

13. In northwest corner what are sizes of pips connection to the system

    We have added the sizes of the pipes

14. For north basin will the site no longer utilize existing concrete channel

    We will continue to use the concrete channel

15. is there enough capacity in alameda and eagle rock to accept flows

    There are no as-builts for this system. The proposed discharge is consistent with the North Albuquerque Master Drainage Plan and less than existing conditions.

16. determine ownership of alameda and eagle rock system

    The City Department of Municipal Development does not maintain these, therefore we have submitted this same report to the NMDOT for approval

17. Show more spot elevations on the wall

    We have added additional spots

18. provide electronic copy of report and drawings

    We have submitted pdf with this resubmittal

Should you have any questions regarding this matter, please do not hesitate to call me.

Sincerely,

David Soule, PE
RIO GRANDE ENGINEERING
PO Box 93924
ALBUQUERQUE, NM 87199
321-9099

REVISED
DRAINAGE REPORT

For

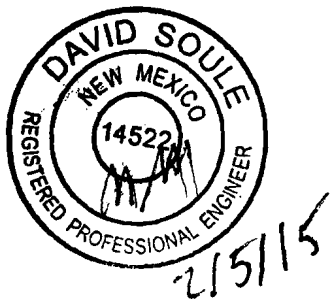
AMERICAN TOYOTA EXPANSION

Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

FEBRUARY 2015



David Soule P.E. No. 14522

TABLE OF CONTENTS

Appendix

Map

PURPOSE

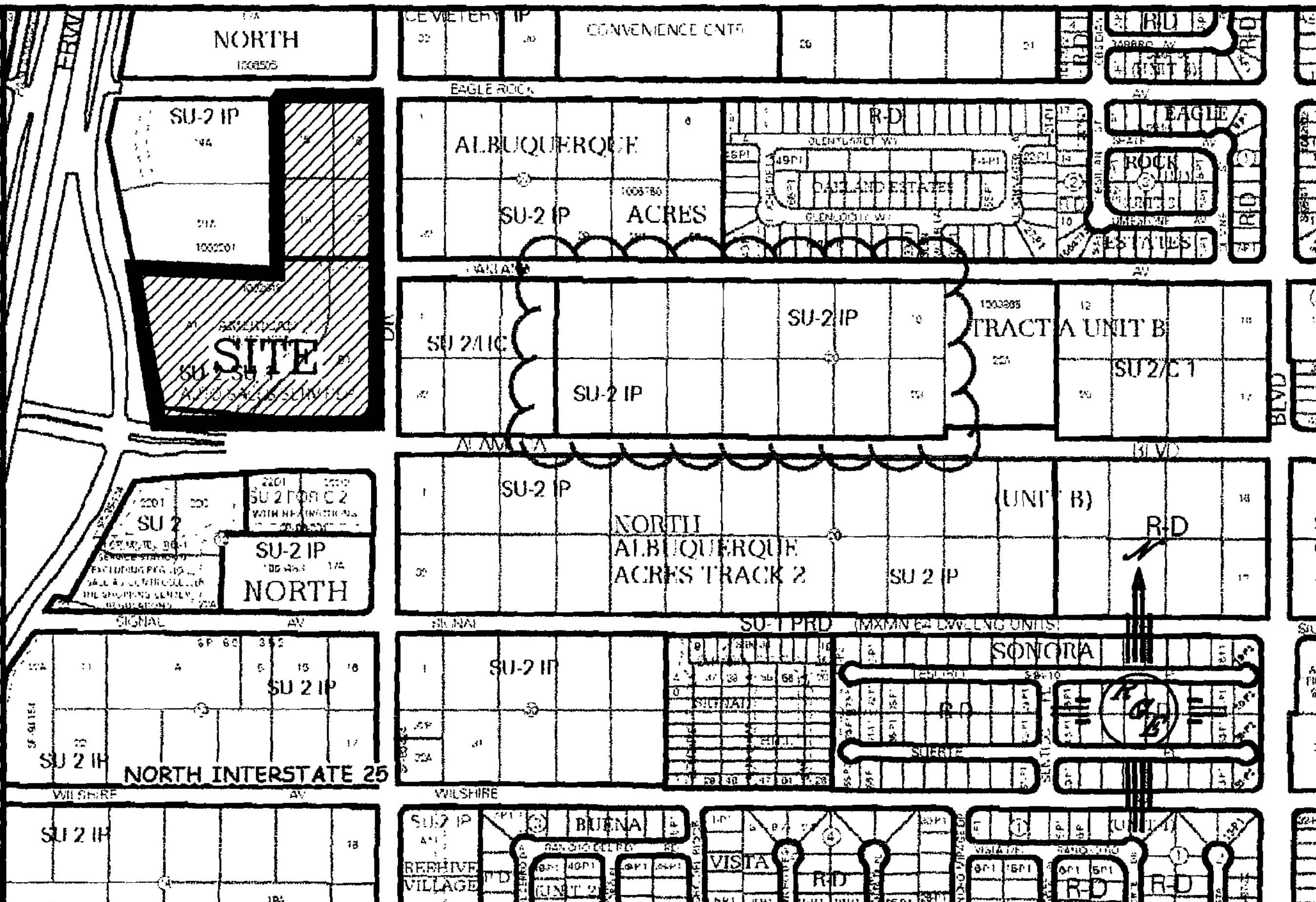
The purpose of this report is to provide the Drainage Management Plan for the development of a 10acre parcel located at 5995 alameda. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

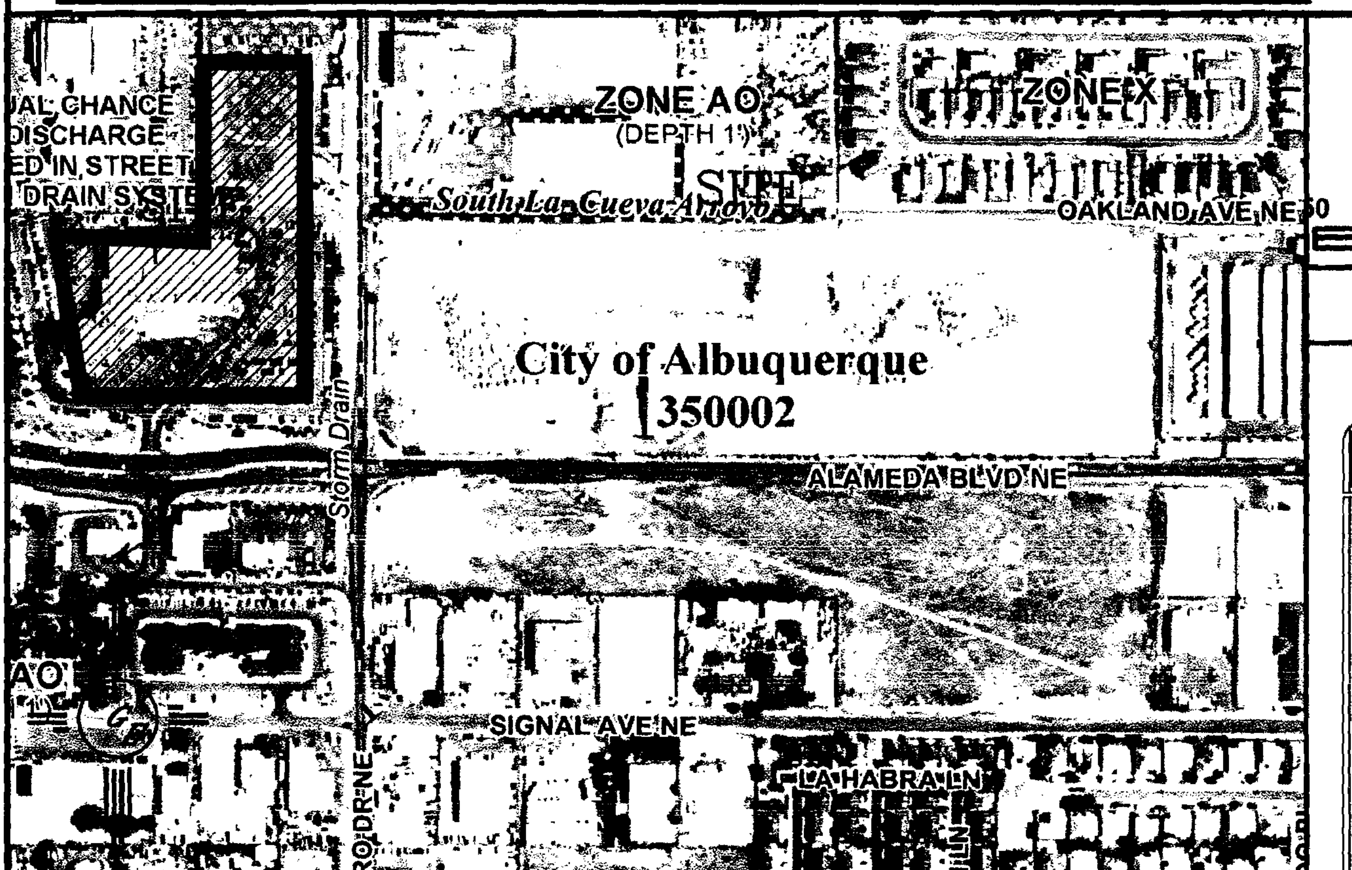
The subject of this report, as shown on the Exhibit A, is a 10-acre parcel of land located on the west side of San Pedro between Alameda and Eagle rock. The legal description of this site is Lots A and B land of American Toyota and lots 15-18, tract A, unit B North Albuquerque Aces. As shown on FIRM map35013C0137H, the majority of the site is located within Flood Zone X; a portion of the site is impacted by flood zone AO-1 foot. The site has had significant grading activities upon it over the past 10 years. The site is not in native condition and is currently developed. Due to the upstream construction of san Pedro, the site is not affected by any upland flow. The site free discharges to the west. The development of the site will require the site to discharge at a rate equal to or less than the fully developed conditions assumed for this site in the governing North Albuquerque Acres Master Drainage Plan (NAAMDP), which relevant excerpts can be found in appendix B.

EXISTING CONDITIONS

The site currently does have structures on it and has been impacted by human development over the years. The site is currently used as a car dealership and sales lot. The site was developed utilizing he approved drainage report in file C18d12, of which excerpts are found in appendix A. The file is old and significant portions were not found. The site is not impacted by any upland flows. As shown in appendix C, The site currently contains 4 basins. The three southern basins discharge to the existing storm drain in Alameda. As shown in appendix A, the storm drain was not a NMDOT facility but the City of Albuquerque DMD claims they do not maintain so permission from NMDOT to continue to drain at the same rate will be required. Basin Alameda B discharge 11.39 cfs to the Alameda roadway via surface flow thru the driveway. Basin Alameda A-1 discharges 7.78 cfs to the alameda storm drain via a 12" RCP conduit, and Alameda A-2 discharges 13.87 cfs to an 24" storm drain that runs within the frontage road connecting to the Alameda storm drain. The north portion of the site currently drains 13.20 cfs to a series of inlets which are connected to the Eagle rock storm drain. The adjacent site shows the inlets are designed for free discharge of the entire basin, which are significantly reduced due to the completion of San Mateo.



VICINITY MAP: C-18-Z



FIRM MAP: 35001C0137H

PROPOSED CONDITIONS

The proposed improvements consist of demolishing the existing building and constructing a new 75,000 building. The general drainage patterns will remain, and increases will be captured and harvested in accordance with new city policy. The amount of storage required to reduce the flow was calculated by comparing the volume of water generated from the basin in the allowed conditions of the NAA Drainage master plan and the water generated with the proposed land treatments. The calculation concept is to determine the how much land area the storage volume is equal to. The theory is the initial discharge is captured and once the collection basins are full the remaining site will discharge in accordance with what the down stream would experience according to the remaining area that is not capture. This increase in volume is captured by a series of underground infiltration chambers. The layout and volume calculation is located in appendix E.

The existing discharge points to the Alameda storm drain and the Eagle rock storm drain will be utilized. No offsite improvements will be constructed. The discharge point for existing basin Alameda B will contain new basins A, B and D. The proposed discharge rate of 10.11 from basins A and B will combine with basin D for a discharge rate of 12.68 cfs, the existing discharge rate is 11.39 cfs. The infiltrator system #4 will captured 6,058 cubic feet. The discharge point for basin Alameda will contain basin E, the proposed discharge rate of 6.66 cfs will leave the site within the existing 12" rcp pipe and 4000 cf will be captured by infiltrator system #3. The existing discharge rate is 7.78 cfs. The discharge point for basin Alameda B2 via frontage road contains basin F, with a proposed discharge rate of 11.25 will leave the site via the existing 24" rcp, 4000 cf will be captured by system #2, the existing discharge rate is 13.87. The flow from existing basin Eagle will contain basin C, it will discharge 6.65 cfs to the existing concrete channel and inlets. 10,100 cf will be captured by system#1. The existing discharge rate is 13.22 cfs

The portion of the site that discharges to eagle rock conforms to NAADMP basin 117.22,

the allowed discharge rate of 6.69 cfs is not exceeded. The portion of the site that drains to Alameda conforms to NAADMP basin 117.5. The allowed discharge rate of 36.93 is not exceeded. The site will discharge 6.65 cfs to Eagle Rock and 37.74 cfs to alameda. This is less than existing and less than allowed. We will utilize existing storm drain connection onsite. No off site infrastructure will be constructed. The proposed discharge rates and locations are less than historical and less than allowed in the North Albuquerque Acres master drainage plan.

SUMMARY AND RECOMMENDATIONS

This project is a redevelopment of an existing site. The development discharge will be consistent with the land use assumptions of the North Albuquerque Acres Master drainage plan. The use of underground infiltration will be used to collect the excess discharge and the water quality volume required. The site has been designed in accordance with City of Albuquerque Drainage ordinance. This drainage plan and report conforms to the governing drainage regulations of the City. Since the effected area site encompasses more than 1 acre, a NPDES permit will be required prior to any construction activity. A letter of Map revision (LOMR) has been submitted to remove the floodplain. In addition a LOMR will be required to be submitted prior to release of financial guarantee.

APPENDIX A

Excerpts of Original drainage report

0000 0000 1795

AMERICAN TOYOTA TRACT B

GRADING AND DRAINAGE PLAN

Prepared by:

Bruiher Engineering, Inc.
4425 Juan Tabo N. E. Suite 202
Albuquerque, New Mexico 87112

September, 1994

25×10

0000 0000 1799

AMERICAN TOYOTA TRACT B

GRADING AND DRAINAGE PLAN

PURPOSE AND SCOPE

The purpose of this Grading and Drainage Plan is to develop the hydrology for the subject property, and to contour the site for use as a vehicle parking and storage facility.

The scope of this report is the analysis of drainage conditions for Tract B, originally analyzed in 1986, using current hydrologic criteria. This plan describes the existing conditions, recent drainage analyses pertaining to the site, and the proposed method of managing stormwater runoff.

SITE LOCATION AND DESCRIPTION

The project site is American Toyota Tract B. It consists of 2.00 acres annexed to the City at the northwest corner of Alameda and San Pedro, in Map C-18. It is bounded on the north by Oakland, on the east by San Pedro, on the west by an existing auto dealership facility, and on the south by Alameda. Oakland is a North Albuquerque Acres 60' unpaved road. San Pedro is paved to 24 feet in width, with an existing 54" storm drain flowing north, in the east side of the road. Alameda is paved permanently to half-width on most of the north side, with curb and gutter, and a 6' sidewalk 1' from the back of the curb. The site was replatted from its original North Albuquerque Acres I-acre lots in 1986, together with Tract A to the west. At that time, it was zoned SU-1 for auto dealership and related uses. The dealership was constructed on Tract A, and Tract B was graded for parking and/or a grading and drainage plan in 1986 for both tracts. The east boundary of Tract A is a 60-foot wide private access and drainage easement which connects by reverse curve Alameda and Oakland. It is mostly all gravel, but it has no outlet to Oakland, and is not used as a through street.

The site is generally unsurfaced, but rough-graded, and in use for storage of new vehicles, and some employee parking, all related to the auto dealership operation on Tract A. The site slopes generally from east to west at approximately 4%. It was originally graded in conformance with existing topography without extensive cutting or filling. As shown by FEMA FIRM Plate 350002 0010C, the site does not lie within a 100 year floodplain.

On-site soils consist mainly of Embudo-Tijeras complex, and Embudo, which are classified by the Soil Conservation Service as hydrologic group 'B' soils. SCS describes them as follows:

EmB - Embudo gravelly fine sandy loam; 0-5% slopes. These are generally deep, well drained soils formed in alluvium derived from decomposed, coarse-grained granitic rocks. They exhibit medium runoff characteristics with moderate erosion.

EtC - Embudo-Tijeras complex, fine sandy loam, 0-9% slopes. This type occurs in drainageways and depressions, and the Tijeras soil is on low ridges in narrow undulations. Runoff is medium, and erosion is moderate.

25×10

EXISTING DRAINAGE CONDITIONS

The 1986 drainage plan analyzed the upstream and downstream basins for both Tracts A and B. It was determined that all flows generated east of San Pedro should be intercepted at or upstream San Pedro by the 54" line in San Pedro. That drainage plan showed that the existing line had the inlet and line capacity to accomplish this for undeveloped conditions upstream. It showed that ultimately, the developed flows could be intercepted by additional drop inlets constructed at the intersections with Alameda and Oakland. This original plan analyzed the Alameda (Richfield) basin downstream and determined that it had the capacity to convey stormwater from both Tracts A and B under developed conditions, based upon criteria in effect at that time.

Tract B was graded to drain to the west to the private drainage and access easement on the east side of Tract A, then south to Alameda. A small portion of Tract B was also planned to discharge to Oakland where, downstream in the cul-de-sac, a drop inlet was constructed with a rundown to the I-25 drainage canal. This grading and drainage plan does not propose to alter these original established basins.

At the time of subdivision, Tract A was encumbered with public and private infrastructure improvements. All these improvements were constructed. The improvements appurtenant to Tract B were identified by infrastructure listing, but were granted a bulk land exclusion and therefore deferred. This finding was both the requirements for paving in Oakland, San Pedro, and Alameda, and waterlines in San Pedro. The paving improvements in Alameda will be constructed under City Project P3037.

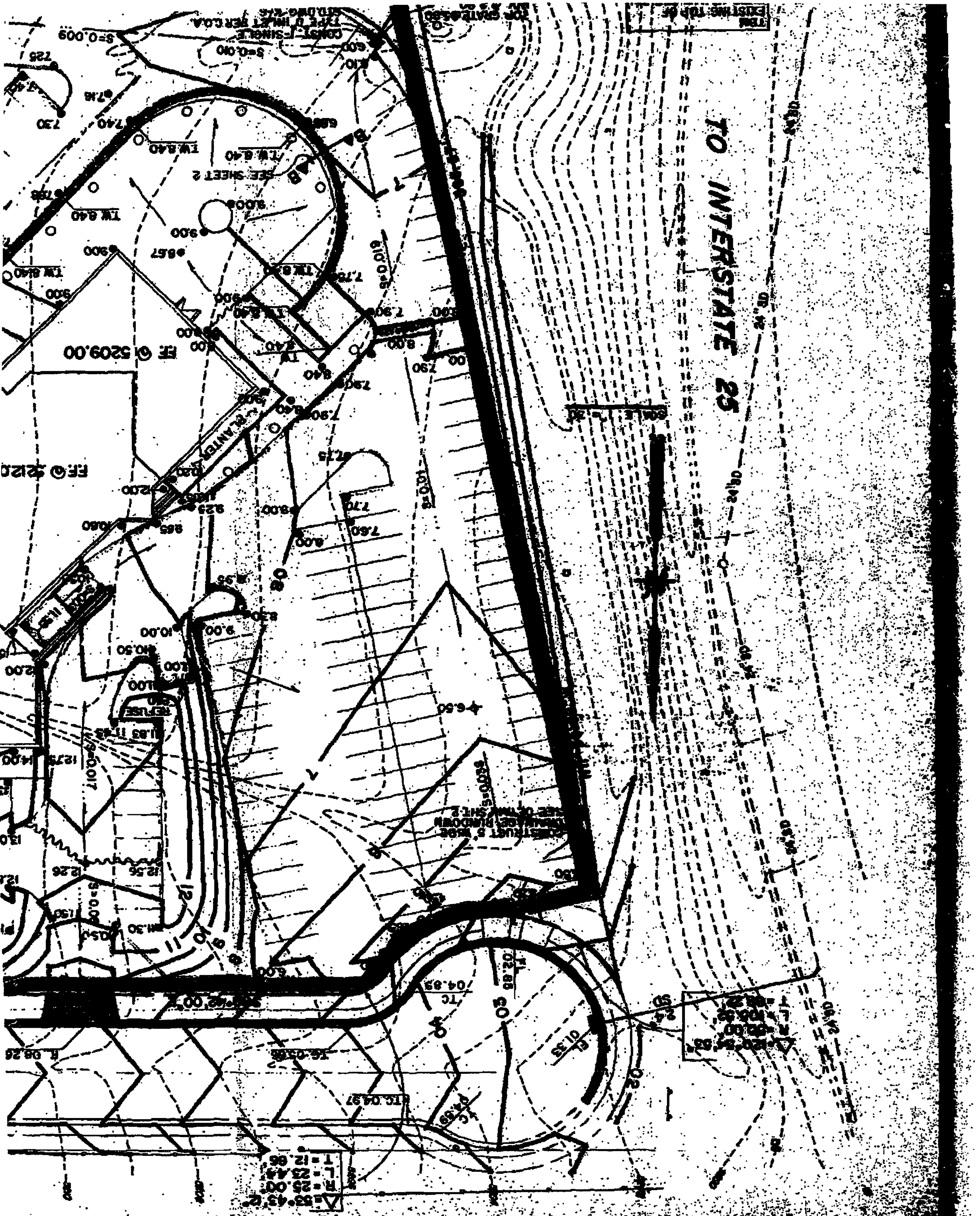
PROPOSED CONDITIONS

The site was graded and has been used continually since 1986 for parking and vehicle storage. The only change to this condition is that the site will be paved. In compliance with the Ninth I-25 Sector Plan, a landscaping buffer will be constructed at the right-of-way lines of the adjoining public streets. These landscaping strips are 15' wide on San Pedro and Alameda, and 10' on Oakland. The site will still drain to the private access and drainage easement, and a narrow strip of the north end of the site will drain to Oakland. Before paving, the yard grading will be refined. The infrastructure listing improvements for Tract B will be constructed by separate City work order. The grading plan reflects the street grades to be constructed by that work order and by City Project 3037 in Alameda.

The original grading and drainage plan contemplated an impervious site for Tract B, and incorporated it into analyses under former criteria. The plan again considers the site as essentially impervious, however, it is analyzed under hydrologic criteria presently in effect. Using new criteria, the 100-year runoff flowrates and volumes are computed. This plan provides detention ponding on-site for the difference between runoff planned for in 1986, and that generated under present methodology. Originally, the site was considered as generating 12.8 cfs under 100-year conditions. By method prescribed in DPM Volume II, Chapter ZZ, this same site will now generate 14.2 cfs - an increase of 1.4 cfs as a result of more stringent criteria now in effect. Although this represents only a marginal increase over past hydrology, this plan provides for the detention ponding of approximately 1810 cubic feet in the southwest corner of the site. The area contributing this volume is shown as Basin 'B'. The area and land treatments within Basin 'A' generate 10.8 cfs. Basin 'B' generates 1809 cubic feet, which will be released through a single 'D' type inlet and a controlled rate of 2.0 cfs. This volume with the

corresponding flowrates are determined by construction of the hydrograph. The pond will accumulate water under 100-year conditions, and is situated in an area reserved for storage and there of new vehicles.

Site grading provides for the widened pavement of the private access road. It calls for establishment of finish "0", and sloping of the site at approximately 4% from east to west. It calls for 6" curbing around the perimeter of the asphalt, with landscaped parking islands in certain locations. One island will include a small roofed, open structure. The site will have lighting fixtures distributed throughout it. Perimeter landscaping will be sod or native minimal water use vegetation, with trees. Minor regrading of a portion of Alameda to reduce the slope may be necessary, but in no instance will slopes be steeper than 3:1 (h:v).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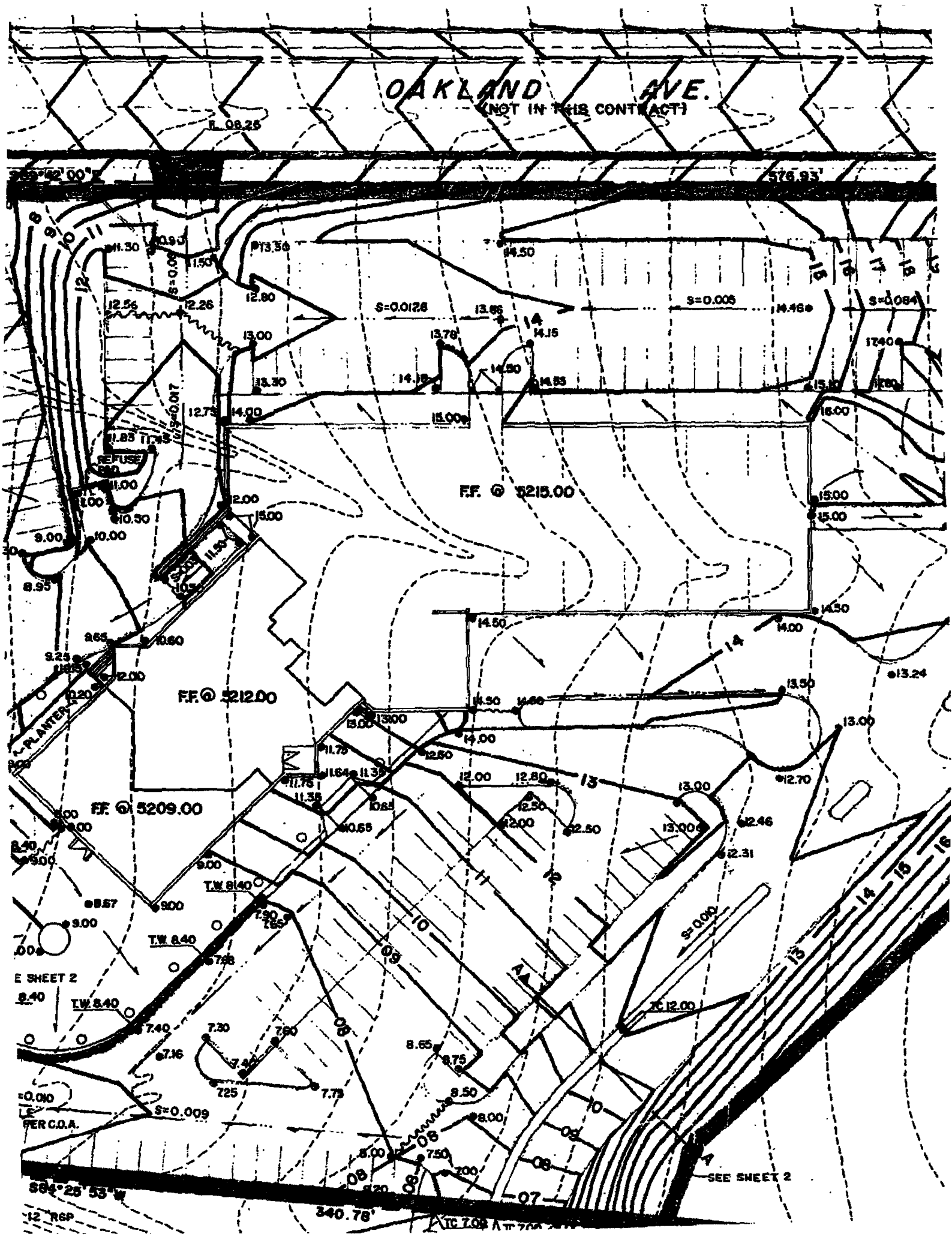
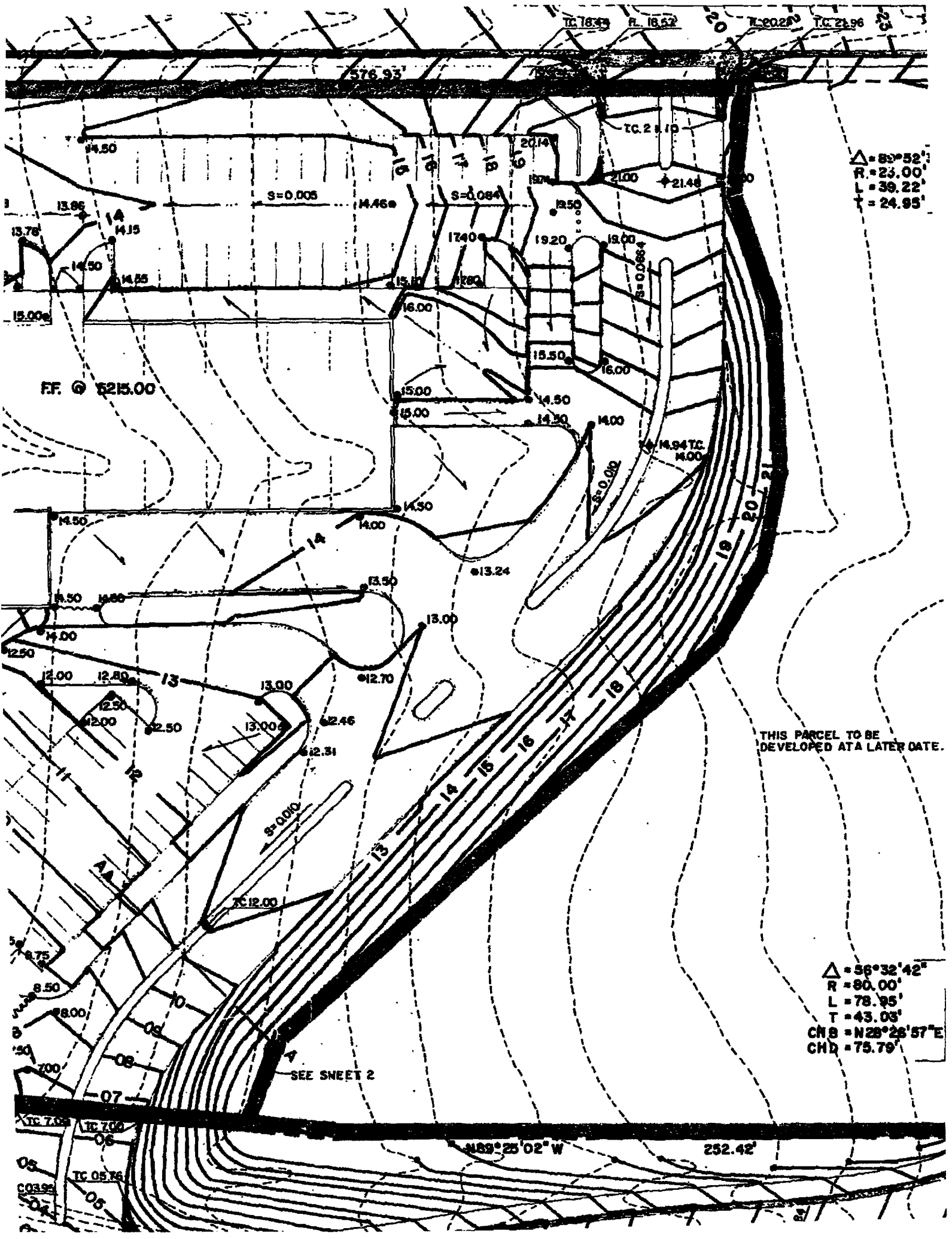
FF @ 5209.00
SEE SHEET 2
REFUSE


OAKLAND AVE.
(NOT IN THIS CONTRACT)
576.93'
F.F. @ 5215.00
F.F. @ 5212.00
F.F. @ 5209.00
S=0.0128
S=0.005
S=0.084
S=0.017
S=0.009
S=0.010
S=0.020
PLANTER
REFUSE
SEE SHEET 2
S84°25'53"W
340.78'


576.93'
F.F. @ 5215.00
S=0.005
S=0.084
S=0.010
Δ = 89°52'
R = 23.00'
L = 39.22'
T = 24.95'
THIS PARCEL TO BE DEVELOPED AT A LATER DATE.
Δ = 56°32'42"
R = 80.00'
L = 78.95'
T = 43.03'
CHB = N28°28'57"E
CHD = 75.79'
SEE SNEET 2
N89°25'02"W
252.42'

NEW MEXICO
STATE HIGHWAY DEPARTMENT

DISTRICT NO. 3

P.O. BOX 2[illegible], STANFORD
ALBUQUERQUE, NEW MEXICO [illegible]

November 10, 1986

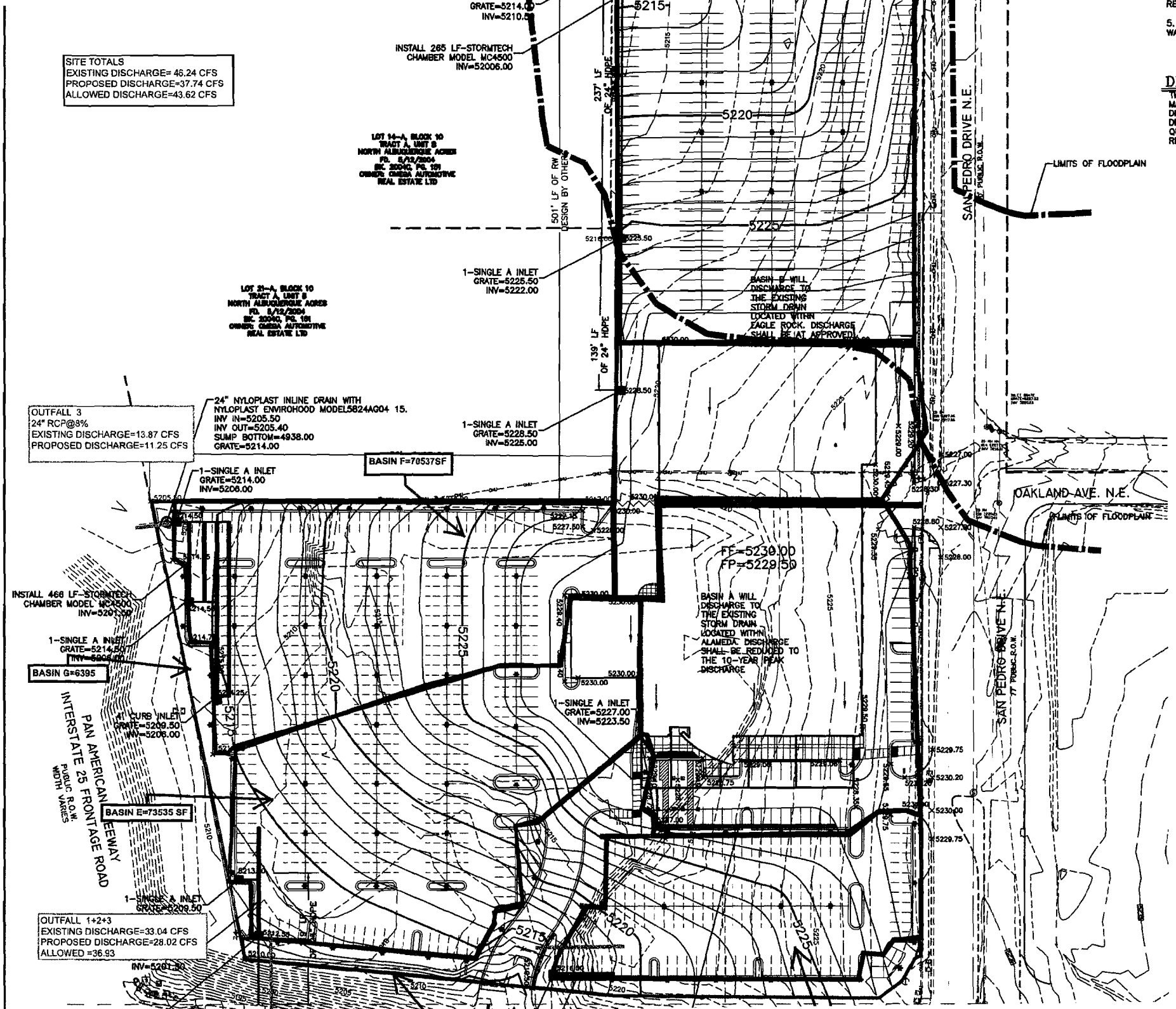
TO WHOM IT MAY CONCERN:

The storm sewer system in existance on San Pedro Drive in the vicinity of Alameda Drive, as well as the storm sewer system constructed to pass storm water under I-25 at the Alameda Interchange are not the property of nor maintained by the State Highway Department.

D. E. ARP
District Highway Engineer

APPENDIX D

PROPOSED HYDROLOGY



RESPONSIBILITY

5. ALL EXPOSED
WATER EROSION

DRAINAGE

THIS SITE IS LOC
MASTER DRAINAGE
DISCHARGE RATES
DEVELOPED COND
QUALITY FEATURES
REQUIREMENTS F

Weighted E Method

AMERICAN TOYOTA

PROPOSED Developed Basins

											100-Year, 6-hr.			10-day
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)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
BASIN A	39648	0.910	0%	0	4.0%	0.036	6.0%	0.05461	90%	0.819	2.238	0.170	4.40	0.279
BASIN B	74514	1.711	0%	0	4.0%	0.068	6.0%	0.10264	90%	1.540	2.238	0.319	8.26	0.524
BASIN C	95977	2.203	0%	0	4.0%	0.088	6.0%	0.1322	90%	1.983	2.238	0.411	10.64	0.675
BASIN D	27176	0.624	0%	0	10.0%	0.062	42.0%	0.26203	48%	0.299	1.767	0.092	2.57	0.132
BASIN E	73535	1.688	0%	0	4.0%	0.068	6.0%	0.10129	90%	1.519	2.238	0.315	8.15	0.517
BASIN F	116842	2.682	0%	0	4.0%	0.107	6.0%	0.16094	90%	2.414	2.238	0.500	12.95	0.822
BASIN G	6395	0.147	0%	0	15.0%	0.022	85.0%	0.12479	0%	0.000	1.235	0.015	0.49	0.015
WATER QUALITY	427692	9.8184573												

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 (zone 3)

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 SUMMARY

	PROPOSED					
DISCHARGE TO INLET A	4.40	CFS				
DISCHARGE TO INLETB	8.26	CFS				
DISCHARGE TO INLET C	10.64	CFS				
DISCHARGE TO INLET E	8.15	CFS				
DISCHARGE TO INLET F	12.95	CFS				
			EXISTING		FIRST FLUSH	RETAINED
DISHCHARGE TO FALL 1	10.11	CFS	11.390	CFS	2911	6000
DISCHARGE TO OUTFALL 2	6.66	CFS	7.780	CFS	1875	3500
DISCHARGE TO OUTFALL 3	11.25	CFS	13.870	CFS	2980	4000
DISCHARGE TO OUTFALL4	6.65	CFS	13.220	CFS	2448	10000

COMPARISION

	EXISTING	PROPOSED	ALLOWED
EAGLE ROCK	13.2	6.66	6.69
ALAMEDA	33.04	31.08	36.93
TOTALS	46.24	37.74	43.62

Weighted E Method

AMERICAN TOYOTA
OUTFALL #1

PROPOSED Developed Basins

											100-Year, 6-hr.			24-hour
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)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
BASIN A	39648	0.910	0%	0	4.0%	0.036	6.0%	0.05461	90%	0.819	2.238	0.170	4.40	0.235
BASIN B	74514	1.711	0%	0	4.0%	0.068	6.0%	0.10264	90%	1.540	2.238	0.319	8.26	0.442
AREA CAPTURED	23000	0.528	0%	0	4.0%	0.021	6.0%	0.03168	90%	0.475	2.238	0.098	2.55	0.136

WATER QUALITY 2911.131

RESULTANT DISCHARGE 10.11 CFS
EXISTING 11.39 CFS

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

STORAGE 6000 CF 0.137741047

Where for 100-year, 6-hour storm (zone 3)

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

Weighted E Method

AMERICAN TOYOTA
OUTFALL#2

PROPOSED Developed Basins

											100-Year, 6-hr.			10-day
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)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
BASIN E	73535	1.688	0%	0	4.0%	0.068	6.0%	0.10129	90%	1.519	2.238	0.315	8.15	0.436
CAPTURED	13500	0.310	0%	0	4.0%	0.012	6.0%	0.0186	90%	0.279	2.238	0.058	1.50	0.080
WATER QUALITY	1875.1425													

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 (zone 3)

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

RESULTANT DISCHARGE 6.66 CFS
EXISTING 7.78 CFS

STORAGE 3500 0.08034894

Weighted E Method

AMERICAN TOYOTA
OUTFALL 3

PROPOSED Developed Basins

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
			%	(acres)	%	(acres)	%	(acres)	%	(acres)				
BASIN F	116842	2.682	0%	0	4.0%	0.107	6.0%	0.16094	90%	2.414	2.238	0.500	12.95	0.822
AREA CAPTURED	15400	0.354	0%	0	4.0%	0.014	6.0%	0.02121	90%	0.318	2.238	0.066	1.71	0.091
WATER QUALITY	2979.471													

Equations:

RESULTANT DISCHARGE 11.25 CFS
EXISTING 13.87 CFS

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

STORAGE 4000 CF 0.091827365

Where for 100-year, 6-hour storm (zone 3)

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

Weighted E Method

AMERICAN TOYOTA
OUTFALL 4

PROPOSED Developed Basins

											100-Year, 6-hr.			10-day
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)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
BASIN C	95977	2.203	0%	0	4.0%	0.088	6.0%	0.1322	90%	1.983	2.238	0.411	10.64	0.675
AREA CAPTURED	36000	0.826	0%	0	4.0%	0.033	6.0%	0.04959	90%	0.744	2.238	0.154	3.99	0.214
WATER QUALITY	2447.4135	2.2033287												

Equations:

RESULTANT DISCHARGE 6.65 CFS
EXISTING 13.22 CFS
6.69

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

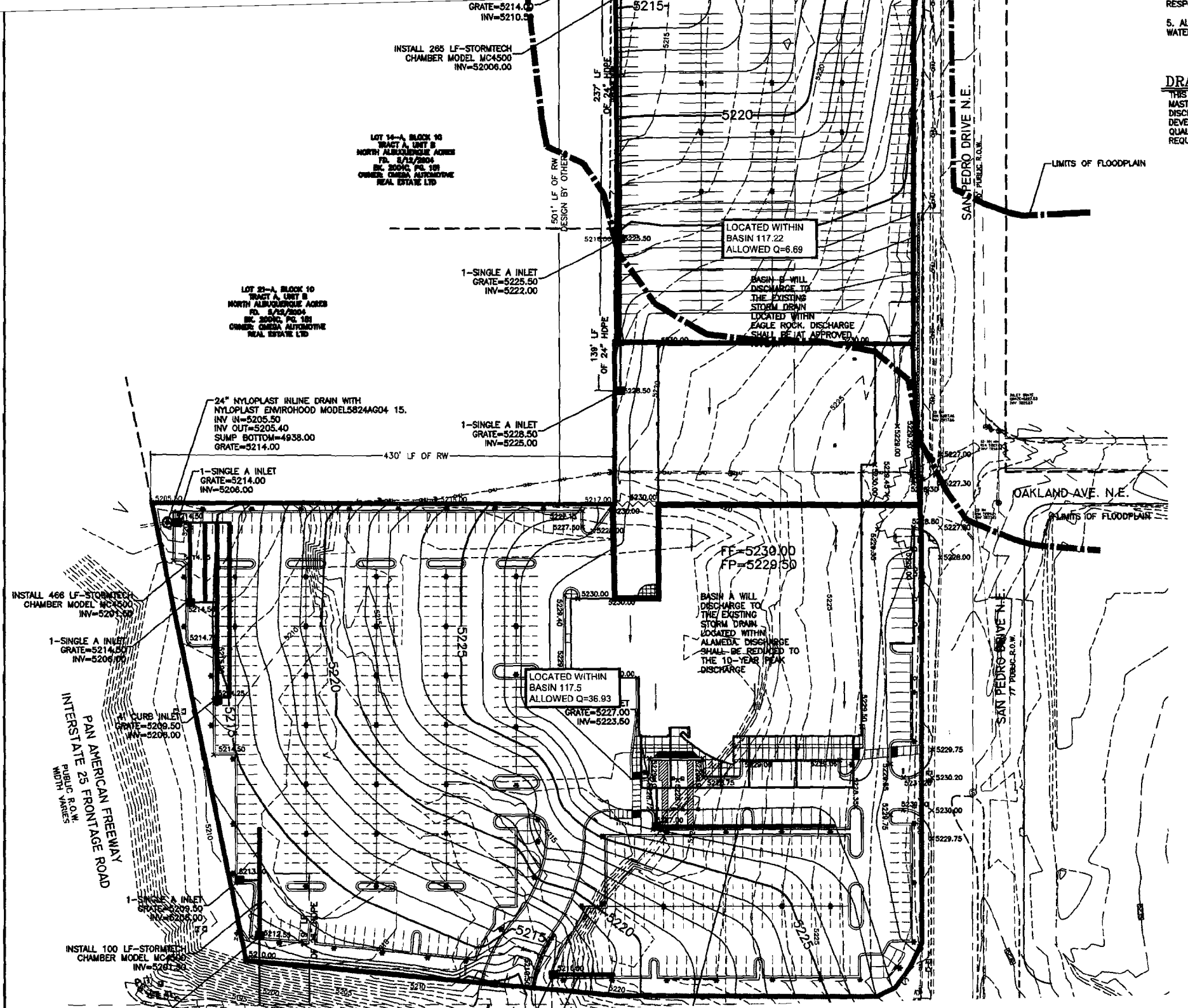
STORAGE 10000CF 0.229568411

Where for 100-year, 6-hour storm (zone 3)

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

APPENDIX B

NAADMP EXCERPTS



RESPONSIBILITY

5. ALL EXPOSED
WATER EROSION

DRAINAGE

THIS SITE IS LO
MASTER DRAINAG
DISCHARGE RATE
DEVELOPED CON
QUALITY FEATURE
REQUIREMENTS F

Weighted E Method

AMERICAN TOYOTA

NAAMDP Developed Basins

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
			%	(acres)	%	(acres)	%	(acres)	%	(acres)				
EAGLEROCK	66508	1.527	0%	0	20.0%	0.305	10.0%	0.15268	70%	1.069	1.965	0.250	6.69	0.393
ALAMEDA	367341	8.433	0%	0	20.0%	1.687	10.0%	0.8433	70%	5.903	1.965	1.381	36.93	2.168

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 (zone 3)

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

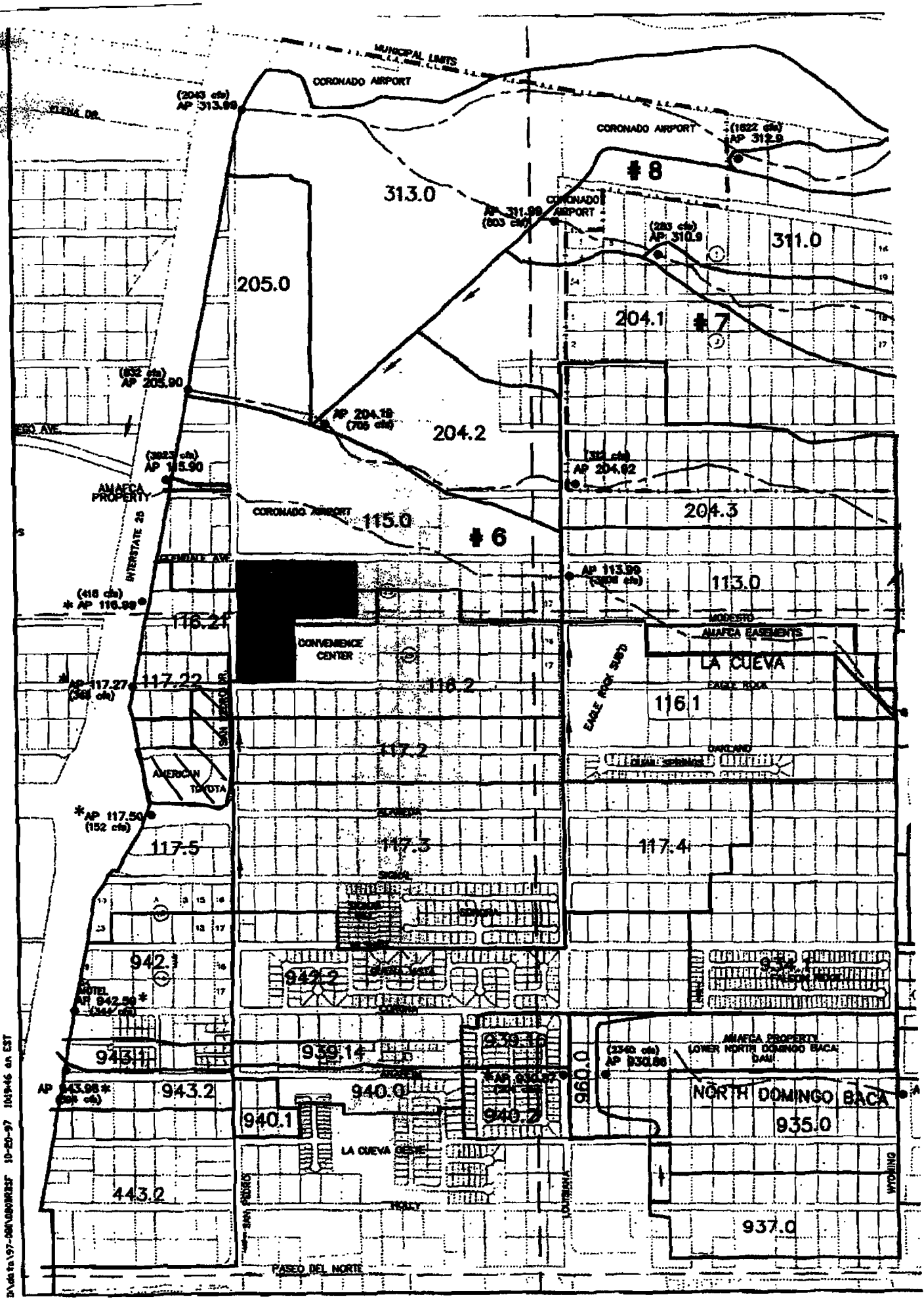

MUNICIPAL LIMITS
CORONADO AIRPORT
ELENA DR
(2043 cfs)
AP 313.99
313.0
205.0
8
(1822 cfs)
AP 312.9
AP 311.99
(803 cfs)
(283 cfs)
AP 310.9
311.0
204.1
7
(832 cfs)
AP 205.90
AP 204.19
(705 cfs)
204.2
(312 cfs)
AP 204.02
204.3
AMAFCA PROPERTY
INTERSTATE 25
CORONADO AIRPORT
115.0
6
AP 113.99
(3808 cfs)
113.0
(416 cfs)
AP 116.99
116.2
CONVENIENCE CENTER
MODESTO
AMAFCA EASEMENTS
LA CUEVA
EAGLE ROCK
116.1
AP 117.27
(368 cfs)
117.22
117.2
OAKLAND
AMERICAN TOYOTA
AP 117.50
(152 cfs)
117.5
117.3
117.4
942.3
942.2
HOTEL
AP 942.50
(344 cfs)
939.16
939.14
943.1
AP 943.98
(308 cfs)
943.2
940.0
940.1
940.2
960.0
(2340 cfs)
AP 930.88
AMAFCA PROPERTY
LOWER NORTH DOMINGO BACA DAM
NORTH DOMINGO BACA
935.0
LA CUEVA DRIVE
443.2
937.0
WYOMING
SAN PEDRO
LOUISIANA
PASEO DEL NORTE

TABLE A-2 (cont.)

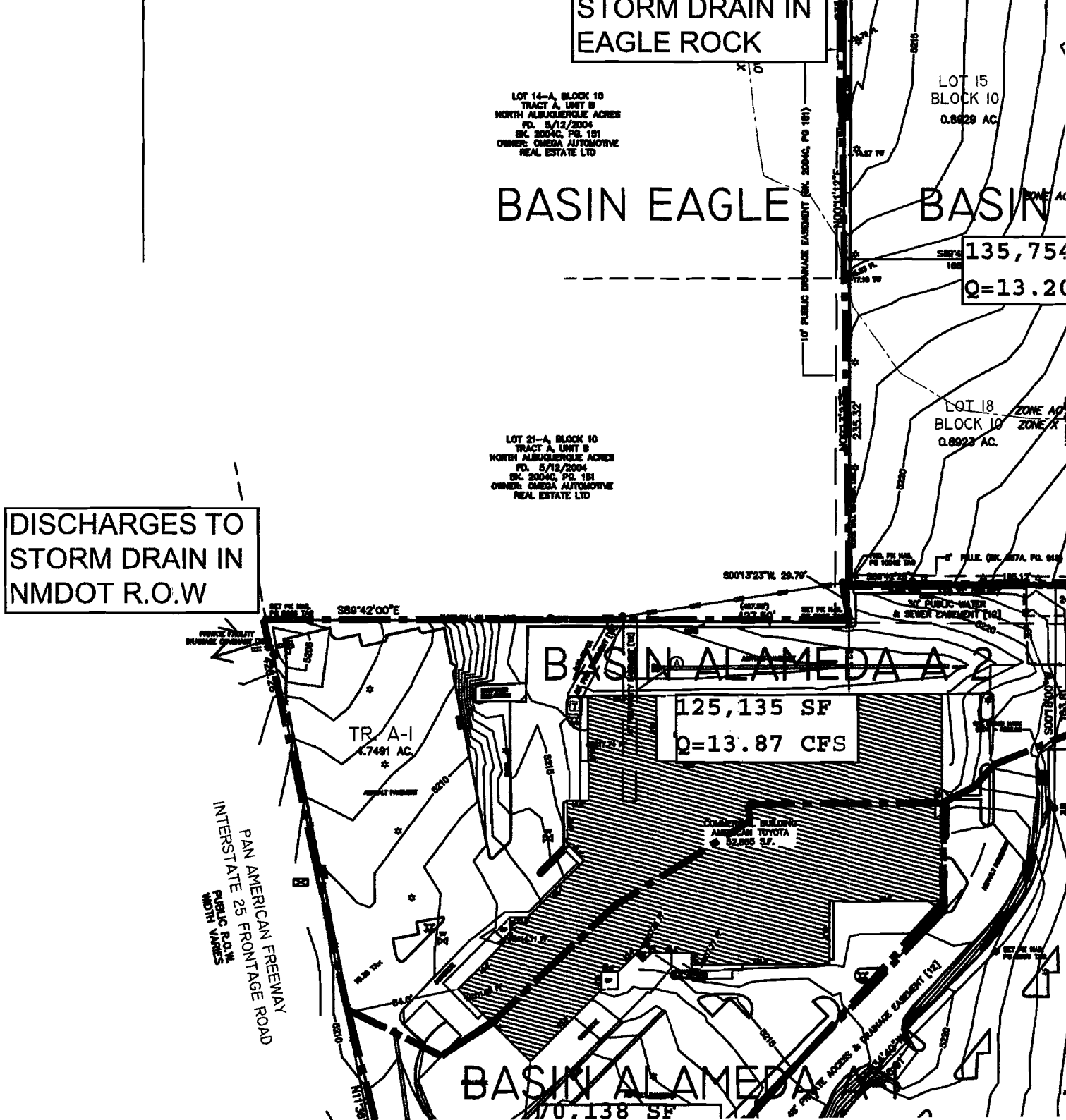
LA CUEVA ARROYO SUB-BASIN CHARACTERISTICS

Basin ID	Hydrologic Condition	Basin Area (mi^2)	Land Treatment (%)				TP (hrs)
			A	B	C	D	
113*	Existing	.1136	80	0	15	5	.133
	Future	.1000	0	25	15	60	.133
115*	Existing	.1337	80	0	15	5	.133
	Future	.1202	0	26	12	62	.133
116*	Existing	.1309	80	0	5	15	.133
116.1	Future	.1000	0	25	15	50	.133
116.2	Future	.0719	0	25	15	60 ~~50~~	.133
116.21	Future	.0344	0	40	20	40	.133
117.2*	Existing	.1391	73	0	7	20	.22
	Future	.0500	0	34	16	50	.133
117.21*	Existing	.0234	0	34	16	50	.133
117.22*	Future	.0156	0	20	10	70	.133
117.3*	Existing	.0863	65	5	15	15	.133
	Future	.1172	0	34	16	50	.133
117.31*	Existing	.0250	0	34	16	50	.133
117.32*	Existing	.0090	0	34	16	50	.133
117.4*	Existing	.0750	85	0	5	10	.133
	Future	.0512	0	25	15	60	.133
117.5*	Existing	.0550	0	10	20	70	.133
	Future	.0550	0	10	20	70	.133
118	Existing	.0649	0	20	10	70	.133
	Future	.0649	0	20	10	70	.133
118.1	Existing	.0306	75	5	10	10	.133
	Future	.0306	0	20	30	50	.133
119	Existing	.0549	0	20	10	70	.133
	Future	.0549	0	20	10	70	.133
120	Existing	.0268	50	0	0	50	.133
	Future	.0268	0	20	10	70	.133
121	Existing	.0489	80	0	15	5	.133
	Future	.0489	0	20	10	70	.133

*Modified for COA NAA MDP 9/97

APPENDIX C

EXISTING HYDROLOGY


STORM DRAIN IN EAGLE ROCK
LOT 14-A, BLOCK 10
TRACT A, UNIT B
NORTH ALBUQUERQUE ACRES
FD. 5/12/2004
BK. 2004C, PG. 151
OWNER: OMEGA AUTOMOTIVE REAL ESTATE LTD
LOT 15
BLOCK 10
0.8629 AC.
BASIN EAGLE
BASIN
135,754
Q=13.20
10' PUBLIC DRAINAGE EASEMENT (BK. 2004C, PG 151)
LOT 18
BLOCK 10
0.8923 AC.
ZONE X
LOT 21-A, BLOCK 10
TRACT A, UNIT B
NORTH ALBUQUERQUE ACRES
FD. 5/12/2004
BK. 2004C, PG. 151
OWNER: OMEGA AUTOMOTIVE REAL ESTATE LTD
DISCHARGES TO STORM DRAIN IN NMDOT R.O.W
S89°42'00"E
BASIN ALAMEDA A-2
125,135 SF
Q=13.87 CFS
TR. A-I
4.7491 AC.
PAN AMERICAN FREEWAY
INTERSTATE 25 FRONTAGE ROAD
PUBLIC R.O.W.
WIDTH VARIES
BASIN ALAMEDA
70,138 SF

APPENDIX E

STORMTECH DETAILS AND CALCULATIONS

ADS SALES REP:	PETER NICHOLS 505-301-5604 PETER.NICHOLS@ADS-PIPE.COM
PROJECT NO:	82394 REV1

ADVANCED DRAINAGE SYSTEMS, INC.

AMERICAN TOYOTA

ALBUQUERQUE, NM

STORMWATER CHAMBER SPECIFICATIONS

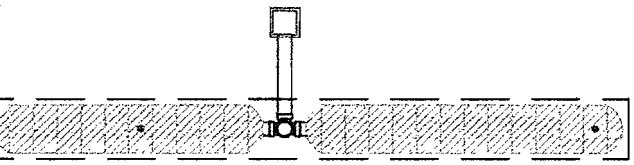
1. CHAMBERS SHALL BE STORMTECH MC-4500 OR APPROVED EQUAL.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

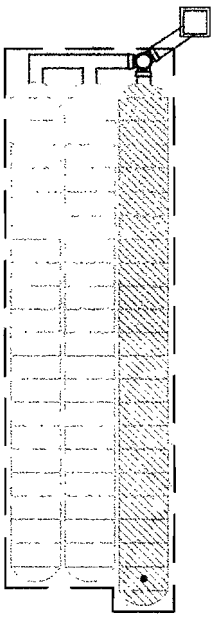
IMPORTANT - NOTES FOR THE BID

1. STORMTECH MC-4500 CHAMBERS SHALL NOT
   PRE-CONSTRUCTION MEETING WITH THE INS
2. STORMTECH MC-4500 CHAMBERS SHALL BE
3. CHAMBERS ARE NOT TO BE BACKFILLED WIT
   STORMTECH RECOMMENDS 3 BACKFILL MET
   - STONESHOOTER LOCATED OFF THE
   - BACKFILL AS ROWS ARE BUILT USING
   - BACKFILL FROM OUTSIDE THE EXCAV
4. THE FOUNDATION STONE SHALL BE LEVELED
5. JOINTS BETWEEN CHAMBERS SHALL BE PRO
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BE
7. INLET AND OUTLET MANIFOLDS MUST BE INS
8. EMBEDMENT STONE SURROUNDING CHAMBE
   DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY ARO
   DIFFER BY MORE THAN 12" (300 mm) BETWEE
10. STONE MUST BE PLACED ON THE TOP CENTE
11. ADS RECOMMENDS THE USE OF "FLEXSTORM
    STORMWATER MANAGEMENT SYSTEM FROM

NOTES FOR CONSTRUCTION EQU

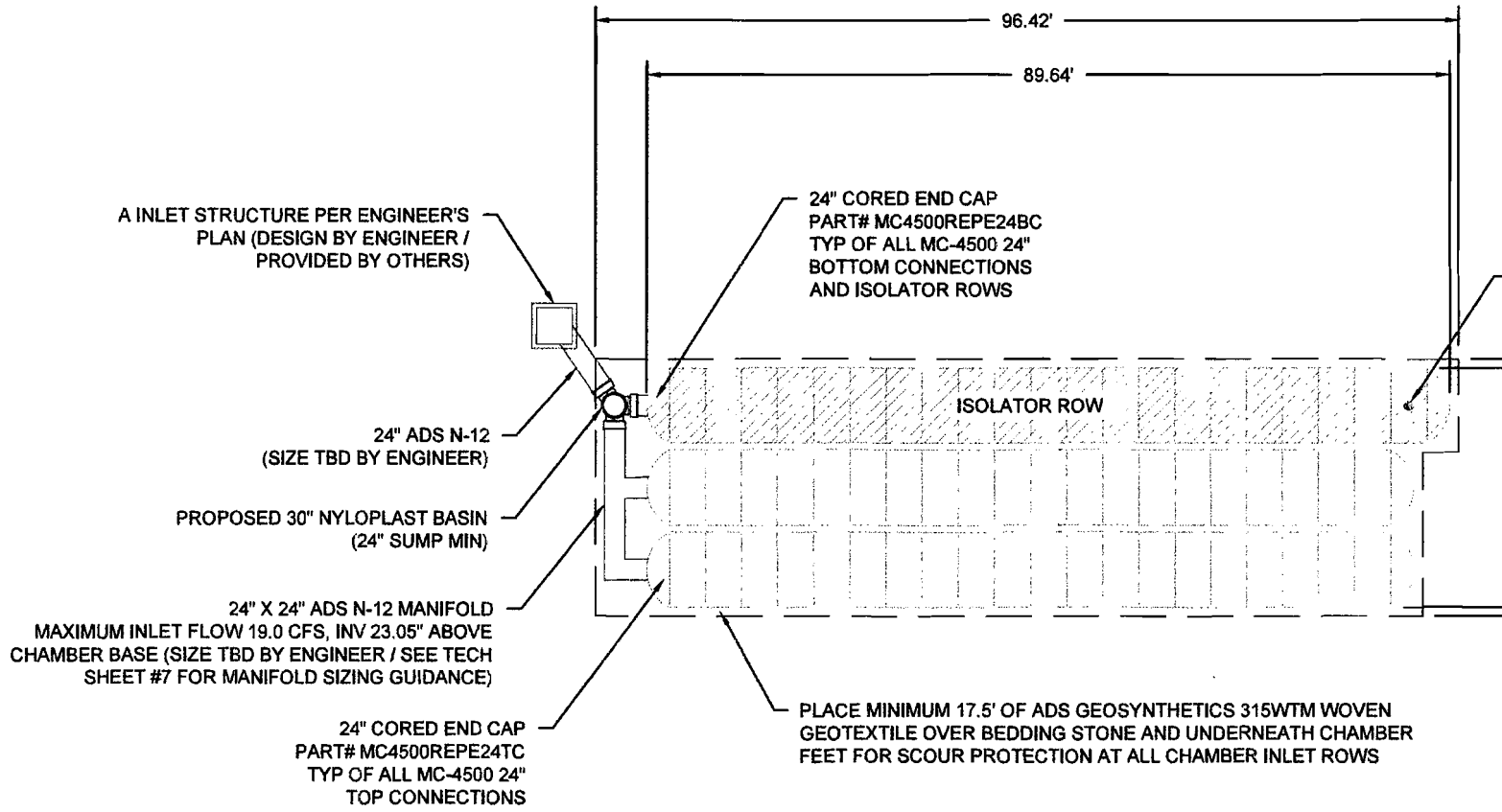
1. STORMTECH MC-4500 CHAMBERS SHALL BE
2. THE USE OF EQUIPMENT OVER MC-4500 CHA
   - NO EQUIPMENT IS ALLOWED ON BARE
   - NO RUBBER TIRED LOADER, DUMP TR
     WITH THE "STORMTECH MC-3500/MC-
   - WEIGHT LIMITS FOR CONSRUCTION E





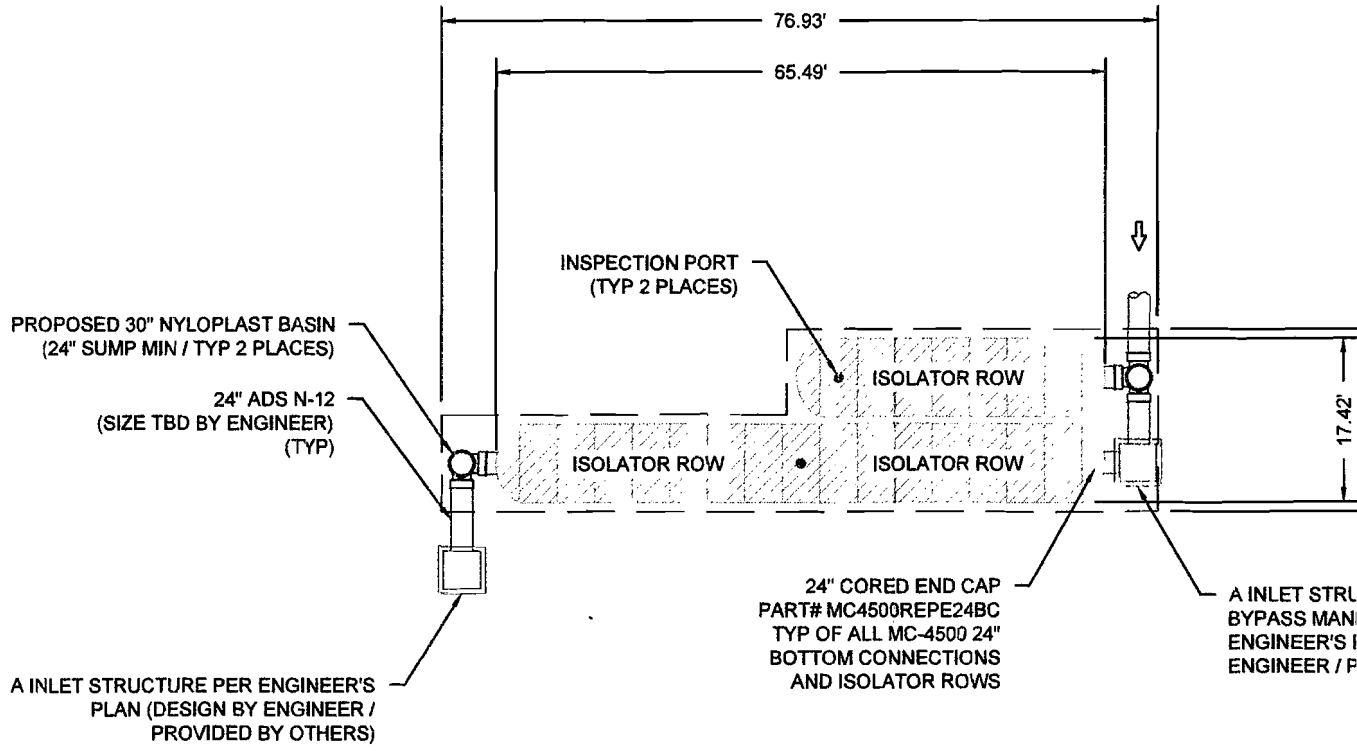
PROPOSED ELEVATIONS (SYSTEM #1)

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	5218.75
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	5214.25
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	5213.75
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	5213.75
TOP OF STONE:	5212.75
TOP OF CHAMBER:	5211.75
24" TOP MANIFOLD INVERT:	5208.67
24" ISOLATOR ROW INVERT:	5206.94
BOTTOM OF CHAMBER:	5206.75
BOTTOM OF STONE:	5206.00



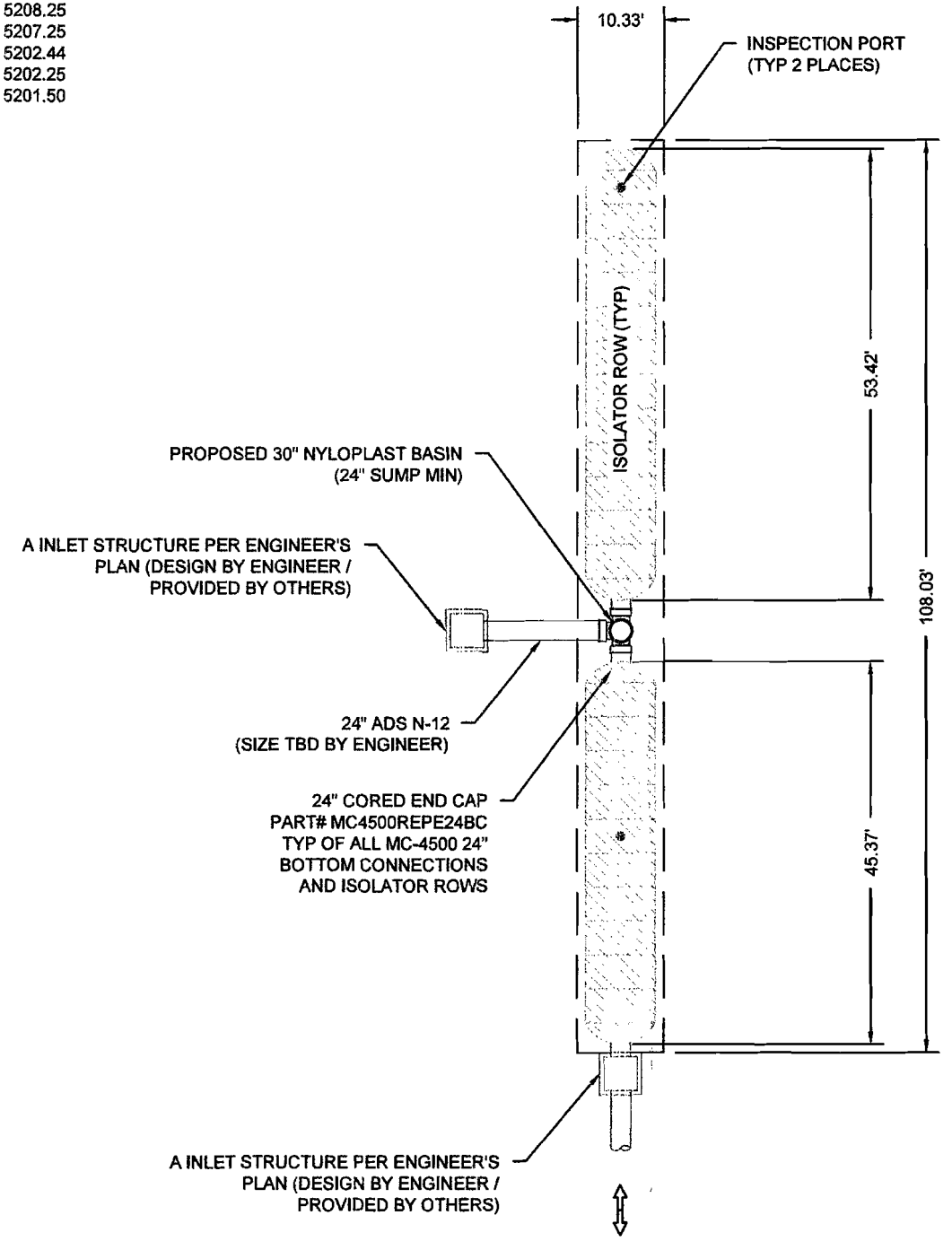
PROPOSED ELEVATIONS (SYSTEM #2)

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	5214.25
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	5209.75
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	5209.25
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	5209.25
TOP OF STONE:	5208.25
TOP OF CHAMBER:	5207.25
24" TOP MANIFOLD INVERT:	5204.17
24" ISOLATOR ROW INVERT:	5202.44
BOTTOM OF CHAMBER:	5202.25
BOTTOM OF STONE:	5201.50



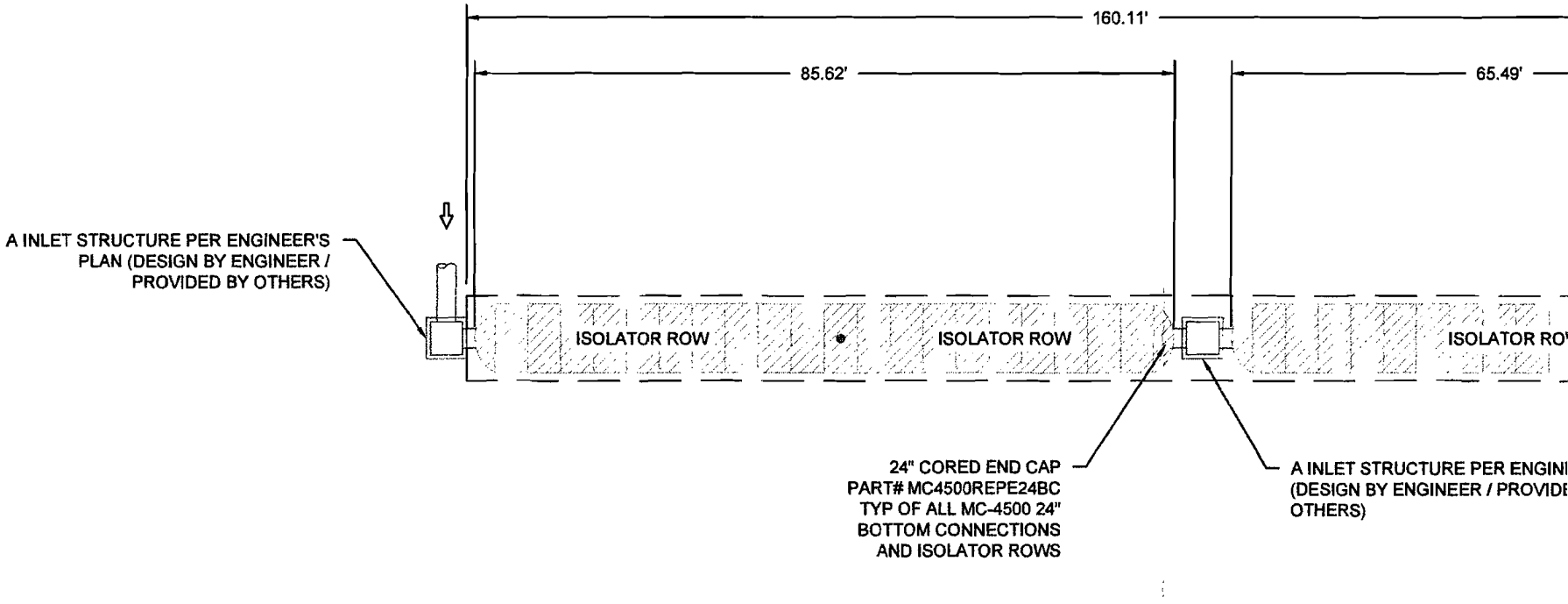
PROPOSED ELEVATIONS (SYSTEM #3)

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	5214.25
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	5209.75
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	5209.25
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	5209.25
TOP OF STONE:	5208.25
TOP OF CHAMBER:	5207.25
24" ISOLATOR ROW INVERT:	5202.44
BOTTOM OF CHAMBER:	5202.25
BOTTOM OF STONE:	5201.50



PROPOSED ELEVATIONS (SYSTEM #5)

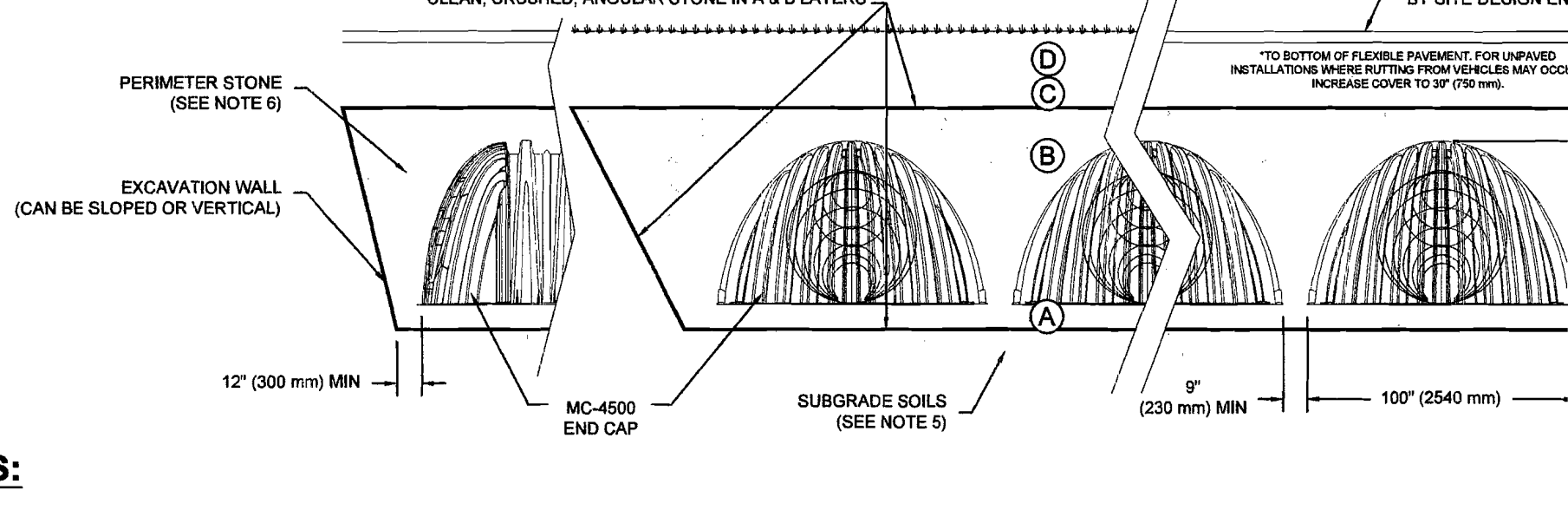
MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	5231.75
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	5227.25
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	5226.75
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	5226.75
TOP OF STONE:	5225.75
TOP OF CHAMBER:	5224.75
24" ISOLATOR ROW INVERT:	5219.94
BOTTOM OF CHAMBER:	5219.75
BOTTOM OF STONE:	5219.00



D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	P
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	M C MA
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4-2 INCH (20-50 mm)	AASHTO M43[1] 3, 4	
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4-2 INCH (20-50 mm)	AASHTO M43[1] 3, 4	F

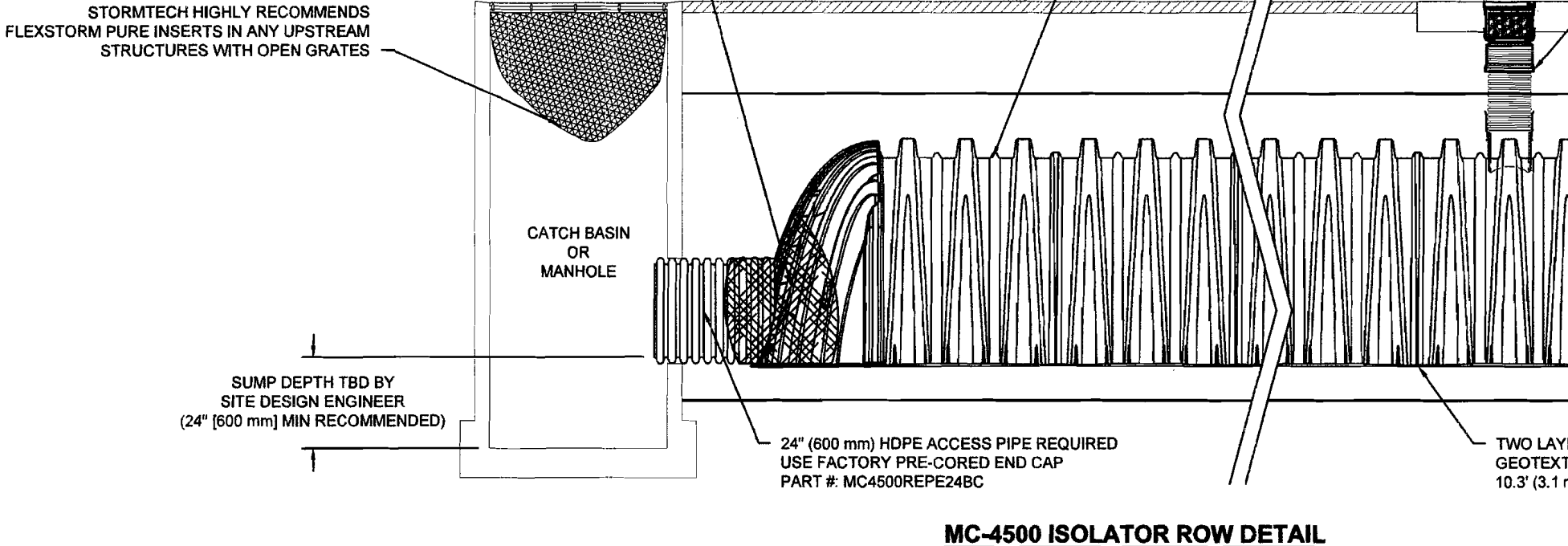
PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 ST ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVE
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

1. MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTI
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATE
4. THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
5. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WI CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.



MC-4500 ISOLATOR ROW DETAIL
NTS

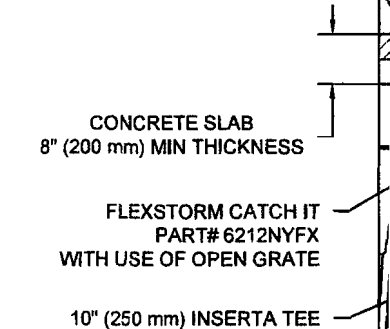
INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

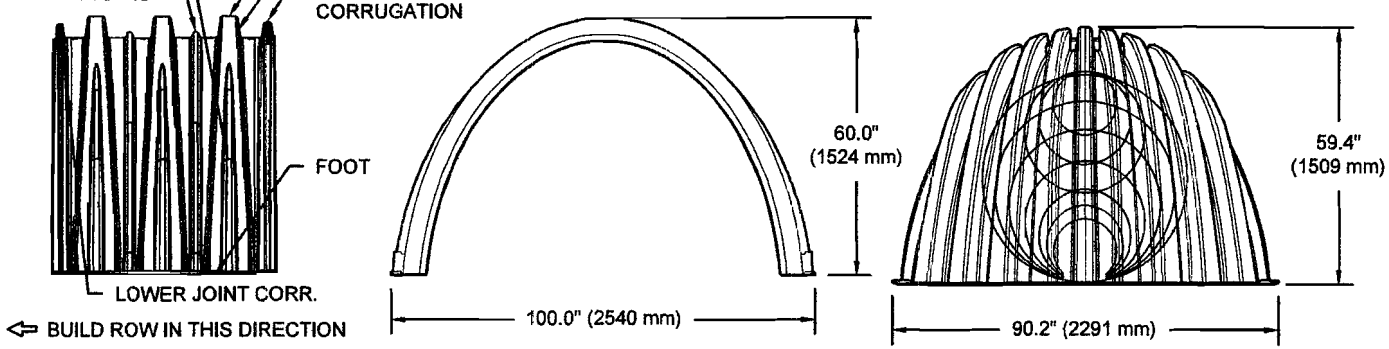
STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

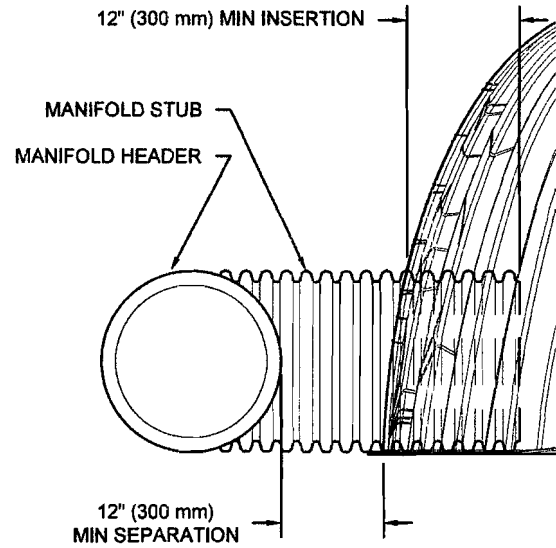


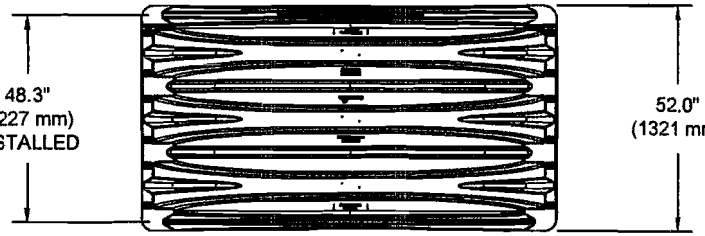
NOTES

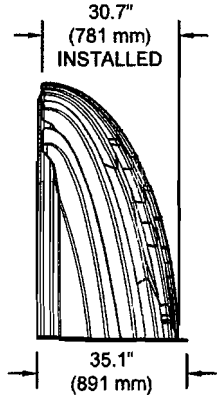
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY









NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m³)
WEIGHT	130.0 lbs.	(59.0 kg)

NOMINAL END CAP SPECIFICATIONS

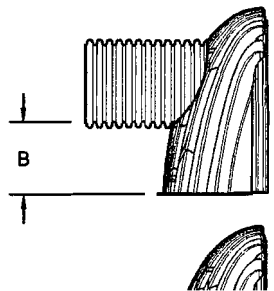
SIZE (W X H X INSTALLED LENGTH)	90.2" X 59.4" X 30.7"	(2291 mm X 1509 mm X 781 mm)
END CAP STORAGE	35.7 CUBIC FEET	(1.01 m³)
MINIMUM INSTALLED STORAGE*	108.7 CUBIC FEET	(3.08 m³)
WEIGHT	135.0 lbs.	(61.2 kg)

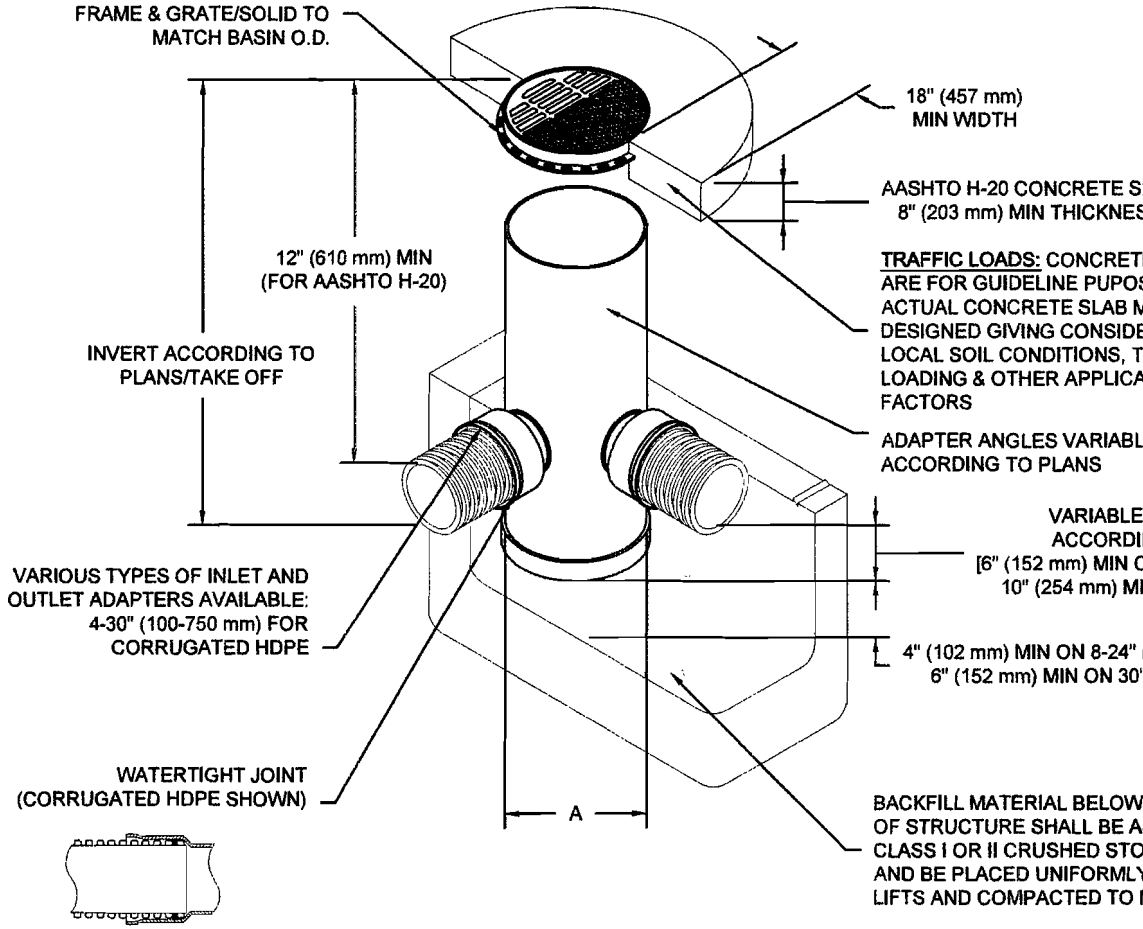
*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

NOTE: MANI
FOR A PROP

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	B	C
MC4500REPE06T	6" (150 mm)	42.54" (1.081 m)	---
MC4500REPE06B		---	0.86" (22 mm)
MC4500REPE08T	8" (200 mm)	40.50" (1.029 m)	---
MC4500REPE08B		---	1.01" (26 mm)
MC4500REPE10T	10" (250 mm)	38.37" (975 mm)	---
MC4500REPE10B		---	1.33" (34 mm)
MC4500REPE12T	12" (300 mm)	35.69" (907 mm)	---
MC4500REPE12B		---	1.55" (39 mm)
MC4500REPE15T	15" (375 mm)	32.72" (831 mm)	---
MC4500REPE15B		---	1.70" (43 mm)
MC4500REPE18TC	18" (450 mm)	29.36" (746 mm)	---
MC4500REPE18BC		---	1.97" (50 mm)
MC4500REPE24TC	24" (600 mm)	23.05" (585 mm)	---
MC4500REPE24BC		---	2.26" (57 mm)
MC4500REPE30BC	30" (750 mm)	---	2.95" (75 mm)
MC4500REPE36BC	36" (900 mm)	---	3.25" (83 mm)
MC4500REPE42BC	42" (1050 mm)	---	3.55" (90 mm)





NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A5 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-5
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D321 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.CO**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTION		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIG
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIG
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SO AASHT
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SO AASHT
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SO AASHT

Project: **82394 - System #1 - REV1**

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Chamber Model -	MC-4500	
Units -	Imperial	Click Here for Metric
Number of Chambers -	61	
Number of End Caps -	6	
Voids in the stone (porosity) -	30	%
Base of Stone Elevation -	5206.00	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	9	in
Area of system -	2675	sf Min. Area - 2424 sf min. area

☑ Include Perimeter Stone in Calculations

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	66.88	66.88	10114.68	5212.75
80	0.00	0.00	0.00	0.00	66.88	66.88	10047.81	5212.67
79	0.00	0.00	0.00	0.00	66.88	66.88	9980.93	5212.58
78	0.00	0.00	0.00	0.00	66.88	66.88	9914.06	5212.50
77	0.00	0.00	0.00	0.00	66.88	66.88	9847.18	5212.42
76	0.00	0.00	0.00	0.00	66.88	66.88	9780.31	5212.33
75	0.00	0.00	0.00	0.00	66.88	66.88	9713.43	5212.25
74	0.00	0.00	0.00	0.00	66.88	66.88	9646.56	5212.17
73	0.00	0.00	0.00	0.00	66.88	66.88	9579.68	5212.08
72	0.00	0.00	0.00	0.00	66.88	66.88	9512.81	5212.00
71	0.00	0.00	0.00	0.00	66.88	66.88	9445.93	5211.92
70	0.00	0.00	0.00	0.00	66.88	66.88	9379.06	5211.83
69	0.04	0.00	2.50	0.00	66.13	68.62	9312.18	5211.75
68	0.12	0.01	7.08	0.06	64.73	71.87	9243.56	5211.67
67	0.16	0.03	10.05	0.16	63.81	74.02	9171.68	5211.58
66	0.21	0.05	12.73	0.29	62.97	75.99	9097.66	5211.50
65	0.27	0.07	16.37	0.41	61.84	78.62	9021.68	5211.42
64	0.45	0.09	27.62	0.53	58.43	86.58	8943.06	5211.33
63	0.67	0.11	40.58	0.68	54.50	95.76	8856.48	5211.25
62	0.80	0.14	48.74	0.85	52.00	101.59	8760.73	5211.17
61	0.91	0.17	55.40	1.01	49.95	106.36	8659.14	5211.08
60	1.00	0.19	61.18	1.15	48.18	110.50	8552.78	5211.00
59	1.09	0.22	66.33	1.29	46.59	114.21	8442.28	5210.92
58	1.16	0.24	70.97	1.45	45.15	117.57	8328.07	5210.83
57	1.23	0.27	75.27	1.62	43.81	120.70	8210.50	5210.75
56	1.30	0.30	79.28	1.79	42.56	123.62	8089.80	5210.67
55	1.36	0.32	83.02	1.94	41.39	126.35	7966.18	5210.58
54	1.42	0.35	86.54	2.09	40.29	128.91	7839.83	5210.50
53	1.47	0.37	89.87	2.23	39.25	131.34	7710.91	5210.42
52	1.53	0.39	93.03	2.36	38.26	133.65	7579.57	5210.33
51	1.57	0.42	96.04	2.50	37.31	135.86	7445.92	5210.25
50	1.62	0.44	98.90	2.64	36.41	137.96	7310.06	5210.17
49	1.67	0.46	101.64	2.78	35.55	139.97	7172.10	5210.08
48	1.71	0.48	104.26	2.90	34.73	141.89	7032.13	5210.00
47	1.75	0.50	106.76	3.03	33.94	143.72	6890.25	5209.92
46	1.79	0.53	109.15	3.15	33.19	145.48	6746.52	5209.83
45	1.83	0.55	111.46	3.27	32.46	147.19	6601.04	5209.75
44	1.86	0.56	113.67	3.39	31.76	148.81	6453.85	5209.67
43	1.90	0.58	115.80	3.50	31.09	150.38	6305.04	5209.58
42	1.93	0.60	117.84	3.61	30.44	151.89	6154.66	5209.50
41	1.96	0.62	119.81	3.72	29.82	153.35	6002.76	5209.42
40	2.00	0.64	121.70	3.83	29.22	154.75	5849.42	5209.33
39	2.03	0.66	123.53	3.93	28.64	156.10	5694.67	5209.25
38	2.05	0.67	125.28	4.04	28.08	157.40	5538.58	5209.17
37	2.08	0.69	126.97	4.14	27.54	158.65	5381.18	5209.08
36	2.11	0.71	128.59	4.24	27.02	159.86	5222.52	5209.00
35	2.13	0.72	130.16	4.34	26.52	161.03	5062.66	5208.92
34	2.16	0.74	131.68	4.44	26.04	162.16	4901.63	5208.83
33	2.18	0.76	133.14	4.54	25.57	163.24	4739.47	5208.75
32	2.21	0.77	134.54	4.63	25.13	164.29	4576.23	5208.67
31	2.23	0.79	135.89	4.72	24.69	165.30	4411.94	5208.58
30	2.25	0.80	137.18	4.81	24.28	166.27	4246.64	5208.50
29	2.27	0.82	138.43	4.92	23.87	167.22	4080.37	5208.42
28	2.29	0.84	139.63	5.04	23.47	168.15	3913.14	5208.33
27	2.31	0.85	140.78	5.08	23.12	168.97	3745.00	5208.25
26	2.33	0.86	141.88	5.15	22.76	169.80	3576.02	5208.17
25	2.34	0.87	142.94	5.23	22.42	170.60	3406.22	5208.08
24	2.36	0.89	143.95	5.31	22.10	171.36	3235.63	5208.00
23	2.38	0.90	144.92	5.39	21.78	172.09	3064.27	5207.92
22	2.39	0.91	145.85	5.46	21.48	172.79	2892.17	5207.83
21	2.41	0.92	146.73	5.53	21.19	173.46	2719.38	5207.75
20	2.42	0.93	147.57	5.61	20.92	174.10	2545.92	5207.67
19	2.43	0.95	148.38	5.67	20.66	174.71	2371.82	5207.58
18	2.44	0.96	149.14	5.74	20.41	175.29	2197.11	5207.50
17	2.46	0.97	149.85	5.80	20.18	175.84	2021.82	5207.42
16	2.47	0.98	150.53	5.87	19.95	176.36	1845.98	5207.33

Project: 82394 - System #2 - REV1

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Chamber Model -	MC-4500		
Units -	Imperial	Click Here for Metric	
Number of Chambers -	22		
Number of End Caps -	4		
Voids in the stone (porosity) -	30	%	
Base of Stone Elevation -	5201.50	ft	☑ Include Perimeter Stone in Calculations
Amount of Stone Above Chambers -	12	in	
Amount of Stone Below Chambers -	9	in	
Area of system -	1158	sf	Min. Area - 934 sf min. area

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	28.95	28.95	4085.14	5208.25
80	0.00	0.00	0.00	0.00	28.95	28.95	4056.19	5208.17
79	0.00	0.00	0.00	0.00	28.95	28.95	4027.24	5208.08
78	0.00	0.00	0.00	0.00	28.95	28.95	3998.29	5208.00
77	0.00	0.00	0.00	0.00	28.95	28.95	3969.34	5207.92
76	0.00	0.00	0.00	0.00	28.95	28.95	3940.39	5207.83
75	0.00	0.00	0.00	0.00	28.95	28.95	3911.44	5207.75
74	0.00	0.00	0.00	0.00	28.95	28.95	3882.49	5207.67
73	0.00	0.00	0.00	0.00	28.95	28.95	3853.54	5207.58
72	0.00	0.00	0.00	0.00	28.95	28.95	3824.59	5207.50
71	0.00	0.00	0.00	0.00	28.95	28.95	3795.64	5207.42
70	0.00	0.00	0.00	0.00	28.95	28.95	3766.69	5207.33
69	0.04	0.00	0.90	0.00	28.68	29.58	3737.74	5207.25
68	0.12	0.01	2.55	0.04	28.17	30.77	3708.15	5207.17
67	0.16	0.03	3.62	0.11	27.83	31.56	3677.39	5207.08
66	0.21	0.05	4.59	0.19	27.52	32.30	3645.83	5207.00
65	0.27	0.07	5.90	0.27	27.10	33.27	3613.53	5206.92
64	0.45	0.09	9.96	0.35	25.86	36.17	3580.26	5206.83
63	0.67	0.11	14.64	0.45	24.42	39.51	3544.09	5206.75
62	0.80	0.14	17.58	0.57	23.51	41.65	3504.58	5206.67
61	0.91	0.17	19.98	0.67	22.76	43.40	3462.93	5206.58
60	1.00	0.19	22.06	0.77	22.10	44.93	3419.52	5206.50
59	1.09	0.22	23.92	0.86	21.52	46.30	3374.59	5206.42
58	1.16	0.24	25.60	0.97	20.98	47.54	3328.29	5206.33
57	1.23	0.27	27.15	1.08	20.48	48.71	3280.75	5206.25
56	1.30	0.30	28.59	1.19	20.01	49.80	3232.04	5206.17
55	1.36	0.32	29.94	1.29	19.58	50.82	3182.24	5206.08
54	1.42	0.35	31.21	1.39	19.17	51.77	3131.43	5206.00
53	1.47	0.37	32.41	1.48	18.78	52.68	3079.65	5205.92
52	1.53	0.39	33.55	1.58	18.41	53.54	3026.98	5205.83
51	1.57	0.42	34.64	1.67	18.06	54.37	2973.44	5205.75
50	1.62	0.44	35.67	1.76	17.72	55.15	2919.07	5205.67
49	1.67	0.46	36.66	1.85	17.40	55.91	2863.92	5205.58
48	1.71	0.48	37.60	1.94	17.09	56.63	2808.01	5205.50
47	1.75	0.50	38.50	2.02	16.79	57.32	2751.39	5205.42
46	1.79	0.53	39.36	2.10	16.51	57.98	2694.07	5205.33
45	1.83	0.55	40.20	2.18	16.24	58.61	2636.10	5205.25
44	1.86	0.56	41.00	2.26	15.97	59.23	2577.48	5205.17
43	1.90	0.58	41.76	2.33	15.72	59.82	2518.25	5205.08
42	1.93	0.60	42.50	2.41	15.48	60.39	2458.44	5205.00
41	1.96	0.62	43.21	2.48	15.24	60.93	2398.05	5204.92
40	2.00	0.64	43.89	2.55	15.02	61.46	2337.12	5204.83
39	2.03	0.66	44.55	2.62	14.80	61.97	2275.66	5204.75
38	2.05	0.67	45.18	2.69	14.59	62.46	2213.69	5204.67
37	2.08	0.69	45.79	2.76	14.38	62.94	2151.22	5204.58
36	2.11	0.71	46.38	2.83	14.19	63.39	2088.28	5204.50
35	2.13	0.72	46.94	2.90	14.00	63.84	2024.89	5204.42
34	2.16	0.74	47.49	2.96	13.81	64.27	1961.05	5204.33
33	2.18	0.76	48.02	3.02	13.64	64.68	1896.79	5204.25
32	2.21	0.77	48.52	3.09	13.47	65.08	1832.11	5204.17
31	2.23	0.79	49.01	3.15	13.30	65.46	1767.03	5204.08
30	2.25	0.80	49.48	3.21	13.15	65.83	1701.57	5204.00
29	2.27	0.82	49.93	3.28	12.99	66.20	1635.75	5203.92
28	2.29	0.84	50.36	3.36	12.83	66.55	1569.55	5203.83
27	2.31	0.85	50.77	3.38	12.70	66.86	1503.00	5203.75
26	2.33	0.86	51.17	3.43	12.57	67.17	1436.14	5203.67
25	2.34	0.87	51.55	3.49	12.44	67.48	1368.96	5203.58
24	2.36	0.89	51.92	3.54	12.31	67.77	1301.48	5203.50
23	2.38	0.90	52.27	3.59	12.19	68.05	1233.71	5203.42
22	2.39	0.91	52.60	3.64	12.08	68.32	1165.66	5203.33
21	2.41	0.92	52.92	3.69	11.97	68.58	1097.34	5203.25
20	2.42	0.93	53.22	3.74	11.86	68.82	1028.76	5203.17
19	2.43	0.95	53.51	3.78	11.76	69.06	959.94	5203.08
18	2.44	0.96	53.79	3.83	11.67	69.28	890.89	5203.00
17	2.46	0.97	54.05	3.87	11.58	69.49	821.61	5202.92
16	2.47	0.98	54.29	3.91	11.49	69.69	752.11	5202.83

Project: 82394 - System #3 - REV1

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A division of ADS

Chamber Model -	MC-4500	
Units -	Imperial	Click Here for Metric
Number of Chambers -	22	
Number of End Caps -	4	
Voids in the stone (porosity) -	30	%
Base of Stone Elevation -	5201.50	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	9	in
Area of system -	1116	sf Min. Area - 934 sf min. area

☑ Include Perimeter Stone in Calculations

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	27.90	27.90	4000.09	5208.25
80	0.00	0.00	0.00	0.00	27.90	27.90	3972.19	5208.17
79	0.00	0.00	0.00	0.00	27.90	27.90	3944.29	5208.08
78	0.00	0.00	0.00	0.00	27.90	27.90	3916.39	5208.00
77	0.00	0.00	0.00	0.00	27.90	27.90	3888.49	5207.92
76	0.00	0.00	0.00	0.00	27.90	27.90	3860.59	5207.83
75	0.00	0.00	0.00	0.00	27.90	27.90	3832.69	5207.75
74	0.00	0.00	0.00	0.00	27.90	27.90	3804.79	5207.67
73	0.00	0.00	0.00	0.00	27.90	27.90	3776.89	5207.58
72	0.00	0.00	0.00	0.00	27.90	27.90	3748.99	5207.50
71	0.00	0.00	0.00	0.00	27.90	27.90	3721.09	5207.42
70	0.00	0.00	0.00	0.00	27.90	27.90	3693.19	5207.33
69	0.04	0.00	0.90	0.00	27.63	28.53	3665.29	5207.25
68	0.12	0.01	2.55	0.04	27.12	29.72	3636.75	5207.17
67	0.16	0.03	3.62	0.11	26.78	30.51	3607.04	5207.08
66	0.21	0.05	4.59	0.19	26.47	31.25	3576.53	5207.00
65	0.27	0.07	5.90	0.27	26.05	32.22	3545.28	5206.92
64	0.45	0.09	9.96	0.35	24.81	35.12	3513.06	5206.83
63	0.67	0.11	14.64	0.45	23.37	38.46	3477.94	5206.75
62	0.80	0.14	17.58	0.57	22.46	40.60	3439.48	5206.67
61	0.91	0.17	19.98	0.67	21.71	42.35	3398.88	5206.58
60	1.00	0.19	22.06	0.77	21.05	43.88	3356.52	5206.50
59	1.09	0.22	23.92	0.86	20.47	45.25	3312.64	5206.42
58	1.16	0.24	25.60	0.97	19.93	46.49	3267.39	5206.33
57	1.23	0.27	27.15	1.08	19.43	47.66	3220.90	5206.25
56	1.30	0.30	28.59	1.19	18.96	48.75	3173.24	5206.17
55	1.36	0.32	29.94	1.29	18.53	49.77	3124.49	5206.08
54	1.42	0.35	31.21	1.39	18.12	50.72	3074.73	5206.00
53	1.47	0.37	32.41	1.48	17.73	51.63	3024.00	5205.92
52	1.53	0.39	33.55	1.58	17.36	52.49	2972.38	5205.83
51	1.57	0.42	34.64	1.67	17.01	53.32	2919.89	5205.75
50	1.62	0.44	35.67	1.76	16.67	54.10	2866.57	5205.67
49	1.67	0.46	36.66	1.85	16.35	54.86	2812.47	5205.58
48	1.71	0.48	37.60	1.94	16.04	55.58	2757.61	5205.50
47	1.75	0.50	38.50	2.02	15.74	56.27	2702.04	5205.42
46	1.79	0.53	39.36	2.10	15.46	56.93	2645.77	5205.33
45	1.83	0.55	40.20	2.18	15.19	57.56	2588.85	5205.25
44	1.86	0.56	41.00	2.26	14.92	58.18	2531.28	5205.17
43	1.90	0.58	41.76	2.33	14.67	58.77	2473.10	5205.08
42	1.93	0.60	42.50	2.41	14.43	59.34	2414.34	5205.00
41	1.96	0.62	43.21	2.48	14.19	59.88	2355.00	5204.92
40	2.00	0.64	43.89	2.55	13.97	60.41	2295.12	5204.83
39	2.03	0.66	44.55	2.62	13.75	60.92	2234.71	5204.75
38	2.05	0.67	45.18	2.69	13.54	61.41	2173.79	5204.67
37	2.08	0.69	45.79	2.76	13.33	61.89	2112.37	5204.58
36	2.11	0.71	46.38	2.83	13.14	62.34	2050.48	5204.50
35	2.13	0.72	46.94	2.90	12.95	62.79	1988.14	5204.42
34	2.16	0.74	47.49	2.96	12.76	63.22	1925.35	5204.33
33	2.18	0.76	48.02	3.02	12.59	63.63	1862.14	5204.25
32	2.21	0.77	48.52	3.09	12.42	64.03	1798.51	5204.17
31	2.23	0.79	49.01	3.15	12.25	64.41	1734.48	5204.08
30	2.25	0.80	49.48	3.21	12.10	64.78	1670.07	5204.00
29	2.27	0.82	49.93	3.28	11.94	65.15	1605.30	5203.92
28	2.29	0.84	50.36	3.36	11.78	65.50	1540.15	5203.83
27	2.31	0.85	50.77	3.38	11.65	65.81	1474.65	5203.75
26	2.33	0.86	51.17	3.43	11.52	66.12	1408.84	5203.67
25	2.34	0.87	51.55	3.49	11.39	66.43	1342.71	5203.58
24	2.36	0.89	51.92	3.54	11.26	66.72	1276.28	5203.50
23	2.38	0.90	52.27	3.59	11.14	67.00	1209.56	5203.42
22	2.39	0.91	52.60	3.64	11.03	67.27	1142.56	5203.33
21	2.41	0.92	52.92	3.69	10.92	67.53	1075.29	5203.25
20	2.42	0.93	53.22	3.74	10.81	67.77	1007.76	5203.17
19	2.43	0.95	53.51	3.78	10.71	68.01	939.99	5203.08
18	2.44	0.96	53.79	3.83	10.62	68.23	871.99	5203.00
17	2.46	0.97	54.05	3.87	10.53	68.44	803.76	5202.92
16	2.47	0.98	54.29	3.91	10.44	68.64	735.31	5202.83

Project: 82394 - System #4 - REV1

StormTech
Division of ADS

Chamber Model -	MC-4500	
Units -	Imperial	Click Here for Metric
Number of Chambers -	35	
Number of End Caps -	4	
Voids in the stone (porosity) -	30	%
Base of Stone Elevation -	5219.00	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	9	in
Area of system -	1654	sf Min. Area - 1409 sf min. area

☑ Include Perimeter Stone in Calculations

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	41.35	41.35	6058.75	5225.75
80	0.00	0.00	0.00	0.00	41.35	41.35	6017.40	5225.67
79	0.00	0.00	0.00	0.00	41.35	41.35	5976.05	5225.58
78	0.00	0.00	0.00	0.00	41.35	41.35	5934.70	5225.50
77	0.00	0.00	0.00	0.00	41.35	41.35	5893.35	5225.42
76	0.00	0.00	0.00	0.00	41.35	41.35	5852.00	5225.33
75	0.00	0.00	0.00	0.00	41.35	41.35	5810.65	5225.25
74	0.00	0.00	0.00	0.00	41.35	41.35	5769.30	5225.17
73	0.00	0.00	0.00	0.00	41.35	41.35	5727.95	5225.08
72	0.00	0.00	0.00	0.00	41.35	41.35	5686.60	5225.00
71	0.00	0.00	0.00	0.00	41.35	41.35	5645.25	5224.92
70	0.00	0.00	0.00	0.00	41.35	41.35	5603.90	5224.83
69	0.04	0.00	1.43	0.00	40.92	42.35	5562.55	5224.75
68	0.12	0.01	4.06	0.04	40.12	44.22	5520.19	5224.67
67	0.16	0.03	5.77	0.11	39.59	45.46	5475.97	5224.58
66	0.21	0.05	7.31	0.19	39.10	46.60	5430.51	5224.50
65	0.27	0.07	9.39	0.27	38.45	48.11	5383.91	5224.42
64	0.45	0.09	15.85	0.35	36.49	52.69	5335.80	5224.33
63	0.67	0.11	23.28	0.45	34.23	57.97	5283.11	5224.25
62	0.80	0.14	27.97	0.57	32.79	61.32	5225.14	5224.17
61	0.91	0.17	31.78	0.67	31.61	64.07	5163.82	5224.08
60	1.00	0.19	35.10	0.77	30.59	66.46	5099.75	5224.00
59	1.09	0.22	38.06	0.86	29.67	68.59	5033.30	5223.92
58	1.16	0.24	40.72	0.97	28.84	70.53	4964.70	5223.83
57	1.23	0.27	43.19	1.08	28.07	72.34	4894.17	5223.75
56	1.30	0.30	45.49	1.19	27.35	74.03	4821.83	5223.67
55	1.36	0.32	47.64	1.29	26.67	75.60	4747.81	5223.58
54	1.42	0.35	49.66	1.39	26.04	77.08	4672.21	5223.50
53	1.47	0.37	51.57	1.48	25.43	78.49	4595.12	5223.42
52	1.53	0.39	53.38	1.58	24.86	79.82	4516.64	5223.33
51	1.57	0.42	55.11	1.67	24.32	81.09	4436.82	5223.25
50	1.62	0.44	56.75	1.76	23.80	82.31	4355.73	5223.17
49	1.67	0.46	58.32	1.85	23.30	83.47	4273.42	5223.08
48	1.71	0.48	59.82	1.94	22.82	84.58	4189.95	5223.00
47	1.75	0.50	61.25	2.02	22.37	85.64	4105.37	5222.92
46	1.79	0.53	62.63	2.10	21.93	86.66	4019.73	5222.83
45	1.83	0.55	63.95	2.18	21.51	87.64	3933.07	5222.75
44	1.86	0.56	65.22	2.26	21.11	88.58	3845.43	5222.67
43	1.90	0.58	66.44	2.33	20.72	89.49	3756.85	5222.58
42	1.93	0.60	67.61	2.41	20.34	90.36	3667.35	5222.50
41	1.96	0.62	68.74	2.48	19.98	91.21	3576.99	5222.42
40	2.00	0.64	69.83	2.55	19.64	92.02	3485.78	5222.33
39	2.03	0.66	70.88	2.62	19.30	92.80	3393.77	5222.25
38	2.05	0.67	71.88	2.69	18.98	93.55	3300.97	5222.17
37	2.08	0.69	72.85	2.76	18.67	94.28	3207.42	5222.08
36	2.11	0.71	73.78	2.83	18.37	94.98	3113.14	5222.00
35	2.13	0.72	74.68	2.90	18.08	95.66	3018.16	5221.92
34	2.16	0.74	75.55	2.96	17.80	96.31	2922.50	5221.83
33	2.18	0.76	76.39	3.02	17.53	96.94	2826.19	5221.75
32	2.21	0.77	77.19	3.09	17.27	97.55	2729.25	5221.67
31	2.23	0.79	77.97	3.15	17.02	98.13	2631.71	5221.58
30	2.25	0.80	78.71	3.21	16.77	98.69	2533.58	5221.50
29	2.27	0.82	79.43	3.28	16.54	99.25	2434.88	5221.42
28	2.29	0.84	80.11	3.36	16.31	99.78	2335.64	5221.33
27	2.31	0.85	80.77	3.38	16.10	100.26	2235.85	5221.25
26	2.33	0.86	81.41	3.43	15.90	100.74	2135.59	5221.17
25	2.34	0.87	82.02	3.49	15.70	101.20	2034.85	5221.08
24	2.36	0.89	82.60	3.54	15.51	101.65	1933.65	5221.00
23	2.38	0.90	83.15	3.59	15.33	102.07	1832.00	5220.92
22	2.39	0.91	83.68	3.64	15.15	102.48	1729.93	5220.83
21	2.41	0.92	84.19	3.69	14.99	102.87	1627.45	5220.75
20	2.42	0.93	84.67	3.74	14.83	103.24	1524.59	5220.67
19	2.43	0.95	85.13	3.78	14.68	103.59	1421.35	5220.58
18	2.44	0.96	85.57	3.83	14.53	103.93	1317.76	5220.50
17	2.46	0.97	85.98	3.87	14.39	104.25	1213.83	5220.42
16	2.47	0.98	86.37	3.91	14.26	104.55	1109.58	5220.33

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:

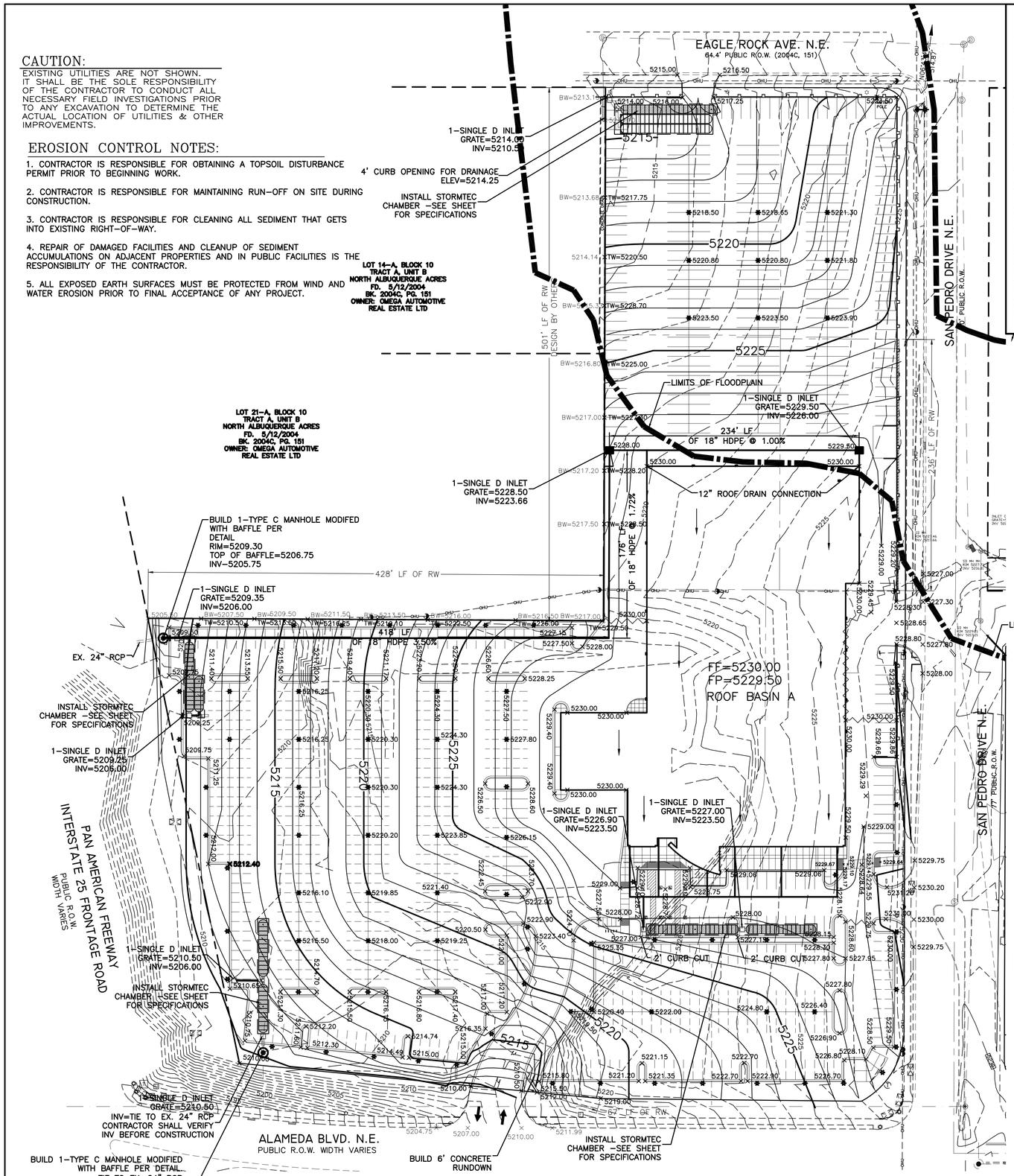
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.

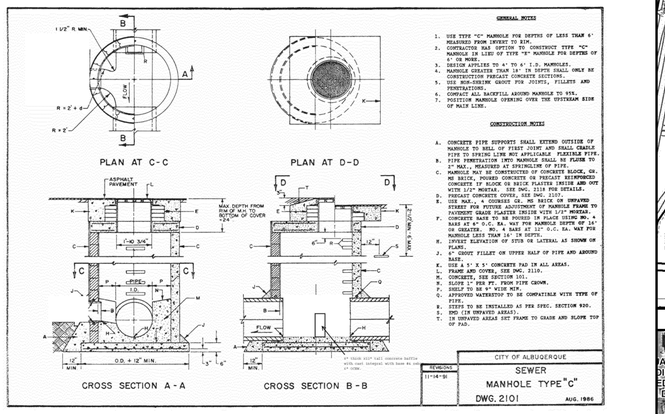
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.

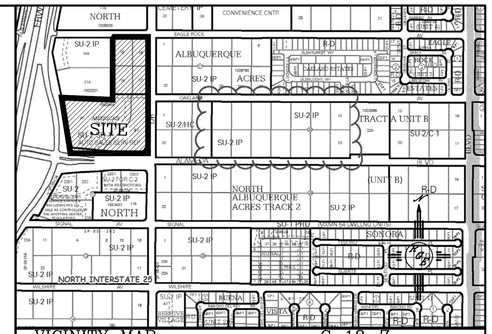
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.

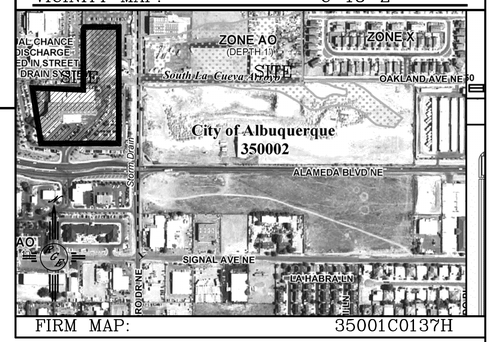
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.

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









LEGAL DESCRIPTION:

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NOTES:

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

2. ALL CURB AND GUTTER TO 6" HEADER UNLESS OTHERWISE NOTED.

3. ALL RETAINING WALL DESIGN SHALL BE BY OTHERS.

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 CURB AND GUTTER
- EXISTING CURB AND GUTTER
- PROPOSED SIDEWALK
- PROPOSED SETBACK
- PROPOSED LOT LINE
- PROPOSED SCREEN WALL
- PROPOSED RETAINING WALL
- LIMITS OF FLOODPLAIN

N

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

ROUGH GRADING APPROVAL DATE

ENGINEER'S SEAL

DAVID SOULE NEW MEXICO 14522 REGISTERED PROFESSIONAL ENGINEER

2/5/15

DAVID SOULE P.E. #14522

AMERICAN TOYOTA

GRADING AND DRAINAGE PLAN

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

DRAWN BY WCWJ

DATE 2-05-15

21403-LAYOUT-1-25-14

SHEET # —

JOB # 21403