Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

Thompson Engineering Consultants, Inc.

January, 2017

CITY OF ALBUQUERQUE

February 14, 2017

Richard J. Berry, Mayor

David Thompson, P.E.
Thompson Engineering Consultants, Inc.
PO Box 65760
Albuquerque, NM 87193

RE: **Hydraulic Analysis Addendum to the Amendment to the DMP Trails Units 1, 2, and 3**
Drainage Report Engineer's Stamp Date 2/10/2017
Hydrology File: C09D001

Dear Mr. Thompson:

Based upon the information provided in your submittal received 2/13/17, the above referenced submittal is reapproved.

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

Dana Peterson, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file

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Albuquerque

New Mexico 87103

www.cabq.gov

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Addendum for the Amendment to the Trails DMP Building Permit #: _____ City Drainage #: C09D001

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

Legal Description: The Trails Unit 2

City Address: _____

Engineering Firm: RESPEC Contact: Hugh Floyd

Address: 5971 Jefferson Street NE, Suite 101; Albuquerque, NM 87109

Phone#: 505.366.4187 Fax#: _____ E-mail: hugh.floyd@respec.com

Owner: _____ Contact: _____

Address: _____

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

Architect: _____ Contact: _____

Address: _____

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

Other Contact: _____ Contact: _____

Address: _____

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

Check all that Apply:

DEPARTMENT:

xx HYDROLOGY/ DRAINAGE

____ TRAFFIC/ TRANSPORTATION

____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

____ ENGINEER/ ARCHITECT CERTIFICATION

____ CONCEPTUAL G & D PLAN

____ GRADING PLAN

X DRAINAGE MASTER PLAN

____ DRAINAGE REPORT

____ CLOMR/LOMR

____ TRAFFIC CIRCULATION LAYOUT (TCL)

____ TRAFFIC IMPACT STUDY (TIS)

____ EROSION & SEDIMENT CONTROL PLAN (ESC)

____ OTHER (SPECIFY) _____

RECEIVED FEB 13 2017 LAND DEVELOPMENT SECTION

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL

____ CERTIFICATE OF OCCUPANCY

____ PRELIMINARY PLAT APPROVAL

____ SITE PLAN FOR SUB'D APPROVAL

____ SITE PLAN FOR BLDG. PERMIT APPROVAL

____ FINAL PLAT APPROVAL

____ SIA/ RELEASE OF FINANCIAL GUARANTEE

____ FOUNDATION PERMIT APPROVAL

____ GRADING PERMIT APPROVAL

____ SO-19 APPROVAL

____ PAVING PERMIT APPROVAL

____ GRADING/ PAD CERTIFICATION

____ WORK ORDER APPROVAL

____ CLOMR/LOMR

____ PRE-DESIGN MEETING

____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: X Yes ____ No

DATE SUBMITTED: 2-13-17 By: Jeremy Shell

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

THOMPSON Engineering Consultants, Inc.

February 2, 2017

Mr. Dana Peterson, P.E.
Senior Engineer, Hydrology Section
Planning Department, Development Review Services
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

RE: Final Revised Hydraulic Analysis Addendum to the Amendment to the Trails DMP Trails Units 1, 2, and 3

Dear Mr. Peterson:

This report is intended to be the final version of the Revised Hydraulic Analysis Addendum to the Amendment to the Trails DMP. The following changes have been made since the previous submittal on October 11, 2016:

1) The rating curves in Appendix B for Ponds D and F5 have been updated to reflect the excavated volumes.

2) Rating curves for the proposed ported risers at Ponds D and F5 were added to Appendix B. These risers match the ones shown in BHI's work order plan set.

3) Updated PCSWMM model in Appendix C.

4) Updated PLATE_1 and Conceptual Grading exhibits in Appendix E.

If you should have any questions regarding this submittal, please do not hesitate to contact me.

Sincerely,

David B. Thompson, P.E.

Cc. Mr. Hugh Floyd, P.E.

Enclosures

P.O. Box 65760 • Albuquerque, NM 87193 • (505) 271-2199

THOMPSON Engineering Consultants, Inc.

September 20, 2016

Ms. Rita Harmon, P.E.
Senior Engineer, Hydrology Section
Planning Department, Development Review Services
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

Re: REVISED HYDRAULIC ANALYSIS ADDENDUM TO THE AMENDMENT TO THE DMP TRAILS UNITS 1, 2, AND 3
DRAINAGE REPORT, ENGINEER'S STAMP DATED 9-14-2016 (FILE: C09D001)

Dear Ms. Harmon:

Attached is the revised Hydraulic Analysis Addendum to the Amendment to the DMP Trails Units 1, 2, and 3. This addendum reflects the changes made to address your comments in a letter dated January 2, 2015. The following is a list of your comments with our responses in bold font.

1) In general, electronic models need to be documented in printed and PDF format so that any information needed in the future can be obtained without having the program itself. This review would have been greatly facilitated if the program inputs and outputs had been printed.
   - It would have been helpful if Appenix A (the as-builts) were in printed form showing which pipes correspond to XPSWMM links, and which manholes correspond to nodes. In my review, I have noted this on the as-builts and included in the binder
     Printed as-builts have been included in Appendix A. Plate 1 now includes our model with all of the nodes and links clearly labeled. Per discussions in the meeting on September 16, 2016, you have in your notes which manholes and pipes correspond to the nodes and links in the model. Therefore, labeling the as-builts was not necessary.

   - Provide an overall printed plan showing the XPSWMM model, with the nodes and links labeled. Indicate the meaning of the blue, green, and red nodes. Indicate that dashed links are orifice plates.
     See updated Plate 1 in Appendix E

   - Provide the link and node data in tabular format. Can the "XP Table List" function/button and the "Link Summary" tab be used to print out the pipe lengths, diameters, invert elevations, max flow, time of peak, etc.?
     See Tables 2 & 3, Plate 1, Appendix E

   - Provide printed forms of the "Inflow Hydrograph" at each node where AHYMO "punch hyds" were input. At each AHYMO ID, note which basins are included -or Plate 2 of TEC Trails DMP showing which basins are included in each AHYMO ID.
     See updated Appendix C and Plate 1 in Appendix E

- Provide hard copies of the "Stepwise Linear Storage" and the hydrograph for each pond
  See updated Appendix B

- Print out orifice data used in model
  See updated Table 5 on Plate 1

- Print a summary of all input values: N-values, C-values, and other pertinent analysis parameters
  See PCSWMM Parameter Summary in Appendix C

2) Node 163 and AHYMO ID #75 peak flows do not match. Model uses 104.03 cfs, AHYMO has 146.48 cfs. However, AHYMO #73, which does not include Basins D5 and D6, does have a peak of 104.03 cfs. It appears Basins D5 and D6 are not included in the model.
   The hydrograph entering at Node 163 has been changed from AHYMO ID #75 to #73. This updated hydrograph reflects basins D5 and D6 being removed and the adjustments to Pond D1 located upstream. See PCSWMM model for updated hydrograph with a peak flow of 164.5 cfs.

3) Node MH58 and AHYMO ID #21 peak flows do not match. Model uses 28.1 cfs, AHYMO has 29.29 cfs.
   AHYMO ID #21 enters the system at node MH53. Assuming "MH58" is a typo, the hydrograph in the PCSWMM model has been adjusted to reflect the AHYMO hydrograph.

4) Modeling around Pond H has the following comments:
   - Link 182: As built shows 5418.65 for D/S RIM, model says 5422.8' for D/S surface for Scenario 1 (and 5423.6 for Base). Why is the WSEL used rather than the actual RIM?
     Link 182 ties into the actual pond. The data was combined between the surge manhole SDMH 45 and the actual Pond H together to simulate the surge function of the pond.

   - MH4 was not modeled correctly. MH4 is a SAS line. It should be SDMH-45 from as-built. (730084, sht 37)
     MH4 has been deleted. See updated PCSWMM model.

   - It seems that a node where the overflow enters back into the system should be between node MH4 (or SDMH45) and MH 46 to be reflective of the actual system.
     Overflow enters the system at Node 177 which is in between Pond H and SDMH 46. See updated PCSWMM model.

- What is the purpose of Node177 and why is it green? Can't node MH4 (MH46) be used in place of Node177 since the orifice is being modeled in Link203? Can LinkL-H be ommitted altogether?

  This was done to model the orifice plate correctly and due to constraints placed by the model. Node 177 is a fictitious node used to simulate the orifice plate. That is why it was green in the XPSWMM model. Blue nodes are locations where hydrographs are added, and red nodes are regular manholes with no inflow data associated in XPSWMM. See the legend in Plate 1 for the description of PCSWMM symbols.

- Table 3 show Q_{out} = 27.4 cfs, but the peak outflow from the XPSWMM model OVERFLOW links, there should not be any contributing flows from these links as they would only be used if the orifice is clogged.

  See updated PCSWMM model and Table 3 on Plate 1. Now there is no water spilling over the emergency spillway.

- The "Stepwise Linear Storage" for Pond H does not match the "Pond Volumes" Table. Stepwise depth 8.85', corresponds to elevation 5421 with the area = 1.27 Ac. Model shows 0.81 Ac. at this depth. Similarly, area at 9.85' depth (5422 elev) should be 1.52 Ac. rather than 1.27 Ac.

  The Pond H storage curve was updated in the PCSWMM model to reflect the correct elevations and areas in the rating curve. Please see Appendix B.

- The Pond H emergency overflow has a grate elevation of 5422.04, but the hydrograph shows max water elevation at 5422.96'. It seems that there would be spill out of the system. While the "OVERFLOW 1" link at U/S Invert = 5422.5, it seems that it should match the overflow grate elevation of 5422.05. BHI calculated the WSEL to be 5421.9, so I would expect the invert of the overflow link to be 0.14' above the max WSEL as well.

  Invert elevation for OVERFLOW 1 has been adjusted and the max water surface elevation matches BHI's calculations, so now there is no spill out of the system.

- The OVERFLOW links are 1' dia. And may be too small. How do you know water is not spilling out of the system? Or that they are not restricting the flow?

  SWMM software does not allow pipes to stick out above ground; therefore a 1 ft diameter pipe was the maximum circular pipe that could be used. The overflow has been remodeled as a rectangular pipe that is 0.5' X 6' (Height X Width) to simulate the overflow while ensuring plenty of capacity. See updated PCSWMM model.

- The Time of Peak for Link L-H is 5.11 hrs, but TEC Trails DMP indicates 2.4 hrs. Why the disrepency?
  Time to peak is controlled by pond outflow and will not match due to routing effects.

- BHI calculated 26.8 cfs through the orifice area of 1.14 sq.ft, with a head of 10.36', why does the SWMM Model calculate a much smaller value (15 cfs) ?
  PCSWMM calculates orifice outflow rates dynamically accounting for backwater effects providing a more realistic flowrate.

- Pond H modifications indicate a 36" pipe beyond orifice plate. As-builts show 30". What is the actual pipe dia?
  Actual pipe diameter is 36". See BHI field survey.

- L106 has an adverse slope and is modeled as such. Is there sediment that should be considered? Verify that it is a 48" dia. pipe as there is conflicting info on plan view of CPN 730084, and CPN 730075 is calling it a 54" pipe. *****
  L106 in the PCSWMM model has been updated to be a 54" pipe. The adverse slope remains unchanged.

- The Design Capacity of Pond H is 3.07 Ac. in Appendix C. (Appendix B)?
  The discrepancies have been addressed, the volume for Pond H is now consistantly 3.11 ac-ft.

- Pond H: Why is the Peak Storage in Tbl. 2 2.98 Ac-ft, as opposed to the full pond volume since it is overtopping. Furthermore, "Continuity Balance" Tab in the "Table List" function shows 3.94 Ac-ft for the Volume for Scenario 1. Could it be that Tbl. 1 was not updated?
  See updated Appendix B and Tables on Plate 1

- Orifice Plate in Pond H is to be 1.83 sq. ft.
  See updated orifice plate and resulting flow rates in the PCSWMM model.

- BHI states that their field survey indicated that the pipe out of Pond H is 36" dia, rather than 30" as indicated on the As-builts. (Links L-H and L104)
  Actual pipe diameter is 36" and is modeled as such. Pipe diameter also verified in the field.

5) Link L108, D/S Rim elev. is 5415, D/S invert is 5400.07 – neither match 730084. What CPN Job No is this taken from?
   D/S invert elevation for L108 is based off the SURV-TEK survey (NAVD 88) attached in Appendix A.

6) It seems that Table 1 needs to be updated.
   All tables have been updated.

7) Pond G:
   - As-built for Pond G (730084, sheet 11/51) shows MH Rim at 16.29 (vs. 15.67)
     The rim for the surge pipe is not input into PCSWMM, the pond begins storing water at an elevation of 5416 to accurately model the functions of a surge pond.

   - Link L-13: D/S Invert is 5403.05 (the design value) but the As-built value is 5402.03 per CPN 730084 Sheet 20/51 for a difference of 1'. The HGL is 5410.98 and adding 1' makes it 5412. The Rim is 5411.23, so the HGL is above the Rim.
     Updated PCSWMM model reflects as-built invert value.

   - The links from Pond G to Universe have a significantly different Hydrograph when comparing the Base to Scenario 1. Can you explain why?
     This is due to the modification to the orifice configuration at Pond G.

   - Link L-24 and Link 180 discharge into Pond G through slotted manholes. Are the areas of the slotted manholes taken into account? If not, the required opening area needs to be stated on Table 3 as part of the improvements to Pond G (or any pond with slotted manholes).
     The orifice downstream (ORF_G) with a diameter of 1.23 ft (1.188 square feet) will control. Therefore, the slotted manhole lids were not considered and the model was not changed.

   - Verify negative peak flows in Links L-27 and L-29 make sense. Time to Peak Velocity for Link L-27 is 37.2, why so much later?
     The negative peak flows and time to peak were due to how the XPSWMM model was set up. The PCSWMM model does not reflect these results.

8) Pond F:
   - Orifice area is 4.25 for the Base Scenario but should be 1.63 sq. ft.
     Base scenario is no longer included. This model was originally included to demonstrate that XPSWMM results are not drastically different than AHYMO.

   - Link L-56 and L-63 are noted as elliptical on the record As-builts
     As-builts note these pipes as 60" equivalent arch RCP. No changes were made to the model.

   - L-63 shows HGL at 22.83 and upstream MH is 23.27, which is somewhat close.
     The HGL remains below the manhole rim and will function adequately.

- Orifice plate is modeled downstream of SDMH 34, which is in Treeline Ave. Since the area is less than 3.14 sq. ft., a sluice gate (or similar device) is required. The installation of such a device at this location seems complicated. What are some possibilities for such a device here?

  A Type D inlet will be added at this location during design, likely adjacent to the pond outlet. This design will be provided with the DRC plans.

- Table 3 should be revised. Qin should change.

  See Table 6 on Plate 1 in Appendix E, which reflects an updated Table 3.

9) Pond D:

- Why in the Base Scenario are there links from Pond D to Pond F5?

  In the previous model, there were several scenarios modeled. The links were a part of a previous scenario but were turned off in the previous proposed scenario.

- The Stepwise Linear Storage for the Base scenario is similar to that for Scenario 1 and does not reflect the Pond as designed in the TEC.

  See updated PCSWMM model for modified Pond D rating curve.

- Q_{in} on Table 3 should be revised, as it states 102.5 cfs. Q_{in} should be the same as from the TEC. The AHYMO Summary file ID No. 75 says 146.48 cfs. However, Table 2 from the TEC shows $Q_{100,in}$ = 154.87 and Q_{bypass} = 13.77 cfs. The Q_{in} should be the sum or 168.64 cfs. It is not clear why there is a discrepency.

  Table 6 in Plate 1 was updated tomatch the PCSWMM model. There is no longer a discrepancy between Qin in the table and in the input hydrograph for the model.

10) Pond F5:

- There is an inflow Hydrograph associated with Pond F5 but is not noted on Plate 1. What basins or AHYMO ID is this hydrograph from? If this is from Basins D5 and D6, I would expect the peak to be about 42.44 cfs (the addition of peaks from both basins D5 and D6) but the peak of this hydrograph is 27.4 cfs.

  There is no hydrograph entering at the Pond F5 directly. Basins D5 and D6 are included in the hydrograph (AHYMO ID 41) entering at Node 191 immediately upstream of the pond. The updated hydrograph has a peak flow rate of 52.5 cfs.

- The SpillCrest in the XPSWMM model is 5428, but should be 5427.

  An emergency spillway will be provided at an elevation of 5426.30. It is reflected in the PCSWMM model, Tables 1 & 4, and in the pond rating curve. The design will be included in the DRC plans.

11) Pond J:

- The Spill crest is 5418 in XPSWMM but the emergency spillway is at 5417 from Table 2.

  The spillway crest elevation is 5417.00 in the updated PCSWMM model.

12) Where is as-built information for Link 213 and 215 in order to verify diameters

  Stamped drawings containing information for Link 213 and 215 has been added to Appendix A

13) Pond K: Emergency spillway at 5410.3 per As-built rather than 5409 on Table 2.

  See updated Table 1 (previously Table 2) with an emergency spillway elevation of 5410.30.

If you should have any questions regarding this submittal please do not hesitate to contact me.

Sincerely,

David B. Thompson, P.E.

Cc: Mr. Hugh Floyd, P.E.

Enclosures

Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

Thompson Engineering Consultants, Inc.

January, 2017

Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

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Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

Introduction and Background

The Amendment to The Drainage Master Plan (DMP) for the Trails Units 1, 2, and 3 was completed by Thompson Engineering Consultants (TEC) in April 2014 and approved by the City Hydrologist in May 2014. The hydrologic analysis for the Trails watershed was modeled using AHYMO_97. For detailed watershed maps and background on the DMP please refer to the document that was approved by the City Hydrologist in May 2014. This Addendum to the Amendment focuses on the area from Rainbow Boulevard on the west to Universe Boulevard on the east and Paseo Del Norte on the north to the Trails boundary on the south. Please refer to **Plate 1**.

Purpose

The purpose of this analysis was to confine the footprint of Pond D within the open space area tract (Tract OS-3) without exceeding the outfall discharge limit of 62 cfs from the Trails Units 1, 2 and 3 at the intersection of Universe Boulevard and Avenida de Jaimito or without increasing the required volume of any other proposed pond in the Trails. All of the Trails surge/detention ponds were based on conservative assumptions when modeled initially by AHYMO.

By performing more intensive and precise hydraulic modeling using PCSWMM software, the inefficiencies of the original system are iteratively investigated and the conservative "slack" created within the AHYMO model can be carefully utilized to maximize the efficiency of the system while decreasing the footprint of Pond D.

Methodology

PCSWMM is a dynamic hydraulic modeling software similar to USEPA's Storm Water Management Model (EPA SWMM). For storm drain and pond analysis, PCSWMM solves the complete St. Venant (Dynamic Flow) equations for gradually varied, one dimensional, unsteady flow throughout the drainage network. Using the Dynamic Wave option, PCSWMM can account for backwater, surcharging, and reverse flow situations, which neither AHYMO nor HEC-HMS are able to model. PCSWMM has a stronger user interface than EPA SWMM, and is effective at importing and exporting hydrographs, and AutoCAD and ArcGIS drawing files. PCSWMM can be easily viewed using EPA SWMM software, which is available for free online, and uses the EPA SWMM software as a solving engine so that no conversion is necessary.

EPA SWMM has been used in the City of Albuquerque for many projects involving complex pressurized flow in storm drains and especially where surge ponds are integral to the drainage system. Examples are the Broadway storm drain system in the southeast valley and the recent Mid Valley DMP modeled by Smith Engineering for the City of Albuquerque. XPSWMM has recently been used in Bernalillo County's south valley for analysis of the system draining to the Sanchez Farm Detention Pond and PCSWMM is currently being used to update those models.

Many of the ponds in this system are inline structures that allow stormwater to surge into the ponds only if the storm drain develops significant head where the Hydraulic Grade Line (HGL) exceeds the pond bottom. Otherwise the low flows from the smaller storms bypass the pond. **Figure 1** shows how a typical surge pond works. PCSWMM is equipped to accurately model this system. PCSWMM is fully compatible with EPA SWMM without any conversions being necessary.

Hydrographs were imported from the TEC Trails DMP AHYMO_97 hydrological model and added directly at key locations within the study area. The location and the AHYMO_97 hydrograph ID numbers are shown on **Plate 1**. **Plates 1 & 2** dated 2-26-15 are located in **Appendix D** and show all of the basins related to the model. These exhibits are for basin information only. All elevation area data for the ponds were imported directly from the TEC Amendment to The Trails Drainage Master Plan, except the hydrograph from Pond D.1, which has been modified to allow a larger flow rate into the Heritage Subdivision storm drain system and consequentially increases the peak flow rate coming to Pond D. This modification was made to allow the original maximum flow rate from the western subdivisions which had been restricted in the Amendment. Record drawings were used to obtain information regarding storm drain size, material, length, slope, and manhole invert and rim elevations for existing storm drain. However, a survey performed by Surv-Tek conflicted with some of the data in the record as-builts. In cases where there was a discrepancy, the data from the survey was used. As-built drawings and Surv-Tek's survey are included in **Appendix A**. All elevations are based on NAVD 1929 datum. Elevation area data for the ponds in the model are included in **Appendix B**. **Appendix C** contains the electronic input files for the PCSWMM model that can be viewed using EPA SWMM software available for free online. A summary of inputs and outputs is also included in Appendix C. A rendering of the model is shown on Plate 1.

AHYMO Modifications

A couple of changes were made to the AHYMO model in order to more accurately reflect proposed and future conditions. The hydrograph (AHYMO ID 73) entering at Node163 was altered to reflect a peak discharge from Pond D1 of 52 cfs instead of 13.4 cfs. This was done to correct a restricted flow rate from the western subdivisions that was imposed in the Amendment, but was not necessary. Secondly, due to changes to the proposed Tract 1 Subdivision layout, the entire property now discharges into Pond F5. Therefore, runoff from Tract 1 (52.5 cfs) was removed from the hydrograph entering Pond D and added to the hydrograph entering Pond F5. The input and summary files are included in **Appendix F**.

PCSWMM Proposed Conditions

The TEC Addendum (April 2014) modeled the developed conditions for storm drains and surge/detention ponds. This model and report determined the sizes for the future installation of ponds and orifice plates. The storm drain system and many of the ponds have already been built.

The PCSWMM model was iteratively altered by making changes to pond volumes and orifice plate sizes to determine the optimum scenario for the Trails storm drain system. The footprint for Pond D was reduced to fit within Tract OS 3 without adding any additional storm drain and Pond F5 was expanded in order to maximize capacity for its location. The modified elevation-area-storage data for all ponds is included in **Appendix B**. Details for the proposed ported risers at Ponds D and F5 are included in **Appendix B** as well. Orifice plates were added at the outflow of Ponds D and F5. **Table 1** summarizes the proposed configurations of the orifice plates at the various ponds as well as a comparison between the Proposed PCSWMM model and the AHYMO_97 model. **Table 6** summarizes Pond improvements and which Tract(s) are responsible for the modifications as they develop in the future. This table is intended to be a replacement for Table 4 in the April 2014 TEC Trails DMP and is intended to be a tool for the City Hydrologist to assign improvements to each Tract and accurately track improvements. **Table 7** provides a summary of the AHYMO hydrographs included in the PCSWMM model.

Results

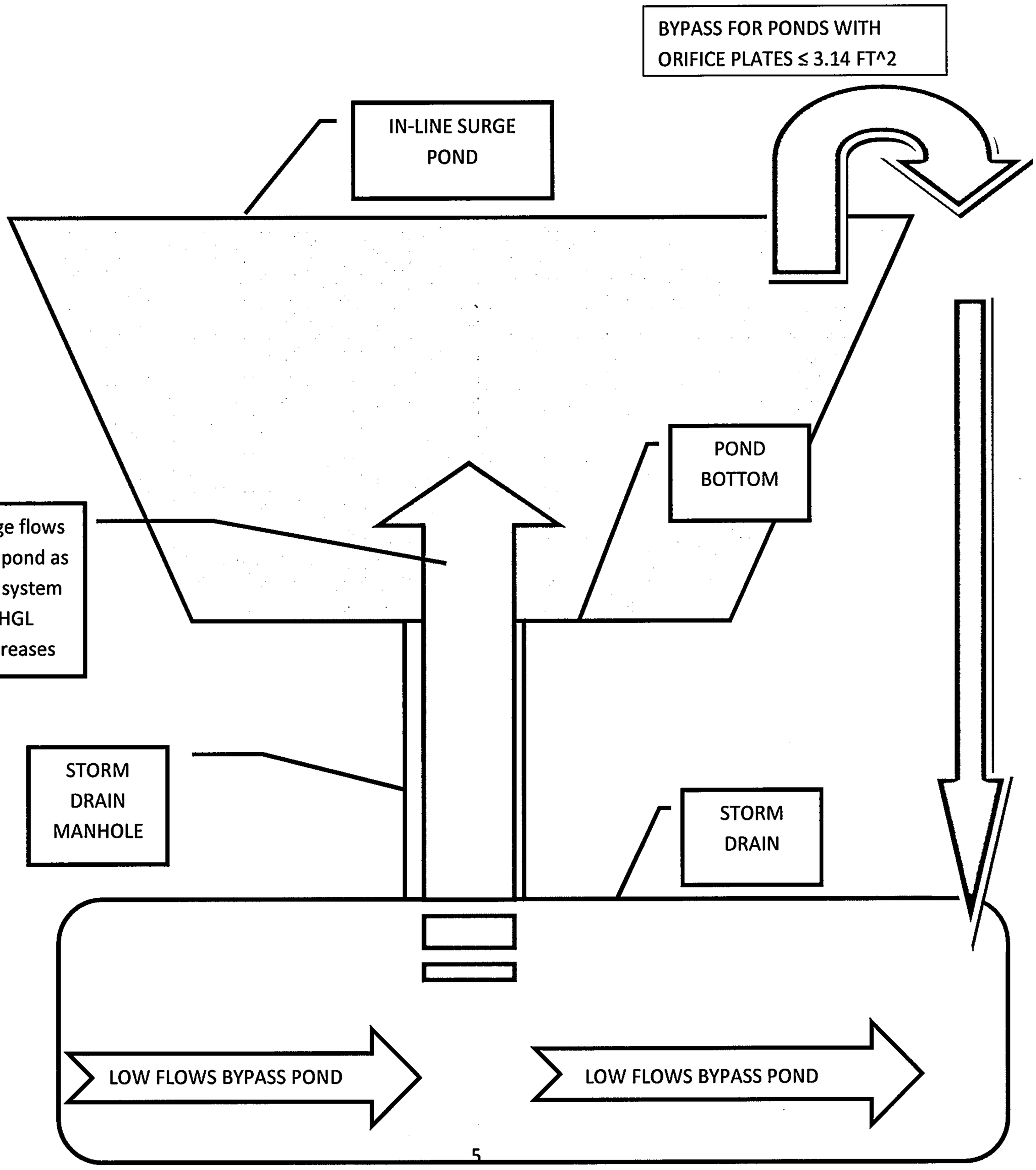
After several iterations, it was determined that the footprint of Pond D could be moved to fit fully on the OS-3 Tract and accommodate a design capacity of 6.44 ac-ft. The existing 24-inch outfall that runs south in Rio Galisteo Place will remain. Furthermore, the orifice plate sizes of all the ponds were changed and ported risers were added at Ponds D and F5. The configuration of orifice plates was altered throughout the system to optimize pond storage and freeboard in all of the ponds. Furthermore, Ponds J and K located on the east side of Universe Boulevard remain unaffected by the proposed changes.

Tables 2 thru **5** provide a summary of the Node, Link, Storage, and Orifice results from the PCSWMM model. All tables are on **Plate 1** and the intent is that all summary model data and the accompanying graphics are displayed together on **Plate 1** to facilitate review and future reference. This exhibit also displays **Tables 1, 6, and 7**.

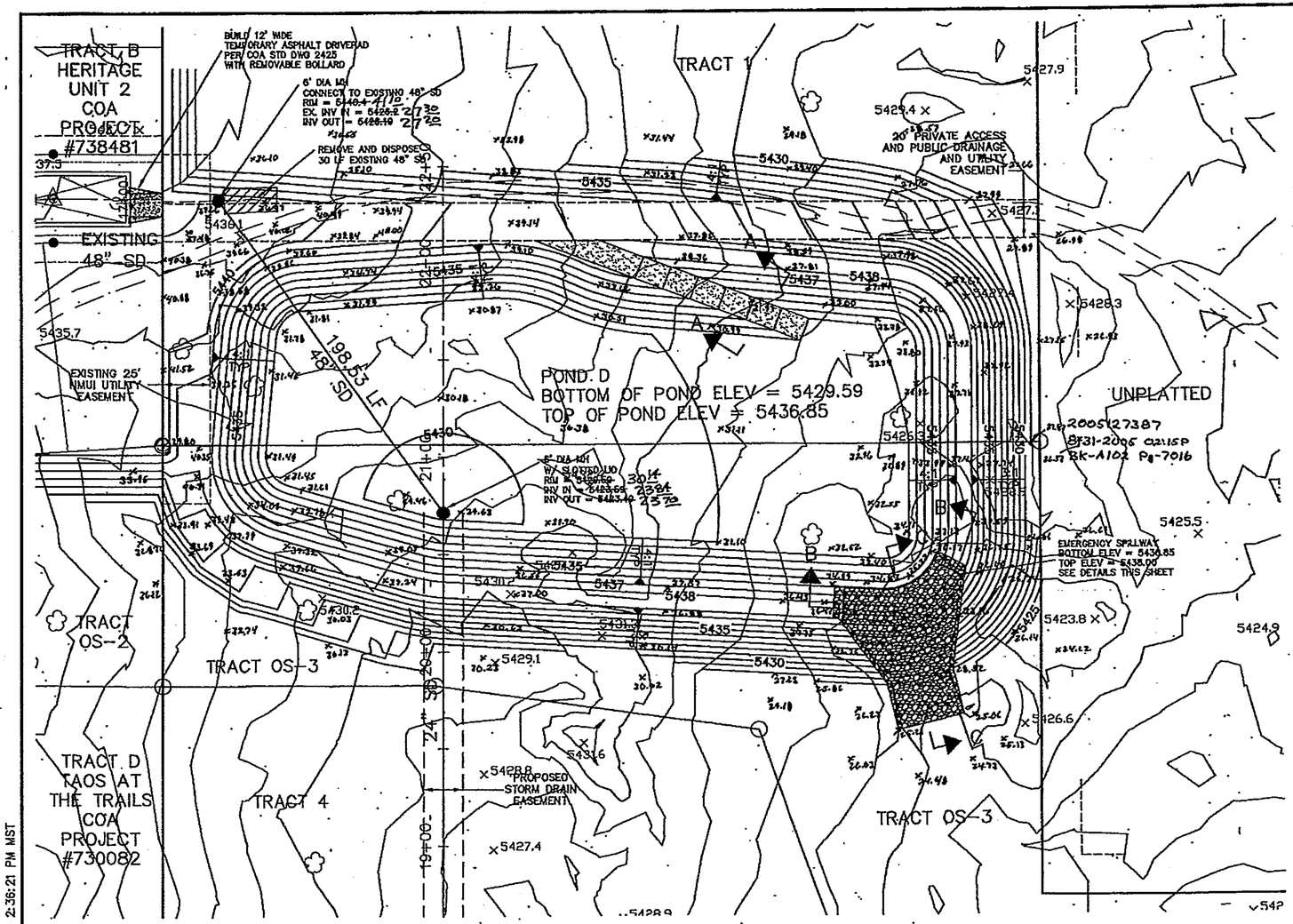
Conclusion

The configuration of existing Pond D has been modified to fit fully in Tract OS-3. Pond D will be reconstructed to have 3H:1V side slopes. The pond bottom will be at elevation 5423.3 ft, while the top of pond will be at elevation 5432.3 ft with an emergency spillway elevation of 5431.3 ft (**Plate 1).** Pond D will be modified to function as a detention pond and will require a ported riser to control discharge. During the 100-yr, 24-hr storm the pond will store 6.44 ac ft of water while maintaining 1 ft offreeboard. By changing the sizes of the orifice plates at Ponds F and G, the storage volumes and freeboard between the ponds balance out more evenly. These changes were made in the model without exceeding the downstream flow constraint of 62 cfs or exceeding the design pond volumes of any of the other proposed ponds simulated in the TEC Trails DMP.

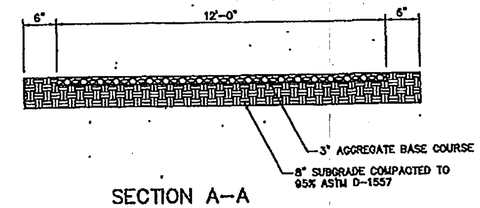
Figure 1 - Definition Sketch for an In-Line Surge Pond



Appendix A



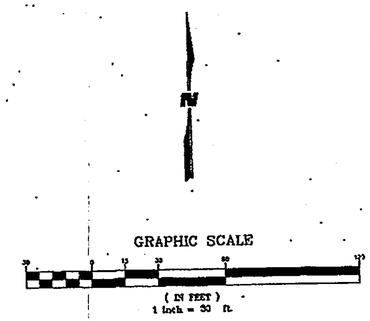
NOTE:
ACCESS TO POND D SHALL
BE THROUGH TRACT B

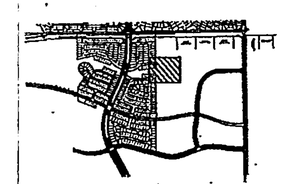


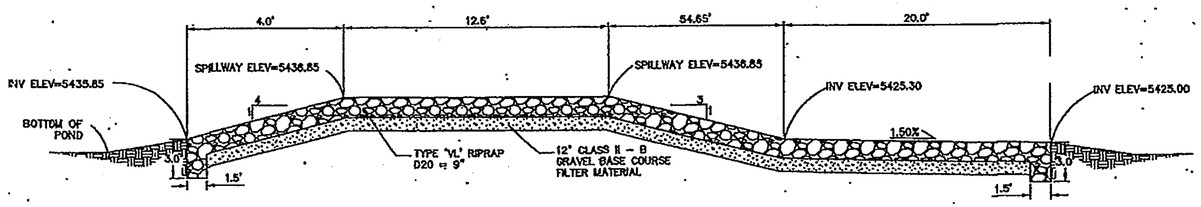
SECTION A-A

ACCESS ROAD DETAIL

NTS

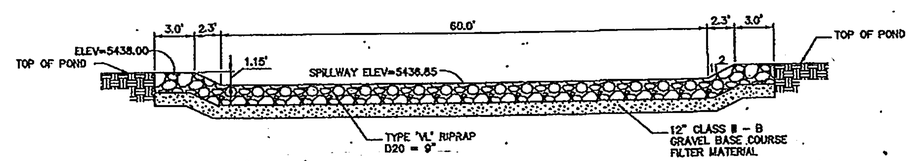






EMERGENCY SPILLWAY SECTION C-C

NTS



EMERGENCY SPILLWAY SECTION B-B

NTS

SURVEYORS CERTIFICATION

I, Russ P. Hugg, New Mexico Professional Surveyor Number 9750, Hereby Certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ P. Hugg
NMPS No. 9750
4-4-07

PROFESSIONAL SURVEYOR
STATE OF
No. 9750
NEW MEXICO
RUSS P. HUGG

AS-BUILT INFORMATION
CONTRACTOR
WORK STAKED BY SURV TEK DATE 2/6/06
FIELD VERIFICATIONS BY SURV TEK DATE 2/6/06
DRAWINGS CORRECTED BY SURV TEK DATE 2/6/06
MICRO-FILM INFORMATION
RECORDED BY DATE

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.99966354
ΔG = -00°16'30"
SLD 1929 Elevation = 5428.35

SURVEY INFORMATION
FIELD NOTES

NO.	DATE	BY

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY

REVISIONS

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DATE JAN 05
DRAWN BY DATE JAN 05
CHECKED BY DATE JAN 05

WILSON & COMPANY
2600 THE AMERICAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO
87124
(505) 896-8021

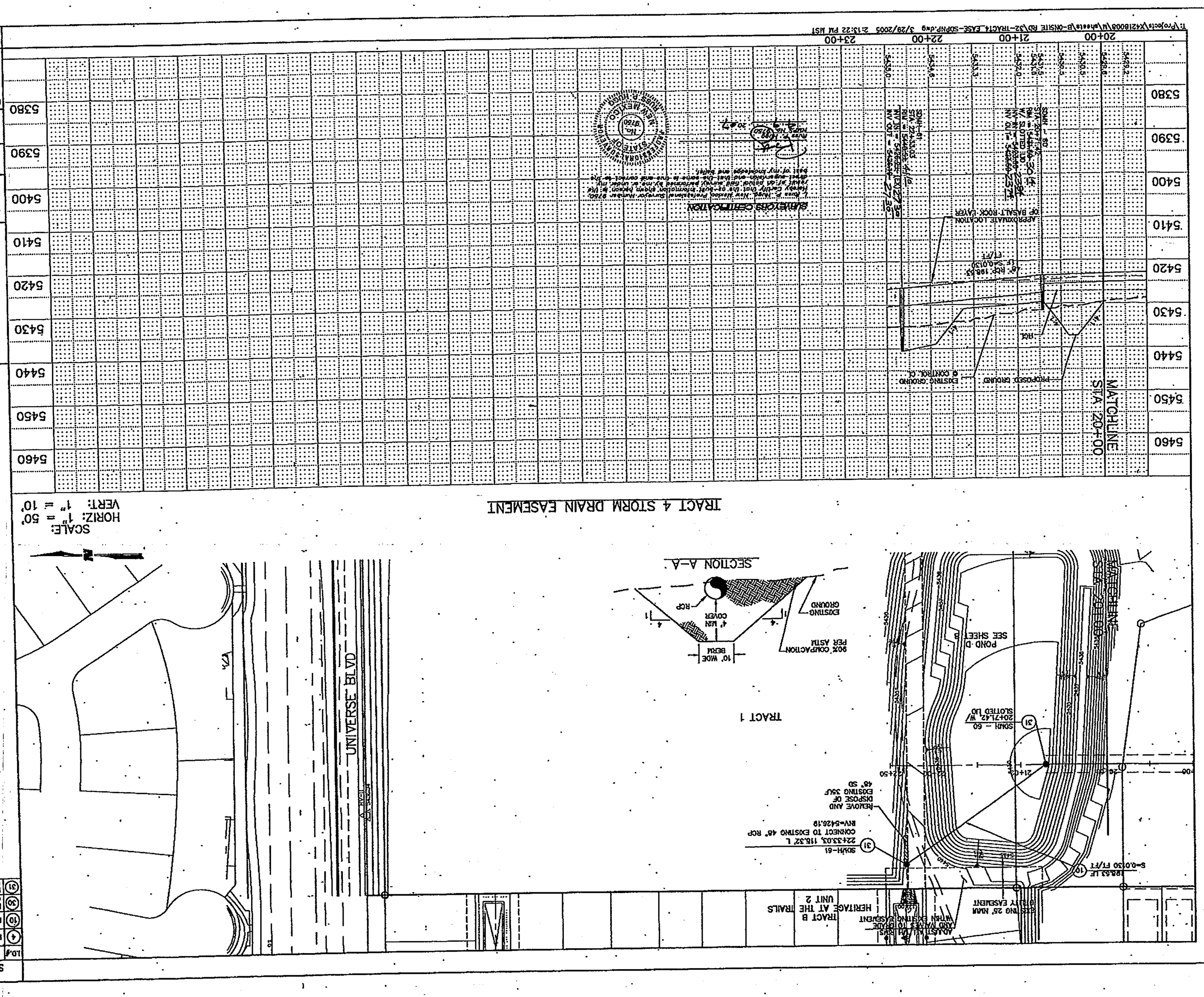
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

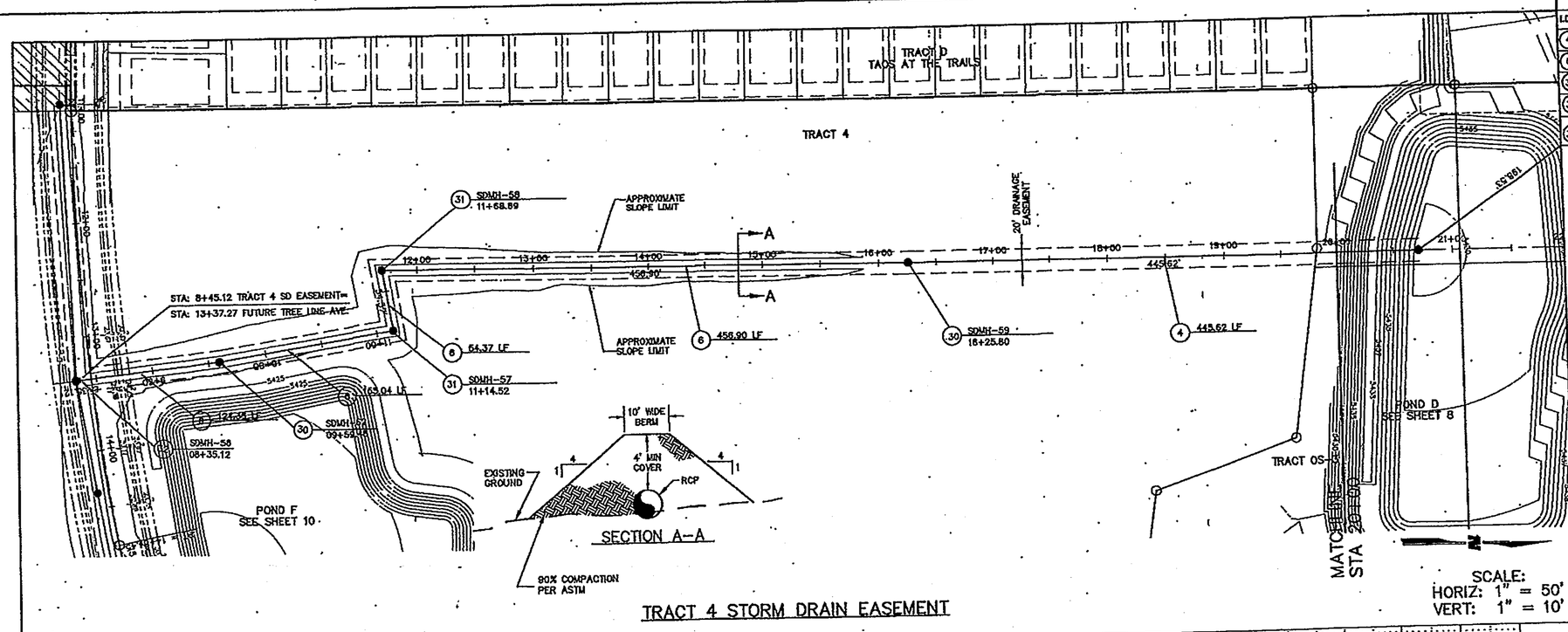
THE TRAILS-OFFSITE STORM DETENTION POND GRADING PLAN POND D

Development Review Services: APPROVED SEP 16 2005 DESIGN REVIEW COMMITTEE
City Engineer Approval: APPROVED JAN 30 2006 CITY ENGINEER
Last Design Update: Mo./Day/Yr. Mo./Day/Yr.

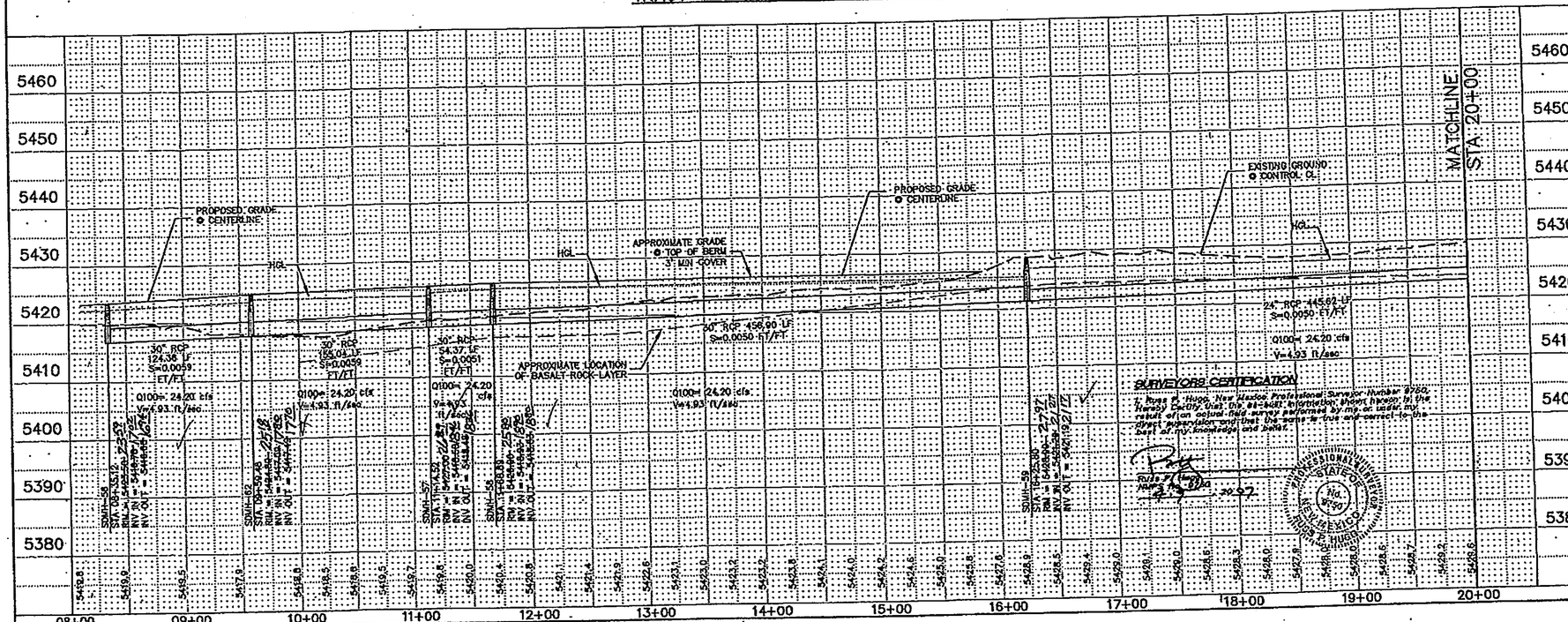
City Project No. 730084 | Zone Map No. C-9-Z | Sheet 8 Of 51

T:\Projects\X4218008\M\sheets\A-GENERAL\08-PD_D.dwg 3/28/2005 2:36:21 PM MST


TRACT 4 STORM DRAIN EASEMENT
SCALE:
HORIZ: 1" = 50'
VERT: 1" = 10'
UNIVERSE BLVD
TRACT 1
TRACT B
HERITAGE AT THE TRAILS
UNIT 2
SECTION A-A'
EXISTING GROUND
90% COMPACTION PER ASTM
4' UW COVER
RCP
10' WIDE BENCH
POND D
SEE SHEET 3
MATCHLINE
STA. 20+00
MATCHLINE
STA. 20+00
PROPOSED GROUND
EXISTING GROUND
℄ CONTROL ℄
APPROXIMATE LOCATION OF BASALT ROCK LAYER
SDVH-61
20+71.42' W/ SLOTTED LID
SDMH - 60
S=0.0150 FT/FT
SDVH-61
22+33.03, 115.32' L
CONNECT TO EXISTING 48" RCP
INV=5426.19
REMOVE AND DISPOSE OF EXISTING 36LF 48" SD
SURVEY TEK
MICRO-FILM INFORMATION
AS-BUILT INFORMATION
BENCH MARKS
"2-B10 1980"
ACS BRASS TABLET STAMPED
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,643.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.999968354
SLD 1929 Elevation = 5429.35
SURVEY INFORMATION
FIELD NOTES
NO. DATE BY
ENGINEER'S SEAL
NO. DATE REMARKS BY
REVISIONS
WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DMD DATE JAN 05
DRAWN BY DMD DATE JAN 05
CHECKED BY SJS DATE JAN 05
INDEX MAP
2600 THE ALBUQUERQUE ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO
87124
(505) 892-8021
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP
THE TRAILS UNIT II
STORM DRAIN PLAN & PROFILE
TRACT 4 STORM DRAIN EASEMENT
APPROVED
SEP 16 2005
DESIGN REVIEW COMMITTEE
APPROVED
JAN 3 0 2006
CITY ENGINEER
City Project No. 730084
Zone Map No. C-9-Z
Sheet 32 Of 51
GENERAL NOTES
1. ALL CURB RETURNS HAVE 30' RADIUS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
2. ALL STATIONS AND OFFSETS ARE TO THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
3. ALL CURB LAYOUT DATA IS AT THEORETICAL FACE OF CURB (FLOWLINE) & DIRECT OFFSET OF PLOTTED BASELINE IS NOT SHOWN
4. ADJUST ALL MANHOLE RIMS AND VALVE COVERS PER COA STD. DWG. 2460
LEGEND
TOP OF STANDARD TYPE CURB
FL FLOW LINE
TOP OF ROLL TYPE CURB
TOP OF ROLL TYPE CURB ELEVATION AT WHEEL CHAIR RAMP TRANSITION.
FLOWLINE ELEVATION AT INTERSECTION OF PROJECTED FACE OF CURB.
MATCHLINE OF NEW TO EXISTING ASPHALT PAVEMENT.
TRANSITION CROWN PER COA STD DWG 2401
STORM DRAIN CONSTRUCTION NOTES
I.D.# DESCRIPTION
1 INSTALL 24" STORM DRAIN PIPE
4 INSTALL 48" STORM DRAIN PIPE
10 INSTALL 4' DIA. MANHOLE PER COA STD DIL 2101
30 INSTALL 6' DIA. MANHOLE PER COA STD. DIL. 2101
31 INSTALL 6' DIA. MANHOLE PER COA STD. DIL. 2101
SUZANNE KONZELMAN
NEW MEXICO
No. 9780
PROFESSIONAL ENGINEER
SURVEYING
SURVEY TEK
MICRO-FILM INFORMATION
AS-BUILT INFORMATION
CONTRACTOR
SURVEY TEK
DATE 12/06
DATE 12/06
DATE 12/06
DATE
DATE
DATE



TRACT 4 STORM DRAIN EASEMENT



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STORM DRAIN CONSTRUCTION NOTES

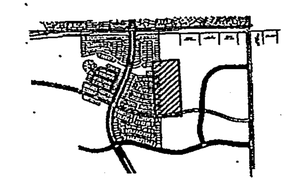
I.D.#	DESCRIPTION
4	INSTALL 24" STORM DRAIN PIPE
6	INSTALL 30" STORM DRAIN PIPE
30	INSTALL 4' DIA. MANHOLE PER COA STD. DTL. 2101
31	INSTALL 6' DIA. MANHOLE PER COA STD. DTL. 2101
32	INSTALL 8' DIA. MANHOLE PER COA STD. DTL. 2101

LEGEND

TC	TOP OF STANDARD TYPE CURB
FL	FLOW LINE
TRC	TOP OF ROLL TYPE CURB
39.85*	TOP OF ROLL TYPE CURB ELEVATION AT WHEEL CHAIR RAMP TRANSITION.
39.85	FLOWLINE ELEVATION AT INTERSECTION OF PROJECTED FACE OF CURB.
	MATCHLINE OF NEW TO EXISTING ASPHALT PAVEMENT.
	TRANSITION CROWN PER COA STD DWG 2401

GENERAL NOTES

1. ALL CURB RETURNS HAVE 30' RADIUS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
2. ALL STATIONS AND OFFSETS ARE TO THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
3. ALL CURB LAYOUT DATA IS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED. CURB LAYOUT THAT IS A DIRECT OFFSET OF PLATTED BASELINE IS NOT SHOWN
4. ADJUST ALL MANHOLE RIMS AND VALVE COVERS PER COA STD. DWG. 2460



INDEX MAP

AS-BUILT INFORMATION
CONTRACTOR: SUBV TEK DATE 12/06
FIELD INSPECTIONS BY: SUBV TEK DATE 12/07
FIELD DRAWINGS CORRECTED BY: SUBV TEK DATE 12/07
MICRO-FILM INFORMATION
RECORDED BY: DATE: NO.

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.99996354
ΔX = -00°16'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES

NO.	DATE	BY

ENGINEER'S SEAL
STEVEN P. SALAZAR NEW MEXICO 10624 PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY

REVISIONS

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DMD DATE JAN 05
DRAWN BY DMD DATE JAN 05
CHECKED BY SJS DATE JAN 05

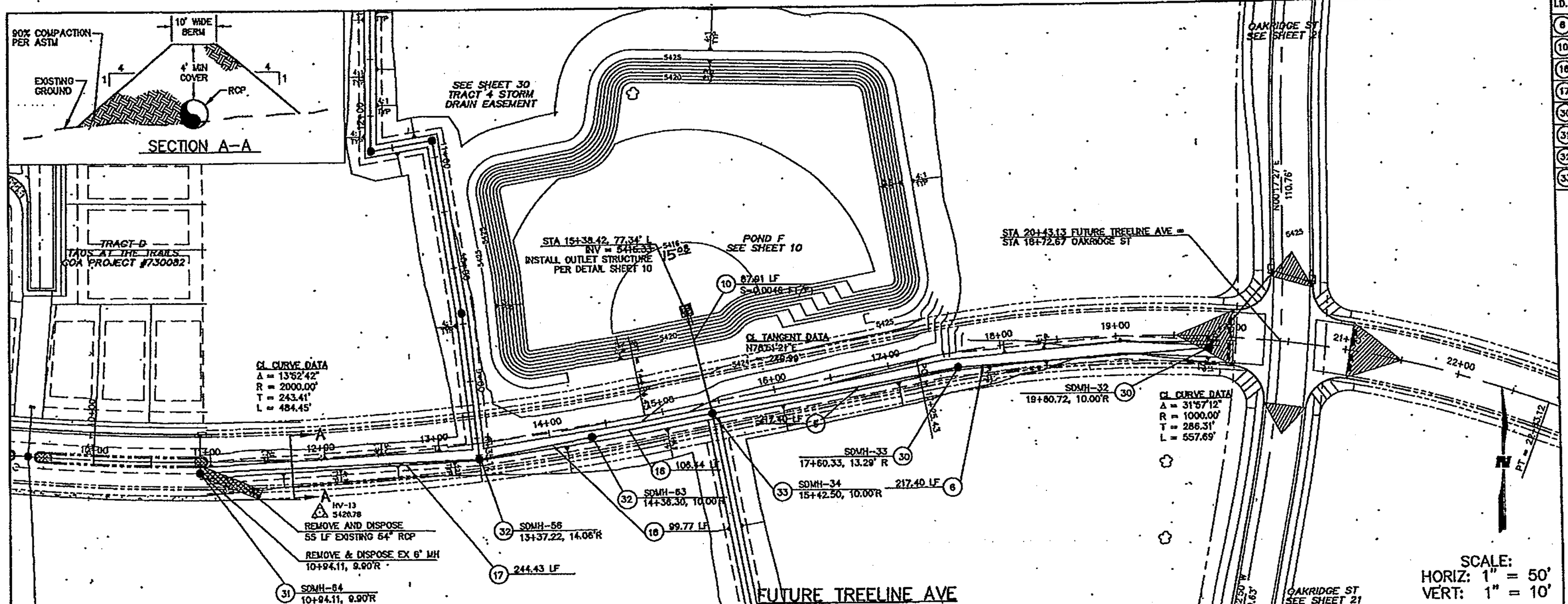
WILSON & COMPANY
2600 THE AMERICAN ROAD S.E.
SUITE 100
R/O RANCHO, NEW MEXICO
87124
(505) 898-8021

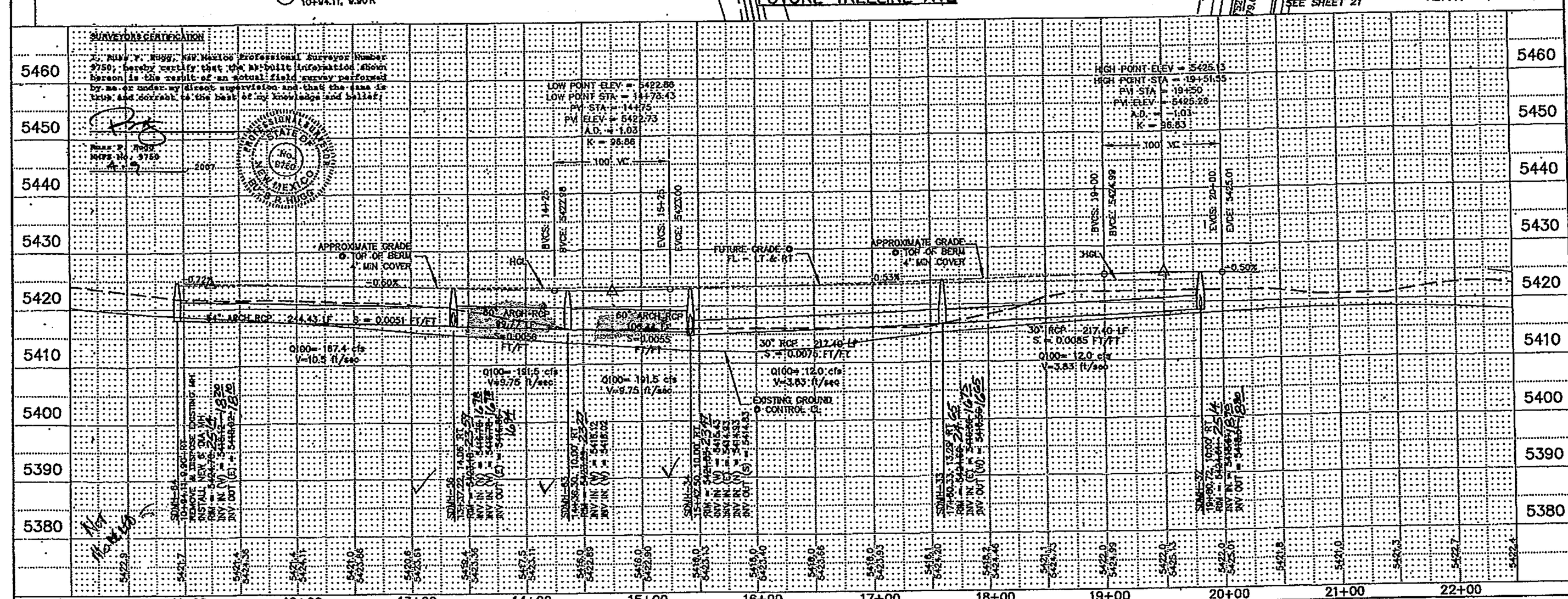
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

THE TRAILS UNIT II
STORM DRAIN PLAN & PROFILE
TRACT 4 STORM DRAIN EASEMENT

Date Approved (Computer) PROVED JAN 18 2006 DESIGN REVIEW COMMITTEE
City Engineer Approval PROVED JAN 30 2006 CITY ENGINEER
Last Design Update Yr./Day/Yr. Yr./Day/Yr.

City Project No. 730084 | Zone Map No. C-9-Z | Sheet 31 of 51





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STORM DRAIN CONSTRUCTION NOTES

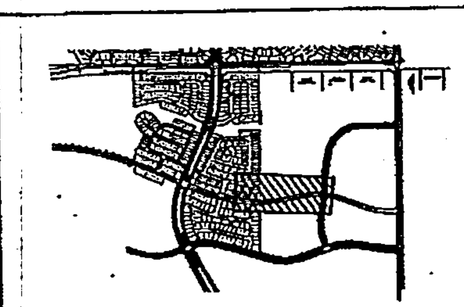
I.D.#	DESCRIPTION
8	INSTALL 30" STORM DRAIN PIPE
10	INSTALL 48" STORM DRAIN PIPE
16	INSTALL 60" EQUIVALENT ARCH STORM DRAIN PIPE
17	INSTALL 54" EQUIVALENT ARCH STORM DRAIN PIPE
30	INSTALL 4' DIA. MANHOLE PER COA STD. DTL. 2101
31	INSTALL 6' DIA. MANHOLE PER COA STD. DTL. 2101
32	INSTALL 8' DIA. MANHOLE PER COA STD. DTL. 2101
33	INSTALL JUNCTION BOX PER DETAIL SHEET 33A

LEGEND

TC	TOP OF STANDARD TYPE CURB
FL	FLOW LINE
TRC	TOP OF ROLL TYPE CURB
39.85*	TOP OF ROLL TYPE CURB ELEVATION AT WHEEL CHAIR RAMP TRANSITION.
39.85	FLOWLINE ELEVATION AT INTERSECTION OF PROJECTED FACE OF CURB.
	MATCHLINE OF NEW TO EXISTING ASPHALT PAVEMENT.
	TRANSITION CROWN PER COA STD DWG 2401

GENERAL NOTES

1. ALL CURB RETURNS HAVE 30' RADIUS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
2. ALL STATIONS AND OFFSETS ARE TO THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
3. ALL CURB LAYOUT DATA IS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED. CURB LAYOUT THAT IS A DIRECT OFFSET OF PLATTED BASELINE IS NOT SHOWN
4. ADJUST ALL MANHOLE RIMS AND VALVE COVERS PER COA STD. DWG. 2460



INDEX MAP

AS-BUILT INFORMATION
CONTRACTOR SUBMITTED BY Surv Tek DATE 8/24/06
ENGINEER REVIEWED BY DATE
FIELD VERIFICATION BY Surv Tek DATE 8/24/06
DRAWINGS CORRECTED BY DATE
MICRO-FILM INFORMATION
FILMED BY DATE
REVIEWED BY

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
Xs = 357,543.73 Ys = 1,527,976.48
Ground-to-Grid Factor = 0.999968354
ΔG = -00°16'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL
J. SALAZAR MEXICO (10241) LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY

REVISIONS

WILSON & COMPANY, ENGINEERS & ARCHITECTS		
DESIGNED BY	DWD	DATE JAN 05
DRAWN BY	DWD	DATE JAN 05
CHECKED BY	SJS	DATE JAN 05

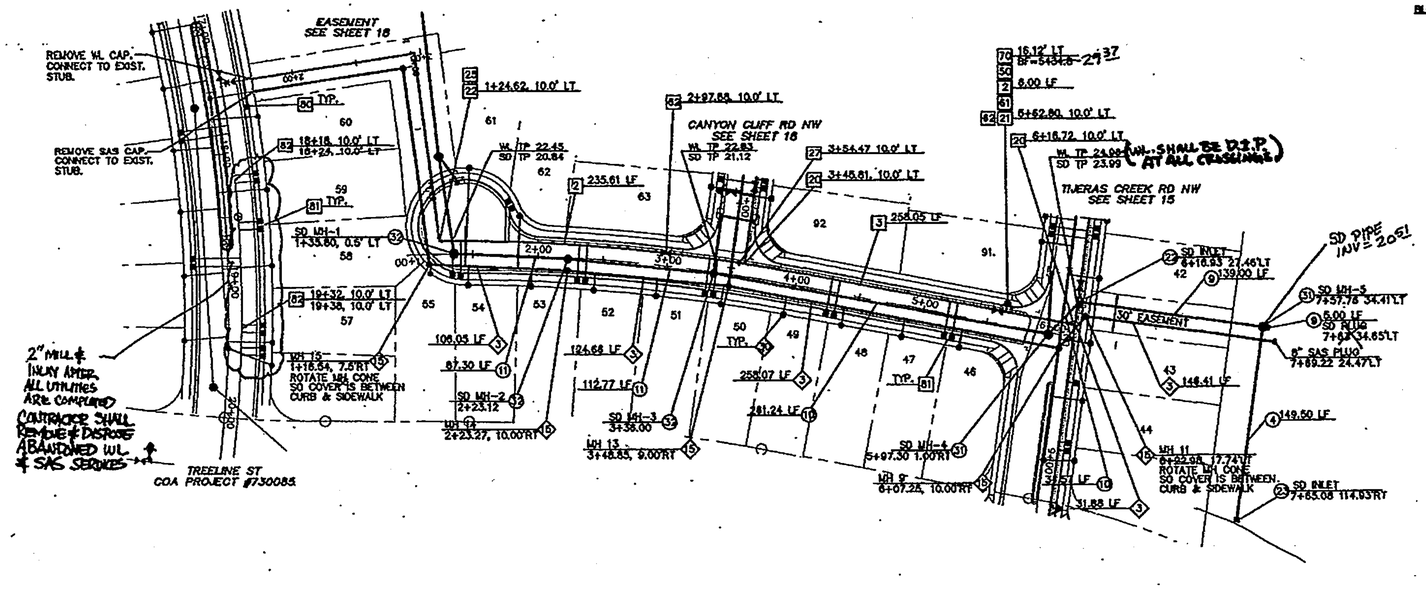
WILSON & COMPANY
2600 THE AVERCAN ROAD S.E. SUITE 100
RIO RANCHO, NEW MEXICO 87124
(505) 896-8021

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

THE TRAILS UNIT II
STORM DRAIN PLAN & PROFILE
FUTURE TREELINE AVENUE

Design Review Committee: DESIGN REVIEW COMMITTEE
City Engineer Approval: APPROVED JAN 30 2006 CITY ENGINEER
Last Design Update | Vs./Rev./No. | Vs./Rev./No.

City Project No.	Zone Map No.	Sheet	Of
730084	C-9-Z	33	51



SCALE:
HORIZ: 1" = 50'
VERT: 1" = 10'

SEWER SERVICE LOCATIONS

BLOCK/LOT	STATION/OFFSET	INV. @ P.A.
46	5+31.81, 23.50R	5422.26
47	4+55.81, 23.50R	5422.03
48	3+39.81, 23.50R	5421.80
49	3+94.77, 23.50R	5421.57
50	3+44.79, 23.50R	5421.32
51	2+93.62, 23.50R	5421.07
52	2+44.54, 23.50R	5420.82
53	1+95.47, 23.50R	5420.58
54	1+46.40, 23.50R	5420.33
55	1+17.04, 23.50R	5420.18
56	18+81.85, 34.00L	5419.26
61	1+47.21, 58.38L	5420.37
62	1+85.29, 57.20L	5420.92

WATER CONSTRUCTION NOTES

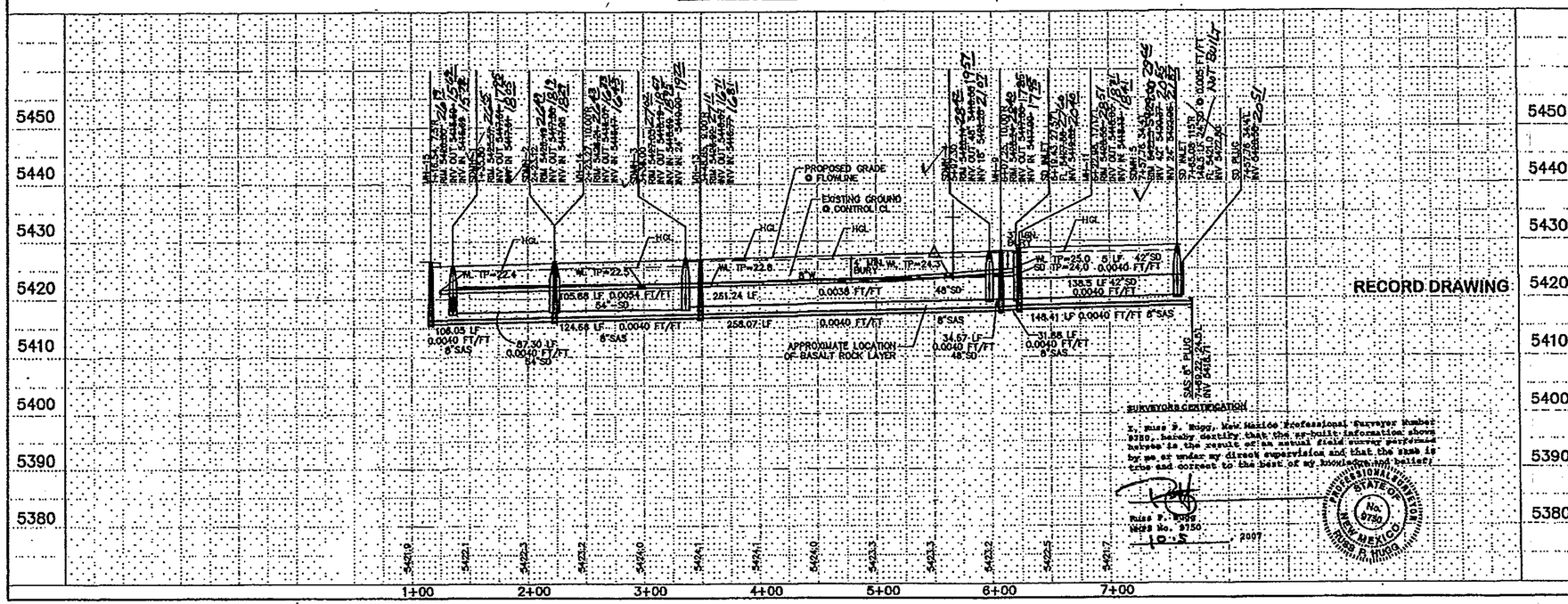
I.D.#	DESCRIPTION
2	INSTALL 6" D.I. WATERLINE PER STD. SPEC. SEC. 801
3	INSTALL 8" WATERLINE PER STD. SPEC. SEC. 801
20	INSTALL 8" TEE
21	INSTALL 8" x 6" TEE
22	INSTALL 8" 90° BEND
23	INSTALL 8" 11 1/4° BEND
27	INSTALL 8" X 6" REDUCER
58	"MEG A LUG" ALL FITTINGS AND JOINTS FROM TEE TO FIRE HYDRANT
61	INSTALL 6" GATE VALVE AND VALVE BOX
62	INSTALL 8" GATE VALVE AND VALVE BOX
70	INSTALL FIRE HYDRANT
80	INSTALL 3/4" SINGLE WATER SERVICE
81	INSTALL 3/4" DOUBLE WATER SERVICE
82	SHUT OFF CORP STOP AT SADDLE SERVICE. CUT, CAP AND ABANDON EXIST COPPER SERVICE TO LOT

SEWER CONSTRUCTION NOTES

I.D.#	DESCRIPTION
3	INSTALL 8" SEWER PIPE PER STD. SPEC. SEC. 901
15	INSTALL 4' DIA. MANHOLE PER COA STD. DTL. 2102
19	INSTALL 4" SEWER SERVICE

STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
4	INSTALL 24" STORM DRAIN PIPE
9	INSTALL 42" STORM DRAIN PIPE
10	INSTALL 48" STORM DRAIN PIPE
11	INSTALL 54" STORM DRAIN PIPE
21	INSTALL TYPE A CATCH BASIN SINGLE GRATE AND DOUBLE THROAT PER COA STD. DTL. 2201
22	INSTALL DOUBLE TYPE C CATCH BASIN DOUBLE GRATE PER COA STD. DTL. 2205
23	INSTALL STORM INLET DOUBLE "D" SINGLE GRATE TYPE PER COA STD DTL 2206
31	INSTALL 6' DIA. MANHOLE PER COA STD. DTL. 2101
32	INSTALL 8' DIA. MANHOLE PER COA STD. DTL. 2101



RECORD DRAWING

SURVEYOR'S CERTIFICATION

I, Russ P. Rugg, New Mexico Professional Surveyor Number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ P. Rugg
NMPS No. 9750
10-5, 2007

PROFESSIONAL SURVEYOR — STATE OF NEW MEXICO — No. 9750 — RUSS P. RUGG

AS-BUILT INFORMATION

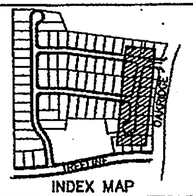
CONTRACTOR: SUBURBAN UTILITIES INC. DATE 10-26-06
WORK STAKED BY: SURVTEK DATE 10-26-06
AS-BUILTS VERIFIED BY: SURVTEK DATE 10-26-06
DRAWINGS CORRECTED BY: SURVTEK DATE 10/26/06
MICRO-FILM INFORMATION
DATE
RECORDED BY

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.99968354
A/C = -00°16'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION

NO.	FIELD NOTES BY	DATE

ENGINEER'S SEAL
NEW MEXICO — RUSS P. RUGG — 9750 — PROFESSIONAL SURVEYOR



INDEX MAP

APPROVED FOR CONSTRUCTION

NEW CONSTRUCTION UTILITIES INC. DATE

WILSON & COMPANY
2600 THE AMERICAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO
87124
(505) 896-5021

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DEC DATE OCT 06
DRAWN BY DEC DATE OCT 06
CHK'D BY SAS DATE

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

SANTA FE 3 AT THE TRAILS UNIT II
SCENIC MESA PL NW
UTILITY PLAN & PROFILE

Design Review Committee — JAN - 3 2007 — DESIGN REVIEW COMMITTEE
City Engineer Approval — MAR 15 — CITY ENGINEER
Last Design Update
Mylar Rev. Date
Use Date

City Project No.	Zone Map No.	Sheet	Of
730087	C-9-Z	17	18

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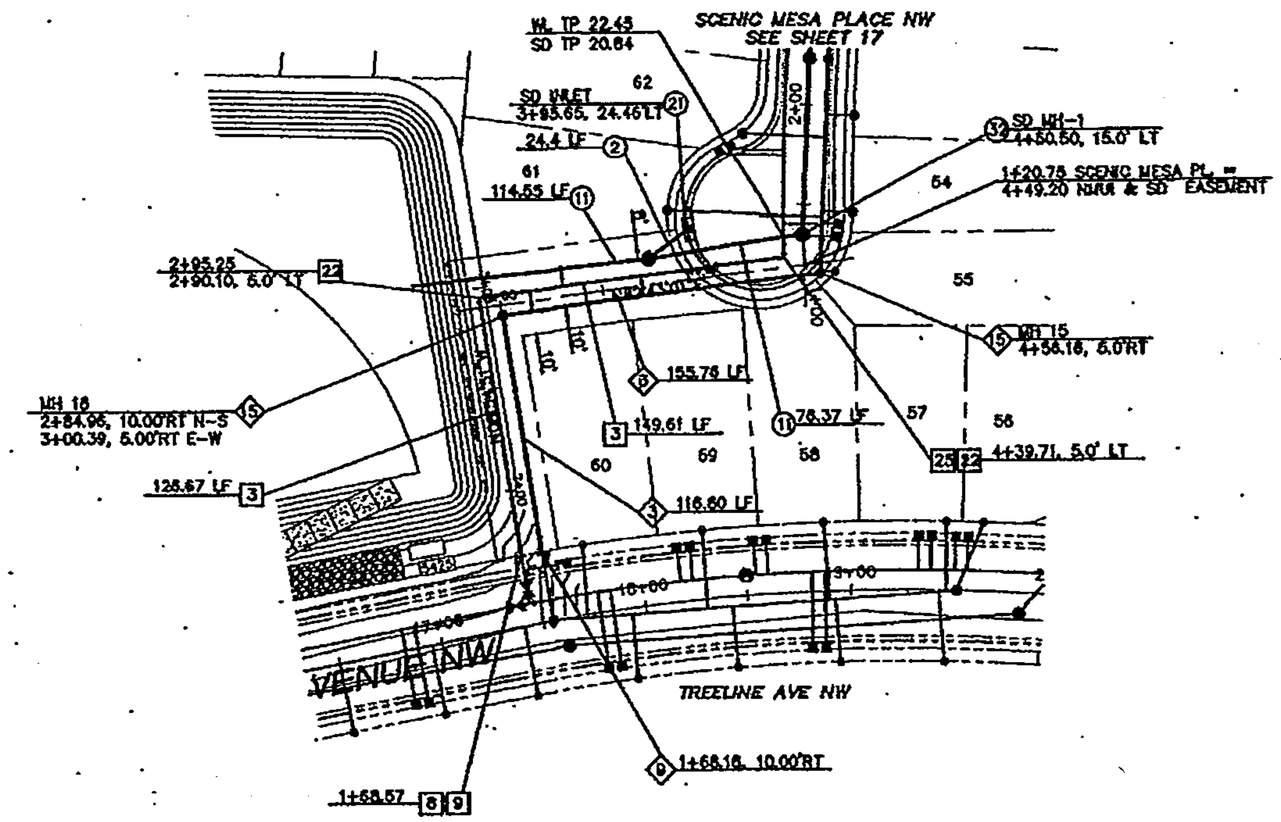
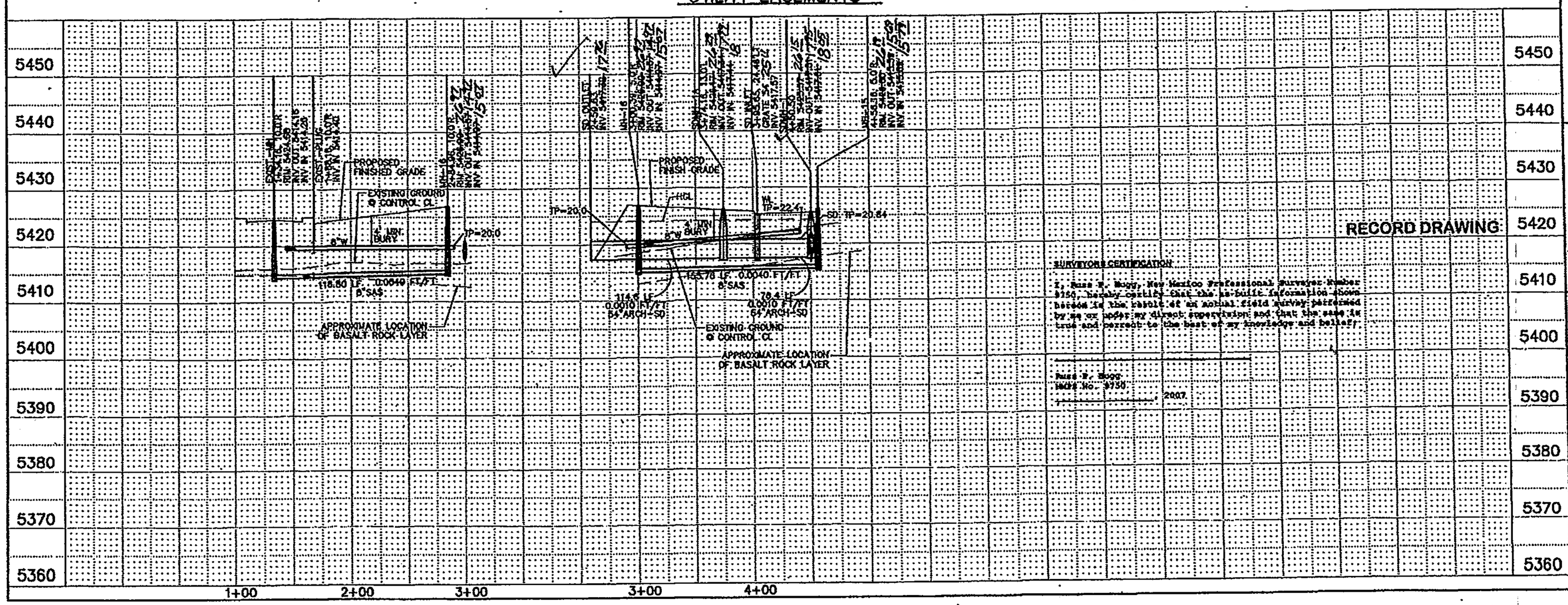


UTILITY EASEMENTS

SCALE:
HORIZ: 1" = 50'
VERT: 1" = 10'



RECORD DRAWING

SURVEYOR'S CERTIFICATION

I, Russ W. Bugg, New Mexico Professional Surveyor Number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ W. Bugg
NMPS No. 9750
_____, 2007

WATER CONSTRUCTION NOTES

I.D.#	DESCRIPTION
3	INSTALL 8" WATERLINE PER STD. SPEC. SEC. 501
8	REMOVE EXISTING FITTING
9	CONNECT NEW WATERLINE TO EXISTING WATERLINE
22	INSTALL 8" 90° BEND
28	INSTALL 8" 11 1/4°" BEND

SEWER CONSTRUCTION NOTES

I.D.#	DESCRIPTION
3	INSTALL 8" SEWER PIPE PER STD. SPEC. SEC. 901
9	REMOVE EXISTING PLUG AND CONNECT NEW SEWER LINE TO EXISTING SEWER LINE
15	INSTALL 4' DIA. MANHOLE PER COA STD. DTL. 2102

STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
2	INSTALL 18" STORM DRAIN PIPE
11	INSTALL 54" STORM DRAIN PIPE
21	INSTALL TYPE A CATCH BASIN SINGLE GRATE AND DOUBLE THROAT PER COA STD. DTL. 2201
32	INSTALL 8' DIA. MANHOLE PER COA STD. DTL. 2101

(EQ. ARCH PIPE)

AS-BUILT INFORMATION
CONTRACTOR: SUPER TEK DATE 6/6/07
TOTAL WORK: SUPER TEK DATE 6/6/07
CONTRACTOR: SUPER TEK DATE 11/1/07
SURVEYOR: SUPER TEK DATE 11/1/07
MICRO-FILM INFORMATION
DATE
REVISED BY
NO.

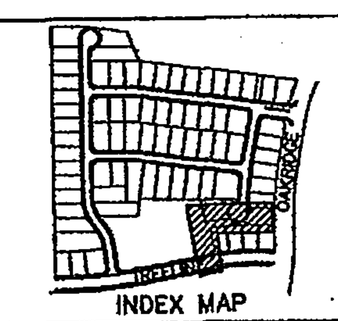
BENCH MARKS
AGS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.99966354
ΔG = -00°16'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
STATE OF NEW MEXICO
RUSS W. BUGG
9750
PROFESSIONAL SURVEYOR

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS.
DESIGNED BY DEC DATE OCT 05
DRAWN BY DEC DATE OCT 05
CHECKED BY SJS DATE OCT 05



INDEX MAP

APPROVED FOR CONSTRUCTION

NEW MEXICO UTILITIES INC. DATE 6-3-07

WILSON & COMPANY
2600 THE AMERICAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO
87124
(505) 898-8021

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

SANTA FE 3 AT THE TRAILS UNIT II
UTILITY EASEMENTS
UTILITY PLAN & PROFILE

Design Review Committee: REVIEWED JAN - 8 2007 DESIGN REVIEW COMMITTEE

City Engineer Approval: CITY ENGINEER

Last Design Update | No./Date/Yr. | No./Date/Yr.

City Project No. 730087 | Zone Map No. C-9-Z | Sheet 18 Of 18

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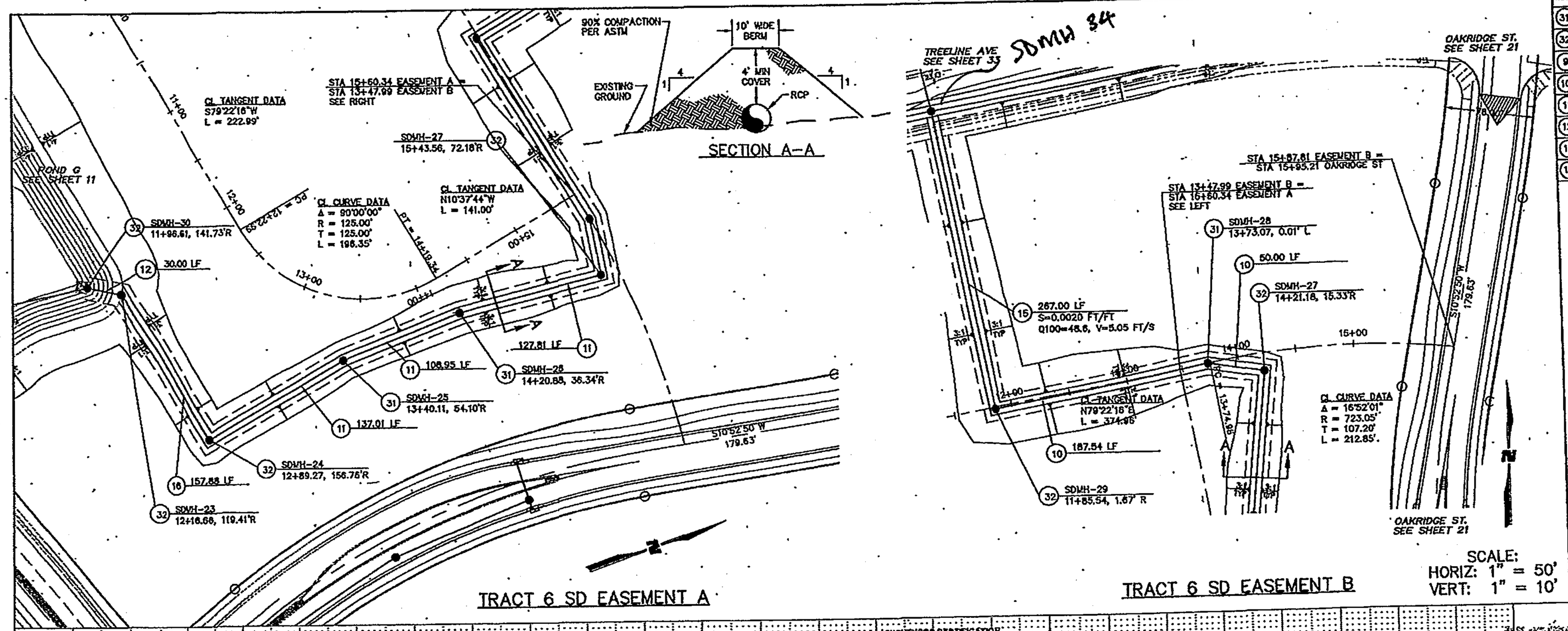


STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
31	INSTALL 6' DIA. MANHOLE PER COA STD. DTL. 2101
32	INSTALL 8' DIA. MANHOLE PER COA STD. DTL. 2101
9	INSTALL 42" STORM DRAIN PIPE
10	INSTALL 48" STORM DRAIN PIPE
11	INSTALL 54" STORM DRAIN PIPE
12	INSTALL 60" STORM DRAIN PIPE
15	INSTALL 42" EQUIVALENT ARCH STORM DRAIN PIPE
16	INSTALL 60" EQUIVALENT ARCH STORM DRAIN PIPE

LEGEND

TO	TOP OF STANDARD TYPE CURB
FL	FLOW LINE
TRC	TOP OF ROLL TYPE CURB
39.85*	TOP OF ROLL TYPE CURB ELEVATION AT WHEEL CHAIR RAMP TRANSITION.
39.63	FLOWLINE ELEVATION AT INTERSECTION OF PROJECTED FACE OF CURB.
	MATCHLINE OF NEW TO EXISTING ASPHALT PAVEMENT.
	TRANSITION CROWN PER COA STD DWG 2401

GENERAL NOTES

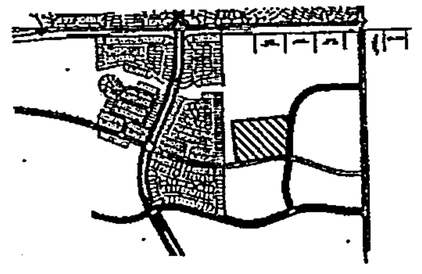
1. ALL CURB RETURNS HAVE 30' RADIUS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
2. ALL STATIONS AND OFFSETS ARE TO THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
3. ALL CURB LAYOUT DATA IS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED. CURB LAYOUT THAT IS A DIRECT OFFSET OF PLATTED BASELINE IS NOT SHOWN
4. ADJUST ALL MANHOLE RIMS AND VALVE COVERS PER COA STD. DWG. 2460

SURVEYOR'S CERTIFICATION

I, Russ P. Bopp, New Mexico Professional Surveyor Number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ P. Bopp
NMPS No. 9750
Date 9-9-2007

PROFESSIONAL SURVEYOR STATE OF NEW MEXICO No. 9750 RUSS P. BOPP



INDEX MAP

WILSON & COMPANY
2500 THE AMERICAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO 87124
(505) 898-8021

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

THE TRAILS UNIT II
STORM DRAIN PLAN & PROFILE
TRACT 6 STORM DRAIN EASEMENT

Design Review Committee: APPROVED JAN 13 2008 DESIGN REVIEW COMMITTEE

City Engineer Approval: APPROVED JAN 30 2008 CITY ENGINEER

Last Design Update | Vs./Dev./Yr.

City Project No.	Zone Map No.	Sheet	Of
730084	C-9-Z	34	51

AS-BUILT INFORMATION
CONTRACTOR: SURV TEK DATE 8-16-06
WORK STAKED BY: SURV TEK DATE
FIELD VERIFIED BY: SURV TEK DATE 08-06-07
DRAWINGS MARKED BY: SURV TEK DATE 08-06-07
MICRO-FILM INFORMATION
RECEIVED BY: DATE
NOL

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.99966354
ΔCC = -00°16'50"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL

REVISIONS
NO. | DATE | REMARKS | BY

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DATE JAN 05
DRAWN BY DATE JAN 05
CHECKED BY DATE JAN 05

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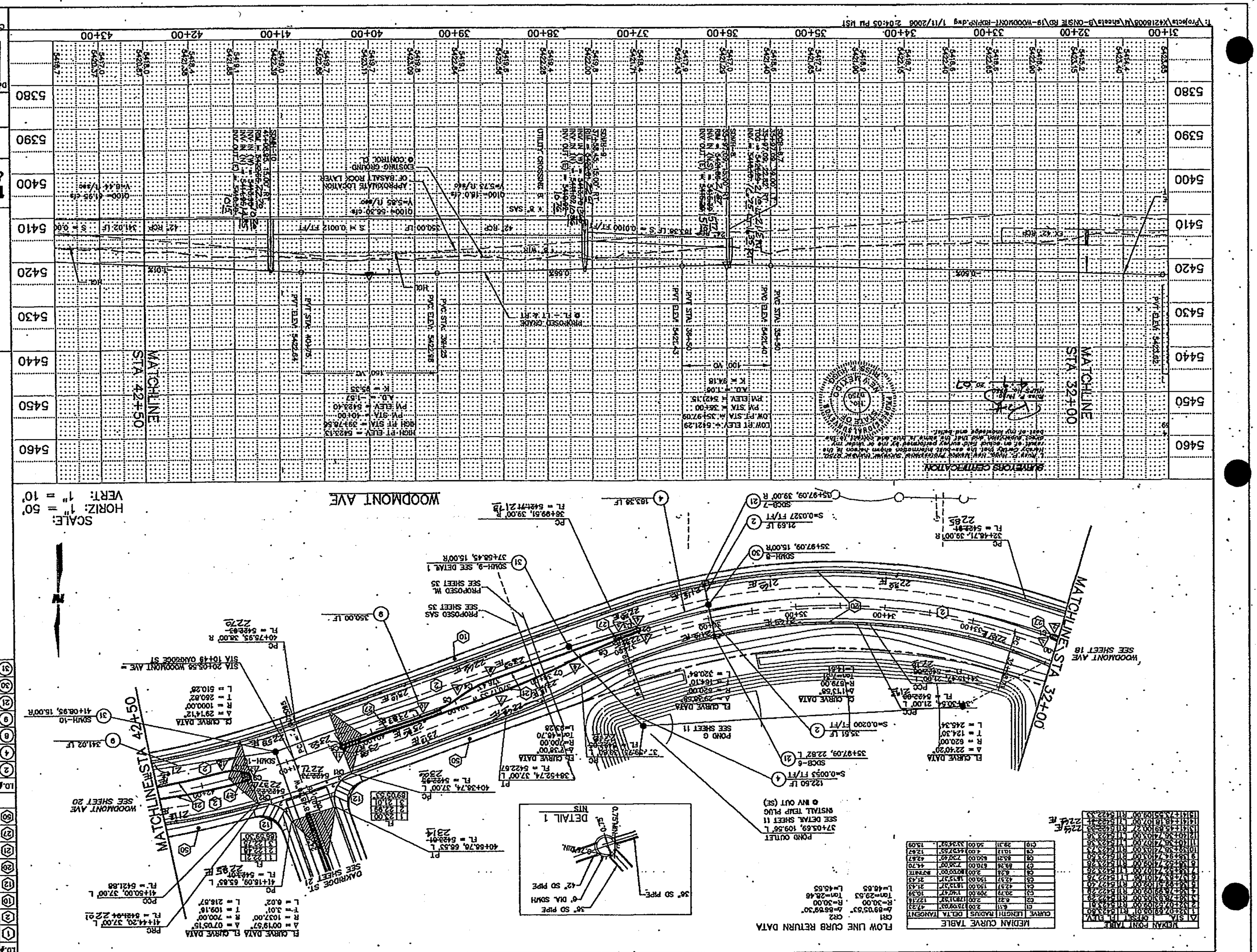


PAVING CONSTRUCTION NOTES

I.D.#	DESCRIPTION
1	BUILD RESIDENTIAL ASPHALT PAVING, PER TYPICAL SECTION (SEE SHEET 5-6)
2	BUILD COLLECTOR ASPHALT PAVING, PER TYPICAL SECTION (SEE SHEETS 5-6)
10	BUILD 6" PCC SIDEWALK, PER COA STD. DTL. 2430
12	BUILD PCC WHEELCHAIR RAMP, PER COA STD. DETAIL 2411, CASE #2
20	INSTALL 6" PCC STD. CURB AND GUTTER, PER COA DETAIL 2415A
21	BUILD PCC MEDIAN CURB AND OUTLET, PER COA DETAIL 2416B
27	BUILD TEXTURED CONCRETE MEDIAN PAVEMENT, PER COA STD. DWG. 2405 & 2301
50	BUILD 8" ASPHALT PEDESTRIAN TRAIL, PER DETAIL SEE SHEET 7

STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
1	INSTALL 18" STORM DRAIN PIPE
2	INSTALL 24" STORM DRAIN PIPE
4	INSTALL 36" STORM DRAIN PIPE
6	INSTALL 42" STORM DRAIN PIPE
9	INSTALL TYPE A CATCH BASIN SINGLE GRATE AND DOUBLE WING PER COA STD. DTL. 2201
21	INSTALL 4' DIA. MANHOLE PER COA STD. DTL. 2101
30	INSTALL 6' DIA. MANHOLE PER COA STD. DTL. 2101
31	INSTALL 36" STORM DRAIN PIPE

LEGEND

TC	TOP OF STANDARD TYPE CURB
FL	FLOW LINE
TRC	TOP OF ROLL TYPE CURB
3245.7	TOP OF ROLL TYPE CURB ELEVATION AT WHEEL CHAIR RAMP TRANSITION.
3245	FLOWLINE ELEVATION AT INTERSECTION OF PROJECTED FACE OF CURB.
	MATCHLINE OF NEW TO EXISTING ASPHALT PAVEMENT.
	TRANSITION CROWN PER COA STD DWG 2401

GENERAL NOTES

1. ALL CURB RETURNS HAVE 30' RADIUS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
2. ALL STATIONS AND OFFSETS ARE TO THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A UNLESS OTHERWISE INDICATED
3. ALL CURB LAYOUT DATA IS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED. CURB LAYOUT THAT IS A DIRECT OFFSET OF PLOTTED BASELINE IS NOT SHOWN
4. ADJUST ALL MANHOLE RIMS AND VALVE COVERS PER COA STD. DWG. 2460

INDEX MAP

WILSON & COMPANY
2600 THE AVENIDA ROAD S.E.
SUITE 100
RIO RANCHO NEW MEXICO
87124
(505) 892-6021

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

THE TRAILS UNIT II
PAVING & STORM DRAIN PLAN & PROFILE
WOODMONT AVENUE

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS		
DESIGNED BY	DMD	DATE JAN 05
DRAWN BY	DMD	DATE JAN 05
CHECKED BY	SAS	DATE JAN 05

DESIGN Review Committee
JAN 13 2006
DESIGN Review Committee
JAN 30 2006
CITY ENGINEER
Last Design Update
No./Date/Ch.
No./Date/Ch.

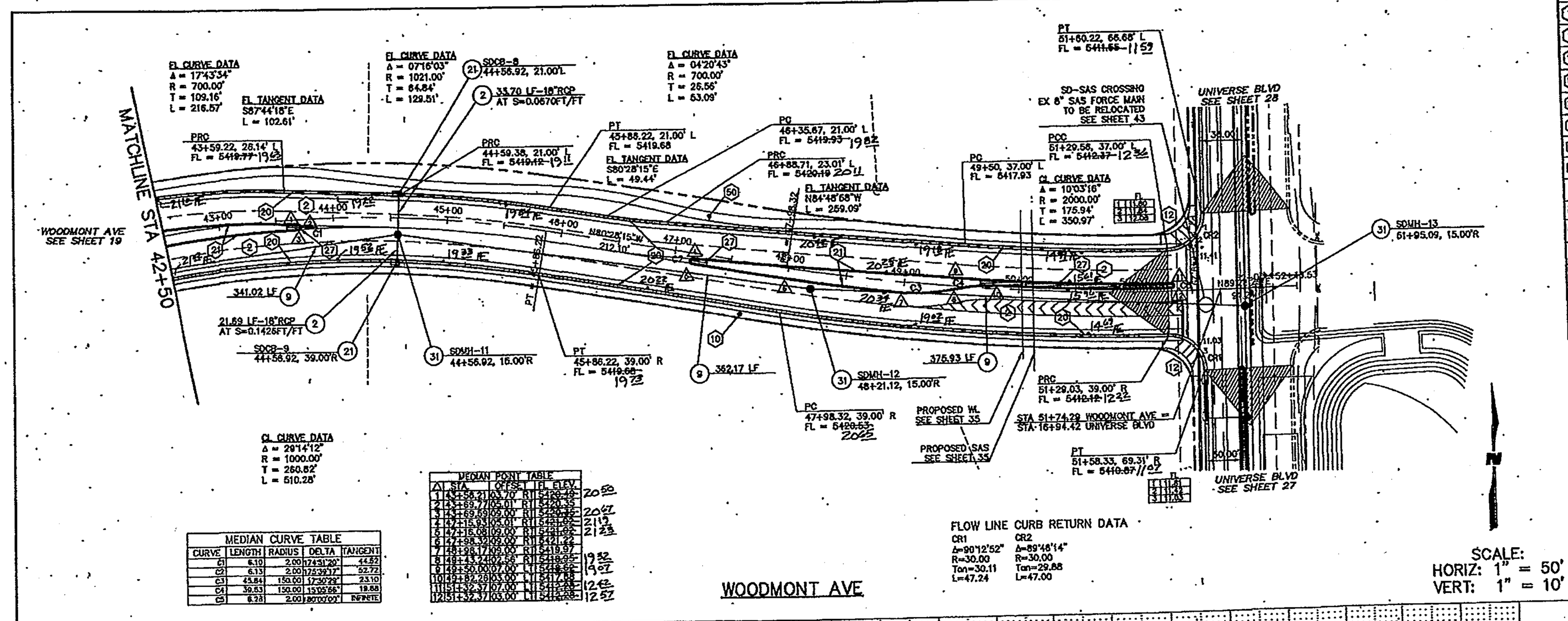
ENGINEER'S SEAL

SURVEY INFORMATION
FIELD NOTES
NO. DATE BY

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,978.48
Ground-to-Grid Factor = 0.99996354
LAT. = 0°16'30"
SLD 1929 Elevation = 5428.35

AS-BUILT INFORMATION
PREPARED BY
WORK PERFORMED BY Surv Tek INC.
CONVERTED TO MICRO-FILM BY Surv Tek INC.
RECORDED BY Surv Tek INC.
MICRO-FILM INFORMATION
DATE
NO.

City Project No. 730084 | Zone Map No. C-9-Z | Sheet 19 of 51



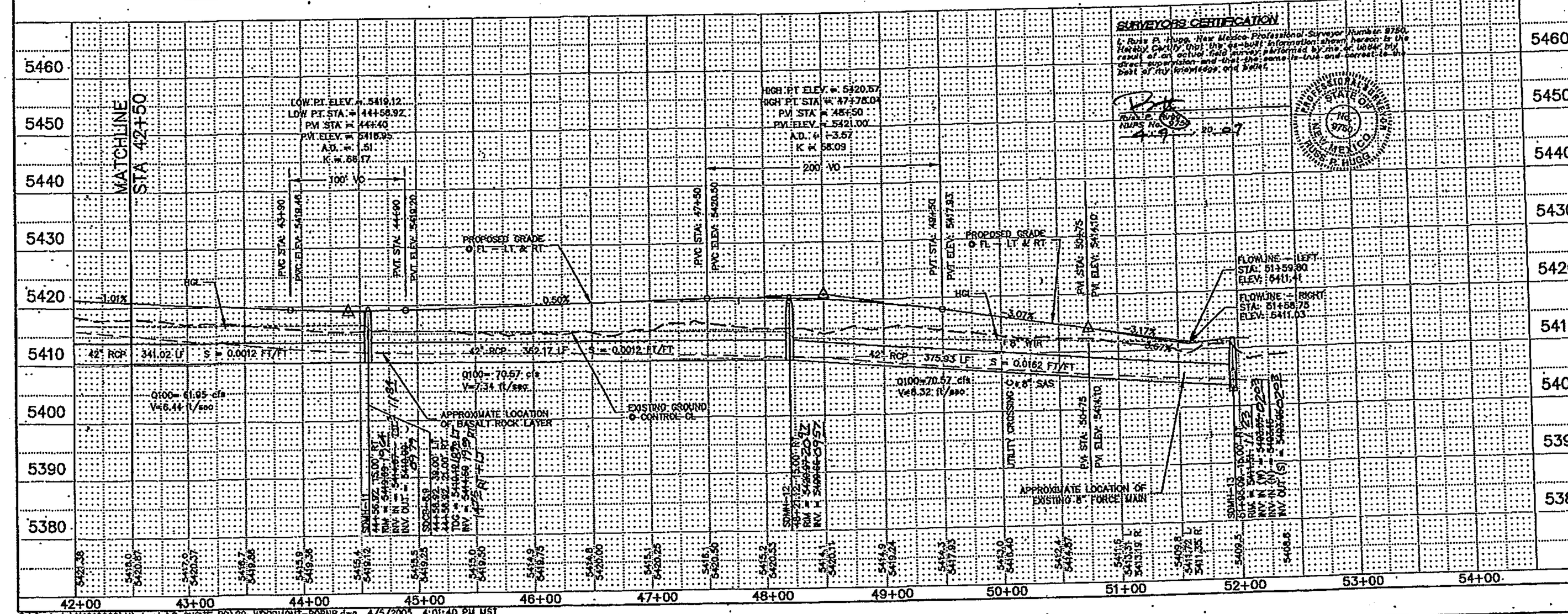
MEDIAN CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	6.10	2.00	N74°31'20"	44.82
C2	6.13	2.00	N53°39'17"	52.72
C3	45.84	150.00	17°30'28"	23.10
C4	39.53	150.00	15°05'56"	19.86
C5	6.28	2.00	N90°00'00"	INFINITE

MEDIAN POINT TABLE				
	AT STA.	OFFSET	PT.	ELEV.
1	43+56.21	03.70'	RT	5420.49
2	43+69.77	05.01'	RT	5420.33
3	43+69.69	09.00'	RT	5420.62
4	43+15.93	05.01'	RT	5421.62
5	47+16.08	09.00'	RT	5421.62
6	47+98.32	09.00'	RT	5421.22
7	48+98.17	09.00'	RT	5419.97
8	49+43.24	04.58	RT	5419.62
9	49+50.00	07.00'	LT	5418.62
10	49+82.28	03.00'	LT	5417.88
11	51+32.37	07.00'	LT	5416.88
12	51+32.37	03.00'	LT	5416.88

FLOW LINE CURB RETURN DATA

CR1
Δ=90°12'52"
R=30.00
Tan=30.11
L=47.24

CR2
Δ=89°48'14"
R=30.00
Tan=29.88
L=47.00



PAVING CONSTRUCTION NOTES

I.D.#	DESCRIPTION
1	BUILD RESIDENTIAL ASPHALT PAVING, PER TYPICAL SECTION (SEE SHEET 5-8)
2	BUILD COLLECTOR ASPHALT PAVING, PER TYPICAL SECTION (SEE SHEETS 5-8)
16	BUILD 6' PCC SIDEWALK, PER COA STD. DTL. 2430
12	BUILD PCC WHEELCHAIR RAMP, PER COA STD. DETAIL 2441, CASE #2
20	INSTALL 8" PCC STD. CURB AND GUTTER, PER COA DETAIL 2415A
21	BUILD PCC MEDIAN CURB AND GUTTER, PER COA DETAIL 2415B
27	BUILD TEXTURED CONCRETE MEDIAN PAVEMENT, PER COA STD. DWG. 2408 & 2501
50	BUILD 8' ASPHALT PEDESTRIAN TRAIL PER DETAIL SEE SHEET 7

STORM DRAIN CONSTRUCTION NOTES

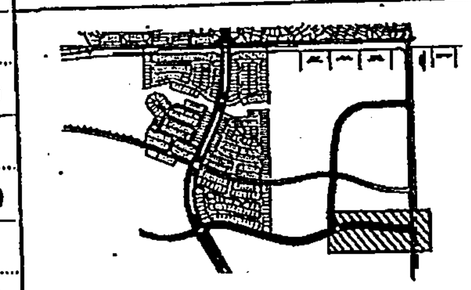
I.D.#	DESCRIPTION
2	INSTALL 18" STORM DRAIN PIPE
9	INSTALL 42" STORM DRAIN PIPE
11	INSTALL 54" STORM DRAIN PIPE
21	INSTALL TYPE A CATCH BASIN SINGLE GRATE AND DOUBLE WING PER COA STD. DTL. 2201
31	INSTALL 5' DIA. MANHOLE PER COA STD. DTL. 2101

LEGEND

TC	TOP OF STANDARD TYPE CURB
FL	FLOW LINE
TRC	TOP OF ROLL TYPE CURB
36.83*	TOP OF ROLL TYPE CURB ELEVATION AT WHEEL CHAIR RAMP TRANSITION.
30.83	FLOWLINE ELEVATION AT INTERSECTION OF PROJECTED FACE OF CURB.
	MATCHLINE OF NEW TO EXISTING ASPHALT PAVEMENT.
	TRANSITION CROWN PER COA STD DWG 2401

GENERAL NOTES

1. ALL CURB RETURNS HAVE 30' RADIUS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
2. ALL STATIONS AND OFFSETS ARE TO THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED
3. ALL CURB LAYOUT DATA IS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHERWISE INDICATED. CURB LAYOUT THAT IS A DIRECT OFFSET OF PLATTED BASELINE IS NOT SHOWN
4. ADJUST ALL MANHOLE RIMS AND VALVE COVERS PER COA STD. DWG. 2460



INDEX MAP

AS-BUILT INFORMATION
CONTRACTOR SURV-TEK DATE 12/06
PLANS REVIEWED BY DATE
FIELD INSPECTION BY DATE 2-07
COMPUTER PLOTTING BY SURV-TEK DATE 2-07
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.99968354
L.C. = -00°16'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS
2600 THE AMERICAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO
87124
(505) 898-8021

DESIGNED BY	DMD	DATE JAN 05
DRAWN BY	DMD	DATE JAN 05
CHECKED BY	SAS	DATE JAN 05

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

THE TRAILS UNIT II
PAVING & STORM DRAIN PLAN & PROFILE
WOODMONT AVENUE

Design Review Committee: PROVED — DESIGN REVIEW COMMITTEE
City Engineer Approval: JAN 30 2006 — CITY ENGINEER
Last Design Update: Ms/Day/Yr.
Ms/Day/Yr.

City Project No. 730084 | Zone Map No. C-9-Z | Sheet 20 of 51

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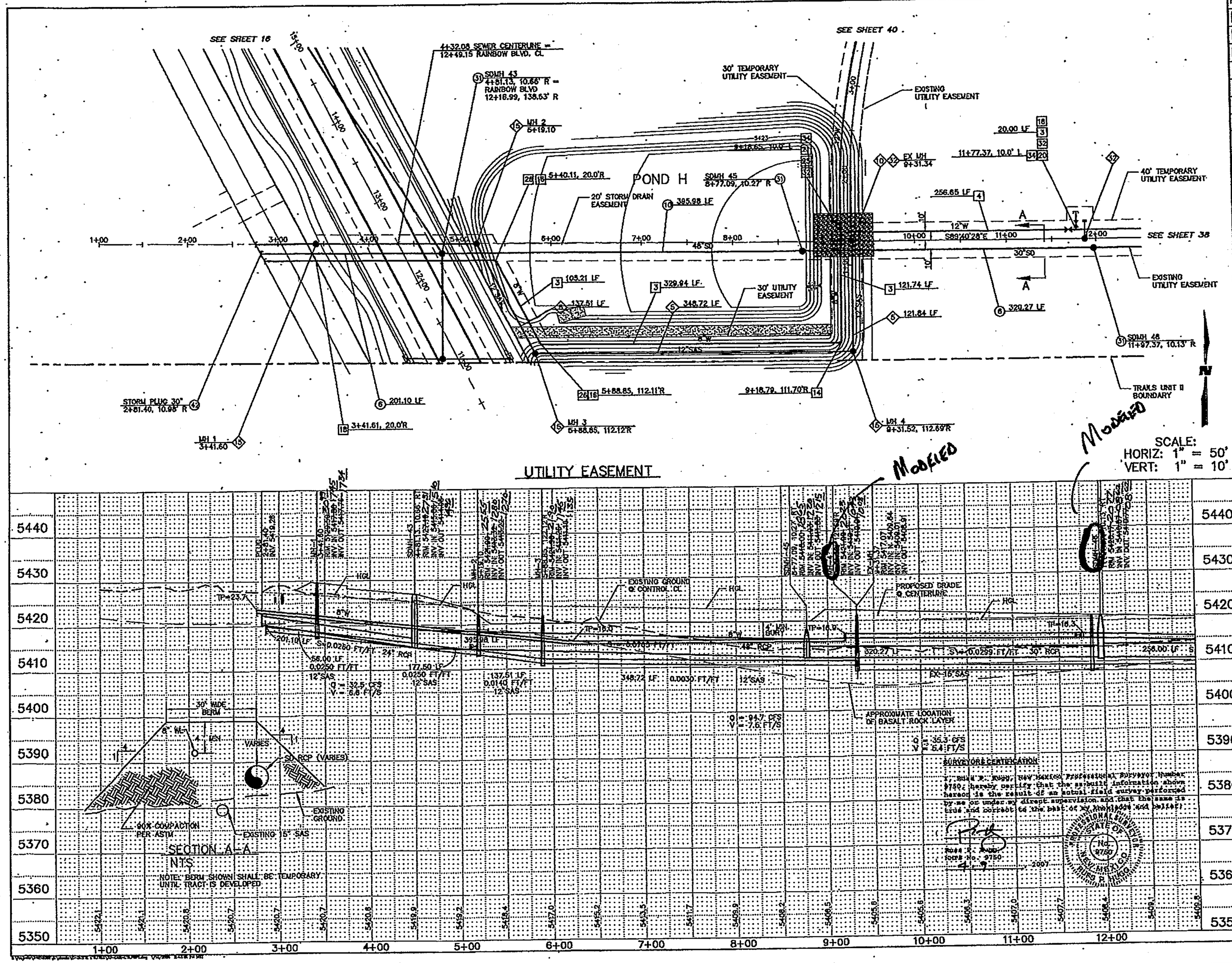


WATER CONSTRUCTION NOTES

I.D.#	DESCRIPTION
3	INSTALL 8" WATERLINE PER STD. SPEC. SEC. 801
4	INSTALL 12" WATERLINE PER STD. SPEC. SEC. 801
13	INSTALL 8" x 8" TEE
14	INSTALL 8" 90° BEND
16	INSTALL 8" 22 1/2° BEND
18	INSTALL 8" CAP
20	INSTALL 12" x 8" TEE
21	INSTALL 12" TEE
25	INSTALL 12" X 8" REDUCER
26	INSTALL 8" 45° BEND
32	INSTALL 8" GATE VALVE AND VALVE BOX PER NMUI STD. DTL.
34	INSTALL 12" GATE VALVE AND VALVE BOX PER NMUI STD. DTL.

SEWER CONSTRUCTION NOTES

I.D.#	DESCRIPTION
3	INSTALL 8" SEWER PIPE PER STD. SPEC. SEC. 901
5	INSTALL 12" SEWER PIPE PER.STD. SPEC. SEC. 901
10	CONNECT NEW SEWER LINE TO EXISTING MANHOLE
15	INSTALL 4' DIA. MANHOLE PER COA STD. DTL. 2102
42	INSTALL PLUG AND DEAD END MARKER PER COA STD. DTL. 2145
52	RAISE EXISTING MH RIM AND COVER TO NEW GRADE

STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
2	INSTALL 18" STORM DRAIN PIPE
4	INSTALL 24" STORM DRAIN PIPE
6	INSTALL 30" STORM DRAIN PIPE
8	INSTALL 36" STORM DRAIN PIPE
10	INSTALL 48" STORM DRAIN PIPE
30	INSTALL 4' DIA. MANHOLE PER COA STD. DTL. 2101
31	INSTALL 6' DIA. MANHOLE PER COA STD. DTL. 2101
42	INSTALL 30" STORM DRAIN PLUG

AS-BUILT INFORMATION
CONTRACTOR: SUNTEK DATE 12/06
WORK STAKED BY: SUNTEK DATE 3-6-07
FIELD VERIFICATIONS BY: SUNTEK DATE 3-6-07
DRAWINGS CORRECTED BY: SUNTEK DATE 3-6-07
MICRO-FILM INFORMATION
RECORDED BY: DATE
NO.

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.999886354
A.C. = -00°16'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL
NEW MEXICO REGISTERED PROFESSIONAL ENGINEER 16243 LICENSED PROFESSIONAL ENGINEER

REVISIONS
NO. DATE REMARKS BY

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DATE JAN 05
DRAWN BY DEC DATE JAN 05
CHECKED BY SJS DATE JAN 05

INDEX MAP

APPROVED FOR CONSTRUCTION
NEW MEXICO UTILITIES INC. DATE

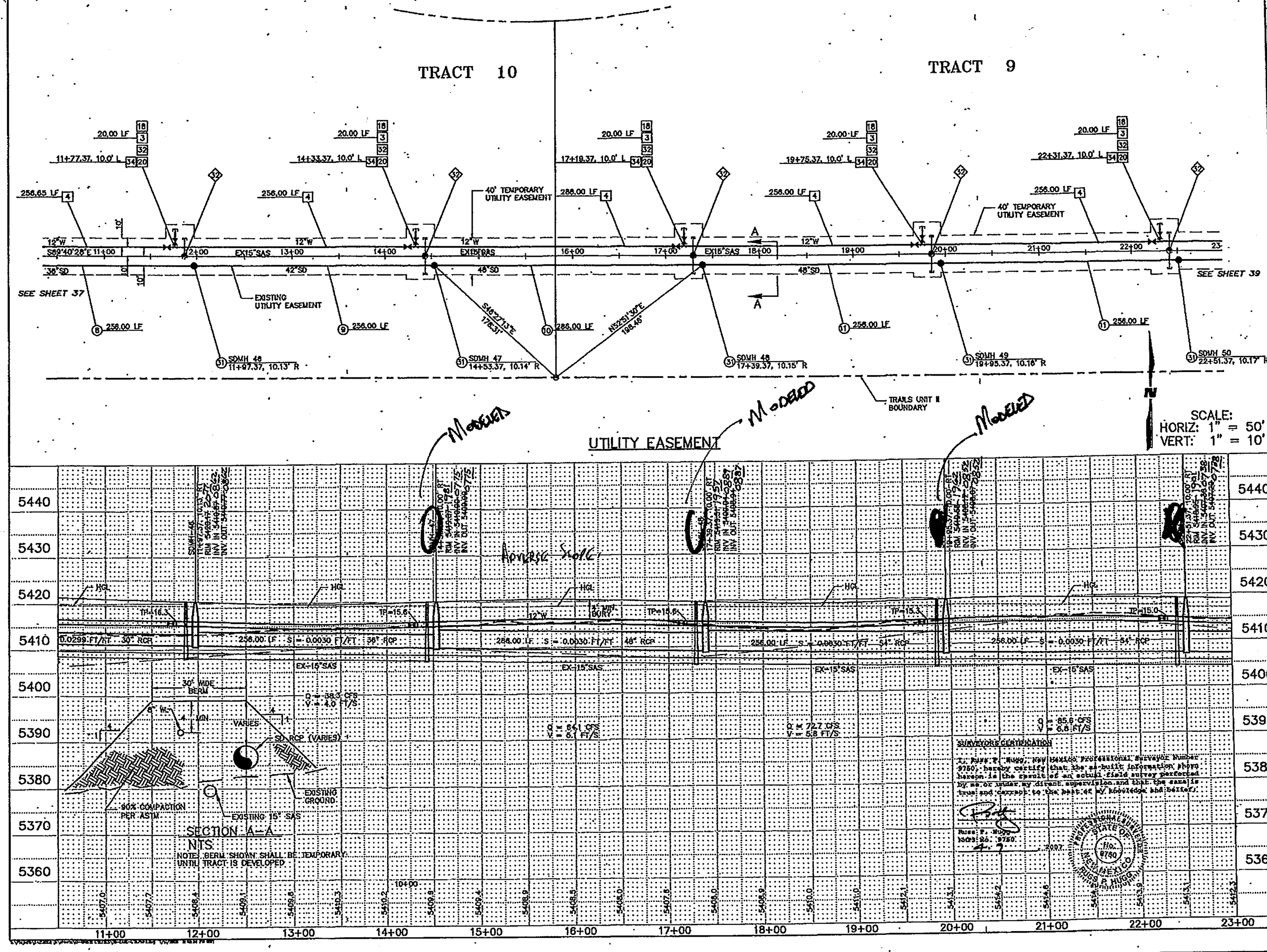
WILSON & COMPANY
2500 THE AMERICAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO 87124
(505) 898-8021

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

THE TRAILS UNIT II
WATER, SEWER, STORM DRAIN PLAN & PROFILE EASEMENT

Design Review Committee: JAN 13 2006 — DESIGN REVIEW COMMITTEE
City Engineer Approval: JAN 30 2006 — CITY ENGINEER
Last Design Update: Yr./Mo./Dy.
Yr./Mo./Dy.

City Project No. 730084 | Zone Map No. C-9-Z | Sheet 37 Of 51



WATER CONSTRUCTION NOTES

I.D.#	DESCRIPTION
3	INSTALL 8" WATERLINE PER STD. SPEC. SEC. 801
4	INSTALL 12" WATERLINE PER STD. SPEC. SEC. 801
18	INSTALL 8" CAP
20	INSTALL 12" x 8" TEE
22	INSTALL 12" x 8" CROSS
32	INSTALL 8" GATE VALVE AND VALVE BOX PER NMUI STD. DTL.
34	INSTALL 12" GATE VALVE AND VALVE BOX PER NMUI STD. DTL.

SEWER CONSTRUCTION NOTES

I.D.#	DESCRIPTION
5	INSTALL 12" SEWER PIPE PER STD. SPEC. SEC. 901
15	INSTALL 4' DIA. MANHOLE PER COA STD. DTL. 2102
52	RAISE EXISTING MH RIM AND COVER TO NEW GRADE

STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
8	INSTALL 36" STORM DRAIN PIPE
9	INSTALL 42" STORM DRAIN PIPE
10	INSTALL 48" STORM DRAIN PIPE
11	INSTALL 54" STORM DRAIN PIPE
31	INSTALL 6' DIA. MANHOLE PER COA STD. DTL. 2101

AS-BUILT INFORMATION
CONTRACTOR
WORK STAKED BY SURVTEK DATE 12/04
WORK INSPECTED BY DATE
ACCEPTANCE BY DATE
FIELD DATA BY SURVTEK DATE 03/05
COORDINATES BY SURVTEK DATE 03/05
MICRO-FILM INFORMATION DATE
RECORDED BY

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.99966354
ΔX = -00°16'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL
NEW MEXICO (1524) LICENSED PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DEC DATE JAN 05
DRAWN BY DEC DATE JAN 05
CHECKED BY SJS DATE JAN 05

INDEX MAP

APPROVED FOR CONSTRUCTION

NEW MEXICO UTILITIES INC. DATE

WILSON & COMPANY
2600 THE AMERICAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO 87124
(505) 896-8021

SURVEYOR'S CERTIFICATION

I, Russ F. Hugg, New Mexico Professional Surveyor Number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ F. Hugg
NMPS No. 9750
4-7-2005

PROFESSIONAL SURVEYOR STATE OF NEW MEXICO RUSS F. HUGG No. 9750

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

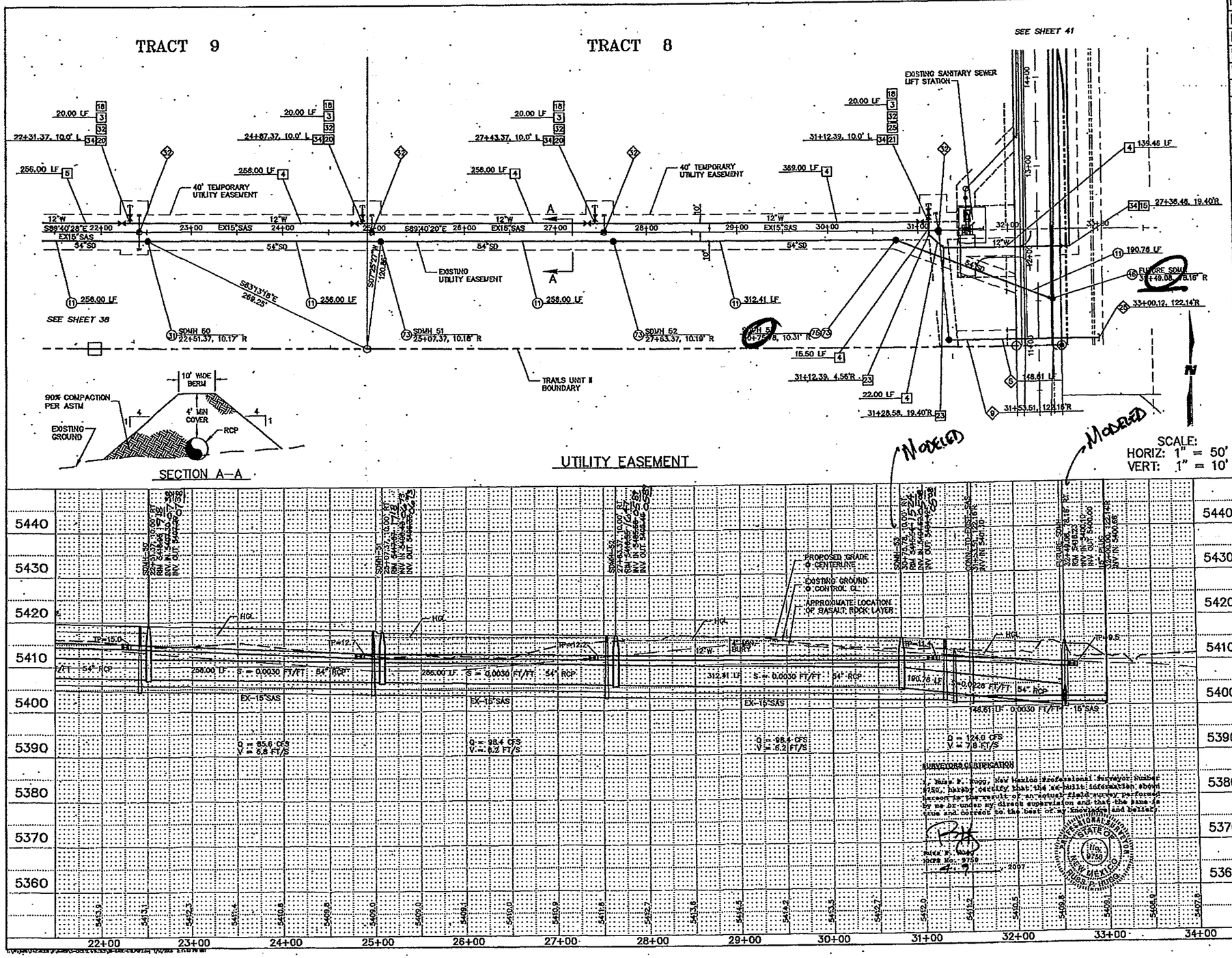
THE TRAILS UNIT II
WATER AND STORM DRAIN PLAN & PROFILE
EASEMENT

Design Review Committee: JAN - 3 2005 DESIGN REVIEW COMMITTEE

City Engineer Approval: JAN 3 0 2005 CITY ENGINEER

Last Design Update: Mo./Day/Yr. Mo./Day/Yr.

City Project No.	Zone Map No.	Sheet	Of
730084	C-9-Z	38	51



WATER CONSTRUCTION NOTES

I.D.#	DESCRIPTION
3	INSTALL 8" WATERLINE PER STD. SPEC. SEC. 801
4	INSTALL 12" WATERLINE PER STD. SPEC. SEC. 801
15	INSTALL 12" 90° BEND
18	INSTALL 8" CAP
20	INSTALL 12" x 8" TEE
21	INSTALL 12" TEE
22	INSTALL 12" x 8" CROSS
23	INSTALL 12" 45° BEND
25	INSTALL 12" X 8" REDUCER
26	INSTALL 8" 45° BEND
32	INSTALL 8" GATE VALVE AND VALVE BOX PER NMUI STD. DTL.
34	INSTALL 12" GATE VALVE AND VALVE BOX PER NMUI STD. DTL.

STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
10	INSTALL 48" STORM DRAIN PIPE
11	INSTALL 54" STORM DRAIN PIPE
31	INSTALL 6' DIA. MANHOLE PER COA STD. DTL. 2101
46	INSTALL 54" STORM DRAIN PLUG
73	INSTALL 54" X 48" RISER TEE
76	INSTALL 54" BEND

SEWER CONSTRUCTION NOTES

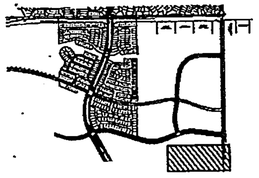
I.D.#	DESCRIPTION
6	INSTALL 12" SEWER PIPE PER STD. SPEC. SEC. 901
9	REMOVE EXISTING PLUG AND CONNECT NEW SEWER LINE TO EXISTING SEWER LINE
25	INSTALL PLUG AND DEAD END MARKER PER COA STD. DTL. 2145
32	RAISE EXISTING MH RIM AND COVER TO NEW GRADE

AS-BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY SURV-TEK — DATE 12/06
WORK INSPECTED BY — DATE
FIELD TOPO BY SURV-TEK — DATE 12/06
DRAWINGS CORRECTED BY SURV-TEK — DATE 12/07
MICRO-FILM INFORMATION
RECORDED BY — DATE

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,978.48
Ground-to-Grid Factor = 0.99986534
$\Delta\alpha$ = -0016'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL


INDEX MAP

APPROVED FOR CONSTRUCTION
NEW MEXICO UTILITIES INC. DATE

WILSON & COMPANY
2600 THE AVERCAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO
87124
(505) 896-8021

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DMD DATE JAN 05
DRAWN BY DMD DATE JAN 05
CHECKED BY SJS DATE JAN 05

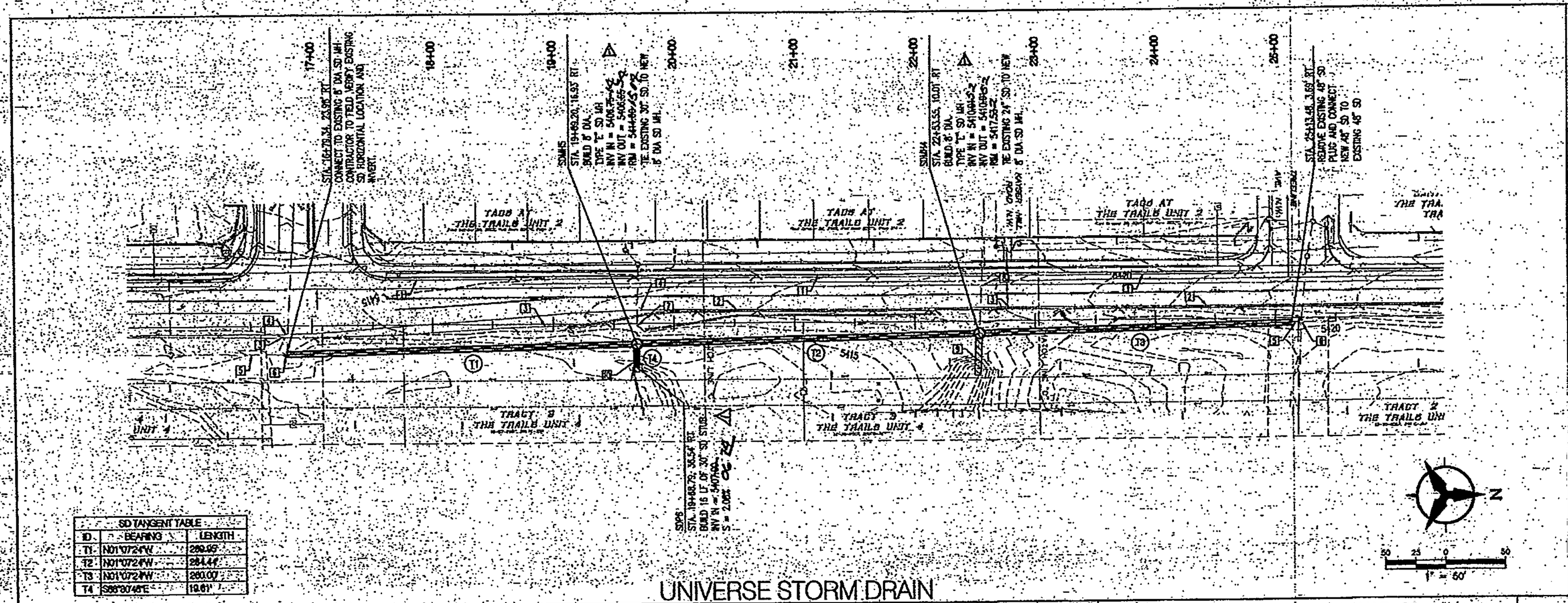
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

THE TRAILS UNIT II
WATER AND STORM DRAIN PLAN & PROFILE
EASEMENT

Design Review Committee — JAN 2 8 2007
City Engineer Approval — JAN 2 0 2006 — CITY ENGINEER
Last Design Update — Mo./Day/Yr. — Mo./Day/Yr.

City Project No. 730084 | Zone Map No. C-9-Z | Sheet 39 Of 51

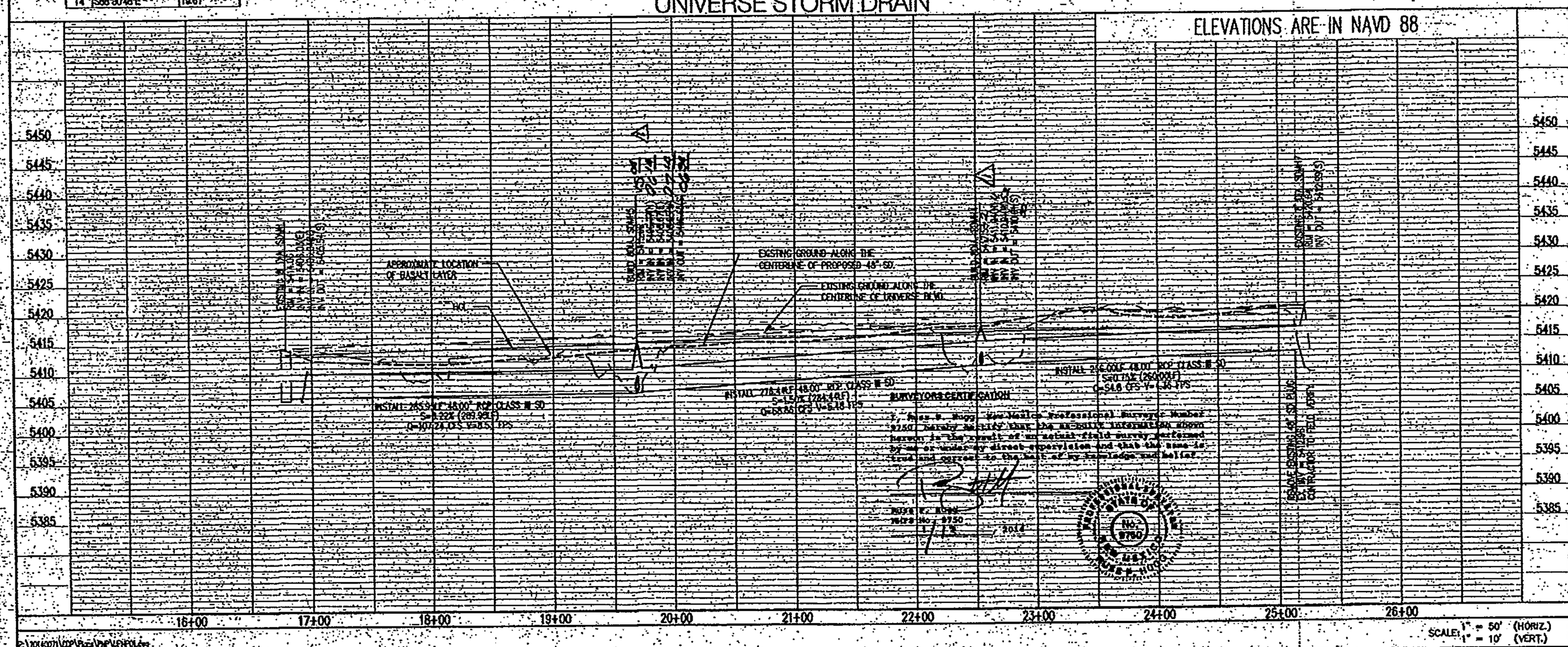
RECORD DRAWINGS



SD TANGENT TABLE		
ID.	BEARING	LENGTH
T1	N01°07'24"W	280.95'
T2	N01°07'24"W	284.44'
T3	N01°07'24"W	280.00'
T4	S88°30'46"E	19.61'

UNIVERSE STORM DRAIN

ELEVATIONS ARE IN NAVD 88



GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES. CONTRACTOR SHALL COORDINATE RELOCATION OF UTILITY LINES WITH UTILITY COMPANIES AS REQUIRED.
2. ALL CURVE DATA AND DIMENSIONS ARE CALCULATED FROM CENTERLINE OF PIPE OR MANHOLE. ALL SIG & SD SLOPES ARE CALCULATED TO MAX PIPE DIMENSIONS (FROM INVERT TO CROWN) (PAY ITEMS ARE SHOWN IN PARENTHESES)
3. GRADE ELEVATIONS, WHERE NOTED, ARE FOR FLOWLINE OF STANDARD CURB UNLESS OTHERWISE SPECIFIED.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL DAMAGED EXISTING UTILITY CONDUITS AND EXISTING LINES.
5. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
6. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, LANDSCAPING, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
7. MH RIMS & CATCH BASIN INLET ELEVATIONS, FIRE HYDRANT & FLANGE ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY AND ADJUST TO FINAL PAVEMENT OR SURFACE GRADES.
8. STORM DRAIN STATIONING FOLLOWS C.L. OF STORM DRAIN UNLESS OTHERWISE NOTED.
9. STATIONING OF DROP INLET IS TO MIDDLE OF DOWN HILL GRATE AT FACE OF CURB.
10. FLOWLINE ELEVATIONS FOR DROP INLETS ARE PROJECTED FROM FLOWLINE OF STANDARD CURB TO MIDDLE OF DOWNHILL GRATE.
11. ALL WATERLINE FITTINGS, VALVES, BENDS, TEES, CROSSES AND APPURTENANCES SHALL USE RESTRAINED JOINTS UNLESS OTHERWISE NOTED ON THE PLANS.
12. AT UTILITY CROSSING WHERE LESS THAN 1 FOOT OF COVER OVER STORM DRAIN PIPE IS PRESENT LEAN FILL IS TO BE USED FOR A DISTANCE OF 5 FEET ON EACH SIDE OF THE SD ℄ FROM TOP OF STORM DRAIN, TO BOTTOM OF SANITARY SEWER OR WATER LINE.
13. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER WITHOUT APPROVAL.
14. ALL EXCAVATION, TRENCHING AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650 SUBPART P.

KEYED NOTES

[1] EXISTING CURB & GUTTER
[2] EXISTING MEDIAN CURB & GUTTER
[3] EXISTING EDGE OF ASPHALT
[4] EXISTING EXTRUDED ASPHALT CURB
[5] EXISTING 48" STORM DRAIN
[6] EXISTING 8' DIA. STORM DRAIN MH.
[7] EXISTING 30" STORM DRAIN
[8] EXISTING 24" STORM DRAIN
[9] REMOVE AND DISPOSE OF 30 LF EXISTING 24" STORM DRAIN.
[10] REMOVE AND DISPOSE OF 20 LF EXISTING 30" STORM DRAIN.

NOTES:

1. ALL SHOULDER WORK, CLEAR ZONE & SIDE SLOPE CRITERIA ROADSIDE DESIGN CRITERIA DURING WORK & NON WORK HOURS
2. CONTRACTOR TO COORDINATE WITH THE CITY OF ALBUQUERQUE CONSTRUCTION COORDINATION ENGINEER (924-3402) PRIOR TO THE PRE-CONSTRUCTION MEETING.
3. CONTRACTOR TO COORDINATE WITH SAD 228 CITY OF ALBUQUERQUE PM MARK IRWIN (468-2291) PRIOR TO START OF CONSTRUCTION.
4. THE DOWNSTREAM STORM DRAIN SHALL BE IN PLACE PRIOR TO THE REMOVAL OF THE 24" AND 30" STORM DRAIN PIPE.

Bohannan ▲ Huston
www.bhinc.com 800.877.6332

AS-BUILT INFORMATION
CONTRACTOR Lonacino DATE 1/14
REVISED BY Sauz-Tek DATE 1/14
CONFIRMED BY Ezzell DATE 1/14
FIELD VERIFIED BY Sauz-Tek DATE 1/14
CORRECTED BY Ritz DATE 1/14
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS
ACS BRASS TABLET STAMPED "7-C10"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
X = 1,495,200.39 Y = 1,521,838.43
GROUND-TO-GRID FACTOR = 0.999967290
Δφ = -00°16'20"
NAVD 1988 ELEVATION = 5425.21

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE
A	Sauz-Tek	1-14

ENGINEER'S SEAL
NEW MEXICO REGISTERED PROFESSIONAL ENGINEER 14808

No.	Date	REMARKS	By
		REVISIONS	
		DESIGN	

Designed By: SJS DATE:06/2013
Drawn By: DM DATE:06/2013
Checked By: SJS DATE:06/2013

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TAOS UNIT 2 at the TRAILS UNIT 2
UTILITY PLAN AND PROFILE
UNIVERSE STORM DRAIN

Design Review Committee: APPROVED JUL 17 2013 DESIGN REVIEW COMMITTEE
City Engineer: APPROVED SEP 6 2013 CITY ENGINEER
Last Design Update | Vs./Date/Ch. | Vs./Date/Ch.

City Project No. 730076 | Zone Map No. C-09-Z | Sheet 14 Of 14

SCALE: 1" = 50' (HORIZ.) 1" = 10' (VERT.)

\2014\07\Plans\PAP\ENPOL.dwg
July 01, 2013 - 5:16pm

GENERAL NOTES:

1. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED UNDER CONTRACT SHALL EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION 1986 EDITION WITH UPDATE NO. 8.
2. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES, AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
3. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE & VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH MINIMUM DELAY.
4. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, INC. @ 260-1990 FOR LOCATION OF EXISTING UTILITIES.
5. CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN A MANNER WHICH WILL MINIMIZE INTERFERENCE WITH LOCAL TRAFFIC. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES, REGULATIONS, AND ORDERS OF ANY PUBLIC BODY HAVING JURISDICTION FOR THE SAFETY OF PERSONS OR PROPERTY, AND TO PROTECT THEM FROM DAMAGE, INJURY, OR LOSS. CONTRACTOR SHALL ERECT AND MAINTAIN, AS REQUIRED BY THE CONDITIONS AND PROGRESS OF THE WORK, ALL NECESSARY SAFEGUARDS FOR SAFETY CONTINUOUSLY AND NOT LIMITED TO NORMAL WORKING HOURS, THROUGHOUT THE DURATION OF THE PROJECT. CONTRACTOR SHALL ADHERE TO SECTION 19 OF THE GENERAL CONDITIONS OF THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986, AS AMENDED WITH UPDATE NO. 8.
6. THE CONTRACTOR AGREES THAT HE SHALL ASSUME THE SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS, AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY, AND HOLD HARMLESS THE OWNER & ENGINEER FROM ANY AND ALL LIABILITY REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR ENGINEER.
7. TRAFFIC CONTROL: SEVEN (7) WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION THE CONTRACTOR SHALL SUBMIT TO THE CONSTRUCTION COORDINATION DIVISION A DETAILED CONSTRUCTION SCHEDULE. TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A BARRICADING PERMIT FROM THE CONSTRUCTION COORDINATION DIVISION. CONTRACTOR SHALL NOTIFY BARRICADE ENGINEER (924-3400) PRIOR TO OCCUPYING AN INTERSECTION. SEE SECTION 19 OF THE SPECIFICATIONS.
8. ALL STREET STRIPING ALTERED OR DESTROYED SHALL BE REPLACED WITH PLASTIC REFLECTORIZED PAVEMENT MARKINGS BY CONTRACTOR TO LOCATION AS EXISTING OR AS SHOWN IN THIS PLAN SET.
9. WHEN ABUTTING EXISTING PAVEMENT TO NEW, SAWCUT EXISTING PAVEMENT TO A STRAIGHT EDGE AND AT A RIGHT ANGLE, OR AS APPROVED BY THE FIELD ENGINEER. REMOVAL OF BROKEN OR CRACKED PAVEMENT WILL ALSO BE REQUIRED. CUTS SHALL BE ORTHOGONAL TO TRAFFIC DIRECTION.
10. EXISTING CURB AND GUTTER NOT TO BE REMOVED UNDER THE CONTRACT WHICH IS DAMAGED OR DISPLACED BY THE CONTRACTOR SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
11. ALL BACKFILL FOR TRENCHES SHALL BE COMPACTED TO A MINIMUM 95% MAXIMUM DENSITY PER ASTM D-1557 AND AS DIRECTED BY SECTION 701.14.2 AND STANDARD DRAWING NUMBER 2465.
12. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY OR PRIVATE ROADWAY EASEMENTS SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET OR INTO ANY PUBLIC DRAINAGE FACILITY.
13. ALL SANITARY SEWER LINE STATIONING REFERS TO SANITARY SEWER CENTERLINE STATIONING.
14. ALL FITTINGS ON WATERLINES SHALL HAVE RESTRAINED JOINTS AS NOTED ON THE PLANS.
15. CONTRACTOR SHALL SUPPORT ALL EXISTING, UNDERGROUND UTILITY LINES WHICH BECOME EXPOSED DURING CONSTRUCTION. PAYMENT FOR SUPPORTING WORK SHALL BE INCIDENTAL TO WATERLINE AND/OR SEWERLINE COSTS.
16. CONTRACTOR SHALL ASSIST THE ENGINEER/INSPECTOR IN THE RECORDING OF DATA ON ALL UTILITY LINES AND ACCESSORIES AS REQUIRED BY THE CITY OF ALBUQUERQUE FOR THE PREPARATION OF RECORD DRAWINGS. CONTRACTOR SHALL NOT COVER UTILITY LINES AND ACCESSORIES UNTIL ALL DATA HAS BEEN RECORDED.
17. THE CONTRACTOR SHALL NOTIFY THE CITY SURVEYOR NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK IN ORDER THAT THE CITY SURVEYOR MAY TAKE NECESSARY MEASURES TO INSURE THE PRESERVATION OF SURVEY MONUMENTS. CONTRACTOR SHALL NOT DISTURB PERMANENT SURVEY MONUMENTS WITHOUT THE CONSENT OF THE CITY SURVEYOR AND SHALL NOTIFY THE CITY SURVEYOR AND BEAR THE EXPENSE OF REPLACING ANY THAT MAY BE DISTURBED WITHOUT PERMISSION. REPLACEMENT SHALL BE DONE ONLY BY THE CITY SURVEYOR. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATIONS OF THE PAVEMENT OF ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED. REFER TO SECTION 4.4 OF THE GENERAL CONDITIONS OF THE STANDARD SPECIFICATIONS.
18. PNM WILL PROVIDE AT NO COST TO THE CITY OR THE CONTRACTOR THE REQUIRED PERSONNEL FOR INSPECTION OR OBSERVATION DEEMED NECESSARY BY PNM WHILE THE CONTRACTOR IS EXPOSING PNM'S CABLES. HOWEVER, THE CONTRACTOR SHALL BE CHARGED THE TOTAL COST ASSOCIATED WITH REPAIRS TO ANY DAMAGED CABLES OR FOR ANY COST ASSOCIATED WITH SUPPORTING OR RELOCATING THE POLES AND CABLES DURING CONSTRUCTION.
19. WARNING--EXISTING UTILITY LINE LOCATIONS ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. THE LOCATION OF ANY SUCH EXISTING LINES IS BASED UPON INFORMATION PROVIDED BY THE UTILITY COMPANY, THE OWNER, OR BY OTHERS, AND THE INFORMATION MAY BE INCOMPLETE OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS UNDERTAKEN NO FIELD VERIFICATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UNDERGROUND UTILITY LINES, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY, AND PRESERVE ANY AND ALL EXISTING UTILITIES. THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES, IN PLANNING AND CONDUCTING EXCAVATION, WHETHER BY CALLING OR NOTIFYING THE UTILITIES, COMPLYING WITH "BLUE STAKES" PROCEDURES, OR OTHERWISE.
20. ANY WORK OCCURRING WITHIN AN ARTERIAL ROADWAY REQUIRES 24 HR. CONSTRUCTION.
21. ALL EXCAVATION, TRENCHING AND SHORING ACTIVITIES MUST BE ACCOMPLISHED IN ACCORDANCE WITH OSHA 29CFR 1926.650 SUBPART P.
22. CONTRACTOR SHALL MAINTAIN A GRAFFITI-FREE WORK SITE. CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL GRAFFITI FROM EQUIPMENT, WHETHER PERMANENT OR TEMPORARY.
23. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
24. AN SO 19 PERMIT IS REQUIRED TO PLACE ANY MATERIAL ON OR AROUND A STORM DRAIN INLET IN THE CITY RIGHT-OF-WAY THAT WOULD INTERFERE WITH THE INLET RECEIVING STORM WATER PER THE ENGINEER'S DESIGN. CITY PERSONNEL MAY REMOVE THIS MATERIAL AT ANY TIME WITHOUT NOTICE. THE PREFERRED BMP IS TO REMOVE SEDIMENT/POLLUTANTS ON THE PROPERTY WHERE CONSTRUCTION ACTIVITY IS OCCURRING.
25. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING & MAINTAINING ALL CONSTRUCTION SIGNING UNTIL PROJECT HAS BEEN ACCEPTED BY THE COA.

Y:\PROJECTS\LONGFORD-UNIVERSE_BASE-REVISED-10-12.dwg 11/8/2012

CERTIFICATE OF SUBSTANTIAL COMPLIANCE ON PLANS

I, Matthew A. Sanchez, of the firm of Bohannan Huston, Inc., a Registered Professional Engineer in the State of New Mexico, do hereby certify, to the best of my knowledge and belief, that the infrastructure installed, as shown on these drawings (Universe Boulevard Storm Drain) has been inspected by me or by a qualified person under my direct supervision and has been constructed in accordance with the plans and specifications and that the original design intent of the approved plans has been met, exceptions noted by me on the as-built construction drawings. This Certification is based on site inspections by me or personnel under my direction and survey information provided by the contractor, Python Construction Company and their surveyor, Russ P. Hugg, NMPS #9750.

Engineer's Seal & Signature

MATTHEW A. SANCHEZ — STATE OF NEW MEXICO — 14720 — PROFESSIONAL ENGINEER

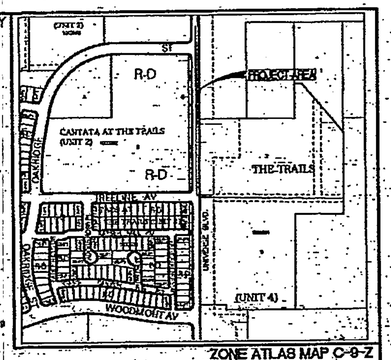
SURVEYORS CERTIFICATION

I, Russ P. Hugg, New Mexico Professional Surveyor number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ P. Hugg
NMPS No. 9750
04/03 2013

PROFESSIONAL SURVEYOR — STATE OF NEW MEXICO — No. 9750 — RUSS P. HUGG

VICINITY MAP
NTS



N
MAP NO. C-9

ZONE ATLAS MAP C-9-Z

ALBUQUERQUE SEAL NEW MEXICO 1706

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
PLANS FOR CONSTRUCTION

THE TRAILS
UNIVERSE BOULEVARD STORM DRAIN
PROJECT #693382

RECORD DRAWINGS

INDEX OF SHEETS

1 TITLE SHEET
2 TREELINE AVE & UNIVERSE BLVD. STORM DRAIN PLAN AND PROFILE
3 UNIVERSE BLVD. STORM DRAIN STA. 30+50 TO STA. 38+00 PLAN AND PROFILE
4 TYPICAL SECTION

CALL BEFORE YOU DIG!
STATEWIDE 1-800-321-ALERT
ALBUQUERQUE 260-1990

REV.	SHEETS	CITY ENGINEER	DATE	USER DEPARTMENT	DATE	USER DEPARTMENT	DATE

ENGINEERS STAMP & SIGNATURE — NEW MEXICO — 9677 — 11-8-12

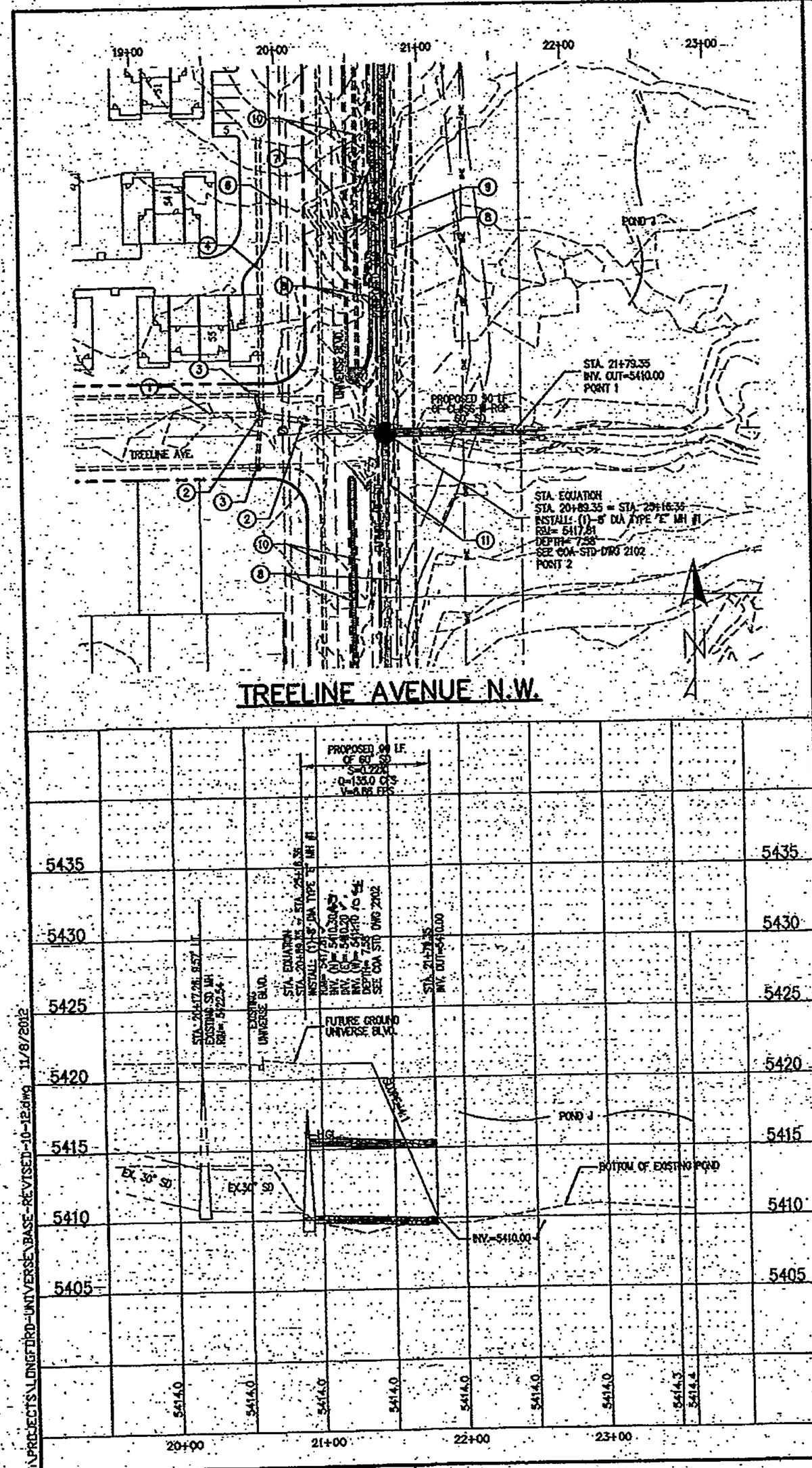
APPROVED	ENGINEER	DATE
DRC Chairman		2/6/13
Transportation		11-14-12
Water/Wastewater		11-14-12
Hydrology		11/14/12
C.I.P.		
AMAFCA		
County Coord.		

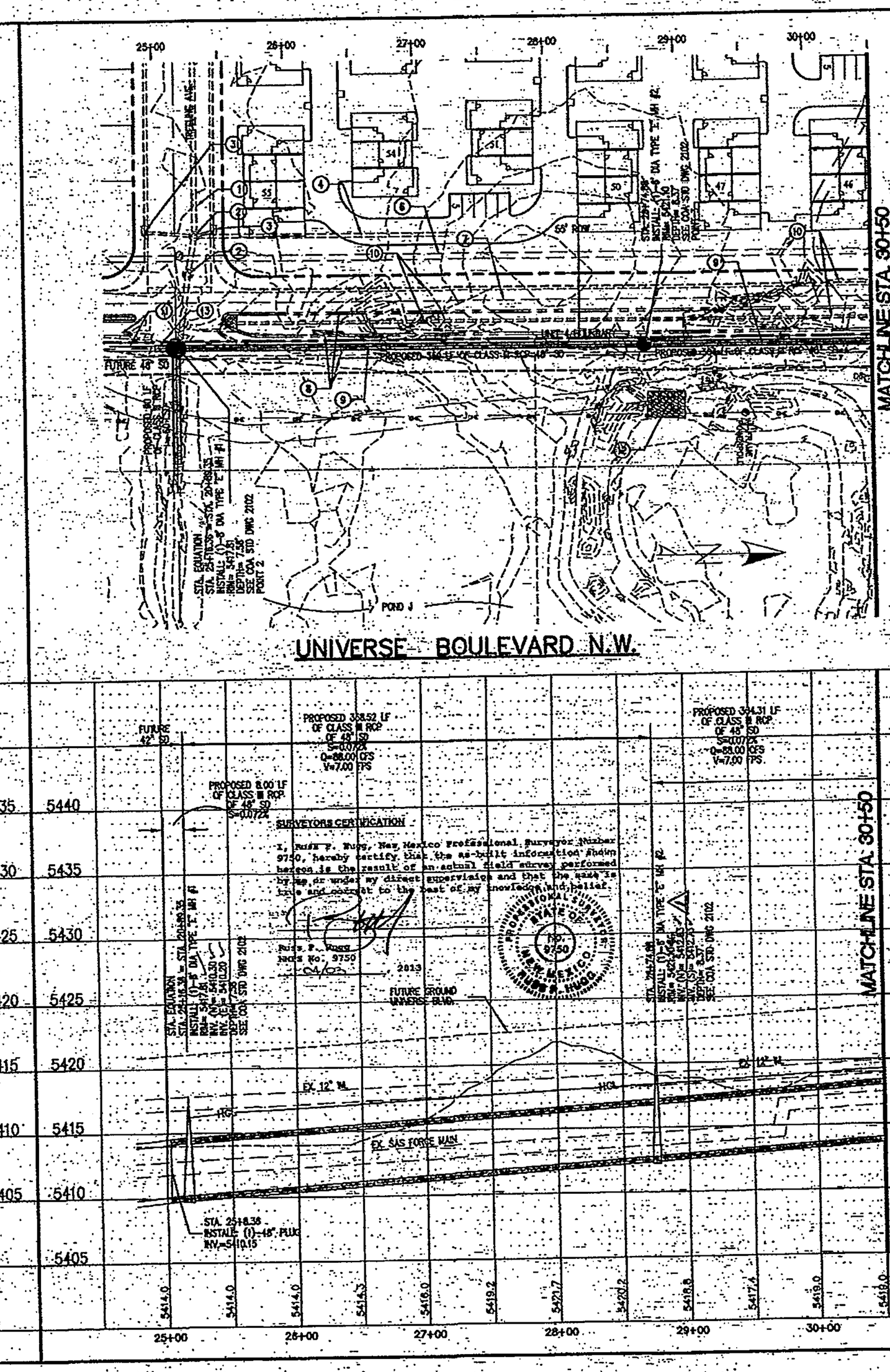
APPROVED FOR CONSTRUCTION
CITY ENGINEER — DATE 2-6-13

PROJECT NUMBER 693382

DRAWING NO. 1 OF 4

Thompson Engineering Consultants, Inc.
tecnm@yahoo.com
P.O. BOX 65760
ALBUQUERQUE, NM 87193
PHONE (505) 271-2199
FAX (505) 830-9246





NOTE:
CONTRACTOR TO FIELD VERIFY INVERTS AT OF EXISTING STORM DRAIN PRIOR TO STARTING CONSTRUCTION OF STORM DRAIN.

KEYED NOTES:

1. EXISTING 42" STORM DRAIN
2. EXISTING STORM DRAIN MANHOLE
3. EXISTING TYPE A STORM DRAIN INLET
4. EXISTING 30" STORM DRAIN
5. 25' PUBLIC STORM DRAIN EASEMENT
6. APPROX LOCATION EXISTING SAS FORCE MAIN
7. EXISTING 12" WATER LINE
8. FUTURE CURB AND GUTTER
9. CONSTRUCTION CENTERLINE
10. EXISTING CURB AND GUTTER
11. FUTURE STORM DRAIN
12. EXISTING EMERGENCY SPILLWAY
13. PROPOSED 1 SECTION OF 48" SD WITH PLUG

CENTERLINE DATA

ALIGNMENT	BEARING	DISTANCE
UNIVERSE BLVD.	N 00° 16' 10" E	3677.38'
TREELINE AVE.	N 90° 00' 00" E	610.93'

NORTHING & EASTING POINT TABLE

POINT #	NORTHING	EASTING
1	1522945.67	357570.61
2	1522945.68	357579.84
3	1523304.20	357581.53
4	1523608.61	357582.96
5	1523618.58	357583.01

Tracts 2, 3 & 4 - The Trails - unit 4
Public Drainage Easement
Doc: 2011102117
Date: 11/08/2011
Agreement & Covenant
Doc: 2011102118
Date: 11/08/2011

RECORD DRAWINGS

SCALE: 1" = 50'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc.
tecinc@yahoo.com
P.O. BOX 65700 ALBUQUERQUE, NM 87193
PHONE: (505) 271-2199
FAX: (505) 830-9549

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

UNIVERSE BLVD. STORM DRAIN
TREELINE AVE & UNIVERSE BLVD. STORM DRAIN PLAN AND PROFILE

Design Review Committee: APPROVED FEB 06 2013
City Engineer Approval: APPROVED FEB 06 2013 CITY ENGINEER
Date Design Update

NO.	DATE	REMARKS	BY
		REVISIONS	

DESIGNED BY DEM DATE 11-8-12
DRAWN BY DEM DATE 11-8-12
CHECKED BY DST DATE 11-8-12

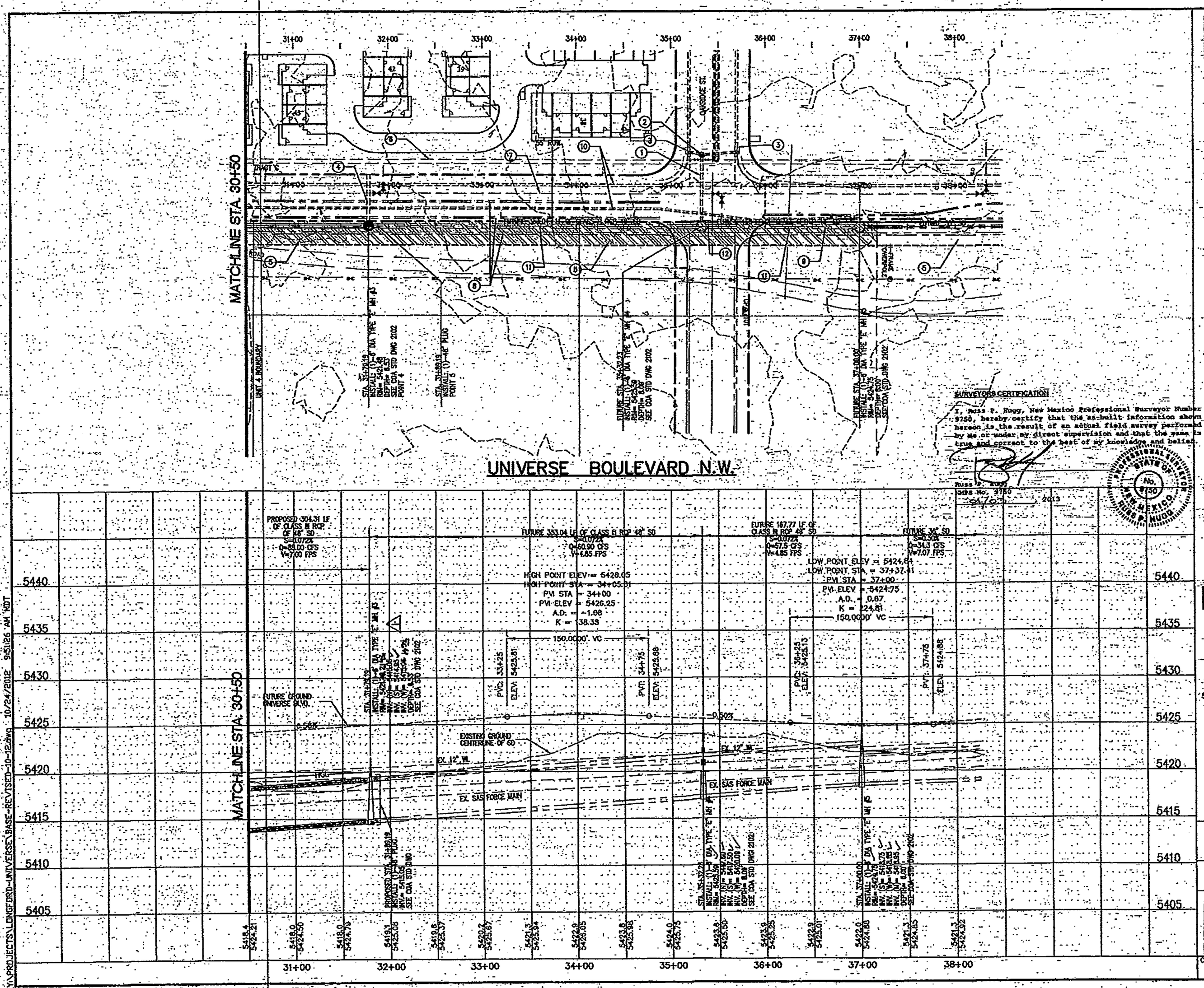
AS BUILT INFORMATION
CONTRACTOR
BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,973.48
Ground-to-Grid Factor = 0.999968354
AVG. = -00°16'30"
SLD 1929 ELEVATION = 5429.35
MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE
ACS BRASS TABLET STAMPED "2-B10 1980" BY ENGRG. DIV. DATE 6/13
Geographic Position (NAD 1927) BY ZTEC DATE 5/13
N.M. State Plane Coordinates (Central Zone) BY SURV. DIV. DATE 6/13
X= 357,543.73 Y= 1,527,973.48 BY SURV. DIV. DATE 6/13
Ground-to-Grid Factor = 0.999968354 BY SURV. DIV. DATE 6/13
AVG. = -00°16'30"
SLD 1929 ELEVATION = 5429.35

ENGINEER'S SEAL

City Project No. 693382
Zone Map No. C-9-Z
Sheet 2 Of 4

\\A:\PROJECTS\LINGFORD-UNIVERSE\BASE-REVISED-10-12.dwg 11/8/2012



NOTE:
CONTRACTOR TO FIELD VERIFY INVERTS AT OF EXISTING STORM DRAIN PRIOR TO STARTING CONSTRUCTION OF STORM DRAIN.

KEYED NOTES:

1. EXISTING 18" STORM DRAIN
2. EXISTING STORM DRAIN MANHOLE
3. EXISTING TYPE A STORM DRAIN INLET
4. EXISTING 30" STORM DRAIN
5. 25' PUBLIC STORM DRAIN EASEMENT Doc: 2013014060 Date: 03/06/2013
6. APPROX LOCATION EXISTING SAS FORCE MAIN
7. EXISTING 12" WATER LINE
8. FUTURE CURB AND GUTTER
9. CONSTRUCTION CENTERLINE
10. EXISTING CURB AND GUTTER
11. FUTURE STORM DRAIN
12. EXISTING BARRICADE SIGNS

NORTHING & EASTING POINT TABLE

POINT #	NORTHING	EASTING
4	1523608.51	357582.96
5	1523618.58	357583.01

CENTERLINE DATA

ALIGNMENT	BEARING	DISTANCE
UNIVERSE BLVD.	N 00° 16' 10" E	3677.38'

SURVEYORS CERTIFICATION

I, Russ P. Rugg, New Mexico Professional Surveyor Number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ P. Rugg
NMPS No. 9750
04/02/2013

RECORD DRAWINGS

SCALE: 1" = 50'

SCALE: 1" = 5'

Thompson Engineering Consultants, Inc.
P.O. BOX 65700
ALBUQUERQUE, NM 87193
(505) 221-2189
(505) 830-0248

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

UNIVERSE BLVD. STORM DRAIN
UNIVERSE BLVD. STORM DRAIN STA. 30+50 TO STA. 38+00 PLAN AND PROFILE

Design Review Committee: APPROVED FEB 06 2013
City Engineer Approval: APPROVED FEB 06 2013 CITY ENGINEER

City Project No. 693382 | Zone Map No. C-9-Z | Sheet 3 Of 4

AS BUILT INFORMATION
CONTRACTOR
AS BUILT INFORMATION
MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

BENCH MARKS
DATE ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
Y= 357,543.73 Y= 1,527,973.48
Ground-to-Grid Factor = 0.99966354
LOC= -0016'30"
SLD 1929 ELEVATION = 5429.35

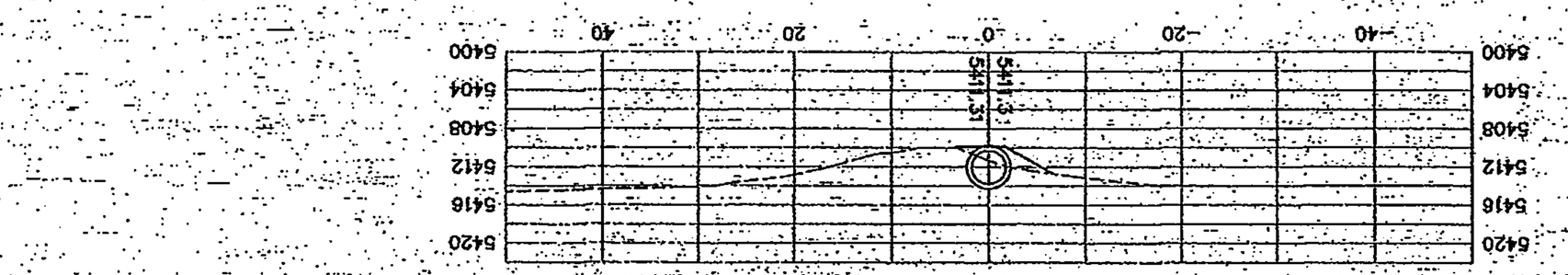
SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

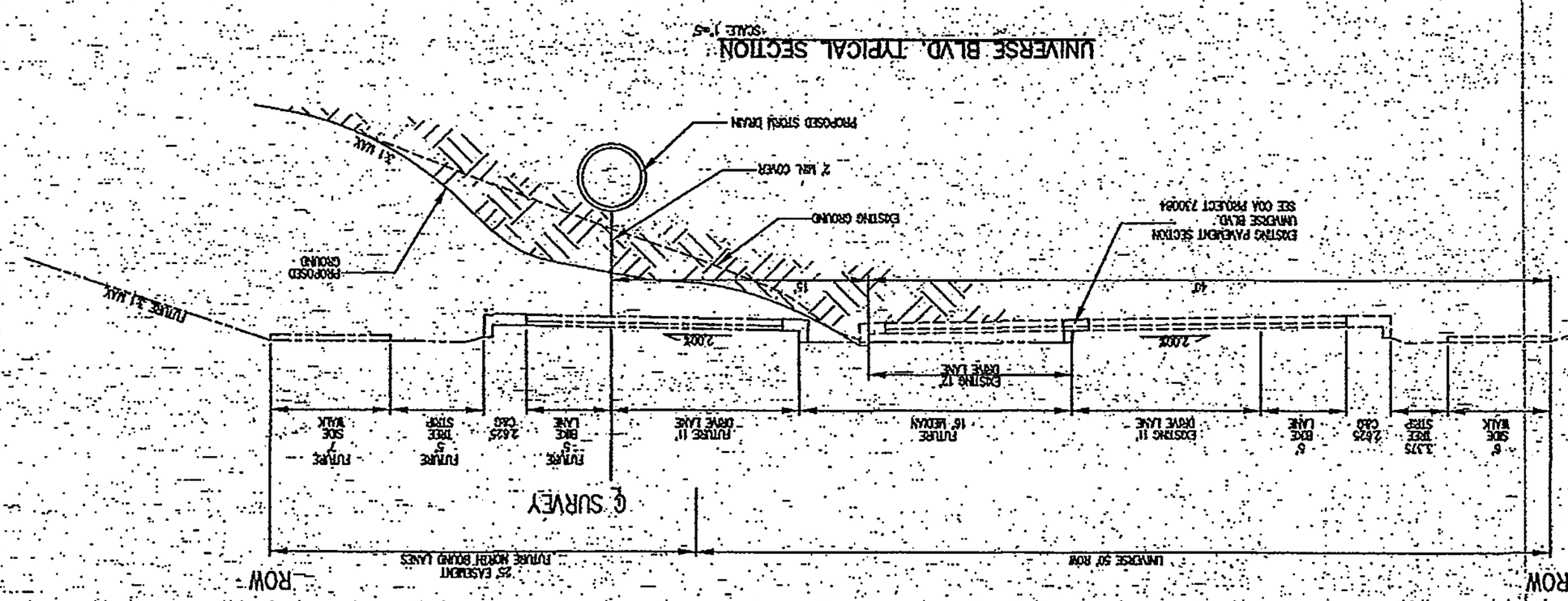
ENGINEERS SEAL

REMARKS
REVISIONS
NO. DATE BY

DESIGNED BY DEM DATE 11-8-12
DRAWN BY DEM DATE 11-8-12
CHECKED BY DBT DATE 11-8-12

Y:\PROJECTS\LONGFORD-UNIVERSE\BASE-REVISED-10-12.DWG 10/24/2012 9:51:26 AM MDT





NOTE:
CONTRACTOR TO FIELD VERIFY INVERTS AT
OF EXISTING STORM DRAIN PRIOR TO STARTING
CONSTRUCTION OF STORM DRAIN.

SURVEY INFORMATION

NO.	FIELD NOTES BY	DATE

ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,973.48
Ground-to-Grid Factor = 0.99968354
IGG= -00°16'50"
SLD 1928 ELEVATION = 5423.35

BENCH MARKS

AS BUILT INFORMATION
CONTRACTOR
SUN-TEK DATE 9/13
SUN-TEK DATE 9/13
BHI DATE 9/13
SUN-TEK DATE 9/13
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

SURVEY INFORMATION

ENGINEERS SEAL

NO.	BY	DATE	REMARKS

REVISIONS

RECORD DRAWINGS

Thompson Engineering Consultants, Inc.
www.thompson
P.O. Box 6570
Albuquerque, NM 87197
Phone: (505) 271-2199
Fax: (505) 850-9249

CITY OF ALBUQUERQUE
DEPARTMENT OF MUNICIPAL DEVELOPMENT
ENGINEERING DIVISION

UNIVERSE BLVD. STORM DRAIN
TYPICAL SECTION

Design Review Committee: APPROVED FEB 04 2013
City Engineer Approval: APPROVED FEB 04 2013 CITY ENGINEER
Date / Initials
Date / Initials

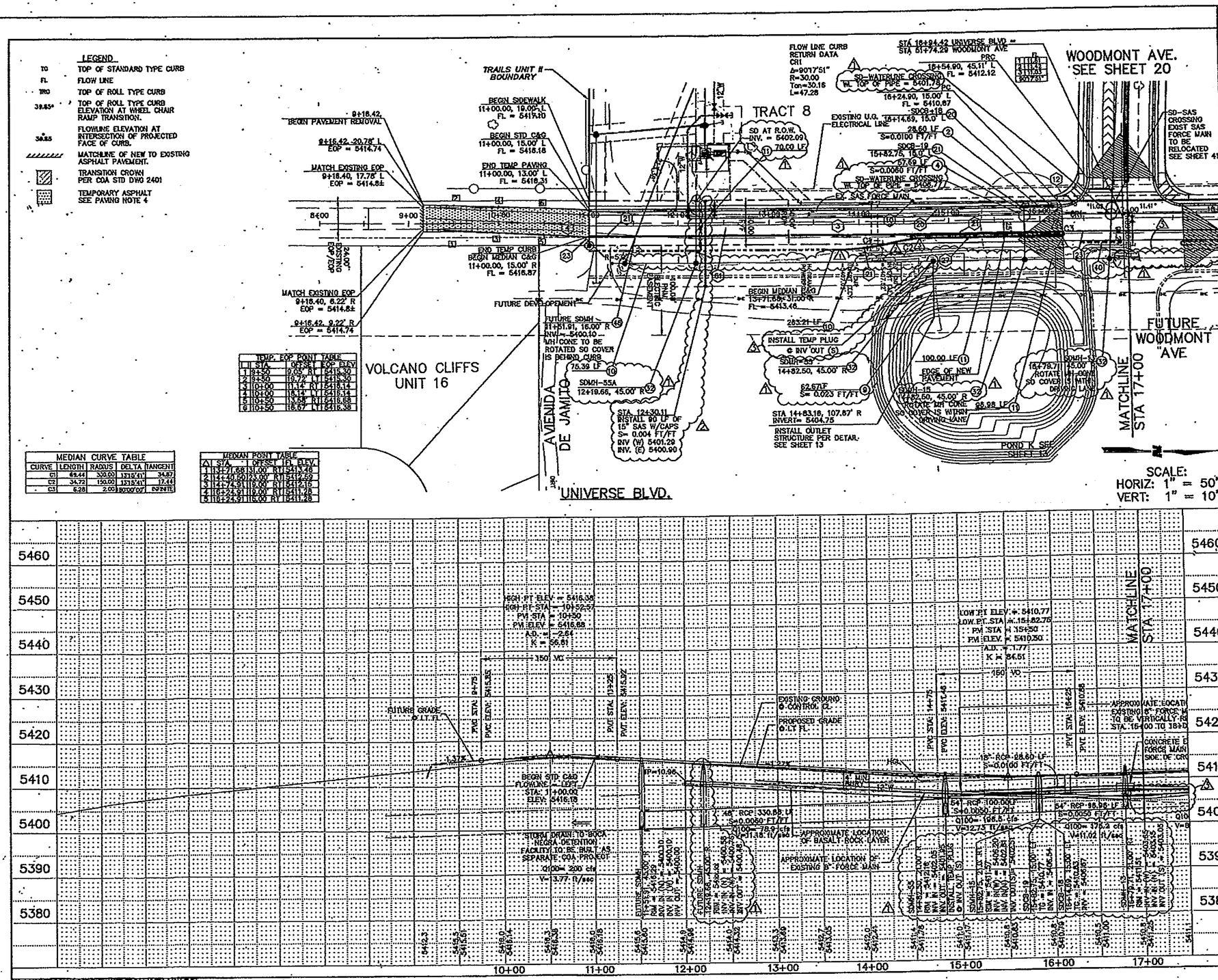
City Project No. 693382 | Zone Map No. C-9-Z | Sheet 4 of 4

CHECKED BY DBT DATE 11-8-12
DRAWN BY DGM DATE 11-8-12
DESIGNED BY DGM DATE 11-8-12

DESIGN

PROJECTS\LONGFRD-UNIVERSE\BASE-REVISED-UB-12.dwg 11/8/2012

Use This Sheet



TEMP. EOP POINT TABLE			
	STA.	OFFSET	EOP ELEV
1	9+50	9.05' RT	5413.30
2	9+50	19.72' LT	5413.30
3	10+00	11.14' RT	5416.14
4	10+00	16.14' LT	5416.14
5	10+50	13.58' RT	5416.68
6	10+50	16.67' LT	5416.38

MEDIAN CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	69.44	300.00	13°15'41"	34.87
C2	34.72	150.00	13°15'41"	17.44
C3	6.28	2.00	90°00'00"	INFINITE

MEDIAN POINT TABLE				
	STA.	OFFSET	FL	ELEV.
1	13+71.68	13.00'	RT	5413.46
2	14+40.50	23.00'	RT	5412.69
3	14+74.91	19.00'	RT	5412.16
4	15+24.91	19.00'	RT	5411.28
5	16+24.91	19.00'	RT	5411.28

PAVING CONSTRUCTION NOTES

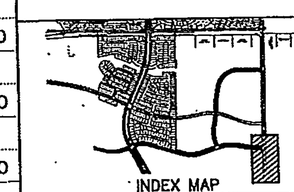
I.D.#	DESCRIPTION
3	BUILD ARTERIAL ASPHALT PAVING, PER TYPICAL SECTION (SEE SHEET 6)
4	BUILD TEMPORARY ARTERIAL ASPHALT PAVING PER DETAIL (SEE SHEET 5)
10	BUILD 6' PCC SIDEWALK, PER COA STD. DTL. 2430
12	BUILD PCC WHEELCHAIR RAMP, PER COA STD. DETAIL 2441, CASE #2
20	INSTALL 8" PCC STD. CURB AND GUTTER, PER COA DETAIL 2415A
21	BUILD PCC MEDIAN CURB AND GUTTER, PER COA DETAIL 2415B
23	BUILD TEMP ASPHALT CURB TYPE C PER COA STD DWG 2415B
27	BUILD TEXTURED CONCRETE MEDIAN PAVEMENT, PER COA STD. DWG. 2408 & 2501
40	INSTALL TYPE III BARRICADES
61	REMOVE AND DISPOSE EXISTING ASPHALT PAVEMENT

STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
2	INSTALL 18" STORM DRAIN PIPE
4	INSTALL 24" STORM DRAIN PIPE
9	INSTALL 42" STORM DRAIN PIPE
10	INSTALL 48" STORM DRAIN PIPE
11	INSTALL 54" STORM DRAIN PIPE
20	INSTALL TYPE A CATCH BASIN SINGLE GRATE SINGLE THROAT PER COA STD. DTL. 2201
21	INSTALL TYPE A CATCH BASIN SINGLE GRATE AND DOUBLE WING PER COA STD. DTL. 2201
32	INSTALL 5' DIA. MANHOLE PER COA STD. DTL. 2101
45	INSTALL 48" STORM DRAIN PLUG
46	INSTALL 54" STORM DRAIN PLUG

GENERAL NOTES

1. ALL CURB RETURNS HAVE 30' RADIUS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHER- WISE INDICATED
2. ALL STATIONS AND OFFSETS ARE TO THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHER- WISE INDICATED
3. ALL CURB LAYOUT DATA IS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHER- WISE INDICATED. CURB LAYOUT THAT IS A DIRECT OFFSET OF PLATTED BASELINE IS NOT SHOWN
4. ADJUST ALL MANHOLE RIMS AND VALVE COVERS PER COA STD. DWG. 2450



AS-BUILT INFORMATION
CONTRACTOR DATE
WORK STAKED BY DATE
STAKING ACCEPTED BY DATE
FIELD VERIFIED BY DATE
DRAWINGS MARKED FOR REVISION BY DATE

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
Y= 1,527,976.49
X= 357,543.73
Ground-to-Grid Factor = 0.9996634
ΔC = -00°16'30"
SLD 1929 Elevation = 5429.35

MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL
STATE OF NEW MEXICO
RICHARD J. SALAZAR
(16234)
PROFESSIONAL ENGINEER

NO.	DATE	REMARKS	BY
1	8/11/06	SD CHANGE ORDER	SS
2	8/11/06	SAS ADDITION	
3	1/02/07	DELETE MAINLINE SD FROM	

REVISIONS

WILSON & COMPANY, ENGINEERS & ARCHITECTS
2600 THE AVENUE ROAD S.E. SUITE 100 RIO RANCHO, NEW MEXICO 87124 (505) 898-8021

DESIGNED BY	DMD	DATE JAN 05
DRAWN BY	DMD	DATE JAN 05
CHECKED BY	SJS	DATE JAN 05

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

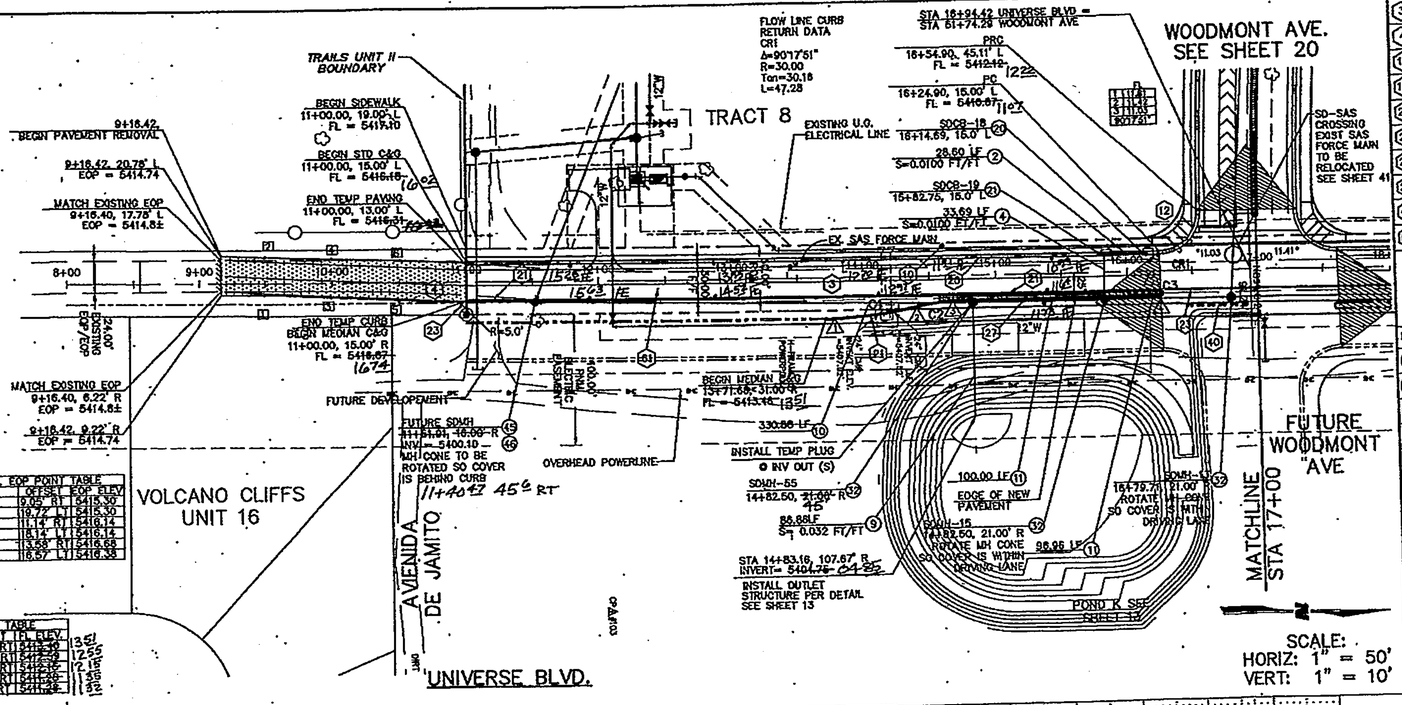
THE TRAILS UNIT II
PAVING AND STORM DRAIN PLAN & PROFILE
UNIVERSE BLVD.

Design Review Committee: APPROVED APR 18 2007 DESIGN REVIEW COMMITTEE
City Engineer: APPROVED APR 11 2007 CITY ENGINEER
Last Design Update | M.D./Day/Yr. | M.D./Day/Yr.

City Project No. 730084 | Zone Map No. C-9-Z | Sheet 27A of 51

LEGEND

- TC — TOP OF STANDARD TYPE CURB
- FL — FLOW LINE
- TRC — TOP OF ROLL TYPE CURB
- 36.85* — TOP OF ROLL TYPE CURB ELEVATION AT WHEEL CHAIR RAMP TRANSITION.
- 36.85 — FLOWLINE ELEVATION AT INTERSECTION OF PROJECTED FACE OF CURB.
- MATCHLINE OF NEW TO EXISTING ASPHALT PAVEMENT.
- TRANSITION CROWN PER COA STD DWG 2401
- TEMPORARY ASPHALT SEE PAVING NOTE 4



TEMP. EOP POINT TABLE				
	STA.	OFFSET	EOP ELEV.	
1	9+50	9.05 RT	5415.30	
2	9+50	19.72' LT	5415.30	
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4	10+00	15.14' LT	5416.14	
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MEDIAN CURVE TABLE				
CURVE	LENGTH	RADIUS	DELTA	TANGENT
C1	69.44	300.00	13°15'41"	34.87
C2	34.72	150.00	13°15'41"	17.44
C3	6.28	2.00	89°90'00"	INFINITE

MEDIAN POINT TABLE				
	STA.	OFFSET	FL ELEV.	
1	13+71.68	31.00' RT	5413.46	13.51
2	14+60.50	21.00' RT	5412.29	12.55
3	14+74.91	19.00' RT	5412.16	12.15
4	16+24.91	19.00' RT	5411.65	11.35
5	16+24.91	15.00' RT	5411.65	11.32

PAVING CONSTRUCTION NOTES

I.D.#	DESCRIPTION
3	BUILD ARTERIAL ASPHALT PAVING, PER TYPICAL SECTION. (SEE SHEET 5)
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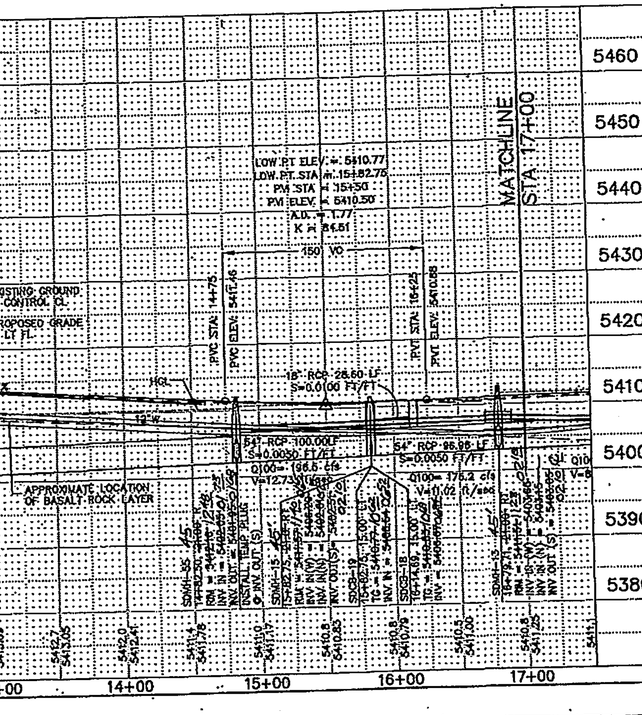
27	BUILD TEXTURED CONCRETE MEDIAN PAVEMENT, PER COA STD. DWG. 2406 & 2501
40	INSTALL TYPE III BARRICADES
51	REMOVE AND DISPOSE EXISTING ASPHALT PAVEMENT

STORM DRAIN CONSTRUCTION NOTES

I.D.#	DESCRIPTION
2	INSTALL 18" STORM DRAIN PIPE
4	INSTALL 24" STORM DRAIN PIPE
9	INSTALL 42" STORM DRAIN PIPE
10	INSTALL 48" STORM DRAIN PIPE
11	INSTALL 54" STORM DRAIN PIPE
20	INSTALL TYPE A CATCH-BASIN SINGLE GRATE SINGLE THROAT PER COA STD. DTL. 2201
21	INSTALL TYPE A CATCH BASIN SINGLE GRATE AND DOUBLE WING PER COA STD. DTL. 2201
32	INSTALL 8' DIA. MANHOLE PER COA STD. DTL. 2101
45	INSTALL 48" STORM DRAIN PLUG
46	INSTALL 54" STORM DRAIN PLUG

GENERAL NOTES

1. ALL CURB RETURNS HAVE 30' RADIUS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHER- WISE INDICATED
2. ALL STATIONS AND OFFSETS ARE TO THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHER- WISE INDICATED
3. ALL CURB LAYOUT DATA IS AT THEORETICAL FACE OF CURB (FLOWLINE) PER COA STD DWG 2415A, UNLESS OTHER- WISE INDICATED. CURB LAYOUT THAT IS A DIRECT OFFSET OF PLATTED BASELINE IS NOT SHOWN
4. ADJUST ALL MANHOLE RIMS AND VALVE COVERS PER COA STD. DWG. 2460

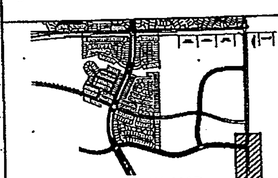


SURVEYOR'S CERTIFICATION

I, Russ P. Hugg, New Mexico Professional Surveyor Number 9750, Hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ P. Hugg
Hugg No. 9750
4-9-20 C.E.

PROFESSIONAL SURVEYOR — STATE OF NEW MEXICO — NO. 9750 — RUSS P. HUGG



INDEX MAP

WILSON & COMPANY
2600 THE AMERICAN ROAD S.E.
SUITE 100
RIO RANCHO, NEW MEXICO
87124
(505) 896-8021

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

THE TRAILS UNIT II
PAVING AND STORM DRAIN PLAN & PROFILE
UNIVERSE BLVD.

APPROVED — SEP 16 — DESIGN REVIEW COMMITTEE
APPROVED — JAN 6 2006 — CITY ENGINEER

Last Design Update	Yr./Day/Yr.	Yr./Day/Yr.

City Project No. 730084 | Zone Map No. C-9-Z | Sheet 27 of 51

ENGINEER'S SEAL — SALVADOR KONDRAT RODRIGUEZ — NEW MEXICO — 16291 — LICENSED PROFESSIONAL ENGINEER

AS-BUILT INFORMATION
CONTRACTOR SURV-TEK DATE 12-6-06
FIELD WORK BY SURV-TEK DATE 12-6-06
FIELD CALCULATION BY SURV-TEK DATE 12-6-06
DRAWING BY SURV-TEK DATE 12-6-06
MICRO-FILM INFORMATION
REVIEWED BY DATE

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1990"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,976.48
Ground-to-Grid Factor = 0.99956354
ΔX = -00°16'30"
SLD 1929 Elevation = 5429.35

SURVEY INFORMATION
FIELD NOTES
NO. | DATE | BY

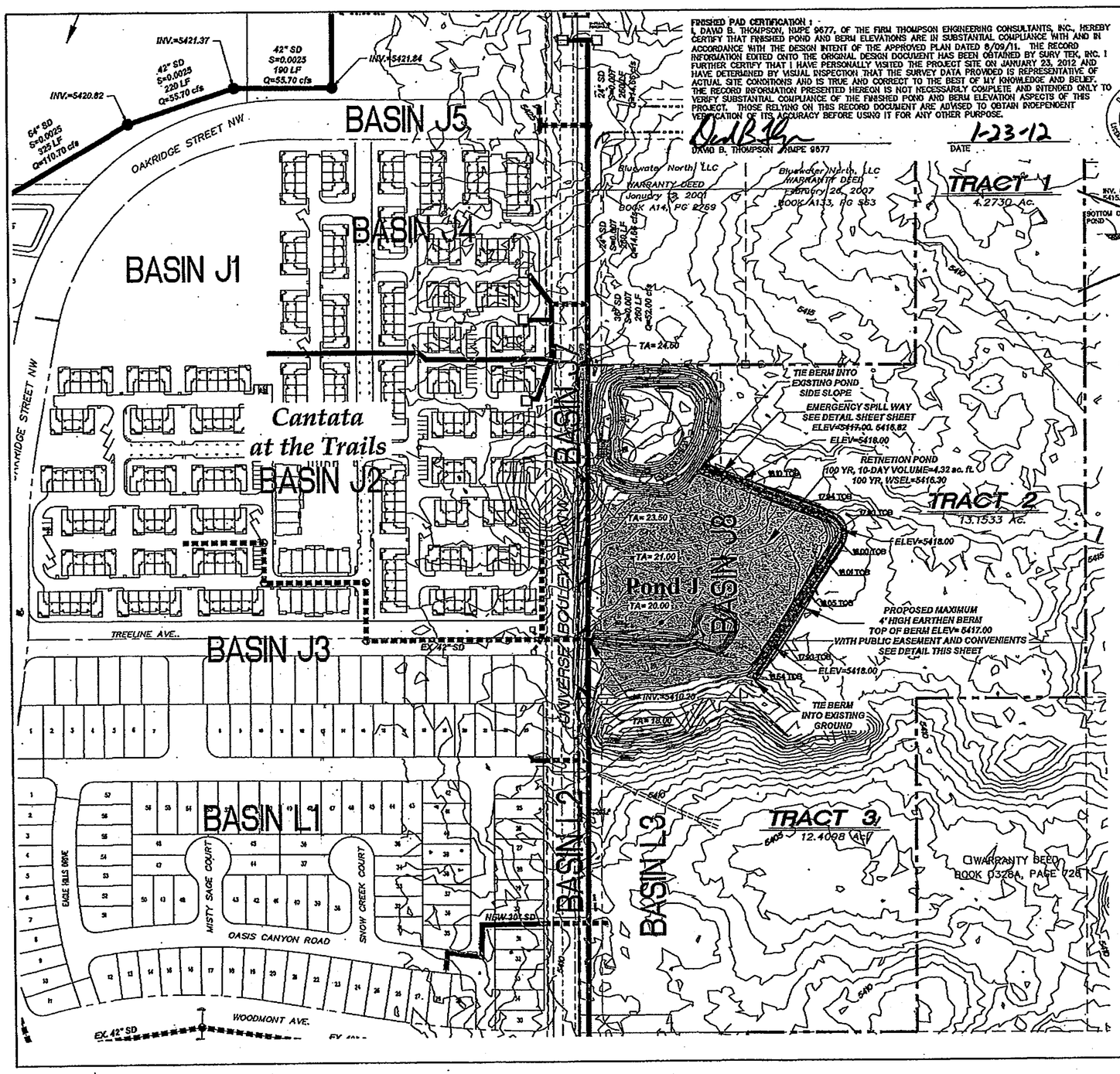
REVISIONS
NO. | DATE | REMARKS | BY

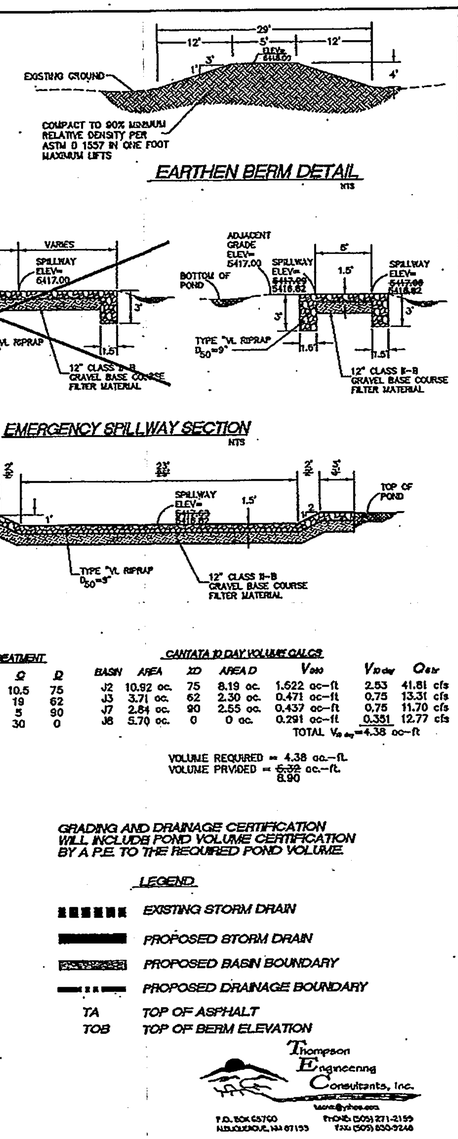
WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY DWD DATE JAN 05
DRAWN BY DWD DATE JAN 05
CHECKED BY SJS DATE JAN 05

FINISHED PAD CERTIFICATION :
I, DAVID B. THOMPSON, NMPE 9677, OF THE FIRM THOMPSON ENGINEERING CONSULTANTS, INC., HEREBY CERTIFY THAT FINISHED POND AND BERM ELEVATIONS ARE IN SUBSTANTIAL COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED 6/09/11. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY SURV TEK, INC. I FURTHER CERTIFY THAT I HAVE PERSONALLY VISITED THE PROJECT SITE ON JANUARY 23, 2012 AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE SURVEY DATA PROVIDED IS REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THE RECORD INFORMATION PRESENTED HEREON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THE FINISHED POND AND BERM ELEVATION ASPECTS OF THIS PROJECT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

DAVID B. THOMPSON NMPE 9677 — DATE 1-23-12

DAVID B. THOMPSON NEW MEXICO 9677 LICENSED PROFESSIONAL ENGINEER





PERCENT LAND TREATMENT

BASIN	A	B	C	D
J2	0	12.5	10.5	75
J3	0	19	19	62
J7	0	5	5	90
J8	0	70	30	0

CANTATA 10 DAY VOLUME CALCS

BASIN	AREA	1D	AREA D	V_{100}	$V_{10\,day}$	Q_{allo}
J2	10.92 ac.	75	8.19 ac.	1.622 ac-ft	2.53	41.81 cfs
J3	3.71 ac.	62	2.30 ac.	0.471 ac-ft	0.75	13.31 cfs
J7	2.84 ac.	90	2.55 ac.	0.437 ac-ft	0.75	11.70 cfs
J8	5.70 ac.	0	0 ac.	0.291 ac-ft	0.351	12.77 cfs

TOTAL $V_{10\,day}$ = 4.38 ac-ft

VOLUME REQUIRED = 4.38 ac.-ft.
VOLUME PROVIDED = ~~6.32~~ ac.-ft.
8.90

GRADING AND DRAINAGE CERTIFICATION WILL INCLUDE POND VOLUME CERTIFICATION BY A P.E. TO THE REQUIRED POND VOLUME.

LEGEND

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- PROPOSED BASIN BOUNDARY
- PROPOSED DRAINAGE BOUNDARY
- TA — TOP OF ASPHALT
- TOB — TOP OF BERM ELEVATION

Thompson Engineering Consultants, Inc.
P.O. BOX 65700 ALBUQUERQUE, NM 87193
PHONE: (505) 271-2159 FAX: (505) 830-9248

AS-BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY — DATE
INSPECTOR'S ACCEPTANCE BY — DATE
FINAL INSPECTION BY — DATE
SUBMITTED BY — DATE

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1990"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
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Ground-to-Grid Factor = 0.99965354
LOC= -00°16'30"
SLD 1929 ELEVATION = 5429.35

MICROFILM INFORMATION
DATE — RECORDED BY — NO.

SURVEY INFORMATION
FIELD NOTES
NO. — BY — DATE

ENGINEER'S SEAL

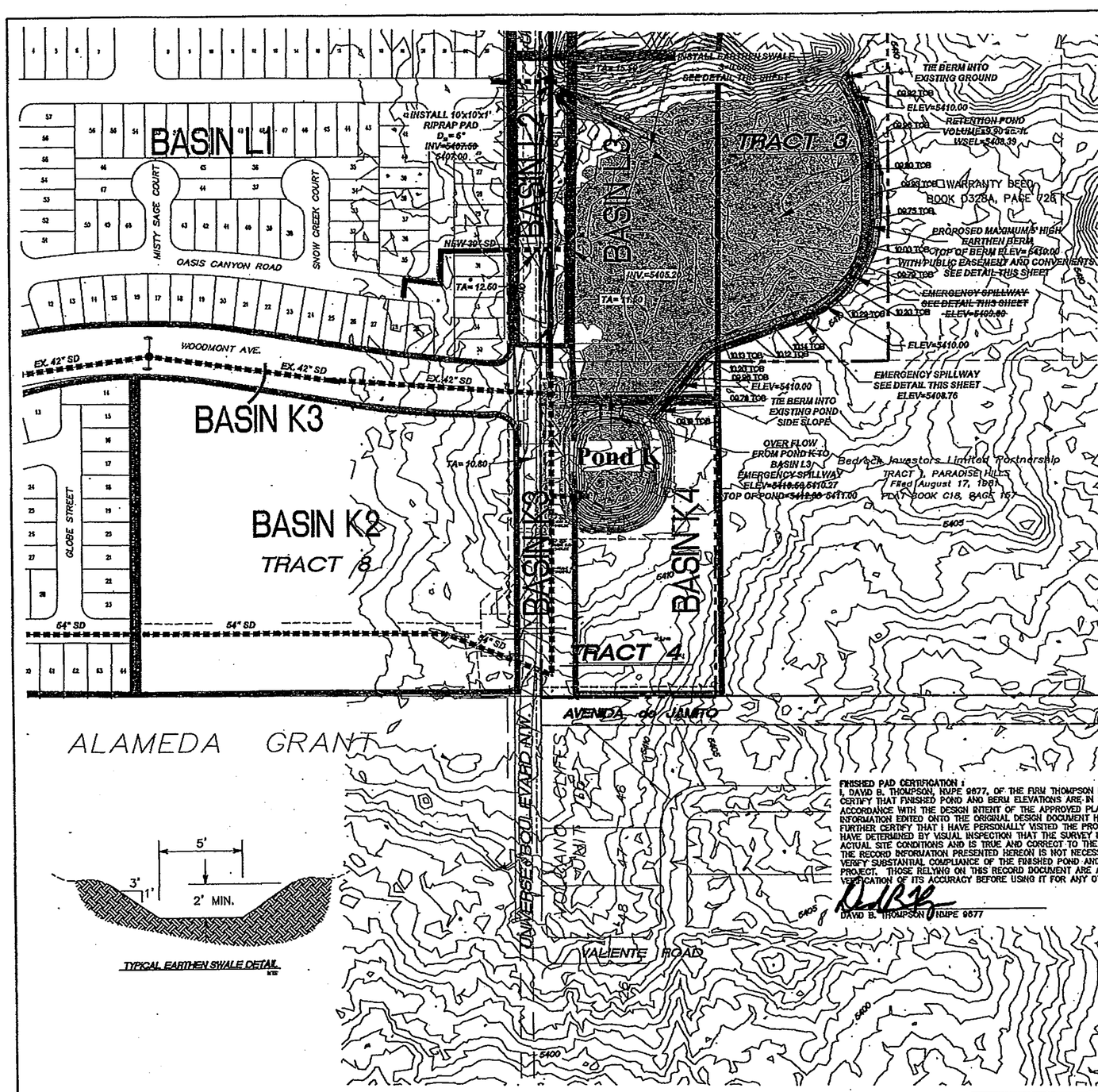
No.	Date	REMARKS	By
		REVISIONS	
		DESIGN	

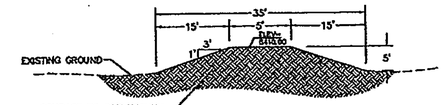
Designed By: DATE:
Drawn By: DATE:
Checked By: DATE:

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
CANTATA AT THE TRAILS
POND J GRADING PLAN

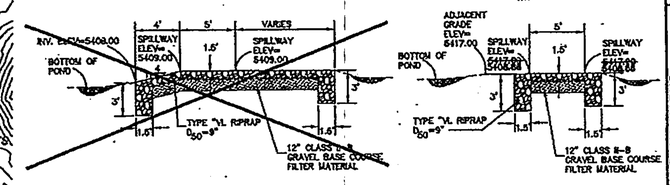
Design Review Committee | City Engineer Approval | Last Design Update | No./Date/Yr. | No./Date/Yr.

City Project No.	Zone Map No.	Sheet	Of
730078	C-9	13	14

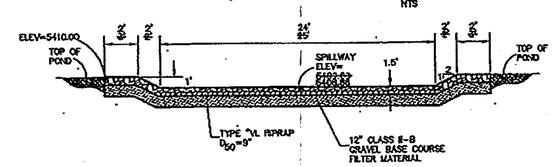




EARTHEN BERM DETAIL
NTS



EMERGENCY SPILLWAY SECTION
NTS



EMERGENCY SPILLWAY SECTION
NTS

*NEW 30" SD TO BE EXTENDED TO POND WITH THE CONSTRUCTION OF TAOS INFRASTRUCTURE.

VOLUME REQUIRED = 9.90 ac.-ft.
VOLUME PRVIDED = ~~14.83~~ ac.-ft.
14.84

GRADING AND DRAINAGE CERTIFICATION WILL INCLUDE POND VOLUME CERTIFACTION BY A P.E. TO THE REQUIRED POND VOLUME.

LEGEND

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN
- PROPOSED BASIN BOUNDARY
- PROPOSED DRAINAGE BOUNDARY
- TA — TOP OF ASPHALT

TYPICAL EARTHEN SWALE DETAIL
NTS

FINISHED PAD CERTIFICATION :
I, DAVID B. THOMPSON, NMPE 9677, OF THE FIRM THOMPSON ENGINEERING CONSULTANTS, INC., HEREBY CERTIFY THAT FINISHED POND AND BERM ELEVATIONS ARE IN SUBSTANTIAL COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED 8/12/11. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY SURV TEK, INC. I FURTHER CERTIFY THAT I HAVE PERSONALLY VISITED THE PROJECT SITE ON JANUARY 23, 2012 AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE SURVEY DATA PROVIDED IS REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THE RECORD INFORMATION PRESENTED HEREON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THE FINISHED POND AND BERM ELEVATION ASPECTS OF THIS PROJECT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

DAVID B. THOMPSON NMPE 9677 — DATE 1-23-12

DAVID B. THOMPSON NEW MEXICO 9677 LICENSED PROFESSIONAL ENGINEER

N

100' 50' 0 100' 200'
SCALE: 100'

AS-BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY — DATE
FIELD VERIFIED BY — DATE
MAP CORRECTED BY — DATE
COMPUTED BY — DATE
MICROFILM INFORMATION
RECORDED BY — DATE
M.S. —

BENCH MARKS
ACS BRASS TABLET STAMPED "2-B10 1980"
Geographic Position (NAD 1927)
N.M. State Plane Coordinates (Central Zone)
X= 357,543.73 Y= 1,527,973.48
Ground-to-Grid Factor = 0.999863354
ΔCG = -00°16'30"
SLD 1929 ELEVATION = 5429.35

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

No.	Date	REMARKS	BY
		REVISIONS	
		DESIGN	

Designed By: DATE:
Drawn By: DATE:
Checked By: DATE:

Thompson Engineering Consultants, Inc.
tecnm@yahoo.com
P.O. BOX 65760 ALBUQUERQUE, NM 87193
PHONE (505) 271-2199
FAX (505) 830-9248

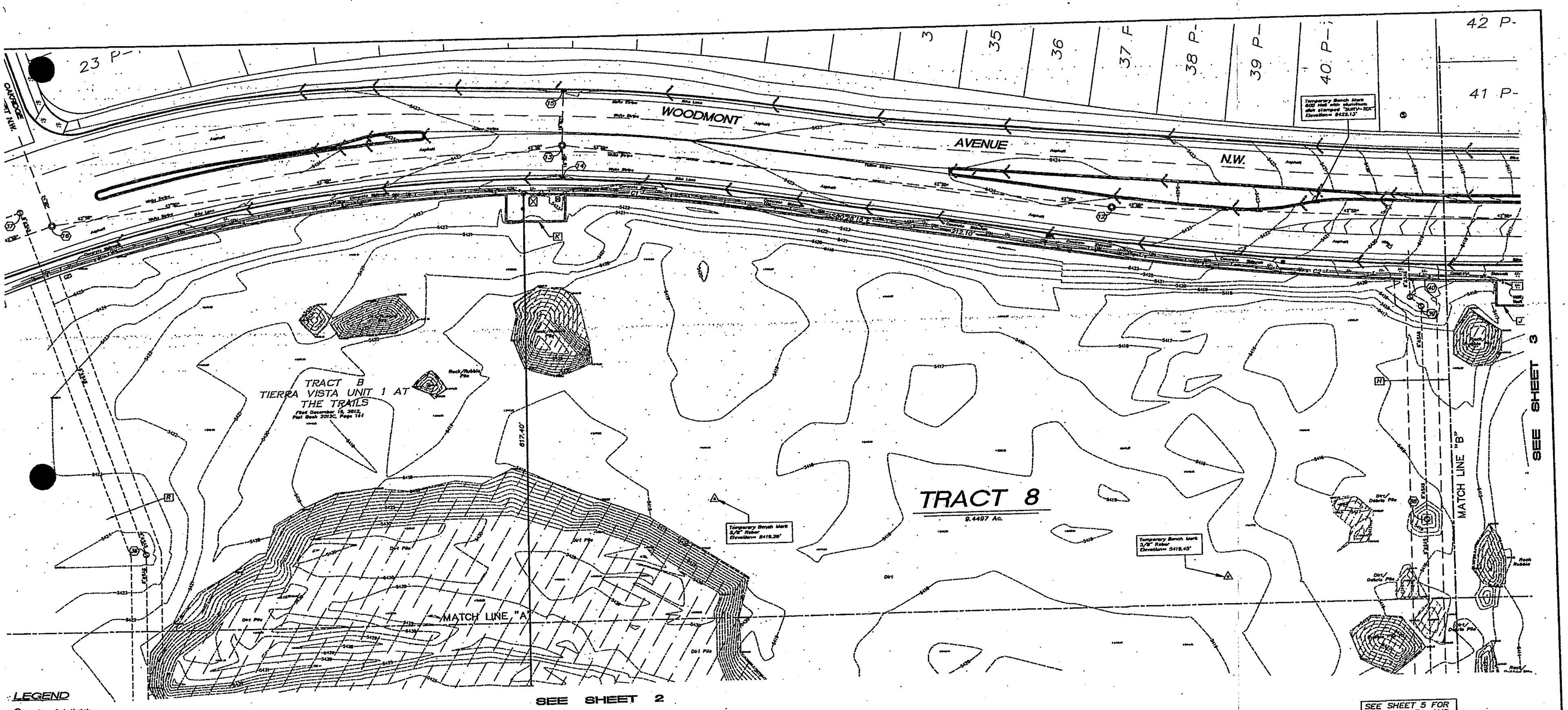
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TAOS UNIT 1 at the TRAILS
POND K GRADING PLAN

Design Review Committee	City Engineer Approval	Last Design Update	No./Date/Ft.	No./Date/Ft.

City Project No.	Zone Map No.	Sheet	Of
730077	C-09-Z	14	16

G:\projects\Vanguard Trails DGP\CANTATA-POND-CERT.dwg, 1/23/2012 11:11:07 PM



LEGEND

- Storm Drain Manhole
- Sanitary Sewer Manhole
- Sanitary Sewer Manhole as shown on provided plans – Not Found
- SAS — Sanitary Sewer Line
- SD — Storm Drain Line
- Power Pole
- Guy Wire
- OHW — Overhead Wires
- E — Electric Line
- CGU — Communications Line
- G — Gas Line
- W — Water Line
- Sanitary Sewer Clean-out
- Water Meter
- Water Valve
- Hydrant
- Cable Pedestal
- Electric Pedestal
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- Traffic Box
- Telephone Pedestal
- Overhead Traffic Light Pole
- Chain Link Fence
- Light Pole
- Bollard
- Concrete Symbol
- Gas Line Marker Post
- Sign

CURVE TABLE						
				CHORD		
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C3	54.86'	35.00'	34.88'	49.41'	N44°37'51"W	89°48'02"

UTILITY DISCLAIMER

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NEW MEXICO ONE CALL (NM811) LOCATE REQUEST CONFIRMATION LINE-SPOTTING TICKET NO. 2013172812, DATE: 4/25/2013, AND 2013190911, DATE: 5/7/2013.

UTILITIES LABELED WITH AN ASTERISK (*) ARE TRANSCRIBED FROM PROVIDED PLANS AND MUST BE VERIFIED BY LINE-SPOTTING.

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GENERAL NOTES

1. Bearings are New Mexico State Plane Grid Bearings (Central Zone – NAD83).
2. Distances are ground.
3. Distances along curved lines are arc lengths.
4. Record Plat or Deed bearings and distances, where they differ from those established by this field survey, are shown in parentheses ( ).

N

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

GENERAL NOTES, Continued

5. All corners found in place and held were tagged with a brass disk stamped "HUGG L.S. 9750" unless otherwise indicated hereon.
6. All corners that were set are either a 5/8" rebar with cap stamped "HUGG L.S. 9750" or a concrete nail with brass disk stamped "HUGG L.S. 9750" unless otherwise indicated hereon.
7. Vertical Datum is based upon the Albuquerque Control Survey Monument "7-C10", Elevation = 5425.21 (NAVD 1988)
8. Contour interval is one foot.
9. Field surveys were performed during the months of April and May, 2013.
10. Documents used in the preparation of this survey are as follows:
    a. Plat entitled "BULK LAND PLAT OF THE TRAILS UNIT 2 (BEING A REPLAT OF TRACTS G AND J, THE TRAILS AND UNPLATTED DEED PARCELS) WITHIN THE TOWN OF ALAMEDA GRANT IN PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO", filed in the office of the County Clerk of Bernalillo County, New Mexico, on October 18, 2004, in Plat Book 2004C, Page 332, as Document No. 2004148586.
11. Source information from Plans and markings have been combined with observed evidence of utilities to develop a view of those underground utilities. However, lacking excavation, the exact location of underground features cannot be accurately, completely and reliably depicted. Where additional or more detailed information is required, the client is advised that excavation may be necessary. Utilities marked with an asterisk (*) are from provided plans.
12. A Title Commitment was not provided for this property as part of the survey preparation. Recorded or unrecorded easements, conditions or restrictions that may be disclosed by such a report are not covered by this survey.

LEGAL DESCRIPTION

Tract 8 of the Trails Unit 2, City of Albuquerque, Bernalillo County, New Mexico, as the same is shown and designated on the plat entitled "BULK LAND PLAT OF THE TRAILS UNIT 2 (BEING A REPLAT OF TRACTS G AND J, THE TRAILS AND UNPLATTED DEED PARCELS) WITHIN THE TOWN OF ALAMEDA GRANT IN PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST, NEW MEXICO PRINCIPAL MERIDIAN, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO", filed in the office of the County Clerk of Bernalillo County, New Mexico, on October 18, 2004, in Plat Book 2004C, Page 332, as Document No. 2004148586.

FLOOD ZONE DETERMINATION

The subject property lies with "Zone X" (Areas determined to be outside the 0.2% annual chance floodplain) as shown on the National Flood Insurance Program Flood Insurance Rate Map Number 35001C0111C, Map revised September 26, 2008.

SURVEYORS CERTIFICATION

I, Russ P. Hugg, New Mexico Professional Surveyor Number 9750, hereby certify that this Topographic and Boundary Survey Plat was prepared from and actual ground survey performed by me or under my direct supervision; that I am responsible for this survey; that this survey is true and correct to the best of my knowledge and belief; and that this Topographic and Boundary Survey Plat and the field survey upon which it is based meet the Minimum Standards for Surveying in New Mexico; and that this survey is not a land division or subdivision as defined in the New Mexico Subdivision Act and that this is a Topographic and Boundary Survey Plat of one parcel.

Russ P. Hugg
NMPS No. 9750
May 17, 2013

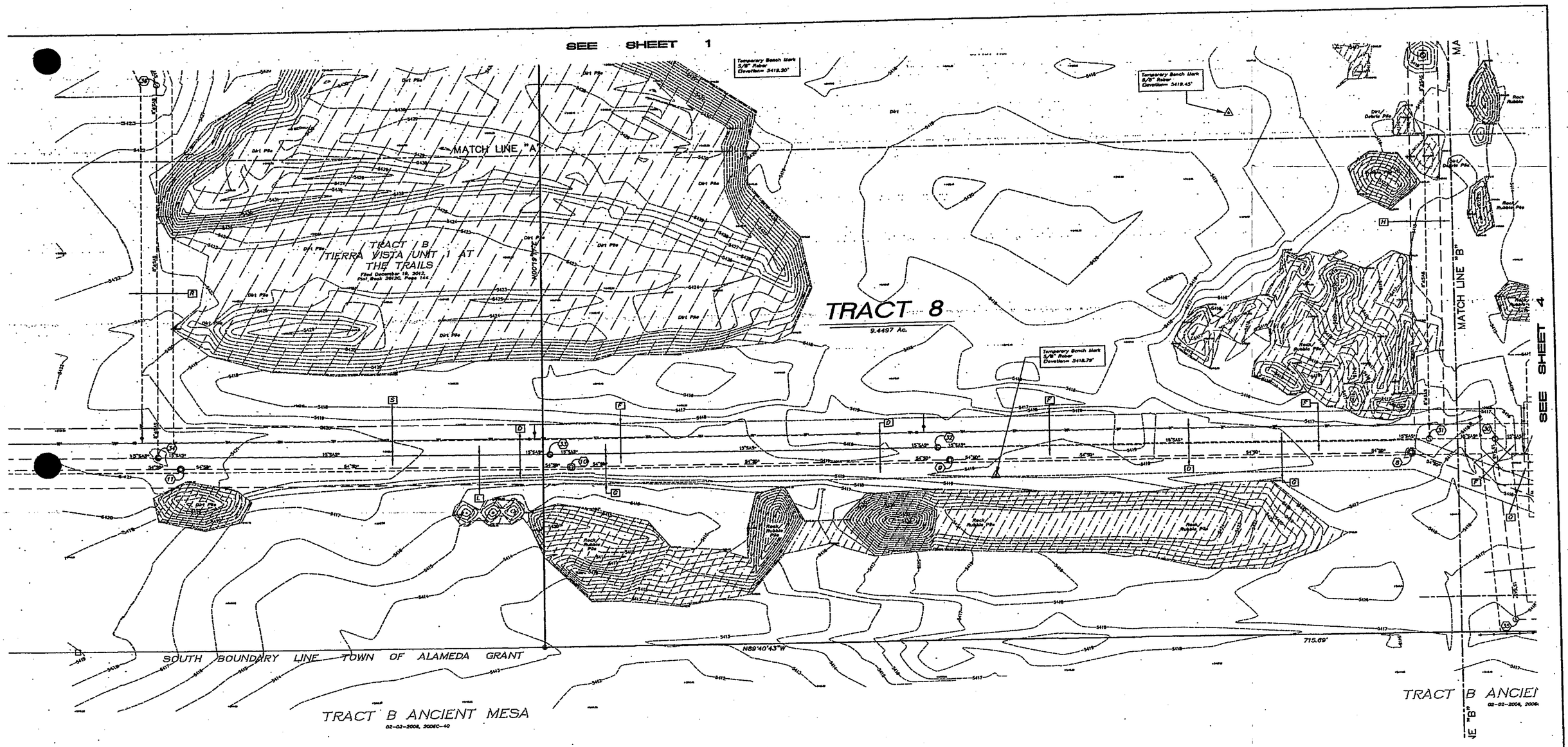
PROFESSIONAL SURVEYOR STATE OF NEW MEXICO No. 9750

TOPOGRAPHIC AND BOUNDARY SURVEY OF TRACT 8 THE TRAILS UNIT 2

WITHIN
THE TOWN OF ALAMEDA GRANT
IN
PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST
NEW MEXICO PRINCIPAL MERIDIAN
CITY OF ALBUQUERQUE
BERNALILLO COUNTY, NEW MEXICO
MAY 2013

SHEET 1 OF 5

SURVTEK, INC.



CURVE TABLE						
				CHORD		
CURVE	LENGTH	RADIUS	TANGENT	CHORD	BEARING	DELTA
C1	149.02'	951.00'	74.66'	148.87'	N84°57'35"W	8°58'41"
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SEE SHEET 5 FOR INVERT DATA AND KEYED EASEMENTS

UTILITY DISCLAIMER

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N

GRAPHIC SCALE

20 0 15 30 60 120

(IN FEET)

LEGEND

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- Guy Wire
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- Water Valve
- Hydrant
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- Electric Pedestal
- Electric Transformer
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- Traffic Box
- Telephone Pedestal
- Overhead Traffic Light Pole
- Chain Link Fence
- Light Pole
- Bollard
- Concrete Symbol
- Gas Line Marker Post
- Sign
- Well
- Water Manhole
- Electric Manhole
- R.T.D.U. A.B.A. Raised Truncated Dome Unit

TOPOGRAPHIC AND BOUNDARY SURVEY OF

TRACT 8

THE TRAILS UNIT 2

WITHIN

THE TOWN OF ALAMEDA GRANT

IN

PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST

NEW MEXICO PRINCIPAL MERIDIAN

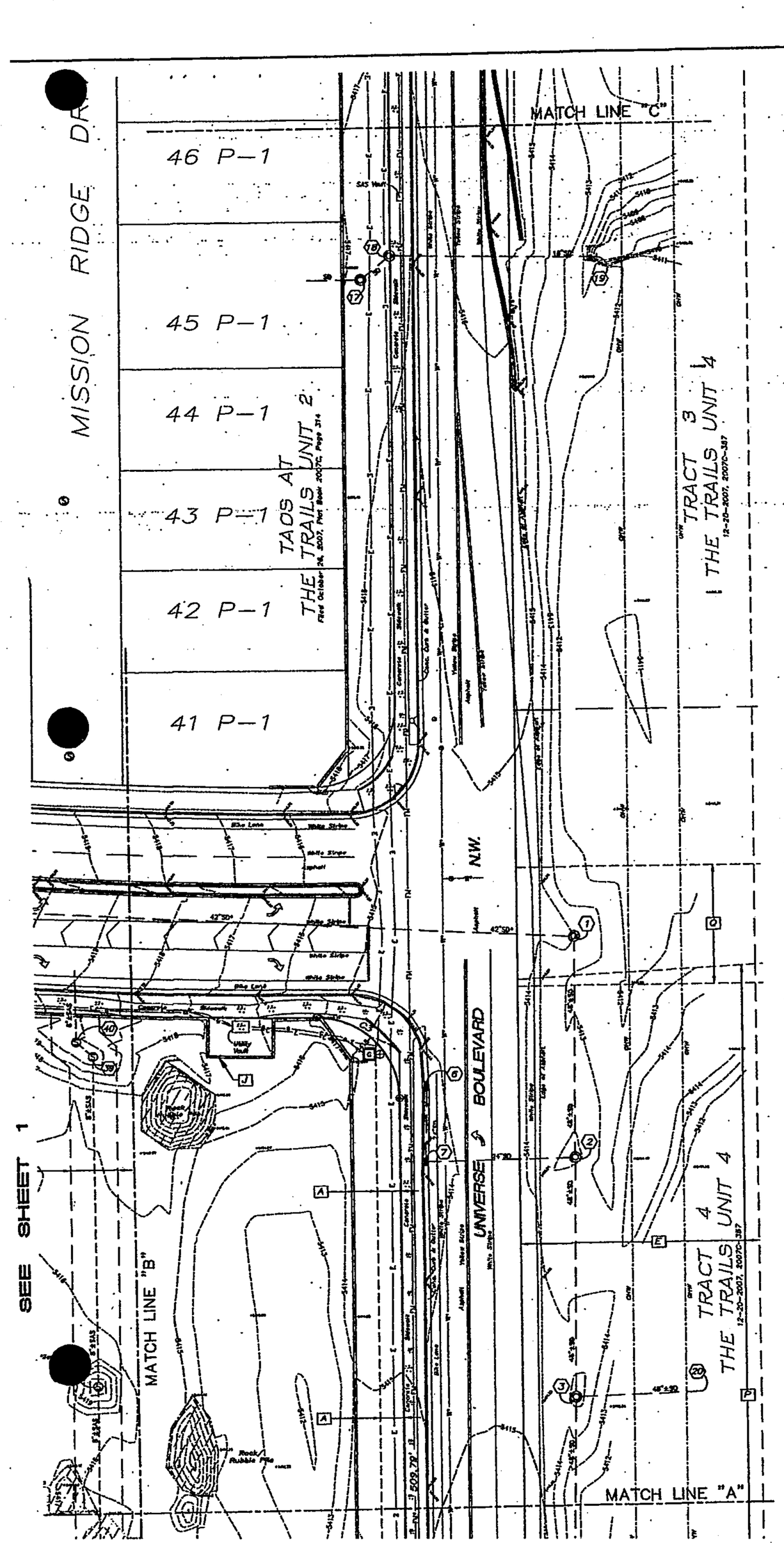
CITY OF ALBUQUERQUE

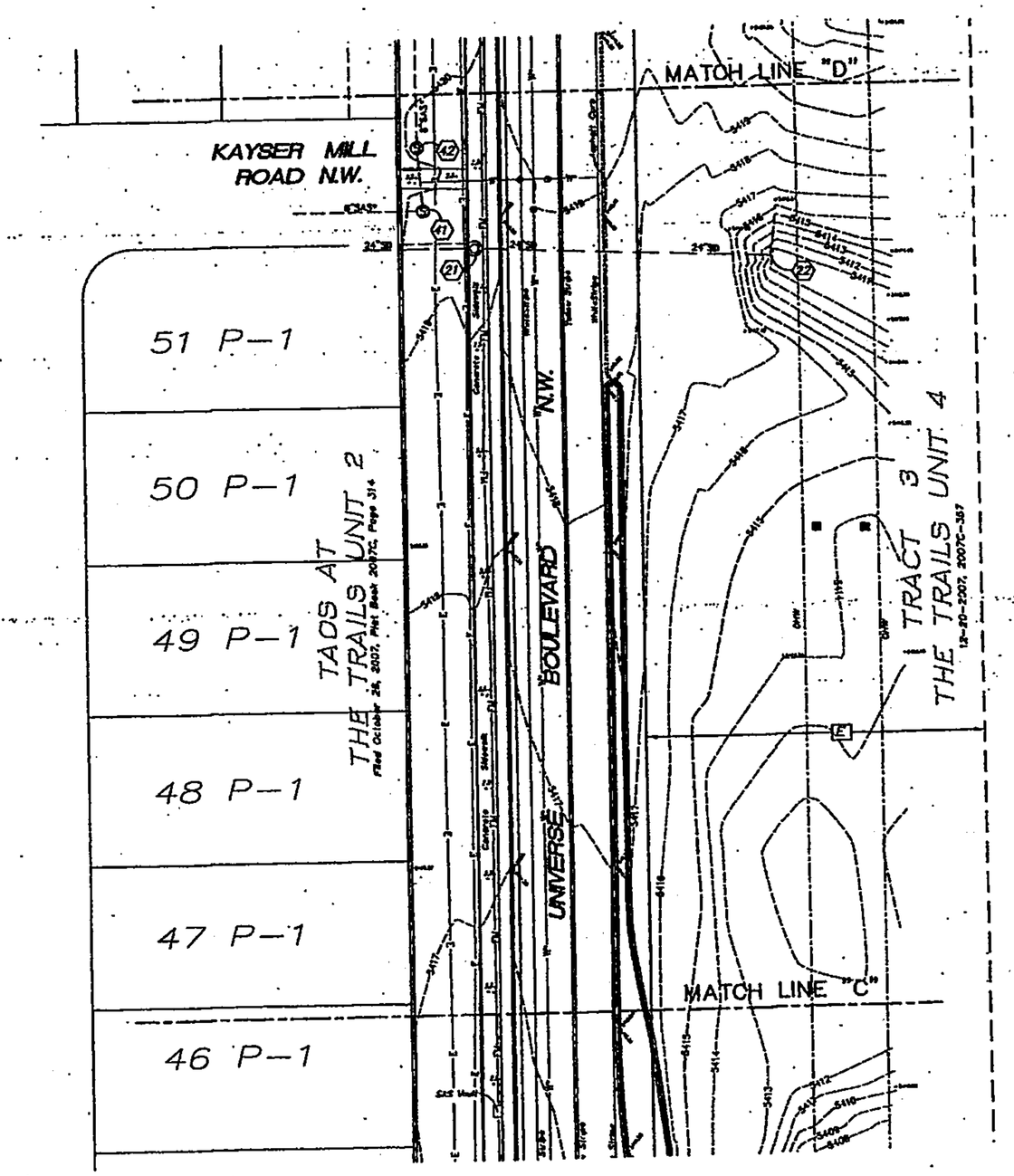
BERNALILLO COUNTY, NEW MEXICO

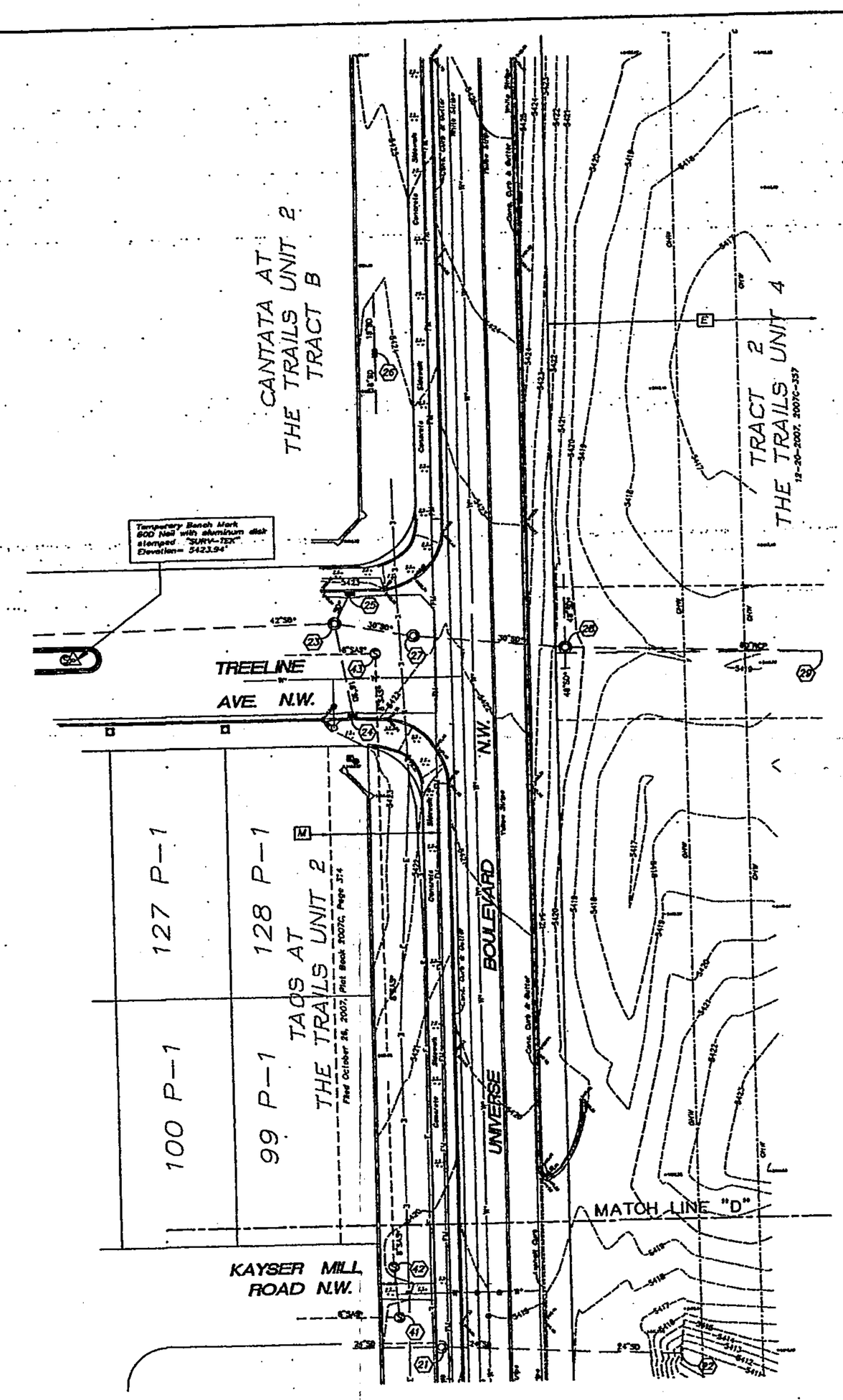
MAY 2013

SHEET 2 OF 5

SURVTEK, INC.







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- Overhead Traffic Light Pole
- Chain Link Fence
- Light Pole
- Bollard
- Concrete Symbol
- Gas Line Marker Post
- Sign
- Wall
- Water Manhole

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THE RETAINING OF A PRIVATE UTILITY LINE-SPOTTING COMPANY MAY BE NECESSARY FOR COMPLETE UTILITY LINE-SPOTTING OF A SUBJECT PROPERTY.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

TOPOGRAPHIC AND BOUNDARY SURVEY OF

TRACT 8

THE TRAILS UNIT 2

WITHIN

THE TOWN OF ALAMEDA GRANT

IN

PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST

NEW MEXICO PRINCIPAL MERIDIAN

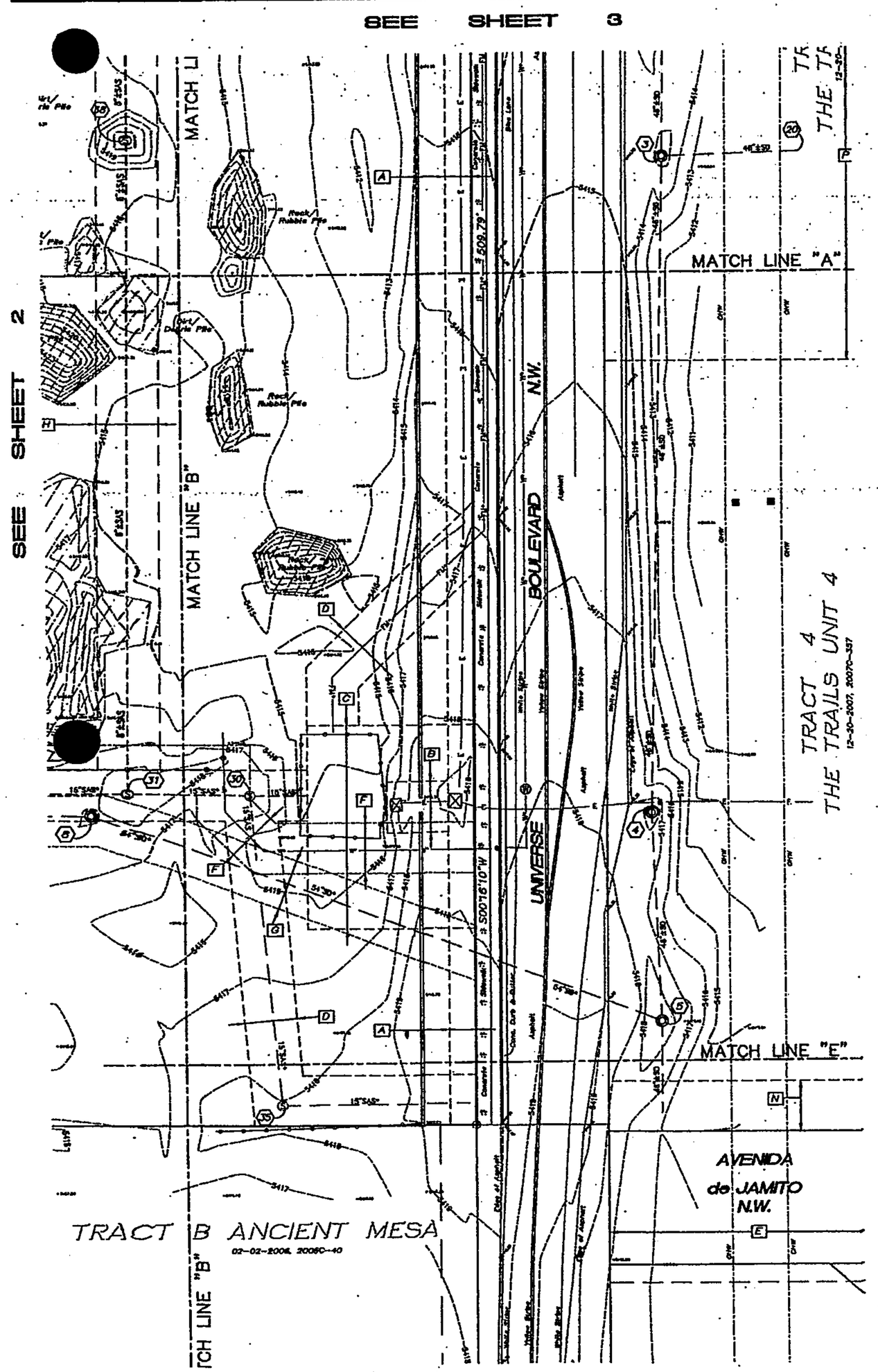
CITY OF ALBUQUERQUE

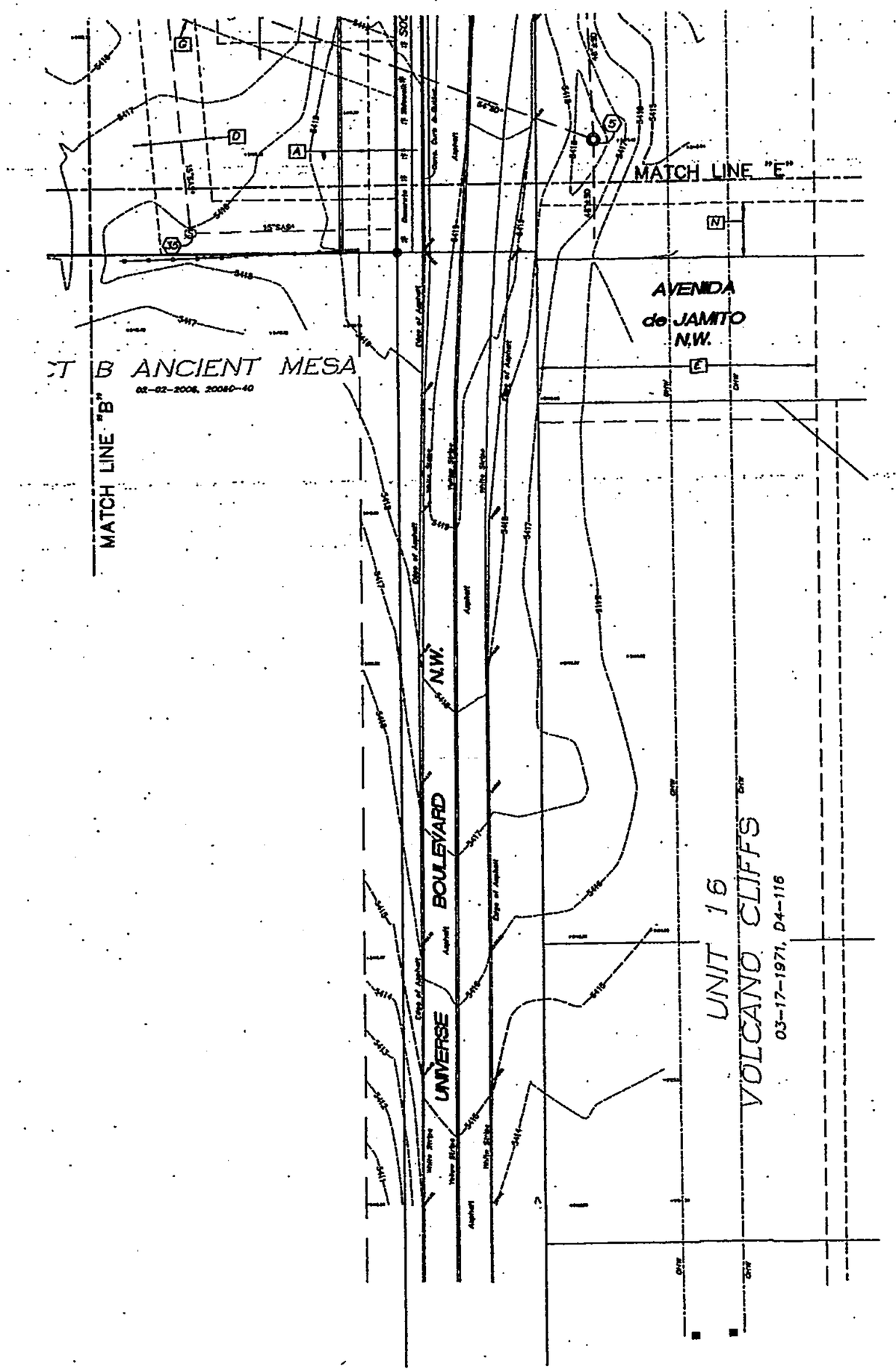
BERNALILLO COUNTY, NEW MEXICO

MAY 2013

SHEET 3 OF 5

SURVTEK, INC.





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(IN FEET)

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NEW MEXICO PRINCIPAL MERIDIAN

CITY OF ALBUQUERQUE

BERNALILLO COUNTY, NEW MEXICO

MAY 2013

SURVTEK, INC.

INVERT DATA

(1) Storm Drain MH
Rim= 5414.06'
Inv.= 5406.03' (N)
Inv.= 5403.54' (S)

(2) Storm Drain MH
Rim= 5414.22'
Inv.= 5405.42' (N)
Inv.= 5405.37' (S)
Inv.= 5405.57' (W)

(3) Storm Drain MH
Rim= 5415.29'
Inv.= 5404.69' (N)
Inv.= 5404.47' (S)
Inv.= 5405.09' (E)

(4) Storm Drain MH
Rim= 5418.09'
Inv.= 5403.93' (N)
Inv.= 5403.54' (S)

(5) Storm Drain MH
Rim= 5418.66'
Inv.= 5402.78' (N)
Inv.= 5402.74' (S)
Inv.= 5402.81 (W)

(6) Storm Drain Inlet
Top of Grate= 5413.53'
Inv.= 5409.77' (S)

(7) Storm Drain Inlet
Top of Grate= 5413.47'
Inv.= 5409.44' (N)
Inv.= 5409.37' (E)

(8) Storm Drain MH
Rim= 5418.06'
Inv.= 5407.46' (SE)
Inv.= 5407.60' (W)

(9) Storm Drain MH
Rim= 5419.28'
Inv.= 5408.41' (E)
Inv.= 5408.51' (W)

(10) Storm Drain MH
Rim= 5420.02'
Inv.= 5409.22' (E)
Inv.= 5409.32' (W)

(11) Storm Drain MH
Rim= 5421.84'
Inv.= 5410.1' (E)
Inv.= 5410.2' (W)

(12) Storm Drain MH
Rim= 5423.89'
Invert Inaccessable
Unable to open

(13) Storm Drain MH
Rim= 5422.67'
Invert Inaccessable
unable to open

(14) Storm Drain Inlet
Top of Grate= 5421.85'
Inv.= 5417.65' (N)

(15) Storm Drain Inlet
Top of Grate= 5421.77'
Inv.= 5417.52' (S)

(16) Storm Drain MH
Rim= 5425.59'
Inv. Inaccessable
Unable to open

(17) Storm Drain MH
Rim= 5416.78'
Inv.= 5411.56' (W)
Inv.= 5411.46' (NE)

(18) Storm Drain MH
Rim= 5416.26'
Inv.= 5409.96' (SW)
Inv.= 5407.86' (E)

(19) Storm Drain Outlet
Inv.= 5407.06'

(20) Storm Drain Outlet
Inv.= 5407.33'

(21) Storm Drain MH
Rim= 5419.35'
Inv.= 5412.55' (W)
Inv.= 5411.95' (E)

(22) Storm Drain Outlet
Inv.= 5410.07'

(23) Storm Drain MH
Rim= 5422.53'

INVERT DATA

(24) Storm Drain Inlet
Top of Grate= 5421.93'
Inv.= 5417.38' (N)

(25) Storm Drain Inlet
Top of Grate= 5422.01'
Inv. Inaccessable
Full of Debris

(26) Storm Drain Inlet
Top of Grate= 5423.55'
Inv.= 5418.85' (N)
Inv.= 5418.70' (S)

(27) Storm Drain MH
Rim=5422.27'
Invert Inaccessable
Unable to open

(28) Storm Drain MH
Rim= 5420.64'
Inv.= 5413.24' (W)
Inv.= 5413.09' (N)
Inv.= 5413.04' (E)
Inv.= 5413.0' (S)

(29) Storm Drain Outlet
Inv.= 5412.78'

(30) Sanitary Sewer MH
Rim= 5417.93'
Inv.= 5404.33' (E)
Inv.= 5404.48' (S)
Inv.= 5404.48' (W)

(31) Sanitary Sewer MH
Rim= 5418.82'
Inv.= 5404.37' (E)
Inv.= 5404.6' (W)
Inv.= 5404.72' (N)

(32) Sanitary Sewer MH
Rim= 5418.42'
Inv.= 5405.77' (E)
Inv.= 5405.87' (W)

(33) Sanitary Sewer MH
Rim= 5419.84'
Inv.= 5406.69' (E)
Inv.= 5406.84' (W)

(34) Sanitary Sewer MH
Rim= 5422.14'
Inv.= 5407.29' (E)
Inv.= 5407.39' (W)
Inv.= 5408.04' (N)

(35) Sanitary Sewer MH
As shown on provided
plans – Not Found

(36) Sanitary Sewer MH
Rim= 5424.42'
Inv.= 5409.67' (S)
Inv.= 5409.77' (N)

(37) Sanitary Sewer MH
Rim= 5425.86'
Inv.= 5410.56' (S)
Inv.= 5410.66' (W)

(38) Sanitary Sewer MH
Rim= 5420.41'
Inv.= 5405.56' (S)
Inv.= 5405.66' (N)

(39) Sanitary Sewer MH
Rim= 5420.37'
Inv.= 5406.17' (S)
Inv.= 5406.27' (NW)

(40) Sanitary Sewer MH
Rim= 5420.42'
Inv.= 5406.12' (SE)
Inv.= 5406.27' (N)

(41) Sanitary Sewer MH
Rim= 5418.86'
Inv.= 5411.41' (N)
Inv.= 5411.21' (W)

(42) Sanitary Sewer MH
Rim= 5419.83'
Inv.= 5411.83' (N)
Inv.= 5411.73' (S)

(43) Sanitary Sewer MH
Rim= 5422.34'

KEYED EASEMENTS

[A] 10' Public Service Company Easement granted by document filed August 27, 2004, Book A83, Page 1516, Document #2004121843

[B] 20' X 23' PNM Switchgear Easement granted by document filed August 27, 2005, Book A83, Page 1517.

[C] 80'X 64' Sanitary Sewer Easement granted by plat filed October 18, 2004, Plat Book 2004C, Page 332

[D] 20' Public Sanitary Sewer Easement granted by plat filed October 18, 2004, Plat Book 2004C, Page 332.

[E] Existing 100' Plains Electric Easement

[F] Proposed 20' Public Waterline Easement

[G] Proposed 20' Public Drainage Easement

[H] Proposed 20' Sanitary Sewer Easement

[J] Proposed 27'x16.5' Public Utility Easement

[K] Proposed 38'x18' Public Utility Easement

[L] 20' Public Drainage Easement granted by plat filed March 7, 2006, Plat Book 2006C, Page 75.

[M] Public Waterline and Sanitary Sewer Easement granted to New Mexico Utilities, Inc (NMUI) by document filed September 12, 2007, Document No. 2007131218.

[N] 20' Public Utility Easement granted to New Mexico Utilities, Inc. by plat filed december 28, 2007, Plat Book 2007C, Page 357.

[P] Temporary Drainage Easement filed 8-31-05 Book A102, Pg. 7014

[Q] 50' Public Roadway Easement granted by plat filed december 28, 2007, Plat Book 2007C, Page 357.

[R] 20' Public Sanitary Sewer Easement granted by plat filed December 19, 2012, Plat Book 2012C, Page 144

[S] 20' Waterline Easement granted by plat filed December 19, 2012, Plat Book 2012C, Page 144

TOPOGRAPHIC AND BOUNDARY SURVEY OF

TRACT 8

THE TRAILS UNIT 2

WITHIN

THE TOWN OF ALAMEDA GRANT

IN

PROJECTED SECTION 16, TOWNSHIP 11 NORTH, RANGE 2 EAST

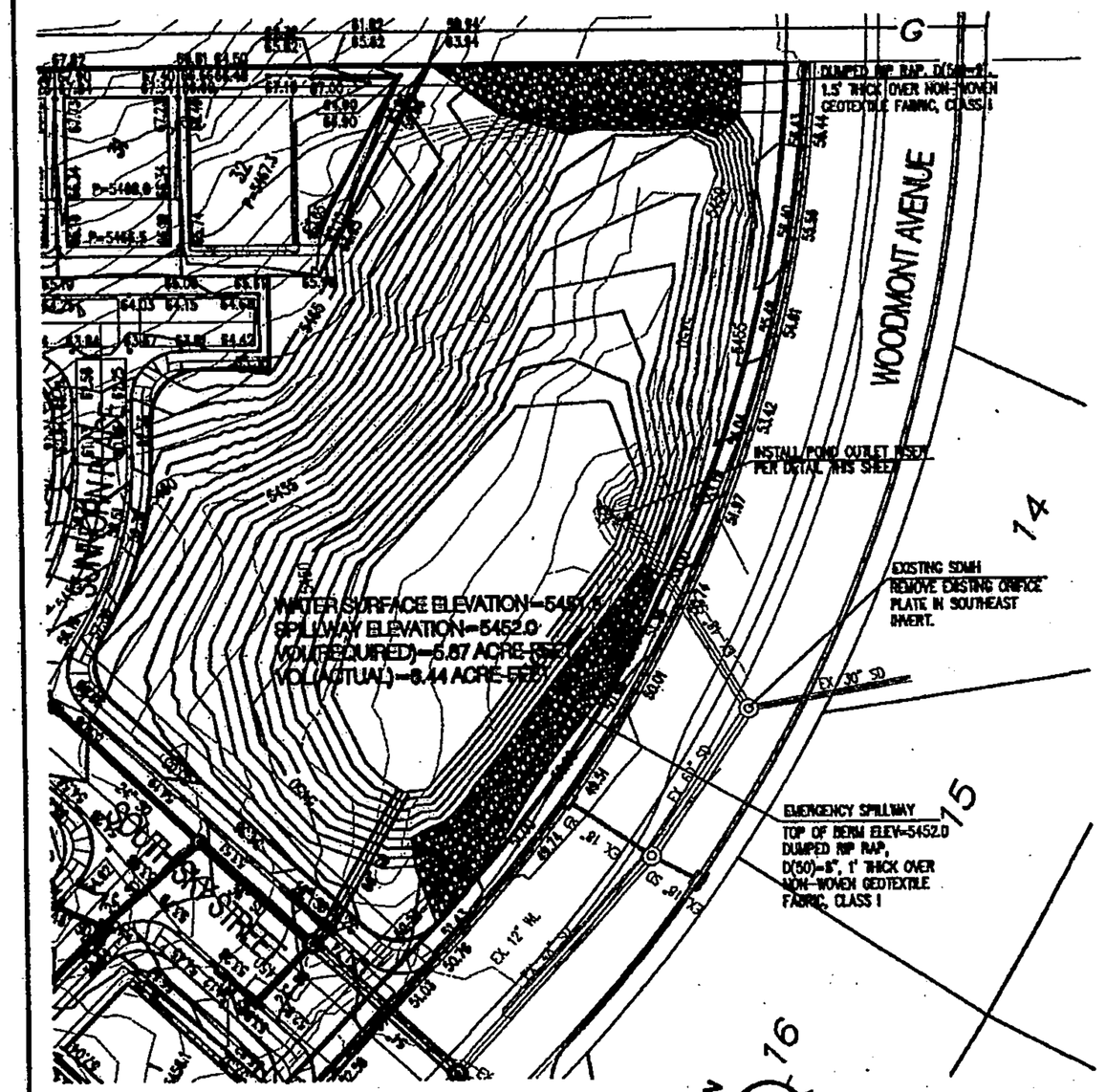
NEW MEXICO PRINCIPAL MERIDIAN

CITY OF ALBUQUERQUE

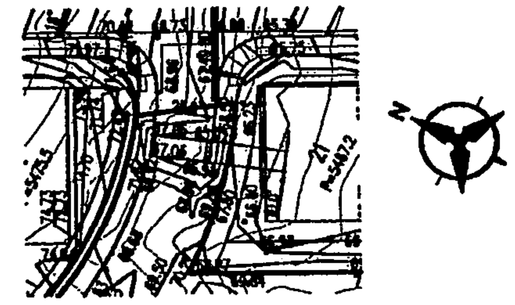
BERNALILLO COUNTY, NEW MEXICO

MAY 2013

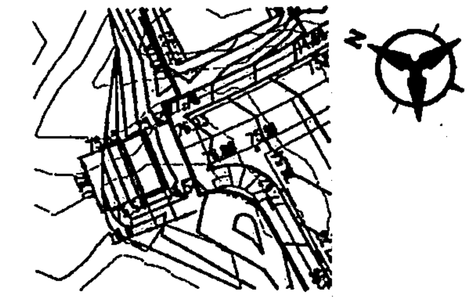
SURVETEK INC



POND E
SCALE: 1" = 50'



SANDMARK ROAD SEDIMENTATION POND
SCALE: 1" = 50'



REDBLOOM ROAD SEDIMENTATION POND
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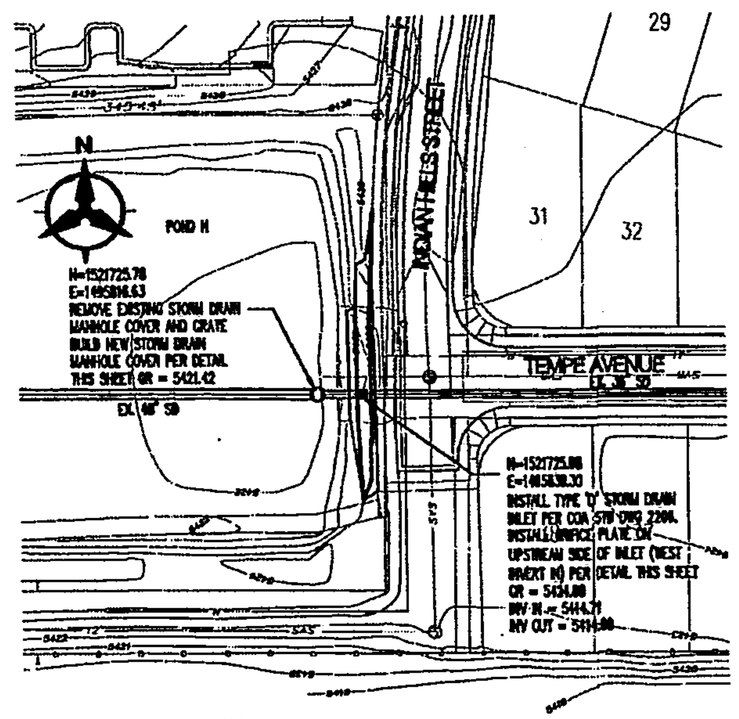
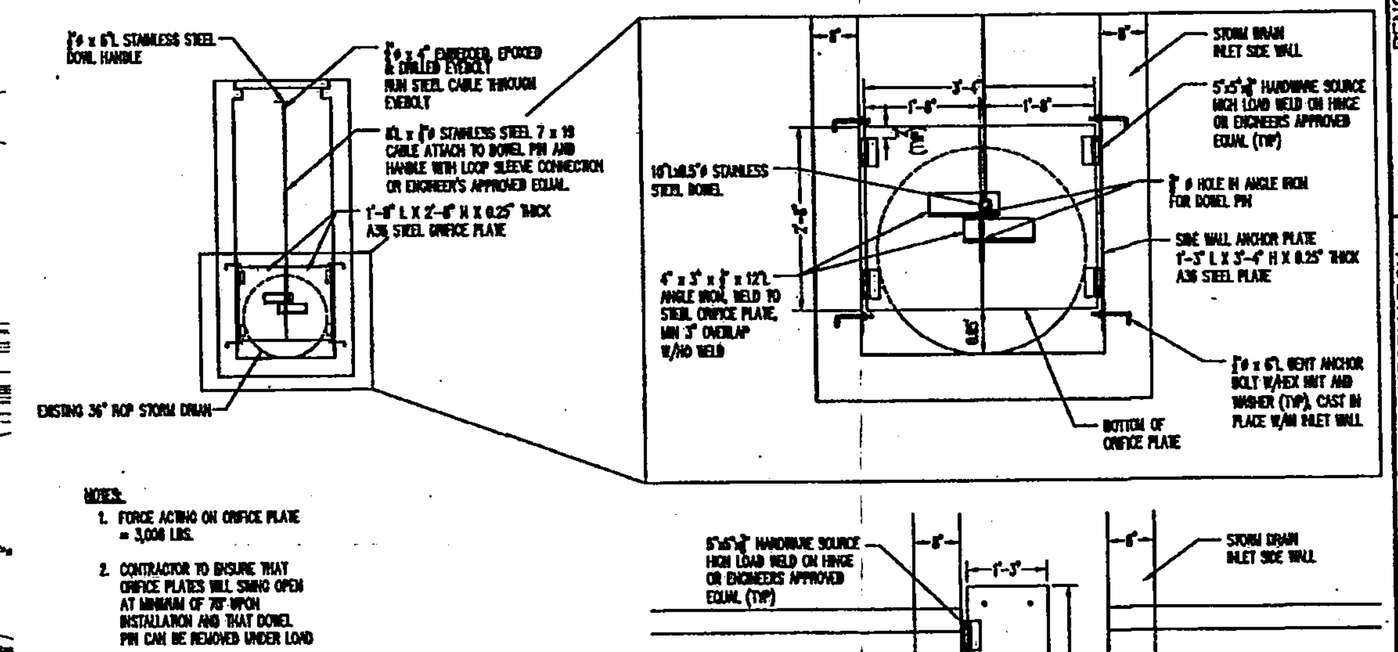
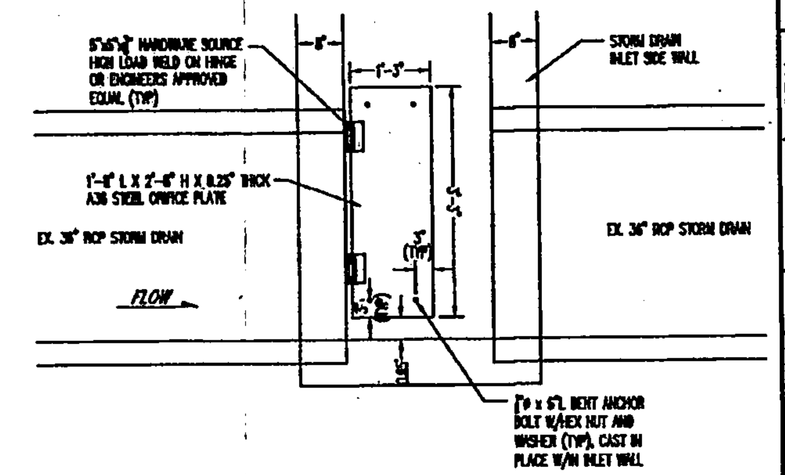


POND H OUTLET MODIFICATIONS
SCALE: 1" = 50'

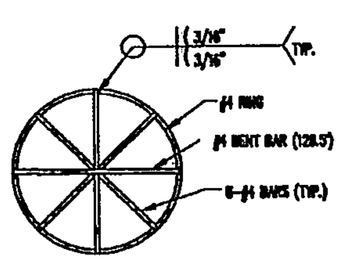


NOTES:
1. FORCE ACTING ON ORIFICE PLATE = 3,008 LBS.
2. CONTRACTOR TO ENSURE THAT ORIFICE PLATES WILL SWING OPEN AT MINIMUM OF 70° UPON INSTALLATION AND THAT DOWEL PIN CAN BE REMOVED UNDER LOAD

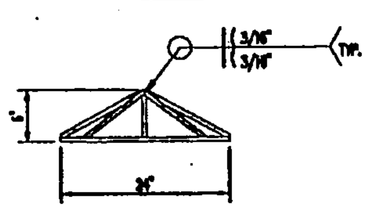
DROP INLET ORIFICE PLATE DETAIL



SIDE WALL STEEL ANCHOR PLATE

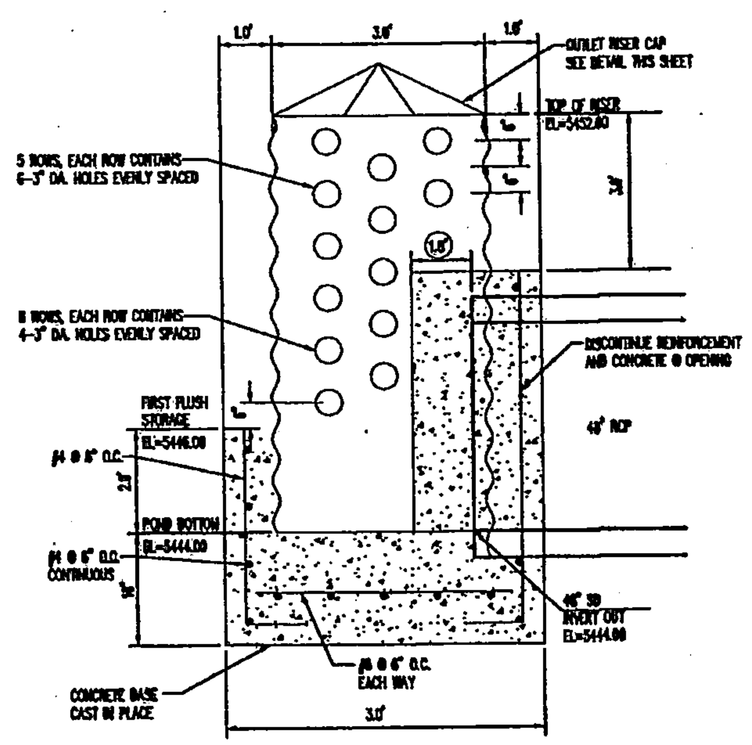


PLAN

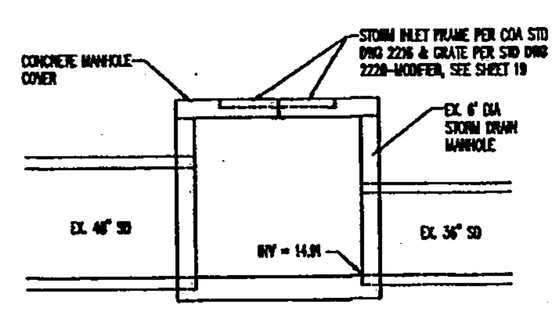


PROFILE

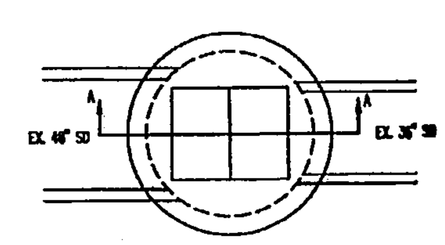
OUTLET RISER CAP DETAIL



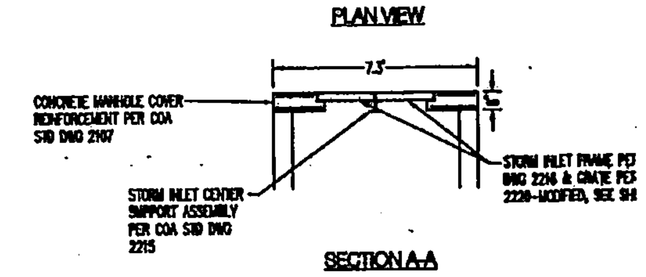
POND OUTLET RISER DETAIL
NOT TO SCALE



ELEVATION VIEW



PLAN VIEW



SECTION A-A

MANHOLE COVER
EXISTING MANHOLE MODIFICATIONS

AS-BUILT INFORMATION

CONTRACTOR		DATE
WORK STAKED BY		DATE
INSPECTOR'S REPORT BY		DATE
FIELD VERIFICATION BY		DATE
DRAWINGS CORRECTED BY		DATE

MICROFILM INFORMATION

RECEIVED BY	DATE
PROCESSED BY	DATE
REL.	

BENCH MARKS

ACS MONUMENT "STAMPED "UNION"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
N = 1,523,503.475 E = 1,493,853.030
GROUND-TO-GRID FACTOR = 0.999968843
Δα = -00°16'55.8"
NAVD 1988 ELEVATION = 5524.850

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL
MATT L. STOFFER
NEW MEXICO
14664
REGISTERED PROFESSIONAL ENGINEER

No.	Date	REMARKS	By
		REVISIONS	
		DESIGN	

Designed By: SJS DATE:05/2011
Drawn By: DM DATE:05/2011
Checked By: SJS DATE:05/2011

Bohannan Huston
www.bhinc.com
800.877.5332

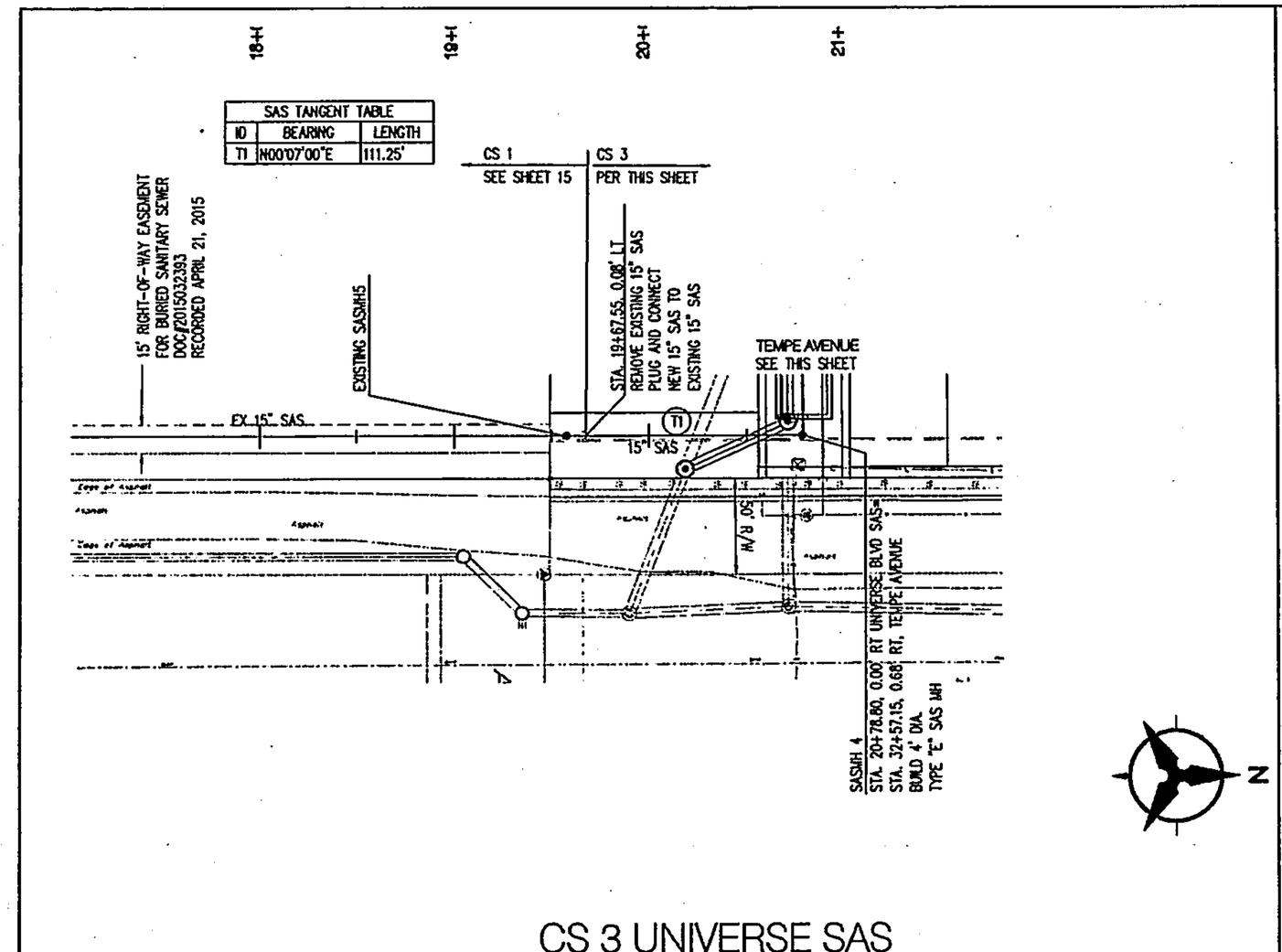
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

VALLE PRADO UNIT 1
POND GRADING PLAN

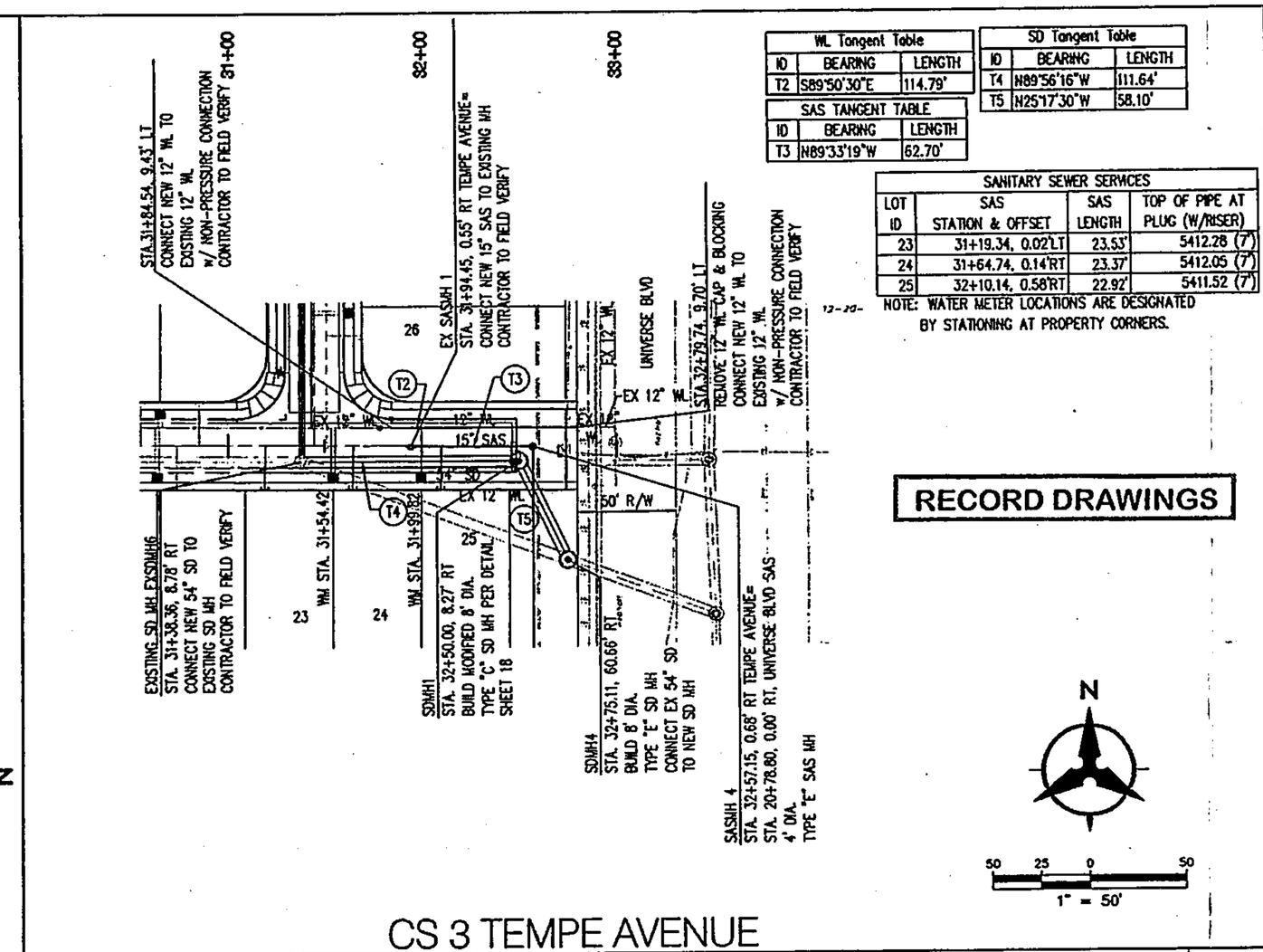
Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.

City Project No.	Zone Map No.	Sheet	Of
740581	C-09-Z	17	19

P:\2015001\CDP\Plans\Civil\2015001_POND_DETAILS.dwg
August 13, 2015 - 8:10am



CS 3 UNIVERSE SAS



WL Tangent Table		
ID	BEARING	LENGTH
T2	S89°50'30"E	114.79'

SD Tangent Table		
ID	BEARING	LENGTH
T4	N89°56'16"W	111.64'
T5	N25°17'30"W	58.10'

SAS TANGENT TABLE		
ID	BEARING	LENGTH
T3	N89°33'19"W	62.70'

SANITARY SEWER SERVICES			
LOT ID	SAS STATION & OFFSET	SAS LENGTH	TOP OF PIPE AT PLUG (W/RISER)
23	31+19.34, 0.02'LT	23.53'	5412.28 (7')
24	31+64.74, 0.14'RT	23.37'	5412.05 (7')
25	32+10.14, 0.58'RT	22.92'	5411.52 (7')

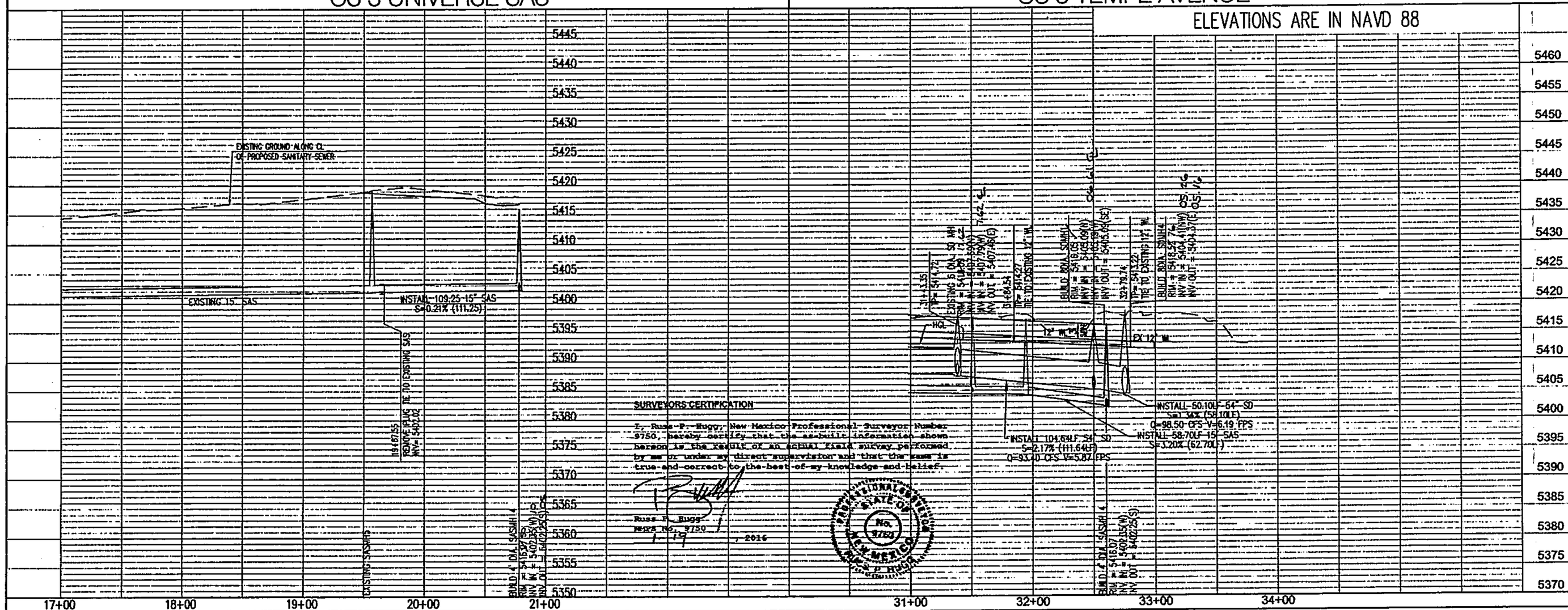
NOTE: WATER METER LOCATIONS ARE DESIGNATED BY STATIONING AT PROPERTY CORNERS.

RECORD DRAWINGS

50 25 0 50
1" = 50'

CS 3 TEMPE AVENUE

ELEVATIONS ARE IN NAVD 88



SURVEYORS CERTIFICATION

I, Russ P. Buggy, New Mexico Professional Surveyor Number 9750, hereby certify that the asbuilt information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ P. Buggy
NMPS No. 9750
7-19, 2016

SCALE: 1" = 50' (HORIZ.)
1" = 10' (VERT.)

P:\20140036\CDP\Plans\PNP\20140036_UPNP06.dwg
April 23, 2015 – 7:13am

GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES. CONTRACTOR SHALL COORDINATE RELOCATION OF UTILITY LINES WITH UTILITY COMPANIES AS REQUIRED.
2. ALL CURVE DATA AND DIMENSIONS ARE CALCULATED FROM CENTERLINE OF PIPE OR MANHOLE. ALL SAS & SD SLOPES ARE CALCULATED TO TRUE PIPE DIMENSIONS FROM INVERT TO INVERT. (PAY TRUS ARE SHOWN IN PARENTHESES)
3. GRADE ELEVATIONS, WHERE NOTED, ARE FOR FLOWLINE OF STANDARD CURB UNLESS OTHERWISE SPECIFIED.
4. CONTRACTOR IS TO INSTALL A 4" X 4" X 5' POST AND C.M.S. AT THE END OF EACH SANITARY SEWER SERVICE.
5. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL DAMAGED EXISTING UTILITY CONDUITS AND EXISTING LINES.
6. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
7. CONTRACTOR SHALL PROVIDE THE INSPECTORS WITH THE PROPOSED TESTING PLAN. THE PLAN MUST BE APPROVED BEFORE TESTING OPERATIONS BEGIN.
8. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, LANDSCAPING, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
9. MH RIMS & CATCH BASIN INLET ELEVATIONS, FIRE HYDRANT & FLANGE ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY AND ADJUST TO FINAL PAVEMENT OR SURFACE GRADES.
10. SAS, STORM DRAIN AND WATERLINE STATIONING FOLLOWS CL OF ROAD. UNLESS OTHERWISE NOTED.
11. STATIONING OF DROP INLET IS TO MIDDLE OF DOWN HILL GRATE AT FACE OF CURB.
12. FLOWLINE ELEVATIONS FOR DROP INLETS ARE PROJECTED FROM FLOWLINE OF STANDARD CURB TO MIDDLE OF DOWNHILL GRATE.
13. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
14. ALL WATERLINE FITTINGS, VALVES, BENDS, TEES, CROSSES AND APPURTENANCES SHALL USE RESTRAINED JOINTS UNLESS OTHERWISE NOTED ON THE PLANS.
15. AT UTILITY CROSSINGS WHERE LESS THAN 18" OF SEPARATION FROM STORM DRAIN PIPE OR MANHOLE IS PRESENT LEAN FILL IS TO BE USED 1) FOR A DISTANCE OF 5 FEET ON EACH SIDE OF THE SD ℄ FROM TOP OF STORM DRAIN TO BOTTOM OF SANITARY SEWER OR WATER LINE OR 2) FOR 10 FEET ALONG SANITARY SEWER OR WATER LINE CENTERED ON THE MANHOLE WITH DEPTH EQUAL TO 2X SEWER OR WATER LINE DIAMETER.
16. ALL EXCAVATION, TRENCHING AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650 SUBPART P.
17. STORM DRAIN GRATES PER MODIFIED COA STD DWG 2220 PER DETAIL SHEET 18.

LEGEND

- DOUBLE WATER METER
- SINGLE WATER METER
- WATER LINE SHUTOFF VALVE
- SAS LATERAL
- SAS MANHOLE
- STORM DRAIN MANHOLE
- STORM DRAIN INLET
- PROPOSED FIRE HYDRANT
- EXISTING WATER VALVE
- PROPOSED STREET LIGHT

"AS-BUILT" LOCATION OF MANHOLES & VALVES

VALVE FH (TYP) MH	NORTHING	EASTING
SAS#14	1521719.69	1498124.52
SD#14	1521663.35	1498141.61

NOTE: TO BE COMPLETED BY CONTRACTOR PRIOR TO ACCEPTANCE

Bohannan Huston
www.bhinc.com 800.877.5332

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

TIERRA VISTA UNIT 3 AT THE TRAILS
UTILITY PLAN AND PROFILE
CS 3 UNIVERSE SAS / CS3 TEMPE AVENUE

Design Review Committee	City Engineer Approval	Last Design Update	Mo./Day/Yr.	Mo./Day/Yr.
APPROVED 2015 CITY ENGINEER REVIEW COMMITTEE	APPROVED ENGINEER			

City Project No.	Zone Map No.	Sheet	Of
730070	C-09-Z	16	18

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE

BENCH MARKS

ACS MONUMENT "2-D9"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
X = 1,493,615.357 Y = 1,515,761.743
GROUND-TO-GRID FACTOR = 0.999667790
Δα = -00°16'58.43"
NAVD 1988 ELEVATION = 5441.396

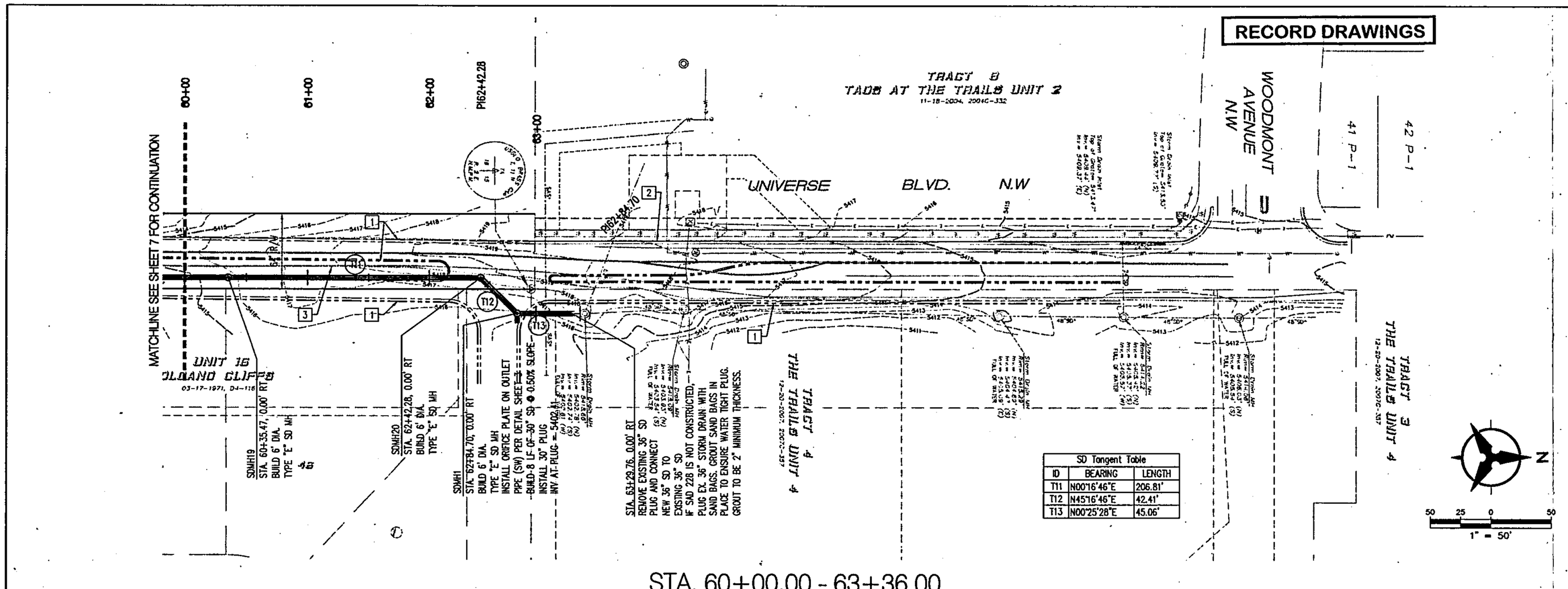
AS-BUILT INFORMATION
CONTRACTOR Franciscus DATE 8/15
WORK STAKED BY Surv-Tek DATE 1/14
INSPECTOR'S ACCEPTANCE BY ELT DATE 1/14
FIELD VERIFICATION BY Surv-Tek DATE 1/14
DRAWINGS CORRECTED BY Surv-Tek DATE 1/14

MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

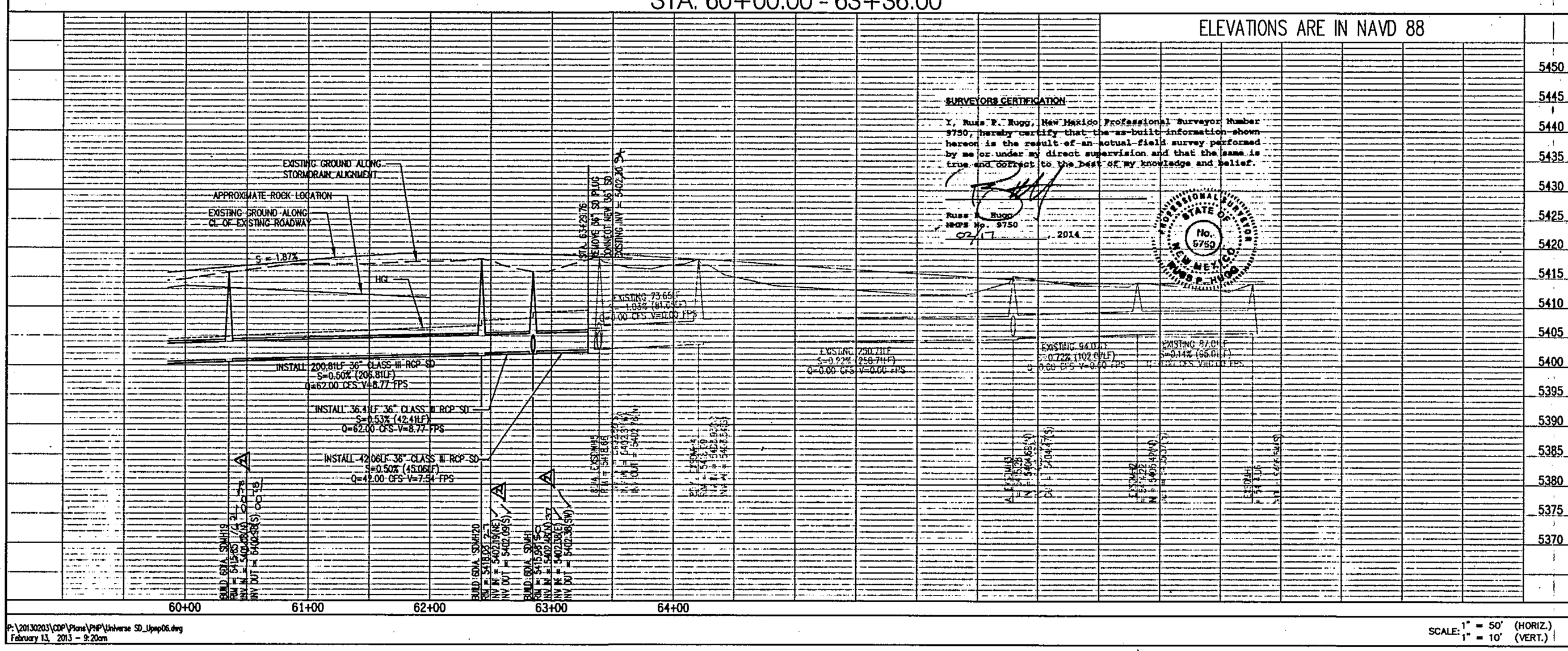
ENGINEER'S SEAL

No.	Date	REMARKS	By
		REVISIONS	
		DESIGN	

Designed By: SJS DATE: 05/2014
Drawn By: DH DATE: 05/2014
Checked By: SJS DATE: 05/2014



STA. 60+00.00 - 63+36.00



SURVEYOR'S CERTIFICATION

I, Russ R. Rugg, New Mexico Professional Surveyor Number 9750, hereby certify that the as-built information shown hereon is the result of an actual field survey performed by me or under my direct supervision and that the same is true and correct to the best of my knowledge and belief.

Russ R. Rugg
NMPS No. 9750
02/17, 2014

PROFESSIONAL SURVEYOR STATE OF NEW MEXICO No. 9750 RUSS R. RUGG

SCALE: 1" = 50' (HORIZ.) 1" = 10' (VERT.)

P:\20130203\CDP\Plans\PNP\Universe SD_Upap05.dwg
February 13, 2013 - 9:20am

GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES. CONTRACTOR SHALL COORDINATE RELOCATION OF UTILITY LINES WITH UTILITY COMPANIES AS REQUIRED.
2. ALL CURVE DATA AND DIMENSIONS ARE CALCULATED FROM CENTERLINE OF PIPE OR MANHOLE. ALL SAS & SD SLOPES ARE CALCULATED TO TRUE PIPE DIMENSIONS FROM INVERT TO INVERT. (PAY ITEMS ARE SHOWN IN PARENTHESES)
3. GRADE ELEVATIONS, WHERE NOTED, ARE FOR FLOWLINE OF STANDARD CURB UNLESS OTHERWISE SPECIFIED.
4. CONTRACTOR IS RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ALL DAMAGED EXISTING UTILITY CONDUITS AND EXISTING LINES.
5. CONTRACTOR SHALL PARK EQUIPMENT AND VEHICLES AS NOT TO INTERFERE WITH NORMAL ACTIVITIES OF RESIDENTS OR OTHER CONTRACTORS ON SITE.
6. ANY DAMAGE TO THE EXISTING FACILITIES (CURB & GUTTER, PAVEMENT, LANDSCAPING, ETC.) DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTORS' EXPENSE.
7. MH RIMS & CATCH BASIN INLET ELEVATIONS, FIRE HYDRANT & FLANGE ELEVATIONS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY AND ADJUST TO FINAL PAVEMENT OR SURFACE GRADES.
8. STORM DRAIN STATIONING FOLLOWS CL OF STORM DRAIN UNLESS OTHERWISE NOTED
9. STATIONING OF DROP INLET IS TO MIDDLE OF DOWN HILL GRATE AT FACE OF CURB.
10. FLOWLINE ELEVATIONS FOR DROP INLETS ARE PROJECTED FROM FLOWLINE OF STANDARD CURB TO MIDDLE OF DOWNHILL GRATE.
11. ALL WATERLINE FITTINGS, VALVES, BENDS, TEES, CROSSES AND APPURTENANCES SHALL USE RESTRAINED JOINTS UNLESS OTHERWISE NOTED ON THE PLANS.
12. AT UTILITY CROSSING WHERE LESS THAN 1 FOOT OF COVER OVER STORM DRAIN PIPE IS PRESENT LEAN FILL IS TO BE USED FOR A DISTANCE OF 5 FEET ON EACH SIDE OF THE SD ℄ FROM TOP OF STORM DRAIN TO BOTTOM OF SANITARY SEWER OR WATER LINE.
13. RCP SHALL BE INSTALLED SO THAT THE JOINT GAP AT THE HOME POSITION SHALL CONFORM TO THE APPROVED MANUFACTURER'S RECOMMENDATIONS. MANUFACTURER'S RECOMMENDED JOINT GAP TOLERANCES FOR EACH PIPE SIZE AND TYPE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PLACEMENT OF PIPE. RCP JOINTS SHALL NOT BE GROUTED UNLESS DIRECTED BY THE ENGINEER AFTER CITY APPROVAL.
14. ALL EXCAVATION, TRENCHING AND SHORING ACTIVITIES MUST BE CARRIED-OUT IN ACCORDANCE WITH OSHA 29 CFR 1926.650 SUBPART P.

KEYED NOTES

1. FUTURE CURB & GUTTER
2. EXISTING CURB & GUTTER
3. EXISTING EDGE OF ASPHALT
4. EXISTING 48" STORM DRAIN

AS-BUILT INFORMATION
CONTRACTOR DYTMA DATE 2/4
WORK STAKED BY SURV-TEK DATE 2/2
INSPECTOR'S REDLINES BY RHT DATE 2/4
FIELD VERIFICATION BY SURV-TEK DATE 2/4
DRAWINGS CORRECTED BY SURV-TEK DATE 2/4
MICRO-FILM INFORMATION
RECORDED BY DATE
NO.

BENCH MARKS
ACS MONUMENT STAMPED "CC_TA_16_15_11N_2E"
GEOGRAPHIC POSITION (NAD 83)
N.M. STATE PLANE COORDINATES (CENTRAL ZONE)
X = 1,497,693.917 Y = 1,521,076.443
GROUND-TO-GRID FACTOR = 0.999667560
$\Delta\alpha$ = -00°16'30.67"
NAVD 1988 ELEVATION = 5417.800

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE
A	Surv-Tek	2/4

ENGINEER'S SEAL
REGISTERED PROFESSIONAL ENGINEER 14664 NEW MEXICO

No.	Date	REMARKS	By
		REVISIONS	
		DESIGN	

Designed By: SJS DATE: 10/2012
Drawn By: DH DATE: 10/2012
Checked By: SJS DATE: 10/2012

Bohannan Huston

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT

THE TRAILS UNIVERSE STORM DRAIN
UTILITY PLAN AND PROFILE
STA. 60+00.00 - 63+36.00

Design Review Committee: APPROVED MAR 12 2013 DESIGN REVIEW COMMITTEE
City Engineer Approval: APPROVED JUL 2013 CITY ENGINEER
Last Design Update | Mo./Day/Yr. | Mo./Day/Yr.

City Project No. 761283 | Zone Map No. C-9 / D-9 | Sheet 8 Of 19

Appendix B

Ported Riser Details:

Pond F5

- Four 6" holes with invert 5423.5
- Three 6" holes with invert 5424.5
- Four 6" holes with invert 5425.5
- Three 6" holes with invert 5426.5
- Spillway elevation = 5428

Pond D

- Four 6" holes with invert 5426.44
- Three 6" holes with invert 5427.44
- Emergency spillway elevation = 5434

Ported Riser Rating Curves					
Pond D			Pond F5		
Elevation (ft)	Depth (ft)	Flow (cfs)	Elevation (ft)	Depth (ft)	Flow (cfs)
5426	0	0	5422	0	0
5426.44	0.44	0	5423	1	0
5427	1	2.11	5423.5	1.5	0
5428	2	5.91	5424	2	1.89
5429	3	8.99	5425	3	5.65
5430	4	11.19	5426	4	10.73
5431	5	13.01	5427	5	16.72
5432	6	14.60	5428	6	21.75
5433	7	16.04	5429	7	59.62
5434	8	17.35			
Orifice Equation: Q=0.6*A*(2*g*h)^(1/2)					

Pond D				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5423.3	0	23060	0	Pond Bottom
5424.3	1	25935	0.56	
5425.3	2	28866	1.19	
5426.3	3	31854	1.89	
5427.3	4	34899	2.65	
5428.3	5	37999	3.49	
5429.3	6	41157	4.40	
5430.3	7	44371	5.38	
5431.3	8	47642	6.44	Emergency Spillway
5432.3	9	50968	7.57	Top of Pond

Pond F5				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5419.3	0	1972	0.00	Pond Bottom
5420.3	1	2679	0.05	
5421.3	2	3444	0.12	
5422.3	3	19022	0.38	
5423.3	4	22671	0.86	
5424.3	5	26117	1.42	
5425.3	6	29621	2.06	
5426.3	7	33180	2.78	Emergency Spillway
5426.8	7.5	34981	3.17	Top of Pond

Pond F				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5415.08	0	0	0	
5416	0.92	6750	0.07	Pond Bottom
5417	1.92	40875	0.62	
5418	2.92	58868	1.76	
5419	3.92	62075	3.15	
5420	4.92	65339	4.61	
5421	5.92	68659	6.15	
5422	6.92	72036	7.77	
5423	7.92	75469	9.46	
5424	8.92	78959	11.23	
5424.33	9.25	80155	11.84	Emergency Spillway
5425	9.92	82547	13.09	Top of Pond

Pond G				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5411.39	0	0	0	
5412	0.61	1	0.00	
5413	1.61	2	0.00	
5414	2.61	3	0.00	
5415	3.61	4	0.00	
5416	4.61	1770	0.02	Pond Bottom
5417	5.61	18197	0.25	
5418	6.61	35019	0.86	
5419	7.61	51588	1.85	
5420	8.61	64405	3.19	
5421	9.61	69184	4.72	
5422	10.61	74067	6.36	
5422.5	11.11	76539	7.23	Emergency Spillway
5423	11.61	79010	8.12	
5424	12.61	84095	9.99	Top of Pond

Pond H				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5412.15	0	0	0	
5413.15	1	1	0.00	
5414.15	2	2	0.00	
5415.15	3	3	0.00	
5416.15	4	4	0.00	
5417.15	5	5	0.00	
5418.65	6.5	7	0.00	
5419	6.85	14234	0.06	Pond Bottom
5420	7.85	35514	0.63	
5421	8.85	55545	1.67	
5422	9.85	66534	3.08	Emergency Spillway
5423	10.85	70916	4.65	Top of Pond

Pond J				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5410	0	1	0	
5411	1	2	0.00	
5412	2	3	0.00	
5413	3	4	0.00	
5413.99	3.99	5	0.00	
5414	4	64648	0.01	Pond Bottom
5415	5	106394	1.97	
5416	6	131917	4.71	
5417	7	150216	7.94	Emergency Spillway
5418	8	165320	11.57	Top of Pond

Pond K				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5402	0	44	0	
5403	1	57	0	
5404	2	10890	0.13	Pond Bottom
5405	3	59634	0.94	
5406	4	95919	2.72	
5407	5	139087	5.42	
5408	6	204819	9.37	
5409	7	283271	14.97	
5410	8	311585	21.80	
5410.3	8.3	325279	23.99	Emergency Spillway
5411	9	387067	29.71	
5412	10	484650	39.72	Top of Pond

Appendix C

PCSWMM Input Parameters Summary
Manning's N = 0.013
Average Energy Loss Coefficient = 0.15
Entry/Exit Energy Loss Coefficient = 0.2
Orifice Discharge Coefficient = 0.6

The storm drain system is assumed to be Reinforced Concrete Pipe (RCP) and modeled with a Manning's "n" value of 0.013. Albuquerque's DPM uses headloss factors of 0.1 to 0.2 times the difference in velocity for pipe transitions. It uses a factor of 0.05 times the velocity head for a manhole. For this study, with a dynamic model the velocities are constantly changing and the direction of flow changes in several locations within the model. For this reason, an average energy loss coefficient of 0.15 was used consistently throughout the model and an entry and exit energy loss coefficient of 0.2 was used to accurately account for energy losses in the system.

AHYMO ID 12		AHYMO ID 20		AHYMO ID 20 (Tract 9)	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0	1.1	0.208	1.1	0.128
1.2	0	1.2	3.228	1.2	2.154
1.3	0	1.3	12.416	1.3	10.074
1.4	6.211	1.4	41.106	1.4	32.447
1.5	10.654	1.5	48.234	1.5	50.543
1.6	7.781	1.6	33.555	1.6	42.91
1.7	4.332	1.7	21.816	1.7	29.198
1.8	2.36	1.8	15.775	1.8	21.218
1.9	1.375	1.9	12.115	1.9	16.481
2	0.982	2	9.71	2	13.401
2.1	0.799	2.1	5.945	2.1	9.924
2.2	0.652	2.2	3.46	2.2	5.886
2.3	0.533	2.3	2.472	2.3	4.007
2.4	0.435	2.4	1.857	2.4	3.054
2.5	0.355	2.5	1.43	2.5	2.398
2.6	0.29	2.6	1.121	2.6	1.91
2.7	0.237	2.7	0.899	2.7	1.538
2.8	0.193	2.8	0.733	2.8	1.256
2.9	0.158	2.9	0.612	2.9	1.038
3	0.129	3	0.522	3	0.875
3.1	0.105	3.1	0.453	3.1	0.75
3.2	0.086	3.2	0.402	3.2	0.653
3.3	0.07	3.3	0.364	3.3	0.578
3.4	0.057	3.4	0.334	3.4	0.519
3.5	0.047	3.5	0.314	3.5	0.473
3.6	0.038	3.6	0.295	3.6	0.436
3.7	0.031	3.7	0.281	3.7	0.406
3.8	0.025	3.8	0.271	3.8	0.384
3.9	0.021	3.9	0.259	3.9	0.367
4	0.017	4	0.254	4	0.354
4.1	0.014	4.1	0.25	4.1	0.346
4.2	0.011	4.2	0.245	4.2	0.337
4.3	0.009	4.3	0.243	4.3	0.33
4.4	0.008	4.4	0.244	4.4	0.325

AHYMO ID 21		AHYMO ID 21 (Tract 8)		AHYMO ID 22	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0.208	1.1	0.08	1.1	0.135
1.2	3.227	1.2	1.352	1.2	2.099
1.3	12.412	1.3	6.287	1.3	7.839
1.4	41.09	1.4	19.146	1.4	19.114
1.5	48.215	1.5	29.392	1.5	20.761
1.6	33.542	1.6	24.826	1.6	14.324
1.7	21.807	1.7	16.913	1.7	9.911
1.8	15.769	1.8	12.461	1.8	7.845
1.9	12.11	1.9	9.852	1.9	6.449
2	9.706	2	8.1	2	5.378
2.1	5.943	2.1	6.005	2.1	3.195
2.2	3.459	2.2	3.522	2.2	1.748
2.3	2.471	2.3	2.378	2.3	1.229
2.4	1.856	2.4	1.807	2.4	0.922
2.5	1.43	2.5	1.417	2.5	0.715
2.6	1.121	2.6	1.128	2.6	0.566
2.7	0.899	2.7	0.908	2.7	0.462
2.8	0.733	2.8	0.742	2.8	0.384
2.9	0.611	2.9	0.615	2.9	0.327
3	0.521	3	0.519	3	0.281
3.1	0.453	3.1	0.447	3.1	0.249
3.2	0.401	3.2	0.391	3.2	0.227
3.3	0.363	3.3	0.347	3.3	0.21
3.4	0.334	3.4	0.312	3.4	0.198
3.5	0.314	3.5	0.284	3.5	0.189
3.6	0.295	3.6	0.264	3.6	0.181
3.7	0.281	3.7	0.247	3.7	0.174
3.8	0.27	3.8	0.235	3.8	0.17
3.9	0.259	3.9	0.225	3.9	0.166
4	0.254	4	0.219	4	0.164
4.1	0.25	4.1	0.211	4.1	0.162
4.2	0.244	4.2	0.205	4.2	0.159
4.3	0.243	4.3	0.202	4.3	0.158
4.4	0.244	4.4	0.201	4.4	0.159

AHYMO ID 23		AHYMO ID 23 (Pond K)		AHYMO ID 24	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0.319	1.1	0	1.1	0.228
1.2	4.964	1.2	0	1.2	3.543
1.3	19.092	1.3	0	1.3	13.333
1.4	63.204	1.4	12.816	1.4	35.48
1.5	74.164	1.5	18.28	1.5	39.521
1.6	51.594	1.6	12.983	1.6	27.343
1.7	33.544	1.7	7.279	1.7	18.535
1.8	24.255	1.8	3.812	1.8	14.261
1.9	18.628	1.9	2.23	1.9	11.49
2	14.93	2	1.539	2	9.474
2.1	9.142	2.1	1.145	2.1	5.677
2.2	5.32	2.2	0.873	2.2	3.163
2.3	3.801	2.3	0.666	2.3	2.234
2.4	2.855	2.4	0.509	2.4	1.677
2.5	2.199	2.5	0.388	2.5	1.297
2.6	1.724	2.6	0.296	2.6	1.025
2.7	1.383	2.7	0.226	2.7	0.832
2.8	1.128	2.8	0.173	2.8	0.688
2.9	0.941	2.9	0.132	2.9	0.583
3	0.804	3	0.101	3	0.506
3.1	0.701	3.1	0.077	3.1	0.447
3.2	0.62	3.2	0.059	3.2	0.403
3.3	0.56	3.3	0.045	3.3	0.371
3.4	0.515	3.4	0.034	3.4	0.346
3.5	0.484	3.5	0.026	3.5	0.328
3.6	0.455	3.6	0.02	3.6	0.309
3.7	0.433	3.7	0.015	3.7	0.296
3.8	0.416	3.8	0.012	3.8	0.287
3.9	0.403	3.9	0.009	3.9	0.28
4	0.397	4	0.007	4	0.277
4.1	0.387	4.1	0.003	4.1	0.274
4.2	0.377	4.2	0	4.2	0.268
4.3	0.374	4.3	0	4.3	0.267
4.4	0.376	4.4	0	4.4	0.268

AHYMO ID 26		AHYMO ID 30,31*		AHYMO ID 70	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0.152	1.1	0.271	1.1	0.338
1.2	2.367	1.2	4.224	1.2	6.681
1.3	8.874	1.3	16.032	1.3	32.703
1.4	22.239	1.4	46.176	1.4	105.579
1.5	24.417	1.5	52.64	1.5	146.952
1.6	16.89	1.6	36.563	1.6	117.177
1.7	11.605	1.7	24.376	1.7	78.435
1.8	9.101	1.8	18.309	1.8	56.295
1.9	7.436	1.9	14.494	1.9	43.19
2	6.181	2	11.83	2	34.655
2.1	3.691	2.1	7.161	2.1	23.674
2.2	2.03	2.2	4.054	2.2	13.928
2.3	1.428	2.3	2.874	2.3	9.201
2.4	1.072	2.4	2.158	2.4	6.772
2.5	0.83	2.5	1.663	2.5	5.204
2.6	0.658	2.6	1.307	2.6	4.068
2.7	0.536	2.7	1.054	2.7	3.258
2.8	0.444	2.8	0.866	2.8	2.657
2.9	0.377	2.9	0.73	2.9	2.205
3	0.327	3	0.63	3	1.872
3.1	0.291	3.1	0.554	3.1	1.625
3.2	0.261	3.2	0.496	3.2	1.435
3.3	0.24	3.3	0.454	3.3	1.293
3.4	0.225	3.4	0.422	3.4	1.186
3.5	0.215	3.5	0.399	3.5	1.108
3.6	0.205	3.6	0.378	3.6	1.045
3.7	0.198	3.7	0.362	3.7	0.993
3.8	0.192	3.8	0.347	3.8	0.952
3.9	0.188	3.9	0.336	3.9	0.915
4	0.186	4	0.332	4	0.891
4.1	0.184	4.1	0.328	4.1	0.878
4.2	0.18	4.2	0.321	4.2	0.863
4.3	0.179	4.3	0.32	4.3	0.852
4.4	0.18	4.4	0.321	4.4	0.851

AHYMO ID 82,83,87*		AHYMO ID 88		AHYMO ID 94	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0.333	1.1	0	1.1	0.344
1.2	5.176	1.2	0	1.2	5.55
1.3	19.507	1.3	0	1.3	23.834
1.4	52.063	1.4	8.605	1.4	66.05
1.5	58.19	1.5	12.308	1.5	86.367
1.6	40.331	1.6	8.76	1.6	68.41
1.7	27.317	1.7	4.918	1.7	47.156
1.8	20.996	1.8	2.576	1.8	35.35
1.9	16.908	1.9	1.506	1.9	28.516
2	13.939	2	1.039	2	23.588
2.1	8.374	2.1	0.773	2.1	16.178
2.2	4.667	2.2	0.59	2.2	9.296
2.3	3.296	2.3	0.451	2.3	5.869
2.4	2.473	2.4	0.344	2.4	4.299
2.5	1.914	2.5	0.263	2.5	3.292
2.6	1.511	2.6	0.201	2.6	2.583
2.7	1.225	2.7	0.153	2.7	2.074
2.8	1.005	2.8	0.117	2.8	1.701
2.9	0.847	2.9	0.089	2.9	1.424
3	0.736	3	0.068	3	1.215
3.1	0.652	3.1	0.052	3.1	1.066
3.2	0.589	3.2	0.04	3.2	0.96
3.3	0.539	3.3	0.03	3.3	0.883
3.4	0.502	3.4	0.023	3.4	0.822
3.5	0.478	3.5	0.018	3.5	0.779
3.6	0.452	3.6	0.014	3.6	0.745
3.7	0.433	3.7	0.01	3.7	0.716
3.8	0.42	3.8	0.008	3.8	0.695
3.9	0.41	3.9	0.003	3.9	0.677
4	0.407	4	0	4	0.667
4.1	0.402	4.1	0	4.1	0.66
4.2	0.393	4.2	0	4.2	0.649
4.3	0.392	4.3	0	4.3	0.642
4.4	0.393	4.4	0	4.4	0.642

AHYMO ID 46

Time	Flow
0	0
0.1	0
0.2	0
0.3	0
0.4	0
0.5	0
0.6	0
0.7	0
0.8	0
0.9	0
1	0
1.1	0.587
1.2	13.678
1.3	44.549
1.4	96.128
1.5	110.673
1.6	83.216
1.7	62.787
1.8	52.479
1.9	46.458
2	41.956
2.1	34.426
2.2	29.208
2.3	27.232
2.4	26.001
2.5	24.165
2.6	21.775
2.7	20.463
2.8	19.188
2.9	18.379
3	17.664
3.1	17.183
3.2	16.759
3.3	16.444
3.4	16.169
3.5	15.953
3.6	15.749
3.7	15.559
3.8	15.396
3.9	15.244
4	15.106
4.1	14.963
4.2	14.802
4.3	14.664
4.4	14.547

AHYMO ID 46 Continued

Time	Flow
4.5	14.424
4.6	14.315
4.7	14.212
4.8	14.095
4.9	13.991
5	13.907
5.1	13.807
5.2	13.693
5.3	13.581
5.4	13.471
5.5	13.379
5.6	13.24
5.7	13.096
5.8	12.978
5.9	12.855
6	12.724
6.1	12.608
6.2	12.507
6.3	12.332
6.4	12.134
6.5	11.94
6.6	11.707
6.7	11.33
6.8	10.895
6.9	10.583
7	10.299
7.1	10.058
7.2	9.692
7.3	9.045
7.4	8.515
7.5	8.269
7.6	7.951
7.7	7.807
7.8	7.619
7.9	7.511
8	7.389
8.1	7.289
8.2	7.208
8.3	7.144
8.4	7.085
8.5	7.016
8.6	6.961
8.7	6.913
8.8	6.836

AHYMO ID 46 Continued

Time	Flow
8.9	6.781
9	6.751
9.1	6.699
9.2	6.639
9.3	6.593
9.4	6.551
9.5	6.494
9.6	6.448
9.7	6.406
9.8	6.348
9.9	6.302
10	6.26
10.1	6.205
10.2	6.159
10.3	6.12
10.4	6.066
10.5	6.022
10.6	5.968
10.7	5.925
10.8	5.887
10.9	5.85
11	5.815
11.1	5.764
11.2	5.724
11.3	5.673
11.4	5.632
11.5	5.597
11.6	5.563
11.7	5.531
11.8	5.483
11.9	5.445
12	5.412
12.1	5.365
12.2	5.327
12.3	5.295
12.4	5.248
12.5	5.211
12.6	5.18
12.7	5.149
12.8	5.12
12.9	5.076
13	5.041
13.1	5.011
13.2	4.967

AHYMO ID 46
Continued

Time	Flow
13.3	4.947
13.4	4.925
13.5	4.868
13.6	4.819
13.7	4.783
13.8	4.731
13.9	4.669
14	4.6
14.1	4.522
14.2	4.451
14.3	4.39
14.4	4.328
14.5	4.269
14.6	4.213
14.7	4.141
14.8	4.079
14.9	4.025
15	3.954
15.1	3.91
15.2	3.866
15.3	3.8
15.4	3.745
15.5	3.682
15.6	3.626
15.7	3.593
15.8	3.54
15.9	3.489
16	3.445
16.1	3.388
16.2	3.338
16.3	3.295
16.4	3.255
16.5	3.215
16.6	3.176
16.7	3.139
16.8	3.087
16.9	3.044
17	3.008
17.1	2.971
17.2	2.937
17.3	2.889
17.4	2.849
17.5	2.815
17.6	2.783

AHYMO ID 46
Continued

Time	Flow
17.7	2.751
17.8	2.72
17.9	2.677
18	2.64
18.1	2.624
18.2	2.589
18.3	2.54
18.4	2.518
18.5	2.497
18.6	2.456
18.7	2.424
18.8	2.398
18.9	2.372
19	2.347
19.1	2.324
19.2	2.301
19.3	2.265
19.4	2.235
19.5	2.213
19.6	2.19
19.7	2.17
19.8	2.148
19.9	2.129
20	2.096
20.1	2.069
20.2	2.048
20.3	2.029
20.4	2.01
20.5	1.992
20.6	1.975
20.7	1.944
20.8	1.919
20.9	1.916
21	1.893
21.1	1.87
21.2	1.855
21.3	1.824
21.4	1.815
21.5	1.807
21.6	1.779
21.7	1.758
21.8	1.743
21.9	1.729
22	1.715

AHYMO ID 46
Continued

Time	Flow
22.1	1.702
22.2	1.689
22.3	1.677
22.4	1.652
22.5	1.631
22.6	1.631
22.7	1.614
22.8	1.595
22.9	1.584
23	1.559
23.1	1.553
23.2	1.549
23.3	1.526
23.4	1.508
23.5	1.497
23.6	1.486
23.7	1.476
23.8	1.467
23.9	1.458
24	1.449
24.1	1.207
24.2	0.813
24.3	0.608
24.4	0.531
24.5	0.483
24.6	0.448
24.7	0.42
24.8	0.397
24.9	0.379
25	0

AHYMO ID 41

Time	Flow
0	0
0.1	0
0.2	0
0.3	0
0.4	0
0.5	0
0.6	0
0.7	0
0.8	0
0.9	0
1	0
1.1	0.389
1.2	6.053
1.3	20.906
1.4	52.228
1.5	59.388
1.6	42.941
1.7	30.202
1.8	23.779
1.9	19.796
2	17.077
2.1	10.994
2.2	6.362
2.3	4.537
2.4	3.408
2.5	2.627
2.6	2.061
2.7	1.656
2.8	1.352
2.9	1.13
3	0.965
3.1	0.843
3.2	0.748
3.3	0.678
3.4	0.625
3.5	0.587
3.6	0.553
3.7	0.527
3.8	0.508
3.9	0.486
4	0.477
4.1	0.47
4.2	0.46
4.3	0.457
4.4	0.46

AHYMO ID 73

Time	Flow
0	0
0.1	0
0.2	0
0.3	0
0.4	0
0.5	0
0.6	0
0.7	0
0.8	0
0.9	0
1	0.589
1.1	1.511
1.2	6.951
1.3	40.703
1.4	125.506
1.5	159.76
1.6	121.608
1.7	89.916
1.8	71.706
1.9	58.137
2	47.655
2.1	35.795
2.2	29.279
2.3	25.18
2.4	21.689
2.5	20.566
2.6	19.636
2.7	18.849
2.8	18.41
2.9	18.045
3	17.736
3.1	17.544
3.2	17.379
3.3	17.233
3.4	17.127
3.5	17.037
3.6	16.95
3.7	16.873
3.8	16.803
3.9	16.735
4	16.676
4.1	16.614
4.2	16.551
4.3	16.492
4.4	16.437

AHYMO ID 73 Continued

Time	Flow
4.5	16.378
4.6	16.325
4.7	16.267
4.8	16.209
4.9	16.152
5	16.102
5.1	16.044
5.2	15.987
5.3	15.925
5.4	15.868
5.5	15.819
5.6	15.758
5.7	15.703
5.8	15.645
5.9	15.591
6	15.526
6.1	15.477
6.2	15.426
6.3	15.364
6.4	15.282
6.5	15.2
6.6	15.122
6.7	15.033
6.8	14.946
6.9	14.862
7	14.779
7.1	14.696
7.2	14.607
7.3	14.515
7.4	14.427
7.5	14.333
7.6	14.246
7.7	14.155
7.8	14.063
7.9	13.968
8	13.867
8.1	13.768
8.2	13.67
8.3	13.573
8.4	13.476
8.5	13.368
8.6	13.268
8.7	13.164
8.8	13.041

AHYMO ID 73
Continued

Time	Flow
8.9	12.929
9	12.819
9.1	12.687
9.2	12.557
9.3	12.43
9.4	12.293
9.5	12.149
9.6	12.015
9.7	11.867
9.8	11.719
9.9	11.574
10	11.425
10.1	11.269
10.2	11.122
10.3	10.968
10.4	10.812
10.5	10.66
10.6	10.5
10.7	10.35
10.8	10.194
10.9	10.045
11	9.891
11.1	9.736
11.2	9.576
11.3	9.411
11.4	9.253
11.5	9.093
11.6	8.937
11.7	8.777
11.8	8.619
11.9	8.464
12	8.31
12.1	8.166
12.2	8.03
12.3	7.889
12.4	7.753
12.5	7.619
12.6	7.486
12.7	7.351
12.8	7.216
12.9	7.074
13	6.947
13.1	6.814
13.2	6.681

AHYMO ID 73
Continued

Time	Flow
13.3	6.564
13.4	6.44
13.5	6.308
13.6	6.194
13.7	6.081
13.8	5.959
13.9	5.848
14	5.733
14.1	5.617
14.2	5.506
14.3	5.396
14.4	5.286
14.5	5.183
14.6	5.079
14.7	4.97
14.8	4.873
14.9	4.772
15	4.67
15.1	4.585
15.2	4.492
15.3	4.397
15.4	4.31
15.5	4.217
15.6	4.132
15.7	4.057
15.8	3.973
15.9	3.896
16	3.819
16.1	3.742
16.2	3.667
16.3	3.599
16.4	3.531
16.5	3.464
16.6	3.401
16.7	3.339
16.8	3.271
16.9	3.215
17	3.154
17.1	3.099
17.2	3.043
17.3	2.986
17.4	2.932
17.5	2.884
17.6	2.836

AHYMO ID 73
Continued

Time	Flow
17.7	2.788
17.8	2.739
17.9	2.684
18	2.637
18.1	2.59
18.2	2.534
18.3	2.48
18.4	2.441
18.5	2.394
18.6	2.346
18.7	2.306
18.8	2.266
18.9	2.226
19	2.191
19.1	2.157
19.2	2.123
19.3	2.085
19.4	2.055
19.5	2.021
19.6	1.997
19.7	1.967
19.8	1.943
19.9	1.915
20	1.887
20.1	1.862
20.2	1.84
20.3	1.818
20.4	1.797
20.5	1.778
20.6	1.759
20.7	1.733
20.8	1.718
20.9	1.705
21	1.682
21.1	1.668
21.2	1.649
21.3	1.63
21.4	1.622
21.5	1.606
21.6	1.589
21.7	1.576
21.8	1.563
21.9	1.55
22	1.539

Appendix D

Appendix E

RECEIVED
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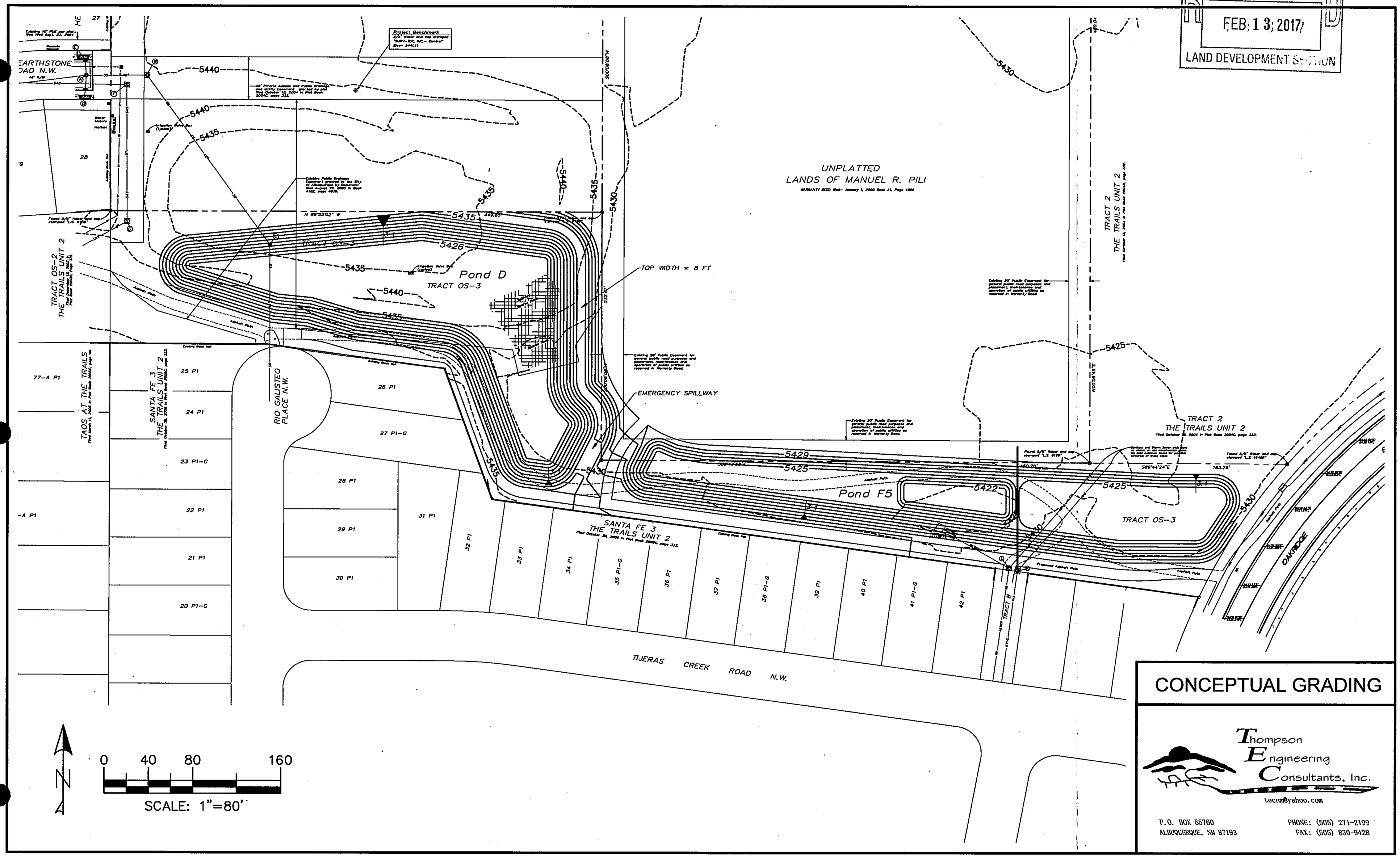
LAND DEVELOPMENT SECTION



CONCEPTUAL GRADING

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Appendix F

TRAILS UNIT III DRAINAGE MASTER PLAN
HYDROLOGIC MODEL--FULLY DEVELOPED CONDITIONS
12 MAY 2014
***MODIFIED 8/2016 - RESPEC

1. TURNED ON SURGE POND FOR POND D.1, 11 CFS BYPASS
2. TURNED ON ADD COMMANED TO COMBINE ID 61 AND 68
3. CHANGED ROUTE MCUNGE INFLOW ID FROM 68 TO 67
4. TURNED OFF OLD RATING CURVE FOR POND.D1
5. CREATED NEW RATING CURVE FOR POND.D1
6. ROUTED HYD FROM POND.D1 TO POND.D
7. TURNED OFF ROUTE FROM RAINBOW TO POND.D
8. TURNED OFF PRINT COMMAND FOR ID 72
9. CHANGED I FROM 72 TO 71 FOR ID 73
10. ID 73 NEW INFLOW HYD TO POND.D
11. TREATMENT TYPE PERCENTAGES CHANGED FOR ID 28
12. TURNED OFF ADD COMMAND FOR ID 74
13. TEATMENT TYPE PERCENTAGES CHANGED FOR ID 25
14. TURNED OFF ADD, PRINT, AND PUNCH FOR ID 75
15. ADDED PUNCH COMMAND FOR ID 73
16. DIVIDE HYD ID CHANGED FROM 75 TO 73
17. TURNED OFF ROUTE RESERVOIR FOR POND.F5
18. TURNED OFF PRINT HYD FOR ID 51
19. ADDED BASIN.F8 TO BASINS F5 AND F7
20. ADDED BASIN.D5 TO BASINS F5,F7,F8
21. ADDED BASIN.D6 TO BASINS F5,F7,F8,D5
22. TURNED OFF ADD/PRINT FOR ID 78
23. ADDED NEW ROUTE RESERVOIR FOR POND.F5
24. CHANGED ID 78 TO 79 FOR BASINS F1TO8
25. CHANGED AREA OF BASIN.D5 TO EXCLUDE POND.D
26. CHANGED TREATMENT TYPE PERCENTAGES FOR BASIN.F8
27. TURNED OFF POND.D HYD TEXT
28. CHANGED POND.D1 FROM SURGE TO DETENTION
29. CHANGED AREA FOR BASIN.D4
30. DIVIDED BASIN D4 TO MODEL RUNOFF BYPASSING INLETS
31. ADDED HYD FOR POND.D BASIN
32. ADDED POND.D BASIN TO D4 SURGE HYD
33. CHANGED INFLOW FOR POND.D INFLOW HYD
34. TURNED OFF ALL COMMANDS FOR BASINS D5, D6, AND F8
35. COMPUTED HYD FOR TRACT 1 AS SINGLE SUBBASIN
36. ADDED TRACT.1 HYD TO INLET.BYPASS (POND.F5 INFLOW HYD)

****

HYDROLOGIC MODEL FOR OFFSITE AND ONSITE BASINS
100-YEAR, 24-HOUR STORM:

PRECIPITATION:
P60 = 1.84"
P360 = 2.20"
P1440 = 2.66"

****

RT TIME=0.0 HR PUNCH CODE=0

AINFALL TYPE=2 RAIN QUARTER=0.0 IN

```
                  RAIN ONE=1.84 IN  RAIN SIX=2.20 IN
                  RAIN DAY=2.66 IN  DT=0.10  HRS
EDIMENT BULK      CODE=1  FACTOR=1.0


S*****************************************************************
********  COMPUTE ONSITE BASINS FROM THE TRAILS
S*********

OMPUTE NM HYD       ID=50  HYD NO=OFFSITE1  DA=.1998 SQ MI
                  %A=100  %B=0  %C=0 %D=0
                  TP=-.66 HR  RAIN=-1
RINT HYD            ID=50 CODE=10

OUTE RESERVOIR      ID=53 HYD=OFF.POND.1  INFLOW ID=50 CODE=5
                  OUTFLOW  STORAGE    DEPTH
                  0        0          0
                  3.85     0.037      1
                  5.44     0.218      2
                  6.66     0.610      3
                  7.69     1.150      4
                  8.60     1.759      5
                  9.42     2.439      6


RINT HYD            ID=53 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.0176
                  DIA=2.0  N=0.013
OUTE MCUNGE         ID=54 HYD=RTE.OFF.POND INFLOW ID=53
                    DT=0.0  L=740 NS=0  SLOPE=0.0176
                    MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD            ID=54 CODE=0

OMPUTE NM HYD       ID=21  HYD NO=BASIN.A1  DA=.02422 SQ MI
                  %A=0  %B=12.5  %C=12.5 %D=75.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=21 CODE=10

OMPUTE NM HYD       ID=22  HYD NO=BASIN.A2  DA=.01331 SQ MI
                  %A=0  %B=33.0  %C=33.0 %D=34.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=22 CODE=10


OMPUTE NM HYD       ID=23  HYD NO=BASIN.A3  DA=.00502 SQ MI
                  %A=0  %B=5.0  %C=5.0 %D=90.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=23 CODE=10


OMPUTE NM HYD       ID=24  HYD NO=BASIN.A4  DA=.01186 SQ MI
                  %A=0  %B=7.5  %C=7.5 %D=85.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=24 CODE=10

UTE NM HYD          ID=25  HYD NO=BASIN.A5  DA=.01830 SQ MI
                  %A=0  %B=17.0  %C=17.0 %D=66.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=25 CODE=10
```

```
OMPUTE NM HYD        ID=26  HYD NO=BASIN.A6  DA=.02652 SQ MI
                    %A=0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.133 HR  RAIN=-1
RINT HYD             ID=26 CODE=10

OMPUTE NM HYD        ID=27  HYD NO=BASIN.A7  DA=.01055 SQ MI
                    %A=0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.133 HR  RAIN=-1
RINT HYD             ID=26 CODE=10

DD HYD              ID=55 HYD=O1.A2 ID I=54 II=22
RINT HYD            ID=55 CODE=10

DD HYD              ID=56 HYD=O1A2.A1 ID I=55 II=21
RINT HYD            ID=56 CODE=10


DD HYD              ID=57 HYD=O1A2A1.A3 ID I=56 II=23
RINT HYD            ID=57 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                     DIA=4.0  N=0.013
OUTE MCUNGE            ID=58 HYD=RTE.O1A2A1.A3 INFLOW ID=57
                       DT=0.0  L=1000 NS=0  SLOPE=0.007
                       MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD               ID=58 CODE=0

D HYD               ID=59 HYD=A1TOA5 ID I=58 II=25
RINT HYD            ID=59 CODE=10


*****************************************************
DIVIDE HYD                ID=59 Q=8.26 ID I=61  HYD NO=BYPASS.A5
                                ID II=62 HYD NO=SURGE.A5
PRINT HYD           ID=61 CODE=10
PRINT HYD           ID=62 CODE=10
*****************************************************


OUTE RESERVOIR      ID=60 HYD=POND.A5  INFLOW ID=59 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0.0      0.0        5511
                    2.13     0.35       5512
                    5.13     1.03       5513
                    8.82     1.94       5514
                    13.07    3.15       5515
                    17.82    4.61       5516

RINT HYD              ID=60 CODE=10


A HYD               ID=59 HYD=TOTALA5 ID I=61 II=60
NT HYD              ID=59 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.013
```

```
                    DIA=2.0  N=0.013
ɔUTE MCUNGE           ID=61 HYD=RTE.A4 INFLOW ID=24
                      DT=0.0  L=900 NS=0  SLOPE=0.013
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=61 CODE=0

DD HYD              ID=62 HYD=RTE.A4.A6 ID I=61 II=26
RINT HYD            ID=62 CODE=10


DD HYD              ID=63 HYD=RTEA4A6.PONDA5 ID I=62 II=60
RINT HYD            ID=63 CODE=10

*****************************************************
DIVIDE HYD                ID=63 Q=8.26 ID I=61  HYD NO=BYPASS.A6
                                ID II=62 HYD NO=SURGE.A6
PRINT HYD           ID=61 CODE=10
PRINT HYD           ID=62 CODE=10
*****************************************************


ɔUTE RESERVOIR      ID=64 HYD=POND.A6  INFLOW ID=63 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0        0          5500
                    2.13     0.30       5501
                    5.13     0.85       5502
                    8.82     1.57       5503
                    13.07    2.47       5504
                    17.82    3.52       5505
                    23.04    4.72       5506
                    100.00   6.06       5507

RINT HYD              ID=64 CODE=10


ADD HYD             ID=66 HYD=TOTALA6 ID I=61 II=64
PRINT HYD           ID=66 CODE=10


DD HYD              ID=65 HYD=PONDA6.A7 ID I=64 II=27
RINT HYD            ID=65 CODE=10


ɔMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.021
                    DIA=2.0  N=0.013
ɔUTE MCUNGE           ID=66 HYD=RTE.A6.A7 INFLOW ID=65
                      DT=0.0  L=520 NS=0  SLOPE=0.021
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=66 CODE=0


ɔMPUTE NM HYD         ID=25  HYD NO=BASIN.D1  DA=.01816 SQ MI
                     %A=0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=25 CODE=10

DD HYD              ID=67 HYD=A6.A7.D1 ID I=66 II=25
RINT HYD            ID=67 CODE=10
```

```
** DIVIDE HYD BELOW WAS TURNED OFF - 8/2016 MOD TURNS IT
** BACK ON.  ID CHANGES ARE MADE TO ROUTE SURGE HYDROGRAPH
** THROUGH POND D.1 - RESPEC
** TURNED OFF DIVIDE HYD - RESPEC
*****************************************************************
DIVIDE HYD              ID=67 Q=11.07 ID I=61  HYD NO=BYPASS.AD1
                              ID II=62 HYD NO=SURGE.D1
PRINT HYD          ID=61 CODE=10
PRINT HYD          ID=62 CODE=10
*****************************************************************


** TURNED OFF OLD RATING CURVE FOR POND.D1 - RESPEC
ROUTE RESERVOIR   ID=68 HYD=POND.D1  INFLOW ID=62 CODE=6.3
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5471
                  2.83     2.47       5472
                  6.84     3.52       5473
                  11.75    4.72       5474
                  17.42    6.06       5475

** CREATED NEW POND.D1 RATING CURVE - RESPEC
** TURNED OFF RATING CURVE - RESPEC
ROUTE RESERVOIR     ID=68 HYD=POND.D1  INFLOW ID=62 CODE 6.3
                  OUTFLOW   STORAGE     DEPTH
                  0         0          5471
                  6.65      0.16       5472
                  16.07     0.23       5473
                  27.61     0.31       5474
                  40.93     0.39       5475

NEW RATING CURVE FOR DETENTION - RESPEC
ROUTE RESERVOIR     ID=68 HYD=POND.D1  INFLOW ID=67 CODE 6.3
                  OUTFLOW   STORAGE     DEPTH
                  0         0          5471
                  7.61      0.066      5472
                  24.06     0.149      5473
                  41.67     0.250      5474
                  53.79     0.370      5475

PRINT HYD           ID=68 CODE=10


** TURNED ON THE ADD/PRINT COMMAND BELOW - RESPEC
** TURNED OFF ADD/PRINT - RESPEC
ADD HYD            ID=67 HYD=TOTALD1 ID I=61 II=68
PRINT HYD          ID=67 CODE=10


** CHANGED INFLOW ID FROM 68 TO 67 - RESPEC
** ROUTED TO POND.D - RESPEC
** CHANGED INFLOW ID FROM 67 TO 68 - RESPEC
COMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.0153
                   DIA=3.5  N=0.013
ROUTE MCUNGE         ID=69 HYD=RTE.D1 INFLOW ID=68
                     DT=0.0  L=2550 NS=0  SLOPE=0.0153
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

OLD ROUTING - RESPEC
COMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.018
                   DIA=2.0  N=0.013
ROUTE MCUNGE         ID=69 HYD=RTE.D1 INFLOW ID=67
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                    DT=0.0  L=1470 NS=0  SLOPE=0.018
                    MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD            ID=69 CODE=0


HERITAGE UNIT 1****

OMPUTE NM HYD       ID=25  HYD NO=BASIN.D2  DA=.03456 SQ MI
                   %A=0  %B=28.5  %C=28.5 %D=43.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=25 CODE=10

DD HYD             ID=70 HYD=PONDD1.D2 ID I=69 II=25
RINT HYD           ID=70 CODE=10


****UNIVERSE BLVD*****

OMPUTE NM HYD       ID=26  HYD NO=BASIN.D3  DA=.00580 SQ MI
                   %A=0  %B=5.0  %C=5.0 %D=90.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=26 CODE=10

DD HYD             ID=71 HYD=D1.D2.D3 ID I=70 II=26
RINT HYD           ID=71 CODE=10


** TUNRED OFF ROUTING - RESPEC
COMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.02
                   DIA=4.0  N=0.013
ROUTE MCUNGE          ID=72 HYD=RTE.D1 INFLOW ID=71
                    DT=0.0  L=1150 NS=0  SLOPE=0.02
                    MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

** TURNED OFF PRINT COMMAND - RESPEC
PRINT HYD             ID=72 CODE=0


***HERITAGE UNIT 2*****

** CHANGED DA FROM 0.01961 TO 0.01809 - RESPEC
OMPUTE NM HYD       ID=27  HYD NO=BASIN.D4  DA=.01809 SQ MI
                   %A=0  %B=28.5  %C=28.5 %D=43.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=27 CODE=10


** ADDED DIVIDE HYD - RESPEC
IVIDE HYD          ID=27 Q=5.39 ID I=1  HYD NO=BYPASS.INLET
                           ID II=2  HYD NO=SURGE.INLET
RINT HYD           ID=1 CODE=10
RINT HYD           ID=2 CODE=10


** ADDED HYD GENERATED BY BASIN.POND.D - RESPEC
UTE NM HYD         ID=4 HYD NO=BASIN.POND.D DA=.00219 SQ MI
                   %A=0  %B=40  %C=40  %D=10
                  TP=-.133 HR  RAIN=-1
RINT HYD           ID=4 CODE=10
```

```
** ADDED BASIN POND.D AND ID 6 - RESPEC
DD HYD            ID=5 HYD=D4.POND.D ID I=2 II=4
RINT HYD          ID=5 CODE=10


** CHANGED I FROM 72 TO 71 - RESPEC
** CHANGED II FROM 27 TO 5 - RESPEC
S****** NEW POND D INFLOW HYDROGRAPH
DD HYD            ID=73 HYD=D1D2D3.D4 ID I=71 II=5
RINT HYD          ID=73 CODE=10

** NEW INFLOW HYD TO POND.D - RESPEC
** ADDED PUNCH FOR ID 73 - RESPEC
JNCH HYD          ID=73

** CHANGED B AND C (23%) TO 20% AND D (54%) TO 60% - RESPEC
** CHANGED DA FROM 0.01367 TO 0.01155 - RESPEC
** TURNED OFF COMPUTE HYD AND PRINT FOR BASIN.D5 - RESPEC
COMPUTE NM HYD      ID=28  HYD NO=BASIN.D5  DA=.01155 SQ MI
                  %A=0  %B=20.0  %C=20.0 %D=60.0
                 TP=-.133 HR  RAIN=-1
PRINT HYD           ID=28 CODE=10

** TURNED OFF ADD/PRINT COMMAND - RESPEC
ADD HYD            ID=74 HYD=D1234.D5 ID I=73 II=28
PRINT HYD         ID=74 CODE=10


** CHANGED B AND C (18%) TO 20% AND D (64%) TO 60% - RESPEC
** TURNED OFF COMPUTE HYD AND PRINT FOR BASIN.D6 - RESPEC
COMPUTE NM HYD      ID=25  HYD NO=BASIN.D6  DA=.00781 SQ MI
                  %A=0.0  %B=20.0  %C=20.0 %D=60.0
                  TP=-.1333 HR  RAIN=-1
PRINT HYD           ID=25 CODE=10

** TURNED OFF ADD/PRINT COMMAND - RESPEC
ADD HYD            ID=75 HYD=D12345.D6 ID I=74 II=25
PRINT HYD         ID=75 CODE=10

 DELETED 'S' TO TURN OFF TEXT - RESPEC
****** POND D INFLOW HYDROGRAPH
** TURNED OFF PUNCH HYD - RESPEC
PUNCH HYD           ID=75

*************************************************************
** CHANGED ID FROM 75 TO 73 - RESPEC
IVIDE HYD         ID=73 Q=13.77 ID I=31  HYD NO=BYPASS.D
                                ID II=32 HYD NO=SURGE.D
RINT HYD          ID=31 CODE=10
RINT HYD          ID=32 CODE=10
*************************************************************


OUTE RESERVOIR    ID=50 HYD=POND.D  INFLOW ID=32 CODE=6.3
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5429.46
                  1.87     0.30       5431
                  2.97     1.01       5432
                  4.00     1.91       5433
                  4.98     2.91       5434
                  5.90     4.00       5435
                  6.79     5.17       5436
```

```
                    7.51      6.24        5436.85
                    130.0     7.80        5438


RINT HYD              ID=50 CODE=10

UTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.0057
                    DIA=2.0  N=0.013
OUTE MCUNGE           ID=51 HYD=RTE.D INFLOW ID=50
                      DT=0.0  L=1530 NS=0  SLOPE=0.0057
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=51 CODE=0


DD HYD              ID=75 HYD=BYPASS.RTE.D ID I=51 II=31
RINT HYD            ID=75 CODE=10


OMPUTE NM HYD         ID=20  HYD NO=BASIN.C  DA=.01278 SQ MI
                    %A=0  %B=25.0  %C=25.0 %D=50.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=20 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.027
                    DIA=3.0  N=0.013
OUTE MCUNGE           ID=76 HYD=RTE.C INFLOW ID=20
                      DT=0.0  L=1020 NS=0  SLOPE=0.027
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=76 CODE=0


*****SANTA FE UNIT 1*******

OMPUTE NM HYD         ID=20  HYD NO=BASIN.F1  DA=.02208 SQ MI
                    %A=0  %B=21.7  %C=21.8 %D=56.5
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=20 CODE=10

DD HYD              ID=77 HYD=C.F1 ID I=76 II=20
RINT HYD            ID=77 CODE=10


****UNIVERSE BLVD******

OMPUTE NM HYD         ID=21  HYD NO=BASIN.F2  DA=.00573 SQ MI
                    %A=0  %B=5.0  %C=5.0 %D=90.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=21 CODE=10

DD HYD              ID=78 HYD=CF1.F2 ID I=77 II=21
RINT HYD            ID=78 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.023
                    DIA=3.0  N=0.013
E MCUNGE              ID=79 HYD=RTE.CF1F2 INFLOW ID=78
                      DT=0.0  L=1560 NS=0  SLOPE=0.023
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=79 CODE=0
```

```
****TAOS AT THE TRAILS****

OMPUTE NM HYD       ID=22  HYD NO=BASIN.F3  DA=.03563 SQ MI
                   %A=0  %B=21.7  %C=21.8 %D=56.5
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=22 CODE=10

DD HYD             ID=70 HYD=CF1F2.F3 ID I=79 II=22
RINT HYD           ID=70 CODE=10


*****SANTA FE III********

OMPUTE NM HYD       ID=23  HYD NO=BASIN.F4  DA=.03892 SQ MI
                   %A=0  %B=25.0  %C=25.0 %D=50.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=23 CODE=10


DD HYD             ID=71 HYD=CF1F2F3.F4 ID I=70 II=23
RINT HYD           ID=71 CODE=10

DD HYD             ID=70 HYD=CF1F2F3F4.D ID I=71 II=75
RINT HYD           ID=70 CODE=10


OMPUTE NM HYD       ID=24  HYD NO=BASIN.F5  DA=.01852  SQ MI
                   %A=0  %B=12.5  %C=12.5 %D=75.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=24 CODE=10

OMPUTE NM HYD       ID=25  HYD NO=BASIN.J10  DA=.00628 SQ MI
                   %A=0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=25 CODE=10


OMPUTE NM HYD       ID=26  HYD NO=BASIN.J11  DA=.00733 SQ MI
                   %A=0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=26 CODE=10

DD HYD             ID=23 HYD=J10.J11 ID I=25 II=26
RINT HYD           ID=23 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.004
                  DIA=3.0  N=0.013
OUTE MCUNGE          ID=10 HYD=RTE.J10J11 INFLOW ID=23
                     DT=0.0  L=1450 NS=0  SLOPE=0.004
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=10 CODE=0


OMPUTE NM HYD       ID=26  HYD NO=BASIN.F7  DA=.01097 SQ MI
                   %A=0.0  %B=7.5  %C=7.5 %D=85.0
                   TP=-.1333 HR  RAIN=-1
```

```
RINT HYD              ID=26 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.004
                    DIA=3.5  N=0.013
E MCUNGE              ID=74 HYD=RTE.F7 INFLOW ID=26
                      DT=0.0  L=500 NS=0  SLOPE=0.004
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=74 CODE=0


DD HYD              ID=75 HYD=F7.F5 ID I=74 II=24
RINT HYD            ID=75 CODE=10


** TURNED OFF ROUTE RESERVOIR - RESPEC
ROUTE RESERVOIR   ID=51 HYD=POND.F5  INFLOW ID=75 CODE=5
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5421
                  3.00     0.1993     5422
                  7.00     0.4325     5423
                  11.00    0.7053     5424
                  15.00    1.0245     5425
                  20.00    1.3979     5426
                  50.00    1.8334     5427


** TURNED OFF PRINT HYD - RESPEC
PRINT HYD             ID=51 CODE=10


CHANGED B AND C (18%) TO 23% AND D (64%) TO 54% - RESPEC
** TURNED OFF COMPUTE HYD AND PRINT FOR BASIN.F8 - RESPEC
OMPUTE NM HYD       ID=27  HYD NO=BASIN.F8  DA=.00781 SQ MI
                  %A=0.0  %B=23.0  %C=23.0 %D=54.0
                  TP=-.1333 HR  RAIN=-1
PRINT HYD             ID=27 CODE=10


** ADDED BASIN.F8 TO BASIN.D5 - RESPEC
** TURNED OFF ADD HYD AND PRINT FOR D5 AND F8 - RESPEC
ADD HYD             ID=40 HYD=F8.D5 ID I=27 II=28
PRINT HYD           ID=40 CODE=10


** ADDED BASIN.D6 TO ID 40 - RESPEC
** TURNED OFF ADD HYD AND PRINT FOR F8,D5,D6 - RESPEC
****** POND F5 INFLOW HYDROGRAPH (PREV ID 27)
ADD HYD             ID=41 HYD=F8.D56 ID I=40 II=25
PRINT HYD           ID=41 CODE=10
** ID 41 NEW INFLOW HYD TO POND.F5 - RESPEC


** NEW ID 41 REFLECTS TRACT 1 BASIN HYD - REPSEC
OMPUTE NM HYD       ID=3  HYD NO=TRACT.1  DA=.02717 SQ MI
                  %A=0.0  %B=20.5  %C=20.5 %D=59.0
                  TP=-.1333 HR  RAIN=-1
T HYD               ID=3 CODE=10


** ADDDED BYPASS.INLET TO ID 3 - REPSEC
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S****** POND F5 INFLOW HYDROGRAPH (PREV ID 27)
DD HYD            ID=41 HYD=S.F5 ID I=3 II=1
RINT HYD          ID=41 CODE=10


JNCH HYD            ID=41

 ADDED BASIN.F5 AND F7 TO ID 41 - RESPEC
DD HYD            ID=42 HYD=F578.D56 ID I=41 II=75
RINT HYD          ID=42 CODE=10


** NEW ROUTE RESERVOIR FOR POND.F5 - RESPEC
OUTE RESERVOIR    ID=52 HYD=POND.F5  INFLOW ID=42 CODE=5
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5421
                  3.00     0.1993     5422
                  7.00     0.4325     5423
                  11.00    0.7053     5424
                  15.00    1.0245     5425
                  20.00    1.3979     5426
                  50.00    1.8334     5427


RINT HYD            ID=52 CODE=10


** TURNED OFF ADD/PRINT FOR ID 78 - RESPEC
ADD HYD           ID=78 HYD=PONDF5.F8 ID I=75 II=27
PRINT HYD         ID=78 CODE=10

UTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.003
                 DIA=3.5  N=0.013
OUTE MCUNGE         ID=77 HYD=RTE.PONDF5 INFLOW ID=52
                    DT=0.0  L=590 NS=0  SLOPE=0.004
                    MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD            ID=77 CODE=0


** CHANGED ID FROM 78 TO 79 - RESPEC
DD HYD            ID=79 HYD=F1TOF8 ID I=77 II=70
RINT HYD          ID=79 CODE=10

** CHANGED HYD ID FROM 78 TO 79 - RESPEC
*****************************************************************
IVIDE HYD         ID=79 Q=6.20 ID I=31  HYD NO=BYPASS.F
                                ID II=32 HYD NO=SURGE.F
RINT HYD          ID=31 CODE=10
RINT HYD          ID=32 CODE=10
*****************************************************************


OUTE RESERVOIR    ID=52 HYD=POND.F  INFLOW ID=32 CODE=6.3
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5415.08
                  3.80     0.25       5416.0
                  6.52     0.55       5417.0
                  8.74     1.69       5418.0
                  10.68    3.08       5419.0
                  12.41    4.54       5420.0
```

```
                14.00    6.08       5421.0
                15.47    7.70       5422.0
                16.85    9.39       5423.0
                18.29    11.16      5424.0
                18.60    11.76      5424.33
                100.00   13.02      5425.0

RINT HYD          ID=52 CODE=10


DD HYD          ID=53 HYD=BYPASSF.PONDF ID I=31 II=52
RINT HYD        ID=53 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.004
                DIA=2.0  N=0.013
OUTE MCUNGE       ID=77 HYD=RTE.PONDF INFLOW ID=53
                  DT=0.0  L=850 NS=0  SLOPE=0.004
                  MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD          ID=77 CODE=0


****RESERVE*****

OMPUTE NM HYD     ID=20  HYD NO=BASIN.G1  DA=.02531 SQ MI
                %A=0  %B=25.0  %C=25.0 %D=50.0
                TP=-.133 HR  RAIN=-1
RINT HYD          ID=20 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                DIA=3.0  N=0.013
OUTE MCUNGE       ID=78 HYD=RTE.G1 INFLOW ID=20
                  DT=0.0  L=580 NS=0  SLOPE=0.007
                  MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD          ID=78 CODE=0


****SANTA FE 2*****

OMPUTE NM HYD     ID=21  HYD NO=BASIN.G2  DA=.02530 SQ MI
                %A=0  %B=25.0  %C=25.0 %D=50.0
                TP=-.133 HR  RAIN=-1
RINT HYD          ID=21 CODE=10


DD HYD          ID=30 HYD=G1.G2 ID I=78 II=21
RINT HYD        ID=30 CODE=10


DD HYD          ID=31 HYD=G1G2.PONDF ID I=30 II=77
RINT HYD        ID=31 CODE=10


*****************************************************
DE HYD          ID=31 Q=17.61 ID I=32  HYD NO=BYPASS.G
                            ID II=33 HYD NO=SURGE.G
RINT HYD        ID=32 CODE=10
RINT HYD        ID=33 CODE=10
*****************************************************
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```
OUTE RESERVOIR    ID=34 HYD=POND.G  INFLOW ID=33 CODE=6.3
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5415.67
                  2.50     0.23       5417.0
                  4.20     0.84       5418.0
                  5.77     1.83       5419.0
                  7.24     3.17       5420.0
                  8.63     4.70       5421.0
                  9.95     6.34       5422.0
                  10.45    7.21       5422.5
                   100.00  8.10       5423.0

RINT HYD            ID=24 CODE=10

OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.006
                   DIA=3.0  N=0.013
OUTE MCUNGE          ID=78 HYD=RTE.PONDG INFLOW ID=34
                     DT=0.0  L=1440 NS=0  SLOPE=0.006
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=78 CODE=0

DD HYD            ID=79 HYD=BYPASS.RTE.G ID I=78 II=32
RINT HYD          ID=79 CODE=10

*****************************************************************
*********POND G DISCHARGES INTO POND K*************************

OMPUTE NM HYD       ID=55  HYD NO=OFFSITE2  DA=.0805 SQ MI
                  %A=100  %B=0.0  %C=0.0 %D=0.0
                  TP=-.66 HR  RAIN=-1
RINT HYD            ID=55 CODE=10

OUTE RESERVOIR    ID=50 HYD=OFFPOND2  INFLOW ID=55 CODE=5
                  OUTFLOW  STORAGE    DEPTH
                  0        0          0
                  2.16     0.047      1
                  3.06     0.222      2
                  3.75     0.466      3
                  4.33     0.751      4
                  4.84     1.081      5

PRINT HYD         ID=50 CODE=10

OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.011
                   DIA=2.0  N=0.013
OUTE MCUNGE          ID=70 HYD=RTE.OFFPOND2 INFLOW ID=50
                     DT=0.0  L=900 NS=0  SLOPE=0.011
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=70 CODE=0
```

```
OMPUTE NM HYD        ID=30  HYD NO=BASIN.B  DA=.01998 SQ MI
                    %A=0  %B=34.0  %C=34.0 %D=32.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=30 CODE=10


E RESERVOIR         ID=51 HYD=POND.B  INFLOW ID=30 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0        0          5515
                    1.71     0.06       5516
                    2.42     0.24       5517
                    2.96     0.55       5518
                    3.42     0.99       5519
                    3.82     1.67       5520

RINT HYD            ID=51 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.03
                     DIA=2.0  N=0.013
OUTE MCUNGE            ID=71 HYD=RTE.PONDB INFLOW ID=51
                       DT=0.0  L=1180 NS=0  SLOPE=0.03
                       MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD               ID=71 CODE=0


ADD HYD             ID=72 HYD=OFF.B ID I=71 II=70
PRINT HYD           ID=72 CODE=10


UTE NM HYD           ID=30  HYD NO=BASINE1.1  DA=.02753 SQ MI
                    %A=0.0  %B=33.0  %C=33.0 %D=34.0
                    TP=-0.133 HR  RAIN=-1
RINT HYD              ID=30 CODE=10


DD HYD              ID=73 HYD=OFF.E11 ID I=70 II=30
RINT HYD            ID=73 CODE=10


OMPUTE NM HYD        ID=31  HYD NO=BASINE1.2  DA=.00588 SQ MI
                    %A=0.0  %B=33.0  %C=33.0 %D=34.0
                    TP=-0.133 HR  RAIN=-1
RINT HYD              ID=31 CODE=10


OMPUTE NM HYD        ID=32  HYD NO=BASIN.E2  DA=.01348 SQ MI
                    %A=0.0  %B=18.0  %C=18.0 %D=64.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=32 CODE=10


DD HYD              ID=72 HYD=E2.E12 ID I=31 II=32
RINT HYD            ID=72 CODE=10


UTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.002
                     DIA=3.0  N=0.013
OUTE MCUNGE            ID=76 HYD=RTE.E12 INFLOW ID=72
                       DT=0.0  L=800 NS=0  SLOPE=0.01
                       MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0
```

```
RINT HYD              ID=76 CODE=0


OMPUTE NM HYD         ID=33  HYD NO=BASIN.E3  DA=.01197 SQ MI
                     %A=0.0  %B=25.0  %C=25.0 %D=50.0
                     TP=-0.133 HR  RAIN=-1
RINT HYD              ID=33 CODE=10


OMPUTE NM HYD         ID=34  HYD NO=BASIN.E4  DA=.00577 SQ MI
                     %A=0.0  %B=5.0  %C=5.0 %D=90.0
                     TP=-0.133 HR  RAIN=-1
RINT HYD              ID=34 CODE=10


DD HYD               ID=74 HYD=E3.E4 ID I=33 II=34
RINT HYD             ID=74 CODE=10


DD HYD               ID=75 HYD=E3E4.PONDB ID I=74 II=71
RINT HYD             ID=75 CODE=10


DD HYD               ID=74 HYD=E3E4B.OFFE11 ID I=75 II=73
RINT HYD             ID=74 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.026
                    DIA=4.0  N=0.013
OUTE MCUNGE            ID=77 HYD=RTE.E1E4 INFLOW ID=74
                       DT=0.0  L=1210 NS=0  SLOPE=0.026
                       MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD               ID=77 CODE=0


DD HYD               ID=78 HYD=E1E4.E12 ID I=77 II=76
RINT HYD             ID=78 CODE=10


OMPUTE NM HYD         ID=35  HYD NO=BASIN.E5  DA=.04402 SQ MI
                     %A=0.0  %B=29.0  %C=29.0 %D=42.0
                     TP=-0.133 HR  RAIN=-1
RINT HYD              ID=35 CODE=10


DD HYD               ID=80 HYD=E1E4.E5 ID I=78 II=35
RINT HYD             ID=80 CODE=10


OMPUTE NM HYD         ID=36  HYD NO=BASIN.E6  DA=.00488 SQ MI
                     %A=0.0  %B=5.0  %C=5.0 %D=90.0
                     TP=-0.133 HR  RAIN=-1
RINT HYD              ID=36 CODE=10


DD HYD               ID=40 HYD=E1E6 ID I=80 II=36
RINT HYD             ID=40 CODE=10

*****************************************************************
IVIDE HYD            ID=40 Q=15.5 ID I=61  HYD NO=BYPASS.E
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                                  ID II=62 HYD NO=SURGE.E
RINT HYD          ID=61 CODE=10
RINT HYD          ID=62 CODE=10
*****************************************************************


E RESERVOIR       ID=37 HYD=POND.E  INFLOW ID=62 CODE=6.3
                  OUTFLOW  STORAGE    DEPTH
                  0.0      0.00       5441.6
                  3.31     1.37       5444
                  4.53     2.73       5445
                  5.68     4.25       5446
                  6.77     5.97       5447
                  7.81     7.52       5448
                  50.0     9.07       5449

RINT HYD          ID=37 CODE=10


DD HYD            ID=40 HYD=TOTALE ID I=61 II=37
RINT HYD          ID=40 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.022
                    DIA=2.5  N=0.013
OUTE MCUNGE           ID=38 HYD=RTE.PONDE INFLOW ID=40
                      DT=0.0  L=1200 NS=0  SLOPE=0.022
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=38 CODE=0


ARK***

OMPUTE NM HYD         ID=32  HYD NO=BASIN.P  DA=.00845 SQ MI
                    %A=43  %B=25  %C=25 %D=7
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=32 CODE=10


**VALLE VISTA***

OMPUTE NM HYD         ID=33  HYD NO=BASIN.H1  DA=.01825 SQ MI
                    %A=0.0  %B=16  %C=16 %D=68
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=33 CODE=10


DD HYD            ID=43 HYD=PONDE.H1 ID I=38 II=33
RINT HYD          ID=43 CODE=10


**RAINBOW BLVD PORTION***

OMPUTE NM HYD         ID=34  HYD NO=BASIN.H2  DA=.00836 SQ MI
                    %A=0.0  %B=0.0  %C=10.0 %D=90.0
                    TP=-.133 HR  RAIN=-1
T HYD                 ID=34 CODE=10


DD HYD            ID=44 HYD=P.H2 ID I=32 II=34
RINT HYD          ID=44 CODE=10
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DD HYD              ID=45 HYD=PH2.H1 ID I=44 II=43
RINT HYD            ID=45 CODE=10


OMPUTE NM HYD         ID=35  HYD NO=BASIN.H3  DA=.01191 SQ MI
                    %A=0.0  %B=20.0  %C=20.0 %D=60.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=35 CODE=10


DD HYD              ID=46 HYD=PH1H3 ID I=45 II=35
RINT HYD            ID=46 CODE=10


**************************************************************
IVIDE HYD           ID=46 Q=21.6 ID I=47  HYD NO=BYPASS.H
                                 ID II=48 HYD NO=SURGE.H
RINT HYD            ID=47 CODE=10
RINT HYD            ID=48 CODE=10
**************************************************************


*****
OUTE RESERVOIR      ID=30 HYD=POND.H  INFLOW ID=48 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0.0      0.0        5418.65
                    2.31     0.57       5420
                    3.88     1.62       5421
                    5.36     3.02       5422
                    100.0    4.60       5423

RINT HYD            ID=30 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.003
                     DIA=2.5  N=0.013
OUTE MCUNGE            ID=49 HYD=RTE.PONDH INFLOW ID=30
                       DT=0.0  L=1600 NS=0  SLOPE=0.003
                       MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD               ID=49 CODE=0


DD HYD              ID=31 HYD=BYPASS.RTE.H ID I=49 II=47
RINT HYD            ID=31 CODE=10


****TIERRA VISTA******

OMPUTE NM HYD         ID=20  HYD NO=BASIN.K1  DA=.02673 SQ MI
                    %A=0.0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.1715 HR  RAIN=-1
RINT HYD              ID=20 CODE=10


HYD                 ID=32 HYD=PONDH.K1 ID I=31 II=20
RINT HYD            ID=32 CODE=10
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```
OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.0088
                    DIA=4.5  N=0.013
OUTE MCUNGE           ID=33 HYD=RTE.K1 INFLOW ID=32
                      DT=0.0  L=800 NS=0  SLOPE=0.0088
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

T HYD                 ID=33 CODE=0


OMPUTE NM HYD         ID=21  HYD NO=BASIN.K2  DA=.01486 SQ MI
                    %A=0.0  %B=15.0  %C=15.0 %D=70.0
                    TP=-.1715 HR  RAIN=-1
RINT HYD              ID=21 CODE=10

DD HYD              ID=34 HYD=K1.K2 ID I=33 II=21
RINT HYD            ID=34 CODE=10


OMPUTE NM HYD         ID=22  HYD NO=BASIN.K3  DA=.00914 SQ MI
                    %A=0  %B=5.0  %C=5.0 %D=90.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=22 CODE=10


DD HYD              ID=24 HYD=PONDG.K3 ID I=79 II=22
RINT HYD            ID=24 CODE=10


OMPUTE NM HYD         ID=23  HYD NO=BASIN.K4  DA=.0134 SQ MI
                    %A=0.0  %B=70.0  %C=30.0 %D=0.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=23 CODE=10


DD HYD              ID=25 HYD=K3.K4 ID I=24 II=23
RINT HYD            ID=25 CODE=10


*******BASINS 2, B, E, H, L ARE LATER ROUTED THROUGH POND K***********


OMPUTE NM HYD         ID=81  HYD NO=BASIN.J1  DA=.00517 SQ MI
                    %A=0.0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.1333 HR  RAIN=-1
RINT HYD              ID=81 CODE=10

****CANTATA*****

OMPUTE NM HYD         ID=82  HYD NO=BASIN.J2  DA=.01706 SQ MI
                    %A=0.0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.1333 HR  RAIN=-1
RINT HYD              ID=82 CODE=10

OMPUTE NM HYD         ID=83  HYD NO=BASIN.J3  DA=.00580 SQ MI
                    %A=0.0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.1333 HR  RAIN=-1
RINT HYD              ID=83 CODE=10

**CANTATA*****

OMPUTE NM HYD         ID=84  HYD NO=BASIN.J4  DA=.01006 SQ MI
                    %A=0.0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.1333 HR  RAIN=-1
```

```
RINT HYD            ID=84 CODE=10


OMPUTE NM HYD       ID=85  HYD NO=BASIN.J5  DA=.00134 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=85 CODE=10


OMPUTE NM HYD       ID=86  HYD NO=BASIN.J6  DA=.00422 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=86 CODE=10


OMPUTE NM HYD       ID=87  HYD NO=BASIN.J7  DA=.00444 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=87 CODE=10


OMPUTE NM HYD       ID=88  HYD NO=BASIN.J8  DA=.00903 SQ MI
                   %A=0.0  %B=70.0  %C=30.0 %D=0.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=88 CODE=10


OMPUTE NM HYD       ID=89  HYD NO=BASIN.J9  DA=.00548 SQ MI
                   %A=0.0  %B=7.5  %C=7.5 %D=85.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=89 CODE=10


UTE NM HYD          ID=12  HYD NO=BASIN.J12  DA=.01419 SQ MI
                   %A=100.0  %B=0.0  %C=0.0 %D=0.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=12 CODE=10


DD HYD             ID=11 HYD=J10J11.J6 ID I=86 II=10
RINT HYD           ID=11 CODE=10


DD HYD             ID=95 HYD=J10J11J6.J9 ID I=11 II=89
RINT HYD           ID=95 CODE=10


DD HYD             ID=90 HYD=J10J11J6J9.J5 ID I=85 II=95
RINT HYD           ID=90 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                   DIA=3.0  N=0.013
OUTE MCUNGE          ID=91 HYD=RTE.J5J6 INFLOW ID=90
                     DT=0.0  L=350 NS=0  SLOPE=0.007
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=91 CODE=0


DD HYD             ID=93 HYD=J1.J4 ID I=81 II=84
RINT HYD           ID=93 CODE=10
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DD HYD              ID=94 HYD=J1J4.J5J6J9 ID I=91 II=93
RINT HYD            ID=94 CODE=10

OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                    DIA=3.5  N=0.013
OUTE MCUNGE           ID=92 HYD=RTE.J14569 INFLOW ID=94
                      DT=0.0  L=650 NS=0  SLOPE=0.007
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=92 CODE=0


DD HYD              ID=95 HYD=J2.J3 ID I=82 II=83
RINT HYD            ID=95 CODE=10


DD HYD              ID=94 HYD=J2J3.J7 ID I=95 II=87
RINT HYD            ID=94 CODE=10


DD HYD              ID=96 HYD=J145679.J237 ID I=94 II=92
RINT HYD            ID=96 CODE=10

DD HYD              ID=97 HYD=J1J7.J8 ID I=96 II=88
RINT HYD            ID=97 CODE=10


DD HYD              ID=98 HYD=J1J8.J12 ID I=97 II=12
RINT HYD            ID=98 CODE=10


*****************************************************************
DE HYD              ID=98 Q=26.34 ID I=83  HYD NO=BYPASSJ
                                ID II=84 HYD NO=SURGEJ
RINT HYD            ID=83 CODE=10
RINT HYD            ID=84 CODE=10
*****************************************************************


OUTE RESERVOIR      ID=90 HYD=POND.J  INFLOW ID=84 CODE=10
                    OUTFLOW  STORAGE    DEPTH
                    0        0          5414
                    3.82     1.96       5415
                    7.20     4.70       5416
                    10.28    7.94       5417
                    100.0    11.56      5418

RINT HYD            ID=90 CODE=0


DD HYD              ID=97 HYD=BYPASS.SURGEPONDJ ID I=90 II=83
RINT HYD            ID=97 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                    DIA=4.0  N=0.013
OUTE MCUNGE           ID=91 HYD=RTE.J5J6 INFLOW ID=97
                      DT=0.0  L=1100 NS=0  SLOPE=0.007
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=91 CODE=0

***TAOS******
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OMPUTE NM HYD        ID=30  HYD NO=BASIN.K5  DA=.02364 SQ MI
                    %A=0.0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.1333 HR  RAIN=-1
RINT HYD             ID=30 CODE=10


OMPUTE NM HYD        ID=31  HYD NO=BASIN.K6  DA=.00220 SQ MI
                    %A=0.0  %B=5.0  %C=5.0 %D=90.0
                    TP=-.1333 HR  RAIN=-1
RINT HYD             ID=31 CODE=10


DD HYD              ID=41 HYD=K5.K6 ID I=30 II=31
RINT HYD            ID=41 CODE=10


ADD HYD             ID=83 HYD=1ADCFG.JK6 ID I=27 II=91
PRINT HYD           ID=83 CODE=10


DD HYD              ID=43 HYD=K5K6.PONDJ I=41 II=91
RINT HYD            ID=43 CODE=10


DD HYD              ID=44 HYD=K5K6PONDJ.K3K4 I=43 II=25
RINT HYD            ID=44 CODE=10


DD HYD              ID=96 HYD=PONDJK13.K1K4 ID I=34 II=44
RINT HYD            ID=96 CODE=10
*****************************************************************
DE HYD              ID=96 Q=44.91 ID I=97  HYD NO=BYPASS.K
                                  ID II=98 HYD NO=SURGE.K
RINT HYD            ID=97 CODE=10
RINT HYD            ID=98 CODE=10
*****************************************************************


OUTE RESERVOIR      ID=70 HYD=POND.K  INFLOW ID=98 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0.00     0          5404.85
                    6.79     2.60       5406
                    12.04    5.29       5407
                    16.84    9.24       5408
                    21.30    14.84      5409
                    25.48    21.67      5410

RINT HYD            ID=70 CODE=10

DD HYD              ID=99 HYD=BYPASS.ROUTE.K ID I=70 II=97
RINT HYD            ID=99 CODE=5


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.005
                   DIA=2.5  N=0.013
E MCUNGE              ID=1 HYD=RTE.PONDK INFLOW ID=99
                      DT=0.0  L=2000 NS=0  SLOPE=0.005
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=1 CODE=0
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OMPUTE NM HYD        ID=2  HYD NO=UNIVROWNORTH  DA=.007266 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD             ID=2 CODE=5

DD HYD             ID=3 HYD=UNIVN.PONDK ID I=1 II=2
RINT HYD           ID=3 CODE=5


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.005
                   DIA=2.5  N=0.013
OUTE MCUNGE          ID=4 HYD=RTE.UNIVN INFLOW ID=3
                     DT=0.0  L=2000 NS=0  SLOPE=0.005
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=4 CODE=0


OMPUTE NM HYD        ID=5  HYD NO=UNIVROWSOUTH  DA=.007266 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD             ID=5 CODE=5

DD HYD             ID=6 HYD=UNIVNS.PONDK ID I=4 II=5
RINT HYD           ID=6 CODE=5

PUNCH HYD            ID=6

S*****************************************************************

*****END OF TRAILS DRAINAGE ANALYSIS

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AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =02/06/2008
INPUT FILE = TRAILS.TXT USER NO.= AHYMO-C-9803c01UNMLIB-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.00
*S**********										
*S********** COMPUTE ONSITE BASINS FROM THE TRAILS										
*S**********										
COMPUTE NM HYD	OFFSITE1	-	50	.19980	37.00	4.426	.41534	2.000	.289	PER IMP= .00
ROUTE RESERVOIR	OFF.POND.1	50	53	.19980	9.25	4.426	.41533	3.200	.072	AC-FT= 2.302
ROUTE MCUNGE	RTE.OFF.POND	53	54	.19980	9.26	4.426	.41537	3.200	.072	CCODE = .2
COMPUTE NM HYD	BASIN.A1	-	21	.02422	51.68	2.610	2.02069	1.500	3.334	PER IMP= 75.00
COMPUTE NM HYD	BASIN.A2	-	22	.01331	23.43	.960	1.35259	1.500	2.750	PER IMP= 34.00
COMPUTE NM HYD	BASIN.A3	-	23	.00502	11.41	.606	2.26512	1.500	3.550	PER IMP= 90.00
COMPUTE NM HYD	BASIN.A4	-	24	.01186	26.39	1.381	2.18365	1.500	3.477	PER IMP= 85.00
COMPUTE NM HYD	BASIN.A5	-	25	.01830	37.55	1.829	1.87404	1.500	3.206	PER IMP= 66.00
COMPUTE NM HYD	BASIN.A6	-	26	.02652	53.44	2.558	1.80886	1.500	3.149	PER IMP= 62.00
COMPUTE NM HYD	BASIN.A7	-	27	.01055	22.52	1.137	2.02070	1.500	3.335	PER IMP= 75.00
ADD HYD	O1.A2	54&22	55	.21311	25.89	5.386	.47390	1.500	.190	
ADD HYD	O1A2.A1	55&21	56	.23733	77.57	7.996	.63175	1.500	.511	
ADD HYD	O1A2A1.A3	56&23	57	.24235	88.97	8.603	.66558	1.500	.574	
ROUTE MCUNGE	RTE.O1A2A1.A	57	58	.24235	80.93	8.569	.66299	1.500	.522	CCODE = .1
ADD HYD	A1TOA5	58&25	59	.26065	118.48	10.398	.74801	1.500	.710	
ROUTE RESERVOIR	POND.A5	59	60	.26065	15.82	10.398	.74801	2.300	.095	AC-FT= 3.996
ROUTE MCUNGE	RTE.A4	24	61	.01186	24.62	1.372	2.16943	1.500	3.243	CCODE = .1
ADD HYD	RTE.A4.A6	61&26	62	.03838	78.06	3.931	1.92024	1.500	3.178	
ADD HYD	RTEA4A6.POND	62&60	63	.29903	84.06	14.329	.89845	1.500	.439	
ROUTE RESERVOIR	POND.A6	63	64	.29903	16.11	14.329	.89845	3.100	.084	AC-FT= 3.142
ADD HYD	PONDA6.A7	64&27	65	.30958	28.42	15.466	.93669	1.500	.143	
ROUTE MCUNGE	RTE.A6.A7	65	66	.30958	28.42	15.466	.93669	1.500	.143	CCODE = .0
COMPUTE NM HYD	BASIN.D1	-	25	.01816	36.60	1.752	1.80886	1.500	3.149	PER IMP= 62.00
ADD HYD	A6.A7.D1	66&25	67	.32774	65.02	17.218	.98501	1.500	.310	
ROUTE RESERVOIR	POND.D1	67	68	.32774	51.59	17.288	.98906	1.500	.246	AC-FT= .348
ROUTE MCUNGE	RTE.D1	68	69	.32774	51.59	17.288	.98906	1.500	.246	CCODE = .0
COMPUTE NM HYD	BASIN.D2	-	25	.03456	63.65	2.763	1.49925	1.500	2.878	PER IMP= 43.00
ADD HYD	PONDD1.D2	69&25	70	.36230	115.24	20.052	1.03772	1.500	.497	
COMPUTE NM HYD	BASIN.D3	-	26	.00580	13.18	.701	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	D1.D2.D3	70&26	71	.36810	128.42	20.752	1.05706	1.500	.545	
COMPUTE NM HYD	BASIN.D4	-	27	.01809	33.32	1.446	1.49925	1.500	2.878	PER IMP= 43.00
DIVIDE HYD	BYPASS.INLET	27	1	.00892	5.39	.713	1.49923	1.300	.944	
	SURGE.INLET	and	2	.00917	27.93	.733	1.49923	1.500	4.760	
COMPUTE NM HYD	BASIN.POND.D	-	4	.00219	3.41	.114	.97961	1.500	2.429	PER IMP= 11.11

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ADD HYD            D4.POND.D  2& 4   5        .01136        31.34        .847      1.39902    1.500    4.311
*S****** NEW POND D INFLOW HYDROGRAPH
ADD HYD           D1D2D3.D4 71& 5  73        .37946       159.76      21.600      1.06730    1.500     .658
DIVIDE HYD          BYPASS.D   73   31        .26477        13.77      15.071      1.06730    1.300     .081
                     SURGE.D  and   32        .11469       145.99       6.528      1.06730    1.500    1.989
ROUTE RESERVOIR       POND.D   32   50        .11469         6.62       6.527      1.06709    2.400     .090 AC-FT=    4.953
ROUTE MCUNGE           RTE.D   50   51        .11469         6.62       6.523      1.06642    2.700     .090 CCODE =      .1
ADD HYD         BYPASS.RTE.D 51&31  75        .37946        20.39      21.594      1.06702    2.700     .084
COMPUTE NM HYD       BASIN.C   -    20        .01278        24.36       1.100      1.61332    1.500    2.978 PER IMP=  50.00
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COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
ROUTE MCUNGE	RTE.C	20	76	.01278	23.74	1.096	1.60827	1.600	2.902	CCODE = .1
COMPUTE NM HYD	BASIN.F1	-	20	.02208	43.39	2.025	1.71939	1.500	3.071	PER IMP= 56.50
ADD HYD	C.F1	76&20	77	.03486	64.42	3.121	1.67860	1.500	2.888	
COMPUTE NM HYD	BASIN.F2	-	21	.00573	13.02	.692	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	CF1.F2	77&21	78	.04059	77.44	3.813	1.76139	1.500	2.981	
ROUTE MCUNGE	RTE.CF1F2	78	79	.04059	76.94	3.816	1.76280	1.500	2.962	CCODE = .2
COMPUTE NM HYD	BASIN.F3	-	22	.03563	70.02	3.267	1.71938	1.500	3.070	PER IMP= 56.50
ADD HYD	CF1F2.F3	79&22	70	.07622	146.95	7.083	1.74248	1.500	3.012	
COMPUTE NM HYD	BASIN.F4	-	23	.03892	74.16	3.349	1.61331	1.500	2.977	PER IMP= 50.00
ADD HYD	CF1F2F3.F4	70&23	71	.11514	221.12	10.432	1.69882	1.500	3.001	
ADD HYD	CF1F2F3F4.D	71&75	70	.49460	235.07	32.026	1.21410	1.500	.743	
COMPUTE NM HYD	BASIN.F5	-	24	.01852	39.52	1.996	2.02070	1.500	3.334	PER IMP= 75.00
COMPUTE NM HYD	BASIN.J10	-	25	.00628	14.27	.759	2.26512	1.500	3.550	PER IMP= 90.00
COMPUTE NM HYD	BASIN.J11	-	26	.00733	16.65	.886	2.26512	1.500	3.549	PER IMP= 90.00
ADD HYD	J10.J11	25&26	23	.01361	30.92	1.644	2.26508	1.500	3.550	
ROUTE MCUNGE	RTE.J10J11	23	10	.01361	29.01	1.634	2.25104	1.500	3.330	CCODE = .1
COMPUTE NM HYD	BASIN.F7	-	26	.01097	24.42	1.278	2.18365	1.500	3.478	PER IMP= 85.00
ROUTE MCUNGE	RTE.F7	26	74	.01097	23.37	1.269	2.16910	1.500	3.328	CCODE = .1
ADD HYD	F7.F5	74&24	75	.02949	62.89	3.265	2.07585	1.500	3.332	
COMPUTE NM HYD	TRACT.1	-	3	.02717	54.00	2.550	1.75997	1.500	3.105	PER IMP= 59.00
*S****** POND F5 INFLOW HYDROGRAPH (PREV ID 27)										
ADD HYD	S.F5	3& 1	41	.03609	59.39	3.264	1.69551	1.500	2.571	
ADD HYD	F578.D56	41&75	42	.06558	122.28	6.529	1.86653	1.500	2.913	
ROUTE RESERVOIR	POND.F5	42	52	.06558	60.11	6.529	1.86653	1.700	1.432	AC-FT= 1.980
ROUTE MCUNGE	RTE.PONDF5	52	77	.06558	58.75	6.504	1.85943	1.700	1.400	CCODE = .2
ADD HYD	F1TOF8	77&70	79	.56018	258.65	38.530	1.28965	1.500	.721	
DIVIDE HYD	BYPASS.F	79	31	.15885	6.20	10.926	1.28965	1.200	.061	
	SURGE.F	and	32	.40133	252.45	27.604	1.28965	1.500	.983	
ROUTE RESERVOIR	POND.F	32	52	.40133	29.95	27.616	1.29021	3.000	.117	AC-FT= 11.936
ADD HYD	BYPASSF.POND	31&52	53	.56018	36.15	38.542	1.29004	3.000	.101	
ROUTE MCUNGE	RTE.PONDF	53	77	.56018	33.85	38.510	1.28898	3.100	.094	CCODE = .2
COMPUTE NM HYD	BASIN.G1	-	20	.02531	48.23	2.178	1.61331	1.500	2.978	PER IMP= 50.00
ROUTE MCUNGE	RTE.G1	20	78	.02531	48.23	2.178	1.61330	1.500	2.978	CCODE = .0
COMPUTE NM HYD	BASIN.G2	-	21	.02530	48.22	2.177	1.61331	1.500	2.978	PER IMP= 50.00
ADD HYD	G1.G2	78&21	30	.05061	96.45	4.355	1.61330	1.500	2.978	
ADD HYD	G1G2.PONDF	30&77	31	.61079	111.17	42.864	1.31585	1.500	.284	
DIVIDE HYD	BYPASS.G	31	32	.43916	17.61	30.820	1.31585	1.300	.063	
	SURGE.G	and	33	.17163	93.56	12.045	1.31585	1.500	.852	
ROUTE RESERVOIR	POND.G	33	34	.17163	7.94	12.045	1.31585	4.800	.072	AC-FT= 3.941
ROUTE MCUNGE	RTE.PONDG	34	78	.17163	7.96	12.047	1.31607	4.800	.072	CCODE = .2
ADD HYD	BYPASS.RTE.G	78&32	79	.61079	25.57	42.866	1.31590	4.800	.065	
COMPUTE NM HYD	OFFSITE2	-	55	.08050	13.87	1.783	.41534	2.000	.269	PER IMP= .00

ROUTE RESERVOIR	OFFPOND2	55	50	.08050	4.43	1.783	.41534	3.100	.086	AC-FT=	.813
ROUTE MCUNGE	RTE.OFFPOND2	50	70	.08050	4.43	1.783	.41538	3.200	.086	CCODE =	.2
COMPUTE NM HYD	BASIN.B	-	30	.01998	34.80	1.407	1.32000	1.500	2.721	PER IMP=	32.00
ROUTE RESERVOIR	POND.B	30	51	.01998	3.36	1.407	1.31999	2.100	.263	AC-FT=	.930
ROUTE MCUNGE	RTE.PONDB	51	71	.01998	3.36	1.407	1.32010	2.100	.263	CCODE =	.2
COMPUTE NM HYD	BASINE1.1	-	30	.02753	48.45	1.986	1.35259	1.500	2.750	PER IMP=	34.00
ADD HYD	OFF.E11	70&30	73	.10803	48.80	3.769	.65420	1.500	.706		
COMPUTE NM HYD	BASINE1.2	-	31	.00588	10.36	.424	1.35259	1.500	2.752	PER IMP=	34.00
COMPUTE NM HYD	BASIN.E2	-	32	.01348	27.42	1.324	1.84145	1.500	3.178	PER IMP=	64.00
ADD HYD	E2.E12	31&32	72	.01936	37.77	1.748	1.69294	1.500	3.049		

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
ROUTE MCUNGE	RTE.E12	72	76	.01936	31.30	1.684	1.63074	1.600	2.526	CCODE = .2
COMPUTE NM HYD	BASIN.E3	-	33	.01197	22.82	1.030	1.61331	1.500	2.978	PER IMP= 50.00
COMPUTE NM HYD	BASIN.E4	-	34	.00577	13.11	.697	2.26513	1.500	3.550	PER IMP= 90.00
ADD HYD	E3.E4	33&34	74	.01774	35.93	1.727	1.82529	1.500	3.164	
ADD HYD	E3E4.PONDB	74&71	75	.03772	38.54	3.134	1.55766	1.500	1.597	
ADD HYD	E3E4B.OFFE11	75&73	74	.14575	87.35	6.903	.88801	1.500	.936	
ROUTE MCUNGE	RTE.E1E4	74	77	.14575	87.35	6.903	.88801	1.500	.936	CCODE = .0
ADD HYD	E1E4.E12	77&76	78	.16511	118.54	8.587	.97509	1.500	1.122	
COMPUTE NM HYD	BASIN.E5	-	35	.04402	80.67	3.482	1.48295	1.500	2.863	PER IMP= 42.00
ADD HYD	E1E4.E5	78&35	80	.20913	199.20	12.068	1.08199	1.500	1.488	
COMPUTE NM HYD	BASIN.E6	-	36	.00488	11.09	.590	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	E1E6	80&36	40	.21401	210.29	12.658	1.10897	1.500	1.535	
DIVIDE HYD	BYPASS.E	40	61	.10387	15.50	6.143	1.10897	1.300	.233	
	SURGE.E	and	62	.11014	194.79	6.514	1.10897	1.500	2.763	
ROUTE RESERVOIR	POND.E	62	37	.11014	6.80	6.520	1.10998	2.100	.096	AC-FT= 6.008
ADD HYD	TOTALE	61&37	40	.21401	22.30	12.663	1.10945	2.100	.163	
ROUTE MCUNGE	RTE.PONDE	40	38	.21401	22.31	12.665	1.10965	2.100	.163	CCODE = .2
COMPUTE NM HYD	BASIN.P	-	32	.00845	10.08	.327	.72623	1.500	1.865	PER IMP= 7.00
COMPUTE NM HYD	BASIN.H1	-	33	.01825	37.78	1.856	1.90663	1.500	3.234	PER IMP= 68.00
ADD HYD	PONDE.H1	38&33	43	.23226	57.64	14.521	1.17226	1.500	.388	
COMPUTE NM HYD	BASIN.H2	-	34	.00836	19.16	1.018	2.28220	1.500	3.582	PER IMP= 90.00
ADD HYD	P.H2	32&34	44	.01681	29.25	1.345	1.50001	1.500	2.718	
ADD HYD	PH2.H1	44&43	45	.24907	86.88	15.866	1.19438	1.500	.545	
COMPUTE NM HYD	BASIN.H3	-	35	.01191	23.79	1.128	1.77627	1.500	3.121	PER IMP= 60.00
ADD HYD	PH1H3	45&35	46	.26098	110.67	16.994	1.22093	1.500	.663	
DIVIDE HYD	BYPASS.H	46	47	.21038	21.60	13.699	1.22093	1.300	.160	
	SURGE.H	and	48	.05060	89.07	3.295	1.22093	1.500	2.751	
ROUTE RESERVOIR	POND.H	48	30	.05060	5.20	3.295	1.22093	2.300	.161	AC-FT= 2.870
ROUTE MCUNGE	RTE.PONDH	30	49	.05060	5.20	3.295	1.22104	2.400	.161	CCODE = .2
ADD HYD	BYPASS.RTE.H	49&47	31	.26098	26.80	16.994	1.22095	2.400	.160	
COMPUTE NM HYD	BASIN.K1	-	20	.02673	50.54	2.579	1.80886	1.500	2.954	PER IMP= 62.00
ADD HYD	PONDH.K1	31&20	32	.28771	73.45	19.573	1.27557	1.500	.399	
ROUTE MCUNGE	RTE.K1	32	33	.28771	73.45	19.573	1.27557	1.500	.399	CCODE = .0
COMPUTE NM HYD	BASIN.K2	-	21	.01486	29.39	1.537	1.93922	1.500	3.090	PER IMP= 70.00
ADD HYD	K1.K2	33&21	34	.30257	102.84	21.110	1.30816	1.500	.531	
COMPUTE NM HYD	BASIN.K3	-	22	.00914	20.76	1.104	2.26513	1.500	3.549	PER IMP= 90.00
ADD HYD	PONDG.K3	79&22	24	.61993	41.03	43.970	1.32990	1.500	.103	
COMPUTE NM HYD	BASIN.K4	-	23	.01340	18.28	.527	.73726	1.500	2.132	PER IMP= .00
ADD HYD	K3.K4	24&23	25	.63333	59.31	44.497	1.31736	1.500	.146	
COMPUTE NM HYD	BASIN.J1	-	81	.00517	11.04	.557	2.02069	1.500	3.336	PER IMP= 75.00
COMPUTE NM HYD	BASIN.J2	-	82	.01706	36.40	1.839	2.02069	1.500	3.334	PER IMP= 75.00
COMPUTE NM HYD	BASIN.J3	-	83	.00580	11.70	.560	1.80886	1.500	3.151	PER IMP= 62.00

COMPUTE NM HYD	BASIN.J4	-	84	.01006	21.47	1.084	2.02069	1.500	3.335	PER IMP=	75.00
COMPUTE NM HYD	BASIN.J5	-	85	.00134	3.05	.162	2.26513	1.500	3.561	PER IMP=	90.00
COMPUTE NM HYD	BASIN.J6	-	86	.00422	9.59	.510	2.26512	1.500	3.551	PER IMP=	90.00
COMPUTE NM HYD	BASIN.J7	-	87	.00444	10.09	.536	2.26512	1.500	3.551	PER IMP=	90.00
COMPUTE NM HYD	BASIN.J8	-	88	.00903	12.31	.355	.73726	1.500	2.130	PER IMP=	.00
COMPUTE NM HYD	BASIN.J9	-	89	.00548	12.20	.638	2.18365	1.500	3.479	PER IMP=	85.00
COMPUTE NM HYD	BASIN.J12	-	12	.01419	10.65	.314	.41534	1.500	1.173	PER IMP=	.00
ADD HYD	J10J11.J6	86&10	11	.01783	38.60	2.144	2.25428	1.500	3.383		
ADD HYD	J10J11J6.J9	11&89	95	.02331	50.80	2.782	2.23766	1.500	3.405		
ADD HYD	J10J11J6J9.J	85&95	90	.02465	53.86	2.944	2.23914	1.500	3.414		

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
ROUTE MCUNGE	RTE.J5J6	90	91	.02465	53.86	2.944	2.23914	1.500	3.414	CCODE = .0
ADD HYD	J1.J4	81&84	93	.01523	32.51	1.641	2.02065	1.500	3.335	
ADD HYD	J1J4.J5J6J9	91&93	94	.03988	86.37	4.585	2.15570	1.500	3.384	
ROUTE MCUNGE	RTE.J14569	94	92	.03988	86.37	4.585	2.15570	1.500	3.384	CCODE = .0
ADD HYD	J2.J3	82&83	95	.02286	48.10	2.398	1.96692	1.500	3.288	
ADD HYD	J2J3.J7	95&87	94	.02730	58.19	2.934	2.01541	1.500	3.330	
ADD HYD	J145679.J237	94&92	96	.06718	144.56	7.519	2.09869	1.500	3.362	
ADD HYD	J1J7.J8	96&88	97	.07621	156.87	7.875	1.93737	1.500	3.216	
ADD HYD	J1J8.J12	97&12	98	.09040	167.52	8.189	1.69846	1.500	2.895	
DIVIDE HYD	BYPASSJ	98	83	.04558	26.34	4.129	1.69846	1.300	.903	
	SURGEJ	and	84	.04482	141.18	4.060	1.69846	1.500	4.922	
ROUTE RESERVOIR	POND.J	84	90	.04482	6.05	4.059	1.69831	2.100	.211	AC-FT= 3.771
ADD HYD	BYPASS.SURGE	90&83	97	.09040	32.39	8.188	1.69835	2.000	.560	
ROUTE MCUNGE	RTE.J5J6	97	91	.09040	32.34	8.180	1.69667	2.100	.559	CCODE = .1
COMPUTE NM HYD	BASIN.K5	-	30	.02364	47.63	2.281	1.80886	1.500	3.148	PER IMP= 62.00
COMPUTE NM HYD	BASIN.K6	-	31	.00220	5.01	.266	2.26512	1.500	3.555	PER IMP= 90.00
ADD HYD	K5.K6	30&31	41	.02584	52.64	2.546	1.84768	1.500	3.183	
ADD HYD	K5K6.PONDJ	41&91	43	.11624	80.50	10.726	1.73022	1.500	1.082	
ADD HYD	K5K6PONDJ.K3	43&25	44	.74957	139.80	55.224	1.38138	1.500	.291	
ADD HYD	PONDJK13.K1K	34&44	96	1.05214	242.64	76.334	1.36033	1.500	.360	
DIVIDE HYD	BYPASS.K	96	97	.88425	44.91	64.153	1.36033	1.300	.079	
	SURGE.K	and	98	.16789	197.73	12.181	1.36033	1.500	1.840	
ROUTE RESERVOIR	POND.K	98	70	.16789	15.94	12.181	1.36032	2.800	.148	AC-FT= 8.497
ADD HYD	BYPASS.ROUTE	70&97	99	1.05214	60.85	76.333	1.36032	2.800	.090	
ROUTE MCUNGE	RTE.PONDK	99	1	1.05214	60.66	76.118	1.35648	3.400	.090	CCODE = .2
COMPUTE NM HYD	UNIVROWNORTH	-	2	.00727	16.51	.878	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	UNIVN.PONDK	1& 2	3	1.05941	60.82	76.996	1.36271	3.400	.090	
ROUTE MCUNGE	RTE.UNIVN	3	4	1.05941	60.66	76.902	1.36106	3.900	.089	CCODE = .2
COMPUTE NM HYD	UNIVROWSOUTH	-	5	.00727	16.51	.878	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	UNIVNS.PONDK	4& 5	6	1.06667	60.79	77.780	1.36722	3.900	.089	

*S**********

*S******END OF TRAILS DRAINAGE ANALYSIS

FINISH

Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

Thompson Engineering Consultants, Inc.

September, 2016

- Pond D grading has changed to avoid retaining walls
- Model changed to reflect Universe Asbuilts
- Model changed to reflect Tract 8 Asbuilts
- Pond D inlet bypass to match BHI plans
- Pond F5 freeboard + emergency spill

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

October 12, 2016

David Thompson, P.E.
Thompson Engineering Consultants, Inc
PO Box 65760
Albuquerque, NM 87193

Re: Hydraulic Analysis Addendum to the Amendment to the DMP Trails Units 1,2, and 3
Drainage Report, Engineer's Stamp Date 9-14-2016 (File: C09D001)

Dear Mr. Thompson:

Based upon the information provided in your submittal received 9-16-2016, the above referenced Submittal is approved.

If you have any questions, you can contact me at 924-3695.

PO Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file, c.pdf

C09C001_AmendDMP_HydAnal_Appr.doc

Albuquerque - Making History 1706-2006

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Addendum to the Amendment Trails DMP **Building Permit #:** _____ **City Drainage #:** C09D001

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

Legal Description: _____

City Address: _____

Engineering Firm: ~~RESPE~~ Thompson Engineering Consultants **Contact:** David Thompson

Address: 5300 Sequoia Rd #207; Albuquerque, NM 87120

Phone#: 505-271-2199 **Fax#:** — **E-mail:** tecnm@yahoo.com

Owner: Real Capital Solutions **Contact:** Brian Mulqueen

Address: 371 Centennial Parkway, Suite 200; Louisville, CO 80027

Phone#: 303-533-1607 **Fax#:** — **E-mail:** bmulqueen@realcapitalsolutions.com

Architect: _____ **Contact:** _____

Address: _____

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

Other Contact: RESPEC **Contact:** Hugh Floyd

Address: 6808 Academy Parkway East NE, Building C2; Albuquerque, NM 87109

Phone#: 505-253-9810 **Fax#:** — **E-mail:** hugh.floyd@respec.com

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE
____ TRAFFIC/ TRANSPORTATION
____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

____ ENGINEER/ ARCHITECT CERTIFICATION

____ CONCEPTUAL G & D PLAN
____ GRADING PLAN
X DRAINAGE MASTER PLAN
____ DRAINAGE REPORT
____ CLOMR/LOMR

____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ EROSION & SEDIMENT CONTROL PLAN (ESC)

____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY

____ PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
____ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL
____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
____ GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR

____ PRE-DESIGN MEETING
____ OTHER (SPECIFY) _____

RECEIVED
SEP 16 2016
LAND DEVELOPMENT SECTION

No Fee Resubm.

IS THIS A RESUBMITTAL?: X Yes ____ No

DATE SUBMITTED: 9-16-16 By: _____

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

THOMPSON Engineering Consultants, Inc.

September 20, 2016

Ms. Rita Harmon, P.E.
Senior Engineer, Hydrology Section
Planning Department, Development Review Services
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87102

Re: REVISED HYDRAULIC ANALYSIS ADDENDUM TO THE AMENDMENT TO THE DMP TRAILS UNITS 1, 2, AND 3
DRAINAGE REPORT, ENGINEER'S STAMP DATED 9-14-2016 (FILE: C09D001)

Dear Ms. Harmon:

Attached is the revised Hydraulic Analysis Addendum to the Amendment to the DMP Trails Units 1, 2, and 3. This addendum reflects the changes made to address your comments in a letter dated January 2, 2015. The following is a list of your comments with our responses in bold font.

1) In general, electronic models need to be documented in printed and PDF format so that any information needed in the future can be obtained without having the program itself. This review would have been greatly facilitated if the program inputs and outputs had been printed.
   - It would have been helpful if Appenix A (the as-builts) were in printed form showing which pipes correspond to XPSWMM links, and which manholes correspond to nodes. In my review, I have noted this on the as-builts and included in the binder
     Printed as-builts have been included in Appendix A. Plate 1 now includes our model with all of the nodes and links clearly labeled. Per discussions in the meeting on September 16, 2016, you have in your notes which manholes and pipes correspond to the nodes and links in the model. Therefore, labeling the as-builts was not necessary.

   - Provide an overall printed plan showing the XPSWMM model, with the nodes and links labeled. Indicate the meaning of the blue, green, and red nodes. Indicate that dashed links are orifice plates.
     See updated Plate 1 in Appendix E

   - Provide the link and node data in tabular format. Can the "XP Table List" function/button and the "Link Summary" tab be used to print out the pipe lengths, diameters, invert elevations, max flow, time of peak, etc.?
     See Tables 2 & 3, Plate 1, Appendix E

   - Provide printed forms of the "Inflow Hydrograph" at each node where AHYMO "punch hyds" were input. At each AHYMO ID, note which basins are included -or Plate 2 of TEC Trails DMP showing which basins are included in each AHYMO ID.
     See updated Appendix C and Plate 1 in Appendix E

- Provide hard copies of the "Stepwise Linear Storage" and the hydrograph for each pond
  See updated Appendix B

- Print out orifice data used in model
  See updated Table 5 on Plate 1

- Print a summary of all input values: N-values, C-values, and other pertinent analysis parameters
  See PCSWMM Parameter Summary in Appendix C

2) Node 163 and AHYMO ID #75 peak flows do not match. Model uses 104.03 cfs, AHYMO has 146.48 cfs. However, AHYMO #73, which does not include Basins D5 and D6, does have a peak of 104.03 cfs. It appears Basins D5 and D6 are not included in the model.
   The hydrograph entering at Node 163 has been changed from AHYMO ID #75 to #73. This updated hydrograph reflects basins D5 and D6 being removed and the adjustments to Pond D1 located upstream. See PCSWMM model for updated hydrograph with a peak flow of 164.5 cfs.

3) Node MH58 and AHYMO ID #21 peak flows do not match. Model uses 28.1 cfs, AHYMO has 29.29 cfs.
   AHYMO ID #21 enters the system at node MH53. Assuming "MH58" is a typo, the hydrograph in the PCSWMM model has been adjusted to reflect the AHYMO hydrograph.

4) Modeling around Pond H has the following comments:
   - Link 182: As built shows 5418.65 for D/S RIM, model says 5422.8' for D/S surface for Scenario 1 (and 5423.6 for Base). Why is the WSEL used rather than the actual RIM?
     Link 182 ties into the actual pond. The data was combined between the surge manhole SDMH 45 and the actual Pond H together to simulate the surge function of the pond.

   - MH4 was not modeled correctly. MH4 is a SAS line. It should be SDMH-45 from as-built. (730084, sht 37)
     MH4 has been deleted. See updated PCSWMM model.

   - It seems that a node where the overflow enters back into the system should be between node MH4 (or SDMH45) and MH 46 to be reflective of the actual system.
     Overflow enters the system at Node 177 which is in between Pond H and SDMH 46. See updated PCSWMM model.

- What is the purpose of Node177 and why is it green? Can't node MH4 (MH46) be used in place of Node177 since the orifice is being modeled in Link203? Can LinkL-H be ommitted altogether?

  This was done to model the orifice plate correctly and due to constraints placed by the model. Node 177 is a fictitious node used to simulate the orifice plate. That is why it was green in the XPSWMM model. Blue nodes are locations where hydrographs are added, and red nodes are regular manholes with no inflow data associated in XPSWMM. See the legend in Plate 1 for the description of PCSWMM symbols.

- Table 3 show Q_{out} = 27.4 cfs, but the peak outflow from the XPSWMM model OVERFLOW links, there should not be any contributing flows from these links as they would only be used if the orifice is clogged.

  See updated PCSWMM model and Table 3 on Plate 1. Now there is no water spilling over the emergency spillway.

- The "Stepwise Linear Storage" for Pond H does not match the "Pond Volumes" Table. Stepwise depth 8.85', corresponds to elevation 5421 with the area = 1.27 Ac. Model shows 0.81 Ac. at this depth. Similarly, area at 9.85' depth (5422 elev) should be 1.52 Ac. rather than 1.27 Ac.

  The Pond H storage curve was updated in the PCSWMM model to reflect the correct elevations and areas in the rating curve. Please see Appendix B.

- The Pond H emergency overflow has a grate elevation of 5422.04, but the hydrograph shows max water elevation at 5422.96'. It seems that there would be spill out of the system. While the "OVERFLOW 1" link at U/S Invert = 5422.5, it seems that it should match the overflow grate elevation of 5422.05. BHI calculated the WSEL to be 5421.9, so I would expect the invert of the overflow link to be 0.14' above the max WSEL as well.

  Invert elevation for OVERFLOW 1 has been adjusted and the max water surface elevation matches BHI's calculations, so now there is no spill out of the system.

- The OVERFLOW links are 1' dia. And may be too small. How do you know water is not spilling out of the system? Or that they are not restricting the flow?

  SWMM software does not allow pipes to stick out above ground; therefore a 1 ft diameter pipe was the maximum circular pipe that could be used. The overflow has been remodeled as a rectangular pipe that is 0.5' X 6' (Height X Width) to simulate the overflow while ensuring plenty of capacity. See updated PCSWMM model.

- The Time of Peak for Link L-H is 5.11 hrs, but TEC Trails DMP indicates 2.4 hrs. Why the disrepency?
  Time to peak is controlled by pond outflow and will not match due to routing effects.

- BHI calculated 26.8 cfs through the orifice area of 1.14 sq.ft, with a head of 10.36', why does the SWMM Model calculate a much smaller value (15 cfs) ?
  PCSWMM calculates orifice outflow rates dynamically accounting for backwater effects providing a more realistic flowrate.

- Pond H modifications indicate a 36" pipe beyond orifice plate. As-builts show 30". What is the actual pipe dia?
  Actual pipe diameter is 36". See BHI field survey.

- L106 has an adverse slope and is modeled as such. Is there sediment that should be considered? Verify that it is a 48" dia. pipe as there is conflicting info on plan view of CPN 730084, and CPN 730075 is calling it a 54" pipe. *****
  L106 in the PCSWMM model has been updated to be a 54" pipe. The adverse slope remains unchanged.

- The Design Capacity of Pond H is 3.07 Ac. in Appendix C. (Appendix B)?
  The discrepancies have been addressed, the volume for Pond H is now consistantly 3.11 ac-ft.

- Pond H: Why is the Peak Storage in Tbl. 2 2.98 Ac-ft, as opposed to the full pond volume since it is overtopping. Furthermore, "Continuity Balance" Tab in the "Table List" function shows 3.94 Ac-ft for the Volume for Scenario 1. Could it be that Tbl. 1 was not updated?
  See updated Appendix B and Tables on Plate 1

- Orifice Plate in Pond H is to be 1.83 sq. ft.
  See updated orifice plate and resulting flow rates in the PCSWMM model.

- BHI states that their field survey indicated that the pipe out of Pond H is 36" dia, rather than 30" as indicated on the As-builts. (Links L-H and L104)
  Actual pipe diameter is 36" and is modeled as such. Pipe diameter also verified in the field.

5) Link L108, D/S Rim elev. is 5415, D/S invert is 5400.07 – neither match 730084. What CPN Job No is this taken from?
   D/S invert elevation for L108 is based off the SURV-TEK survey (NAVD 88) attached in Appendix A.

6) It seems that Table 1 needs to be updated.
   All tables have been updated.

7) Pond G:
   - As-built for Pond G (730084, sheet 11/51) shows MH Rim at 16.29 (vs. 15.67)
     The rim for the surge pipe is not input into PCSWMM, the pond begins storing water at an elevation of 5416 to accurately model the functions of a surge pond.

   - Link L-13: D/S Invert is 5403.05 (the design value) but the As-built value is 5402.03 per CPN 730084 Sheet 20/51 for a difference of 1'. The HGL is 5410.98 and adding 1' makes it 5412. The Rim is 5411.23, so the HGL is above the Rim.
     Updated PCSWMM model reflects as-built invert value.

   - The links from Pond G to Universe have a significantly different Hydrograph when comparing the Base to Scenario 1. Can you explain why?
     This is due to the modification to the orifice configuration at Pond G.

   - Link L-24 and Link 180 discharge into Pond G through slotted manholes. Are the areas of the slotted manholes taken into account? If not, the required opening area needs to be stated on Table 3 as part of the improvements to Pond G (or any pond with slotted manholes).
     The orifice downstream (ORF_G) with a diameter of 1.23 ft (1.188 square feet) will control. Therefore, the slotted manhole lids were not considered and the model was not changed.

   - Verify negative peak flows in Links L-27 and L-29 make sense. Time to Peak Velocity for Link L-27 is 37.2, why so much later?
     The negative peak flows and time to peak were due to how the XPSWMM model was set up. The PCSWMM model does not reflect these results.

8) Pond F:
   - Orifice area is 4.25 for the Base Scenario but should be 1.63 sq. ft.
     Base scenario is no longer included. This model was originally included to demonstrate that XPSWMM results are not drastically different than AHYMO.

   - Link L-56 and L-63 are noted as elliptical on the record As-builts
     As-builts note these pipes as 60" equivalent arch RCP. No changes were made to the model.

   - L-63 shows HGL at 22.83 and upstream MH is 23.27, which is somewhat close.
     The HGL remains below the manhole rim and will function adequately.

- Orifice plate is modeled downstream of SDMH 34, which is in Treeline Ave. Since the area is less than 3.14 sq. ft., a sluice gate (or similar device) is required. The installation of such a device at this location seems complicated. What are some possibilities for such a device here?

  A Type D inlet will be added at this location during design, likely adjacent to the pond outlet. This design will be provided with the DRC plans.

- Table 3 should be revised. Qin should change.

  See Table 6 on Plate 1 in Appendix E, which reflects an updated Table 3.

9) Pond D:

- Why in the Base Scenario are there links from Pond D to Pond F5?

  In the previous model, there were several scenarios modeled. The links were a part of a previous scenario but were turned off in the previous proposed scenario.

- The Stepwise Linear Storage for the Base scenario is similar to that for Scenario 1 and does not reflect the Pond as designed in the TEC.

  See updated PCSWMM model for modified Pond D rating curve.

- Q_{in} on Table 3 should be revised, as it states 102.5 cfs. Q_{in} should be the same as from the TEC. The AHYMO Summary file ID No. 75 says 146.48 cfs. However, Table 2 from the TEC shows $Q_{100,in}$ = 154.87 and Q_{bypass} = 13.77 cfs. The Q_{in} should be the sum or 168.64 cfs. It is not clear why there is a discrepency.

  Table 6 in Plate 1 was updated tomatch the PCSWMM model. There is no longer a discrepancy between Qin in the table and in the input hydrograph for the model.

10) Pond F5:

- There is an inflow Hydrograph associated with Pond F5 but is not noted on Plate 1. What basins or AHYMO ID is this hydrograph from? If this is from Basins D5 and D6, I would expect the peak to be about 42.44 cfs (the addition of peaks from both basins D5 and D6) but the peak of this hydrograph is 27.4 cfs.

  There is no hydrograph entering at the Pond F5 directly. Basins D5 and D6 are included in the hydrograph (AHYMO ID 41) entering at Node 191 immediately upstream of the pond. The updated hydrograph has a peak flow rate of 52.5 cfs.

- The SpillCrest in the XPSWMM model is 5428, but should be 5427.

  An emergency spillway will be provided at an elevation of 5426.30. It is reflected in the PCSWMM model, Tables 1 & 4, and in the pond rating curve. The design will be included in the DRC plans.

11) Pond J:

- The Spill crest is 5418 in XPSWMM but the emergency spillway is at 5417 from Table 2.

  The spillway crest elevation is 5417.00 in the updated PCSWMM model.

12) Where is as-built information for Link 213 and 215 in order to verify diameters

Stamped drawings containing information for Link 213 and 215 has been added to Appendix A

13) Pond K: Emergency spillway at 5410.3 per As-built rather than 5409 on Table 2.

See updated Table 1 (previously Table 2) with an emergency spillway elevation of 5410.30.

If you should have any questions regarding this submittal please do not hesitate to contact me.

Sincerely,

David B. Thompson, P.E.

Cc: Mr. Hugh Floyd, P.E.

Enclosures

Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

Thompson Engineering Consultants, Inc.

September, 2016

Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

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Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

Introduction and Background

The Amendment to The Drainage Master Plan (DMP) for the Trails Units 1, 2, and 3 was completed by Thompson Engineering Consultants (TEC) in April 2014 and approved by the City Hydrologist in May 2014. The hydrologic analysis for the Trails watershed was modeled using AHYMO_97. For detailed watershed maps and background on the DMP please refer to the document that was approved by the City Hydrologist in May 2014. This Addendum to the Amendment focuses on the area from Rainbow Boulevard on the west to Universe Boulevard on the east and Paseo Del Norte on the north to the Trails boundary on the south. Please refer to **Plate 1**.

Purpose

The purpose of this analysis was to confine the footprint of Pond D within the open space area tract (Tract OS-3) without exceeding the outfall discharge limit of 62 cfs from the Trails Units 1, 2 and 3 at the intersection of Universe Boulevard and Avenida de Jaimito or without increasing the required volume of any other proposed pond in the Trails. All of the Trails surge/detention ponds were based on conservative assumptions when modeled initially by AHYMO.

By performing more intensive and precise hydraulic modeling using PCSWMM software, the inefficiencies of the original system are iteratively investigated and the conservative "slack" created within the AHYMO model can be carefully utilized to maximize the efficiency of the system while decreasing the footprint of Pond D.

Methodology

PCSWMM is a dynamic hydraulic modeling software similar to USEPA's Storm Water Management Model (EPA SWMM). For storm drain and pond analysis, PCSWMM solves the complete St. Venant (Dynamic Flow) equations for gradually varied, one dimensional, unsteady flow throughout the drainage network. Using the Dynamic Wave option, PCSWMM can account for backwater, surcharging, and reverse flow situations, which neither AHYMO nor HEC-HMS are able to model. PCSWMM has a stronger user interface than EPA SWMM, and is effective at importing and exporting hydrographs, and AutoCAD and ArcGIS drawing files. PCSWMM can be easily viewed using EPA SWMM software, which is available for free online, and uses the EPA SWMM software as a solving engine so that no conversion is necessary.

EPA SWMM has been used in the City of Albuquerque for many projects involving complex pressurized flow in storm drains and especially where surge ponds are integral to the drainage system. Examples are the Broadway storm drain system in the southeast valley and the recent Mid Valley DMP modeled by Smith Engineering for the City of Albuquerque. XPSWMM has recently been used in Bernalillo County's south valley for analysis of the system draining to the Sanchez Farm Detention Pond and PCSWMM is currently being used to update those models.

Many of the ponds in this system are inline structures that allow stormwater to surge into the ponds only if the storm drain develops significant head where the Hydraulic Grade Line (HGL) exceeds the pond bottom. Otherwise the low flows from the smaller storms bypass the pond. **Figure 1** shows how a typical surge pond works. PCSWMM is equipped to accurately model this system. PCSWMM is fully compatible with EPA SWMM without any conversions being necessary.

Hydrographs were imported from the TEC Trails DMP AHYMO_97 hydrological model and added directly at key locations within the study area. The location and the AHYMO_97 hydrograph ID numbers are shown on **Plate 1**. **Plates 1 & 2** dated 2-26-15 are located in **Appendix D** and show all of the basins related to the model. These exhibits are for basin information only. All elevation area data for the ponds were imported directly from the TEC Amendment to The Trails Drainage Master Plan, except the hydrograph from Pond D.1, which has been modified to allow a larger flow rate into the Heritage Subdivision storm drain system and consequentially increases the peak flow rate coming to Pond D. This modification was made to allow the original maximum flow rate from the western subdivisions which had been restricted in the Amendment. Record drawings were used to obtain information regarding storm drain size, material, length, slope, and manhole invert and rim elevations for existing storm drain. However, a survey performed by Surv-Tek conflicted with some of the data in the record as-builts. In cases where there was a discrepancy, the data from the survey was used. As-built drawings and Surv-Tek's survey are included in **Appendix A**. All elevations are based on NAVD 1929 datum. Elevation area data for the ponds in the model are included in **Appendix B**. **Appendix C** contains the electronic input files for the PCSWMM model that can be viewed using EPA SWMM software available for free online. A summary of inputs and outputs is also included in Appendix C. A rendering of the model is shown on Plate 1.

AHYMO Modifications

A couple of changes were made to the AHYMO model in order to more accurately reflect proposed and future conditions. The hydrograph (AHYMO ID 73) entering at Node163 was altered to reflect a peak discharge from Pond D1 of 52 cfs instead of 13.4 cfs. This was done to correct a restricted flow rate from the western subdivisions that was imposed in the Amendment, but was not necessary. Secondly, due to changes to the proposed Tract 1 Subdivision layout, the entire property now discharges into Pond F5. Therefore, runoff from Tract 1 (52.5 cfs) was removed from the hydrograph entering Pond D and added to the hydrograph entering Pond F5. The input and summary files are included in **Appendix F**.

PCSWMM Proposed Conditions

The TEC Addendum (April 2014) modeled the developed conditions for storm drains and surge/detention ponds. This model and report determined the sizes for the future installation of ponds and orifice plates. The storm drain system and many of the ponds have already been built.

The PCSWMM model was iteratively altered by making changes to pond volumes and orifice plate sizes to determine the optimum scenario for the Trails storm drain system. The footprint for Pond D was reduced to fit within Tract OS 3 without adding any additional storm drain and Pond F5 was expanded in order to maximize capacity for its location. The modified elevation-area-storage data for all ponds is included in **Appendix B**. Orifice plates were added at the outflow of Ponds D and F5. **Table 1** summarizes the proposed configurations of the orifice plates at the various ponds as well as a comparison between the Proposed PCSWMM model and the AHYMO_97 model. **Table 6** summarizes Pond improvements and which Tract(s) are responsible for the modifications as they develop in the future. This table is intended to be a replacement for Table 4 in the April 2014 TEC Trails DMP and is intended to be a tool for the City Hydrologist to assign improvements to each Tract and accurately track improvements. **Table 7** provides a summary of the AHYMO hydrographs included in the PCSWMM model.

Results

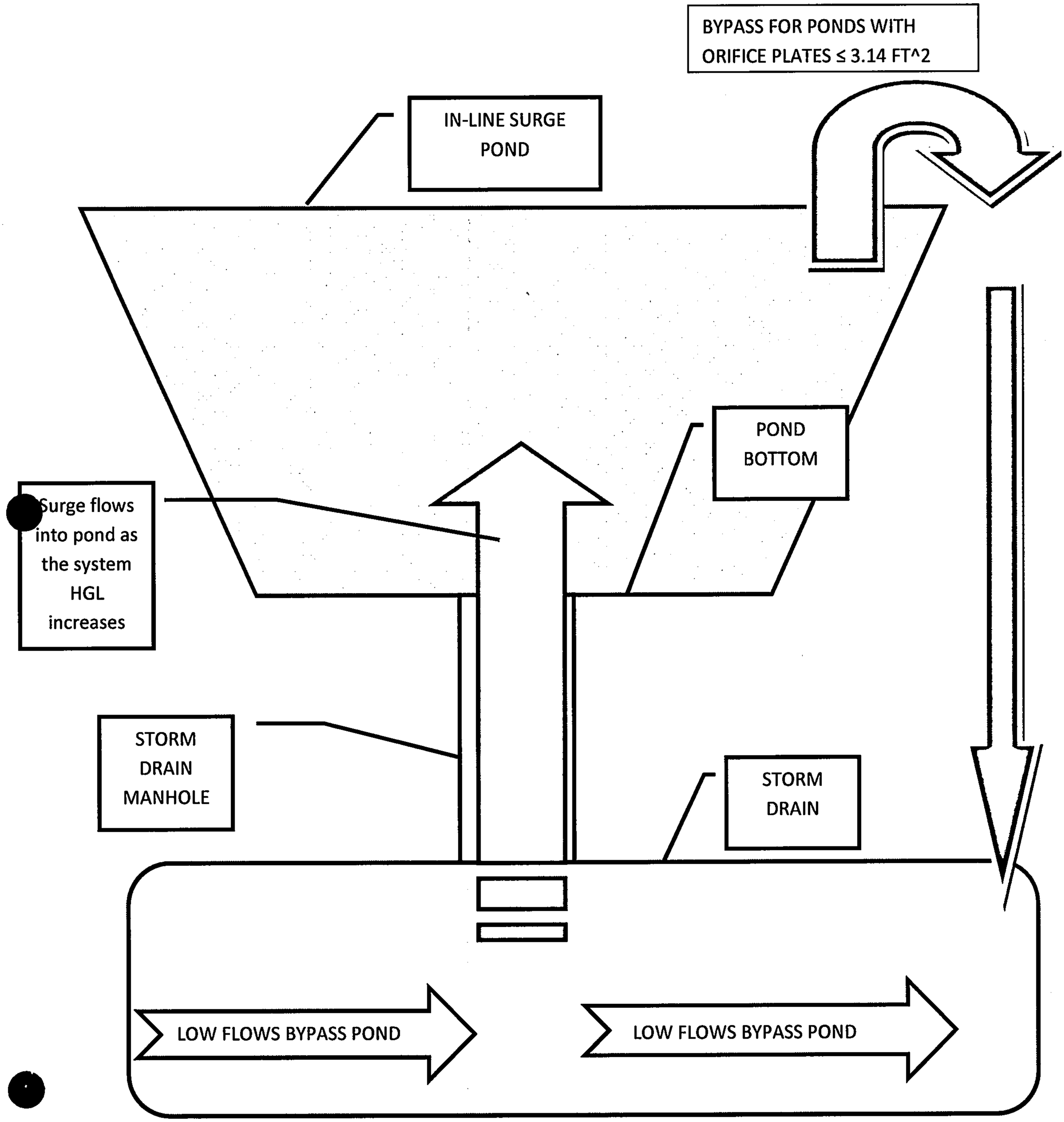
After several iterations, it was determined that the footprint of Pond D could be moved to fit fully on the OS-3 Tract and accommodate a design capacity of 6.13 ac-ft. The existing 24-inch outfall that runs south in Rio Galisteo Place will remain. Furthermore, the orifice plate sizes of all the ponds were changed and orifice plates were added at Ponds D and F5. The configuration of orifice plates was altered throughout the system to optimize pond storage and freeboard in all of the ponds. Furthermore, Ponds J and K located on the east side of Universe Boulevard remain unaffected by the proposed changes.

Tables 2 thru **5** provide a summary of the Node, Link, Storage, and Orifice results from the PCSWMM model. All tables are on **Plate 1** and the intent is that all summary model data and the accompanying graphics are displayed together on **Plate 1** to facilitate review and future reference. This exhibit also displays **Tables 1, 6, and 7**.

Conclusion

The configuration of existing Pond D has been modified to fit fully in Tract OS-3. Pond D will be reconstructed to have 3H:1V side slopes. The pond bottom will be at elevation 5423.3 ft, while the top of pond will be at elevation 5432.3 ft with an emergency spillway elevation of 5431.3 ft **(Plate 1).** Pond D will be modified to function as a detention pond and will require an orifice plate to control discharge. During the 100-yr, 24-hr storm the pond will store 6.11 ac ft of water while maintaining 1.0 ft of freeboard. By changing the sizes of the orifice plates at Ponds F and G, the storage volumes and freeboard between the ponds balance out more evenly. These changes were made in the model without exceeding the downstream flow constraint of 62 cfs or exceeding the design pond volumes of any of the other proposed ponds simulated in the TEC Trails DMP.

Figure 1 - Definition Sketch for an In-Line Surge Pond



Appendix A

Appendix B

Pond D				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5423.3	0	20110	0	Pond Bottom
5424.3	1	22402	0.49	
5425.3	2	24750	1.03	
5426.3	3	27155	1.62	
5427.3	4	34941	2.34	
5428.3	5	38058	3.18	
5429.3	6	41231	4.09	
5430.3	7	44461	5.07	
5431.3	8	47748	6.13	Emergency Spillway
5432.3	9	51092	7.26	Top of Pond

Pond F5				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5419.3	0	6991	0.00	Pond Bottom
5420.3	1	8927	0.18	
5421.3	2	10985	0.41	
5422.3	3	18850	0.75	
5423.3	4	22671	1.23	
5424.3	5	26117	1.79	
5425.3	6	29621	2.43	
5426.3	7	33180	3.15	Emergency Spillway
5426.8	7.5	34981	3.54	Top of Pond

Pond F				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5415.08	0	0	0	
5416	0.92	6750	0.07	Pond Bottom
5417	1.92	40875	0.62	
5418	2.92	58868	1.76	
5419	3.92	62075	3.15	
5420	4.92	65339	4.61	
5421	5.92	68659	6.15	
5422	6.92	72036	7.77	
5423	7.92	75469	9.46	
5424	8.92	78959	11.23	
5424.33	9.25	80155	11.84	Emergency Spillway
5425	9.92	82547	13.09	Top of Pond

Pond G				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5411.39	0	0	0	
5412	0.61	1	0.00	
5413	1.61	2	0.00	
5414	2.61	3	0.00	
5415	3.61	4	0.00	
5416	4.61	1770	0.02	Pond Bottom
5417	5.61	18197	0.25	
5418	6.61	35019	0.86	
5419	7.61	51588	1.85	
5420	8.61	64405	3.19	
5421	9.61	69184	4.72	
5422	10.61	74067	6.36	
5422.5	11.11	76539	7.23	Emergency Spillway
5423	11.61	79010	8.12	
5424	12.61	84095	9.99	Top of Pond

Pond H				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5412.15	0	0	0	
5413.15	1	1	0.00	
5414.15	2	2	0.00	
5415.15	3	3	0.00	
5416.15	4	4	0.00	
5417.15	5	5	0.00	
5418.65	6.5	7	0.00	
5419	6.85	14234	0.06	Pond Bottom
5420	7.85	35514	0.63	
5421	8.85	55545	1.67	
5422	9.85	66534	3.08	Emergency Spillway
5423	10.85	70916	4.65	Top of Pond

Pond J				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5410	0	1	0	
5411	1	2	0.00	
5412	2	3	0.00	
5413	3	4	0.00	
5413.99	3.99	5	0.00	
5414	4	64648	0.01	Pond Bottom
5415	5	106394	1.97	
5416	6	131917	4.71	
5417	7	150216	7.94	Emergency Spillway
5418	8	165320	11.57	Top of Pond

Pond K				
Elevation (ft)	Depth (ft)	Area (ft^2)	Cum. Vol. (ac-ft)	
5402	0	44	0	
5403	1	57	0	
5404	2	10890	0.13	Pond Bottom
5405	3	59634	0.94	
5406	4	95919	2.72	
5407	5	139087	5.42	
5408	6	204819	9.37	
5409	7	283271	14.97	
5410	8	311585	21.80	
5410.3	8.3	325279	23.99	Emergency Spillway
5411	9	387067	29.71	
5412	10	484650	39.72	Top of Pond

Appendix C

PCSWMM Input Parameters Summary
Manning's N = 0.013
Average Energy Loss Coefficient = 0.15
Entry/Exit Energy Loss Coefficient = 0.2
Orifice Discharge Coefficient = 0.6

The storm drain system is assumed to be Reinforced Concrete Pipe (RCP) and modeled with a Manning's "n" value of 0.013. Albuquerque's DPM uses headloss factors of 0.1 to 0.2 times the difference in velocity for pipe transitions. It uses a factor of 0.05 times the velocity head for a manhole. For this study, with a dynamic model the velocities are constantly changing and the direction of flow changes in several locations within the model. For this reason, an average energy loss coefficient of 0.15 was used consistently throughout the model and an entry and exit energy loss coefficient of 0.2 was used to accurately account for energy losses in the system.

AHYMO ID 12		AHYMO ID 20		AHYMO ID 20 (Tract 9)	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0	1.1	0.208	1.1	0.128
1.2	0	1.2	3.228	1.2	2.154
1.3	0	1.3	12.416	1.3	10.074
1.4	6.211	1.4	41.106	1.4	32.447
1.5	10.654	1.5	48.234	1.5	50.543
1.6	7.781	1.6	33.555	1.6	42.91
1.7	4.332	1.7	21.816	1.7	29.198
1.8	2.36	1.8	15.775	1.8	21.218
1.9	1.375	1.9	12.115	1.9	16.481
2	0.982	2	9.71	2	13.401
2.1	0.799	2.1	5.945	2.1	9.924
2.2	0.652	2.2	3.46	2.2	5.886
2.3	0.533	2.3	2.472	2.3	4.007
2.4	0.435	2.4	1.857	2.4	3.054
2.5	0.355	2.5	1.43	2.5	2.398
2.6	0.29	2.6	1.121	2.6	1.91
2.7	0.237	2.7	0.899	2.7	1.538
2.8	0.193	2.8	0.733	2.8	1.256
2.9	0.158	2.9	0.612	2.9	1.038
3	0.129	3	0.522	3	0.875
3.1	0.105	3.1	0.453	3.1	0.75
3.2	0.086	3.2	0.402	3.2	0.653
3.3	0.07	3.3	0.364	3.3	0.578
3.4	0.057	3.4	0.334	3.4	0.519
3.5	0.047	3.5	0.314	3.5	0.473
3.6	0.038	3.6	0.295	3.6	0.436
3.7	0.031	3.7	0.281	3.7	0.406
3.8	0.025	3.8	0.271	3.8	0.384
3.9	0.021	3.9	0.259	3.9	0.367
4	0.017	4	0.254	4	0.354
4.1	0.014	4.1	0.25	4.1	0.346
4.2	0.011	4.2	0.245	4.2	0.337
4.3	0.009	4.3	0.243	4.3	0.33
4.4	0.008	4.4	0.244	4.4	0.325

AHYMO ID 21		AHYMO ID 21 (Tract 8)		AHYMO ID 22	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0.208	1.1	0.08	1.1	0.135
1.2	3.227	1.2	1.352	1.2	2.099
1.3	12.412	1.3	6.287	1.3	7.839
1.4	41.09	1.4	19.146	1.4	19.114
1.5	48.215	1.5	29.392	1.5	20.761
1.6	33.542	1.6	24.826	1.6	14.324
1.7	21.807	1.7	16.913	1.7	9.911
1.8	15.769	1.8	12.461	1.8	7.845
1.9	12.11	1.9	9.852	1.9	6.449
2	9.706	2	8.1	2	5.378
2.1	5.943	2.1	6.005	2.1	3.195
2.2	3.459	2.2	3.522	2.2	1.748
2.3	2.471	2.3	2.378	2.3	1.229
2.4	1.856	2.4	1.807	2.4	0.922
2.5	1.43	2.5	1.417	2.5	0.715
2.6	1.121	2.6	1.128	2.6	0.566
2.7	0.899	2.7	0.908	2.7	0.462
2.8	0.733	2.8	0.742	2.8	0.384
2.9	0.611	2.9	0.615	2.9	0.327
3	0.521	3	0.519	3	0.281
3.1	0.453	3.1	0.447	3.1	0.249
3.2	0.401	3.2	0.391	3.2	0.227
3.3	0.363	3.3	0.347	3.3	0.21
3.4	0.334	3.4	0.312	3.4	0.198
3.5	0.314	3.5	0.284	3.5	0.189
3.6	0.295	3.6	0.264	3.6	0.181
3.7	0.281	3.7	0.247	3.7	0.174
3.8	0.27	3.8	0.235	3.8	0.17
3.9	0.259	3.9	0.225	3.9	0.166
4	0.254	4	0.219	4	0.164
4.1	0.25	4.1	0.211	4.1	0.162
4.2	0.244	4.2	0.205	4.2	0.159
4.3	0.243	4.3	0.202	4.3	0.158
4.4	0.244	4.4	0.201	4.4	0.159

AHYMO ID 23		AHYMO ID 23 (Pond K)		AHYMO ID 24	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0.319	1.1	0	1.1	0.228
1.2	4.964	1.2	0	1.2	3.543
1.3	19.092	1.3	0	1.3	13.333
1.4	63.204	1.4	12.816	1.4	35.48
1.5	74.164	1.5	18.28	1.5	39.521
1.6	51.594	1.6	12.983	1.6	27.343
1.7	33.544	1.7	7.279	1.7	18.535
1.8	24.255	1.8	3.812	1.8	14.261
1.9	18.628	1.9	2.23	1.9	11.49
2	14.93	2	1.539	2	9.474
2.1	9.142	2.1	1.145	2.1	5.677
2.2	5.32	2.2	0.873	2.2	3.163
2.3	3.801	2.3	0.666	2.3	2.234
2.4	2.855	2.4	0.509	2.4	1.677
2.5	2.199	2.5	0.388	2.5	1.297
2.6	1.724	2.6	0.296	2.6	1.025
2.7	1.383	2.7	0.226	2.7	0.832
2.8	1.128	2.8	0.173	2.8	0.688
2.9	0.941	2.9	0.132	2.9	0.583
3	0.804	3	0.101	3	0.506
3.1	0.701	3.1	0.077	3.1	0.447
3.2	0.62	3.2	0.059	3.2	0.403
3.3	0.56	3.3	0.045	3.3	0.371
3.4	0.515	3.4	0.034	3.4	0.346
3.5	0.484	3.5	0.026	3.5	0.328
3.6	0.455	3.6	0.02	3.6	0.309
3.7	0.433	3.7	0.015	3.7	0.296
3.8	0.416	3.8	0.012	3.8	0.287
3.9	0.403	3.9	0.009	3.9	0.28
4	0.397	4	0.007	4	0.277
4.1	0.387	4.1	0.003	4.1	0.274
4.2	0.377	4.2	0	4.2	0.268
4.3	0.374	4.3	0	4.3	0.267
4.4	0.376	4.4	0	4.4	0.268

AHYMO ID 26		AHYMO ID 30,31*		AHYMO ID 70	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0.152	1.1	0.271	1.1	0.338
1.2	2.367	1.2	4.224	1.2	6.681
1.3	8.874	1.3	16.032	1.3	32.703
1.4	22.239	1.4	46.176	1.4	105.579
1.5	24.417	1.5	52.64	1.5	146.952
1.6	16.89	1.6	36.563	1.6	117.177
1.7	11.605	1.7	24.376	1.7	78.435
1.8	9.101	1.8	18.309	1.8	56.295
1.9	7.436	1.9	14.494	1.9	43.19
2	6.181	2	11.83	2	34.655
2.1	3.691	2.1	7.161	2.1	23.674
2.2	2.03	2.2	4.054	2.2	13.928
2.3	1.428	2.3	2.874	2.3	9.201
2.4	1.072	2.4	2.158	2.4	6.772
2.5	0.83	2.5	1.663	2.5	5.204
2.6	0.658	2.6	1.307	2.6	4.068
2.7	0.536	2.7	1.054	2.7	3.258
2.8	0.444	2.8	0.866	2.8	2.657
2.9	0.377	2.9	0.73	2.9	2.205
3	0.327	3	0.63	3	1.872
3.1	0.291	3.1	0.554	3.1	1.625
3.2	0.261	3.2	0.496	3.2	1.435
3.3	0.24	3.3	0.454	3.3	1.293
3.4	0.225	3.4	0.422	3.4	1.186
3.5	0.215	3.5	0.399	3.5	1.108
3.6	0.205	3.6	0.378	3.6	1.045
3.7	0.198	3.7	0.362	3.7	0.993
3.8	0.192	3.8	0.347	3.8	0.952
3.9	0.188	3.9	0.336	3.9	0.915
4	0.186	4	0.332	4	0.891
4.1	0.184	4.1	0.328	4.1	0.878
4.2	0.18	4.2	0.321	4.2	0.863
4.3	0.179	4.3	0.32	4.3	0.852
4.4	0.18	4.4	0.321	4.4	0.851

AHYMO ID 82,83,87*		AHYMO ID 88		AHYMO ID 94	
Time	Flow	Time	Flow	Time	Flow
0	0	0	0	0	0
0.1	0	0.1	0	0.1	0
0.2	0	0.2	0	0.2	0
0.3	0	0.3	0	0.3	0
0.4	0	0.4	0	0.4	0
0.5	0	0.5	0	0.5	0
0.6	0	0.6	0	0.6	0
0.7	0	0.7	0	0.7	0
0.8	0	0.8	0	0.8	0
0.9	0	0.9	0	0.9	0
1	0	1	0	1	0
1.1	0.333	1.1	0	1.1	0.344
1.2	5.176	1.2	0	1.2	5.55
1.3	19.507	1.3	0	1.3	23.834
1.4	52.063	1.4	8.605	1.4	66.05
1.5	58.19	1.5	12.308	1.5	86.367
1.6	40.331	1.6	8.76	1.6	68.41
1.7	27.317	1.7	4.918	1.7	47.156
1.8	20.996	1.8	2.576	1.8	35.35
1.9	16.908	1.9	1.506	1.9	28.516
2	13.939	2	1.039	2	23.588
2.1	8.374	2.1	0.773	2.1	16.178
2.2	4.667	2.2	0.59	2.2	9.296
2.3	3.296	2.3	0.451	2.3	5.869
2.4	2.473	2.4	0.344	2.4	4.299
2.5	1.914	2.5	0.263	2.5	3.292
2.6	1.511	2.6	0.201	2.6	2.583
2.7	1.225	2.7	0.153	2.7	2.074
2.8	1.005	2.8	0.117	2.8	1.701
2.9	0.847	2.9	0.089	2.9	1.424
3	0.736	3	0.068	3	1.215
3.1	0.652	3.1	0.052	3.1	1.066
3.2	0.589	3.2	0.04	3.2	0.96
3.3	0.539	3.3	0.03	3.3	0.883
3.4	0.502	3.4	0.023	3.4	0.822
3.5	0.478	3.5	0.018	3.5	0.779
3.6	0.452	3.6	0.014	3.6	0.745
3.7	0.433	3.7	0.01	3.7	0.716
3.8	0.42	3.8	0.008	3.8	0.695
3.9	0.41	3.9	0.003	3.9	0.677
4	0.407	4	0	4	0.667
4.1	0.402	4.1	0	4.1	0.66
4.2	0.393	4.2	0	4.2	0.649
4.3	0.392	4.3	0	4.3	0.642
4.4	0.393	4.4	0	4.4	0.642

AHYMO ID 46

Time	Flow
0	0
0.1	0
0.2	0
0.3	0
0.4	0
0.5	0
0.6	0
0.7	0
0.8	0
0.9	0
1	0
1.1	0.587
1.2	13.678
1.3	44.549
1.4	96.128
1.5	110.673
1.6	83.216
1.7	62.787
1.8	52.479
1.9	46.458
2	41.956
2.1	34.426
2.2	29.208
2.3	27.232
2.4	26.001
2.5	24.165
2.6	21.775
2.7	20.463
2.8	19.188
2.9	18.379
3	17.664
3.1	17.183
3.2	16.759
3.3	16.444
3.4	16.169
3.5	15.953
3.6	15.749
3.7	15.559
3.8	15.396
3.9	15.244
4	15.106
4.1	14.963
4.2	14.802
4.3	14.664
4.4	14.547

AHYMO ID 46 Continued

Time	Flow
4.5	14.424
4.6	14.315
4.7	14.212
4.8	14.095
4.9	13.991
5	13.907
5.1	13.807
5.2	13.693
5.3	13.581
5.4	13.471
5.5	13.379
5.6	13.24
5.7	13.096
5.8	12.978
5.9	12.855
6	12.724
6.1	12.608
6.2	12.507
6.3	12.332
6.4	12.134
6.5	11.94
6.6	11.707
6.7	11.33
6.8	10.895
6.9	10.583
7	10.299
7.1	10.058
7.2	9.692
7.3	9.045
7.4	8.515
7.5	8.269
7.6	7.951
7.7	7.807
7.8	7.619
7.9	7.511
8	7.389
8.1	7.289
8.2	7.208
8.3	7.144
8.4	7.085
8.5	7.016
8.6	6.961
8.7	6.913
8.8	6.836

AHYMO ID 46 Continued

Time	Flow
8.9	6.781
9	6.751
9.1	6.699
9.2	6.639
9.3	6.593
9.4	6.551
9.5	6.494
9.6	6.448
9.7	6.406
9.8	6.348
9.9	6.302
10	6.26
10.1	6.205
10.2	6.159
10.3	6.12
10.4	6.066
10.5	6.022
10.6	5.968
10.7	5.925
10.8	5.887
10.9	5.85
11	5.815
11.1	5.764
11.2	5.724
11.3	5.673
11.4	5.632
11.5	5.597
11.6	5.563
11.7	5.531
11.8	5.483
11.9	5.445
12	5.412
12.1	5.365
12.2	5.327
12.3	5.295
12.4	5.248
12.5	5.211
12.6	5.18
12.7	5.149
12.8	5.12
12.9	5.076
13	5.041
13.1	5.011
13.2	4.967

AHYMO ID 46
Continued

Time	Flow
13.3	4.947
13.4	4.925
13.5	4.868
13.6	4.819
13.7	4.783
13.8	4.731
13.9	4.669
14	4.6
14.1	4.522
14.2	4.451
14.3	4.39
14.4	4.328
14.5	4.269
14.6	4.213
14.7	4.141
14.8	4.079
14.9	4.025
15	3.954
15.1	3.91
15.2	3.866
15.3	3.8
15.4	3.745
15.5	3.682
15.6	3.626
15.7	3.593
15.8	3.54
15.9	3.489
16	3.445
16.1	3.388
16.2	3.338
16.3	3.295
16.4	3.255
16.5	3.215
16.6	3.176
16.7	3.139
16.8	3.087
16.9	3.044
17	3.008
17.1	2.971
17.2	2.937
17.3	2.889
17.4	2.849
17.5	2.815
17.6	2.783

AHYMO ID 46
Continued

Time	Flow
17.7	2.751
17.8	2.72
17.9	2.677
18	2.64
18.1	2.624
18.2	2.589
18.3	2.54
18.4	2.518
18.5	2.497
18.6	2.456
18.7	2.424
18.8	2.398
18.9	2.372
19	2.347
19.1	2.324
19.2	2.301
19.3	2.265
19.4	2.235
19.5	2.213
19.6	2.19
19.7	2.17
19.8	2.148
19.9	2.129
20	2.096
20.1	2.069
20.2	2.048
20.3	2.029
20.4	2.01
20.5	1.992
20.6	1.975
20.7	1.944
20.8	1.919
20.9	1.916
21	1.893
21.1	1.87
21.2	1.855
21.3	1.824
21.4	1.815
21.5	1.807
21.6	1.779
21.7	1.758
21.8	1.743
21.9	1.729
22	1.715

AHYMO ID 46
Continued

Time	Flow
22.1	1.702
22.2	1.689
22.3	1.677
22.4	1.652
22.5	1.631
22.6	1.631
22.7	1.614
22.8	1.595
22.9	1.584
23	1.559
23.1	1.553
23.2	1.549
23.3	1.526
23.4	1.508
23.5	1.497
23.6	1.486
23.7	1.476
23.8	1.467
23.9	1.458
24	1.449
24.1	1.207
24.2	0.813
24.3	0.608
24.4	0.531
24.5	0.483
24.6	0.448
24.7	0.42
24.8	0.397
24.9	0.379
25	0

AHYMO ID 41

Time	Flow
0	0
0.1	0
0.2	0
0.3	0
0.4	0
0.5	0
0.6	0
0.7	0
0.8	0
0.9	0
1	0
1.1	0.389
1.2	6.053
1.3	20.906
1.4	52.228
1.5	59.388
1.6	42.941
1.7	30.202
1.8	23.779
1.9	19.796
2	17.077
2.1	10.994
2.2	6.362
2.3	4.537
2.4	3.408
2.5	2.627
2.6	2.061
2.7	1.656
2.8	1.352
2.9	1.13
3	0.965
3.1	0.843
3.2	0.748
3.3	0.678
3.4	0.625
3.5	0.587
3.6	0.553
3.7	0.527
3.8	0.508
3.9	0.486
4	0.477
4.1	0.47
4.2	0.46
4.3	0.457
4.4	0.46

AHYMO ID 73

Time	Flow
0	0
0.1	0
0.2	0
0.3	0
0.4	0
0.5	0
0.6	0
0.7	0
0.8	0
0.9	0
1	0.589
1.1	1.511
1.2	6.951
1.3	40.703
1.4	125.506
1.5	159.76
1.6	121.608
1.7	89.916
1.8	71.706
1.9	58.137
2	47.655
2.1	35.795
2.2	29.279
2.3	25.18
2.4	21.689
2.5	20.566
2.6	19.636
2.7	18.849
2.8	18.41
2.9	18.045
3	17.736
3.1	17.544
3.2	17.379
3.3	17.233
3.4	17.127
3.5	17.037
3.6	16.95
3.7	16.873
3.8	16.803
3.9	16.735
4	16.676
4.1	16.614
4.2	16.551
4.3	16.492
4.4	16.437

AHYMO ID 73
Continued

Time	Flow
4.5	16.378
4.6	16.325
4.7	16.267
4.8	16.209
4.9	16.152
5	16.102
5.1	16.044
5.2	15.987
5.3	15.925
5.4	15.868
5.5	15.819
5.6	15.758
5.7	15.703
5.8	15.645
5.9	15.591
6	15.526
6.1	15.477
6.2	15.426
6.3	15.364
6.4	15.282
6.5	15.2
6.6	15.122
6.7	15.033
6.8	14.946
6.9	14.862
7	14.779
7.1	14.696
7.2	14.607
7.3	14.515
7.4	14.427
7.5	14.333
7.6	14.246
7.7	14.155
7.8	14.063
7.9	13.968
8	13.867
8.1	13.768
8.2	13.67
8.3	13.573
8.4	13.476
8.5	13.368
8.6	13.268
8.7	13.164
8.8	13.041

AHYMO ID 73
Continued

Time	Flow
8.9	12.929
9	12.819
9.1	12.687
9.2	12.557
9.3	12.43
9.4	12.293
9.5	12.149
9.6	12.015
9.7	11.867
9.8	11.719
9.9	11.574
10	11.425
10.1	11.269
10.2	11.122
10.3	10.968
10.4	10.812
10.5	10.66
10.6	10.5
10.7	10.35
10.8	10.194
10.9	10.045
11	9.891
11.1	9.736
11.2	9.576
11.3	9.411
11.4	9.253
11.5	9.093
11.6	8.937
11.7	8.777
11.8	8.619
11.9	8.464
12	8.31
12.1	8.166
12.2	8.03
12.3	7.889
12.4	7.753
12.5	7.619
12.6	7.486
12.7	7.351
12.8	7.216
12.9	7.074
13	6.947
13.1	6.814
13.2	6.681

AHYMO ID 73
Continued

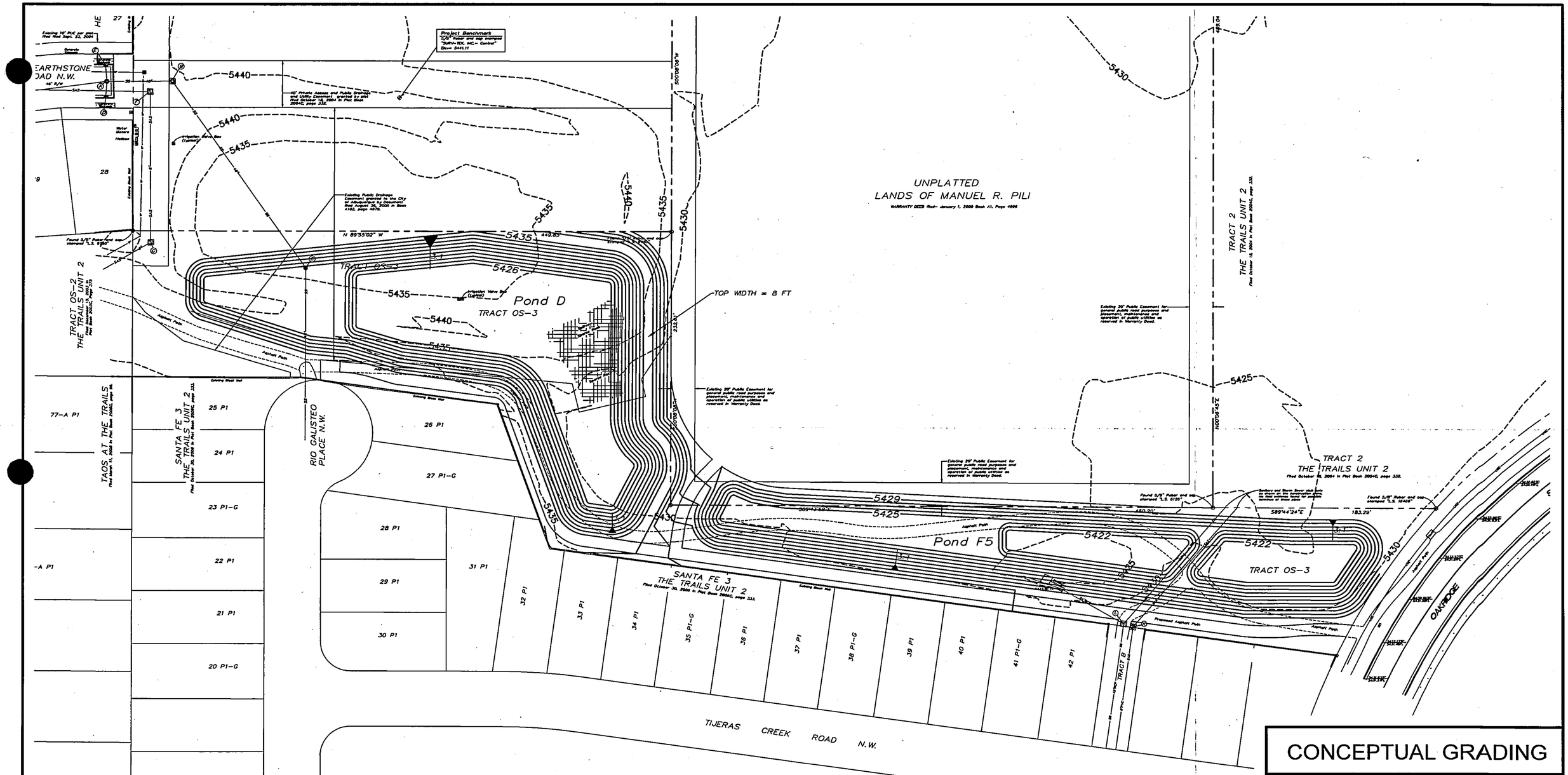
Time	Flow
13.3	6.564
13.4	6.44
13.5	6.308
13.6	6.194
13.7	6.081
13.8	5.959
13.9	5.848
14	5.733
14.1	5.617
14.2	5.506
14.3	5.396
14.4	5.286
14.5	5.183
14.6	5.079
14.7	4.97
14.8	4.873
14.9	4.772
15	4.67
15.1	4.585
15.2	4.492
15.3	4.397
15.4	4.31
15.5	4.217
15.6	4.132
15.7	4.057
15.8	3.973
15.9	3.896
16	3.819
16.1	3.742
16.2	3.667
16.3	3.599
16.4	3.531
16.5	3.464
16.6	3.401
16.7	3.339
16.8	3.271
16.9	3.215
17	3.154
17.1	3.099
17.2	3.043
17.3	2.986
17.4	2.932
17.5	2.884
17.6	2.836

AHYMO ID 73
Continued

Time	Flow
17.7	2.788
17.8	2.739
17.9	2.684
18	2.637
18.1	2.59
18.2	2.534
18.3	2.48
18.4	2.441
18.5	2.394
18.6	2.346
18.7	2.306
18.8	2.266
18.9	2.226
19	2.191
19.1	2.157
19.2	2.123
19.3	2.085
19.4	2.055
19.5	2.021
19.6	1.997
19.7	1.967
19.8	1.943
19.9	1.915
20	1.887
20.1	1.862
20.2	1.84
20.3	1.818
20.4	1.797
20.5	1.778
20.6	1.759
20.7	1.733
20.8	1.718
20.9	1.705
21	1.682
21.1	1.668
21.2	1.649
21.3	1.63
21.4	1.622
21.5	1.606
21.6	1.589
21.7	1.576
21.8	1.563
21.9	1.55
22	1.539

Appendix D

Appendix E



CONCEPTUAL GRADING

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Appendix F

TRAILS UNIT III DRAINAGE MASTER PLAN
HYDROLOGIC MODEL--FULLY DEVELOPED CONDITIONS
12 MAY 2014
***MODIFIED 8/2016 - RESPEC

1. TURNED ON SURGE POND FOR POND D.1, 11 CFS BYPASS
2. TURNED ON ADD COMMANED TO COMBINE ID 61 AND 68
3. CHANGED ROUTE MCUNGE INFLOW ID FROM 68 TO 67
4. TURNED OFF OLD RATING CURVE FOR POND.D1
5. CREATED NEW RATING CURVE FOR POND.D1
6. ROUTED HYD FROM POND.D1 TO POND.D
7. TURNED OFF ROUTE FROM RAINBOW TO POND.D
8. TURNED OFF PRINT COMMAND FOR ID 72
9. CHANGED I FROM 72 TO 71 FOR ID 73
10. ID 73 NEW INFLOW HYD TO POND.D
11. TREATMENT TYPE PERCENTAGES CHANGED FOR ID 28
12. TURNED OFF ADD COMMAND FOR ID 74
13. TEATMENT TYPE PERCENTAGES CHANGED FOR ID 25
14. TURNED OFF ADD, PRINT, AND PUNCH FOR ID 75
15. ADDED PUNCH COMMAND FOR ID 73
16. DIVIDE HYD ID CHANGED FROM 75 TO 73
17. TURNED OFF ROUTE RESERVOIR FOR POND.F5
18. TURNED OFF PRINT HYD FOR ID 51
19. ADDED BASIN.F8 TO BASINS F5 AND F7
20. ADDED BASIN.D5 TO BASINS F5,F7,F8
21. ADDED BASIN.D6 TO BASINS F5,F7,F8,D5
22. TURNED OFF ADD/PRINT FOR ID 78
23. ADDED NEW ROUTE RESERVOIR FOR POND.F5
24. CHANGED ID 78 TO 79 FOR BASINS F1TO8
25. CHANGED AREA OF BASIN.D5 TO EXCLUDE POND.D
26. CHANGED TREATMENT TYPE PERCENTAGES FOR BASIN.F8
27. TURNED OFF POND.D HYD TEXT
28. CHANGED POND.D1 FROM SURGE TO DETENTION
29. CHANGED AREA FOR BASIN.D4
30. DIVIDED BASIN D4 TO MODEL RUNOFF BYPASSING INLETS
31. ADDED HYD FOR POND.D BASIN
32. ADDED POND.D BASIN TO D4 SURGE HYD
33. CHANGED INFLOW FOR POND.D INFLOW HYD
34. TURNED OFF ALL COMMANDS FOR BASINS D5, D6, AND F8
35. COMPUTED HYD FOR TRACT 1 AS SINGLE SUBBASIN
36. ADDED TRACT.1 HYD TO INLET.BYPASS (POND.F5 INFLOW HYD)

****

HYDROLOGIC MODEL FOR OFFSITE AND ONSITE BASINS
100-YEAR, 24-HOUR STORM:

PRECIPITATION:
P60 = 1.84"
P360 = 2.20"
P1440 = 2.66"

****

IA TIME=0.0 HR PUNCH CODE=0

AINFALL TYPE=2 RAIN QUARTER=0.0 IN

```
                    RAIN ONE=1.84 IN  RAIN SIX=2.20 IN
                    RAIN DAY=2.66 IN  DT=0.10  HRS
EDIMENT BULK        CODE=1  FACTOR=1.0


S*****************************************************************
S********  COMPUTE ONSITE BASINS FROM THE TRAILS
S*********

OMPUTE NM HYD         ID=50  HYD NO=OFFSITE1  DA=.1998 SQ MI
                    %A=100  %B=0  %C=0 %D=0
                    TP=-.66 HR  RAIN=-1
RINT HYD              ID=50 CODE=10

OUTE RESERVOIR        ID=53 HYD=OFF.POND.1  INFLOW ID=50 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0        0          0
                    3.85     0.037      1
                    5.44     0.218      2
                    6.66     0.610      3
                    7.69     1.150      4
                    8.60     1.759      5
                    9.42     2.439      6


RINT HYD              ID=53 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.0176
                    DIA=2.0  N=0.013
OUTE MCUNGE           ID=54 HYD=RTE.OFF.POND INFLOW ID=53
                      DT=0.0  L=740 NS=0  SLOPE=0.0176
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=54 CODE=0

OMPUTE NM HYD         ID=21  HYD NO=BASIN.A1  DA=.02422 SQ MI
                    %A=0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=21 CODE=10

OMPUTE NM HYD         ID=22  HYD NO=BASIN.A2  DA=.01331 SQ MI
                    %A=0  %B=33.0  %C=33.0 %D=34.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=22 CODE=10


OMPUTE NM HYD         ID=23  HYD NO=BASIN.A3  DA=.00502 SQ MI
                    %A=0  %B=5.0  %C=5.0 %D=90.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=23 CODE=10


OMPUTE NM HYD         ID=24  HYD NO=BASIN.A4  DA=.01186 SQ MI
                    %A=0  %B=7.5  %C=7.5 %D=85.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=24 CODE=10

OMPUTE NM HYD         ID=25  HYD NO=BASIN.A5  DA=.01830 SQ MI
                    %A=0  %B=17.0  %C=17.0 %D=66.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=25 CODE=10
```

```
OMPUTE NM HYD        ID=26  HYD NO=BASIN.A6  DA=.02652 SQ MI
                    %A=0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.133 HR  RAIN=-1
RINT HYD             ID=26 CODE=10

OMPUTE NM HYD        ID=27  HYD NO=BASIN.A7  DA=.01055 SQ MI
                    %A=0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.133 HR  RAIN=-1
RINT HYD             ID=26 CODE=10

DD HYD              ID=55 HYD=O1.A2 ID I=54 II=22
RINT HYD            ID=55 CODE=10

DD HYD              ID=56 HYD=O1A2.A1 ID I=55 II=21
RINT HYD            ID=56 CODE=10


DD HYD              ID=57 HYD=O1A2A1.A3 ID I=56 II=23
RINT HYD            ID=57 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                   DIA=4.0  N=0.013
OUTE MCUNGE          ID=58 HYD=RTE.O1A2A1.A3 INFLOW ID=57
                     DT=0.0  L=1000 NS=0  SLOPE=0.007
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=58 CODE=0

DD HYD              ID=59 HYD=A1TOA5 ID I=58 II=25
RINT HYD            ID=59 CODE=10


*****************************************************
DIVIDE HYD                ID=59 Q=8.26 ID I=61  HYD NO=BYPASS.A5
                                ID II=62 HYD NO=SURGE.A5
PRINT HYD           ID=61 CODE=10
PRINT HYD           ID=62 CODE=10
*****************************************************


OUTE RESERVOIR      ID=60 HYD=POND.A5  INFLOW ID=59 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0.0      0.0        5511
                    2.13     0.35       5512
                    5.13     1.03       5513
                    8.82     1.94       5514
                    13.07    3.15       5515
                    17.82    4.61       5516


RINT HYD             ID=60 CODE=10


AD HYD              ID=59 HYD=TOTALA5 ID I=61 II=60
PR T HYD            ID=59 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.013
```

```
                    DIA=2.0  N=0.013
ROUTE MCUNGE          ID=61 HYD=RTE.A4 INFLOW ID=24
                      DT=0.0  L=900 NS=0  SLOPE=0.013
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

PRINT HYD             ID=61 CODE=0

ADD HYD             ID=62 HYD=RTE.A4.A6 ID I=61 II=26
PRINT HYD           ID=62 CODE=10


ADD HYD             ID=63 HYD=RTEA4A6.PONDA5 ID I=62 II=60
PRINT HYD           ID=63 CODE=10

*****************************************************
DIVIDE HYD            ID=63 Q=8.26 ID I=61  HYD NO=BYPASS.A6
                            ID II=62 HYD NO=SURGE.A6
PRINT HYD           ID=61 CODE=10
PRINT HYD           ID=62 CODE=10
*****************************************************


ROUTE RESERVOIR     ID=64 HYD=POND.A6  INFLOW ID=63 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0        0          5500
                    2.13     0.30       5501
                    5.13     0.85       5502
                    8.82     1.57       5503
                    13.07    2.47       5504
                    17.82    3.52       5505
                    23.04    4.72       5506
                    100.00   6.06       5507

PRINT HYD             ID=64 CODE=10


ADD HYD             ID=66 HYD=TOTALA6 ID I=61 II=64
PRINT HYD           ID=66 CODE=10


ADD HYD             ID=65 HYD=PONDA6.A7 ID I=64 II=27
PRINT HYD           ID=65 CODE=10


COMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.021
                    DIA=2.0  N=0.013
ROUTE MCUNGE          ID=66 HYD=RTE.A6.A7 INFLOW ID=65
                      DT=0.0  L=520 NS=0  SLOPE=0.021
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

PRINT HYD             ID=66 CODE=0


COMPUTE NM HYD        ID=25  HYD NO=BASIN.D1  DA=.01816 SQ MI
                    %A=0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.133 HR  RAIN=-1
PRINT HYD             ID=25 CODE=10

ADD HYD             ID=67 HYD=A6.A7.D1 ID I=66 II=25
PRINT HYD           ID=67 CODE=10
```

```
** DIVIDE HYD BELOW WAS TURNED OFF - 8/2016 MOD TURNS IT
** BACK ON.  ID CHANGES ARE MADE TO ROUTE SURGE HYDROGRAPH
** THROUGH POND D.1 - RESPEC
** TURNED OFF DIVIDE HYD - RESPEC
*****************************************************************
DIVIDE HYD              ID=67 Q=11.07 ID I=61  HYD NO=BYPASS.AD1
                              ID II=62 HYD NO=SURGE.D1
PRINT HYD          ID=61 CODE=10
PRINT HYD          ID=62 CODE=10
*****************************************************************


** TURNED OFF OLD RATING CURVE FOR POND.D1 - RESPEC
ROUTE RESERVOIR   ID=68 HYD=POND.D1  INFLOW ID=62 CODE=6.3
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5471
                  2.83     2.47       5472
                  6.84     3.52       5473
                  11.75    4.72       5474
                  17.42    6.06       5475

** CREATED NEW POND.D1 RATING CURVE - RESPEC
** TURNED OFF RATING CURVE - RESPEC
ROUTE RESERVOIR     ID=68 HYD=POND.D1  INFLOW ID=62 CODE 6.3
                  OUTFLOW   STORAGE     DEPTH
                  0         0          5471
                  6.65      0.16       5472
                  16.07     0.23       5473
                  27.61     0.31       5474
                  40.93     0.39       5475

** NEW RATING CURVE FOR DETENTION - RESPEC
ROUTE RESERVOIR     ID=68 HYD=POND.D1  INFLOW ID=67 CODE 6.3
                  OUTFLOW   STORAGE     DEPTH
                  0         0          5471
                  7.61      0.066      5472
                  24.06     0.149      5473
                  41.67     0.250      5474
                  53.79     0.370      5475

PRINT HYD           ID=68 CODE=10


** TURNED ON THE ADD/PRINT COMMAND BELOW - RESPEC
** TURNED OFF ADD/PRINT - RESPEC
ADD HYD            ID=67 HYD=TOTALD1 ID I=61 II=68
PRINT HYD          ID=67 CODE=10


** CHANGED INFLOW ID FROM 68 TO 67 - RESPEC
** ROUTED TO POND.D - RESPEC
** CHANGED INFLOW ID FROM 67 TO 68 - RESPEC
COMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.0153
                   DIA=3.5  N=0.013
ROUTE MCUNGE         ID=69 HYD=RTE.D1 INFLOW ID=68
                     DT=0.0  L=2550 NS=0  SLOPE=0.0153
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

** OLD ROUTING - RESPEC
COMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.018
                   DIA=2.0  N=0.013
ROUTE MCUNGE         ID=69 HYD=RTE.D1 INFLOW ID=67
```

```
                    DT=0.0  L=1470 NS=0  SLOPE=0.018
                    MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD            ID=69 CODE=0


*HERITAGE UNIT 1****

OMPUTE NM HYD       ID=25  HYD NO=BASIN.D2  DA=.03456 SQ MI
                   %A=0  %B=28.5  %C=28.5 %D=43.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=25 CODE=10

DD HYD             ID=70 HYD=PONDD1.D2 ID I=69 II=25
RINT HYD           ID=70 CODE=10


****UNIVERSE BLVD*****

OMPUTE NM HYD       ID=26  HYD NO=BASIN.D3  DA=.00580 SQ MI
                   %A=0  %B=5.0  %C=5.0 %D=90.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=26 CODE=10

DD HYD             ID=71 HYD=D1.D2.D3 ID I=70 II=26
RINT HYD           ID=71 CODE=10


** TUNRED OFF ROUTING - RESPEC
COMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.02
                   DIA=4.0  N=0.013
ROUTE MCUNGE          ID=72 HYD=RTE.D1 INFLOW ID=71
                    DT=0.0  L=1150 NS=0  SLOPE=0.02
                    MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

** TURNED OFF PRINT COMMAND - RESPEC
PRINT HYD             ID=72 CODE=0


***HERITAGE UNIT 2*****

** CHANGED DA FROM 0.01961 TO 0.01809 - RESPEC
OMPUTE NM HYD       ID=27  HYD NO=BASIN.D4  DA=.01809 SQ MI
                   %A=0  %B=28.5  %C=28.5 %D=43.0
                  TP=-.133 HR  RAIN=-1
RINT HYD            ID=27 CODE=10


** ADDED DIVIDE HYD - RESPEC
IVIDE HYD          ID=27 Q=5.39 ID I=1  HYD NO=BYPASS.INLET
                            ID II=2  HYD NO=SURGE.INLET
RINT HYD           ID=1 CODE=10
RINT HYD           ID=2 CODE=10


** ADDED HYD GENERATED BY BASIN.POND.D - RESPEC
OMPUTE NM HYD      ID=4 HYD NO=BASIN.POND.D DA=.00219 SQ MI
                   %A=0  %B=40  %C=40  %D=10
                  TP=-.133 HR  RAIN=-1
RINT HYD           ID=4 CODE=10
```

```
** ADDED BASIN POND.D AND ID 6 - RESPEC
DD HYD            ID=5 HYD=D4.POND.D ID I=2 II=4
RINT HYD          ID=5 CODE=10


** CHANGED I FROM 72 TO 71 - RESPEC
** CHANGED II FROM 27 TO 5 - RESPEC
S****** NEW POND D INFLOW HYDROGRAPH
DD HYD            ID=73 HYD=D1D2D3.D4 ID I=71 II=5
RINT HYD          ID=73 CODE=10

** NEW INFLOW HYD TO POND.D - RESPEC
** ADDED PUNCH FOR ID 73 - RESPEC
JNCH HYD          ID=73

** CHANGED B AND C (23%) TO 20% AND D (54%) TO 60% - RESPEC
** CHANGED DA FROM 0.01367 TO 0.01155 - RESPEC
** TURNED OFF COMPUTE HYD AND PRINT FOR BASIN.D5 - RESPEC
COMPUTE NM HYD      ID=28  HYD NO=BASIN.D5  DA=.01155 SQ MI
                  %A=0  %B=20.0  %C=20.0 %D=60.0
                 TP=-.133 HR  RAIN=-1
PRINT HYD           ID=28 CODE=10

** TURNED OFF ADD/PRINT COMMAND - RESPEC
ADD HYD           ID=74 HYD=D1234.D5 ID I=73 II=28
PRINT HYD         ID=74 CODE=10


** CHANGED B AND C (18%) TO 20% AND D (64%) TO 60% - RESPEC
** TURNED OFF COMPUTE HYD AND PRINT FOR BASIN.D6 - RESPEC
COMPUTE NM HYD      ID=25  HYD NO=BASIN.D6  DA=.00781 SQ MI
                  %A=0.0  %B=20.0  %C=20.0 %D=60.0
                  TP=-.1333 HR  RAIN=-1
PRINT HYD           ID=25 CODE=10

** TURNED OFF ADD/PRINT COMMAND - RESPEC
ADD HYD           ID=75 HYD=D12345.D6 ID I=74 II=25
PRINT HYD         ID=75 CODE=10

 DELETED 'S' TO TURN OFF TEXT - RESPEC
****** POND D INFLOW HYDROGRAPH
** TURNED OFF PUNCH HYD - RESPEC
PUNCH HYD           ID=75

*************************************************************
** CHANGED ID FROM 75 TO 73 - RESPEC
IVIDE HYD         ID=73 Q=13.77 ID I=31  HYD NO=BYPASS.D
                                ID II=32 HYD NO=SURGE.D
RINT HYD          ID=31 CODE=10
RINT HYD          ID=32 CODE=10
*************************************************************


OUTE RESERVOIR    ID=50 HYD=POND.D  INFLOW ID=32 CODE=6.3
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5429.46
                  1.87     0.30       5431
                  2.97     1.01       5432
                  4.00     1.91       5433
                  4.98     2.91       5434
                  5.90     4.00       5435
                  6.79     5.17       5436
```

```
                    7.51      6.24        5436.85
                   130.0     7.80        5438


RINT HYD             ID=50 CODE=10

OUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.0057
                   DIA=2.0  N=0.013
OUTE MCUNGE          ID=51 HYD=RTE.D INFLOW ID=50
                     DT=0.0  L=1530 NS=0  SLOPE=0.0057
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=51 CODE=0


DD HYD             ID=75 HYD=BYPASS.RTE.D ID I=51 II=31
RINT HYD           ID=75 CODE=10


OMPUTE NM HYD        ID=20  HYD NO=BASIN.C  DA=.01278 SQ MI
                   %A=0  %B=25.0  %C=25.0 %D=50.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=20 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.027
                   DIA=3.0  N=0.013
OUTE MCUNGE          ID=76 HYD=RTE.C INFLOW ID=20
                     DT=0.0  L=1020 NS=0  SLOPE=0.027
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=76 CODE=0


*****SANTA FE UNIT 1*******

OMPUTE NM HYD        ID=20  HYD NO=BASIN.F1  DA=.02208 SQ MI
                   %A=0  %B=21.7  %C=21.8 %D=56.5
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=20 CODE=10

DD HYD             ID=77 HYD=C.F1 ID I=76 II=20
RINT HYD           ID=77 CODE=10


****UNIVERSE BLVD******

OMPUTE NM HYD        ID=21  HYD NO=BASIN.F2  DA=.00573 SQ MI
                   %A=0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=21 CODE=10

DD HYD             ID=78 HYD=CF1.F2 ID I=77 II=21
RINT HYD           ID=78 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.023
                   DIA=3.0  N=0.013
OUTE MCUNGE          ID=79 HYD=RTE.CF1F2 INFLOW ID=78
                     DT=0.0  L=1560 NS=0  SLOPE=0.023
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=79 CODE=0
```

```
****TAOS AT THE TRAILS****

OMPUTE NM HYD       ID=22  HYD NO=BASIN.F3  DA=.03563 SQ MI
                   %A=0  %B=21.7  %C=21.8 %D=56.5
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=22 CODE=10

DD HYD             ID=70 HYD=CF1F2.F3 ID I=79 II=22
RINT HYD           ID=70 CODE=10


*****SANTA FE III********

OMPUTE NM HYD       ID=23  HYD NO=BASIN.F4  DA=.03892 SQ MI
                   %A=0  %B=25.0  %C=25.0 %D=50.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=23 CODE=10


DD HYD             ID=71 HYD=CF1F2F3.F4 ID I=70 II=23
RINT HYD           ID=71 CODE=10

DD HYD             ID=70 HYD=CF1F2F3F4.D ID I=71 II=75
RINT HYD           ID=70 CODE=10


OMPUTE NM HYD       ID=24  HYD NO=BASIN.F5  DA=.01852  SQ MI
                   %A=0  %B=12.5  %C=12.5 %D=75.0
                   TP=-.133 HR  RAIN=-1
R HYD               ID=24 CODE=10

OMPUTE NM HYD       ID=25  HYD NO=BASIN.J10  DA=.00628 SQ MI
                   %A=0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=25 CODE=10


OMPUTE NM HYD       ID=26  HYD NO=BASIN.J11  DA=.00733 SQ MI
                   %A=0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=26 CODE=10

DD HYD             ID=23 HYD=J10.J11 ID I=25 II=26
RINT HYD           ID=23 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.004
                    DIA=3.0  N=0.013
OUTE MCUNGE           ID=10 HYD=RTE.J10J11 INFLOW ID=23
                      DT=0.0  L=1450 NS=0  SLOPE=0.004
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=10 CODE=0


OMPUTE NM HYD       ID=26  HYD NO=BASIN.F7  DA=.01097 SQ MI
                   %A=0.0  %B=7.5  %C=7.5 %D=85.0
                   TP=-.1333 HR  RAIN=-1
```

```
RINT HYD              ID=26 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.004
                    DIA=3.5  N=0.013
O[illegible] MCUNGE          ID=74 HYD=RTE.F7 INFLOW ID=26
                             DT=0.0  L=500 NS=0  SLOPE=0.004
                             MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD                     ID=74 CODE=0


DD HYD              ID=75 HYD=F7.F5 ID I=74 II=24
RINT HYD            ID=75 CODE=10


** TURNED OFF ROUTE RESERVOIR - RESPEC
ROUTE RESERVOIR   ID=51 HYD=POND.F5  INFLOW ID=75 CODE=5
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5421
                  3.00     0.1993     5422
                  7.00     0.4325     5423
                  11.00    0.7053     5424
                  15.00    1.0245     5425
                  20.00    1.3979     5426
                  50.00    1.8334     5427


** TURNED OFF PRINT HYD - RESPEC
PRINT HYD             ID=51 CODE=10

** [illegible]HANGED B AND C (18%) TO 23% AND D (64%) TO 54% - RESPEC
** TURNED OFF COMPUTE HYD AND PRINT FOR BASIN.F8 - RESPEC
OMPUTE NM HYD         ID=27  HYD NO=BASIN.F8  DA=.00781 SQ MI
                  %A=0.0  %B=23.0  %C=23.0 %D=54.0
                  TP=-.1333 HR  RAIN=-1
PRINT HYD             ID=27 CODE=10


** ADDED BASIN.F8 TO BASIN.D5 - RESPEC
** TURNED OFF ADD HYD AND PRINT FOR D5 AND F8 - RESPEC
ADD HYD             ID=40 HYD=F8.D5 ID I=27 II=28
PRINT HYD           ID=40 CODE=10


** ADDED BASIN.D6 TO ID 40 - RESPEC
** TURNED OFF ADD HYD AND PRINT FOR F8,D5,D6 - RESPEC
****** POND F5 INFLOW HYDROGRAPH (PREV ID 27)
ADD HYD             ID=41 HYD=F8.D56 ID I=40 II=25
PRINT HYD           ID=41 CODE=10
** ID 41 NEW INFLOW HYD TO POND.F5 - RESPEC


** NEW ID 41 REFLECTS TRACT 1 BASIN HYD - REPSEC
OMPUTE NM HYD         ID=3  HYD NO=TRACT.1  DA=.02717 SQ MI
                  %A=0.0  %B=20.5  %C=20.5 %D=59.0
                  TP=-.1333 HR  RAIN=-1
RI[illegible] HYD             ID=3 CODE=10


** ADDDED BYPASS.INLET TO ID 3 - REPSEC
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S****** POND F5 INFLOW HYDROGRAPH (PREV ID 27)
DD HYD              ID=41 HYD=S.F5 ID I=3 II=1
RINT HYD            ID=41 CODE=10


JNCH HYD              ID=41

** ADDED BASIN.F5 AND F7 TO ID 41 - RESPEC
DD HYD              ID=42 HYD=F578.D56 ID I=41 II=75
RINT HYD            ID=42 CODE=10


** NEW ROUTE RESERVOIR FOR POND.F5 - RESPEC
OUTE RESERVOIR      ID=52 HYD=POND.F5  INFLOW ID=42 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0        0          5421
                    3.00     0.1993     5422
                    7.00     0.4325     5423
                    11.00    0.7053     5424
                    15.00    1.0245     5425
                    20.00    1.3979     5426
                    50.00    1.8334     5427


RINT HYD              ID=52 CODE=10


** TURNED OFF ADD/PRINT FOR ID 78 - RESPEC
ADD HYD             ID=78 HYD=PONDF5.F8 ID I=75 II=27
PRINT HYD           ID=78 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.003
                    DIA=3.5  N=0.013
OUTE MCUNGE           ID=77 HYD=RTE.PONDF5 INFLOW ID=52
                      DT=0.0  L=590 NS=0  SLOPE=0.004
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=77 CODE=0


** CHANGED ID FROM 78 TO 79 - RESPEC
DD HYD              ID=79 HYD=F1TOF8 ID I=77 II=70
RINT HYD            ID=79 CODE=10

** CHANGED HYD ID FROM 78 TO 79 - RESPEC
*****************************************************
IVIDE HYD           ID=79 Q=6.20 ID I=31  HYD NO=BYPASS.F
                                 ID II=32 HYD NO=SURGE.F
RINT HYD            ID=31 CODE=10
RINT HYD            ID=32 CODE=10
*****************************************************


OUTE RESERVOIR      ID=52 HYD=POND.F  INFLOW ID=32 CODE=6.3
                    OUTFLOW  STORAGE    DEPTH
                    0        0          5415.08
                    3.80     0.25       5416.0
                    6.52     0.55       5417.0
                    8.74     1.69       5418.0
                    10.68    3.08       5419.0
                    12.41    4.54       5420.0
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                    14.00     6.08        5421.0
                    15.47     7.70        5422.0
                    16.85     9.39        5423.0
                    18.29     11.16       5424.0
                    18.60     11.76       5424.33
                    100.00    13.02       5425.0

RINT HYD              ID=52 CODE=10

DD HYD              ID=53 HYD=BYPASSF.PONDF ID I=31 II=52
RINT HYD            ID=53 CODE=10

OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.004
                   DIA=2.0  N=0.013
OUTE MCUNGE          ID=77 HYD=RTE.PONDF INFLOW ID=53
                     DT=0.0  L=850 NS=0  SLOPE=0.004
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=77 CODE=0


****RESERVE*****

OMPUTE NM HYD        ID=20  HYD NO=BASIN.G1  DA=.02531 SQ MI
                   %A=0  %B=25.0  %C=25.0 %D=50.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=20 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                   DIA=3.0  N=0.013
OUTE MCUNGE          ID=78 HYD=RTE.G1 INFLOW ID=20
                     DT=0.0  L=580 NS=0  SLOPE=0.007
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=78 CODE=0


****SANTA FE 2*****

OMPUTE NM HYD        ID=21  HYD NO=BASIN.G2  DA=.02530 SQ MI
                   %A=0  %B=25.0  %C=25.0 %D=50.0
                   TP=-.133 HR  RAIN=-1
RINT HYD             ID=21 CODE=10


DD HYD              ID=30 HYD=G1.G2 ID I=78 II=21
RINT HYD            ID=30 CODE=10


DD HYD              ID=31 HYD=G1G2.PONDF ID I=30 II=77
RINT HYD            ID=31 CODE=10


*****************************************************************
IVERSE HYD          ID=31 Q=17.61 ID I=32  HYD NO=BYPASS.G
                                ID II=33 HYD NO=SURGE.G
RINT HYD            ID=32 CODE=10
RINT HYD            ID=33 CODE=10
*****************************************************************
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ɔUTE RESERVOIR    ID=34 HYD=POND.G  INFLOW ID=33 CODE=6.3
                  OUTFLOW  STORAGE    DEPTH
                  0        0          5415.67
                  2.50     0.23       5417.0
                  4.20     0.84       5418.0
                  5.77     1.83       5419.0
                  7.24     3.17       5420.0
                  8.63     4.70       5421.0
                  9.95     6.34       5422.0
                  10.45    7.21       5422.5
                   100.00  8.10       5423.0


RINT HYD            ID=24 CODE=10


ɔMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.006
                   DIA=3.0  N=0.013
ɔUTE MCUNGE          ID=78 HYD=RTE.PONDG INFLOW ID=34
                     DT=0.0  L=1440 NS=0  SLOPE=0.006
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=78 CODE=0


DD HYD            ID=79 HYD=BYPASS.RTE.G ID I=78 II=32
RINT HYD          ID=79 CODE=10


*****************************************************************
*********POND G DISCHARGES INTO POND K*************************

ɔMPUTE NM HYD       ID=55  HYD NO=OFFSITE2  DA=.0805 SQ MI
                  %A=100  %B=0.0  %C=0.0 %D=0.0
                  TP=-.66 HR  RAIN=-1
RINT HYD            ID=55 CODE=10


ɔUTE RESERVOIR    ID=50 HYD=OFFPOND2  INFLOW ID=55 CODE=5
                  OUTFLOW  STORAGE    DEPTH
                  0        0          0
                  2.16     0.047      1
                  3.06     0.222      2
                  3.75     0.466      3
                  4.33     0.751      4
                  4.84     1.081      5


PRINT HYD         ID=50 CODE=10


ɔMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.011
                   DIA=2.0  N=0.013
ɔUTE MCUNGE          ID=70 HYD=RTE.OFFPOND2 INFLOW ID=50
                     DT=0.0  L=900 NS=0  SLOPE=0.011
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=70 CODE=0
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OMPUTE NM HYD        ID=30  HYD NO=BASIN.B  DA=.01998 SQ MI
                    %A=0  %B=34.0  %C=34.0 %D=32.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=30 CODE=10


OU RESERVOIR        ID=51 HYD=POND.B  INFLOW ID=30 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0        0          5515
                    1.71     0.06       5516
                    2.42     0.24       5517
                    2.96     0.55       5518
                    3.42     0.99       5519
                    3.82     1.67       5520

RINT HYD            ID=51 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.03
                   DIA=2.0  N=0.013
OUTE MCUNGE           ID=71 HYD=RTE.PONDB INFLOW ID=51
                      DT=0.0  L=1180 NS=0  SLOPE=0.03
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=71 CODE=0


ADD HYD             ID=72 HYD=OFF.B ID I=71 II=70
PRINT HYD           ID=72 CODE=10

OM TE NM HYD         ID=30  HYD NO=BASINE1.1  DA=.02753 SQ MI
                    %A=0.0  %B=33.0  %C=33.0 %D=34.0
                    TP=-0.133 HR  RAIN=-1
RINT HYD              ID=30 CODE=10


DD HYD              ID=73 HYD=OFF.E11 ID I=70 II=30
RINT HYD            ID=73 CODE=10


OMPUTE NM HYD        ID=31  HYD NO=BASINE1.2  DA=.00588 SQ MI
                    %A=0.0  %B=33.0  %C=33.0 %D=34.0
                    TP=-0.133 HR  RAIN=-1
RINT HYD              ID=31 CODE=10


OMPUTE NM HYD        ID=32  HYD NO=BASIN.E2  DA=.01348 SQ MI
                    %A=0.0  %B=18.0  %C=18.0 %D=64.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=32 CODE=10


DD HYD              ID=72 HYD=E2.E12 ID I=31 II=32
RINT HYD            ID=72 CODE=10


OM TE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.002
                   DIA=3.0  N=0.013
OUTE MCUNGE           ID=76 HYD=RTE.E12 INFLOW ID=72
                      DT=0.0  L=800 NS=0  SLOPE=0.01
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0
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RINT HYD              ID=76 CODE=0


OMPUTE NM HYD         ID=33  HYD NO=BASIN.E3  DA=.01197 SQ MI
                     %A=0.0  %B=25.0  %C=25.0 %D=50.0
                     TP=-0.133 HR  RAIN=-1
RINT HYD              ID=33 CODE=10


OMPUTE NM HYD         ID=34  HYD NO=BASIN.E4  DA=.00577 SQ MI
                     %A=0.0  %B=5.0  %C=5.0 %D=90.0
                     TP=-0.133 HR  RAIN=-1
RINT HYD              ID=34 CODE=10


DD HYD               ID=74 HYD=E3.E4 ID I=33 II=34
RINT HYD             ID=74 CODE=10


DD HYD               ID=75 HYD=E3E4.PONDB ID I=74 II=71
RINT HYD             ID=75 CODE=10


DD HYD               ID=74 HYD=E3E4B.OFFE11 ID I=75 II=73
RINT HYD             ID=74 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.026
                    DIA=4.0  N=0.013
OUTE MCUNGE            ID=77 HYD=RTE.E1E4 INFLOW ID=74
                       DT=0.0  L=1210 NS=0  SLOPE=0.026
                       MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD               ID=77 CODE=0


DD HYD               ID=78 HYD=E1E4.E12 ID I=77 II=76
RINT HYD             ID=78 CODE=10


OMPUTE NM HYD         ID=35  HYD NO=BASIN.E5  DA=.04402 SQ MI
                     %A=0.0  %B=29.0  %C=29.0 %D=42.0
                     TP=-0.133 HR  RAIN=-1
RINT HYD              ID=35 CODE=10


DD HYD               ID=80 HYD=E1E4.E5 ID I=78 II=35
RINT HYD             ID=80 CODE=10


OMPUTE NM HYD         ID=36  HYD NO=BASIN.E6  DA=.00488 SQ MI
                     %A=0.0  %B=5.0  %C=5.0 %D=90.0
                     TP=-0.133 HR  RAIN=-1
RINT HYD              ID=36 CODE=10


DD HYD               ID=40 HYD=E1E6 ID I=80 II=36
RINT HYD             ID=40 CODE=10


*****************************************************************
IVIDE HYD            ID=40 Q=15.5 ID I=61  HYD NO=BYPASS.E
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                                  ID II=62 HYD NO=SURGE.E
RINT HYD            ID=61 CODE=10
RINT HYD            ID=62 CODE=10
*****************************************************************


OU RESERVOIR        ID=37 HYD=POND.E  INFLOW ID=62 CODE=6.3
                    OUTFLOW  STORAGE    DEPTH
                    0.0      0.00       5441.6
                    3.31     1.37       5444
                    4.53     2.73       5445
                    5.68     4.25       5446
                    6.77     5.97       5447
                    7.81     7.52       5448
                    50.0     9.07       5449

RINT HYD            ID=37 CODE=10


DD HYD              ID=40 HYD=TOTALE ID I=61 II=37
RINT HYD            ID=40 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.022
                     DIA=2.5  N=0.013
OUTE MCUNGE           ID=38 HYD=RTE.PONDE INFLOW ID=40
                      DT=0.0  L=1200 NS=0  SLOPE=0.022
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=38 CODE=0


**PARK***

OMPUTE NM HYD         ID=32  HYD NO=BASIN.P  DA=.00845 SQ MI
                    %A=43  %B=25  %C=25 %D=7
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=32 CODE=10


**VALLE VISTA***

OMPUTE NM HYD         ID=33  HYD NO=BASIN.H1  DA=.01825 SQ MI
                    %A=0.0  %B=16  %C=16 %D=68
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=33 CODE=10


DD HYD              ID=43 HYD=PONDE.H1 ID I=38 II=33
RINT HYD            ID=43 CODE=10


**RAINBOW BLVD PORTION***

OMPUTE NM HYD         ID=34  HYD NO=BASIN.H2  DA=.00836 SQ MI
                    %A=0.0  %B=0.0  %C=10.0 %D=90.0
                    TP=-.133 HR  RAIN=-1
RI HYD                ID=34 CODE=10


DD HYD              ID=44 HYD=P.H2 ID I=32 II=34
RINT HYD            ID=44 CODE=10
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DD HYD              ID=45 HYD=PH2.H1 ID I=44 II=43
RINT HYD            ID=45 CODE=10


OMPUTE NM HYD         ID=35  HYD NO=BASIN.H3  DA=.01191 SQ MI
                    %A=0.0  %B=20.0  %C=20.0 %D=60.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=35 CODE=10


DD HYD              ID=46 HYD=PH1H3 ID I=45 II=35
RINT HYD            ID=46 CODE=10


*****************************************************
IVIDE HYD           ID=46 Q=21.6 ID I=47  HYD NO=BYPASS.H
                                 ID II=48 HYD NO=SURGE.H
RINT HYD            ID=47 CODE=10
RINT HYD            ID=48 CODE=10
*****************************************************


*****
OUTE RESERVOIR      ID=30 HYD=POND.H  INFLOW ID=48 CODE=5
                    OUTFLOW  STORAGE    DEPTH
                    0.0      0.0        5418.65
                    2.31     0.57       5420
                    3.88     1.62       5421
                    5.36     3.02       5422
                    100.0    4.60       5423

RINT HYD            ID=30 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.003
                     DIA=2.5  N=0.013
OUTE MCUNGE            ID=49 HYD=RTE.PONDH INFLOW ID=30
                       DT=0.0  L=1600 NS=0  SLOPE=0.003
                       MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD               ID=49 CODE=0


DD HYD              ID=31 HYD=BYPASS.RTE.H ID I=49 II=47
RINT HYD            ID=31 CODE=10


****TIERRA VISTA******

OMPUTE NM HYD         ID=20  HYD NO=BASIN.K1  DA=.02673 SQ MI
                    %A=0.0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.1715 HR  RAIN=-1
RINT HYD              ID=20 CODE=10


DD HYD              ID=32 HYD=PONDH.K1 ID I=31 II=20
RINT HYD            ID=32 CODE=10
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```
OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.0088
                    DIA=4.5  N=0.013
OUTE MCUNGE           ID=33 HYD=RTE.K1 INFLOW ID=32
                      DT=0.0  L=800 NS=0  SLOPE=0.0088
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RI HYD                ID=33 CODE=0


OMPUTE NM HYD         ID=21  HYD NO=BASIN.K2  DA=.01486 SQ MI
                    %A=0.0  %B=15.0  %C=15.0 %D=70.0
                    TP=-.1715 HR  RAIN=-1
RINT HYD              ID=21 CODE=10

DD HYD              ID=34 HYD=K1.K2 ID I=33 II=21
RINT HYD            ID=34 CODE=10


OMPUTE NM HYD         ID=22  HYD NO=BASIN.K3  DA=.00914 SQ MI
                    %A=0  %B=5.0  %C=5.0 %D=90.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=22 CODE=10


DD HYD              ID=24 HYD=PONDG.K3 ID I=79 II=22
RINT HYD            ID=24 CODE=10


OMPUTE NM HYD         ID=23  HYD NO=BASIN.K4  DA=.0134 SQ MI
                    %A=0.0  %B=70.0  %C=30.0 %D=0.0
                    TP=-.133 HR  RAIN=-1
RINT HYD              ID=23 CODE=10


DD HYD              ID=25 HYD=K3.K4 ID I=24 II=23
RINT HYD            ID=25 CODE=10


*******BASINS 2, B, E, H, L ARE LATER ROUTED THROUGH POND K***********


OMPUTE NM HYD         ID=81  HYD NO=BASIN.J1  DA=.00517 SQ MI
                    %A=0.0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.1333 HR  RAIN=-1
RINT HYD              ID=81 CODE=10

****CANTATA*****

OMPUTE NM HYD         ID=82  HYD NO=BASIN.J2  DA=.01706 SQ MI
                    %A=0.0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.1333 HR  RAIN=-1
RINT HYD              ID=82 CODE=10

OMPUTE NM HYD         ID=83  HYD NO=BASIN.J3  DA=.00580 SQ MI
                    %A=0.0  %B=19.0  %C=19.0 %D=62.0
                    TP=-.1333 HR  RAIN=-1
RINT HYD              ID=83 CODE=10

** CANTATA*****

OMPUTE NM HYD         ID=84  HYD NO=BASIN.J4  DA=.01006 SQ MI
                    %A=0.0  %B=12.5  %C=12.5 %D=75.0
                    TP=-.1333 HR  RAIN=-1
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```
RINT HYD            ID=84 CODE=10


OMPUTE NM HYD       ID=85  HYD NO=BASIN.J5  DA=.00134 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RI[illegible] HYD   ID=85 CODE=10


OMPUTE NM HYD       ID=86  HYD NO=BASIN.J6  DA=.00422 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=86 CODE=10


OMPUTE NM HYD       ID=87  HYD NO=BASIN.J7  DA=.00444 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=87 CODE=10


OMPUTE NM HYD       ID=88  HYD NO=BASIN.J8  DA=.00903 SQ MI
                   %A=0.0  %B=70.0  %C=30.0 %D=0.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=88 CODE=10


OMPUTE NM HYD       ID=89  HYD NO=BASIN.J9  DA=.00548 SQ MI
                   %A=0.0  %B=7.5  %C=7.5 %D=85.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=89 CODE=10


OM[illegible]TE NM HYD      ID=12  HYD NO=BASIN.J12  DA=.01419 SQ MI
                   %A=100.0  %B=0.0  %C=0.0 %D=0.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=12 CODE=10


DD HYD             ID=11 HYD=J10J11.J6 ID I=86 II=10
RINT HYD           ID=11 CODE=10


DD HYD             ID=95 HYD=J10J11J6.J9 ID I=11 II=89
RINT HYD           ID=95 CODE=10


DD HYD             ID=90 HYD=J10J11J6J9.J5 ID I=85 II=95
RINT HYD           ID=90 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                   DIA=3.0  N=0.013
OUTE MCUNGE          ID=91 HYD=RTE.J5J6 INFLOW ID=90
                     DT=0.0  L=350 NS=0  SLOPE=0.007
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=91 CODE=0


DD HYD             ID=93 HYD=J1.J4 ID I=81 II=84
RINT HYD           ID=93 CODE=10
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DD HYD              ID=94 HYD=J1J4.J5J6J9 ID I=91 II=93
RINT HYD            ID=94 CODE=10

OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                    DIA=3.5  N=0.013
OUTE MCUNGE           ID=92 HYD=RTE.J14569 INFLOW ID=94
                      DT=0.0  L=650 NS=0  SLOPE=0.007
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=92 CODE=0


DD HYD              ID=95 HYD=J2.J3 ID I=82 II=83
RINT HYD            ID=95 CODE=10


DD HYD              ID=94 HYD=J2J3.J7 ID I=95 II=87
RINT HYD            ID=94 CODE=10


DD HYD              ID=96 HYD=J145679.J237 ID I=94 II=92
RINT HYD            ID=96 CODE=10

DD HYD              ID=97 HYD=J1J7.J8 ID I=96 II=88
RINT HYD            ID=97 CODE=10


DD HYD              ID=98 HYD=J1J8.J12 ID I=97 II=12
RINT HYD            ID=98 CODE=10


*****************************************************************
IV E HYD            ID=98 Q=26.34 ID I=83  HYD NO=BYPASSJ
                                  ID II=84 HYD NO=SURGEJ
RINT HYD            ID=83 CODE=10
RINT HYD            ID=84 CODE=10
*****************************************************************


OUTE RESERVOIR      ID=90 HYD=POND.J  INFLOW ID=84 CODE=10
                    OUTFLOW  STORAGE    DEPTH
                    0        0          5414
                    3.82     1.96       5415
                    7.20     4.70       5416
                    10.28    7.94       5417
                    100.0    11.56      5418

RINT HYD            ID=90 CODE=0


DD HYD              ID=97 HYD=BYPASS.SURGEPONDJ ID I=90 II=83
RINT HYD            ID=97 CODE=10


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.007
                    DIA=4.0  N=0.013
OUTE MCUNGE           ID=91 HYD=RTE.J5J6 INFLOW ID=97
                      DT=0.0  L=1100 NS=0  SLOPE=0.007
                      MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD              ID=91 CODE=0

***TAOS******
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OMPUTE NM HYD       ID=30  HYD NO=BASIN.K5  DA=.02364 SQ MI
                   %A=0.0  %B=19.0  %C=19.0 %D=62.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=30 CODE=10


OMPUTE NM HYD       ID=31  HYD NO=BASIN.K6  DA=.00220 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD            ID=31 CODE=10


DD HYD             ID=41 HYD=K5.K6 ID I=30 II=31
RINT HYD           ID=41 CODE=10


ADD HYD            ID=83 HYD=1ADCFG.JK6 ID I=27 II=91
PRINT HYD          ID=83 CODE=10


DD HYD             ID=43 HYD=K5K6.PONDJ I=41 II=91
RINT HYD           ID=43 CODE=10


DD HYD             ID=44 HYD=K5K6PONDJ.K3K4 I=43 II=25
RINT HYD           ID=44 CODE=10


DD HYD             ID=96 HYD=PONDJK13.K1K4 ID I=34 II=44
RINT HYD           ID=96 CODE=10

*****************************************************************
IVIDE HYD          ID=96 Q=44.91 ID I=97  HYD NO=BYPASS.K
                                 ID II=98 HYD NO=SURGE.K
RINT HYD           ID=97 CODE=10
RINT HYD           ID=98 CODE=10
*****************************************************************


OUTE RESERVOIR     ID=70 HYD=POND.K  INFLOW ID=98 CODE=5
                   OUTFLOW  STORAGE    DEPTH
                   0.00     0          5404.85
                   6.79     2.60       5406
                   12.04    5.29       5407
                   16.84    9.24       5408
                   21.30    14.84      5409
                   25.48    21.67      5410

RINT HYD           ID=70 CODE=10

DD HYD             ID=99 HYD=BYPASS.ROUTE.K ID I=70 II=97
RINT HYD           ID=99 CODE=5


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.005
                   DIA=2.5  N=0.013
OU MCUNGE            ID=1 HYD=RTE.PONDK INFLOW ID=99
                     DT=0.0  L=2000 NS=0  SLOPE=0.005
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=1 CODE=0
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```
OMPUTE NM HYD        ID=2  HYD NO=UNIVROWNORTH  DA=.007266 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD             ID=2 CODE=5

DD HYD             ID=3 HYD=UNIVN.PONDK ID I=1 II=2
RINT HYD           ID=3 CODE=5


OMPUTE RATING CURVE CID=1  VS NO=1  CODE=-1   SLP=0.005
                   DIA=2.5  N=0.013
OUTE MCUNGE          ID=4 HYD=RTE.UNIVN INFLOW ID=3
                     DT=0.0  L=2000 NS=0  SLOPE=0.005
                     MATCODE=0 REGCODE=0 CCODE=0 MM CODE=0

RINT HYD             ID=4 CODE=0


OMPUTE NM HYD        ID=5  HYD NO=UNIVROWSOUTH  DA=.007266 SQ MI
                   %A=0.0  %B=5.0  %C=5.0 %D=90.0
                   TP=-.1333 HR  RAIN=-1
RINT HYD             ID=5 CODE=5

DD HYD             ID=6 HYD=UNIVNS.PONDK ID I=4 II=5
RINT HYD           ID=6 CODE=5

PUNCH HYD            ID=6

S*****************************************************************

S*****END OF TRAILS DRAINAGE ANALYSIS

INISH
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AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =02/06/2008
INPUT FILE = TRAILS.TXT USER NO.= AHYMO-C-9803c01UNMLIB-AH

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.660
SEDIMENT BULK										PK BF = 1.00
*S********** COMPUTE ONSITE BASINS FROM THE TRAILS										
*S**********										
COMPUTE NM HYD	OFFSITE1	-	50	.19980	37.00	4.426	.41534	2.000	.289	PER IMP= .00
ROUTE RESERVOIR	OFF.POND.1	50	53	.19980	9.25	4.426	.41533	3.200	.072	AC-FT= 2.302
ROUTE MCUNGE	RTE.OFF.POND	53	54	.19980	9.26	4.426	.41537	3.200	.072	CCODE = .2
COMPUTE NM HYD	BASIN.A1	-	21	.02422	51.68	2.610	2.02069	1.500	3.334	PER IMP= 75.00
COMPUTE NM HYD	BASIN.A2	-	22	.01331	23.43	.960	1.35259	1.500	2.750	PER IMP= 34.00
COMPUTE NM HYD	BASIN.A3	-	23	.00502	11.41	.606	2.26512	1.500	3.550	PER IMP= 90.00
COMPUTE NM HYD	BASIN.A4	-	24	.01186	26.39	1.381	2.18365	1.500	3.477	PER IMP= 85.00
COMPUTE NM HYD	BASIN.A5	-	25	.01830	37.55	1.829	1.87404	1.500	3.206	PER IMP= 66.00
COMPUTE NM HYD	BASIN.A6	-	26	.02652	53.44	2.558	1.80886	1.500	3.149	PER IMP= 62.00
COMPUTE NM HYD	BASIN.A7	-	27	.01055	22.52	1.137	2.02070	1.500	3.335	PER IMP= 75.00
ADD HYD	O1.A2	54&22	55	.21311	25.89	5.386	.47390	1.500	.190	
ADD HYD	O1A2.A1	55&21	56	.23733	77.57	7.996	.63175	1.500	.511	
ADD HYD	O1A2A1.A3	56&23	57	.24235	88.97	8.603	.66558	1.500	.574	
ROUTE MCUNGE	RTE.O1A2A1.A	57	58	.24235	80.93	8.569	.66299	1.500	.522	CCODE = .1
ADD HYD	A1TOA5	58&25	59	.26065	118.48	10.398	.74801	1.500	.710	
ROUTE RESERVOIR	POND.A5	59	60	.26065	15.82	10.398	.74801	2.300	.095	AC-FT= 3.996
ROUTE MCUNGE	RTE.A4	24	61	.01186	24.62	1.372	2.16943	1.500	3.243	CCODE = .1
ADD HYD	RTE.A4.A6	61&26	62	.03838	78.06	3.931	1.92024	1.500	3.178	
ADD HYD	RTEA4A6.POND	62&60	63	.29903	84.06	14.329	.89845	1.500	.439	
ROUTE RESERVOIR	POND.A6	63	64	.29903	16.11	14.329	.89845	3.100	.084	AC-FT= 3.142
ADD HYD	PONDA6.A7	64&27	65	.30958	28.42	15.466	.93669	1.500	.143	
ROUTE MCUNGE	RTE.A6.A7	65	66	.30958	28.42	15.466	.93669	1.500	.143	CCODE = .0
COMPUTE NM HYD	BASIN.D1	-	25	.01816	36.60	1.752	1.80886	1.500	3.149	PER IMP= 62.00
ADD HYD	A6.A7.D1	66&25	67	.32774	65.02	17.218	.98501	1.500	.310	
ROUTE RESERVOIR	POND.D1	67	68	.32774	51.59	17.288	.98906	1.500	.246	AC-FT= .348
ROUTE MCUNGE	RTE.D1	68	69	.32774	51.59	17.288	.98906	1.500	.246	CCODE = .0
COMPUTE NM HYD	BASIN.D2	-	25	.03456	63.65	2.763	1.49925	1.500	2.878	PER IMP= 43.00
ADD HYD	PONDD1.D2	69&25	70	.36230	115.24	20.052	1.03772	1.500	.497	
COMPUTE NM HYD	BASIN.D3	-	26	.00580	13.18	.701	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	D1.D2.D3	70&26	71	.36810	128.42	20.752	1.05706	1.500	.545	
COMPUTE NM HYD	BASIN.D4	-	27	.01809	33.32	1.446	1.49925	1.500	2.878	PER IMP= 43.00
DIVIDE HYD	BYPASS.INLET	27	1	.00892	5.39	.713	1.49923	1.300	.944	
	SURGE.INLET	and	2	.00917	27.93	.733	1.49923	1.500	4.760	
COMPUTE NM HYD	BASIN.POND.D	-	4	.00219	3.41	.114	.97961	1.500	2.429	PER IMP= 11.11

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ADD HYD            D4.POND.D  2& 4   5        .01136        31.34        .847      1.39902    1.500    4.311
*S****** NEW POND D INFLOW HYDROGRAPH
ADD HYD           D1D2D3.D4 71& 5  73        .37946       159.76      21.600      1.06730    1.500     .658
DIVIDE HYD         BYPASS.D   73   31        .26477        13.77      15.071      1.06730    1.300     .081
                    SURGE.D  and   32        .11469       145.99       6.528      1.06730    1.500    1.989
ROUTE RESERVOIR      POND.D   32   50        .11469         6.62       6.527      1.06709    2.400     .090 AC-FT=    4.953
ROUTE MCUNGE          RTE.D   50   51        .11469         6.62       6.523      1.06642    2.700     .090 CCODE =      .1
ADD HYD         BYPASS.RTE.D 51&31  75        .37946        20.39      21.594      1.06702    2.700     .084
COMPUTE NM HYD       BASIN.C   -    20        .01278        24.36       1.100      1.61332    1.500    2.978 PER IMP=  50.00
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COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
ROUTE MCUNGE	RTE.C	20	76	.01278	23.74	1.096	1.60827	1.600	2.902	CCODE = .1
COMPUTE NM HYD	BASIN.F1	-	20	.02208	43.39	2.025	1.71939	1.500	3.071	PER IMP= 56.50
ADD HYD	C.F1	76&20	77	.03486	64.42	3.121	1.67860	1.500	2.888	
COMPUTE NM HYD	BASIN.F2	-	21	.00573	13.02	.692	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	CF1.F2	77&21	78	.04059	77.44	3.813	1.76139	1.500	2.981	
ROUTE MCUNGE	RTE.CF1F2	78	79	.04059	76.94	3.816	1.76280	1.500	2.962	CCODE = .2
COMPUTE NM HYD	BASIN.F3	-	22	.03563	70.02	3.267	1.71938	1.500	3.070	PER IMP= 56.50
ADD HYD	CF1F2.F3	79&22	70	.07622	146.95	7.083	1.74248	1.500	3.012	
COMPUTE NM HYD	BASIN.F4	-	23	.03892	74.16	3.349	1.61331	1.500	2.977	PER IMP= 50.00
ADD HYD	CF1F2F3.F4	70&23	71	.11514	221.12	10.432	1.69882	1.500	3.001	
ADD HYD	CF1F2F3F4.D	71&75	70	.49460	235.07	32.026	1.21410	1.500	.743	
COMPUTE NM HYD	BASIN.F5	-	24	.01852	39.52	1.996	2.02070	1.500	3.334	PER IMP= 75.00
COMPUTE NM HYD	BASIN.J10	-	25	.00628	14.27	.759	2.26512	1.500	3.550	PER IMP= 90.00
COMPUTE NM HYD	BASIN.J11	-	26	.00733	16.65	.886	2.26512	1.500	3.549	PER IMP= 90.00
ADD HYD	J10.J11	25&26	23	.01361	30.92	1.644	2.26508	1.500	3.550	
ROUTE MCUNGE	RTE.J10J11	23	10	.01361	29.01	1.634	2.25104	1.500	3.330	CCODE = .1
COMPUTE NM HYD	BASIN.F7	-	26	.01097	24.42	1.278	2.18365	1.500	3.478	PER IMP= 85.00
ROUTE MCUNGE	RTE.F7	26	74	.01097	23.37	1.269	2.16910	1.500	3.328	CCODE = .1
ADD HYD	F7.F5	74&24	75	.02949	62.89	3.265	2.07585	1.500	3.332	
COMPUTE NM HYD	TRACT.1	-	3	.02717	54.00	2.550	1.75997	1.500	3.105	PER IMP= 59.00
*S****** POND F5 INFLOW HYDROGRAPH (PREV ID 27)										
ADD HYD	S.F5	3& 1	41	.03609	59.39	3.264	1.69551	1.500	2.571	
ADD HYD	F578.D56	41&75	42	.06558	122.28	6.529	1.86653	1.500	2.913	
ROUTE RESERVOIR	POND.F5	42	52	.06558	60.11	6.529	1.86653	1.700	1.432	AC-FT= 1.980
ROUTE MCUNGE	RTE.PONDF5	52	77	.06558	58.75	6.504	1.85943	1.700	1.400	CCODE = .2
ADD HYD	F1TOF8	77&70	79	.56018	258.65	38.530	1.28965	1.500	.721	
DIVIDE HYD	BYPASS.F	79	31	.15885	6.20	10.926	1.28965	1.200	.061	
	SURGE.F	and	32	.40133	252.45	27.604	1.28965	1.500	.983	
ROUTE RESERVOIR	POND.F	32	52	.40133	29.95	27.616	1.29021	3.000	.117	AC-FT= 11.936
ADD HYD	BYPASSF.POND	31&52	53	.56018	36.15	38.542	1.29004	3.000	.101	
ROUTE MCUNGE	RTE.PONDF	53	77	.56018	33.85	38.510	1.28898	3.100	.094	CCODE = .2
COMPUTE NM HYD	BASIN.G1	-	20	.02531	48.23	2.178	1.61331	1.500	2.978	PER IMP= 50.00
ROUTE MCUNGE	RTE.G1	20	78	.02531	48.23	2.178	1.61330	1.500	2.978	CCODE = .0
COMPUTE NM HYD	BASIN.G2	-	21	.02530	48.22	2.177	1.61331	1.500	2.978	PER IMP= 50.00
ADD HYD	G1.G2	78&21	30	.05061	96.45	4.355	1.61330	1.500	2.978	
ADD HYD	G1G2.PONDF	30&77	31	.61079	111.17	42.864	1.31585	1.500	.284	
DIVIDE HYD	BYPASS.G	31	32	.43916	17.61	30.820	1.31585	1.300	.063	
	SURGE.G	and	33	.17163	93.56	12.045	1.31585	1.500	.852	
ROUTE RESERVOIR	POND.G	33	34	.17163	7.94	12.045	1.31585	4.800	.072	AC-FT= 3.941
ROUTE MCUNGE	RTE.PONDG	34	78	.17163	7.96	12.047	1.31607	4.800	.072	CCODE = .2
ADD HYD	BYPASS.RTE.G	78&32	79	.61079	25.57	42.866	1.31590	4.800	.065	
COMPUTE NM HYD	OFFSITE2	-	55	.08050	13.87	1.783	.41534	2.000	.269	PER IMP= .00

ROUTE RESERVOIR	OFFPOND2	55	50	.08050	4.43	1.783	.41534	3.100	.086	AC-FT=	.813
ROUTE MCUNGE	RTE.OFFPOND2	50	70	.08050	4.43	1.783	.41538	3.200	.086	CCODE =	.2
COMPUTE NM HYD	BASIN.B	-	30	.01998	34.80	1.407	1.32000	1.500	2.721	PER IMP=	32.00
ROUTE RESERVOIR	POND.B	30	51	.01998	3.36	1.407	1.31999	2.100	.263	AC-FT=	.930
ROUTE MCUNGE	RTE.PONDB	51	71	.01998	3.36	1.407	1.32010	2.100	.263	CCODE =	.2
COMPUTE NM HYD	BASINE1.1	-	30	.02753	48.45	1.986	1.35259	1.500	2.750	PER IMP=	34.00
ADD HYD	OFF.E11	70&30	73	.10803	48.80	3.769	.65420	1.500	.706		
COMPUTE NM HYD	BASINE1.2	-	31	.00588	10.36	.424	1.35259	1.500	2.752	PER IMP=	34.00
COMPUTE NM HYD	BASIN.E2	-	32	.01348	27.42	1.324	1.84145	1.500	3.178	PER IMP=	64.00
ADD HYD	E2.E12	31&32	72	.01936	37.77	1.748	1.69294	1.500	3.049		

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
ROUTE MCUNGE	RTE.E12	72	76	.01936	31.30	1.684	1.63074	1.600	2.526	CCODE = .2
COMPUTE NM HYD	BASIN.E3	-	33	.01197	22.82	1.030	1.61331	1.500	2.978	PER IMP= 50.00
COMPUTE NM HYD	BASIN.E4	-	34	.00577	13.11	.697	2.26513	1.500	3.550	PER IMP= 90.00
ADD HYD	E3.E4	33&34	74	.01774	35.93	1.727	1.82529	1.500	3.164	
ADD HYD	E3E4.PONDB	74&71	75	.03772	38.54	3.134	1.55766	1.500	1.597	
ADD HYD	E3E4B.OFFE11	75&73	74	.14575	87.35	6.903	.88801	1.500	.936	
ROUTE MCUNGE	RTE.E1E4	74	77	.14575	87.35	6.903	.88801	1.500	.936	CCODE = .0
ADD HYD	E1E4.E12	77&76	78	.16511	118.54	8.587	.97509	1.500	1.122	
COMPUTE NM HYD	BASIN.E5	-	35	.04402	80.67	3.482	1.48295	1.500	2.863	PER IMP= 42.00
ADD HYD	E1E4.E5	78&35	80	.20913	199.20	12.068	1.08199	1.500	1.488	
COMPUTE NM HYD	BASIN.E6	-	36	.00488	11.09	.590	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	E1E6	80&36	40	.21401	210.29	12.658	1.10897	1.500	1.535	
DIVIDE HYD	BYPASS.E	40	61	.10387	15.50	6.143	1.10897	1.300	.233	
	SURGE.E	and	62	.11014	194.79	6.514	1.10897	1.500	2.763	
ROUTE RESERVOIR	POND.E	62	37	.11014	6.80	6.520	1.10998	2.100	.096	AC-FT= 6.008
ADD HYD	TOTALE	61&37	40	.21401	22.30	12.663	1.10945	2.100	.163	
ROUTE MCUNGE	RTE.PONDE	40	38	.21401	22.31	12.665	1.10965	2.100	.163	CCODE = .2
COMPUTE NM HYD	BASIN.P	-	32	.00845	10.08	.327	.72623	1.500	1.865	PER IMP= 7.00
COMPUTE NM HYD	BASIN.H1	-	33	.01825	37.78	1.856	1.90663	1.500	3.234	PER IMP= 68.00
ADD HYD	PONDE.H1	38&33	43	.23226	57.64	14.521	1.17226	1.500	.388	
COMPUTE NM HYD	BASIN.H2	-	34	.00836	19.16	1.018	2.28220	1.500	3.582	PER IMP= 90.00
ADD HYD	P.H2	32&34	44	.01681	29.25	1.345	1.50001	1.500	2.718	
ADD HYD	PH2.H1	44&43	45	.24907	86.88	15.866	1.19438	1.500	.545	
COMPUTE NM HYD	BASIN.H3	-	35	.01191	23.79	1.128	1.77627	1.500	3.121	PER IMP= 60.00
ADD HYD	PH1H3	45&35	46	.26098	110.67	16.994	1.22093	1.500	.663	
DIVIDE HYD	BYPASS.H	46	47	.21038	21.60	13.699	1.22093	1.300	.160	
	SURGE.H	and	48	.05060	89.07	3.295	1.22093	1.500	2.751	
ROUTE RESERVOIR	POND.H	48	30	.05060	5.20	3.295	1.22093	2.300	.161	AC-FT= 2.870
ROUTE MCUNGE	RTE.PONDH	30	49	.05060	5.20	3.295	1.22104	2.400	.161	CCODE = .2
ADD HYD	BYPASS.RTE.H	49&47	31	.26098	26.80	16.994	1.22095	2.400	.160	
COMPUTE NM HYD	BASIN.K1	-	20	.02673	50.54	2.579	1.80886	1.500	2.954	PER IMP= 62.00
ADD HYD	PONDH.K1	31&20	32	.28771	73.45	19.573	1.27557	1.500	.399	
ROUTE MCUNGE	RTE.K1	32	33	.28771	73.45	19.573	1.27557	1.500	.399	CCODE = .0
COMPUTE NM HYD	BASIN.K2	-	21	.01486	29.39	1.537	1.93922	1.500	3.090	PER IMP= 70.00
ADD HYD	K1.K2	33&21	34	.30257	102.84	21.110	1.30816	1.500	.531	
COMPUTE NM HYD	BASIN.K3	-	22	.00914	20.76	1.104	2.26513	1.500	3.549	PER IMP= 90.00
ADD HYD	PONDG.K3	79&22	24	.61993	41.03	43.970	1.32990	1.500	.103	
COMPUTE NM HYD	BASIN.K4	-	23	.01340	18.28	.527	.73726	1.500	2.132	PER IMP= .00
ADD HYD	K3.K4	24&23	25	.63333	59.31	44.497	1.31736	1.500	.146	
COMPUTE NM HYD	BASIN.J1	-	81	.00517	11.04	.557	2.02069	1.500	3.336	PER IMP= 75.00
COMPUTE NM HYD	BASIN.J2	-	82	.01706	36.40	1.839	2.02069	1.500	3.334	PER IMP= 75.00
COMPUTE NM HYD	BASIN.J3	-	83	.00580	11.70	.560	1.80886	1.500	3.151	PER IMP= 62.00

COMPUTE NM HYD	BASIN.J4	-	84	.01006	21.47	1.084	2.02069	1.500	3.335	PER IMP=	75.00
COMPUTE NM HYD	BASIN.J5	-	85	.00134	3.05	.162	2.26513	1.500	3.561	PER IMP=	90.00
COMPUTE NM HYD	BASIN.J6	-	86	.00422	9.59	.510	2.26512	1.500	3.551	PER IMP=	90.00
COMPUTE NM HYD	BASIN.J7	-	87	.00444	10.09	.536	2.26512	1.500	3.551	PER IMP=	90.00
COMPUTE NM HYD	BASIN.J8	-	88	.00903	12.31	.355	.73726	1.500	2.130	PER IMP=	.00
COMPUTE NM HYD	BASIN.J9	-	89	.00548	12.20	.638	2.18365	1.500	3.479	PER IMP=	85.00
COMPUTE NM HYD	BASIN.J12	-	12	.01419	10.65	.314	.41534	1.500	1.173	PER IMP=	.00
ADD HYD	J10J11.J6	86&10	11	.01783	38.60	2.144	2.25428	1.500	3.383		
ADD HYD	J10J11J6.J9	11&89	95	.02331	50.80	2.782	2.23766	1.500	3.405		
ADD HYD	J10J11J6J9.J	85&95	90	.02465	53.86	2.944	2.23914	1.500	3.414		

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
ROUTE MCUNGE	RTE.J5J6	90	91	.02465	53.86	2.944	2.23914	1.500	3.414	CCODE = .0
ADD HYD	J1.J4	81&84	93	.01523	32.51	1.641	2.02065	1.500	3.335	
ADD HYD	J1J4.J5J6J9	91&93	94	.03988	86.37	4.585	2.15570	1.500	3.384	
ROUTE MCUNGE	RTE.J14569	94	92	.03988	86.37	4.585	2.15570	1.500	3.384	CCODE = .0
ADD HYD	J2.J3	82&83	95	.02286	48.10	2.398	1.96692	1.500	3.288	
ADD HYD	J2J3.J7	95&87	94	.02730	58.19	2.934	2.01541	1.500	3.330	
ADD HYD	J145679.J237	94&92	96	.06718	144.56	7.519	2.09869	1.500	3.362	
ADD HYD	J1J7.J8	96&88	97	.07621	156.87	7.875	1.93737	1.500	3.216	
ADD HYD	J1J8.J12	97&12	98	.09040	167.52	8.189	1.69846	1.500	2.895	
DIVIDE HYD	BYPASSJ	98	83	.04558	26.34	4.129	1.69846	1.300	.903	
	SURGEJ	and	84	.04482	141.18	4.060	1.69846	1.500	4.922	
ROUTE RESERVOIR	POND.J	84	90	.04482	6.05	4.059	1.69831	2.100	.211	AC-FT= 3.771
ADD HYD	BYPASS.SURGE	90&83	97	.09040	32.39	8.188	1.69835	2.000	.560	
ROUTE MCUNGE	RTE.J5J6	97	91	.09040	32.34	8.180	1.69667	2.100	.559	CCODE = .1
COMPUTE NM HYD	BASIN.K5	-	30	.02364	47.63	2.281	1.80886	1.500	3.148	PER IMP= 62.00
COMPUTE NM HYD	BASIN.K6	-	31	.00220	5.01	.266	2.26512	1.500	3.555	PER IMP= 90.00
ADD HYD	K5.K6	30&31	41	.02584	52.64	2.546	1.84768	1.500	3.183	
ADD HYD	K5K6.PONDJ	41&91	43	.11624	80.50	10.726	1.73022	1.500	1.082	
ADD HYD	K5K6PONDJ.K3	43&25	44	.74957	139.80	55.224	1.38138	1.500	.291	
ADD HYD	PONDJK13.K1K	34&44	96	1.05214	242.64	76.334	1.36033	1.500	.360	
DIVIDE HYD	BYPASS.K	96	97	.88425	44.91	64.153	1.36033	1.300	.079	
	SURGE.K	and	98	.16789	197.73	12.181	1.36033	1.500	1.840	
ROUTE RESERVOIR	POND.K	98	70	.16789	15.94	12.181	1.36032	2.800	.148	AC-FT= 8.497
ADD HYD	BYPASS.ROUTE	70&97	99	1.05214	60.85	76.333	1.36032	2.800	.090	
ROUTE MCUNGE	RTE.PONDK	99	1	1.05214	60.66	76.118	1.35648	3.400	.090	CCODE = .2
COMPUTE NM HYD	UNIVROWNORTH	-	2	.00727	16.51	.878	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	UNIVN.PONDK	1& 2	3	1.05941	60.82	76.996	1.36271	3.400	.090	
ROUTE MCUNGE	RTE.UNIVN	3	4	1.05941	60.66	76.902	1.36106	3.900	.089	CCODE = .2
COMPUTE NM HYD	UNIVROWSOUTH	-	5	.00727	16.51	.878	2.26512	1.500	3.550	PER IMP= 90.00
ADD HYD	UNIVNS.PONDK	4& 5	6	1.06667	60.79	77.780	1.36722	3.900	.089	

*S**********

*S******END OF TRAILS DRAINAGE ANALYSIS

FINISH

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services

Richard J. Berry, Mayor

January 2, 2015

David Thompson, P.E.
Thompson Engineering Consultants, Inc
PO Box 65760
Albuquerque, NM 87193

Re: Hydraulic Analysis Addendum to the Amendment to the DMP Trails Units 1,2, and 3
Drainage Report, Engineer's Stamp Date 10-22-2014 (File: C09D001)

Dear Mr. Thompson:

Based upon the information provided in your submittal received 10-22-14, the above referenced Submittal cannot be approved until the following conditions/ comments are addressed:

1) In general, electronic models need to be documented in printed and pdf format so that any information needed in the future can be obtained without having the program itself. This review would have been greatly facilitated if the program Inputs and Outputs had been printed.
   - It would have been helpful if Appendix A (the as-builts) were in printed form showing which pipes correspond to XPSWMM links, and which Manholes correspond to nodes. In my review, I have noted this on the as-builts and included in the binder.
   - Provide an overall printed plan showing the XPSWMM model, with the nodes and links labeled. Indicate the meaning of the Blue, green, and red nodes. Indicate that dashed links are orifice plates.
   - Provide the Link and node data in tabular format. Can the" XP Table List" function/button and the "Link Summary" Tab be used to print out the pipe lengths, diameters, invert elevations, Max Flow, Time of Peak, etc.?
   - Provide printed forms of the "Inflow Hydrograph" at each node where AHYMO "punch hyds" were input. At each AHYMO ID, note which basins are included -or Plate 2 of TEC Trails DMP showing which basins are included in each AHYMO ID.
   - Provide hard copies of the "Stepwise Linear Storage" and the hydrograph for each pond
   - Print out orifice data used in model
   - Print a summary of all input values: N-values, C-values, and other pertinent analysis parameters

2) Node 163 and AHYMO ID #75 Peak flows do not match. Model uses 104.03 cfs, AHYMO has 146.48 cfs. However, AHYMO # 73, which does not include Basins D5 and D6, does have a peak of 104.03 cfs. It appears Basins D5 and D6 are not included in the model.
3) Node MH58 and AHYMO ID #21 Peak flows do not match. Model uses 28.1 cfs, AHYMO has 29.39 cfs.
4) Modeling around Pond H has following comments:

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- Link 182: As built shows 5418.65 for D/S RIM, model says 5422.8' for D/S surface for Scenario 1 (and 5423.6 for Base). Why is the WSEL used rather than the actual RIM?
- MH 4 was not modeled correctly. MH4 is a SAS line. It should be SDMH-45 from as-built. (730084, sht 37)
- It seems that a node where the overflow enters back into the system should be between Node MH4 (or SDMH45) and MH46 to be reflective of the actual system.
- What is the purpose of NODE 177 and why is it green? Can't Node MH4 (MH46) be used in place of NODE 177 since the orifice is being modeled in LINK 203? Can LINK L-H be omitted altogether?
- Table 3 shows Q_{out} = 27.4 cfs , but the Peak Outflow from the XPSWMM model 21.6 cfs. Why are these values different? If you are including in the flow from the OVERFLOW links, there should not be any contributing flows from these links as they would only be used if the orifice is clogged.
- The "Stepwise Linear Storage" for Pond H does not match the "Pond Volumes" Table. Stepwise depth 8.85', corresponds to elevation 5421 with the area = 1.27 Ac. Model shows 0.81 Ac. at this depth. Similarly, Area at 9.85' depth (5422 elev) should be 1.52 Ac. rather than 1.27 Ac.
- The Pond H emergency overflow has a grate elevation of 5422.04, but the hydrograph shows Max water elevation at 5422.96'. It seems that there would be spill out of the system. While the "OVERFLOW 1" link at U/S Invert =5422.5, it seems that it should match the overflow grate elevation of 5422.04. BHI calculated the WSEL to be 5421.9, so I would expect the invert of the overflow link to be 0.14' above the Max WSEL as well.
- The OVERFLOW links are 1' dia. and may be too small. How do you know water is not spilling out of the system? Or that they are not restricting the flow ?
- The Time of Peak for Link L-H is 5.11 hrs, but TEC Trails DMP indicates 2.4 Hrs. Why the discrepancy?
- BHI calculated 26.8 cfs though the orifice area of 1.14 sq.ft, with a head of 10.36', Why does the SWMM Model calculate a much smaller value (15 cfs) ?
- Pond H modifications indicate a 36" pipe beyond orifice plate. As-builts show 30". What is the actual pipe dia?
- L106 has an adverse slope and is modeled as such. Is there sediment that should be considered? Verify that it is a 48" dia. pipe as there is conflicting info on plan view of CPN 730084, and CPN 730075 is calling it a 54" pipe. *****
- The Design Capacity of Pond H is 3.07 Ac. in Appendix C. (Appendix B)?
- Pond H:Why is the Peak Storage in Tbl. 2 2.98 Ac-ft, as opposed to the full pond volume since it is overtopping. Furthermore, "Continuity Balance" Tab in the "Table List" function shows 3.94 Ac-ft for the Volume for Scenario 1. Could it be that Tbl. 1 was not updated?
- Orifice Plate in Pond H is to be 1.83 sq. ft. — changed after VP
- BHI states that their field survey indicated that the pipe out of Pond H is 36" dia, rather than 30" as indicated on the As-built. (Links L-H, and L104)

5) LINK L108, D/S Rim elev. is 5415, D/S invert is 5400.07 – neither match 730084. What CPN Job No is this taken from?
6) It seems that Table 1 needs to be updated.
7) Pond G:
   - As-built for Pond G (730084, sheet 11/51) shows MH Rim at 16.29 (vs. 15.67)

- Link L-13: D/S Invert is 5403.05 (the design value) but the As-built value is 5402.03 per CPN 730084 Sheet 20/51 for a difference of 1'. The HGL is 5410.98 and adding 1' makes it 5412. The Rim is 5411.23, so the HGL is above the Rim.
- The Links from pond G to Universe have a significantly different Hydrograph when comparing the Base to Scenario1. Can you explain why?
- Link L-24 and Link 180 discharge into Pond G through slotted manholes. Are the areas of the slotted manholes taken into account? If not, the required opening area needs to be stated on Table 3 as part of the improvements to Pond G (or any pond with slotted manholes).
- Verify negative peak flows in Links L-27 and L-29 make sense. Time of Peak Velocity for Link L-27 is 37.2, why so much later?

8) Pond F:
   - Orifice area is 4.25 for the Base Scenario but should be 1.63 sq. ft.
   - Link L-56 and L-63 are noted as elliptical on the record As-builts
   - L-63 shows HGL at 22.83 and upstream MH is 23.27, which is somewhat close.
   - Orifice plate is modeled downstream of SDMH 34, which is in Treeline Ave. Since the area is less than 3.14 Sq. ft., a sluice gate (or similar device) is required. The installation of such a device at this location seems complicated. What are some possibilities for such a device here?
   - Table 3 should be revised. Qin should change.
9) Pond D:
   - Why in the Base Scenario are there links from Pond D to Pond F5?
   - The Stepwise Linear Storage for the Base Scenario is Similar to that for Scenario 1 and does not reflect the Pond as designed in the TEC.
   - Q_{in} on Table 3 should be revised, as it states 102.5cfs. Q_{in} should be the same as from the TEC. The AHYMO Summary file ID No. 75 says 146.48 cfs. However, Table 2 from the TEC shows $Q_{100,in}$ =154.87 cfs and Q_{bypass}= 13.77 cfs. The Q_{in} should be the sum or 168.64cfs. It is not clear why there is a discrepancy.
10) Pond F5:
   - There is an inflow Hydrograph associated with Pond F5 but is not noted on Plate 1. What basins or AHYMO ID is this hydrograph from? If this is from Basins D5 and D6, I would expect the peak to be about 42.44 cfs (the additions of peaks from both basins D5 and D6) but the peak of this hydrograph is 27.4 cfs.
   - The SpillCrest in the XPSWMM model is 5428, but should be 5427.
11) Pond J:
   - The Spill crest is 5418 in XPSWMM but the emergency spillway is at 5417 from Table 2.
12) Where is as-built information for Link 213 and 215 in order to verify diameters
13) Pond K: Emergency spillway at 5410.3 per As-built rather than 5409 on Table 2.

include

If you have any questions, you can contact me at 924-3695.

Sincerely,

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file, c.pdf Addressee via Email, Monica Ortiz

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DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

C09D001

PROJECT TITLE: Hydraulic Analysis Addendum for the Amendment to the DMP for the Trails Units 1,2,3 ZONE MAP PAGE: C-9
DRB#: _____ EPC#: _____ WORK ORDER#: _____

LEGAL DESCRIPTION: The Trails Units 1, 2, and 3
CITY ADDRESS: _____

ENGINEERING FIRM: Thompson Engineering Consultants — CONTACT: David B Thompson PE
ADDRESS: PO Box 65760 — PHONE: 505 271-2199
CITY, STATE: Albuquerque, NM — ZIP CODE: 87193

OWNER: Real Capital Solutions — CONTACT: Brian Paul
ADDRESS: 371 Centennial Parkway, Suite 200 — PHONE: _____
CITY, STATE: Louisville, CO — ZIP CODE: 80027

ARCHITECT: _____ — CONTACT: _____
ADDRESS: _____ — PHONE: _____
CITY, STATE: _____ — ZIP CODE: _____

SURVEYOR: _____ — CONTACT: _____
ADDRESS: _____ — PHONE: _____
CITY, STATE: _____ — ZIP CODE: _____

CONTRACTOR: _____ — CONTACT: _____
ADDRESS: _____ — PHONE: _____
CITY, STATE: _____ — ZIP CODE: _____

TYPE OF SUBMITTAL:
XX DRAINAGE REPORT
___ DRAINAGE PLAN 1st SUBMITTAL
XX DRAINAGE PLAN RESUBMITTAL
___ CONCEPTUAL G & D PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
___ ENGINEER'S CERT (HYDROLOGY)
___ CLOMR/LOMR
___ TRAFFIC CIRCULATION LAYOUT
___ ENGINEER/ARCHITECT CERT (TCL)
___ ENGINEER/ARCHITECT CERT (DRB S.P.)
___ ENGINEER/ARCHITECT CERT (AA)
___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL SOUGHT:
___ SIA/FINANCIAL GUARANTEE RELEASE
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D APPROVAL
___ S. DEV. FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
___ BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY (PERM)
___ CERTIFICATE OF OCCUPANCY (TEMP)
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ WORK ORDER APPROVAL
XX OTHER (SPECIFY) DMB APPROVAL

RECEIVED
OCT 22 2014
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED:
___ YES
___ NO
___ COPY PROVIDED

SUBMITTED BY: David B Thompson DATE: October 22, 2014

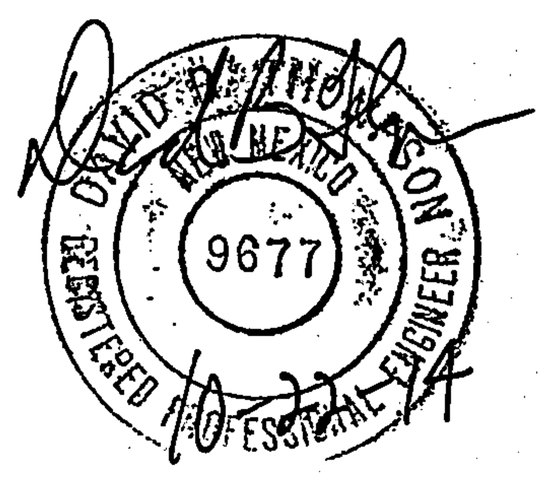
Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on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

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.

Hydraulic Analysis Addendum for the Amendment to the Drainage Master Plan for the Trails Units 1, 2 and 3

Thompson Engineering Consultants, Inc.

October, 2014



Harmon Rita T.

From: Hugh Floyd <Hugh@developnm.com>
Sent: Friday, October 17, 2014 4:10 PM
To: Cherne, Curtis; Harmon Rita T.
Cc: David Thompson (tecnm@yahoo.com); Rick Beltramo (rbeltramo@gcinm.com); E. Chris Naidu
Subject: Trails Adendum to the Amendment

Everyone,

I just wanted to follow up on our meeting with the four points we had identified to complete the report:

- We need to add an explanation of why the orifice plates for Ponds G & F are tied to the subdivisions/Tracts that are shown in the table. We will reassociate them with different Tracts if it makes more sense.
- Remodel Pond H to match the orifice plate and overflow design as produced by Scott Steffen. (Rick please send this to me.)
- Pond F5- We are showing a top of pond 1' higher than is shown in the Amendment document. Our intent was to not modify any future ponds except Pond D. We will double check this and correct in the model if necessary to insure we are not imposing any increased volume or height requirement on Pond F5.
- Readjust the the final orifice plate to match the Amendment document rather than showing a miniscule change.
- Revise the Summary Table #3 to incorporate the changes above.

Please correct me if I have missed anything from our meeting. We intend to wrap up the changes this week and resubmit. Thanks

Hugh Floyd, PE
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