CITY OF ALBUQUERQUE

Planning Department
David Campbell, Director

Mayor Timothy M. Keller

April 1, 2019

Ronald Bohannan, P.E.
Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, NM, 87109

RE: Mister Car Wash - 98th St. & Volcano Rd.
Grading and Drainage Plan & Drainage Report
Engineer's Stamp Date: 03/27/19
Hydrology File: K08D004

Dear Mr. Bohannan:

Based upon the information provided in your submittal received 03/27/2019, the Grading & Drainage Plan and Drainage Report is approved for Building Permit, Grading Permit, Work Order, and for action by the DRB on Platting and Site Plan for Building Permit.

Please attach a copy of this approved plan in the construction sets for Building Permit processing along with a copy of this letter. Prior to approval in support of Permanent Release of Occupancy by Hydrology, Engineer Certification per the DPM checklist will be required.

As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Curtis Cherne, PE, ccherne@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

Also as a reminder, please provide Drainage Covenant for the temporary pond and the stormwater quality pond per Chapter 17 of the DPM prior to Permanent Release of Occupancy. Please submit this on the 4th floor of Plaza de Sol. A $25 fee will be required.

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: Mister Car Wash Building Permit #: _____ Hydrology File #: _____

DRB#: PR-2019-001964 EPC#: _____ Work Order#: _____

Legal Description: South 233 Feet of Tracts 1 & 2, Unit "A", ROW 2, A West of Westland

City Address: _____

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? __X__ Yes _____ 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) _____
__X__ PRE-DESIGN MEETING? 11/16/18

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

__X__ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY

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

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

DATE SUBMITTED: 3/14/19 By: Joel Hernandez

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

TIERRA WEST, LLC

5571 Midway Park Pl. NE Albuquerque, NM 87109
(505) 858-3100 fax (505) 858-1118 1-800-245-3102
tierrawestllc.com

March 25, 2019

Ms. Renee Brissette, PE
Drainage Engineer
City of Albuquerque
Hydrology Section
600 2nd St NW
Albuquerque, NM 87102

RE: MISTER CAR WASH – 98TH AND VOLCANO
GRADING AND DRAINAGE PLAN RESPONSE TO COMMENTS
ENGINEER'S STAMP DATE

Dear Ms. Brissette

Per your correspondence dated March 25, 2019 please find the following responses addressing the comments listed below.

DRAINAGE REPORT

1. In the Introduction, please change "Hydrology Department" to "Hydrology Section".
   Response: The change has been made.

2. In the Drainage Basin Description, please replace "Rita Harmon to "City of Albuquerque Hydrology Section".
   Response: The change has been made.

3. Please label "POSB-1" In the Proposed Basin Map Exhibit.
   Response: Basin POSB-1 is labeled on the south side of the basin.

4. Please remove the Worksheet for Capacity Check of Pipe Culvert P-1. This is a culvert and the calculation report for the culvert was done
   Response: The worksheet has been removed.

5. Please revise the title of the above mention culvert calculation report from "P-3" to "P-2".
   Response: The change has been made.

6. Please plot the StormCAD profiles on individual sheets.
   Response: The change has been made.

GRADING & DRAINAGE PLAN

7. Sheet C2. Please either show a swale or revise grades to direct the flows from the off-site basin to Leonidas Lane.
   Response: The correction has been made.

8. Sheet C2. Please show the proposed 66 inch storm pipe along 98th St. and add a label stating. "To be constructed with work order."

Response: The changes have been made.

9. Sheet C2. Please add the flowline elevations along the prop curb on both 98th St. & Volcano Rd.
   Response: The changes have been made.

10. Sheet C2. Please enlarge the area of the stormwater quality pond and remove the proposed contours so that the proposed retaining wall will be shown.
    Response: The changes have been made.

11. Sheet C2. Please add the top of pond and bottom of pond for the City's detention pond.
    Response: The elevations have been added.

12. Sheet C4. Please add a section showing the 48 inch culverts, temporary pond, Volcano Rd curb & sidewalk, the existing City Pond, and the existing 8" sanitary sewer. Also add the clearance for the sanitary sewer and the top of the storm pipe.
    Response: The detail has been added to sheet C4.

13. Sheet C4 – Detail "A". Either change the pipe from HDPE to RCP or add a converter from HDPE to RCP at the R.O.W. and add the detail from ADS.
    Response: The detail has been added.

14. Please remove Sheets C3 andC5 from further submittals to Hydrology. These are not needed.
    Response: The sheets have been removed.

15. As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of –Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted the Stormwater Quality Engineer (Curtis Cherne, PE, ccherne@cabq.gov, 924-3420) 14 days prior to any earth disturbance.
    Response: Duly noted.

16. Also as a reminder, please provide Drainage Covenant for the temporary pond and the stormwater quality pond per Chapter 17 of the DPM prior to Permanent Release of Occupancy. Please submit this on the 4th floor of Plaza del Sol. A $25 fee will be required.
    Response: Duly noted.

17. Standard review fee of $300 will be required at the time of resubmittal.
    Response: Duly noted.

If you have any questions or need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, PE

JN: 2018058
RRB/vp

Mister Car Wash
98 St NW & Volcano Rd NW
Albuquerque, New Mexico

March 25, 2019

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

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.

RONALD R BOHANNAN NEW MEXICO 7868 REGISTERED PROFESSIONAL ENGINEER

3/25/19

Ronald R. Bohannan,
PE # 7868

Job No. 2018058

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Introduction

Tierra West is seeking to develop a car wash on the vacant lot on the SE Corner of 98th St NW and Volcano Rd NW. The legal description of the property is South 233 Feet of Tracts 1 & 2, Unit "A", Row 2, West Of Westland in Town of Atrisco Grant containing 2.25 acres. The intent is to subdivide vacant land and develop a car wash facility on the eastern parcel to be platted as Tract 1. The westerly "Remainder Parcel" to be platted as Tract 2 is to be used for temporary drainage facilities until permanent facilities are constructed and the Tract can be developed. In the interim condition of the proposed drainage solution, Tract 2 will serve as a temporary pond to redirect offsite flows to the city ponds to the south of Volcano Road. This drainage report serves to demonstrate that public and private improvements involved within the site will comply with City of Albuquerque Development Process Manual requirements.

The existing drainage basins contributing to the site have been previously analyzed in the Amole-Hubbell Drainage Master Plan prepared by Wilson & Company in 1998 and then updated in 2013. They were updated again by THE Group for the Paradise RV Park Phase I Drainage Report and were then revised with minor revisions in the 98th St Inlet Study performed by Wooten Engineering in 2015 (WEIS). These reports in combination with site observations were used to determine the contributing flows to the site. Excerpts of the referenced reports can be found in Appendix B.

The proposed drainage solution on site involves discharging drainage from the developed site through a water quality pond which drains into the storm sewer system that runs parallel to the eastern property line and ultimately discharges into the City ponds to the south. A portion of this existing 36" storm drain that runs along the property frontage is undersized for the region's ultimate development and per discussions with the City of Albuquerque Hydrology Section, will need to be upsized. Offsite flows are to be redirected from the western remainder parcel to the City ponds to the south. This site is not located within a known floodplain mapped by FEMA as indicated by Map No. 35001C0328J.

Drainage Basin Description

This project is located in the 98th and Central Basin that was analyzed in the Amole-Hubbell Drainage Master Plan prepared by Wilson & Company in 1998 and then updated in 2013. According to the report update, the basin is approximately 0.81 sq. mi. and is generally bounded by 98th St to the east; I-40 to the north; by the powerline channel to the west; and Central Avenue to the south. The report also states that "A two cell pond made up of Pond NE2 and Pond NE3 receives the area's runoff." These ponds are the ultimate discharge point of the entire 98th and Central Basin. They are located just south of the proposed car wash site on the south side of Volcano Rd NW and can be found in both the Amole Hubbell Master Plan and the THE Group Paradise RV Park drainage reports. The latter was determined as the master plan for the 98th & Central Basin in correspondence with City of Albuquerque Hydrology Section in 2015. For this reason, the existing basin routing from this report was used as the basis to show which basins are contributing to the proposed car wash site.

Hydrology

Existing Conditions - Offsite

The hydrologic analysis of the existing contributing offsite flows to the proposed car wash site involved a review of the reports mentioned in the Existing Drainage Basin Description section of this report paired with site observations to confirm their findings. The Offsite Basin Map in Appendix A delineates the existing basin map in the Paradise RV Park Drainage Report to show the contributing offsite basins that Tierra West found to arrive at AP 2 - the analysis point at the SE corner of the proposed car wash site. Currently, the flows that make it to this location (AP 2) drain into a curb inlet on 98th Street NW and the 98th Street roadway as this single inlet is unlikely to have capacity. The delineation in this report's Offsite Basin Map conservatively assumes that Basins 102,107, and one half of Basin 108 ultimately pass through the site from the west and will therefore need to be diverted to the City Ponds through the detention pond and pipe culvert on the remainder parcel of proposed car wash property. Basin 104, 70% of Basin 109, and the other 50% of Basin 108 are assumed to do the same and are to be diverted to the temporary pond on the remainder parcel from the north. These offsite basins are respectively designated as OS-1 and OS-2 on the Offsite Basin Map in Appendix A.

Existing Conditions – Onsite

It should be noted that the proposed car wash is encompassed within the portion of Basin 109 in the Offsite Basin Map that is assumed to drain to AP 2. Compared to the existing offsite flows that are assumed to arrive at the site, the onsite flows are negligible. Flows from the site are assumed to drain into the curb inlet in 98th St and into the roadway along with the rest of AP 2.

Proposed Conditions - Offsite

The intent of the proposed off-site drainage scheme is to intercept and reroute the majority of the flows that arrive at AP 2 to a temporary pond on the Remainder Parcel. This analysis is based on the flows calculated in the Offsite Existing Conditions analysis above. The intent is for the majority of offsite flows (225 cfs) to be passed into the North City Pond (Pond 2, NE2) through three 48" pipe culverts. The remaining flows (44 cfs) will bypass the culverts through a weir controlled outlet into Volcano Rd NW. No attenuation is being credited to this pond.

The proposed car wash property is protected by a berm on the east side of the Remainder Parcel. The temporary pond and pipe culverts on the Remainder Parcel are only intended to be in place until upstream infrastructure from the future Paradise RV Park development is in place – afterwards the pond on the Remainder Parcel may be filled, allowing for future development.

Proposed Conditions - Onsite

The onsite drainage schematic for the car wash site involves routing the proposed developed flows through overland swales and drop inlets to a water quality pond that will ultimately discharge into the 98th Street storm sewer. This will be done through a standpipe that has an orifice elevation that is higher than the elevation of the required water quality volume. The required water quality, or first flush volume was calculated as 0.34" over the entire pervious area of the proposed car wash property. The only offsite drainage that will be accepted will be flows from the berm that separates the property from the remainder parcel. Developed onsite flows were calculated using the Weighted E Method specified in the Albuquerque DPM. Onsite basin areas and flow calculations can be found in Appendix A.

Ultimate Conditions - Storm Drain Analysis

Neither of the aforementioned reports accounted for the drainage basins in 98th street that discharge into the same storm sewer as the areas mentioned in the analysis of the existing

basins. The Wooten Engineering Inlet Study, performed for the development just north of the proposed car wash property, analyzed the capacity of the inlets along 98th street and updated the analysis performed by THE Group to correct the total flow that makes it to AP 2 (Existing Conditions). This is a relevant analysis point for the proposed car wash site because it is at the corner of 98th St NW and Volcano Rd NW. The WEIS demonstrates that in existing conditions, there is an additional 32.3 cfs that comes to this analysis point that were not accounted for in the Paradise RV Park Drainage Report. It is unclear whether or not these additional flows were later accounted for in the developed conditions in the Paradise RV Park Drainage Report. For this reason, they were added in the hydraulic analysis of the storm sewer system in 98th Street between Volcano Rd NW and Avalon Rd NW. The system was conservatively analyzed for the 353 cfs shown at AP6 (same as AP2 but in proposed conditions) plus the additional flows cited in the WEIS. This is further discussed in the Hydraulics section of this report.

Hydraulics

All storm drainage facilities were sized and configured to accommodate the 100-year, 6-hour storm event. Hydraulic calculations were prepared using FlowMaster, CulvertMaster, StormCAD and spreadsheet calculations as necessary.

Existing Conditions - Offsite
Relevant offsite drainage facilities to the east include the existing storm drain system in 98th St that ultimately connects to the southern City Pond (Pond 3, NE 3). Because the existing 36" storm sewer is deficient to pass future developed flows, a portion along the property frontage will need to be upsized to 66" in the developed condition.

Ultimate Conditions - Offsite
As discussed in the hydrology section of this report, developed flows from the Paradise RV Park Drainage Report plus the flows shown entering the inlets on 98th St from the WEIS were used to conservatively analyze the necessary improvements to the existing system. The additional flows from each inlet were input into the StormCAD model at their approximate location by increasing the known flow at each manhole just upstream of each inlet. The storm drain schematic in Appendix A models how this flow will pass through the existing system with 1) no improvements; 2) by upsizing the 36" section to 66" all the way up to Avalon; and 3) by upsizing the 36" section to 66" solely along the frontage of the car wash property. The intent of this development is to only upsize the portion that is along the frontage of the property up to MH-12. The other cases demonstrate the entire system is undersized for the region's ultimate developed condition.

Proposed Conditions - Offsite
Proposed offsite facilities to the west include the temporary detention pond on the remainder parcel as well as the three 48" pipe culverts that reroute the majority of offsite flows (225 cfs) from the 98th and Central basin to the northern City Pond (Pond 2, NE 2). The remainder of these offsite flows (44 cfs) will be discharged from a weir controlled outlet into Volcano Rd. The velocity that this 44 cfs will be discharged at meets the City's criterion that requires the product of the velocity (ft/s) and flow depth (ft) to be less than 6.5. Calculations for the pipe culverts, the overflow weir, and the capacity of Volcano Rd can be found in Appendix A.

Proposed Conditions - Onsite

Onsite drainage facilities consist of a private storm drain system, landscaped swales, drop inlets, detention ponds, and a water quality/sediment basin. The onsite basin map in Appendix A shows the flows from the western part of the site being conveyed to a pond swale through overland sheet flow, curb cuts, and concrete flumes. This pond swale is connected to the water quality pond that is intended to connect to the existing public storm sewer system in 98th St NW. The eastern part of the site drains into two inlets that connect to a single pipe that discharges into the same water quality pond.

The proposed drainage facilities will continue to discharge into the two City Ponds to the south of the development. The basins that are to be routed through the temporary retention pond and pipe culverts to discharge into the Northern Pond (Pond 2, NE 2) are also shown to do so in the Paradise RV Park Drainage Report. This means that the temporary drainage solution is consistent with the intent of the current adopted master plan for the area.

Water Quality

As mentioned in the On-Site Conditions section of this report, water quality or first flush requirements are being met by detaining the required water quality volume of 0.34 inches over the entire impervious area of the site in a water quality pond. The required water quality volume was calculated to be 1383.7 cubic feet. This volume is contained within the bottom 1.2 feet of pond below a standpipe that functions as the outlet for the pond. Water quality calculations and the stage discharge curve for the pond can be found in Appendix A.

Conclusions

The methodology for design was prepared in accordance with the criteria set forth in the City of Albuquerque Development Process Manual. The proposed design demonstrates that the car wash site can be developed while accommodating existing and ultimate offsite flows from the 98th and Central Basin. The proposed drainage solution also complies with the existing master drainage plan for the area – the Paradise RV Park Drainage Report by THE Group. The site will freely discharge into the City Ponds to the south.

Exhibit A-Vicinity Map

Response: The changes have been made.

9. Sheet C2. Please add the flowline elevations along the prop curb on both 98th St. & Volcano Rd.
   Response: The changes have been made.

10. Sheet C2. Please enlarge the area of the stormwater quality pond and remove the proposed contours so that the proposed retaining wall will be shown.
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    Response: Duly noted.

16. Also as a reminder, please provide Drainage Covenant for the temporary pond and the stormwater quality pond per Chapter 17 of the DPM prior to Permanent Release of Occupancy. Please submit this on the 4th floor of Plaza del Sol. A $25 fee will be required.
    Response: Duly noted.

17. Standard review fee of $300 will be required at the time of resubmittal.
    Response: Duly noted.

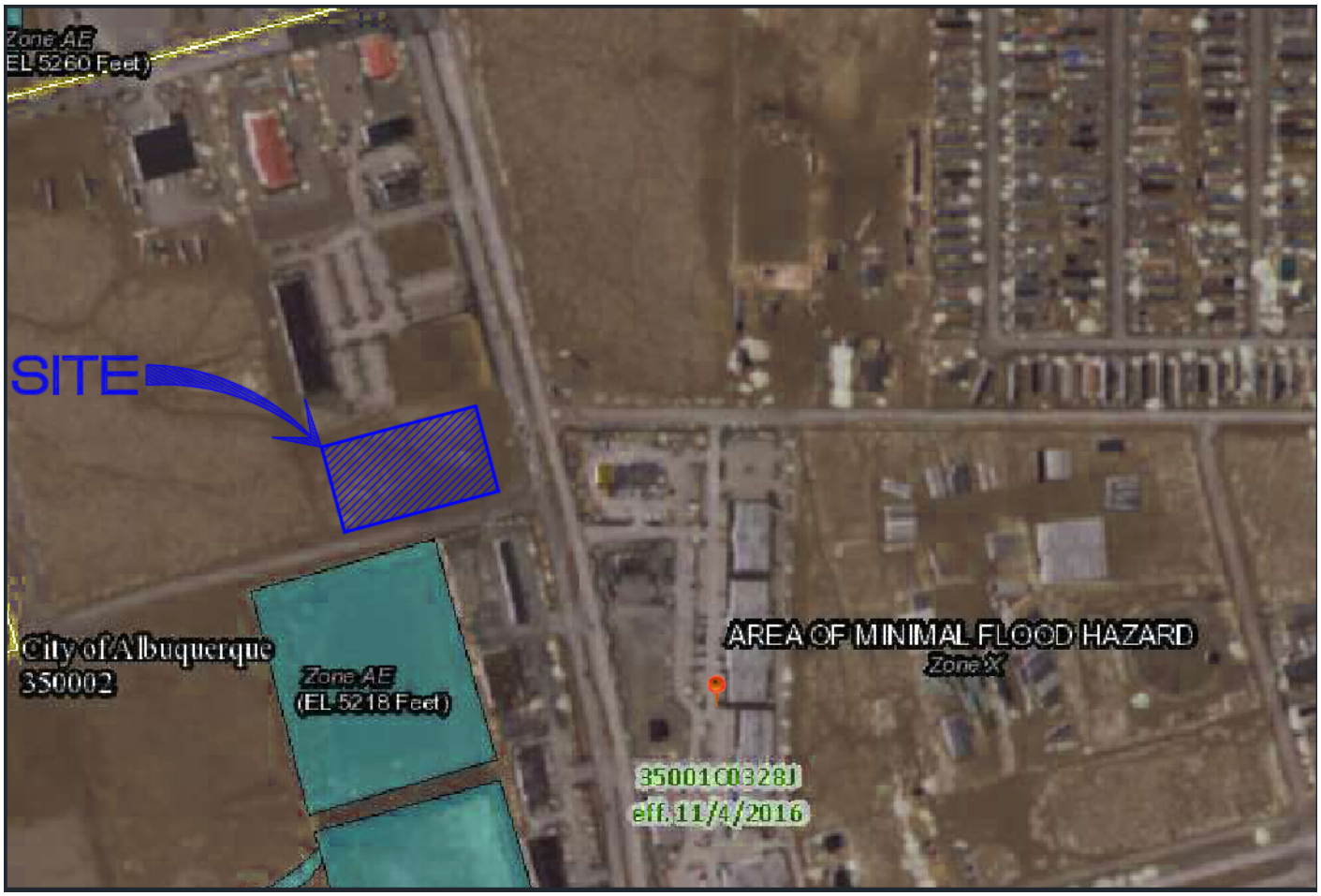
If you have any questions or need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, PE

JN: 2018058
RRB/vp

Appendix A



FIRM MAP: 65001C9328J

DPM Weighted E Method

Precipitation Zone 1
Area Vicinity
Site Name and Address: Mister Car Wash 98th Street and Volcano Road
TWLLC **Date** 2/13/2019

Existing Conditions

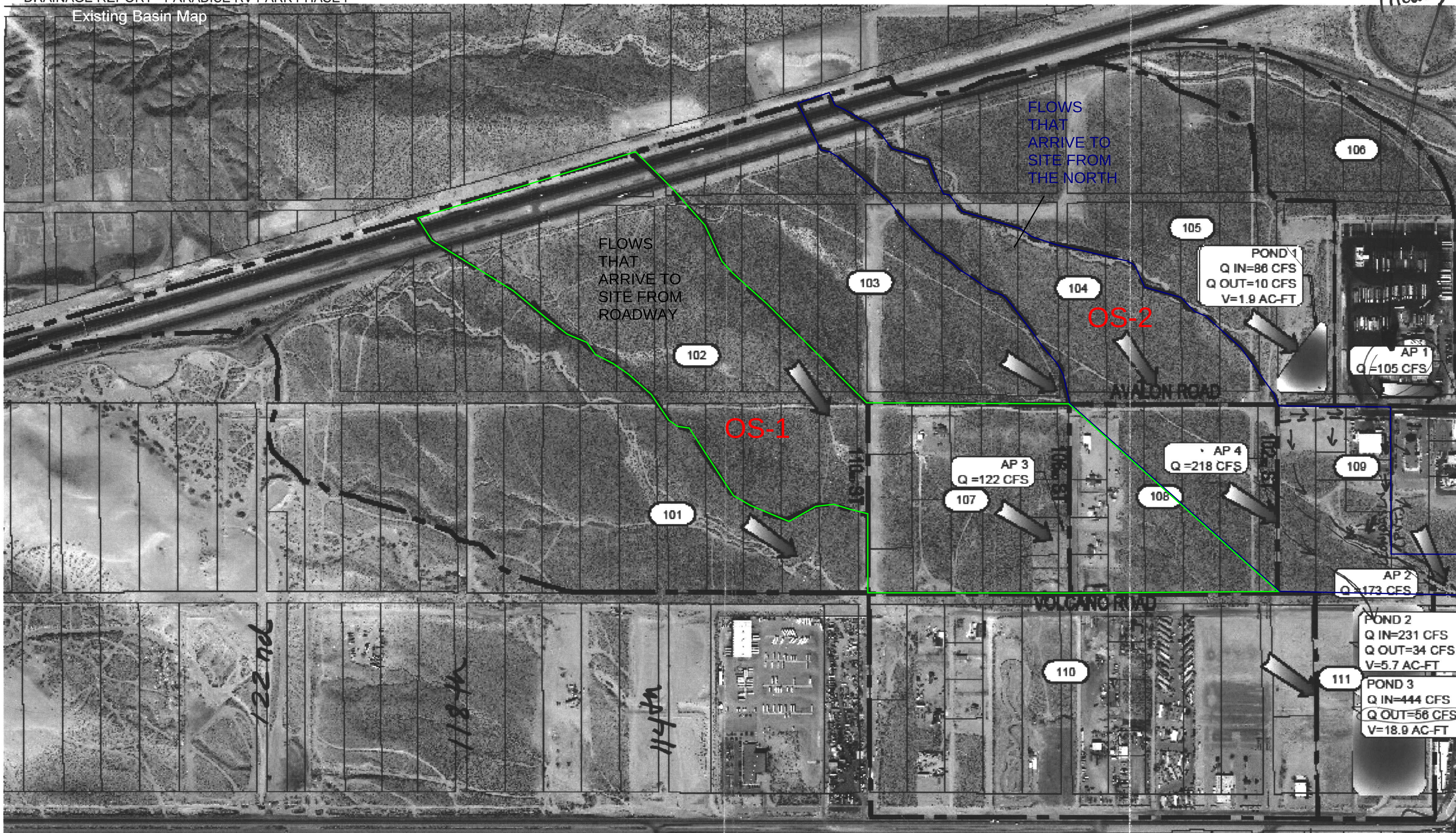
Basin Descriptions												100-Year, 6-Hr			10-Year, 6-Hr		
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	Treatment A %	Treatment A (acres)	Treatment B %	Treatment B (acres)	Treatment C %	Treatment C (acres)	Treatment D %	Treatment D (acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
PB-1	29,575.00	0.679	0.00106	0%	0.000	0%	0.000	10%	0.071	90%	0.608	1.868	0.106	2.86	1.157	0.065	1.86
PB-2	23,385.00	0.537	0.00084	0%	0.000	0%	0.000	25%	0.133	75%	0.404	1.727	0.077	2.15	1.042	0.047	1.37
PB-3	4,753.00	0.109	0.00017	0%	0.000	0%	0.000	0%	0.000	100%	0.109	1.970	0.018	0.48	1.240	0.011	0.32
PB-4	4,327.00	0.099	0.00016	0%	0.000	0%	0.000	100%	0.099	0%	0.000	0.990	0.008	0.29	0.440	0.004	0.15
PB-5	2307.00	0.053	0.00008	0%	0.000	0%	0.000	100%	0.053	0%	0.000	0.990	0.004	0.15	0.440	0.002	0.08
POSB-1	6538.00	0.150	0.00023	0%	0.000	0%	0.000	100%	0.150	0%	0.000	0.990	0.012	0.43	0.440	0.006	0.22
Total	**70,885.00**	**1.477**	**0.00231**		**0.000**		**0.000**		**0.000**		**1.121**		**0.213**	**5.92**		**0.129**	**3.77**

First Flush Volume= 0.0318 ac-ft
or 1383.7 cubic feet

Pond Capacity= 0.15 ac-ft
6539.5 cubic feet

Pond Capacity at Riser 0.032755 ac-ft
Elevation 15.2= 1426.8 cubic feet

Does not include 98th St


Existing Basin Map
FLOWS THAT ARRIVE TO SITE FROM ROADWAY
FLOWS THAT ARRIVE TO SITE FROM THE NORTH
OS-1
OS-2
101
102
103
104
105
106
107
108
109
110
111
POND 1
Q IN=86 CFS
Q OUT=10 CFS
V=1.9 AC-FT
AP 1
Q =105 CFS
AP 2
Q =173 CFS
AP 3
Q =122 CFS
AP 4
Q =218 CFS
POND 2
Q IN=231 CFS
Q OUT=34 CFS
V=5.7 AC-FT
POND 3
Q IN=444 CFS
Q OUT=56 CFS
V=18.9 AC-FT
AVALON ROAD
VOLCANO ROAD
110th ST
106th ST
102nd ST
122 nd
118th
114th

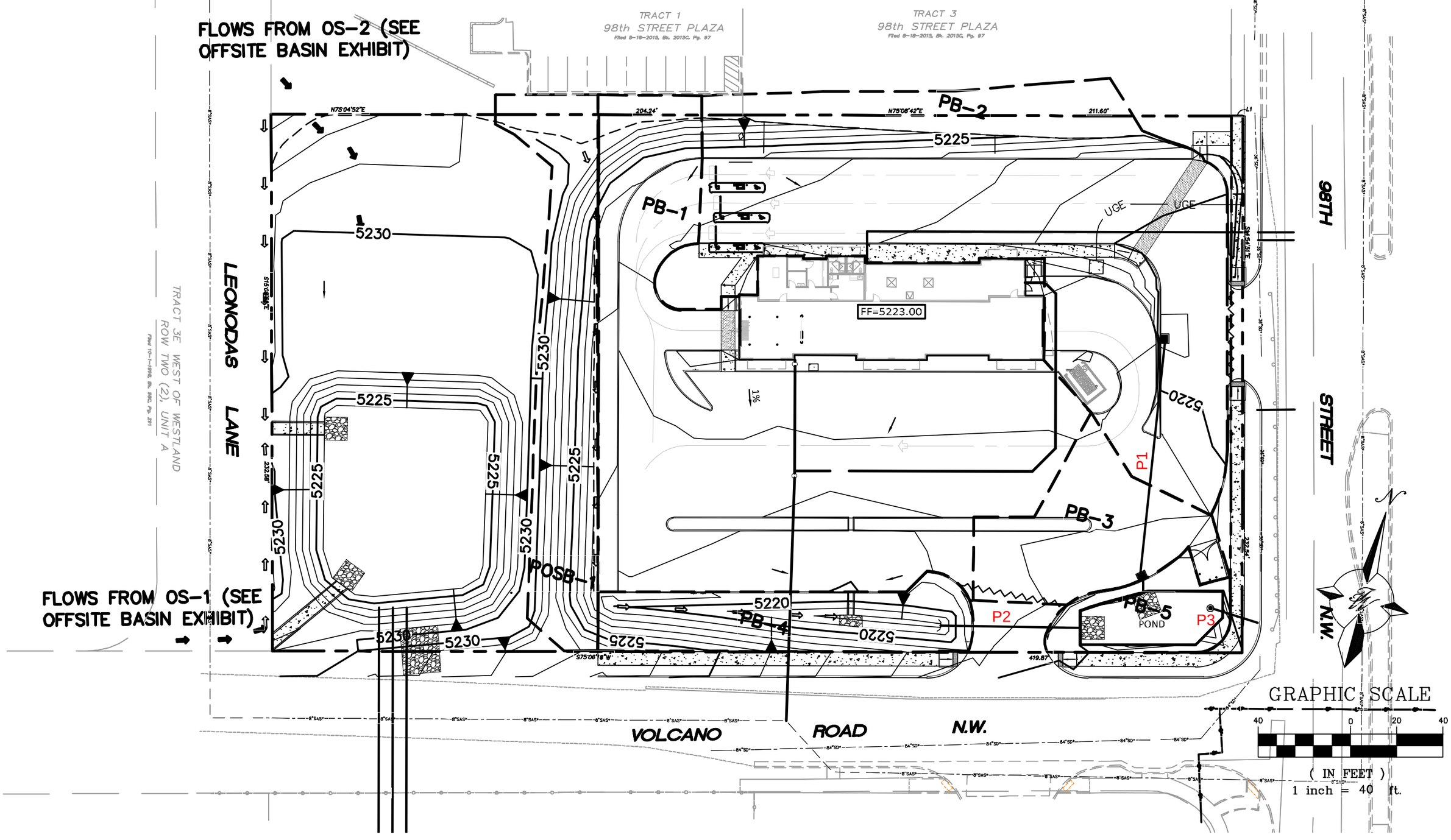
Total Tributary Flow to Site = Basin 104 + 0.5 * Basin 108 + 0.7 * Basin 109 + Basin 102 + Basin 107 + 0.5 * Basin 108 = 269 cfs

500' 250' 0 500' 1000'
SCALE: 1" = 500'

EXISTING BASIN MAP

THE Group
300 Branding Iron Rd. SE
Rio Rancho, New Mexico 87124

PROPOSED BASIN MAP



WQ Pond Discharge-Orifice Calculations

SURFACE POND VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)	
5114	0			
5115	1189	1189	1189	
5115.2	1189	237.8	1427	Riser Orifice Elevation
5116	1189	951.2	2378	
5117	1189	1189	3567	
5118	1189	1189	4756	
5119	1189	1189	5945	
5119.5	1189	594.5	6540	

Orifice Equation

Q = CA SQRT(2gH)

C =	0.6			
Diameter (in)	12			
Area (ft^2)=	0.785			
g =	32.2			
H (Ft) =	4.3	head available above riser orifice		
Q (CFS)=	7.84185	max flow rate out of pond	>	5.92 cfs

Total unattenuated flow for the whole site is 5.92 cfs, therefore the flow can be passed into storm manhole on 98th Street safely.

Capacity of Onsite Curb Openings

Weir Equation:

$$Q = CLH^{3/2}$$

Q= Flow
C = 2.7 (Per 6-15(A) of proposed DPM)
L= Length of weir
H = Height of Weir

3.0' Curb Opening(s) to Drainage Swale

Q=2.7 * 3.0' * 0.5' ^(3/2)

Q = 2.86 cfs
2.86 cfs = 2.86 cfs (Basin PB1 discharge 100yr-6hr)

Opening has adequate capacity.

Emergency Overflow Weir at Water Quality Pond

Q=2.7 * 6.5' * 0.5' ^(3/2)

Q = 6.2 cfs
6.2 cfs > 5.92 cfs (Full unattenuated discharge of whole site)

Opening has adequate capacity.

Worksheet for Circular Pipe - 1 P-1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Diameter	1.50	ft
Discharge	2.15	ft³/s

Results

Normal Depth	0.46	ft
Flow Area	0.46	ft²
Wetted Perimeter	1.76	ft
Hydraulic Radius	0.26	ft
Top Width	1.38	ft
Critical Depth	0.55	ft
Percent Full	30.7	%
Critical Slope	0.00496	ft/ft
Velocity	4.67	ft/s
Velocity Head	0.34	ft
Specific Energy	0.80	ft
Froude Number	1.43	
Maximum Discharge	11.30	ft³/s
Discharge Full	10.50	ft³/s
Slope Full	0.00042	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	30.69	%
Downstream Velocity	Infinity	ft/s

Worksheet for Circular Pipe - 1 P-1

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.46	ft
Critical Depth	0.55	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00496	ft/ft

Worksheet for Pond Outlet Pipe P-3

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.05000	ft/ft
Diameter	1.00	ft
Discharge	5.92	ft³/s

Results

Normal Depth	0.64	ft
Flow Area	0.53	ft²
Wetted Perimeter	1.86	ft
Hydraulic Radius	0.29	ft
Top Width	0.96	ft
Critical Depth	0.95	ft
Percent Full	64.2	%
Critical Slope	0.02395	ft/ft
Velocity	11.11	ft/s
Velocity Head	1.92	ft
Specific Energy	2.56	ft
Froude Number	2.63	
Maximum Discharge	8.57	ft³/s
Discharge Full	7.97	ft³/s
Slope Full	0.02761	ft/ft
Flow Type	SuperCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	64.22	%
Downstream Velocity	Infinity	ft/s

Worksheet for Pond Outlet Pipe P-3

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	0.64	ft
Critical Depth	0.95	ft
Channel Slope	0.05000	ft/ft
Critical Slope	0.02395	ft/ft

Culvert Calculator Report
On-Site Pipe Culvert P-2

Solve For: Headwater Elevation

Culvert Summary					
Allowable HW Elevation	20.50	ft	Headwater Depth/Height	4.90	
Computed Headwater Elev	20.40	ft	Discharge	3.58	cfs
Inlet Control HW Elev.	19.50	ft	Tailwater Elevation	19.50	ft
Outlet Control HW Elev.	20.40	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	15.50	ft	Downstream Invert	14.50	ft
Length	60.00	ft	Constructed Slope	0.016667	ft/ft

Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	5.00	ft
Slope Type	N/A		Normal Depth	0.63	ft
Flow Regime	N/A		Critical Depth	0.81	ft
Velocity Downstream	4.56	ft/s	Critical Slope	0.008840	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.012	
Section Material	HDPE (Smooth Interior)		Span	1.00	ft
Section Size	12 inch		Rise	1.00	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	20.40	ft	Upstream Velocity Head	0.32	ft
Ke	0.20		Entrance Loss	0.06	ft

Inlet Control Properties					
Inlet Control HW Elev.	19.50	ft	Flow Control	N/A	
Inlet Type	Groove end w/headwall		Area Full	0.8	ft²
K	0.00180		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	2	
C	0.02920		Equation Form	1	
Y	0.74000				

Culvert Calculator Report
Off-Site Pipe Culverts to Pond

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	30.00	ft	Headwater Depth/Height	1.00	
Computed Headwater Elev	30.00	ft	Discharge	225.15	cfs
Inlet Control HW Elev.	29.74	ft	Tailwater Elevation	28.70	ft
Outlet Control HW Elev.	30.00	ft	Control Type	Entrance Control	

Grades					
Upstream Invert	26.00	ft	Downstream Invert	19.80	ft
Length	88.00	ft	Constructed Slope	0.070455	ft/ft

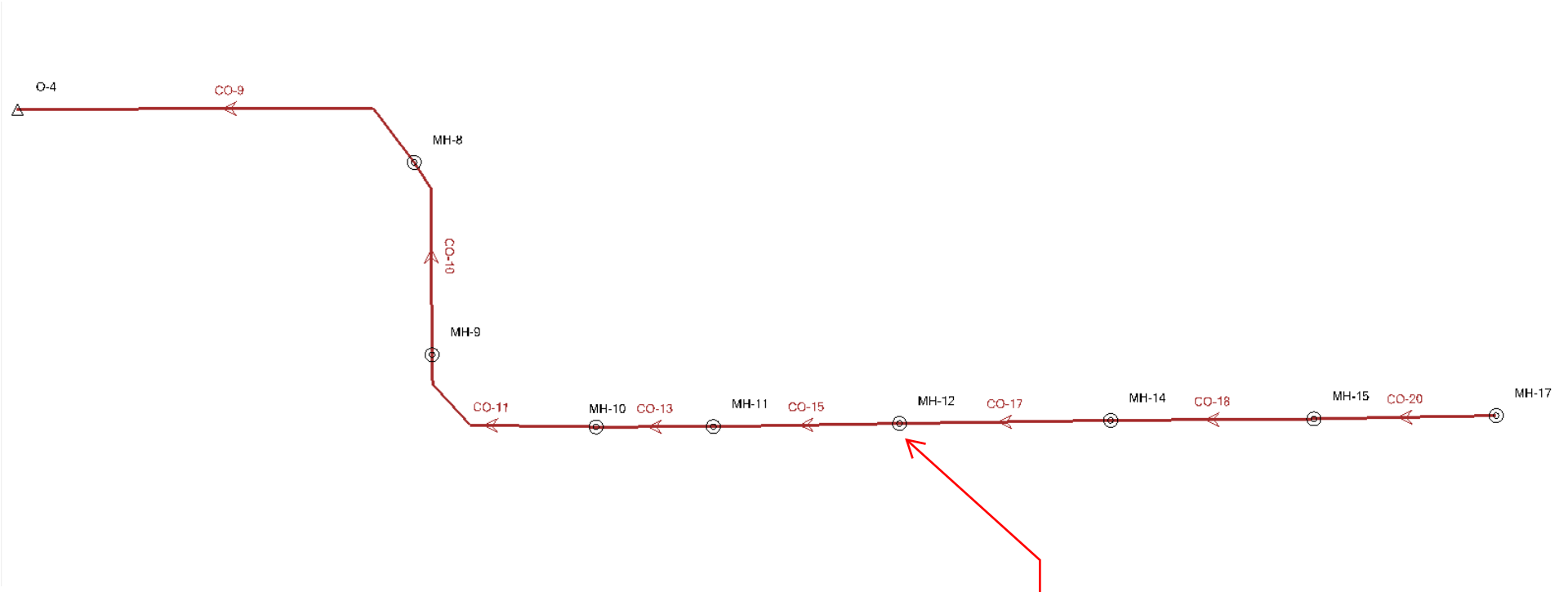
Hydraulic Profile					
Profile	CompositePressureProfileS1S2		Depth, Downstream	8.90	ft
Slope Type	N/A		Normal Depth	1.15	ft
Flow Regime	N/A		Critical Depth	2.62	ft
Velocity Downstream	5.97	ft/s	Critical Slope	0.003969	ft/ft

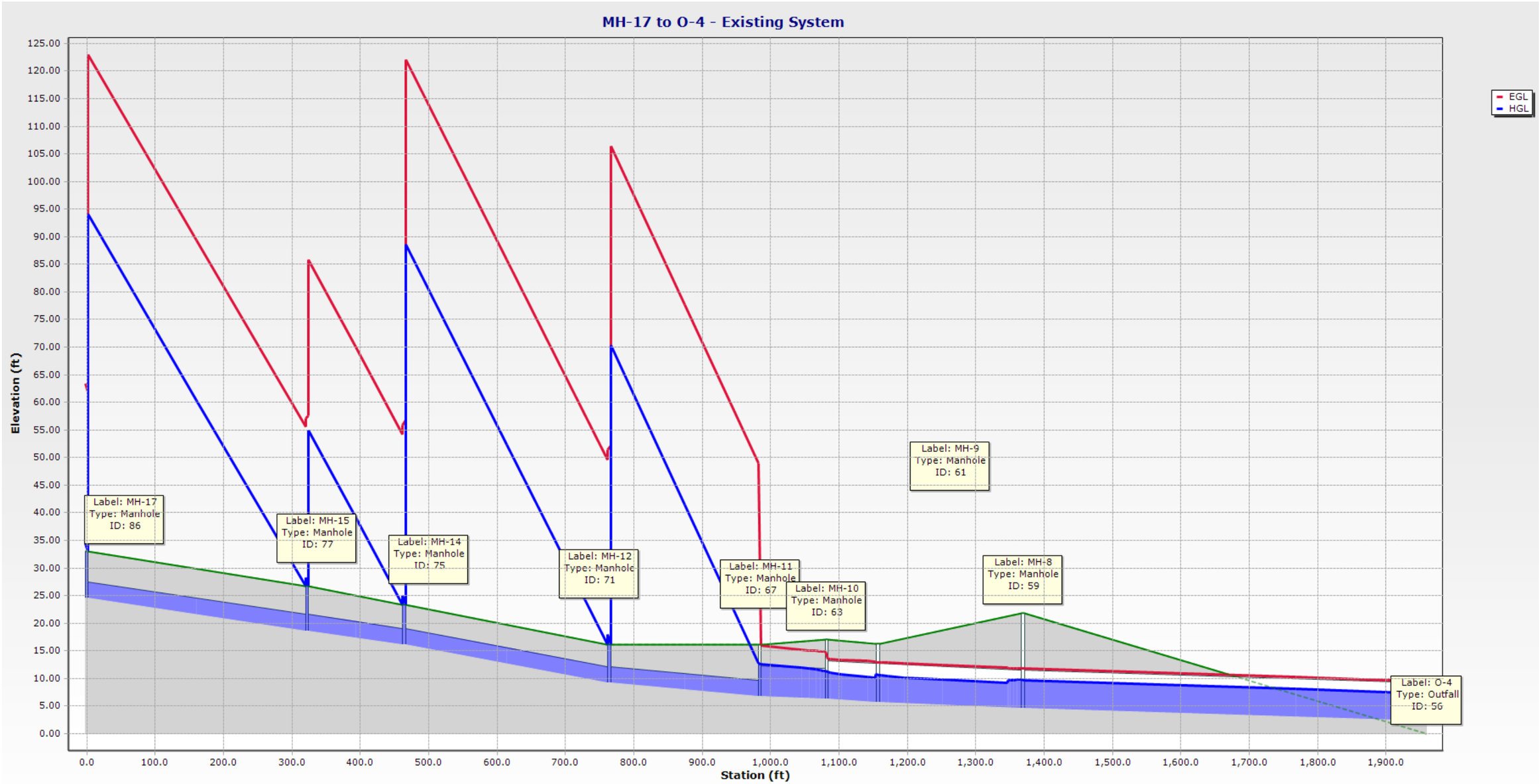
Section					
Section Shape	Circular		Mannings Coefficient	0.012	
Section Material	HDPE (Smooth Interior)		Span	4.00	ft
Section Size	48 inch		Rise	4.00	ft
Number Sections	3				

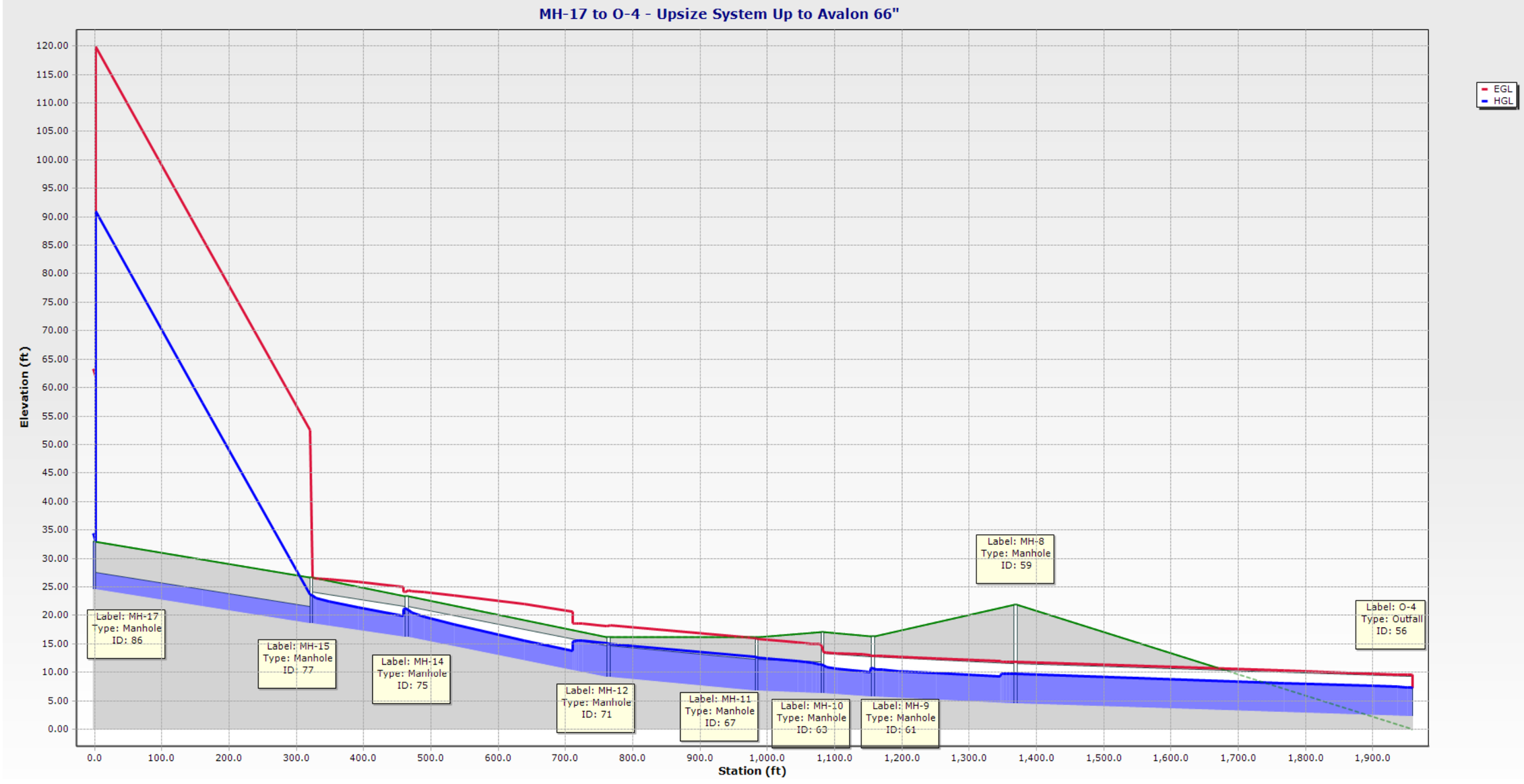
Outlet Control Properties					
Outlet Control HW Elev.	30.00	ft	Upstream Velocity Head	1.15	ft
Ke	0.20		Entrance Loss	0.23	ft

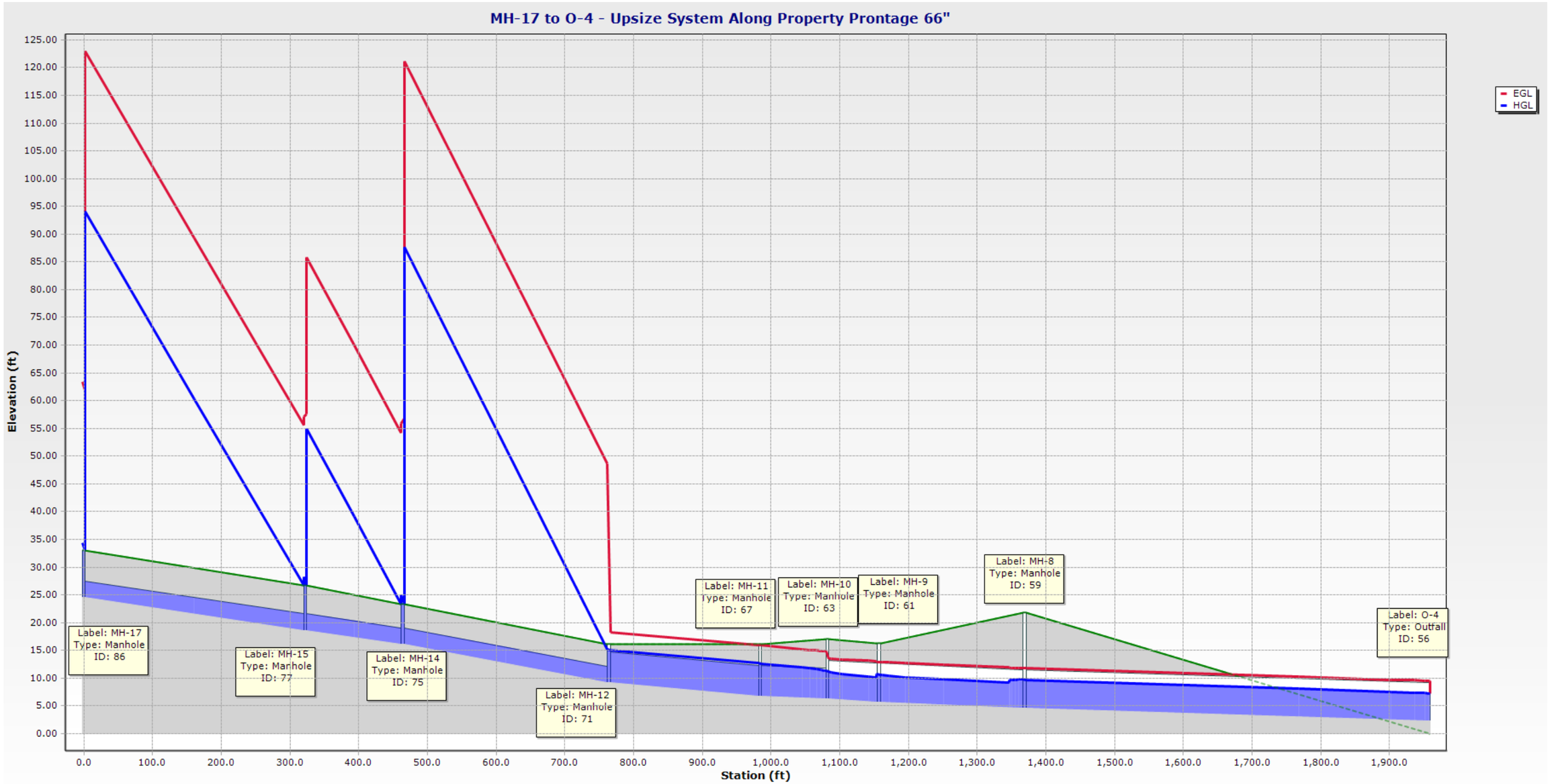
Inlet Control Properties					
Inlet Control HW Elev.	29.74	ft	Flow Control	Unsubmerged	
Inlet Type	Beveled ring, 33.7° bevels		Area Full	37.7	ft²
K	0.00180		HDS 5 Chart	3	
M	2.50000		HDS 5 Scale	B	
C	0.02430		Equation Form	1	
Y	0.83000				

STORMCAD - 98TH ST STORM SEWER SCHEMATIC




MH-17 to O-4 - Existing System
Elevation (ft)
Station (ft)
EGL
HGL
125.00
120.00
115.00
110.00
105.00
100.00
95.00
90.00
85.00
80.00
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0.0
100.0
200.0
300.0
400.0
500.0
600.0
700.0
800.0
900.0
1,000.0
1,100.0
1,200.0
1,300.0
1,400.0
1,500.0
1,600.0
1,700.0
1,800.0
1,900.0
Label: MH-17
Type: Manhole
ID: 86
Label: MH-15
Type: Manhole
ID: 77
Label: MH-14
Type: Manhole
ID: 75
Label: MH-12
Type: Manhole
ID: 71
Label: MH-11
Type: Manhole
ID: 67
Label: MH-10
Type: Manhole
ID: 63
Label: MH-9
Type: Manhole
ID: 61
Label: MH-8
Type: Manhole
ID: 59
Label: O-4
Type: Outfall
ID: 56


MH-17 to O-4 - Upsize System Up to Avalon 66"
EGL
HGL
Elevation (ft)
Station (ft)
120.00
115.00
110.00
105.00
100.00
95.00
90.00
85.00
80.00
75.00
70.00
65.00
60.00
55.00
50.00
45.00
40.00
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
0.0
100.0
200.0
300.0
400.0
500.0
600.0
700.0
800.0
900.0
1,000.0
1,100.0
1,200.0
1,300.0
1,400.0
1,500.0
1,600.0
1,700.0
1,800.0
1,900.0
Label: MH-17
Type: Manhole
ID: 86
Label: MH-15
Type: Manhole
ID: 77
Label: MH-14
Type: Manhole
ID: 75
Label: MH-12
Type: Manhole
ID: 71
Label: MH-11
Type: Manhole
ID: 67
Label: MH-10
Type: Manhole
ID: 63
Label: MH-9
Type: Manhole
ID: 61
Label: MH-8
Type: Manhole
ID: 59
Label: O-4
Type: Outfall
ID: 56


MH-17 to O-4 - Upsize System Along Property Prontage 66"
Elevation (ft)
Station (ft)
EGL
HGL
Label: MH-17
Type: Manhole
ID: 86
Label: MH-15
Type: Manhole
ID: 77
Label: MH-14
Type: Manhole
ID: 75
Label: MH-12
Type: Manhole
ID: 71
Label: MH-11
Type: Manhole
ID: 67
Label: MH-10
Type: Manhole
ID: 63
Label: MH-9
Type: Manhole
ID: 61
Label: MH-8
Type: Manhole
ID: 59
Label: O-4
Type: Outfall
ID: 56

Offsite Pond Overflow Bypass Weir

Weir Equation:

$$Q = CLH^{3/2}$$

Q= 44 cfs
C = 2.7 (Per 6-15(A) of proposed DPM)
L= Length of weir
H = Height of Weir = 1’

Length of Weir Calculation

L= Q/(C*H^1.5)
= 16.3’ ~ Length of Curb Cut required

APPENDIX B

From: Harmon Rita T.
Sent: Friday, September 25, 2015 12:07 PM
To: Don R. Briggs; 'Bingham, Brad'
Cc: Robert Pierson; Daggett, Kevin; Eisenberg, Jame J.; ron@thegroup.cc; 'Catherine VerEecke'
Subject: 98th & Central Basin and Amole Del Norte Dam

Don,

A copy of the *Paradise RV Park Drainage Report, 2015 by Ron Hensley* is being provided to the County to serve as a Master Drainage Plan for the 98Th and Central Basin. Development within the County's jurisdiction will need to adhere to this report.

Discussions with the County Planner, Catherine VerEecke, indicated that while Zoned A-1 (1 dwelling unit per Acre) that it is anticipated this undeveloped property will be much denser. A new zoning plan is in the works. The City recommends using the *Paradise RV Park Drainage Report, 2015 by Ron Hensley* to establish appropriate use.

Attached is a summary of the analysis as well as the approved Drainage Report.

Brad,

The *Paradise RV Park Drainage Report, 2015 by Ron Hensley* establishes that the discharge out of the dam in the ultimate condition is 70 cfs. Therefore 48 cfs, rather than 75 cfs (per earlier emails) , will need to be absorbed by the new HEC-HMS study.

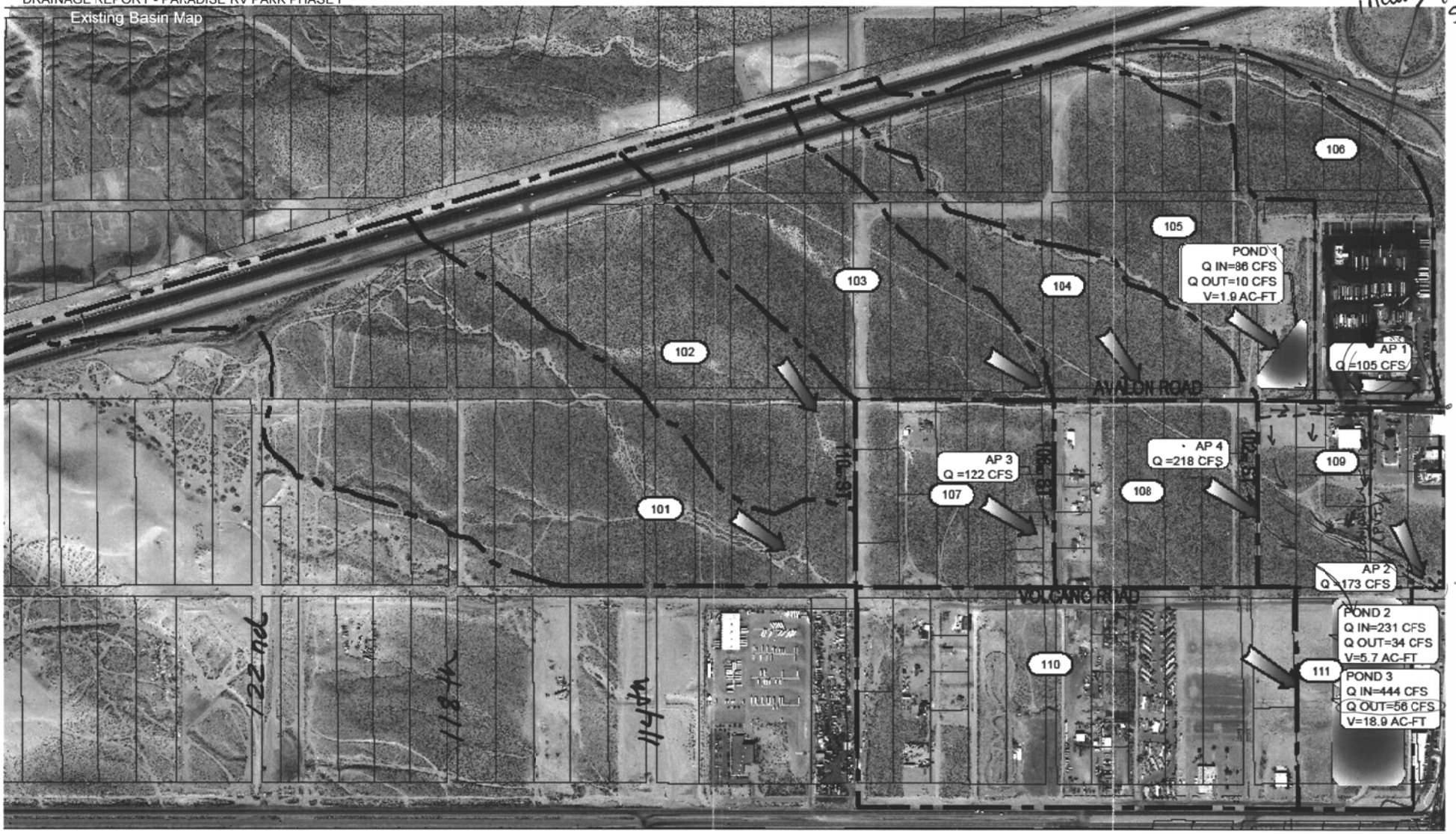
Sincerely,

Rita Harmon, P.E.
Senior Engineer
Planning Department
Development & Review Services Division
600 2nd St. NW, Suite 201
Albuquerque, NM 87102
t 505-924-3695
f 505-924-3864


Wooten Engineering
1005 21st Street SE, Suite B1
Rio Rancho, NM 87124
Ph: 505.980.3560
N
W
E
S
200' 100' 0 200'
SCALE: 1"=200'
Drainage Basin Map
THE Report = Paradise RV Park Report by The Hensley Engineering Group dated 9/8/2015
WEIS = Inlet Study for 98th St Plaza by Wooten Engineering dated 2/13/2015
EX. CULVERT
EX. CULVERT
DRAINS TO FLYING J SITE & SWALE ALONG 98TH
Qin=2.90cfs per WEIS
FLYING J DRAINAGE COLLECTED ONSITE
BASIN 106 Q100=105cfs AP1 (THE Report)
Q100=107.90cfs
BASIN 105 EXISTING POND Q100 out = 10cfs per THE Report
Ex 36" RCP (10cfs)
Qin=10.0cfs per WEIS
Q100=117.90cfs
Qin=8.0cfs per WEIS
Q100=125.90cfs
Qin=5.7cfs per WEIS
BASIN G per WEIS Qin=12.99cfs
24" SD
Q100=131.60cfs
Q100=144.59cfs
Qin=5.7cfs per WEIS
Ex 36" RCP
Q100=150.29cfs
Ex 84" RCP
FUTURE INLET
FUTURE SD TO POND
FUTURE SD TO POND
FUTURE SD TO POND
EX POND
Q100=205.30cfs 173cfs per THE Report plus 32.3cfs (added 98th St Flows)
JEFFREY TODD WOOTEN
NEW MEXICO
16892
LICENSED PROFESSIONAL ENGINEER
11/10/15

Existing Basin Map

Does not include 98th St



500' 250' 0 500' 1000'

SCALE: 1" = 500'

EXISTING BASIN MAP

THE Group
300 Branding Iron Rd. SE
Rio Rancho, New Mexico 87124

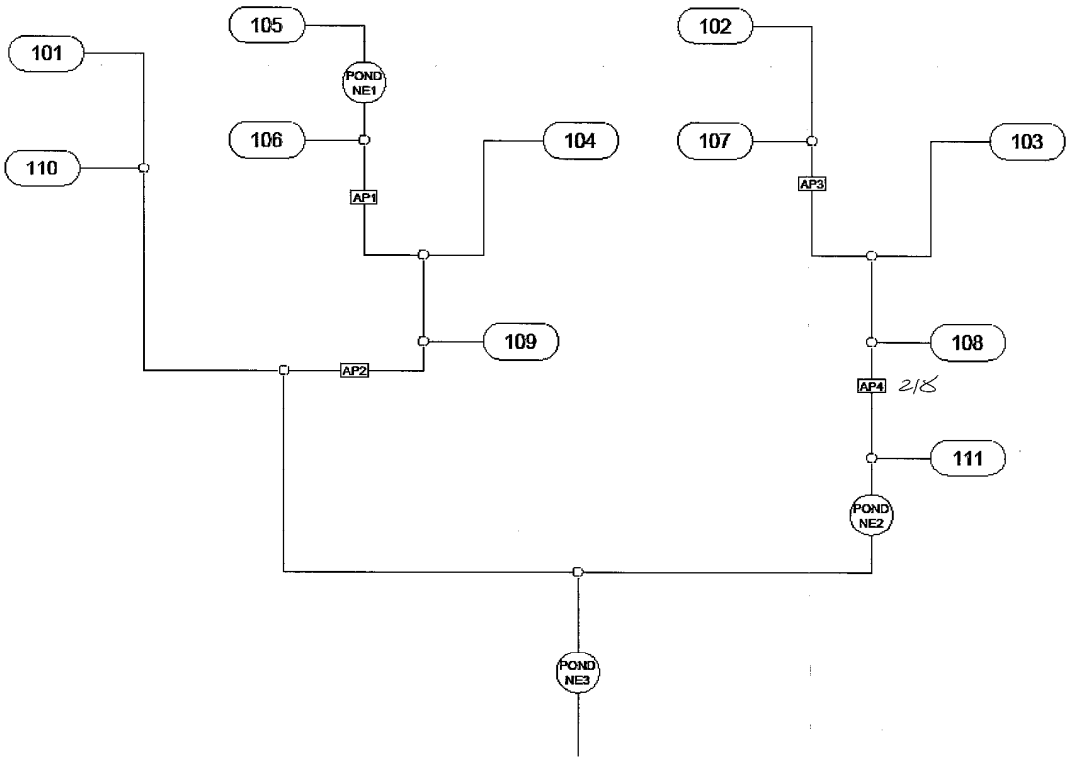
EXISTING CONDITIONS

Basin	Area (ac.)	Land Treatment				Yield (cfs/ac.)	Q_{100-24} (cfs)	V_{100-24} (cfs) — Ac-ft?
		A	B	C	D			
101	92.93	79	8	8	5	1.48	137.69	4.787
102	48.67	79	8	8	5	1.71	82.97	2.507
103	41.22	79	8	8	5	1.68	69.26	2.124
104	26.86	79	8	8	5	1.47	39.56	1.384
105	54.01	79	8	8	5	1.59	85.72	2.782
106	36.74	36	6	6	52	2.82	103.63	4.736
107	27.68	70	12	12	6	1.82	50.42	1.550
108	28.94	67	13	13	7	1.87	54.07	1.665
109	27.75	65	7	8	20	2.15	59.57	2.100
110	83.10	22	11	21	46	2.49	206.63	10.522
111	15.08	79	8	8	5	1.14	17.18	0.777

INCLUDES THIS SITE.

THIS IS SAME TREATMENTS used in Arnole Hubbell 2013 AHYMO for existing conditions

Basins exactly match that of 2013 Arnole-Hubbell



EXISTING BASIN ROUTING

THE Group
800 Branding Iron Rd. SE
Rio Rancho, New Mexico 87124

FINAL BASIN MAP

THE Group
300 Branding Iron Rd. SE
Rio Rancho, New Mexico 87124

Proposed Conditions

The proposed condition provides analyses for the basin modifications due to the extension of storm drain into the basin. The interim conditions will we modified with the following:

- Modification of sub-basin boundaries and runoff due to future development.
- The runoff analysis includes storm drain extension.

Generally used land treatments shown in Greiner Report 1995

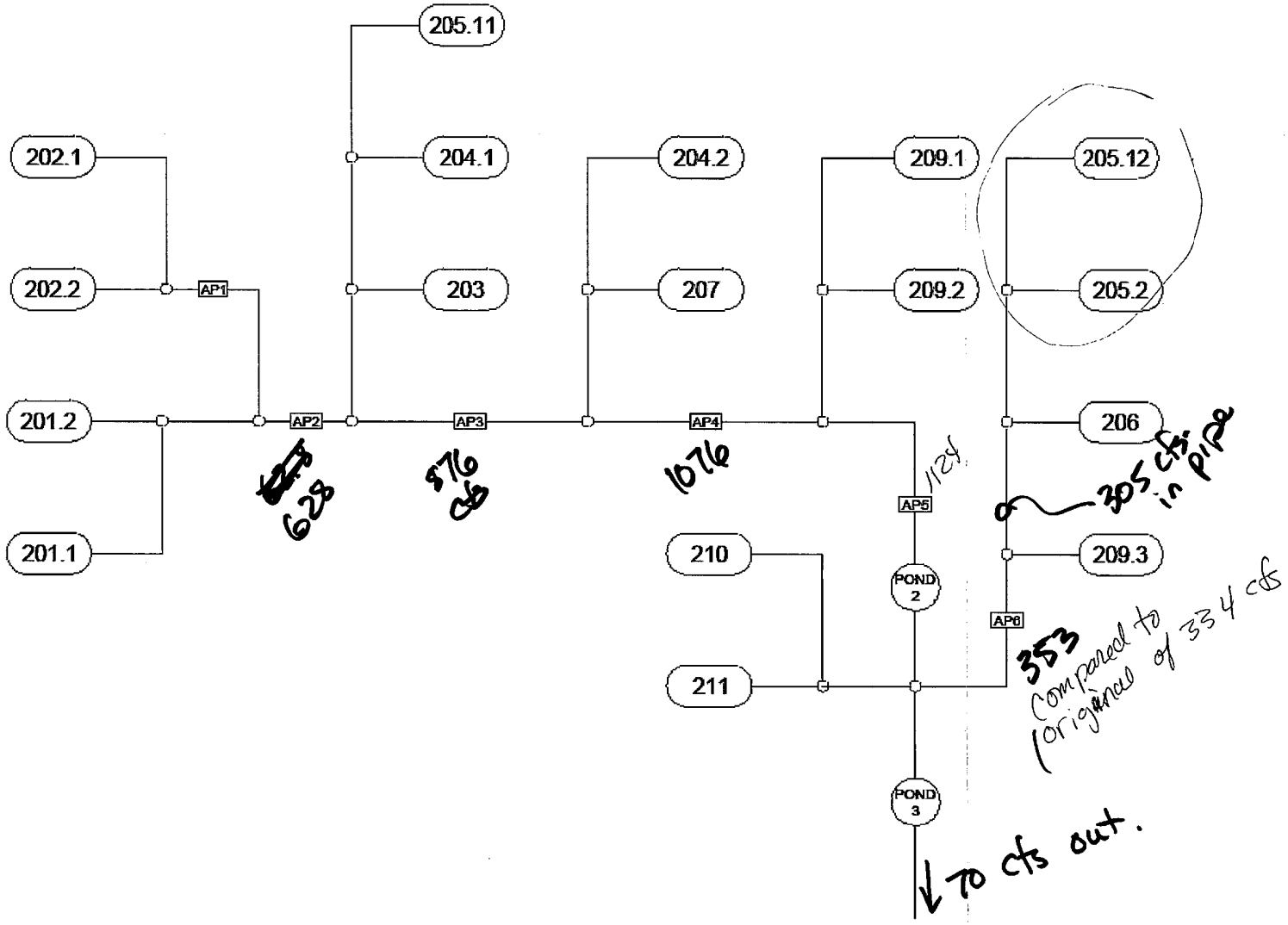
Hydrology

The analysis for the 100-yr 24-hr duration storm was done using AHYMO 97 software. The land treatments reflect existing and the proposed conditions of the basins and routing depicted on the following page. ~~Unless current development is of higher density, the land treatments for the undeveloped sub-basins have been modified to allow for a development density of 1 DU/AC as per current county zoning~~. The land treatments in other sub-basins will remain equivalent to the interim condition. A summary of the result is listed below and the AHYMO files are detailed in the Appendix.

Basin	Area (ac.)	Land Treatment				Yield (cfs/ac.)	$Q_{100(24)}$ (cfs)	$V_{100(24)}$ (cfs)
		A	B	C	D			
201.1	54.16	0	18	19	63	3.88	209.91	8.520
201.2	27.83	0	18	19	63	3.88	107.94	4.378
202.1	54.01	0	18	19	63	3.88	209.31	8.496
202.2	39.58	0	18	19	63	3.88	153.51	6.227
203	32.93	0	18	19	63	3.88	127.70	5.180
204.1	27.72	0	18	19	63	3.88	107.52	4.361
204.2	29.22	0	18	19	63	3.88	113.33	4.597
205.11	16.82	0	41	22	37	3.26	54.79	2.008
205.12	30.95	0	41	22	37	3.26	100.80	3.696
205.2	38.64	0	41	42	17	2.94	113.62	3.688
206	28.15	0	15	16	69	4.00	112.51	4.653
207	32.89	0	18	19	63	3.88	127.55	5.174
209.1	5.80	0	0	20	80	4.32	25.06	1.064
209.2	10.00	0	0	20	80	4.32	43.14	1.832
209.3	11.95	0	0	15	85	4.40	52.51	2.261
210	83.10	0	20	21	59	2.93	243.06	12.612
211	15.08	16	5	21	58	2.76	41.54	2.201

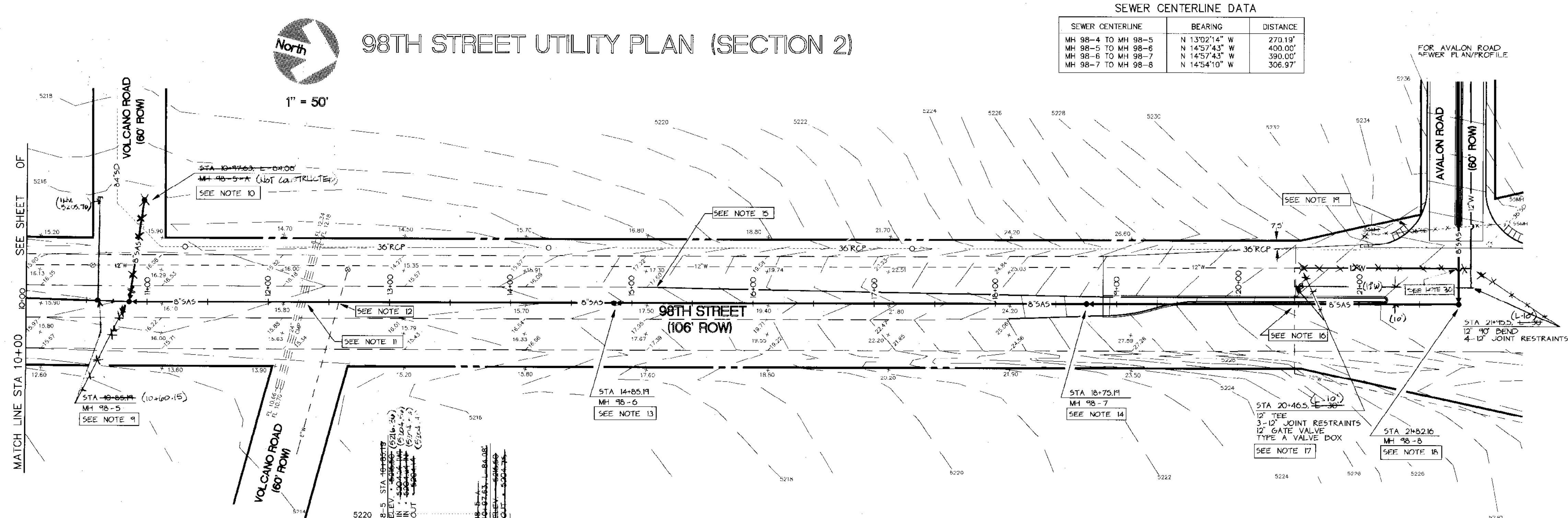
205.2 smaller than 205.12 per map.

These areas are based on basins extending to I-40 - too large



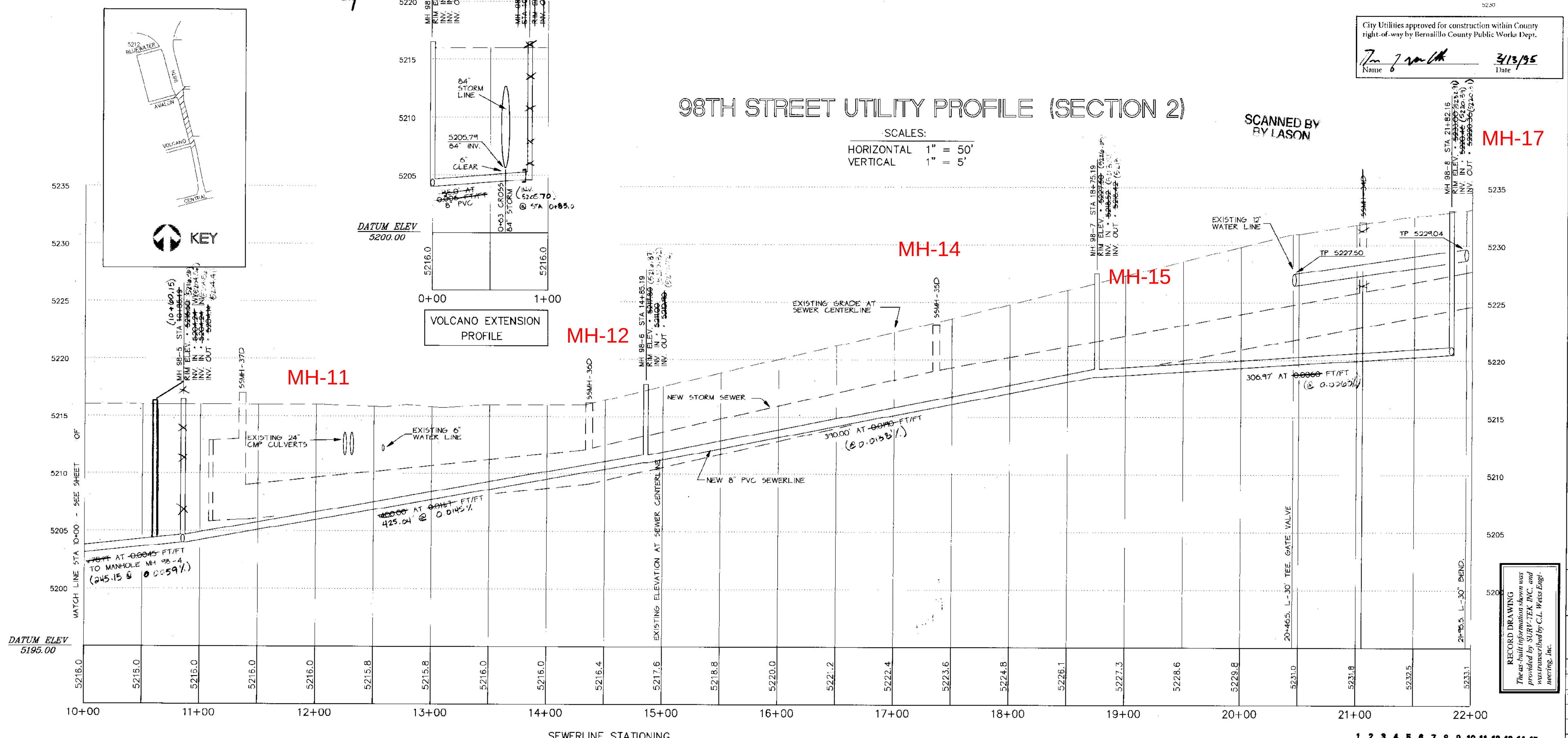
FINAL BASIN ROUTING

THE Group
900 Branding Iron Rd. SE
Rio Rancho, New Mexico 87124



SEWER CENTERLINE DATA

SEWER CENTERLINE	BEARING	DISTANCE
MH 98-4 TO MH 98-5	N 13°02'14" W	270.19'
MH 98-5 TO MH 98-6	N 14°57'43" W	400.00'
MH 98-6 TO MH 98-7	N 14°57'43" W	390.00'
MH 98-7 TO MH 98-8	N 14°54'10" W	306.97'



GENERAL NOTES

9. INSTALL TYPE 'E' MANHOLE. REMOVE AND REPLACE EXISTING ARTERIAL ASPHALT PAVING AS REQUIRED. SEE C.O.A. STD. DWGS. 2102, 2110 AND 2465.
10. INSTALL TYPE 'E' DROP MANHOLE. FUTURE WEST INVERT TO BE STANDARD 8' BELOW FINISHED GRADE. REMOVE AND REPLACE EXISTING ARTERIAL ASPHALT PAVING AS REQUIRED. SEE C.O.A. STD. DWGS. 2102, 2110, 2116 AND 2465.
11. 2 EXISTING 24" CMP CULVERTS LOCATED AT APPROXIMATELY STA 12+28.
12. EXISTING UNDERGROUND 6" WATER LINE LOCATED AT APPROXIMATELY STA 12+58.
13. INSTALL TYPE 'E' MANHOLE. REMOVE AND REPLACE EXISTING ARTERIAL ASPHALT PAVING AS REQUIRED. SEE C.O.A. STD. DWGS. 2102, 2110 AND 2465.
14. INSTALL TYPE 'E' MANHOLE. REMOVE AND REPLACE EXISTING ARTERIAL ASPHALT PAVING AND TEMPORARY ASPHALT CURB AS REQUIRED. SEE C.O.A. STD. DWGS. 2102, 2110, 2415 AND 2465.
15. NEW 98TH STREET PAVING IMPROVEMENTS BEGIN AT STA 15+21. ALL SAS CONSTRUCTION IS TO BE COMPLETED PRIOR TO PAVING IMPROVEMENTS. SEE ALSO RELATED PROJECT DRAWINGS "98TH STREET IMPROVEMENTS PLAN/PROFILE AND AVALON ROAD PLAN/PROFILE" (BERNALILLO COUNTY PUBLIC WORKS DEPT.) FOR ADDITIONAL INFORMATION.
16. EXISTING UNDERGROUND 6" WATER LINE LOCATED AT APPROXIMATELY STA 20+47.
17. DRY-CONNECT NEW 12" WATER LINE TO EXISTING 12" LINE. NEW WATER LINES TO BE INSTALLED PRIOR TO NEW STREET CONSTRUC-

    2328 AND 2333. SEE ALSO WATER SHUTOFF PLAN, THIS SHEET.
18. INSTALL TYPE 'E' MANHOLE. SEE C.O.A. STD. DWGS. 2102, 2110 AND 2465.
19. REFER TO PROJECT STORM SEWER PLANS FOR INFORMATION ON SYSTEM.

    TION. SEE C.O.A. STD. DWGS. 2301, 2315, 2325.

C.L. Weiss Engineering, Inc
Sandia Park: Phone / Fax (505) 281-1800
Albuquerque: Ph. (505) 266-3444 • Fax (505) 266-8560

TRAFFIC HANDLING NOTES

1. CONTRACTOR MUST SUBMIT A CONSTRUCTION SIGNING AND BARRICADING PLAN TO BERNALILLO COUNTY TRAFFIC CONTROL ENGINEER AND RECEIVE A BARRICADING PERMIT PRIOR TO CONSTRUCTION.
2. ALL CONSTRUCTION SIGNING AND BARRICADING SHALL COMPLY WITH MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 1988 EDITION. REVISION 3, SEPTEMBER 1993.
3. CONTRACTOR'S OPERATION, BARRICADING AND SIGNING SHALL NOT AFFECT THROUGH LANES BETWEEN 7 AM AND 9 AM, OR 4PM AND 6 PM ON 98TH STREET OR CENTRAL AVENUE NW.
4. SEE ALSO RELATED PROJECT DRAWINGS "98TH STREET IMPROVEMENTS PLAN/PROFILE, AVALON ROAD NW STREET + STORM DRAIN PLAN/PROFILE" (BERNALILLO COUNTY PUBLIC WORKS DEPT.), AND "98TH STREET IMPROVEMENTS TRTAFFIC CONTROL PLAN" (NMSHD).

WATER VALVE SHUT-OFF PLAN

WATER DISTRIBUTION MAP K-8

1. CONTRACTOR IS RESPONSIBLE FOR COORDINATING SHT-OFF PLAN WITH C.O.A. WATER SYSTEMS DIVISION (857-5200) AT LEAST 3 WORKING DAYS PRIOR TO ANY WORK DONE ON PUBLIC WATER LINES. ONLY WATER SYSTEMS DIVISION WILL PERFORM THE SHUT-OFF PLAN.
2. SHUT OFF VALVES 601, 751 AND 752 PRIOR TO MAKING NEW 12" NON-PRESSURIZED CONNECTION.

AS-BUILT INFORMATION | BENCH MARKS | SURVEY INFORMATION | ENGINEER'S SEAL | REVISIONS

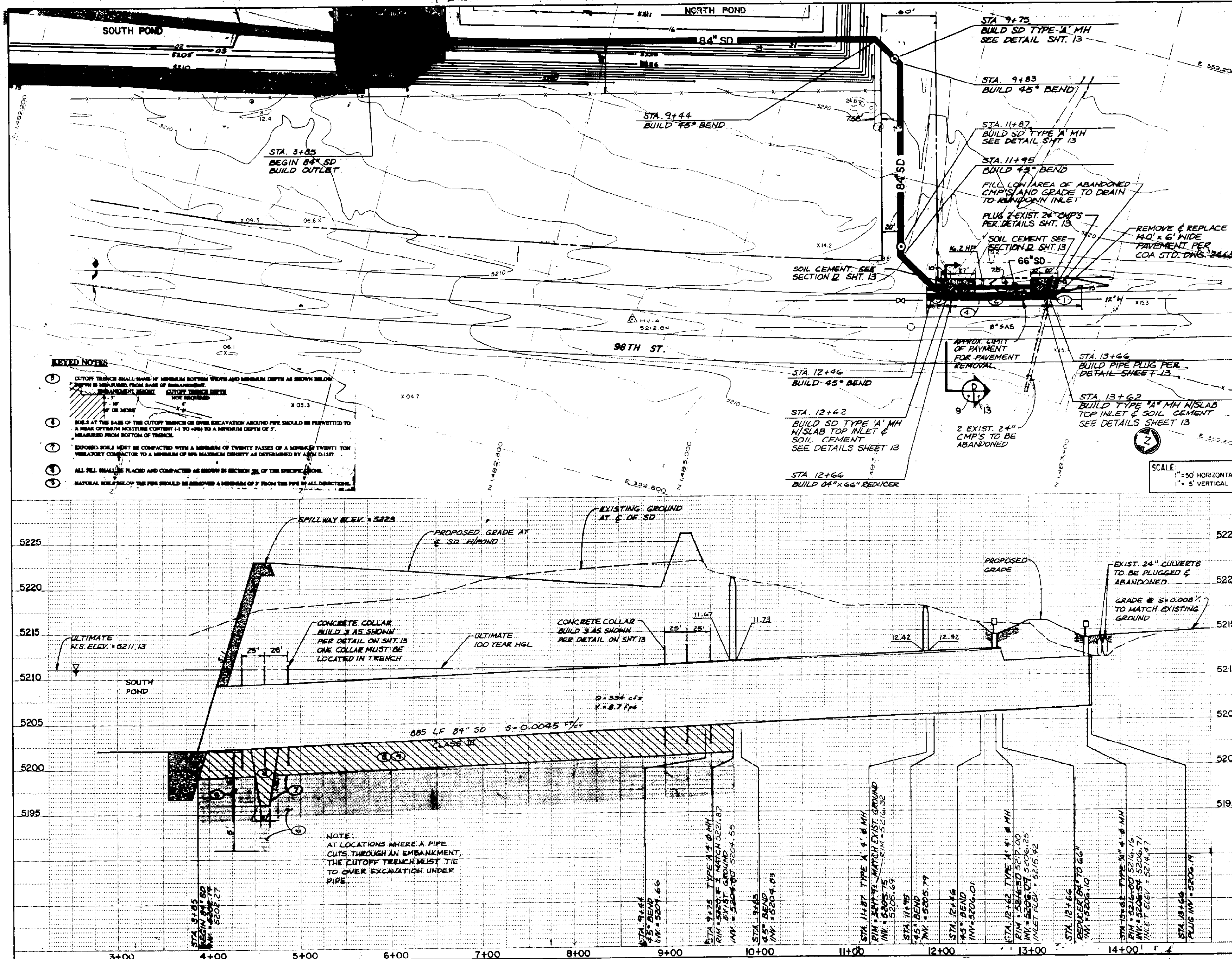
DESIGNED BY SC | DRAWN BY SC | CHECKED BY CW

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: **98TH STREET NW**
WATER & SEWER PLAN / PROFILE (SECTION 2)

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
DRC CHAIRMAN	B.J. Goolsby	3-30-95	WATER	R.W. Kane	11-23-94
TRANSPORTATION	N/A RHO	11-29-94	WASTE WATER	R.W. Kane	11-23-94
HYDROLOGY	N/A SMC	3-16-95			

PROJECT NO. 4506.90 | MAP NO. K 8 | SHEET 2 OF 4



KEYED NOTES

1. STA. 13+69.21 TO STA. 14+06.71 37.5' TYPE 'C' END ANCHORAGE PER COA STD. DWG. 2635
2. STA. 12+62 TO 13+69.21 GUARDRAIL PER COA STD. DWG. 2612
3. STA. 12+37 TO 12+62 25' END ANCHORAGE PER COA STD. DWG. 2615.
4. SEE GUARDRAIL/INLET PLACEMENT DETAIL ON SHEET 13.

AS BUILT INFORMATION

CONTRACTOR CHAVA TRUCKING
WORK STAKED BY COA
INSPECTORS ACCEPTANCE BY COA
FIELD VERIFICATION BY COA
DRAWINGS CORRECTED BY URSG DATE 8/97

MICRO-FILM INFORMATION

RECORDED BY
DATE
NO.

BENCH MARKS

ACS 10-L9 ALUMINUM CAP SET IN CONCRETE CURB ON THE NORTHEASTERLY TURN ISLAND IN THE INTERSECTION OF 98th STREET AND CENTRAL AVENUE
N = 1,482,085.103 E = 352,792.376
ELEV. = 5204.425

SURVEY INFORMATION

FIELD NOTES

ENGINEER'S SEAL

MARK S. HOLSTAD NEW MEXICO No. 7288

4-25-95

RECORD DRAWINGS
THESE DRAWINGS HAVE BEEN REVISED TO REFLECT AS-CONSTRUCTED CONDITIONS FOR STORM DIVERSION FACILITIES IN ACCORDANCE WITH INFORMATION FURNISHED BY THE CONTRACTOR (CHAVA TRUCKING) AND THE CITY OF ALBUQUERQUE WHICH PERFORMED ON-SITE INSPECTION AND SURVEY DURING CONSTRUCTION.

12-15-97

NO.	DATE	REVISIONS	BY

DESIGN: DESIGNED BY SKJ DATE 4-94; DRAWN BY TAK DATE 4-94; CHECKED BY MSH/PO DATE 2-95

Greiner Engineering

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

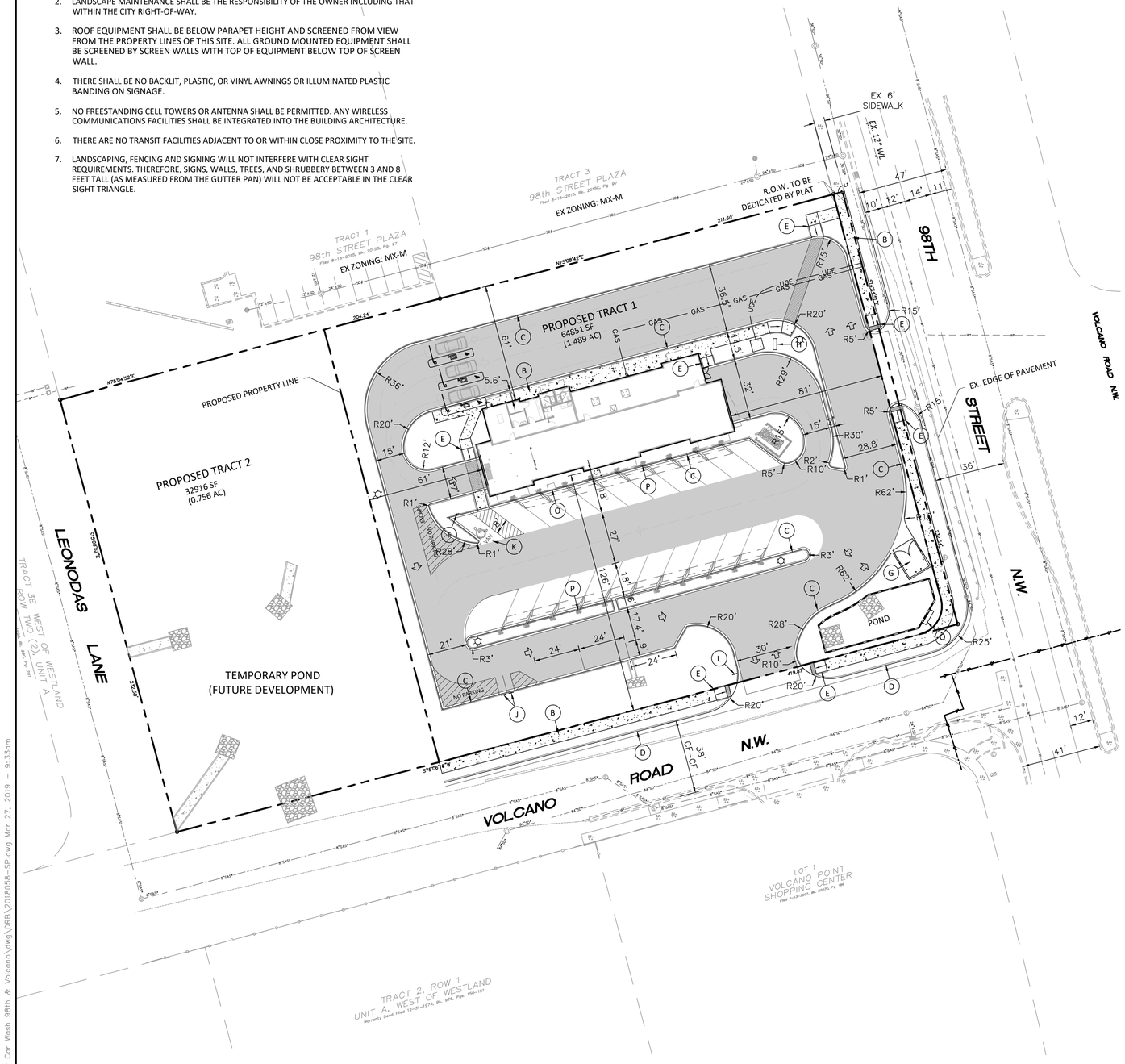
TITLE: AMOLE DEL NORTE STORM DIVERSION FACILITIES - PHASE IIC
TIERRA BAYITA DRAINAGE FACILITIES
98TH ST. STA. 3+85 TO STA. 13+66
STORM DRAIN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
DRC CHAIRMAN		5-12-95	WATER		5/1/95
TRANSPORTATION		4-26-95	WASTEWATER		
HYDROLOGY		4-24-95			

DRAWING NO. 4076.92 | MAP NO. K-9 | SHEET 9 OF 15

GENERAL NOTES:

1. APPROVAL OF THIS PLAN DOES NOT CONSTITUTE OR IMPLY EXEMPTION FROM WATER WASTE PROVISIONS OF THE WATER CONSERVATION LANDSCAPING AND WATER WASTE ORDINANCE. WATER WASTE MANAGEMENT IS THE SOLE RESPONSIBILITY OF THE PROPERTY OWNER.
2. LANDSCAPE MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE OWNER INCLUDING THAT WITHIN THE CITY RIGHT-OF-WAY.
3. ROOF EQUIPMENT SHALL BE BELOW PARAPET HEIGHT AND SCREENED FROM VIEW FROM THE PROPERTY LINES OF THIS SITE. ALL GROUND MOUNTED EQUIPMENT SHALL BE SCREENED BY SCREEN WALLS WITH TOP OF EQUIPMENT BELOW TOP OF SCREEN WALL.
4. THERE SHALL BE NO BACKLIT, PLASTIC, OR VINYL AWNINGS OR ILLUMINATED PLASTIC BANDING ON SIGNAGE.
5. NO FREESTANDING CELL TOWERS OR ANTENNA SHALL BE PERMITTED. ANY WIRELESS COMMUNICATIONS FACILITIES SHALL BE INTEGRATED INTO THE BUILDING ARCHITECTURE.
6. THERE ARE NO TRANSIT FACILITIES ADJACENT TO OR WITHIN CLOSE PROXIMITY TO THE SITE.
7. LANDSCAPING, FENCING AND SIGNING WILL NOT INTERFERE WITH CLEAR SIGHT REQUIREMENTS. THEREFORE, SIGNS, WALLS, TREES, AND SHRUBBERY BETWEEN 3 AND 8 FEET TALL (AS MEASURED FROM THE GUTTER PAN) WILL NOT BE ACCEPTABLE IN THE CLEAR SIGHT TRIANGLE.



LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- STREET LIGHTS
- LANE
- STRIPING
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING SIDEWALK
- EXISTING LANE
- EXISTING STRIPING
- PROPOSED HEAVY DUTY PCC PAVEMENT
- PROPOSED STANDARD DUTY PCC PAVEMENT

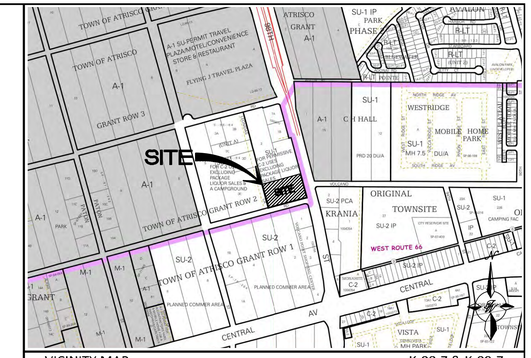
SITE DATA

PROPOSED USAGE:	CAR WASH 5,580 SF
ZONING:	MX-M (USE PERMISSIVE)
LOT AREA:	2.25 ACRES
PARKING REQUIRED: PARKING PROVIDED:	2 SPACES 28 SPACES
HC PARKING REQUIRED: HC PARKING PROVIDED:	1 SPACES 1 SPACES 1 SPACE VAN ACCESSIBLE

KEYED NOTE:

(A) 2' ALLEY GUTTER PER COA STD DWG #2415A
(B) SIDEWALK PER COA STD DWG #2430
(C) 6" PRIVATE CURB & GUTTER PER DETAIL ON SHEET C5
(D) EDGE OF PAVEMENT
(E) UNIDIRECTIONAL HC RAMP PER DETAIL ON SHEET C5
(F) HANDICAP PARKING SIGN PER DETAIL SHEET C5
(G) TRASH ENCLOSURE PER DETAIL SHEET C6
(H) BIKE RACK PER DETAIL SHEET C6
(I) SITE LIGHTING
(J) MOTORCYCLE PARKING SIGN PER DETAIL SHEET C6
(K) ACCESSIBLE PARKING PER ADA STANDARDS (SEE DETAIL SHEET C5)
(L) STOP SIGN
(M) MONUMENT SIGN (SEE DETAIL SHEET A2.2)
(N) PEDESTRIAN RAILING (SEE DETAIL SHEET C4)
(O) 4'X3' CONCRETE PAD FOR MAT CLEANER
(P) 18" DIA CONC. FOOTING FOR VACUUM ARCH. TOP ELEV TO BE 6" ABOVE PAVING. SEE DETAIL N3, SHEET A1.1.
(Q) MONUMENT SIGN (SEE ARCH FOR DETAILS)

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



VICINITY MAP: K-08-Z & K-09-Z

LEGAL DESCRIPTION:

TRACT 1 AND TRACT 2, UNIT A, ROW 2, WEST OF WESTLAND

NOTES

1. LIGHT FIXTURES SHALL BE INSTALLED WITH FULL CUT OFF SHIELDS ON FIXTURES SO THAT NO FUGITIVE LIGHT SHALL ESCAPE BEYOND THE PROPERTY LINE.
2. 10' CLEARANCE SHALL BE PROVIDED FOR ALL GROUND MOUNTED PNM UTILITIES FOR SAFE OPERATION, MAINTENANCE AND REPAIR PURPOSES.

PROJECT NUMBER: PR-2018-001964
APPLICATION NUMBER: PS-2019-00003

This plan is consistent with the specific Site Development Plan approved by the Environmental Planning Commission (EPC), dated _____ and the Findings and Conditions in the Official Notification of Decision are satisfied.

Is an infrastructure List required? ( ) Yes ( ) No If Yes, then a set of approved DRC plans with a work order is required for any construction within Public Right-of-Way or for construction of public improvements.

DRB SITE DEVELOPMENT PLAN SIGNOFF APPROVAL:

Traffic Engineer, Transportation Division	Date
Water Utility Development	Date
Parks & Recreation Department	Date
City Engineer	Date
* Environmental Health Department (conditional)	Date
Solid Waste Management	Date
DRB Chairperson, Planning Department	Date

* Environmental Health, if necessary

INDEX TO DRAWINGS

C1. SITE PLAN
C2. GRADING AND DRAINAGE PLAN
C3. MASTER UTILITY PLAN
C4. DETAIL SHEET
C5. DETAIL SHEET
C6. DETAIL SHEET
L1. LANDSCAPING PLAN
A5.0 BUILDING ELEVATIONS
A5.1 BUILDING ELEVATIONS
A6.0 BUILDNG AND SIGN DETAILS

ENGINEER'S SEAL
RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER
3/27/2019
RONALD R. BOHANNAN P.E. #7868

MISTER CAR WASH
98TH ST & VOLCANO RD
SITE PLAN FOR BUILDING PERMIT

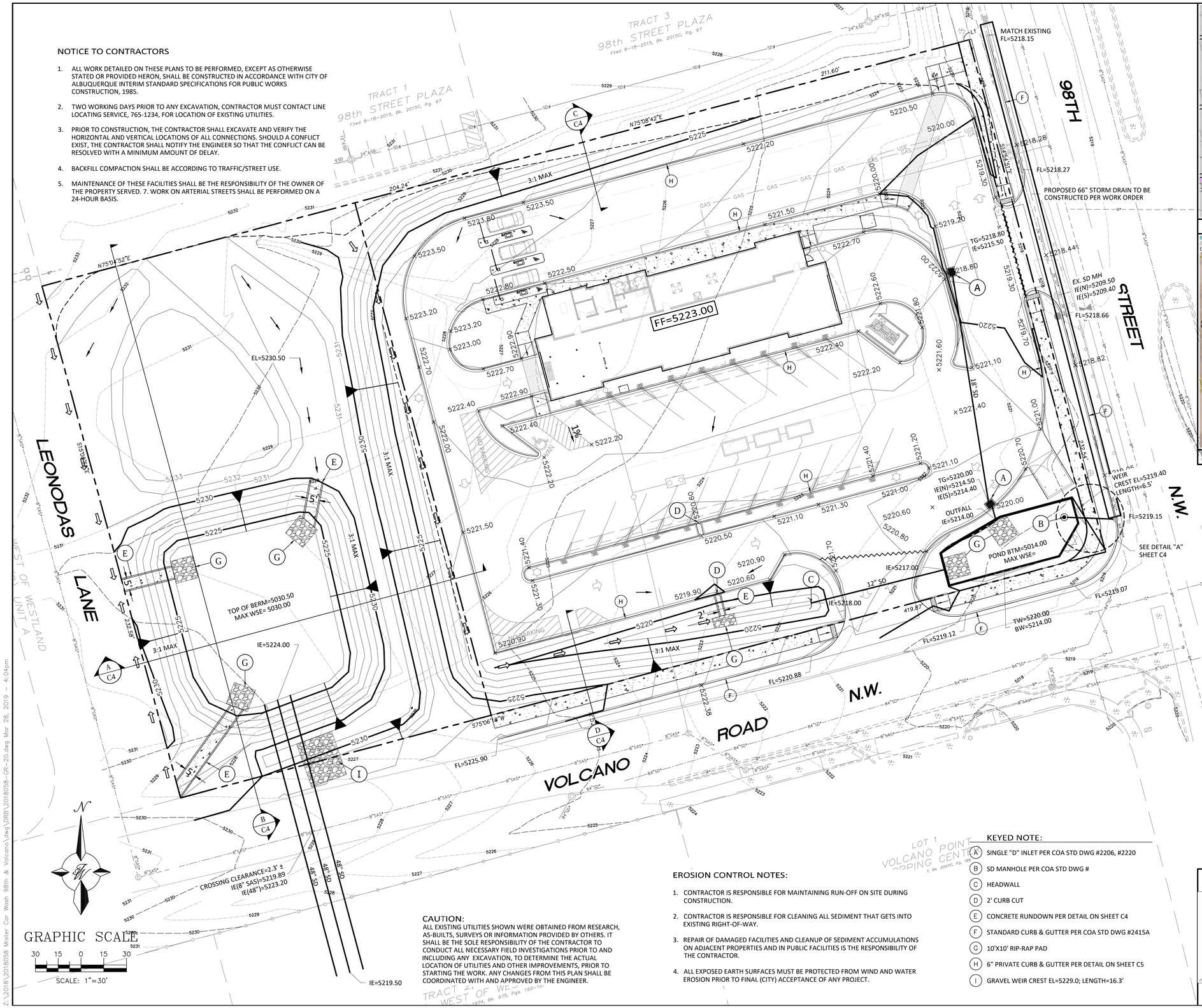
TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858-3100
www.tierrawestllc.com

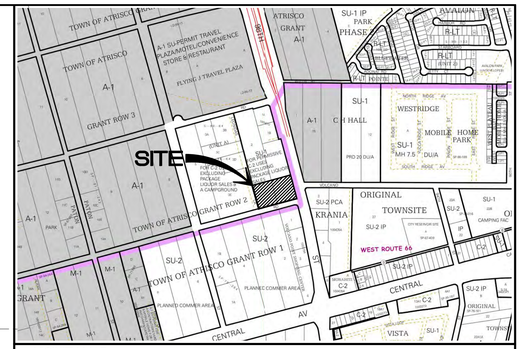
DRAWN BY DY
DATE 3/27/19
2018058-SP
SHEET # C1
JOB # 2018058

Z:\2018\2018058 Mister Car Wash 98th & Volcano\dwg\DRB\2018058-SP.dwg, Mar 27, 2019 - 8:33am

NOTICE TO CONTRACTORS

1. 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.
2. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
3. 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.
4. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
5. 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.





VICINITY MAP:

FIRM MAP: 35001C0328J

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
- 12"x12" CATCH BASIN (NDS OR EQUAL)
- PCC V-DITCH

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.

EROSION CONTROL NOTES:

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

KEYED NOTE:

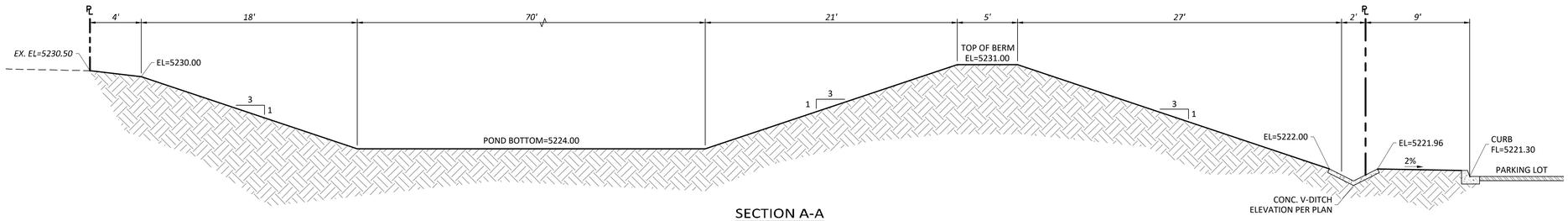
- (A) SINGLE "D" INLET PER COA STD DWG #2206, #2220
- (B) SD MANHOLE PER COA STD DWG #
- (C) HEADWALL
- (D) 2' CURB CUT
- (E) CONCRETE RUNDOWN PER DETAIL ON SHEET C4
- (F) STANDARD CURB & GUTTER PER COA STD DWG #2415A
- (G) 10'X10' RIP-RAP PAD
- (H) 6" PRIVATE CURB & GUTTER PER DETAIL ON SHEET C5
- (I) GRAVEL WEIR CREST EL=5229.0; LENGTH=16.3'

ENGINEER'S SEAL
RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER
3/27/2019
RONALD R. BOHANNAN P.E. #7868

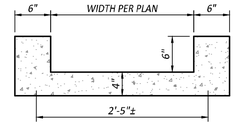
MISTER CAR WASH
98TH ST & VOLCANO RD
GRADING AND DRAINAGE PLAN

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

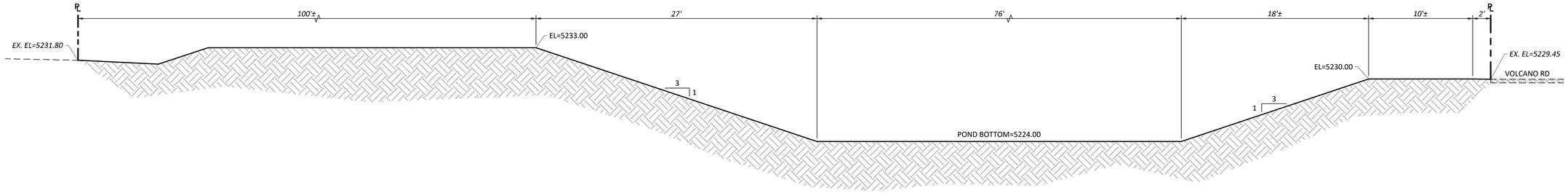
DRAWN BY: DY
DATE: 3/27/19
2018058-GR-20
SHEET # C2
JOB # 2018058



SECTION A-A
NTS



CONCRETE FLUME
NTS



SECTION B-B
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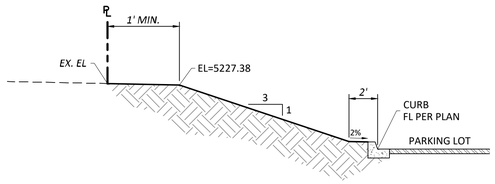

SECTION C-C
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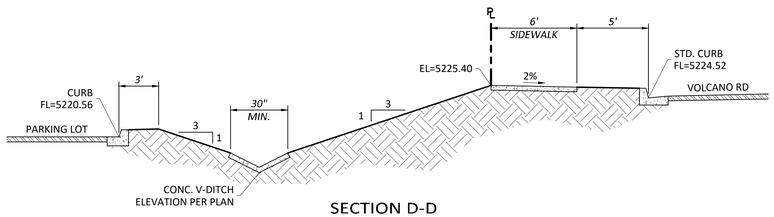

SECTION D-D
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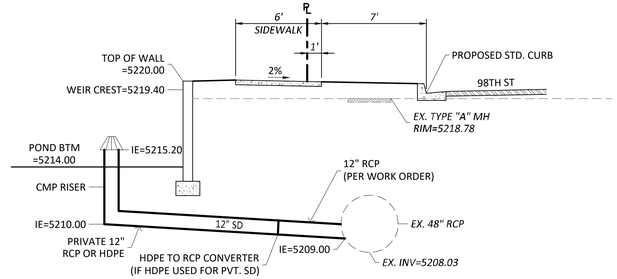
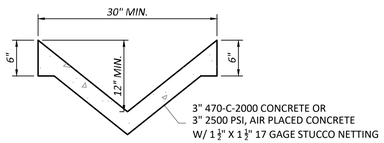


DETAIL "A"
NTS

SECTION E-E
NTS



V-DITCH DETAIL
NTS

ENGINEER'S SEAL

RONALD R. BOHANNAN
NEW MEXICO
7868
PROFESSIONAL ENGINEER
3/27/2019

RONALD R. BOHANNAN
P.E. #7868

MISTER CAR WASH
98TH ST & VOLCANO RD
SECTIONS AND DETAILS

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www.tierrawestllc.com

DRAWN BY
DY

DATE
3/27/19

2018058-X-SECTIONS

SHEET #
C4

JOB #
2018058

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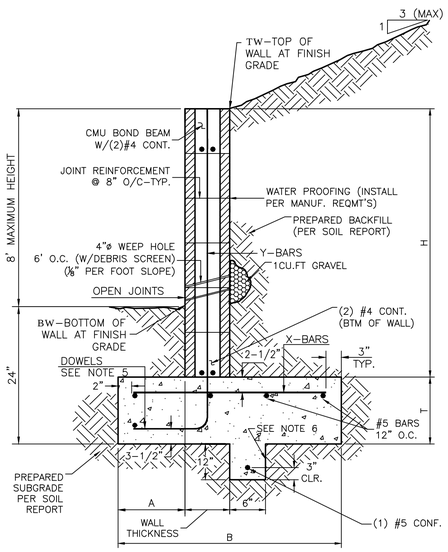


8 INCH REINFORCED CONCRETE MASONRY WALL

H	A	B	T	Y–BARS	X–BARS
ft.–in.	in.	ft.–in.	in.		
2'–0"	10"	2'–4"	10"	#4 @24" O.C.	#4 @24" O.C.
2'–8"	10"	2'–4"	10"	#4 @24" O.C.	#4 @24" O.C.
3'–4"	10"	2'–4"	10"	#4 @24" O.C.	#4 @24" O.C.
4'–0"	12"	2'–8"	10"	#4 @16" O.C.	#4 @24" O.C.
4'–8"	16"	3'–4"	12"	#5 @16" O.C.	#4 @18" O.C.
5'–4"	19"	3'–10"	12"	#5 @ 8" O.C.	#5 @24" O.C.
6'–0"	20"	4'–8"	12"	#6 @ 8" O.C.	#5 @24" O.C.

Y– BARS EDGE (2 ½") FROM RETAINING FACE

12 INCH REINFORCED CONCRETE MASONRY WALL

H	A	B	T	Y–BARS	X–BARS
ft.–in.	in.	ft.–in.	in.		
5'–4"	16"	3'–8"	12"	#5 @16" O.C.	#5 @24" O.C.
6'–0"	19"	4'–2"	12"	#5 @ 8" O.C.	#5 @24" O.C.
6'–8"	21"	4'–6"	12"	#5 @ 8" O.C.	#5 @16" O.C.
7'–4"	23"	4'–10"	12"	#6 @ 8" O.C.	#6 @18" O.C.
8'–0"	26"	5'–4"	12"	#6 @ 8" O.C.	#6 @18" O.C.
8'–8"	28"	5'–8"	12"	#6 @ 8" O.C.	#6 @12" O.C.

Y– BARS EDGE (3") FROM RETAINING FACE

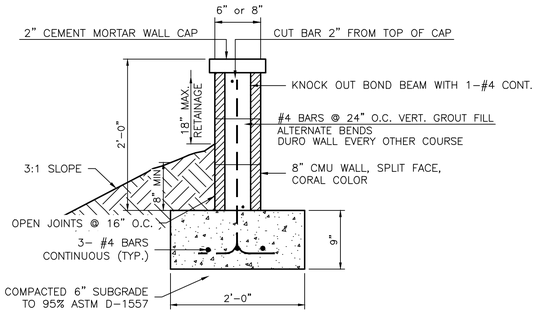
GENERAL NOTES:

1. ALL CONCRETE IS TO BE 4000 PSI @ 28 DAYS.
2. MINIMUM COMPACTION UNDER FOOTINGS IS TO BE 95% PER ASTM. D 1557 FOR A DEPTH OF 12" MOISTURE CONTENT IS TO BE ± 2.0%.
3. BACK FILL AGAINST WALLS IS TO BE HAND–PLACED AND COMPACTED.
4. ALL BARS ARE TO BE GRADE 60, ASTM 615.
5. DOWELS SHALL BE EQUAL IN SIZE AND SPACING TO Y–BARS, SHALL PROJECT A MINIMUM OF #4–24", #5–30", #6–36" INTO THE FILLED BLOCK CORES, AND SHALL EXTEND TO THE TOE OF THE FOOTING.
6. PROVIDE KEY FOR 8" AND 12" WALLS WHERE H EXCEEDS 6'
7. USE EITHER EXPANSION JOINTS ON 20' CENTERS OR PILASTERS EVERY 16'.

RETAINING WALL DETAIL

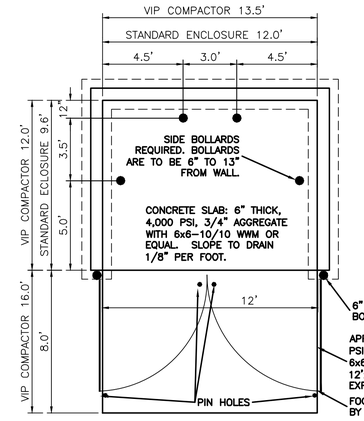
NTS

- $f'm$ = 1500 PSI
- SOIL ALLOWABLE 2000 PSF (VERIFY W/SOILS REPORT)
- ACTIVE SOIL PRESSURE – 35 PSF/FT (VERIFY W/SOILS REPORT)
- PASSIVE SOIL PRESSURE – 250 PSF/FT (VERIFY W/SOILS REPORT)
- SOIL FRICTION FACTOR – 0.4 (VERIFY W/SOILS REPORT)

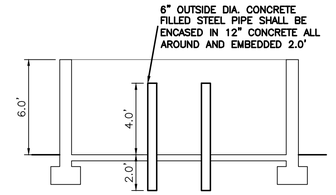


GARDEN WALL

NTS



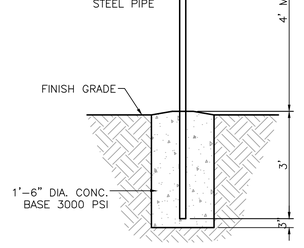
APRON REQUIRED IN FRONT OF EACH ENCLOSURE. (6" WITH REINFORCING TO WITHSTAND 57,000 LBS.)



NOTE: THESE ARE THE MINIMUM REQUIREMENTS FOR TRASH ENCLOSURES. DESIGNS MAY VARY TO FIT THE SELECTED ENCLOSURE.

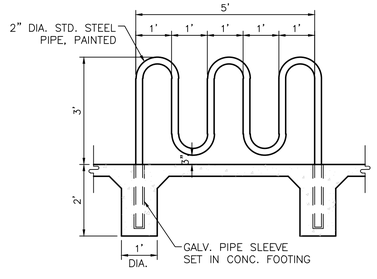
DUMPSTER ENCLOSURE DETAIL

NTS



MOTORCYCLE PARKING SIGN

NTS



BIKE RACK DETAIL

SCALE: 1/2"=1'

ENGINEER'S SEAL	MISTER CAR WASH 98TH ST & VOLCANO RD	DRAWN BY DY
RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER 3/27/2019	DETAILS	DATE 3/01/19
		2018058–DETAILS
RONALD R. BOHANNAN P.E. #7868	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858–3100 www.tierrawestllc.com	SHEET # C6
		JOB # 2018058