CITY OF ALBUQUERQUE

Richard J. Berry, Mayor

December 4, 2015

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

RE: Multi-Specialty Clinic
Grading and Drainage Plan
Engineer's Stamp Date 11-20-2015 (File: M15D026B)

Dear Mr. Hernandez:

Based upon the information received on 11-20-2015, the above referenced Grading and Drainage Plan is approved for Site Plan for Building Permit, Grading Permit, and Building Permit. Please attach a copy of this approved plan in the construction sets when submitting for a Building Permit.

We understand that the asphalt trail will be detailed in a future DRC Set, please ensure that the trail's north and south termini will be ADA compliant.

Prior to Certificate of Occupancy release, Engineer Certification per the DPM checklist will be required.

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

Sincerely,

Abiel Carrillo, P.E.
Principal Engineer, Planning Dept.
Development Review Services

PO Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

M15D026B_SPBP_GP_BP_APPR

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: 80K Medical Office Building Permit #: _____ City Drainage #: M15D026B

DRB#: _____ EPC#: 1009090 Work Order#: _____

Legal Description: Tract 2 Plat of Capstone Subdivision

City Address: _____

Engineering Firm: Tierra West, LLC Contact: Joel Hernandez

Address: 5571 Midway Park Place NE Albuquerque NM 87109

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

Owner: _____ Contact: _____

Address: _____

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

Architect: Deker Perich Sabatini Contact: Chris Gunning

Address: 7601 Jefferson NE, Suite 100 Albuquerque, NM 87109

Phone#: 505-842-7633 Fax#: _____ E-mail: chrisg@dpsdesign.org

Other Contact: _____ Contact: _____

Address: _____

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

Check all that Apply:

DEPARTMENT:

X HYDROLOGY/ DRAINAGE

_____ TRAFFIC/ TRANSPORTATION

_____ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

_____ ENGINEER/ ARCHITECT CERTIFICATION

_____ CONCEPTUAL G & D PLAN

X GRADING PLAN

_____ DRAINAGE MASTER PLAN

X DRAINAGE REPORT

_____ CLOMR/LOMR

_____ TRAFFIC CIRCULATION LAYOUT (TCL)

_____ TRAFFIC IMPACT STUDY (TIS)

_____ EROSION & SEDIMENT CONTROL PLAN (ESC)

_____ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

X BUILDING PERMIT APPROVAL

_____ CERTIFICATE OF OCCUPANCY

_____ PRELIMINARY PLAT APPROVAL

_____ SITE PLAN FOR SUB'D APPROVAL

X SITE PLAN FOR BLDG. PERMIT APPROVAL

_____ FINAL PLAT APPROVAL

_____ SIA/ RELEASE OF FINANCIAL GUARANTEE

_____ FOUNDATION PERMIT APPROVAL

X GRADING PERMIT APPROVAL

_____ SO-19 APPROVAL

_____ PAVING PERMIT APPROVAL

_____ GRADING/ PAD CERTIFICATION

_____ WORK ORDER APPROVAL

_____ CLOMR/LOMR

_____ PRE-DESIGN MEETING

_____ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: X Yes _____ No

DATE SUBMITTED: 11/20/2015 By: Joel Hernandez

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: ___

JAN

TIERRA WEST, LLC

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

November 20, 2015

Mr. Abiel Carrillo, P.E.
Planning Department- Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Multi-Specialty Clinic Grading & Drainage (File M15-D026B)

Please find the following responses addressing staff comments from correspondence dated July 18, 2015 listed below:

1. Provide show the retaining wall layout on the Site Plan.

Response: We are including the Horizontal Control Plan/Paving Plan (Sheet C1) which also depicts the retaining wall layout with this submittal.

2. Sheet RW-1 shows a back of wall profile that has a 2-foot drop, which implies that, the trail profile would have the drop as well.

Response: We have revised the location of the bike trail to be within the trail right of way and adjusted the retaining wall location such that the trail elevation is unaffected by the retaining profile. Please see the typical section added to Sheet GR-2 which depicts the relationship between the wall and trail.

3. Show the HGL and Q on the storm drain profiles for the storm drain network that outfalls to The Diversion Channel.

Response: We have updated the storm drain profile sheet to include the HGL and Q, as requested.

4. Will "heavy duty" decorative concrete paving be defined within the plan set? (Thickness, reinforcement).

Response: We are including the Horizontal Control Plan/Paving Plan (Sheet C1) which also depicts the various pavement sections.

5. The grading plan does not appear to account for the construction of some of the ADA ramps, for example, Sheet GR-3, shows untied/conflicting contour line work and does not appear to give the contractor enough information to build the ramps correctly in the vicinity of

the retaining wall. Elevations shown for the ramp will likely not work with the header curb dimensions suggested on the Site Plan.

Response: We have updated the grading plan sheets to reflect the revision to the trail and more clearly show the proposed contours in ramp areas. Also included in this submittal is an additional plan sheet (Sheet GR-4) at 1"=20' to more clearly show the ADA access in the flatwork around the building.

6. Ensure that all ADA ramps are shown on both the Site Plan and the Grading Plan Sheets.

Response: We are including the Horizontal Control Plan/Paving Plan (Sheet C1) which also depicts the ADA ramps, as well as plan sheet (Sheet GR-4) at 1"=20' to more clearly show the ADA access in the flatwork around the building.

7. Include a cross section of the bike trail to show the intended cross slope to ensure positive drainage from the wall.

Response: We have added a typical section detail to Sheet GR-2 which depicts the relationship between the wall and trail.

8. Show the pipe connection from Phase I as an existing structure to be preserved (or show new outlet structure improvements if that is the intent).

Response: We have added a note to the grading plan (Sheet GR-3) to install an end section to the storm drain pipe.

9. Reprint the StormCAD output for "Profile-2" (pipe CO-3), it is not legible in the report.

Response: We have reprinted the StormCAD output for "Profile 2" for inclusion in the report.

10. Sheet GR-2 references the concrete flume detail on SD-2, but it is not shown. Also, adjust the capacity worksheet to match the dimension (4' bottom width) shown on the plans.

Response: We have added the concrete flume detail to sheet SD-2 and included a revised capacity worksheet to match the 4-foot bottom width dimension as shown on the plans.

11. Has coordination with the USACE been completed per AMAFCA's review letter of the Capstone Student Housing Drainage Management Plan (letter dated June 25, 2013)?

Response: The review with the USACE is ongoing, but is limited to the construction of the outfall improvements. We have added a note to the storm drain plan (SD-1) requiring this work proceed upon and until approval is obtained from the USACE and authorization from AMAFCA. The work within the AMAFCA right of way is subject to executed license agreement which requires adherence to the approved plans and notification of the AMAFCA Project Manager at least forty-eight (48) hours prior to beginning work on or in the AMAFCA property.

12. Provide email or correspondence from AMAFCA confirming that a license agreement is in place for the new outlet structure into the Diversion Channel.

Response: Attached with this submittal is the email correspondence from Lynn Mazur, the AMAFCA Development Review Engineer dated November 16, 2015 confirming the license agreement is in place, as well as a copy of the agreement in question.

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

Sincerely,

Joel Hernandez, PE

JN: 2014088
RRB/jh/jg

South Diversion Channel, Parcel 8
ZAP M-15

PRIVATE LICENSE AGREEMENT FOR STORM DRAIN CONNECTION TO SOUTH DIVERSION CHANNEL

This License Agreement is made and entered into this 29 day of September, 2015, by and between the Albuquerque Metropolitan Arroyo Flood Control Authority ("AMAFCA"), a political subdivision of the State of New Mexico, and ABQ Health Partners, LLC, a New Mexico limited liability company ("LICENSEE"), collectively referred to as the "PARTIES".

RECITALS:

WHEREAS, AMAFCA owns the fee right-of-way for Parcel 8 of the South Diversion Channel ("SDC") as shown on the plat for South Diversion Channel Drainage Right-of-Way Phase 1, filed for record in the Office of the County Clerk of Bernalillo County, New Mexico, on July 17, 2000, in Book 2000C, Page 183; and

WHEREAS, LICENSEE proposes to develop Tract 2 of Capstone Subdivision, the location of which is shown on Exhibit "A", and to install a thirty-six inch reinforced concrete storm drain pipe (36" RCP) connection to the SDC, along with eight inch (8") thick concrete slope paving, riprap erosion protection and grading ("IMPROVEMENTS") within AMAFCA's property. The specific area containing the IMPROVEMENTS will henceforth be referred to as the "Licensed Area"; and

WHEREAS, the IMPROVEMENTS will provide a benefit to AMAFCA by improving the existing pipe connection and providing a controlled drainage outfall with water quality treatment to the SDC.

NOW THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged:

AMAFCA hereby grants to LICENSEE, and its successors and assigns, a non-exclusive License to construct, operate and maintain the IMPROVEMENTS within the Licensed Area, as graphically shown on the attached Exhibit "B", together with full ingress thereto, subject to the following terms and conditions:

1. LICENSEE shall obtain AMAFCA's prior written approval for the following:

   a. All changes to the construction drawings for installation of the IMPROVEMENTS. The drawings, with an Engineer's stamp and as approved and signed by AMAFCA, shall be used.

   b. All future repairs, modifications, removal, or other activities affecting the IMPROVEMENTS.

2. LICENSEE or its contractor shall notify the AMAFCA Project Manager by telephone call to

884-2215 at least forty-eight (48) hours prior to beginning work on or in the AMAFCA's property.

3. LICENSEE shall be responsible for all damages caused by the construction activities to AMAFCA's facilities or property, whether caused by or in any way resulting from the actions of LICENSEE, its successors or assigns, or its contractor. To ensure repair of such damages, LICENSEE shall require its contractor, if work will be performed by a second party, to obtain a Temporary Construction and Access License from AMAFCA prior to construction.

4. All construction by LICENSEE or its contractor and all materials within AMAFCA's property shall be subject to inspection and approval by AMAFCA's Project Manager or his representative to ensure compliance with the approved plans. Any AMAFCA comments shall be directed to LICENSEE.

5. AMAFCA shall have the authority to cause the installation of any of the IMPROVEMENTS to be stopped, or to require that the IMPROVEMENTS be removed by LICENSEE from the Licensed Area, if the construction does not comply with the approved plans.

6. LICENSEE shall revegetate any disturbed ground area within AMAFCA's property that is disturbed by construction or any of LICENSEE's activities, with the exception of maintenance roads and the SDC bottom, which revegetation shall be completed in accordance with City of Albuquerque Standard Specifications for Public Works Construction, Section 1012 Native Grass Seeding, as currently updated.

7. All construction, operation, maintenance, repair, relocation and removal of the IMPROVEMENTS shall be accomplished at the sole expense of LICENSEE. Any existing survey control or right-of-way monuments that are moved or destroyed as a result of the actions permitted by this License Agreement shall be replaced by a registered surveyor at the sole expense of LICENSEE.

8. LICENSEE agrees that all rights granted herein are subordinate to the flood control function of and right of access to AMAFCA's facilities. All work shall be performed in such a manner as will not damage or interfere with the operation and maintenance of and access to AMAFCA's property, flood control facilities and equipment.

9. LICENSEE shall indemnify and hold AMAFCA harmless from all claims or judgments for damages or injury to property or persons to the extent caused by LICENSEE arising from the construction, operation, maintenance, relocation or removal of the IMPROVEMENTS and related equipment, and shall defend AMAFCA against any such claim. LICENSEE shall reimburse AMAFCA for all costs and expenses incurred by AMAFCA resulting from the installation, operation, maintenance or removal of the IMPROVEMENTS should such activities be required to prevent damage to AMAFCA or others. Determination of whether such damage is likely shall be by AMAFCA, which determination shall be reasonable. This agreement to indemnify shall not extend to liability, claims, damages, losses or expenses, including attorney fees, arising out of the preparation or approval of maps, drawings,

opinions, reports, surveys, change orders, designs or specifications by AMAFCA, its agents or employees.

10. Should LICENSEE fail to comply with the provisions of this License Agreement, or should LICENSEE fail to properly maintain the IMPROVEMENTS, this License Agreement and all rights and privileges herein granted may be terminated by AMAFCA. Any damage or maintenance issue caused by AMAFCA shall be excluded. However, such termination shall be preceded by written notice, giving LICENSEE at least thirty (30) days to effect a cure. If the notice concerns repair or lack of maintenance, and LICENSEE fails to effect a cure within thirty (30) days, AMAFCA may perform the required repair or maintenance and invoice LICENSEE for incurred costs, without impairing its right to terminate this License Agreement. LICENSEE shall pay such costs within sixty (60) days of the date of said invoice.

11. All notices with respect to this License Agreement shall be in writing and shall be delivered personally, via electronic mail with receipt request, or sent postage prepaid by United States Mail, via certified mail with return receipt requested, to the addresses set forth below or other such addresses as hereafter specified in writing by one PARTY to the others:

AMAFCA
2600 Prospect Ave. NE
Albuquerque, NM 87107
Attn: Jerry Lovato, Executive Engineer
Email: JLovato@amafca.org

ABQ Health Partners, LLC
5400 Gibson Blvd. SE
Albuquerque, NM 87108
Attn: Jill C. Klar, COO
Email: Jill.Klar@abqhp.com

12. This License Agreement shall be construed according to the laws of the State of New Mexico.

13. Each individual signing for each of the PARTIES hereafter warrants and represents that he or she is an authorized agent of such PARTY, on whose benefit he is executing this License, and is authorized to executive the same.

14. This License Agreement shall be in full force and effect for a period of twenty (20) years from the date of signature by AMAFCA and may be renewed for an additional twenty (20) year period upon request of LICENSEE and acceptance by AMAFCA. The burden of timely renewal is on LICENSEE.

15. In the event of a dispute between any of the PARTIES, each PARTY shall be responsible for its own costs and attorney's fees.

16. All terms, conditions and obligations contained herein shall inure to the benefit of and shall be binding upon the parties, their successors, assigns, administrators, executors, receivers and heirs.

IN WITNESS WHEREOF, the undersigned have caused this License Agreement to be executed as of the day and year set forth on Page 1.

LICENSOR:

ALBUQUERQUE METROPOLITAN ARROYO
FLOOD CONTROL AUTHORITY

By: _____
Jerry M. Lovato, P.E., Executive Engineer

ACKNOWLEDGMENT

STATE OF NEW MEXICO)
)SS
COUNTY OF BERNALILLO)

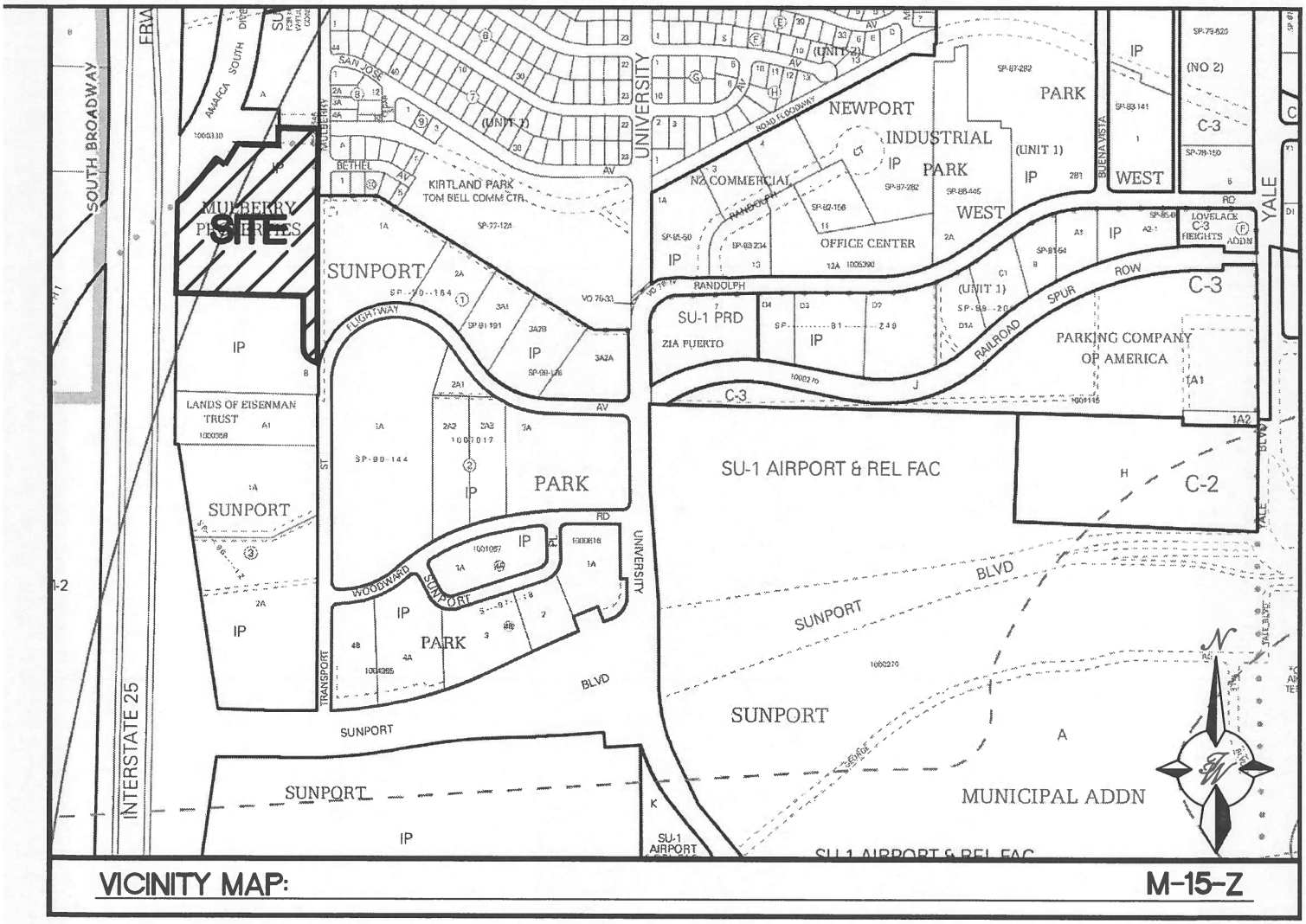
This instrument was acknowledged before me on October 7, 2015 by Jerry M. Lovato, as Executive Engineer of the Albuquerque Metropolitan Arroyo Flood Control Authority, a political subdivision of the State of New Mexico, on behalf of said political subdivision.

My Commission Expires: 09/15/2018

OFFICIAL SEAL
CHASTITY S WINEBRENNER
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 09/15/2018

_____
(SEAL)

_____
Notary Public



VICINITY MAP: M-15-Z

EXHIBIT A

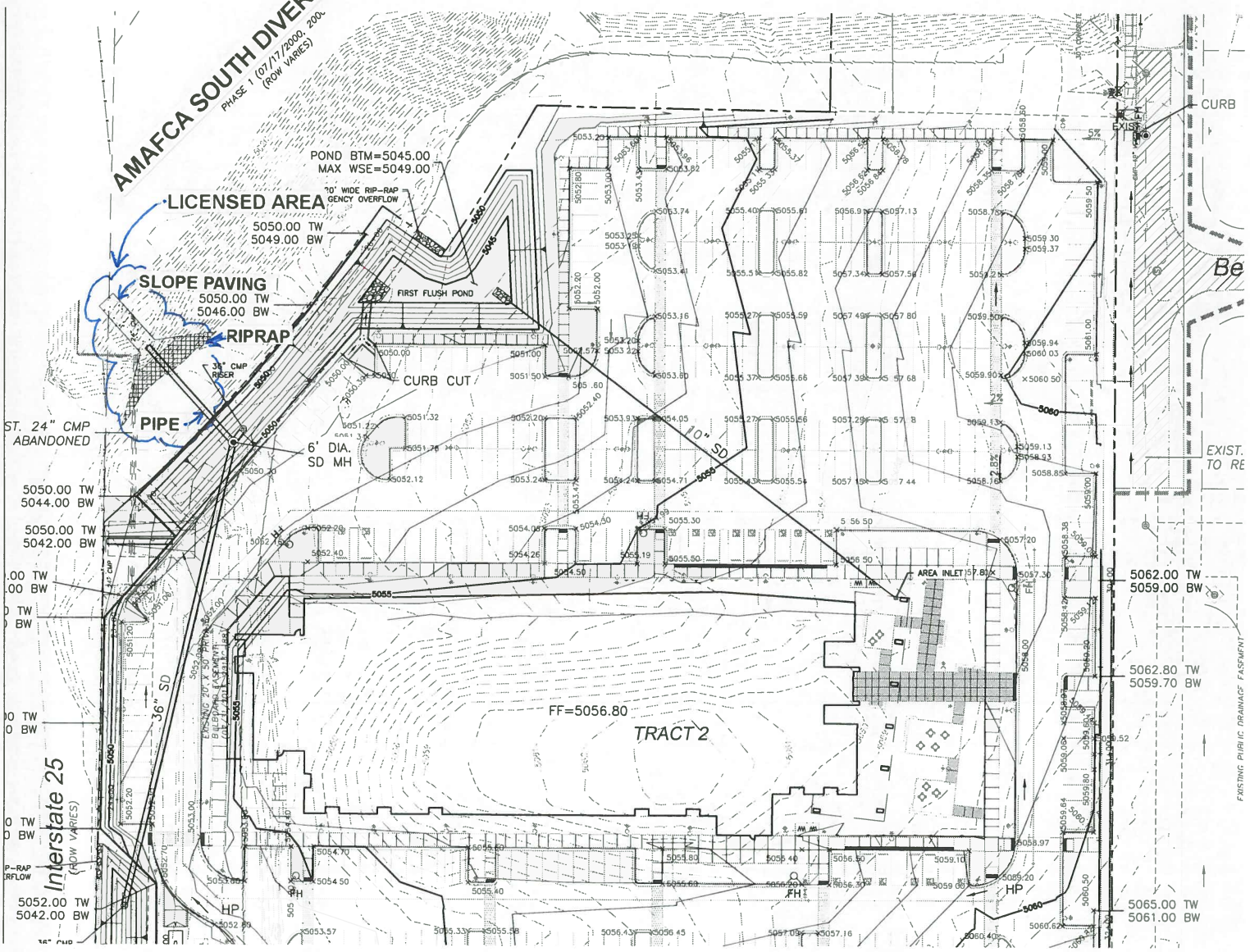
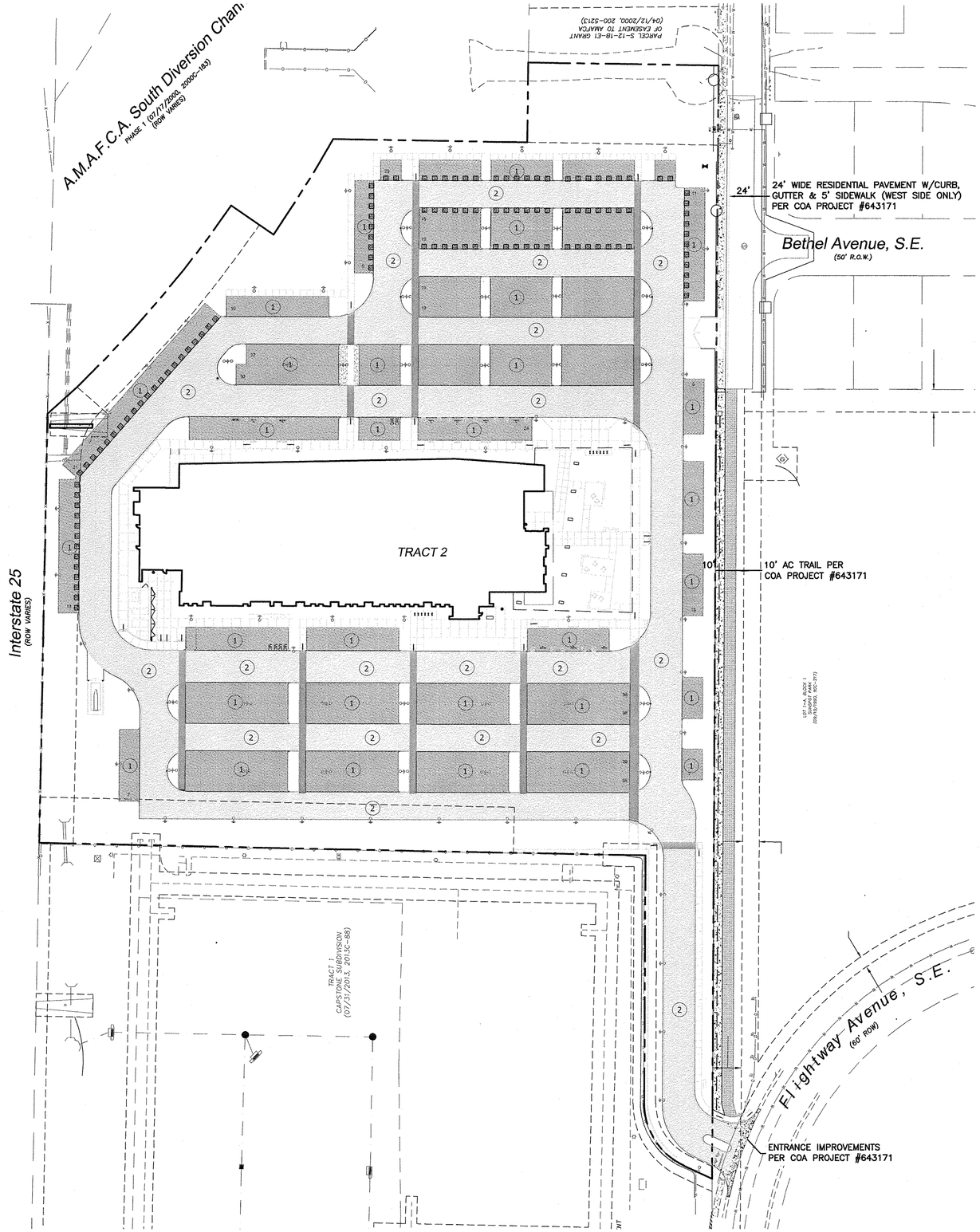
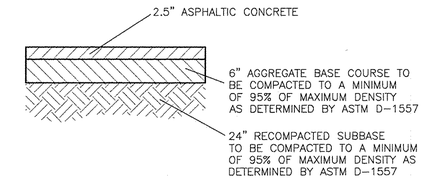
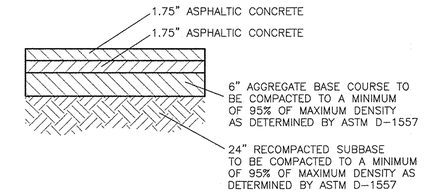

AMAFCA SOUTH DIVERSION CHANNEL
PHASE 1 (07/17/2000, 200-
(ROW VARIES)
POND BTM=5045.00
MAX WSE=5049.00
LICENSED AREA
5050.00 TW
5049.00 BW
SLOPE PAVING
5050.00 TW
5046.00 BW
RIPRAP
PIPE
6' DIA.
SD MH
CURB CUT
FIRST FLUSH POND
36" CMP
RISER
ST. 24" CMP
ABANDONED
5050.00 TW
5044.00 BW
5050.00 TW
5042.00 BW
36" SD
10" SD
FF=5056.80
TRACT 2
AREA INLET
5062.00 TW
5059.00 BW
5062.80 TW
5059.70 BW
5065.00 TW
5061.00 BW
5052.00 TW
5042.00 BW
Interstate 25
(ROW VARIES)
CURB
EXIST.
TO RE
EXISTING PUBLIC DRAINAGE EASEMENT
HP
FH

EXHIBIT B

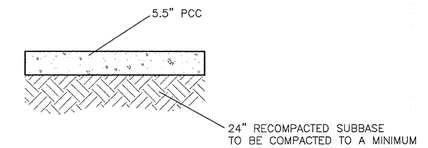




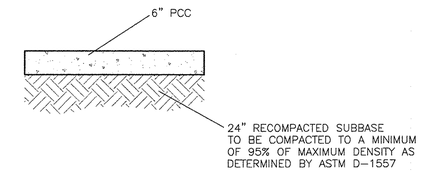
1 **STANDARD DUTY PAVING SECTION**
NTS



2 **HEAVY DUTY PAVING SECTION**
NTS



PCC PAVING IN DRIVES
NTS



PCC PAVING IN DUMPSTER AREA
NTS

LEGEND

- STANDARD DUTY AC PAVING
- HEAVY DUTY AC PAVING
- PCC PAVING (SEE ARCHITECTURAL PLANS FOR COLOR & PATTERN)

N

GRAPHIC SCALE
50 25 0 25 50
SCALE: 1"=50'

ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL

JOEL D. HERNANDEZ NEW MEXICO 17893 PROFESSIONAL ENGINEER

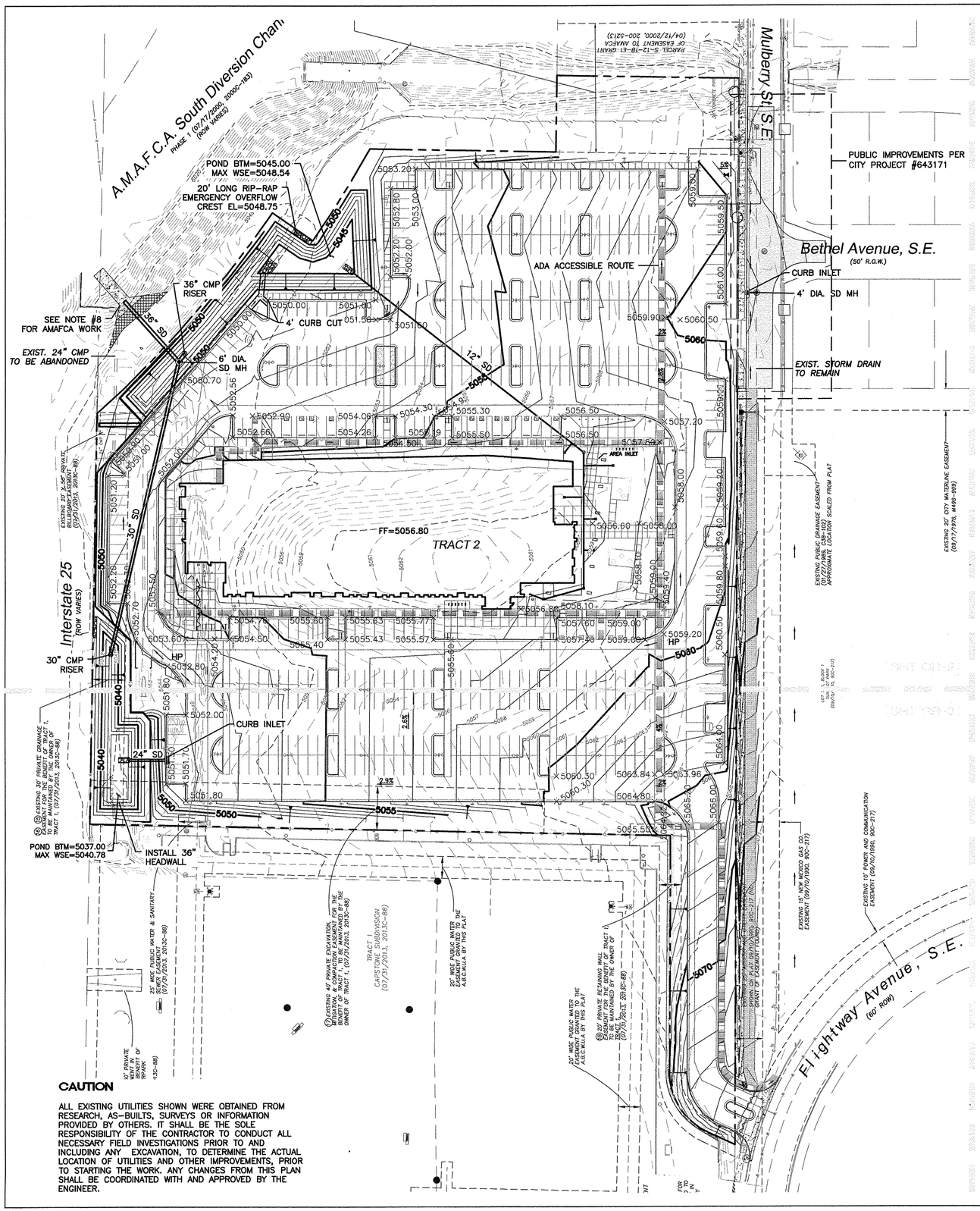
JOEL D. HERNANDEZ
P.E. #17893

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.

HORIZONTAL CONTROL/ MASTER PAVING PLAN

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

DRAWN BY: DY
DATE: 11/06/15
2015044-HORIZONTAL CONTROL
SHEET #: C1
JOB #: 2015044

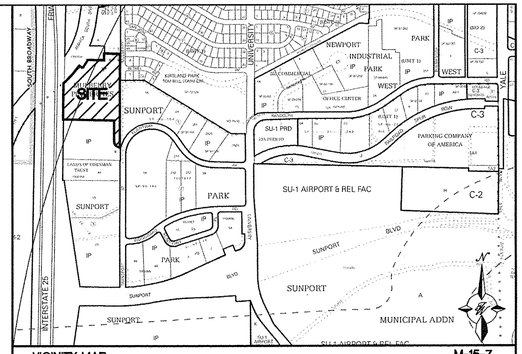


LEGEND

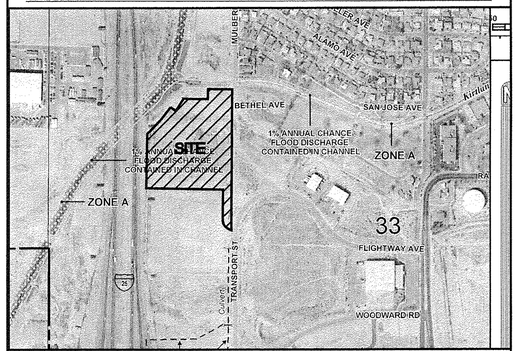
- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- BUILDING
- SIDEWALK
- SCREEN WALL
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR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

EROSION CONTROL NOTES:

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



VICINITY MAP: M-15-Z



FIRM MAP: 35001C0342G

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HERON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.
8. IMPROVEMENTS WITHIN AMAFCA RIGHT OF WAY TO BE INSTALLED AFTER APPROVAL FROM AMAFCA IS GRANTED. CONTRACTOR SHALL NOTIFY AMAFCA PROJECT MANAGER BY TELEPHONE (505.884.2215) AT LEAST FORTY-EIGHT HOURS PRIOR TO BEGINNING WORK ON OR IN THE AMAFCA PROPERTY.

APPROVAL	NAME	DATE
INSPECTOR		

CAUTION

ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL

JOEL D. HERNANDEZ NEW MEXICO 17893 PROFESSIONAL ENGINEER

JOEL D. HERNANDEZ P.E. #17893

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.

GRADING AND DRAINAGE PLAN

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

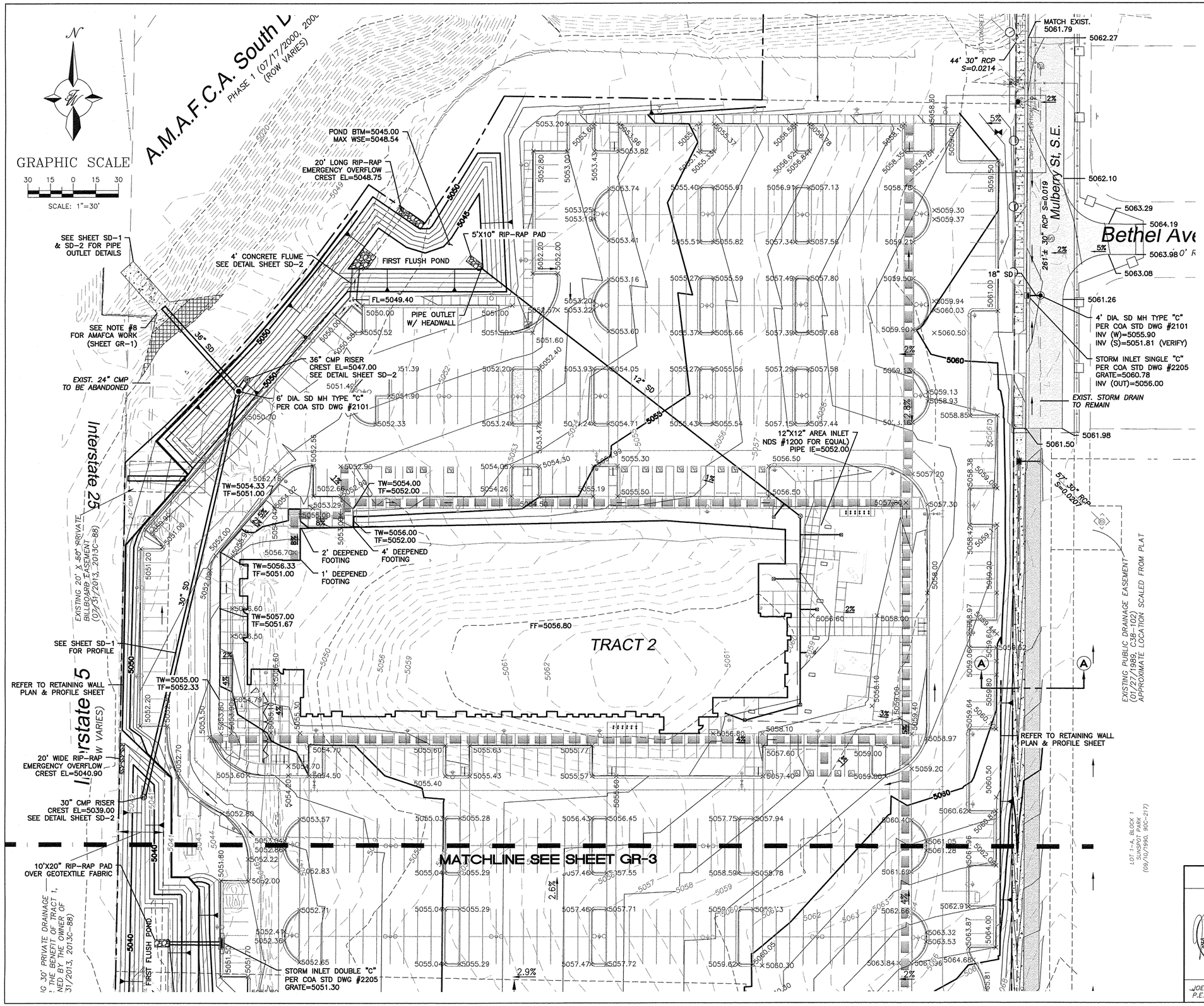
DRAWN BY: DY

DATE: 11/19/15

2015044-GRB

SHEET #: GR-1

JOB #: 2015044



LEGEND

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

EROSION CONTROL NOTES:

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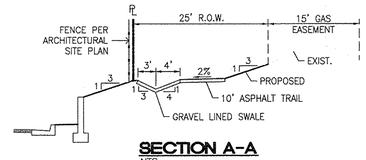
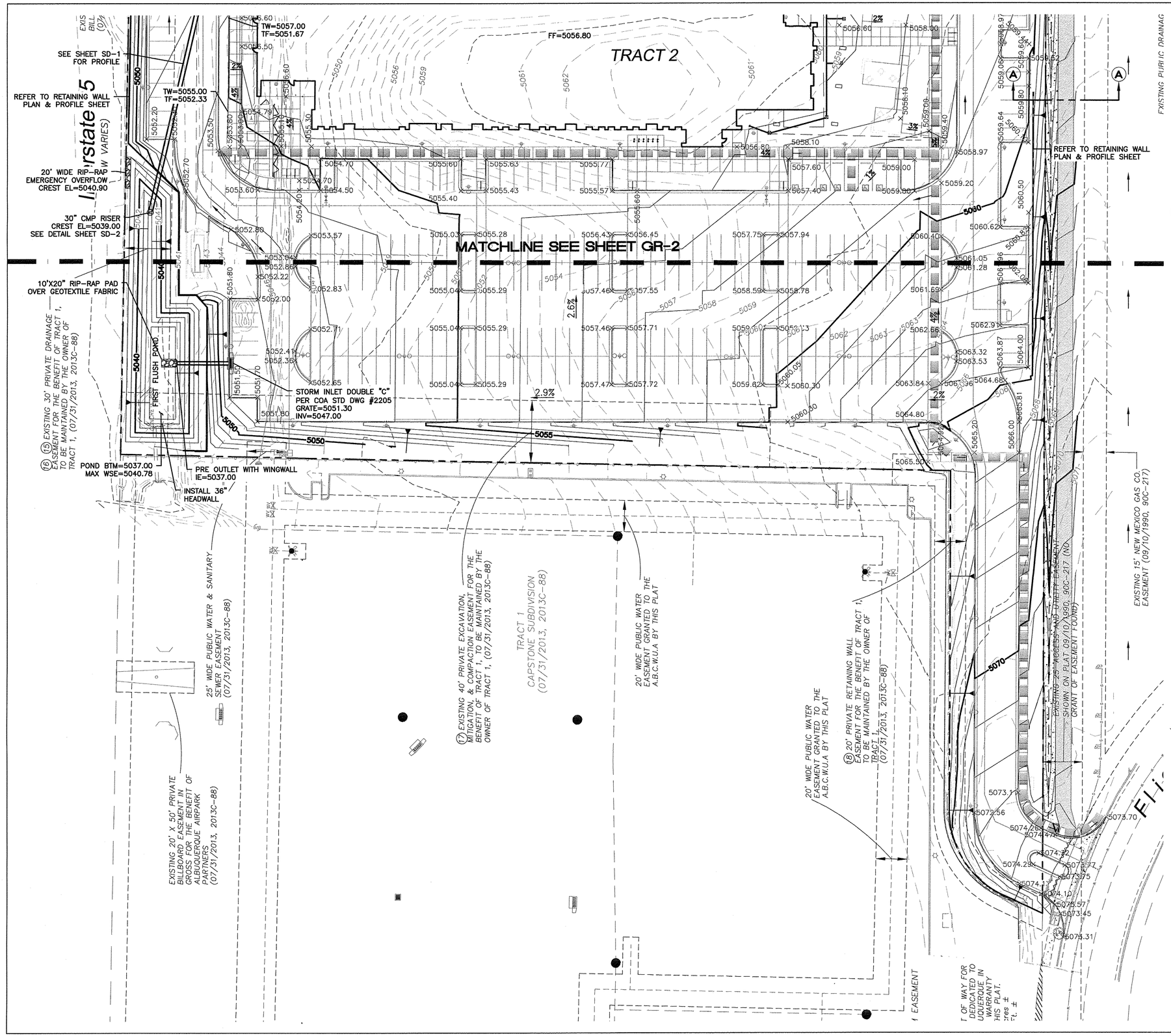


SECTION A-A
NTS

ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL	MULTI-SPECIALTY CLINIC 2901 TRANSPORT ST, S.E.	DRAWN BY DY
	GRADING AND DRAINAGE PLAN	DATE 11/06/15
		2015044-GRB
JOEL D. HERNANDEZ P.E. #17893	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # GR-2
		JOB # 2015044



LEGEND

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

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
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ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL

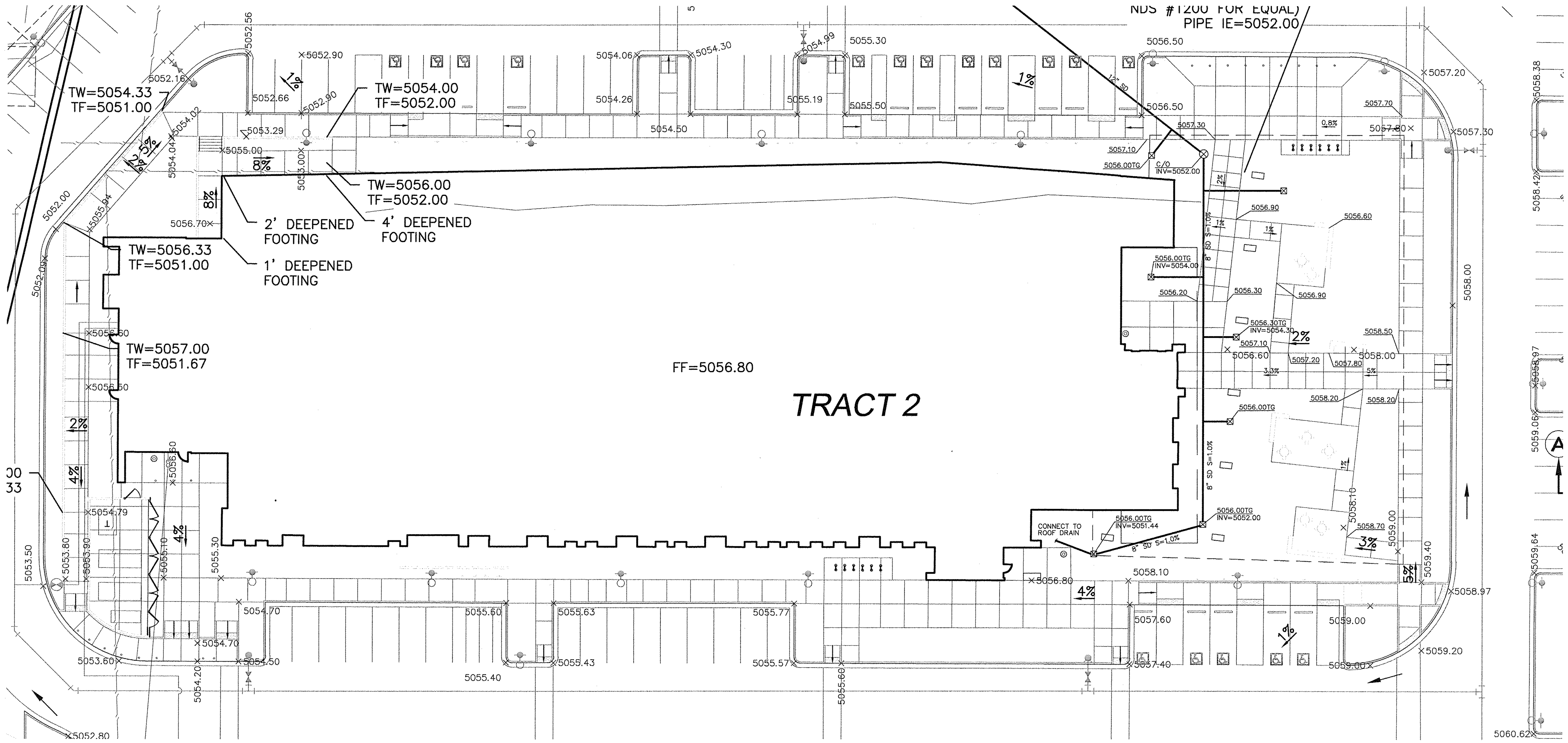
JOEL D. HERNANDEZ P.E. #17893

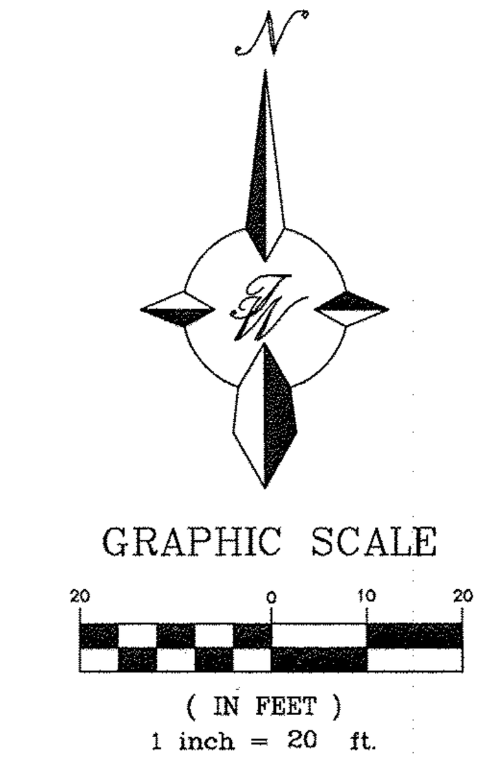
MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.

GRADING AND DRAINAGE PLAN

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

DRAWN BY: DY
DATE: 11/06/15
2015044-GRB
SHEET #: GR-3
JOB #: 2015044





LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- BUILDING
- SIDEWALK
- SCREEN WALL
- RETAINING WALL
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- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
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ARCHITECTURAL SHELL PACKAGE

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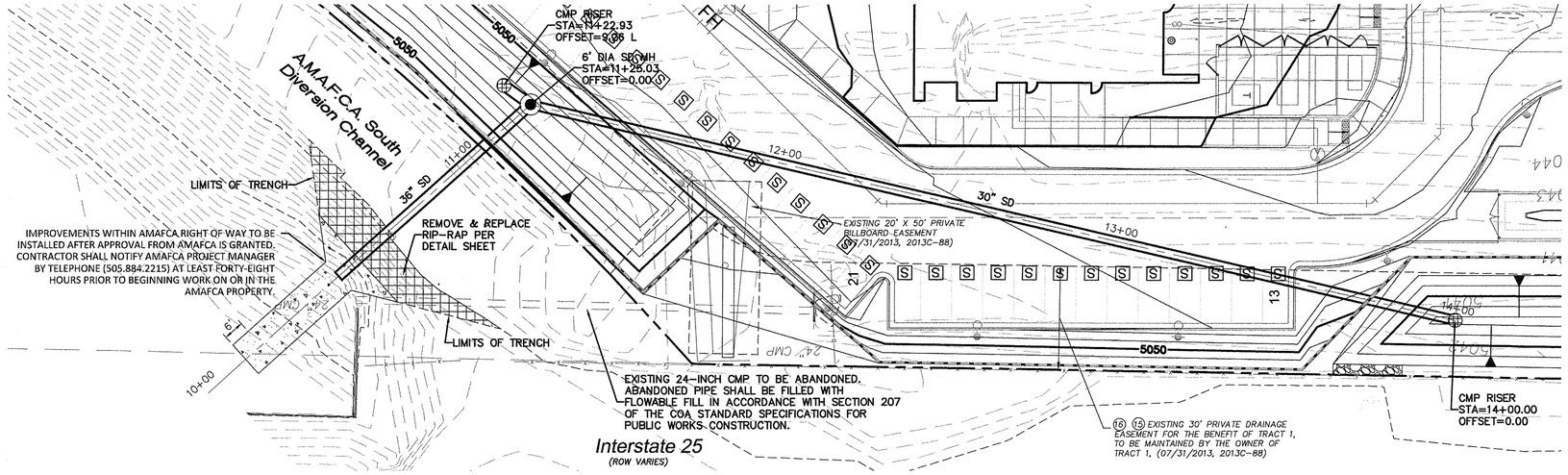
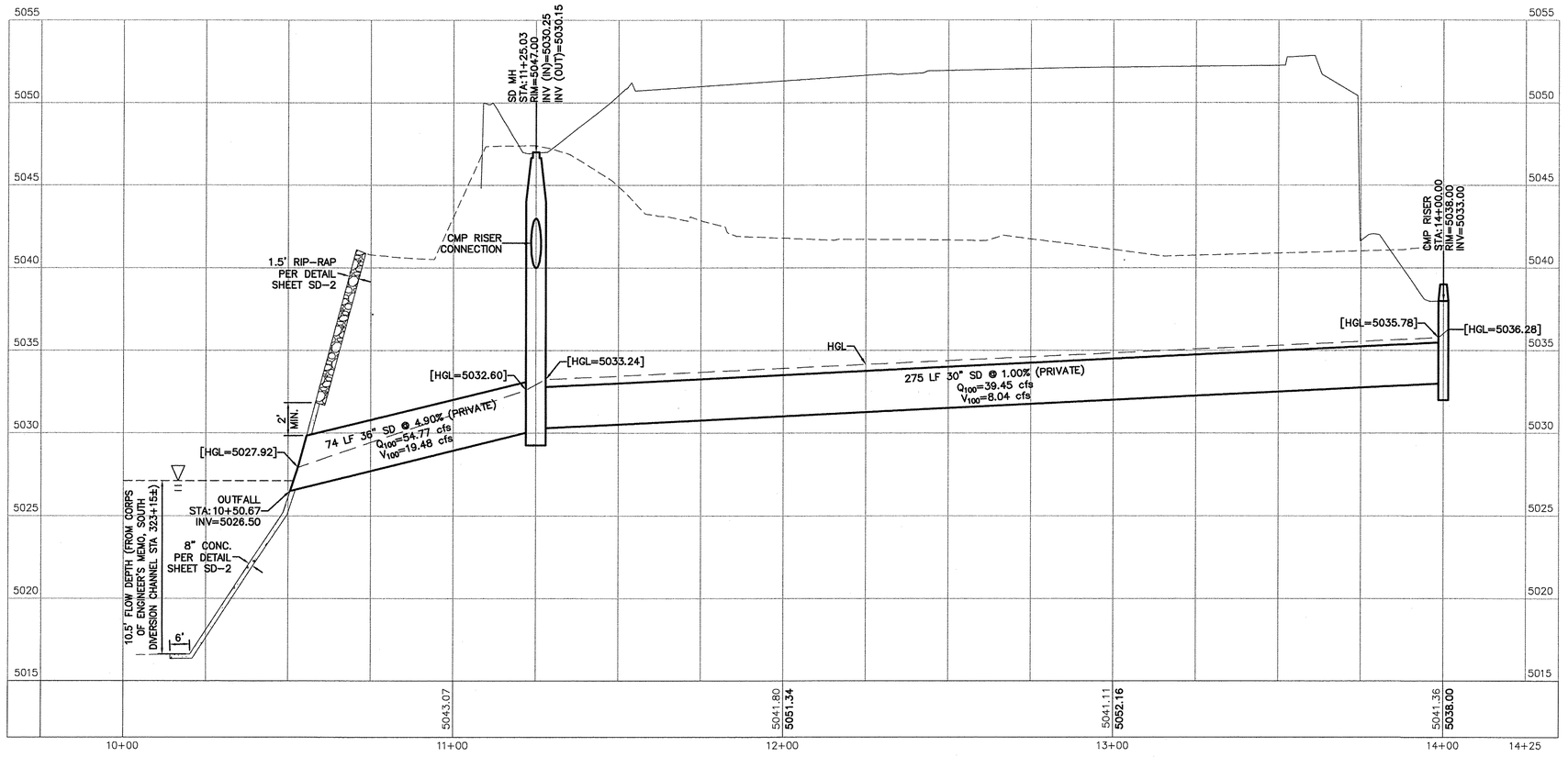
JOEL D. HERNANDEZ NEW MEXICO 17893 PROFESSIONAL ENGINEER	GRADING AND DRAINAGE PLAN	DATE 11/06/15
		2015044-GRB
JOEL D. HERNANDEZ P.E. #17893	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # GR-4 JOB # 2015044



LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- SCREEN WALL
- RETAINING WALL
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 30" SD — STORM SEWER LINE
- 8" SAS — SANITARY SEWER LINE
- 8" WL — WATERLINE
- SINGLE CLEAN OUT
- EXISTING SD MANHOLE
- EXISTING INLET
- EXISTING SAS MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING POWER POLE
- EXISTING GAS VALVE
- OHU — EXISTING OVERHEAD UTILITIES
- EX. UGE — EXISTING UNDERGROUND UTILITIES
- EX. 2" GAS — EXISTING GAS
- EX. 8" SAS — EXISTING SANITARY SEWER LINE
- EX. 12" WL — EXISTING WATER LINE
- EX. 30" RCP — EXISTING STORM SEWER LINE



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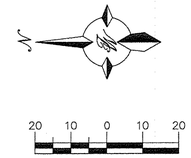
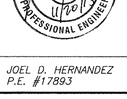


SCALE: HORIZ. 1"=20'
VERT. 1"=4'

ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL



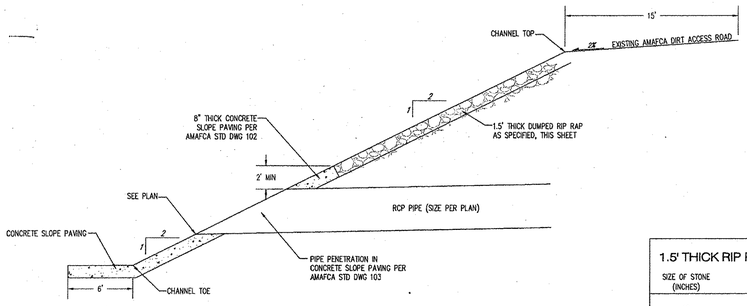
JOEL D. HERNANDEZ
P.E. #17893

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.

STORM DRAIN
PLAN AND PROFILE

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

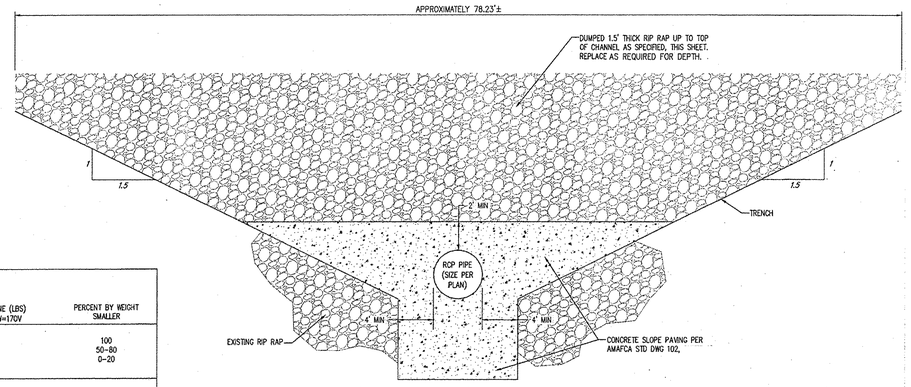
DRAWN BY: DY
DATE: 11/06/15
2015044-SD
SHEET #: SD-1
JOB #: 2015044



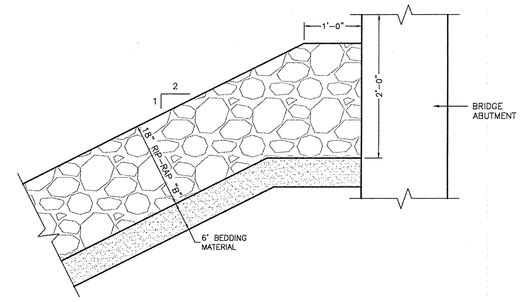
ROCK CHANNEL PIPE PENETRATION (SIDE VIEW)
N.T.S.

1.5' THICK RIP RAP:		
SIZE OF STONE (INCHES)	WEIGHT OF STONE (LBS) Yp=0.750"3, W=170Y	PERCENT BY WEIGHT SMALLER
12	125	100
9	50	50–80
6	15	0–20

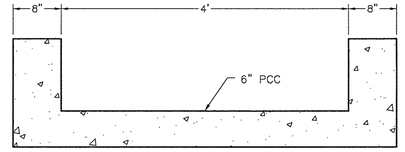
6" BEDDING:	
STANDARD SIZE U.S. STANDARD	PERCENT BY WEIGHT PASSING
4-INCH	100
3-INCH	80–100
3/4-INCH	45–65
NO. 4	25–45
NO. 40	0–29
NO. 200	0–5



SOUTH DIVERSION ROCK CHANNEL PIPE PENETRATION
N.T.S.



TYPICAL RIPRAP SECTION @ BRIDGE ABUTMENT
NTS



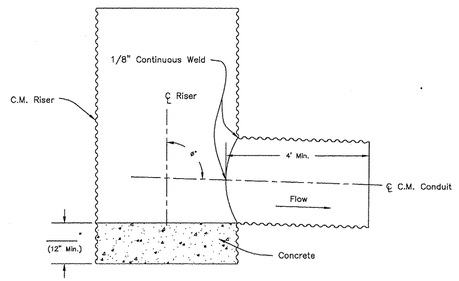
CONC. FLUME
NTS

Bill of Materials

C.M. Riser _____Diam., _____Lin. Ft., Metal thickness = _____" (_____Gage)
C.M. Conduit _____ Diam., _____Lin. Ft., Metal thickness = _____" (_____Gage)
ø Angle = _____ Degrees
Volume of Concrete = _____Cu. Yds.

Concrete Table

Riser Diameter (Inches)	Volume of Concrete (Cu. Yds./Inch)
18	.0055
21	.0074
24	.0097
30	.0152
36	.0218

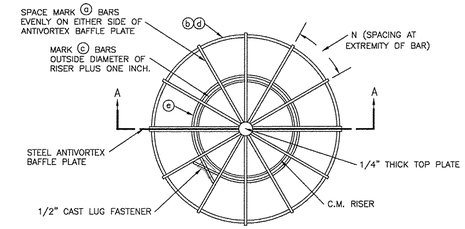


Section on Centerline

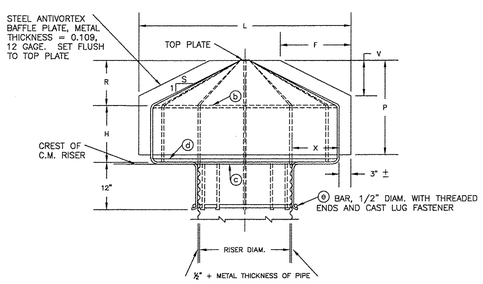
Notes:

1. The maximum diameter of the C.M. riser shall be 36".
2. The maximum height of the C.M. riser measured from the top of the riser to the invert of the C.M. conduit shall be 13 feet.

USDA United States Department of Agriculture Natural Resources Conservation Service	C.M. RISER DETAILS (ROUND CONCRETE BASE)	Designed #### Date ####	File Name WI-261
	CLIENT: ####	Drawn	Date 07/14
	COUNTY: ####	Checked	
		Approved	Sheet XX of ####



PLAN VIEW



SECTION A–A

ALL BARS FORMING CONICAL TRASH RACK ARE MARK ⓐ BARS, UNLESS OTHERWISE NOTED.

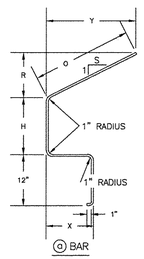
WI-275 Page 1 of 3

USDA United States Department of Agriculture Natural Resources Conservation Service	CONICAL TRASH RACK AND BAFFLE PLATE FOR 18" TO 36" DIAM. C.M. RISERS	Designed #### Date ####	File Name WI-275
	CLIENT: ####	Drawn	Date 07/14
	COUNTY: ####	Checked	
		Approved	Sheet XX of ####

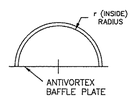
NOTES:

1. WELD 4 MARK ⓐ BARS TO BAFFLE PLATE AND TO TOP PLATE. WELD MARK ⓒ AND MARK ⓓ BARS TO 4 MARK ⓐ BARS. WELD MARK ⓑ BAR TO MARK ⓐ BARS. WELD REMAINING MARK ⓐ BARS TO MARK ⓑ, MARK ⓒ, AND MARK ⓓ BARS AND TOP PLATE.
2. THE TRASH RACK AND ANTIVORTEX BAFFLE PLATE, MAY BE FABRICATED AS A UNIT, OR TRASH RACK MAY BE FABRICATED IN IDENTICAL HALVES AND ATTACHED TO BAFFLE PLATE WITH 1/2" DIAM. U BOLTS SPACED APPROXIMATELY 12 INCHES CENTER TO CENTER ALONG THE VERTICAL AND INCLINED SECTIONS OF THE MARK ⓒ BARS NEXT TO THE PLATE.
3. ALL BARS ARE SMOOTH ROUND BARS.
4. COAT WITH A RUST INHIBITIVE PAINT.

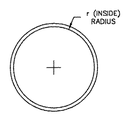
BENDING DIAGRAMS



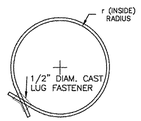
ⓐ BAR



ⓑ BAR



ⓒ AND ⓓ BARS



ⓔ BAR

WI-275 Page 2 of 3

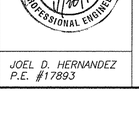
TABLE OF DIMENSIONS AND QUANTITIES												
ⓐ BARS 5/8" DIAMETER									ANTIVORTEX BAFFLE PLATE			
H	R	X	Y	S	O	TOTAL	NO.	N	L	P	F	V
INCHES	INCHES	INCHES	INCHES		INCHES	LENGTH	REQ'D	INCHES		INCHES	INCHES	INCHES
18" DIAMETER CORRUGATED METAL RISER												
9	14–1/8	6	14–1/8	1	20	4'	10	11–7/16	3'	21	8	8
21" DIAMETER CORRUGATED METAL RISER												
12	9–1/4	9	18–1/2	2	20–5/8	4' 6–5/8"	12	12–3/8	4'	18	12	6
24" DIAMETER CORRUGATED METAL RISER												
15	11–3/8	12	22–3/4	2	25–3/8	5' 5–3/8"	12	14–13/16	4'–6"	24	18	9
30" DIAMETER CORRUGATED METAL RISER												
18	9–1/2	15	28–1/2	3	30	6' 4"	14	15–13/16	6'	24	21	7
36" DIAMETER CORRUGATED METAL RISER												
21	12–1/2	21	37–5/8	3	39–1/2	7'10–1/2"	16	17–5/16	7'–6"	30	30	10

TABLE OF DIMENSIONS AND QUANTITIES												
ⓑ BARS 5/8" DIAMETER			ⓒ BARS 5/8" DIAMETER			ⓓ BARS 5/8" DIAMETER			ⓔ BARS 5/8" DIAMETER			TOP PLATE
NO.	r	LENGTH	NO.	r	LENGTH	NO.	r	LENGTH	NO.	r	LENGTH	DIAM.
REQ'D.	INCHES	INCHES	REQ'D	INCHES	INCHES	REQ'D	INCHES	INCHES	REQ'D	INCHES	INCHES	INCHES
18" DIAMETER CORRUGATED METAL RISER												
2	14–5/16	46	1	10	62–10	1	14–5/16	92	1	10–1/4	73	3
21" DIAMETER CORRUGATED METAL RISER												
2	18–13/16	60	1	11–1/2	72–1/4	1	18–13/16	120	1	11–3/4	82–1/2	3–1/2
24" DIAMETER CORRUGATED METAL RISER												
2	23–5/16	74	1	13	81–8	1	23–5/16	148	1	13–1/4	91–1/2	3–1/2
30" DIAMETER CORRUGATED METAL RISER												
2	29–5/16	93	1	16	100–1/2	1	29–5/16	186	1	16–1/4	111	4
36" DIAMETER CORRUGATED METAL RISER												
2	38–3/8	121–1/2	1	19	119–5	1	38–3/8	243	1	19–1/4	129	4

WI-275 Page 3 of 3

ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL



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P.E. #17893

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.

STORM DRAIN DETAILS

DRAWN BY DY
DATE 11/06/15
2015044–SD DETAILS
SHEET # SD-2
JOB # 2015044

TIERRA WEST, LLC
5571 MIDWAY PARK PLACE NE
ALBUQUERQUE, NM 87109
(505) 858–3100
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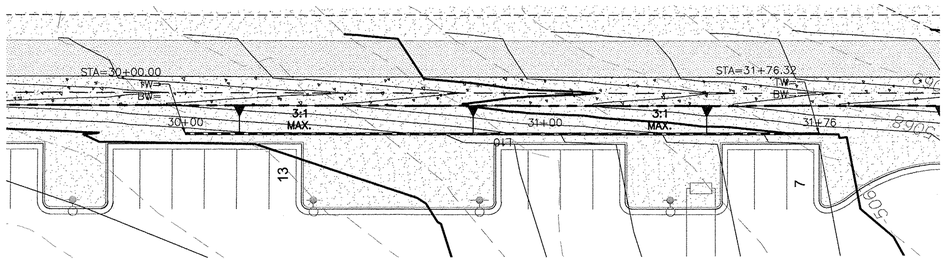

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LEGEND

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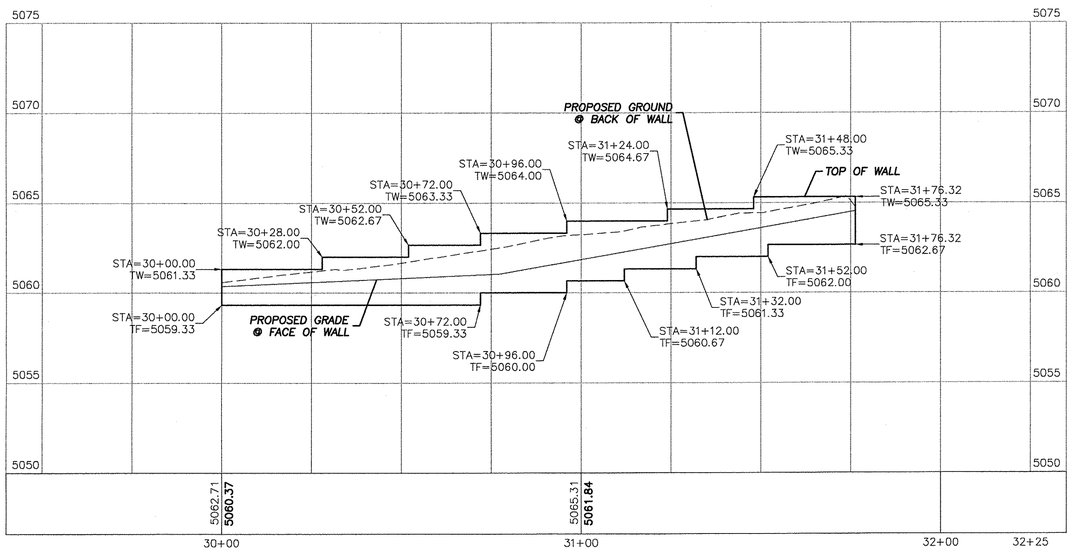
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR

LINE TABLE		
LINE	BEARING	LENGTH
L10	N0°10'04"E	176.32

EAST RETAINING WALL



20 10 0 10 20

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

ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL

JOEL D. HERNANDEZ
NEW MEXICO
17893
PROFESSIONAL ENGINEER

JOEL D. HERNANDEZ
P.E. #17893

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.

EAST RETAINING WALL
PLAN AND PROFILE

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

DRAWN BY
DY

DATE
11/06/15

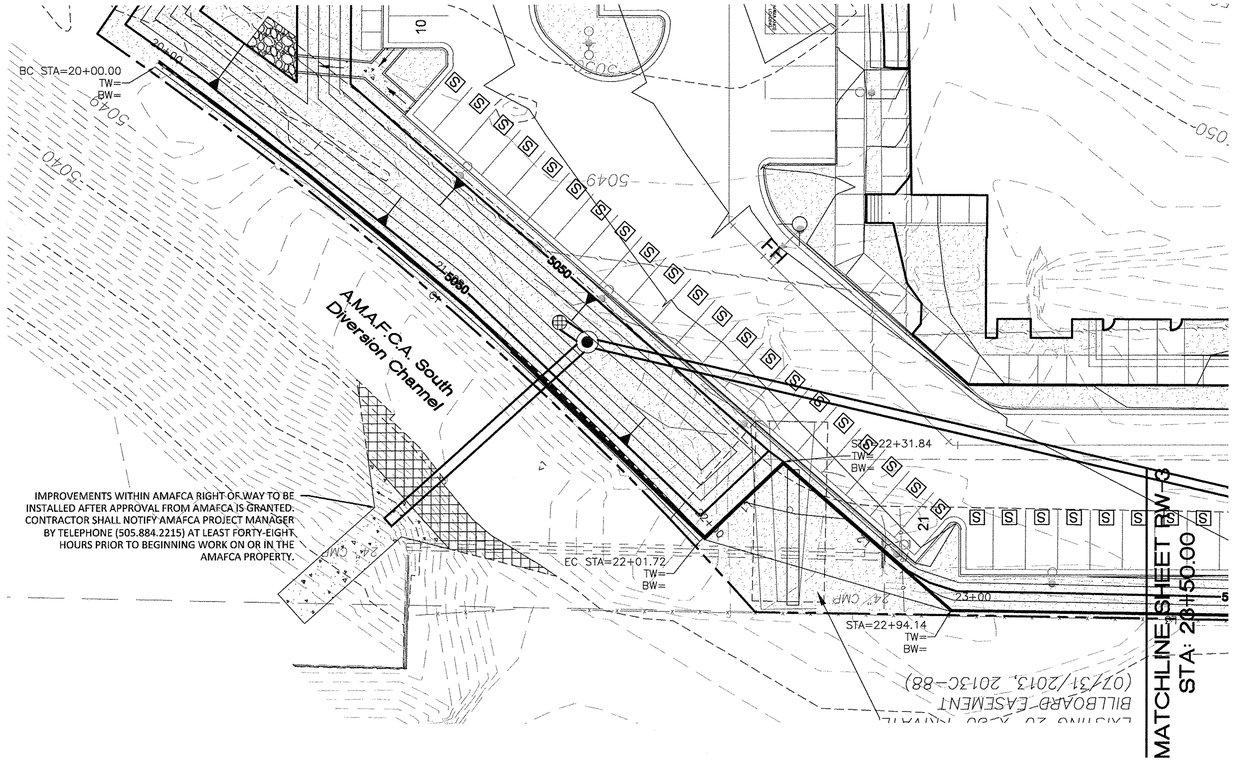
2015044–RWALLS

SHEET #
RW–1

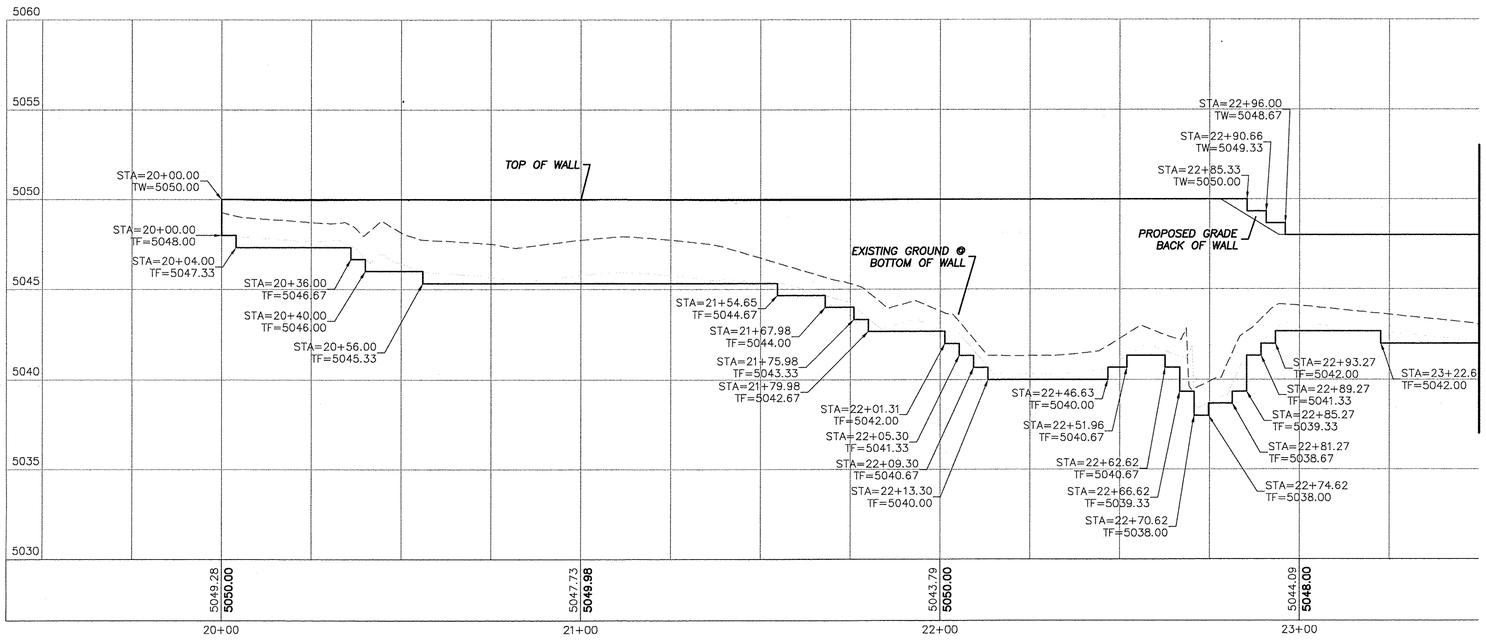
JOB #
2015044

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	10°57'42"	1052.35	201.34

LINE TABLE		
LINE	BEARING	LENGTH
L1	N43°28'32"W	32.13
L2	N41°15'46"E	62.30
L3	N1°01'01"E	121.87
L4	N45°57'23"W	45.17
L5	N0°00'00"W	65.70
L6	N89°56'41"W	11.19
L7	N41°25'17"W	10.72
L8	N0°10'04"E	92.41
L9	S88°48'26"E	15.58
L10	N0°10'04"E	176.32



WEST RETAINING WALL



EROSION CONTROL NOTES:

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

CAUTION:
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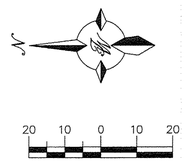
LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR



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

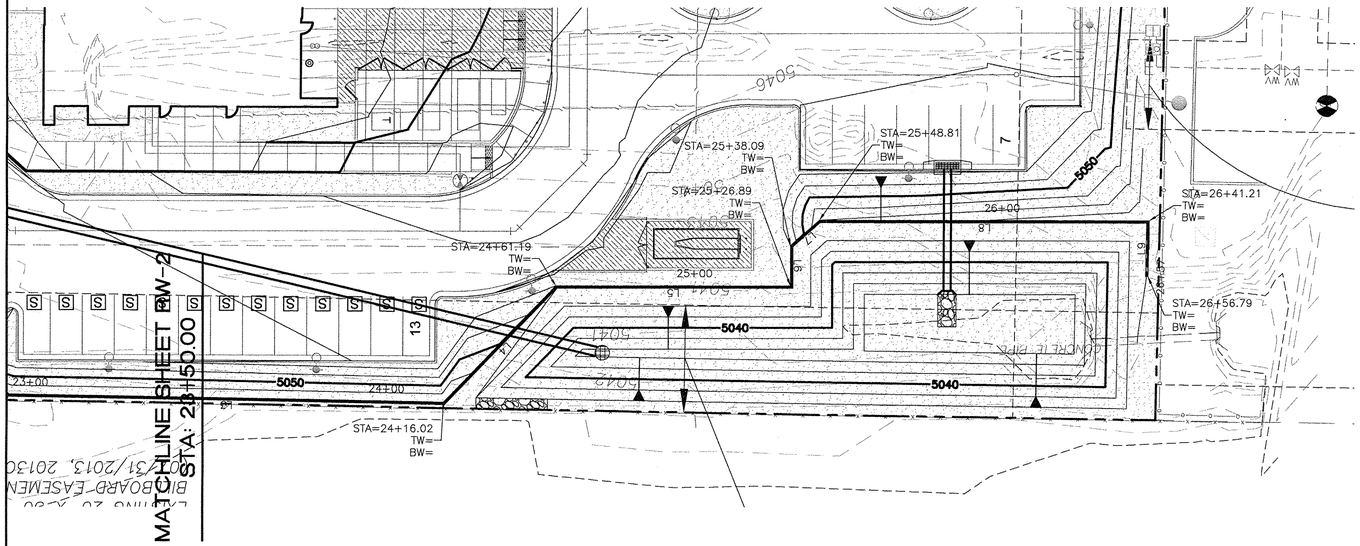
ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL
JOEL D. HERNANDEZ
NEW MEXICO
17893
PROFESSIONAL ENGINEER
JOEL D. HERNANDEZ
P.E. #17893

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.
WEST RETAINING WALL
PLAN AND PROFILE

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

DRAWN BY: DY
DATE: 11/06/15
2015044-RWALLS
SHEET # RW-2
JOB # 2015044



CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	10°57'42"	1052.35	201.34

LINE TABLE		
LINE	BEARING	LENGTH
L1	N43°28'32"W	32.13
L2	N41°15'46"E	62.30
L3	N1°01'01"E	121.87
L4	N45°57'23"W	45.17
L5	N0°00'00"W	65.70
L6	N89°56'41"W	11.19
L7	N41°25'17"W	10.72
L8	N0°10'04"E	92.41
L9	S88°48'26"E	15.58
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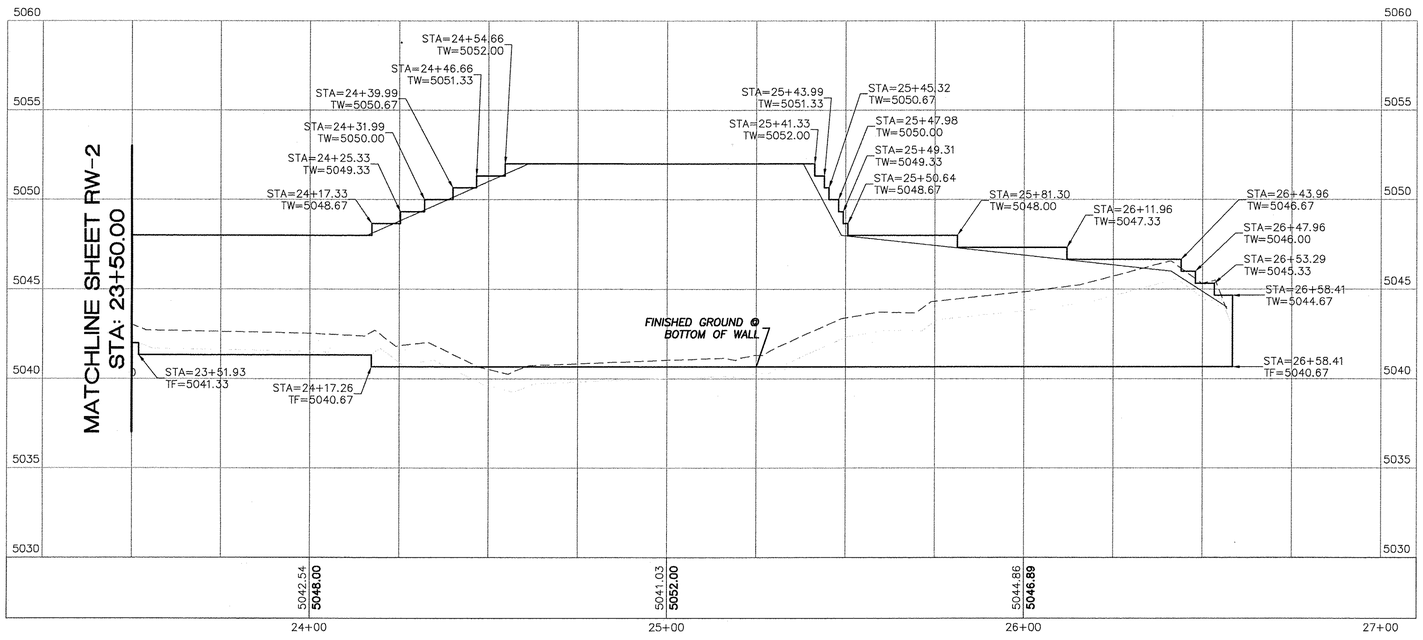
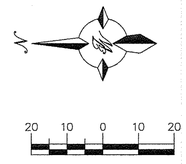
WEST RETAINING WALL





ARCHITECTURAL SHELL PACKAGE

ENGINEER'S SEAL	MULTI-SPECIALTY CLINIC 2901 TRANSPORT ST, S.E.	DRAWN BY DY
		DATE 11/06/15
	WEST RETAINING WALL PLAN AND PROFILE	2015044-RWALLS
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # RW-3
JOEL D. HERNANDEZ P.E. #17893		JOB # 2015044

DRAINAGE REPORT
for

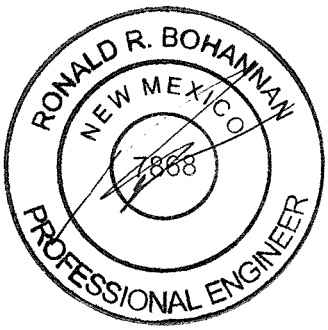
Multi-Specialty Clinic
2901 Transport St. S.E.

Prepared by:

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

September 16, 2015

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



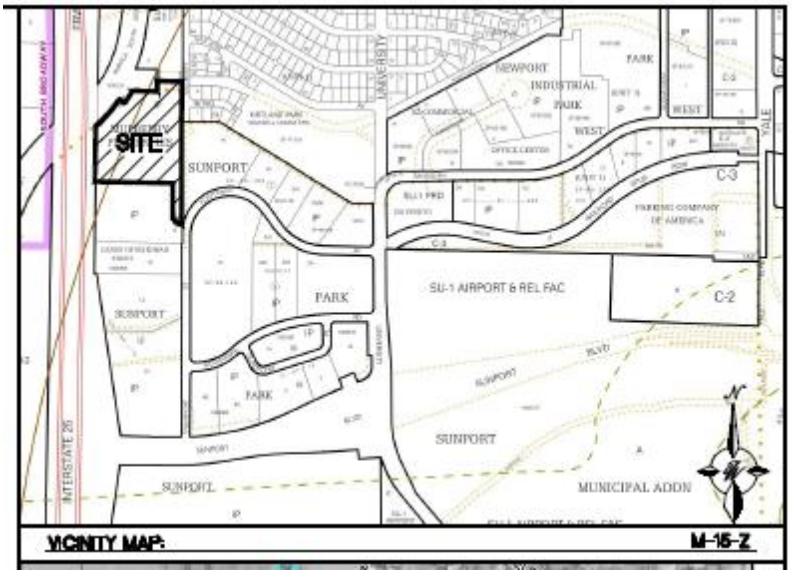
Ronald R. Bohannan, PE
9/16/15

DRAINAGE MANAGEMENT PLAN

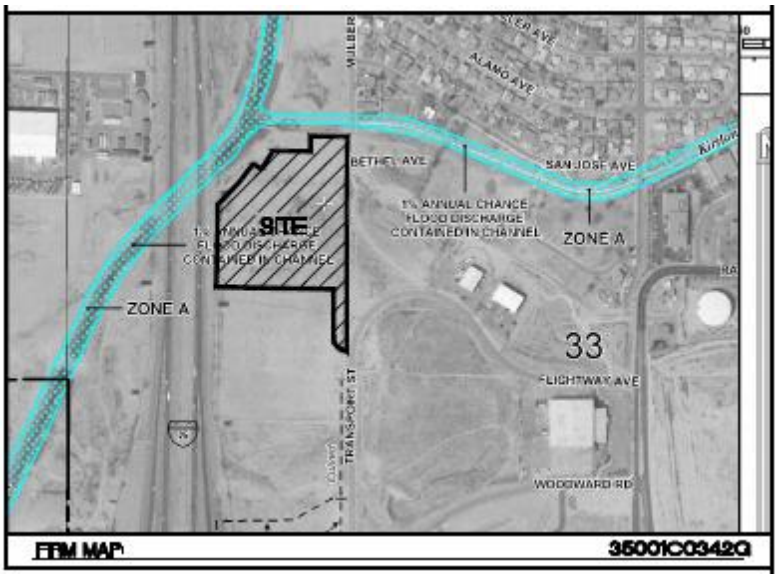
Introduction

The purpose of this submittal is to provide a conceptual drainage management plan for EPC approval of the Site Plan for Building Permit for the Multi-Specialty Clinic to be located at 2901 Transport Street, S.E. This project site lies within an 8.3 acre area previously designated as Phase 2 of the Capstone Student Housing and will consist of a 90,000 square foot two-story building along with associated parking and landscape areas. As shown in the vicinity map below, the site is located at the northeast corner of I-25 and Sunport Boulevard SE. The site lies within Precipitation Zone 2 according to Section 22.2 of the DPM. As shown in the FEMA Flood Map on page 2, the site lies outside any flood hazard zone.

Vicinity Map



FEMA FIRMap



Pre-Developed Conditions

A portion of this site was previously a landfill for construction debris (mainly concrete and asphalt) and has subsequently been mass graded to fill the site to the current grades. Some construction debris remains and this project will mitigate the soil as necessary, which includes removal of the deleterious material where encountered during over-excavation required to provide the specified engineered fill.

The site topography slopes generally from east to west and is covered with very limited natural vegetation. Per the attached Pre-Developed Conditions Basin Map, the site consists of a total of 2 distinct basins within the subject property, while flows from the Capstone Phase I project are routed through the property to an existing 24" CMP discharging into the AMAFCA South Diversion Channel. The Capstone Phase I project incorporated detention basins to attenuate the flows into the existing 24" CMP due to capacity limitations, however, the South Diversion Channel has adequate capacity for free discharge, per correspondence dated June 25, 2013, attached. The adjacent property to the east (Basin EX B-2) flows into an existing storm drain which discharges into the South Diversion Channel.

The proposed development will encompass portions of Basin B-2 and Basin C-1 as designated in the Drainage Management Plan for Capstone Student Housing report, attached for reference.

Post-Developed Conditions

The proposed project currently consists only of what had been designed as Capstone Phase 2 and contains approximately 8.3 acres. The first phase corresponds with the newly developed Capstone Student Housing, and the third phase will be left undeveloped at this time and a separate drainage management plan will be required prior to development of that area. Per the attached Post-Developed Conditions Basin Map, the site will consist of 2 basins onsite for the development of an office building and associated parking facilities.

The proposed grading and drainage plan is configured to accept flows from Capstone Phase I via an existing 36-inch RCP into a detention pond within Basin D-2 which will function as a single-interconnected pond with existing ponds B-1 and B-2. The capacity of the existing ponds is based on as-built information. The bottom two feet of the pond are sized to retain the first flush volume and are not included in the detention calculations. Discharge from this pond will be through a CMP riser and an emergency overflow weir is provided to accommodate the 100-year storm should the outlet become clogged.

This pond will discharge via a proposed 30-inch storm drain pipe with a manhole junction at Pond D-1 to the north. Drainage from Pond D-1, which accepts flows from Basin D-1, will likewise drain through a CMP riser connected to the junction manhole and outlet directly into the South Diversion Channel through a 36-inch storm drain pipe near the outlet of the existing 24-inch CMP which will be abandoned after the new system is installed. The pond on Basin D-1 will also be configured to retain the necessary first-flush volume in the first two feet of depth. An emergency overflow weir is provided to accommodate the 100-year storm should the outlet become clogged.

Water Quality Management

Discharge from the developed portions of the project will be captured in the detention/retention ponds which are sized to retain the first-flush flows. Calculations for sizing are provided in the appendix to this report.

Conclusion

This Drainage Management Plan provides for grading and drainage elements which are capable of safely conveying the 100-Yr, 6-Hr storm and which meet City requirements, as well as meeting the water quality requirements. With this submittal, we request Drainage Report and Grading Plan approvals for the Site Plan for Building Permit application.

DPM Weighted E Method

Precipitation Zone 2

MULTI-SPECIALTY CLINIC

2901 Transport St, SE

TWLLC/JH, PE **14-Sep-15**

Existing Conditions

Basin Descriptions																	
				Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-Hr			10-Year, 6-Hr		
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
B-1	475,425.00	10.91	0.01705	0%	0	0%	0.000	15%	1.6371384	85%	9.277	1.972	1.793	48.74	1.217	1.107	31.93
Ex-B2	183,206.00	4.21	0.00657	0%	0	0%	0.000	100%	4.205831	0%	0.000	1.130	0.396	13.21	0.520	0.182	7.19
Ex-B3	307,640.00	7.06	0.01104	0%	0	0%	0.000	100%	7.0624426	0%	0.000	1.130	0.665	22.18	0.520	0.306	12.08
Ex-C	131,863.00	3.03	0.00473	0%	0	0%	0.000	100%	3.0271579	0%	0.000	1.130	0.285	9.51	0.520	0.131	5.18
Total	**1,098,134.00**	**25.210**	**0.03939**										**3.139**	**93.63**		**1.726**	**56.37**

Notes:

Developed Conditions

Basin Descriptions																	
				Treatment A		Treatment B		Treatment C		Treatment D		100-Year, 6-Hr			10-Year, 6-Hr		
Basin ID	Area (sf)	Area (acres)	Area (sq miles)	%	(acres)	%	(acres)	%	(acres)	%	(acres)	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs
D-1	232,936.00	5.35	0.00836	0%	0	0%	0.000	30%	1.5828525	70%	3.765	1.827	0.814	22.66	1.097	0.489	14.53
D-2	155,279.00	3.56	0.00557	0%	0	0%	0.000	42%	1.4971804	58%	2.068	1.704	0.506	14.42	0.996	0.296	9.05
C-1A	35,532.00	0.82	0.00127	0%	0	0%	0.000	79%	0.644405	21%	0.171	1.338	0.091	2.83	0.692	0.047	1.64
B-1	475,425.00	10.91	0.01705	0%	0	0%	0.000	15%	1.6371384	85%	9.277	1.972	1.793	48.74	1.217	1.107	31.93
B-2A	183,206.00	4.21	0.00657	0%	0	0%	0.000	100%	4.205831	0%	0.000	1.130	0.396	13.21	0.520	0.182	7.19
	35,532.00	0.82	0.00127	0%	0	0%	0.000	79%	0.644405	21%	0.171	1.338	0.091	2.83	0.692	0.047	1.64
Total	**1,117,910.00**	**25.664**	**0.04010**										**3.691**	**104.69**		**2.168**	**65.98**

Notes:

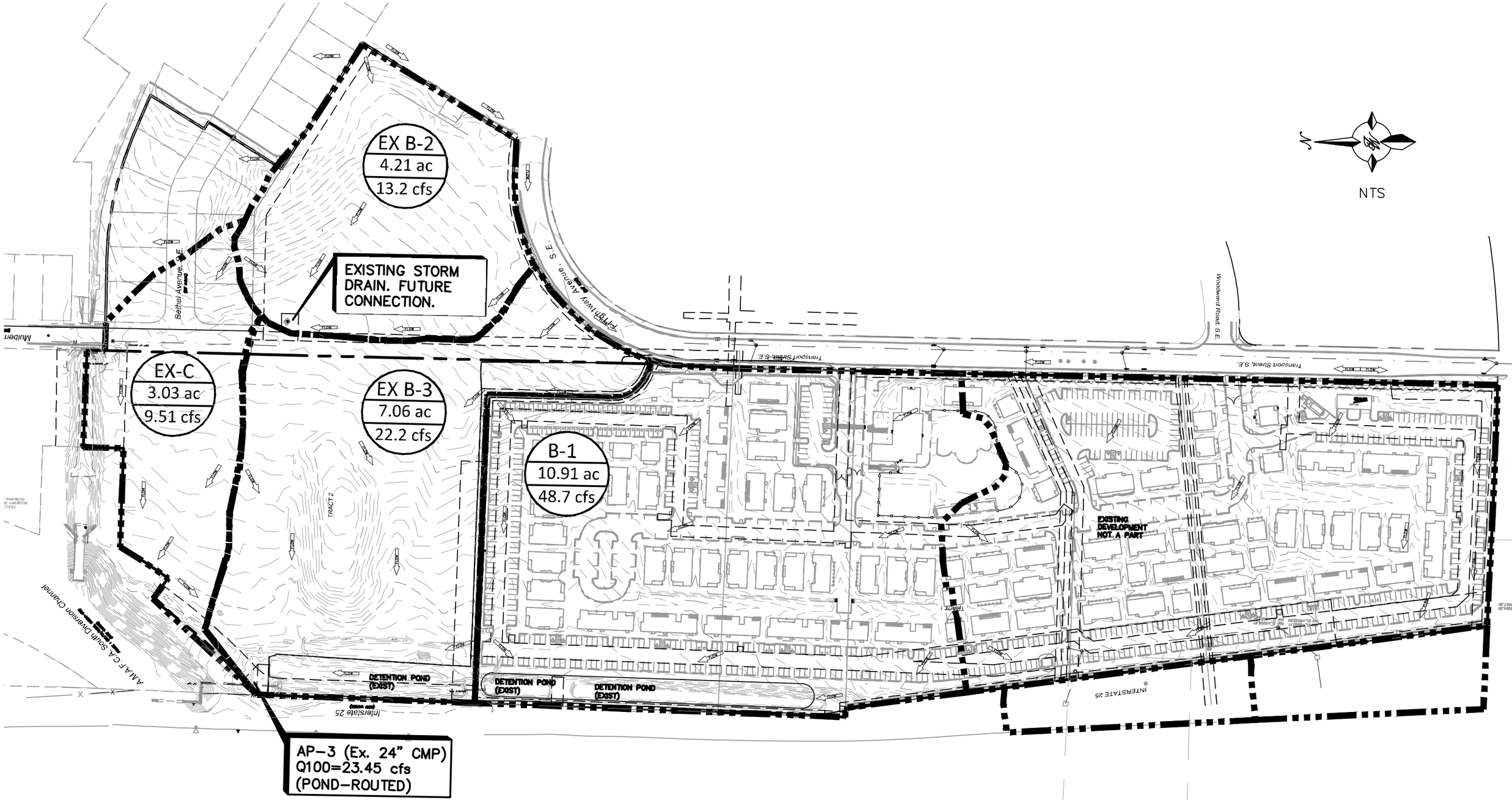
Equations:

Weighted E = $E_a*A_a + E_b*A_b + E_c*A_c + E_d*A_d$ / (Total Area)

Volume = Weighted D * Total Area

Flow = $Q_a * A_a + Q_b * A_b + Q_c * A_c + Q_d * A_d$

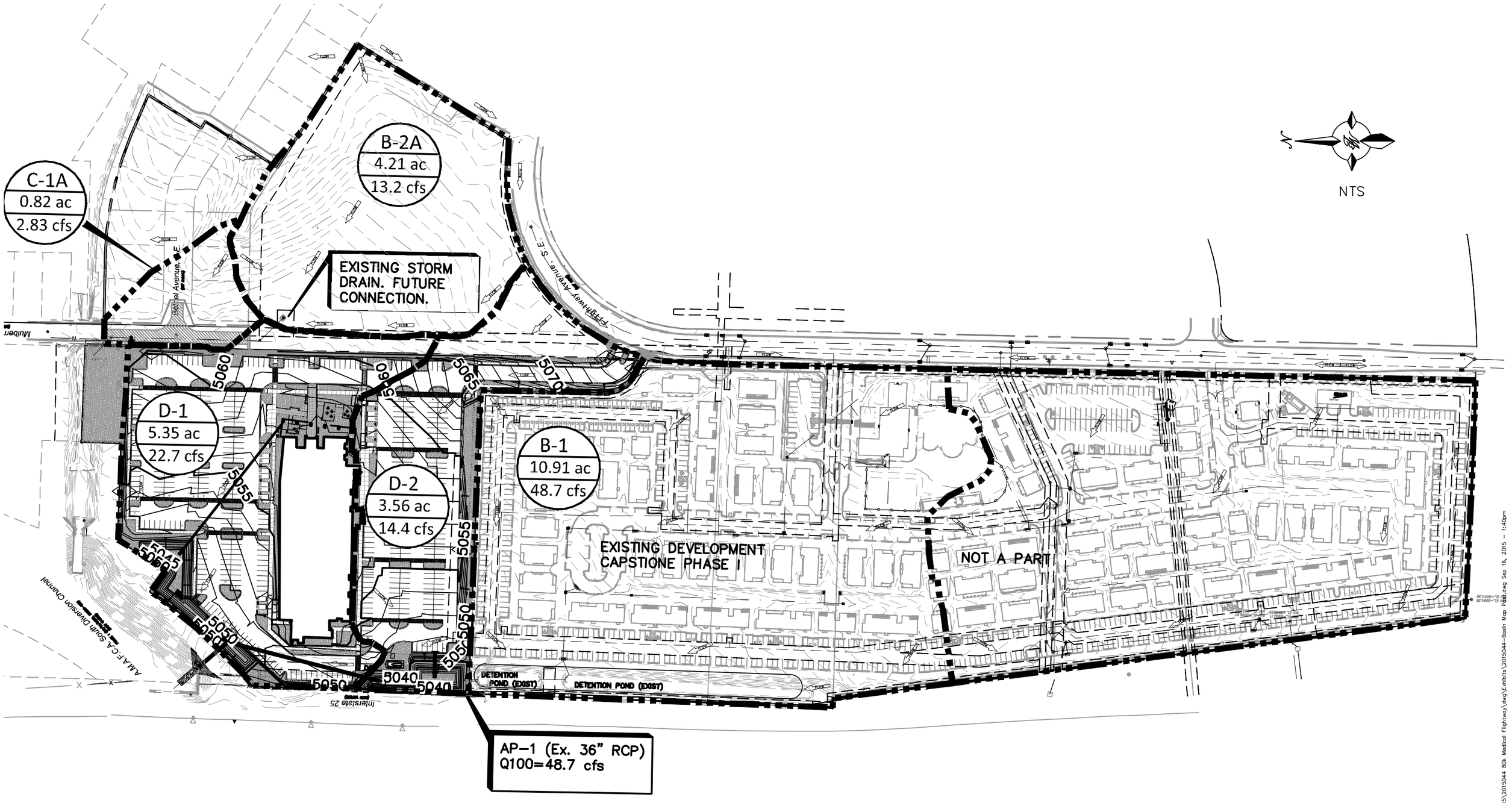
MULTI-SPECIALTY CLINIC
PRE-DEVELOPED BASIN MAP



DATE PREPARED: 6-30-15

Z:\2015\2015044 80k Medical Flightway\dwg\Exhibits\2015044-Basin Map Predevg Jul 02, 2015 - 3:41pm

MULTI-SPECIALTY CLINIC
POST-DEVELOPED BASIN MAP



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NTS

DATE PREPARED: 9-15-15

Z:\2015\2015044 80A Medical Flightway\dwg\Exhibits\2015044-Basin Map P&D.dwg Sep 16, 2015 - 1:40pm

FIRST FLUSH RETENTION VOLUME CALCULATIONS

SOUTH POND (D-2) RETENTION VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)
5037	953	0	0
5038	1440	1196.5	1197
5039	1997	1718.5	**2915**

VOLUME PROVIDED: **2915**

VOLUME REQUIRED:

IMPERVIOUS AREA: 90,154 sf

VOLUME REQUIRED= (0.44-0.1)/12= **2,554 cf**

OK

NORTH POND (D-1) RETENTION VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)
5045	1735	0	0
5046	2606	2170.5	2170.5
5047	3588	3097	**5267.5**

VOLUME PROVIDED: **5268**

VOLUME REQUIRED:

IMPERVIOUS AREA: 164,025 sf

VOLUME REQUIRED= (0.44-0.1)/12= **4,647 cf**

OK

Pond Discharge-Orifice Calculations (Pond D-1)

OFFSITE POND B-1 VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)
5047	4271	0	0
5048	6202	5236.5	5237
5049	8210	7206	12443
5050	10294	9252	21695
5051	15375	12834.5	34529

ACTUAL ELEV.	DEPTH (FT)	VOLUME (CF)	Q (CFS)	VOLUME (AC-FT)
47.00	0	0	0.00	
48.00	1.00	5237	11.88	0.1202135
49.00	2.00	12443	18.31	0.2856405
50.00	3.00	21695	24.18	0.49803719

Orifice Equation

Q = CA SQRT(2gH)

C = 0.6
Diameter 2.5
Area (ft^2 0.034
g = 32.2
H (Ft) = Depth of water above center of orifice
Q (CFS)= Flow

Pond Discharge-Orifice Calculations (Pond D-2)

OFFSITE POND B-1 VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)
5039	7118	0	0
5040	9192	8155	8155
5041	11206	10199	18354
5042	13265	12235.5	30590
5043	15375	14320	44910

OFFSITE POND B-2 VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)
5039	2964	0	0
5040	3498	3231	3231
5041	4057	3777.5	7008.5
5042	4642	4349.5	11358
5042.5	4943	2396.25	13754.25

ONSITE POND D-2 VOLUME CALCULATIONS

ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)
5039	2675	0	0
5040	3785	3230	3230
5041	4977	4381	7611
5042	6252	5614.5	13226
			13226

***NOTE: THREE PONDS INTERCONNECTED THEREFORE SUM USED**

ACTUAL ELEV.	DEPTH (FT)	VOLUME (CF)	Q (CFS)	VOLUME (AC-FT)
39.00	0	0	0.00	
40.00	1.00	14616	28.57	0.33553719
41.00	2.00	32974	42.92	0.7569674
42.00	3.00	55173	55.52	1.2665978

Orifice Equation

Q = CA SQRT(2gH)

C =	0.6
Diameter	3
Area (ft^2	0.049
g =	32.2

H (Ft) = Depth of water above center of orifice

Q (CFS)= Flow

```
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01a
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              START TIME (HR:MIN:SEC) = 16:06:34     USER NO.=
TierraWest-SiteA99368577
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    ********************************************************************

    *               Multi Specialty Clinic, ALBUQUERQUE, NM            *

    ********************************************************************

    * 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ routing *

    ********************************************************************

    *

    START                TIME=0.0

    *

    *

    RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN

                         RAIN ONE=2.01 IN RAIN SIX=2.35 IN

                         RAIN DAY=2.75 IN DT=0.05 HR


                       24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR
CONVECTIVE AREAS (NM & AZ) - D1
                       DT =   0.050000 HOURS       END TIME =    24.000002 HOURS
                         0.0000  0.0023  0.0046  0.0071  0.0099  0.0127  0.0159
                         0.0203  0.0272  0.0347  0.0424  0.0509  0.0595  0.0684
                         0.0776  0.0870  0.0974  0.1084  0.1204  0.1437  0.1728
                         0.2117  0.2559  0.3104  0.3831  0.4649  0.6062  0.8258
                         1.2021  1.4666  1.6752  1.7800  1.8719  1.9379  1.9905
                         2.0362  2.0697  2.1005  2.1259  2.1418  2.1530  2.1629
                         2.1722  2.1803  2.1879  2.1953  2.2025  2.2084  2.2118
                         2.2152  2.2186  2.2217  2.2247  2.2278  2.2307  2.2336
                         2.2363  2.2391  2.2417  2.2443  2.2469  2.2494  2.2518
                         2.2542  2.2565  2.2588  2.2611  2.2633  2.2654  2.2676
                         2.2697  2.2717  2.2738  2.2758  2.2778  2.2798  2.2817
                         2.2837  2.2856  2.2874  2.2893  2.2911  2.2930  2.2948
                         2.2965  2.2983  2.3000  2.3017  2.3034  2.3051  2.3068
                         2.3084  2.3100  2.3117  2.3133  2.3148  2.3164  2.3180
                         2.3195  2.3210  2.3225  2.3240  2.3255  2.3269  2.3284
                         2.3298  2.3313  2.3327  2.3341  2.3355  2.3368  2.3382
                         2.3396  2.3409  2.3422  2.3436  2.3449  2.3462  2.3474
                         2.3487  2.3500  2.3513  2.3525  2.3538  2.3551  2.3563
                         2.3576  2.3589  2.3601  2.3614  2.3627  2.3639  2.3652
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                         2.3753  2.3765  2.3778  2.3790  2.3803  2.3815  2.3828
                         2.3840  2.3853  2.3865  2.3878  2.3890  2.3903  2.3915
                         2.3927  2.3940  2.3952  2.3965  2.3977  2.3989  2.4002
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                         2.4272  2.4284  2.4296  2.4308  2.4320  2.4333  2.4345
                         2.4357  2.4369  2.4381  2.4393  2.4405  2.4417  2.4429
                         2.4441  2.4453  2.4465  2.4478  2.4490  2.4502  2.4514
```

2.4526 2.4538 2.4550 2.4561 2.4573 2.4585 2.4597
2.4609 2.4621 2.4633 2.4645 2.4657 2.4669 2.4681
2.4692 2.4704 2.4716 2.4728 2.4740 2.4752 2.4764
2.4775 2.4787 2.4799 2.4811 2.4822 2.4834 2.4846
2.4858 2.4869 2.4881 2.4893 2.4905 2.4916 2.4928
2.4940 2.4951 2.4963 2.4975 2.4986 2.4998 2.5010
2.5021 2.5033 2.5044 2.5056 2.5068 2.5079 2.5091
2.5102 2.5114 2.5125 2.5137 2.5148 2.5160 2.5171
2.5183 2.5194 2.5206 2.5217 2.5229 2.5240 2.5252
2.5263 2.5274 2.5286 2.5297 2.5309 2.5320 2.5331
2.5343 2.5354 2.5365 2.5377 2.5388 2.5399 2.5411
2.5422 2.5433 2.5445 2.5456 2.5467 2.5478 2.5490
2.5501 2.5512 2.5523 2.5535 2.5546 2.5557 2.5568
2.5579 2.5590 2.5602 2.5613 2.5624 2.5635 2.5646
2.5657 2.5668 2.5679 2.5691 2.5702 2.5713 2.5724
2.5735 2.5746 2.5757 2.5768 2.5779 2.5790 2.5801
2.5812 2.5823 2.5834 2.5845 2.5856 2.5867 2.5878
2.5889 2.5899 2.5910 2.5921 2.5932 2.5943 2.5954
2.5965 2.5976 2.5986 2.5997 2.6008 2.6019 2.6030
2.6040 2.6051 2.6062 2.6073 2.6084 2.6094 2.6105
2.6116 2.6126 2.6137 2.6148 2.6159 2.6169 2.6180
2.6191 2.6201 2.6212 2.6223 2.6233 2.6244 2.6254
2.6265 2.6276 2.6286 2.6297 2.6307 2.6318 2.6328
2.6339 2.6350 2.6360 2.6371 2.6381 2.6392 2.6402
2.6413 2.6423 2.6433 2.6444 2.6454 2.6465 2.6475
2.6486 2.6496 2.6506 2.6517 2.6527 2.6538 2.6548
2.6558 2.6569 2.6579 2.6589 2.6600 2.6610 2.6620
2.6630 2.6641 2.6651 2.6661 2.6672 2.6682 2.6692
2.6702 2.6712 2.6723 2.6733 2.6743 2.6753 2.6763
2.6774 2.6784 2.6794 2.6804 2.6814 2.6824 2.6834
2.6844 2.6854 2.6865 2.6875 2.6885 2.6895 2.6905
2.6915 2.6925 2.6935 2.6945 2.6955 2.6965 2.6975
2.6985 2.6995 2.7005 2.7015 2.7025 2.7034 2.7044
2.7054 2.7064 2.7074 2.7084 2.7094 2.7104 2.7114
2.7123 2.7133 2.7143 2.7153 2.7163 2.7172 2.7182
2.7192 2.7202 2.7211 2.7221 2.7231 2.7241 2.7250
2.7260 2.7270 2.7280 2.7289 2.7299 2.7309 2.7318
2.7328 2.7338 2.7347 2.7357 2.7366 2.7376 2.7386
2.7395 2.7405 2.7414 2.7424 2.7433 2.7443 2.7452
2.7462 2.7472 2.7481 2.7491 2.7500

*DEVELOPED CONDITIONS

*

*BASIN B-1

*

COMPUTE NM HYD ID=1 HYD NO=100.1 AREA=0.01705 SQ MI

PER A=0.00 PER B=0.00 PER C=15.0 PER D=85.00

TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000
SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 57.217 CFS UNIT VOLUME = 0.9989 B = 526.28 P60 = 2.0100
AREA = 0.014493 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

```
         K =  0.107446HR    TP =  0.133300HR    K/TP RATIO =  0.806046
SHAPE CONSTANT, N =  4.440407
         UNIT PEAK =   7.3586    CFS   UNIT VOLUME =    1.000       B =
383.54      P60 = 2.0100
         AREA =     0.002558 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT =  0.050000

    PRINT HYD           ID=1 CODE=1


                                       PARTIAL HYDROGRAPH   100.10


        RUNOFF VOLUME =     2.31096 INCHES     =       2.1014 ACRE-FEET
        PEAK DISCHARGE RATE =      50.21 CFS  AT   1.500 HOURS   BASIN AREA =
0.0171 SQ. MI.



    *

    *

    *BASIN D-2

    *

    COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.00557 SQ MI

                        PER A=0.00 PER B=0.00 PER C=42.0 PER D=58.0

                        TP=-0.1333 HR MASS RAINFALL=-1


         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000
SHAPE CONSTANT, N =  7.106428
         UNIT PEAK =   12.755    CFS   UNIT VOLUME =   0.9983       B =
526.28      P60 = 2.0100
         AREA =     0.003231 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT =  0.050000


         K =  0.107446HR    TP =  0.133300HR    K/TP RATIO =  0.806046
SHAPE CONSTANT, N =  4.440407
         UNIT PEAK =   6.7310    CFS   UNIT VOLUME =    1.000       B =
383.54      P60 = 2.0100
         AREA =     0.002339 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT =  0.050000

    PRINT HYD           ID=2 CODE=1


                                       PARTIAL HYDROGRAPH   100.20


        RUNOFF VOLUME =     1.96150 INCHES     =       0.5827 ACRE-FEET
        PEAK DISCHARGE RATE =      15.07 CFS  AT   1.500 HOURS   BASIN AREA =
0.0056 SQ. MI.
```

```
    *
    *
    *BASIN D-1
    *
    COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.00836 SQ MI
                        PER A=0.00 PER B=0.00 PER C=29.6 PER D=70.40
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000
SHAPE CONSTANT, N =  7.106428
         UNIT PEAK =   23.236    CFS   UNIT VOLUME =   0.9986       B =
526.28      P60 = 2.0100
         AREA =     0.005885 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT =  0.050000


         K =  0.107446HR    TP =  0.133300HR    K/TP RATIO =  0.806046
SHAPE CONSTANT, N =  4.440407
         UNIT PEAK =   7.1199    CFS   UNIT VOLUME =    1.000       B =
383.54      P60 = 2.0100
         AREA =     0.002475 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD -
DT =  0.050000

    PRINT HYD           ID=3 CODE=1

                                      PARTIAL HYDROGRAPH   100.30

        RUNOFF VOLUME =     2.12200 INCHES     =       0.9461 ACRE-FEET
        PEAK DISCHARGE RATE =      23.54 CFS  AT   1.500 HOURS   BASIN AREA =
0.0084 SQ. MI.
                        BASIS FOR POND D-1 EMERGENCY WEIR
                        OVERFLOW CALC
    *
    *
    *
    *
    ADD HYD                         ID=50 HYD NO=100.21 ID=1 ID=2
    *
    *
    PRINT HYD           ID=50 CODE=1

                                      PARTIAL HYDROGRAPH   100.21
```

```
        RUNOFF VOLUME =     2.22489 INCHES     =       2.6841 ACRE-FEET
        PEAK DISCHARGE RATE =      65.28 CFS  AT    1.500 HOURS   BASIN AREA =
0.0226 SQ. MI.
```

BASIS FOR POND D-2 EMERCENCY WEIR OVERFLOW CALC

```
    *
    *
    *ROUTE BASIN B-1 and D-2 THROUGH SOUTH DETENTION PONDS
    ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24
                            OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                                    0.0            0.0                 39.00
                                    28.57          0.3355              40.00
                                    42.920         0.7569              41.00
                                    55.520         1.2666              42.00

      *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

        TIME      INFLOW    ELEV      VOLUME    OUTFLOW
        (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

         0.00       0.00     39.00       0.000      0.00
         1.20       8.68     39.17       0.056      4.77
         2.40       2.11     39.15       0.051      4.31
         3.60       0.11     39.00       0.001      0.13
         4.80       0.17     39.01       0.002      0.16
         6.00       0.28     39.01       0.003      0.27
         7.20       0.29     39.01       0.003      0.29
         8.40       0.28     39.01       0.003      0.28
         9.60       0.28     39.01       0.003      0.28
        10.80       0.27     39.01       0.003      0.27
        12.00       0.27     39.01       0.003      0.27
        13.20       0.26     39.01       0.003      0.26
        14.40       0.26     39.01       0.003      0.26
        15.60       0.25     39.01       0.003      0.25
        16.80       0.25     39.01       0.003      0.25
        18.00       0.24     39.01       0.003      0.24
        19.20       0.24     39.01       0.003      0.24
        20.40       0.24     39.01       0.003      0.23
        21.60       0.23     39.01       0.003      0.23
        22.80       0.22     39.01       0.003      0.22
        24.00       0.22     39.01       0.003      0.22
     PEAK DISCHARGE =       39.454 CFS - PEAK OCCURS AT HOUR    1.65
     MAXIMUM WATER SURFACE ELEVATION =       40.758
     MAXIMUM STORAGE =        0.6551 AC-FT      INCREMENTAL TIME=
0.050000HRS
```

<TOP OF POND EL=42.0 (1.25' FB), OK

```
    *
    *
    PRINT HYD           ID=55  CODE=1

                                    PARTIAL HYDROGRAPH   200.10
```

```
        RUNOFF VOLUME =     2.22489 INCHES     =       2.6841 ACRE-FEET
        PEAK DISCHARGE RATE =      39.45 CFS  AT   1.650 HOURS   BASIN AREA =
0.0226 SQ. MI.


    *

    *ROUTE BASIN D-1 THROUGH NORTH DETENTION POND

    ROUTE RESERVOIR     ID=56 HYD NO=200.2 INFLOW ID=3 CODE=24

                          OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)

                                  0.0            0.0                 47.00

                                  11.880         0.1202              48.00

                                  18.310         0.2856              49.00

                                  24.180         0.4980              50.00

      *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

         TIME      INFLOW    ELEV      VOLUME    OUTFLOW
         (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

          0.00       0.00     47.00       0.000      0.00
          1.20       2.89     47.14       0.017      1.71
          2.40       0.75     47.11       0.013      1.29
          3.60       0.04     47.00       0.000      0.04
          4.80       0.06     47.00       0.001      0.05
          6.00       0.09     47.01       0.001      0.09
          7.20       0.09     47.01       0.001      0.10
          8.40       0.09     47.01       0.001      0.09
          9.60       0.09     47.01       0.001      0.09
         10.80       0.09     47.01       0.001      0.09
         12.00       0.09     47.01       0.001      0.09
         13.20       0.09     47.01       0.001      0.09
         14.40       0.09     47.01       0.001      0.09
         15.60       0.08     47.01       0.001      0.08
         16.80       0.08     47.01       0.001      0.08
         18.00       0.08     47.01       0.001      0.08
         19.20       0.08     47.01       0.001      0.08
         20.40       0.08     47.01       0.001      0.08
         21.60       0.08     47.01       0.001      0.08
         22.80       0.07     47.01       0.001      0.07
         24.00       0.07     47.01       0.001      0.07
     PEAK DISCHARGE =       15.319 CFS - PEAK OCCURS AT HOUR    1.65
     MAXIMUM WATER SURFACE ELEVATION =       48.535 <TOP OF POND EL=50.0 (1.47' FB), OK
     MAXIMUM STORAGE =        0.2087 AC-FT      INCREMENTAL TIME=
0.050000HRS

    *

    *

    PRINT HYD           ID=55  CODE=1

                                      PARTIAL HYDROGRAPH   200.10

        RUNOFF VOLUME =     2.22489 INCHES     =       2.6841 ACRE-FEET
```

PEAK DISCHARGE RATE = 39.45 CFS AT 1.650 HOURS BASIN AREA = 0.0226 SQ. MI.

*

ADD HYD ID=57 HYD NO=100.22 ID=55 ID=56

*

*

PRINT HYD ID=57 CODE=1

PARTIAL HYDROGRAPH 100.22

RUNOFF VOLUME = 2.19710 INCHES = 3.6302 ACRE-FEET
PEAK DISCHARGE RATE = 54.77 CFS AT 1.650 HOURS BASIN AREA = 0.0310 SQ. MI.

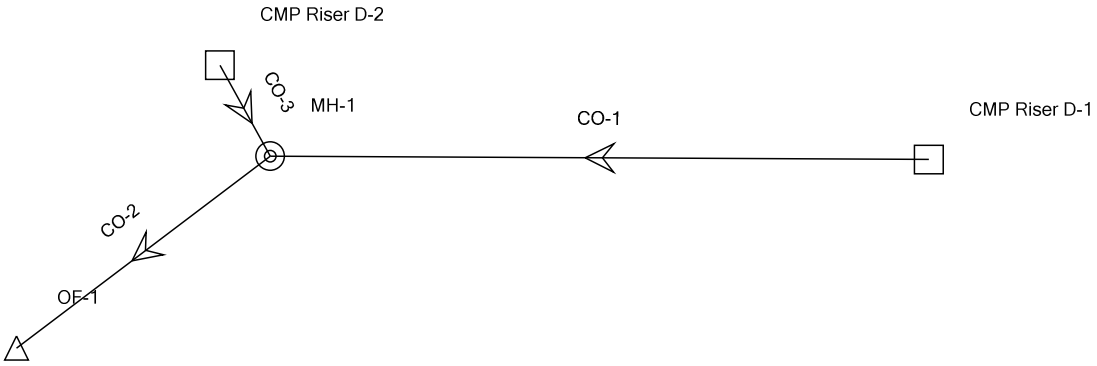
*

*

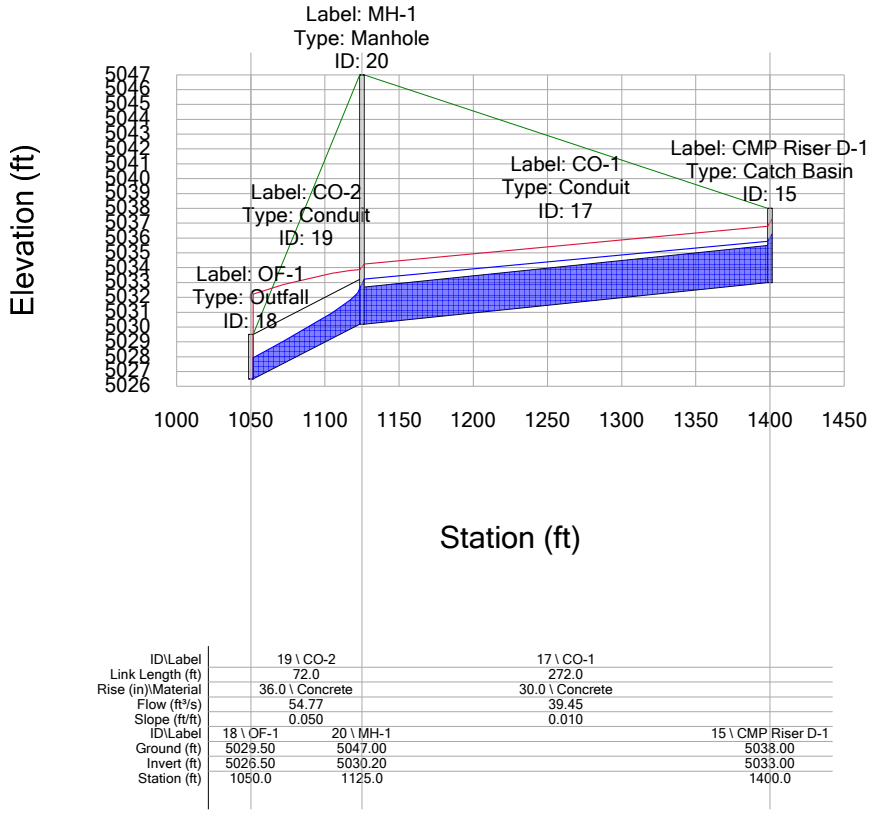
FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 16:06:34

Scenario: Base

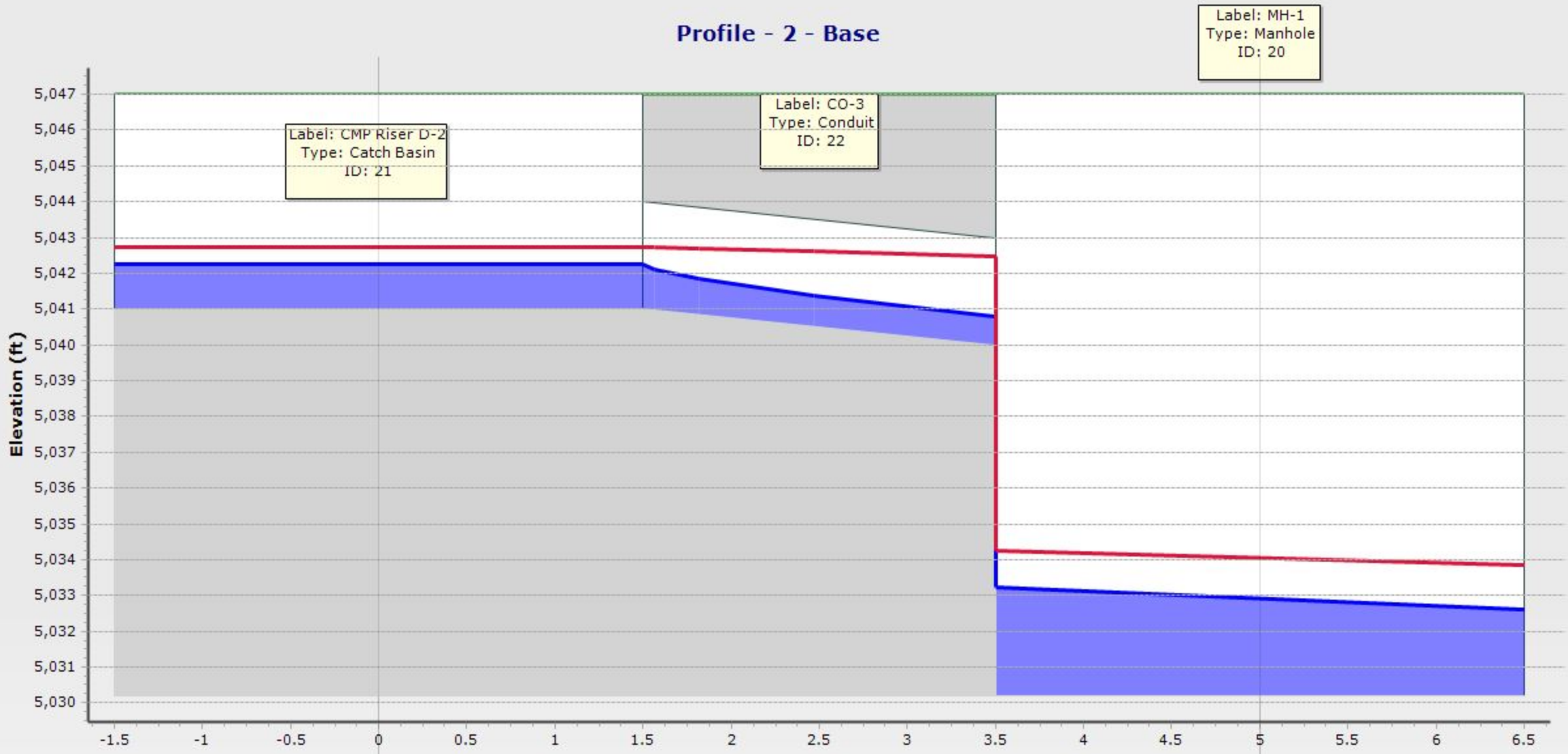


Profile Report
Profile: Profile - 1



ID\Label	19 \ CO-2		17 \ CO-1	
Link Length (ft)	72.0		272.0	
Rise (in)\Material	36.0 \ Concrete		30.0 \ Concrete	
Flow (ft³/s)	54.77		39.45	
Slope (ft/ft)	0.050		0.010	
ID\Label	18 \ OF-1	20 \ MH-1		15 \ CMP Riser D-1
Ground (ft)	5029.50	5047.00		5038.00
Invert (ft)	5026.50	5030.20		5033.00
Station (ft)	1050.0	1125.0		1400.0

Profile: Profile - 2



ID\Label		22 \ CO-3	
Link Length (ft)		2.0	
Rise (in)\Material		36.0 \ CMP	
Flow (ft³/s)		15.32	
Slope (ft/ft)		0.200	
ID\Label	21 \ CMP Riser D-2		20 \ MH-1
Ground (ft)	5047.00		5047.00
Invert (ft)	5041.00		5030.20
Station (ft)	0.0		5.0

Scenario: Base
Current Time Step: 0.000Hr
Conduit FlexTable: Combined Pipe/Node Report

Label	Start Node	Stop Node	Length (Unified) (ft)	Capacity (Full Flow) (ft^3/s)	Flow (Link) (ft^3/s)	Velocity (Average) (ft/s)	Slope (ft/ft)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)	Invert (Downstream) (ft)	Invert (Upstream) (ft)
CO-3	CMP Riser D-2	MH-1	5.0	161.56	15.32	14.39	0.200	5,042.25	5,040.79	5,040.00	5,041.00
CO-2	MH-1	OF-1	74.0	149.13	54.77	19.48	0.050	5,032.60	5,027.92	5,026.50	5,030.20
CO-1	CMP Riser D-1	MH-1	275.0	41.39	39.45	8.04	0.010	5,035.78	5,033.24	5,030.20	5,033.00

Z:\2015\2015044 80k Medical Flightway\Working Documents\Drainage\2015044 STORM Hydraulic.stc

Worksheet for Broad Crested Weir - D-2

Project Description

Solve For	Headwater Elevation

Input Data

Discharge		65.28	ft³/s
Crest Elevation		5040.90	ft
Tailwater Elevation		0.00	ft
Crest Surface Type	Gravel		
Crest Breadth		5.00	ft
Crest Length		20.00	ft

Results

Headwater Elevation		5041.95	ft
Headwater Height Above Crest		1.05	ft
Tailwater Height Above Crest		-5040.90	ft
Weir Coefficient		3.02	US
Submergence Factor		1.00	
Adjusted Weir Coefficient		3.02	US
Flow Area		21.08	ft²
Velocity		3.10	ft/s
Wetted Perimeter		22.11	ft
Top Width		20.00	ft

<5042.0, therefore OK

Worksheet for Broad Crested Weir - D-1

Project Description

Solve For	Headwater Elevation

Input Data

Discharge		23.54	ft³/s
Crest Elevation		5048.75	ft
Tailwater Elevation		0.00	ft
Crest Surface Type	Gravel		
Crest Breadth		5.00	ft
Crest Length		20.00	ft

Results

Headwater Elevation		5049.32	ft <5050.0, therefore OK
Headwater Height Above Crest		0.57	ft
Tailwater Height Above Crest		-5048.75	ft
Weir Coefficient		2.72	US
Submergence Factor		1.00	
Adjusted Weir Coefficient		2.72	US
Flow Area		11.45	ft²
Velocity		2.06	ft/s
Wetted Perimeter		21.15	ft
Top Width		20.00	ft

Worksheet for 4-ft Conc Flume at Basin D-1

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.04000	ft/ft
Bottom Width	4.00	ft
Discharge	22.66	ft³/s

Results

Normal Depth	0.47	ft	<0.5 ft, OK
Flow Area	1.89	ft²	
Wetted Perimeter	4.94	ft	
Hydraulic Radius	0.38	ft	
Top Width	4.00	ft	
Critical Depth	1.00	ft	
Critical Slope	0.00423	ft/ft	
Velocity	12.02	ft/s	
Velocity Head	2.24	ft	
Specific Energy	2.72	ft	
Froude Number	3.09		
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.47	ft
Critical Depth	1.00	ft
Channel Slope	0.04000	ft/ft
Critical Slope	0.00423	ft/ft

Capacity of a Single ‘C’ Storm Drop Inlet

Capacity of the grate:

L = 40” - 2(2"$_{ends}$) - 7(½” $_{middle\ bars}$)
= 32 1/2"
= 2.7083’

W = 25" - 13(½” $_{middle\ bars}$)
= 18.5"
= 1.54'

Area = 2.7083' x 1.54'
= 4.18 ft^2

Effective Area = 4.18- 4.18 (0.5 $_{clogging\ factor}$)
= 2.09 ft^2 at the grate

Orifice Equation

Q = CA sqrt(2gH)
Q = 0.6*2.09*sqrt(2*32.2*0.67)
Q = 8.24 cfs

Capacity of the Throat:

L = 4.00’

H = 10 ¾” - 4 ½”
= 6 ¼”
= 0.5208'

Area = 4.00' x 0.5208'
= 2.08 ft^2 at the throat

Weir Equation

Q = CLH^(3/2)
Q = 2.95 * 2.08 * 0.67^(3/2)
Q = 3.37 cfs

Total Capacity:

Q = 8.24$_{grate}$ + 3.37$_{throat}$
Q = 11.61 cfs

Check for Basin C-1A

Required Capacity =2.83 cfs < 11.61 Provided Capacity, therefore **OK**

Capacity of a Double 'C' Storm Drop Inlet

Capacity of the grate:

L = 80" - 2(2"$_{ends}$) - 14(½" $_{middle\ bars}$) – 6" $_{center\ piece}$
= 66 1/2"
= 5.25'

W = 25" - 13(½" $_{middle\ bars}$)
= 18.5"
= 1.54'

Area = 5.25' x 1.54'
= 8.09 ft^2

Effective Area = 8.09- 8.09 (0.5 $_{clogging\ factor}$)
= 4.04 ft^2 at the grate

Orifice Equation

Q = CA sqrt(2gH)
Q = 0.6*4.04*sqrt(2*32.2*0.50)
Q = 13.75 cfs

Capacity of the Throat:

L = 7.40'

H = 10 ¾" - 4 ½"
= 6 ¼"
= 0.5208'

Area = 7.40' x 0.5208'
= 3.85 ft^2 at the throat

Weir Equation

Q = CLH^(3/2)
Q = 2.95 * 3.85 * 0.50^(3/2)
Q = 4.01 cfs

Total Capacity:

Q = 15.93$_{grate}$ + 6.24$_{throat}$
Q = 17.77 cfs

Check For Basin D-2:
Required Capacity=14.42 < 17.77 Provided Capacity; therefore **OK**

Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority
2600 Prospect N.E., Albuquerque, NM 87107
Phone: (505) 884-2215 Fax: (505) 884-0214
Website: www.amafca.org

Mr. Jeff Wooten, P.E., LEED AP
Tierra West, LLC
5571 Midway Park Pl. NE
Albuquerque, NM 87109

June 25, 2013

Via E-mail

Re: Drainage Management Plan for Capstone Student Housing,
Engineer's Stamp Dated June 14, 2013

Dear Mr. Wooten:

AMAFCA approves Development Review Board action for Preliminary and Final Plat for the referenced plan. AMAFCA will sign the Final Plat. I have reviewed the drainage report and have the following comments:

1. AMAFCA recently completed a re-study of the South Diversion Channel (SDC) which indicated freeboard deficiency for the 100-year flow in certain sections. The section by Capstone does have adequate capacity, so free discharge is allowed.
2. For the Phase 1 development, some type of onsite water quality treatment will be required prior to Basin A-1 discharge to the existing 48-inch storm drain which outfalls to the SDC. This can be in the form of bio-swales, hooded, sock or similar inserts for the inlets or a water quality manhole on the storm drain.
3. The detention ponds and discharge through the existing 24-inch CMP will be acceptable for Basin B-1. However, a debris fence, similar to the photo attached to the email, will be required in the downstream pond prior to the 24-inch pipe opening.
4. Basin C-1 direct discharge to the Kirtland Channel is acceptable for Phase 1. Future development will require a controlled discharge with water quality treatment measures.
5. Basin B-2 discharge to the 24-inch CMP is acceptable for Phase 1; however, future phases of development will require a new reinforced pipe outfall to the SDC with water quality. The design will require review by the U.S. Army of Corps of Engineers.

I do not require a revised drainage report at this time, but I do request a letter response to these comments for my file. These items must be taken into consideration for Site Plan for Building Permit approval. If you have any questions, please call me at 884-2215.

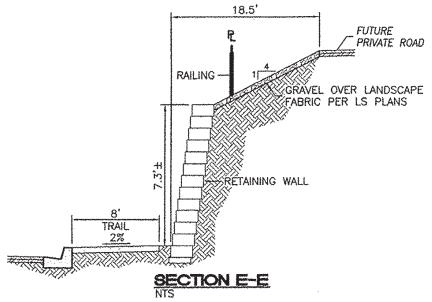
Sincerely,
AMAFCA

Lynn M. Mazur, P.E., C.F.M.
Development Review Engineer

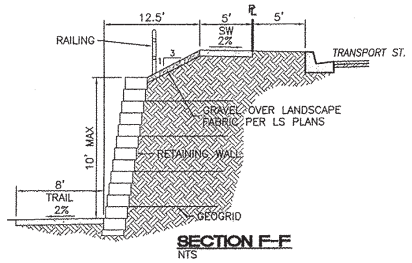
C: Curtis Cherne, City Hydrology

LEGEND

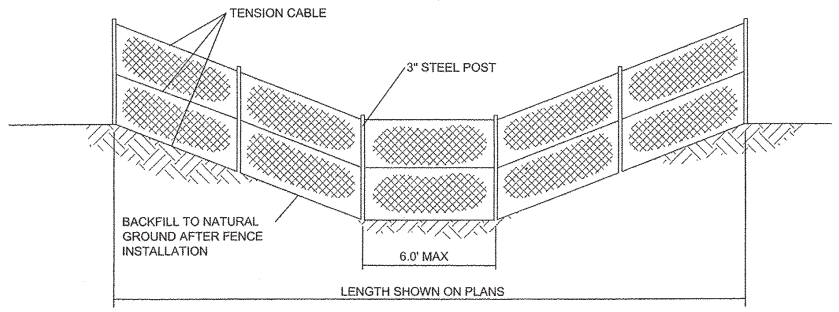
- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- SIDEWALK
- EXISTING CURB & GUTTER
- EXISTING SD MANHOLE
- EXISTING SAS MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING POWER POLE
- EXISTING GAS VALVE
- EXISTING OVERHEAD UTILITIES
- EXISTING GAS
- EX. 8" SAS — EXISTING SANITARY SEWER LINE
- EX. WL — EXISTING WATER LINE
- EX. RCP — EXISTING STORM SEWER LINE
- 4900 — EXISTING INDEX CONTOUR
- EXISTING CONTOUR



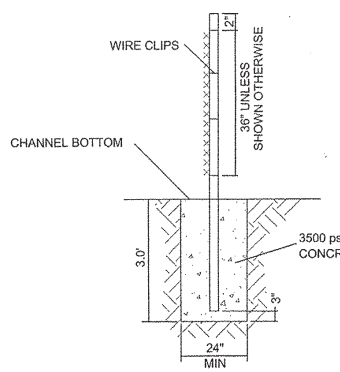
SECTION E-E
NTS



SECTION F-F
NTS



ELEVATION



SECTION

NOTES

1. FENCE FABRIC SHALL BE 2" MESH 9 GAGE GALVANIZED WIRE, CHAINLIKE PLACED ON THE UPSTREAM SIDE OF THE POSTS AND TENSION CABLES

2. TENSION CABLE SHALL BE 5/16" DIA STEEL AT 18" C/C SECURED AT ENDS WITH CLAMPS. SECURE FENCE TO CABLE WITH NO 12 GALVANIZED STEEL WIRE LOOPED AT 6" C/C

3. POSTS SHALL BE 3" DIA STEEL PIPE, 5.79 LB/FT. FILL MORTAR AFTER PLACING

4. FENCE FABRIC SHALL BE SECURED TO POSTS WITH 9 GAGE WIRE CLIPS AT 9" C/C

DEBRIS FENCE DETAIL
NTS

POND VOLUME
REQUIRED PER HYDROLOGY REPORT
= 73,798 CF
AS-BUILT PROVIDED E B-1, B-2, B3
= 78,698 CF ∴ OK

DRAINAGE CERTIFICATION BASED ON FIELD OBSERVATION AND MEASUREMENTS

DRAINAGE CERTIFICATION FOR ZONE 4

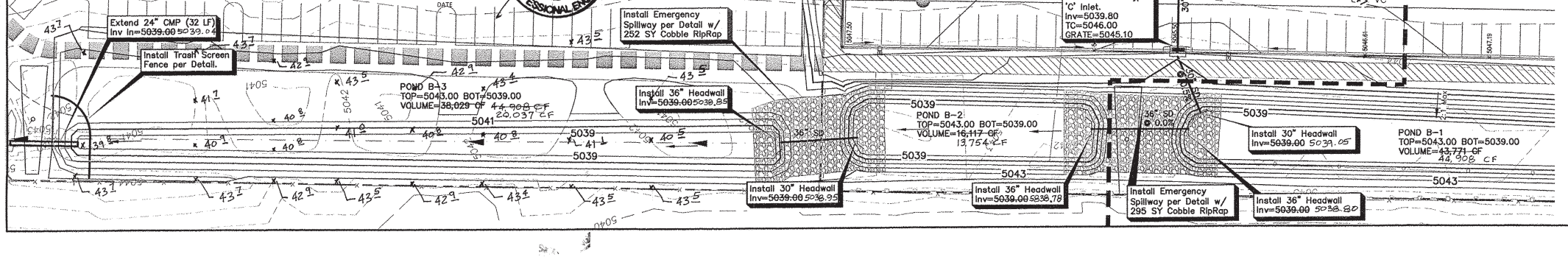
I, RONALD R. BOHANNAN, NMPE # 7868 OF THE FIRM TIERRA WEST, LLC, HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED AND WATER DRAIN IN SUBSTANTIAL COMPLIANCE WITH AND IN ACCORDANCE TO THE DESIGN INTENT OF THE APPROVED PLAN DATED 12/13/13 OR AS RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY FIELD MEASUREMENTS TAKEN ON AUGUST 13, 2014. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR DRAINAGE CERTIFICATION FOR CONDITIONAL/TEMPORARY CERTIFICATE OF OCCUPANCY.

EXCEPTIONS: AMENDED AS-BUILT DRAWING USING DATA PROVIDED BY PROFESSIONAL SURVEYOR TO BE PROVIDED PRIOR TO ISSUANCE OF PERMANENT CERTIFICATE OF OCCUPANCY.

THE RECORD INFORMATION PRESENTED HERON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE OF THE GRADING AND DRAINAGE OF THIS PROJECT. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATIONS OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

RONALD R. BOHANNAN, NMPE #7868

8/14/14
DATE



POND B-2
EMERGENCY SPILLWAY DETAIL
NTS

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

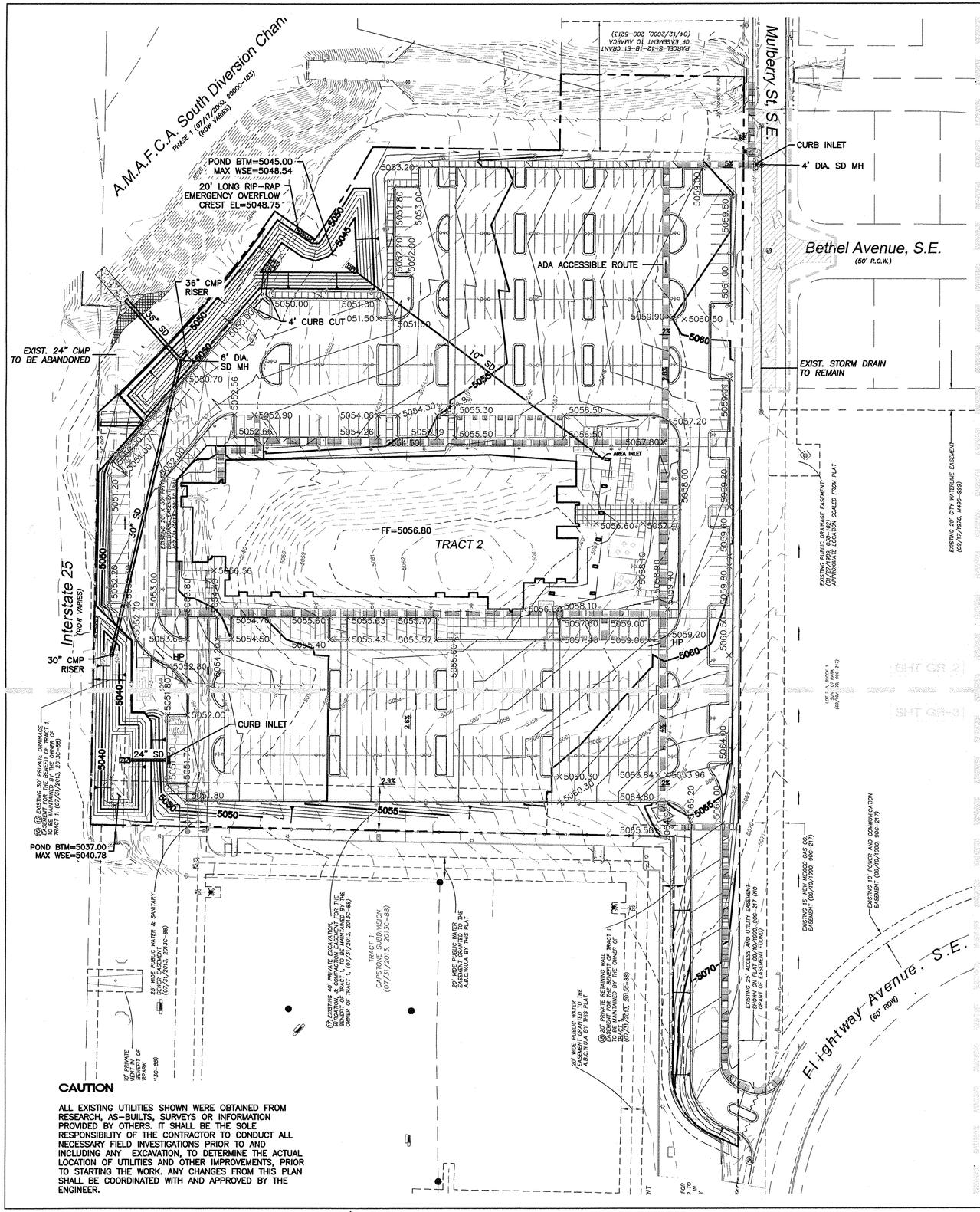
ENGINEER'S SEAL
JEFFREY TODD WOOTEN NEW MEXICO 16892 PROFESSIONAL ENGINEER
12/13/13
JEFFREY T. WOOTEN
P.E. #16892

CAPSTONE STUDENT HOUSING
ALBUQUERQUE, NM

ZONE 4
DETAILED GRADING PLAN

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

DRAWN BY: SH
DATE: 12-13-13
DRAWING: 2011064-GR
SHEET #: C5F
JOB #: 2011064



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LEGEND

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

EROSION CONTROL NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES AND CLEANUP OF SEDIMENT ACCUMULATIONS ON ADJACENT PROPERTIES AND IN PUBLIC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
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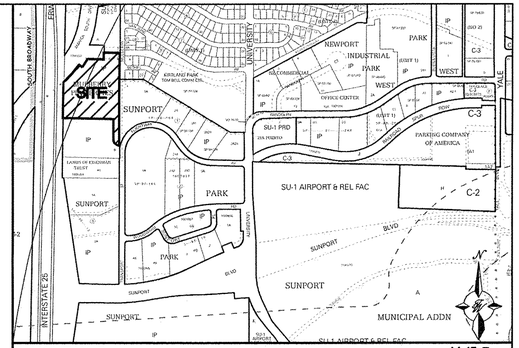
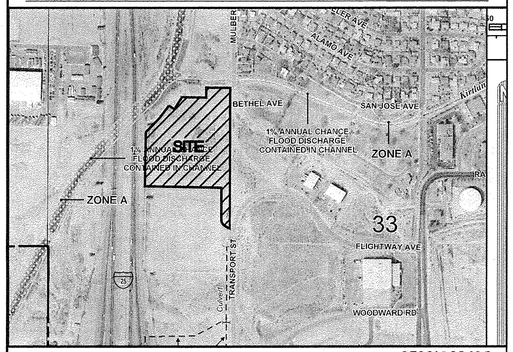


VICINITY MAP: M-15-Z



FIRM MAP: 35001C0342G

NOTICE TO CONTRACTORS

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY.
2. ALL WORK DETAILED ON THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HERON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL CONSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO TRAFFIC/STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. WORK ON ARTERIAL STREETS SHALL BE PERFORMED ON A 24-HOUR BASIS.

APPROVAL	NAME	DATE
INSPECTOR		

GRAPHIC SCALE

50 25 0 25 50

SCALE: 1"=50'

ENGINEER'S SEAL

RONALD R. BOHANNAN NEW MEXICO 7868 PROFESSIONAL ENGINEER

RONALD R. BOHANNAN P.E. #7868

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.
GRADING AND DRAINAGE PLAN

DRAWN BY: DY

DATE: 9/15/15

2015044-GRB

SHEET # GR-1

JOB # 2015044

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

A.M.A.F.C.A. South Diversion Channel
PHASE 1 (07/17/2000, 2000-
(ROW VARIES)

Interstate 25
(ROW VARIES)

Mulberry St, S.E.

Bethel Ave
(50' R

POND BTM=5045.00
MAX WSE=5048.54

20' LONG RIP-RAP
EMERGENCY OVERFLOW
CREST EL=5048.75

5'X10" RIP-RAP PAD

FIRST FLUSH POND

4' CONCRETE FLUME
SEE DETAIL SHEET SD-2

SEE SHEET SD-1
& SD-2 FOR PIPE
OUTLET DETAILS

FL=5049.40

PIPE OUTLET
W/ HEADWALL

36" SD

EXIST. 24" CMP
TO BE ABANDONED

36" CMP RISER
CREST EL=5047.00
SEE DETAIL SHEET SD-2

6' DIA. SD MH TYPE "C"
PER COA STD DWG #2101

10" SD

12"X12" AREA INLET;
NDS #1200 FOR EQUAL)
PIPE IE=5053.00

TW=5054.00
TF=5052.00

TW=5054.00
TF=5051.30

TW=5056.00
TF=5052.00

2' DEEPENED
FOOTING

4' DEEPENED
FOOTING

TW=5056.00
TF=5051.30

1' DEEPENED
FOOTING

30" SD

EXISTING 20' X 50' PRIVATE
BILLBOARD EASEMENT
(01/27/1989, C38-102)

TW=5056.00
TF=5052.00

STAIRS

SEE SHEET SD-1
FOR PROFILE

REFER TO RETAINING WALL
PLAN & PROFILE SHEET

20' WIDE RIP-RAP
EMERGENCY OVERFLOW
CREST EL=5040.90

30" CMP RISER
CREST EL=5039.00
SEE DETAIL SHEET SD-2

10'X20" RIP-RAP PAD
OVER GEOTEXTILE FABRIC

FIRST FLUSH POND

STORM INLET DOUBLE "C"
PER COA STD DWG #2205
GRATE=5051.30

TRACT 2

MATCHLINE SEE SHEET GR-3

44' 30" RCP
S=0.0214

STORM INLET SINGLE "C"
PER COA STD DWG #2205
INV (OUT)=5057.45

4' DIA. SD MH TYPE "C"
PER COA STD DWG #2101
IE=5054.37 (MATCH EXIST.)

18" SD

261'± 30" RCP S=0.019

EXIST. STORM DRAIN
TO REMAIN

57' 30" RCP
S=0.0207

REFER TO RETAINING WALL
PLAN & PROFILE SHEET

EXISTING PUBLIC DRAINAGE EASEMENT
(01/27/1989, C38-102)
APPROXIMATE LOCATION SCALED FROM PLAT

LOT 1-A, BLOCK 1
SUNSPOT PARK
(09/10/1996, 96C-217)

10' PRIVATE DRAINAGE
, THE BENEFIT OF TRACT 1,
NED BY THE OWNER OF
31/2013, 2013C-68)

LEGEND

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

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N

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

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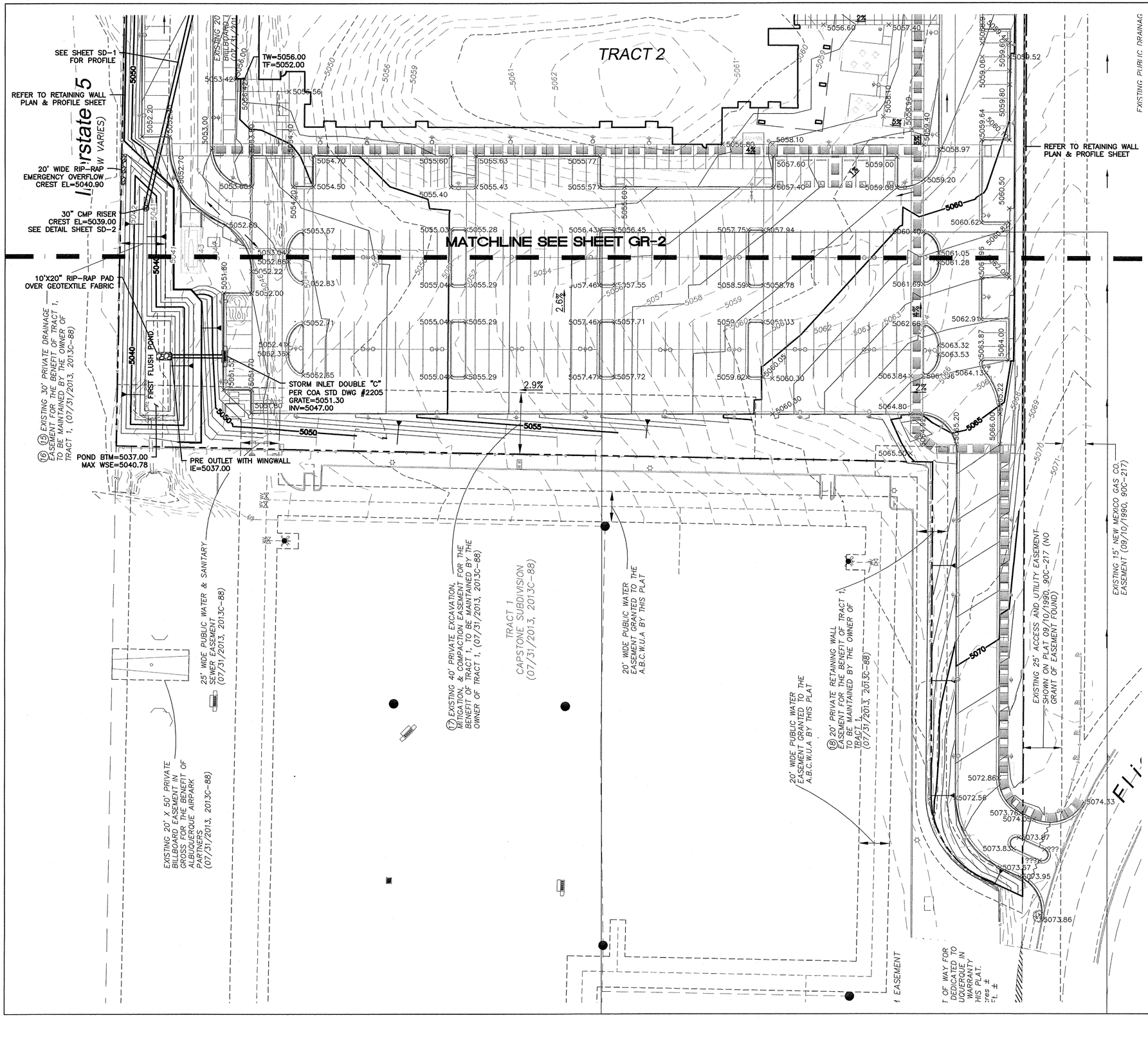
RONALD R. BOHANNAN
NEW MEXICO
7868
PROFESSIONAL ENGINEER
RONALD R. BOHANNAN
P.E. #7868

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.
GRADING AND
DRAINAGE PLAN

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

DRAWN BY
DY
DATE
9/11/15
2015044-GRB
SHEET #
GR-2
JOB #
2015044



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30 15 0 15 30

SCALE: 1"=30'

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- CURB & GUTTER
- BOUNDARY LINE
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ALBUQUERQUE, NM 87109
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www.tierrawestllc.com

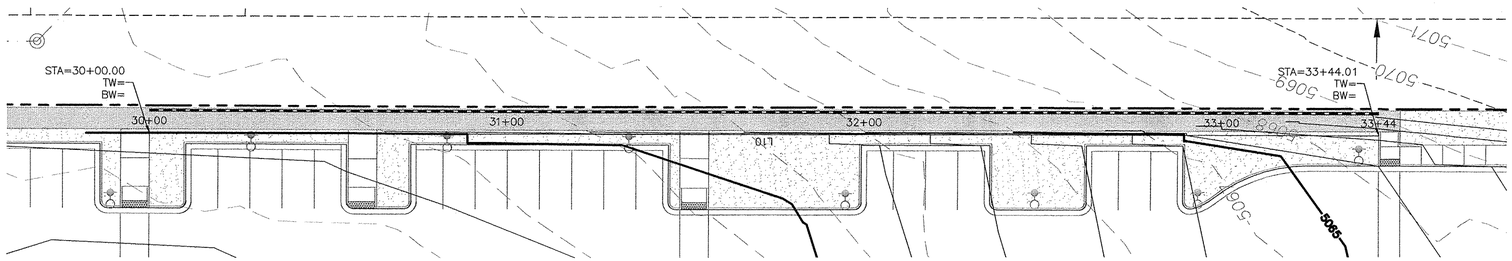
DRAWN BY: DY

DATE: 9/15/15

2015044-GRB

SHEET # GR-3

JOB # 2015044



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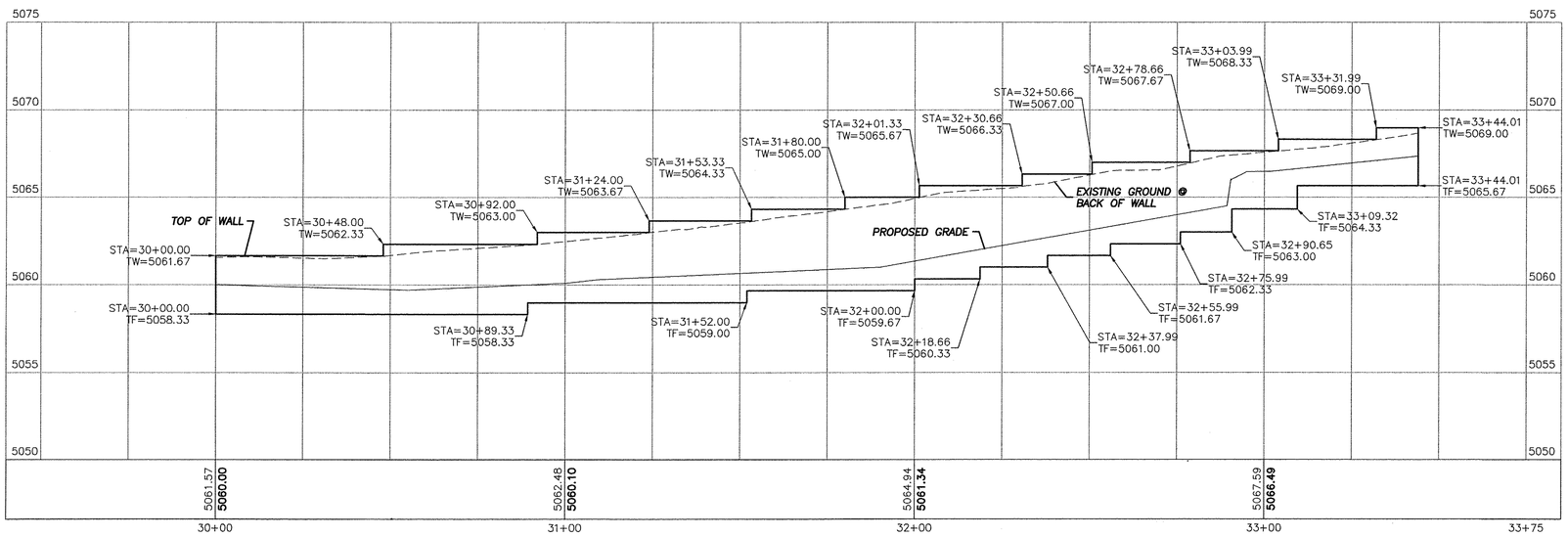
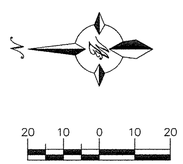
LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR

LINE TABLE		
LINE	BEARING	LENGTH
L10	N0°10'04"E	344.01

EAST RETAINING WALL





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

ENGINEER'S SEAL

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NEW MEXICO
7868
PROFESSIONAL ENGINEER

RONALD R. BOHANNAN
P.E. #7868

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.

EAST RETAINING WALL
PLAN AND PROFILE

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

DRAWN BY
DY

DATE
9/15/15

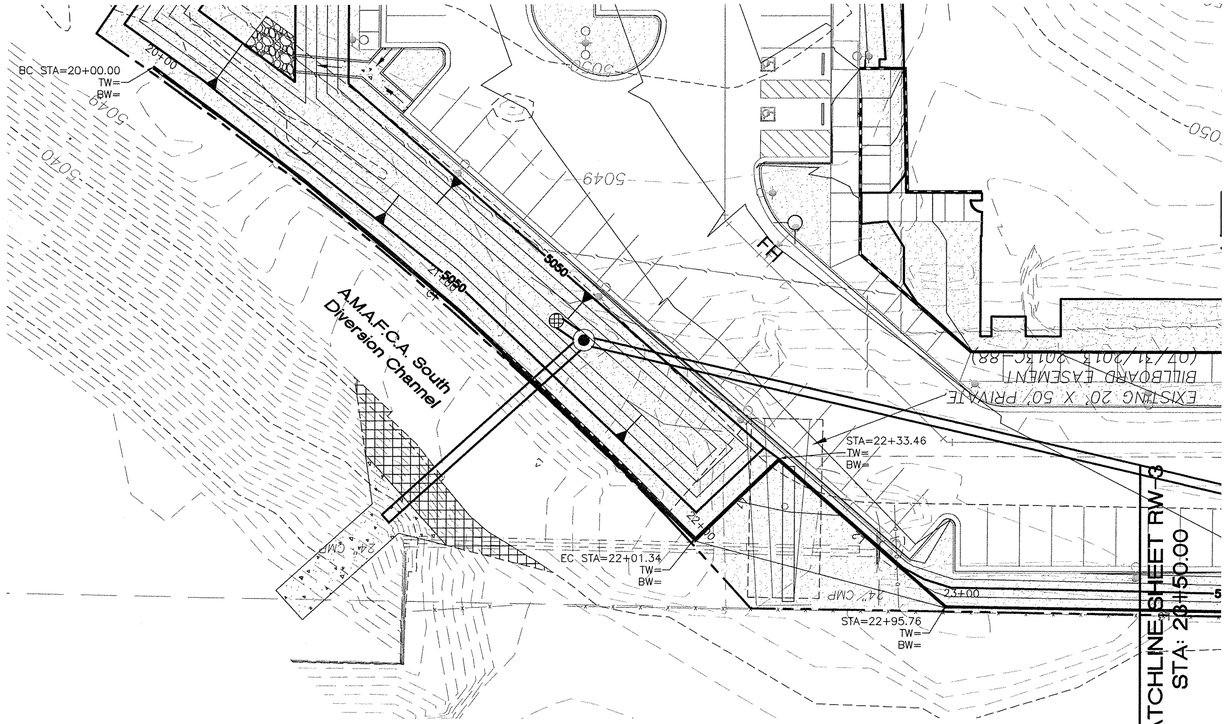
2015044-RWALLS

SHEET #
RW-1

JOB #
2015044

CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	10°57'42"	1052.35	201.34

LINE TABLE		
LINE	BEARING	LENGTH
L1	N43°28'32"W	32.13
L2	N41°15'46"E	62.30
L3	N1°01'01"E	121.87
L4	N45°57'23"W	45.17
L5	N0°00'00"W	65.70
L6	N89°56'41"W	11.19
L7	N41°25'17"W	10.72
L8	N0°10'04"E	92.41
L9	S88°48'26"E	15.58
L10	N0°10'04"E	344.01



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LEGEND

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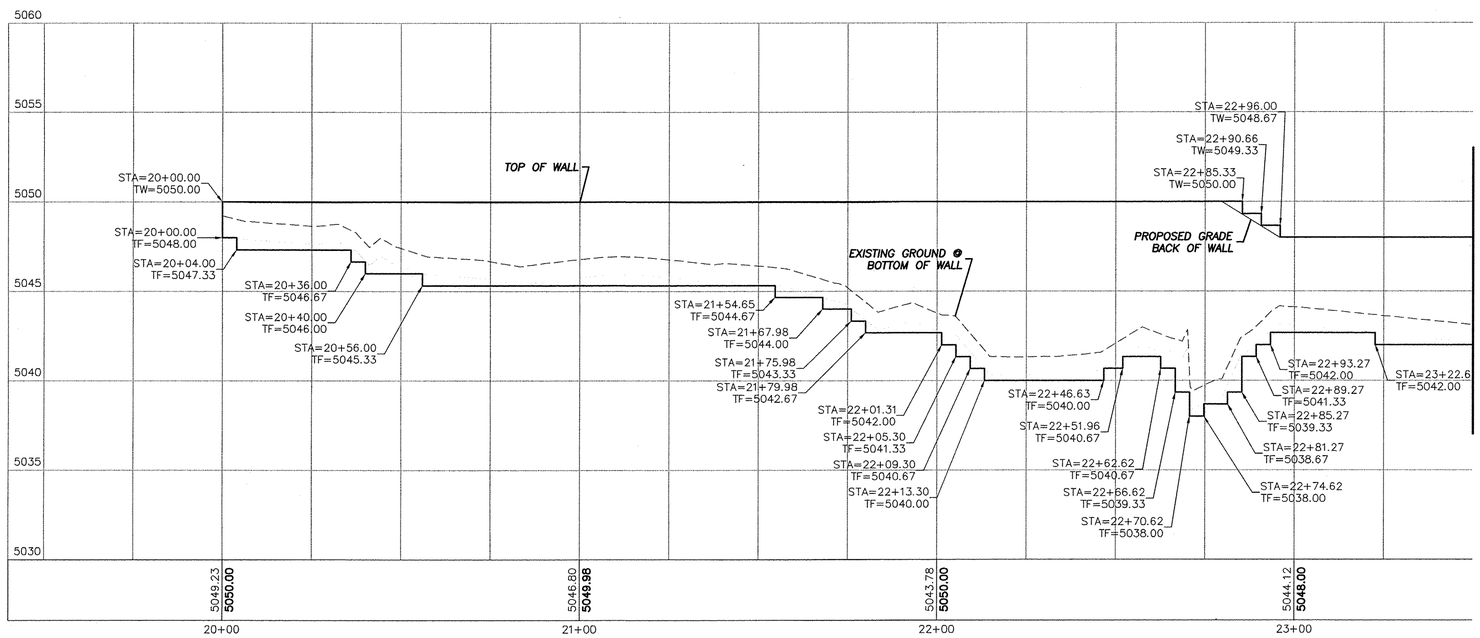
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR

WEST RETAINING WALL



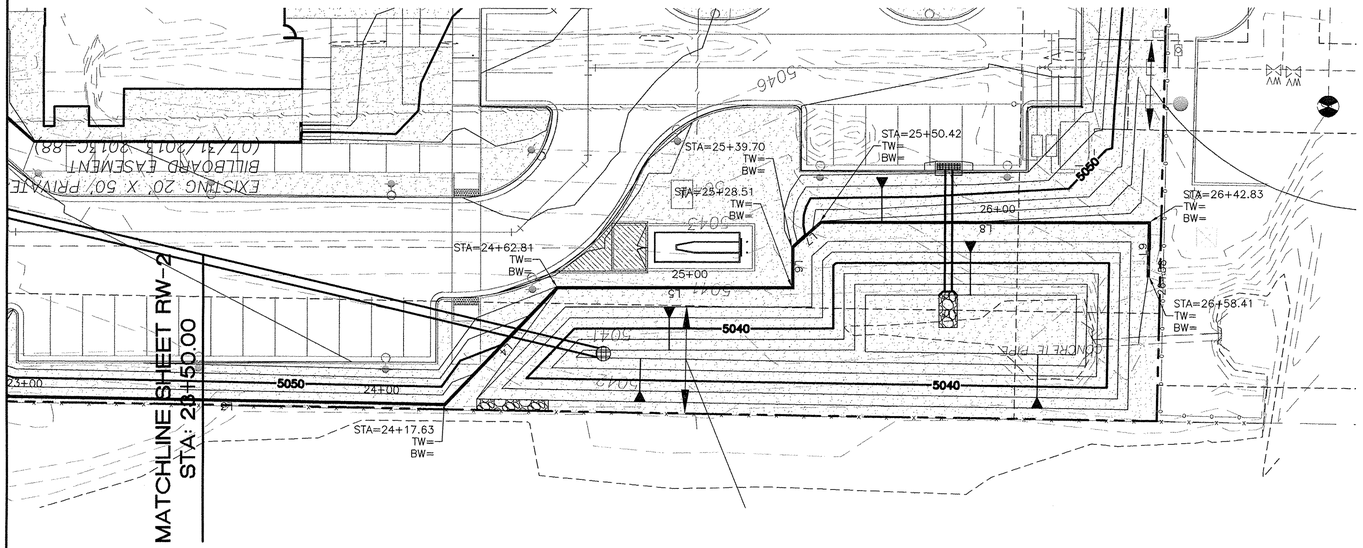
SCALE: HORIZ. 1"=20'
VERT. 1"=4'

ENGINEER'S SEAL
RONALD R. BOHANNAN
NEW MEXICO
7868
PROFESSIONAL ENGINEER
RONALD R. BOHANNAN
P.E. #7868

MULTI-SPECIALTY CLINIC
2901 TRANSPORT ST, S.E.
WEST RETAINING WALL
PLAN AND PROFILE

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

DRAWN BY: DY
DATE: 9/15/15
2015044-RWALLS
SHEET # RW-2
JOB # 2015044



CURVE TABLE			
CURVE	DELTA	RADIUS	LENGTH
C1	10°57'42"	1052.35	201.34

LINE TABLE		
LINE	BEARING	LENGTH
L1	N43°28'32"W	32.13
L2	N41°15'46"E	62.30
L3	N1°01'01"E	121.87
L4	N45°57'23"W	45.17
L5	N0°00'00"W	65.70
L6	N89°56'41"W	11.19
L7	N41°25'17"W	10.72
L8	N0°10'04"E	92.41
L9	S88°48'26"E	15.58
L10	N0°10'04"E	344.01

EROSION CONTROL NOTES:

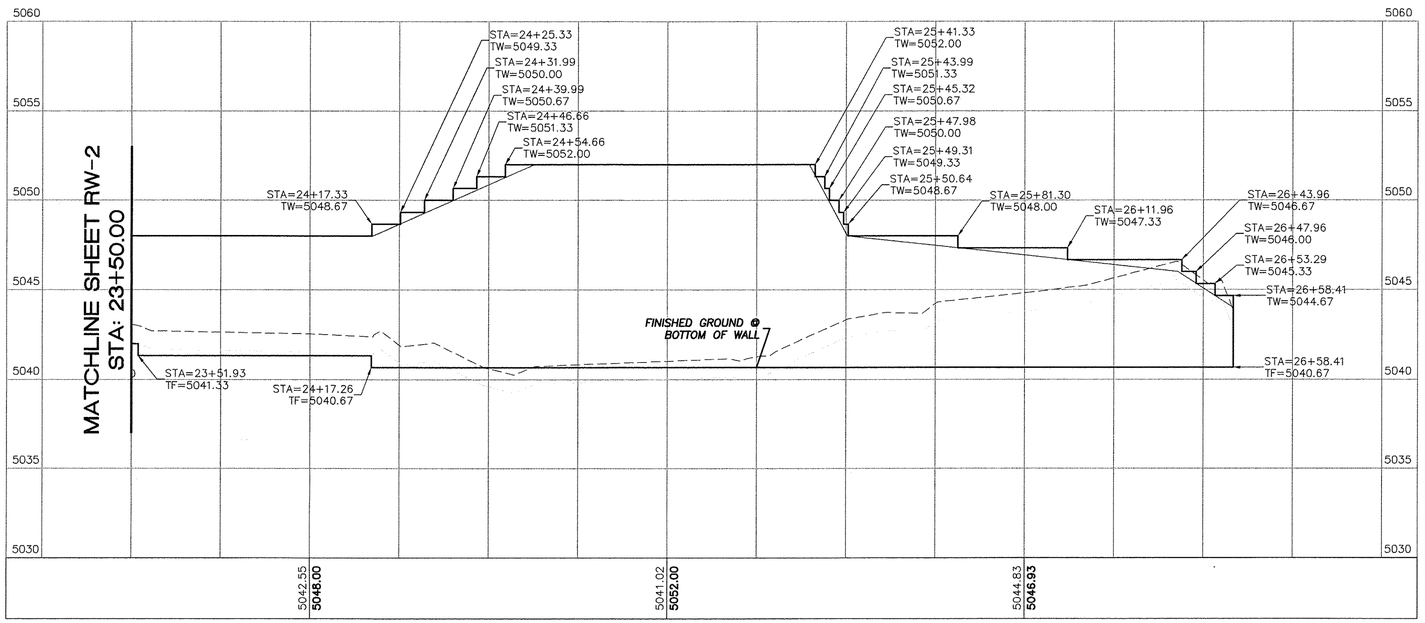
1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A TOPSOIL DISTURBANCE PERMIT PRIOR TO BEGINNING WORK.
2. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING RUN-OFF ON SITE DURING CONSTRUCTION.
3. CONTRACTOR IS RESPONSIBLE FOR CLEANING ALL SEDIMENT THAT GETS INTO EXISTING RIGHT-OF-WAY.
4. REPAIR OF DAMAGED FACILITIES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

CAUTION:
ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- RETAINING WALL
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 5010 EXISTING CONTOUR MAJOR
- 5011 EXISTING CONTOUR MINOR

WEST RETAINING WALL



SCALE: HORIZ. 1"=20'
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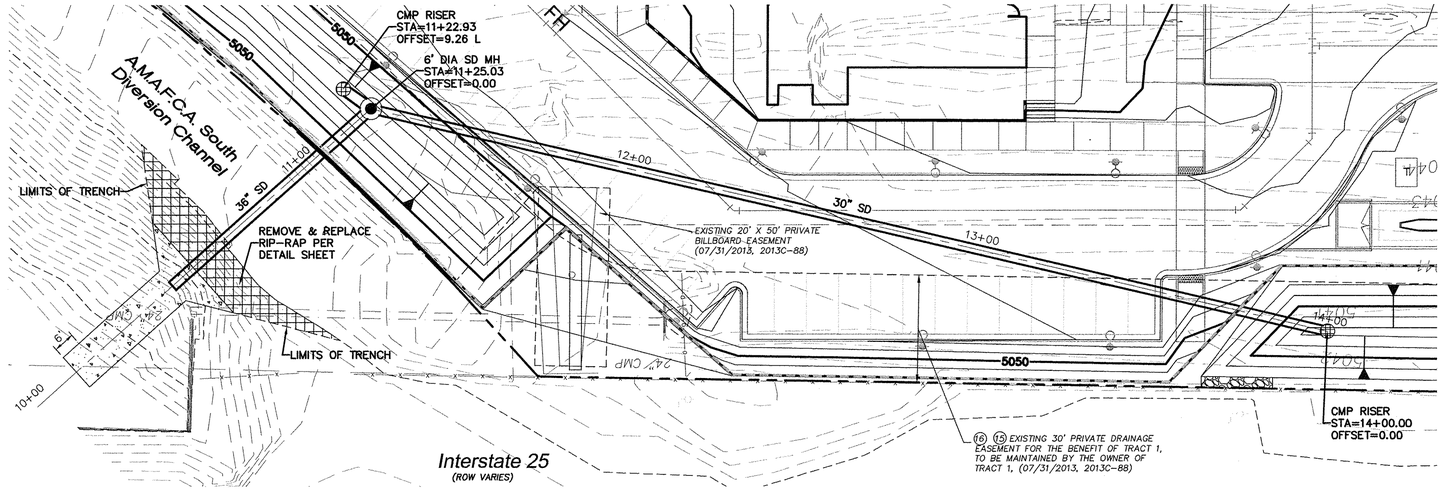
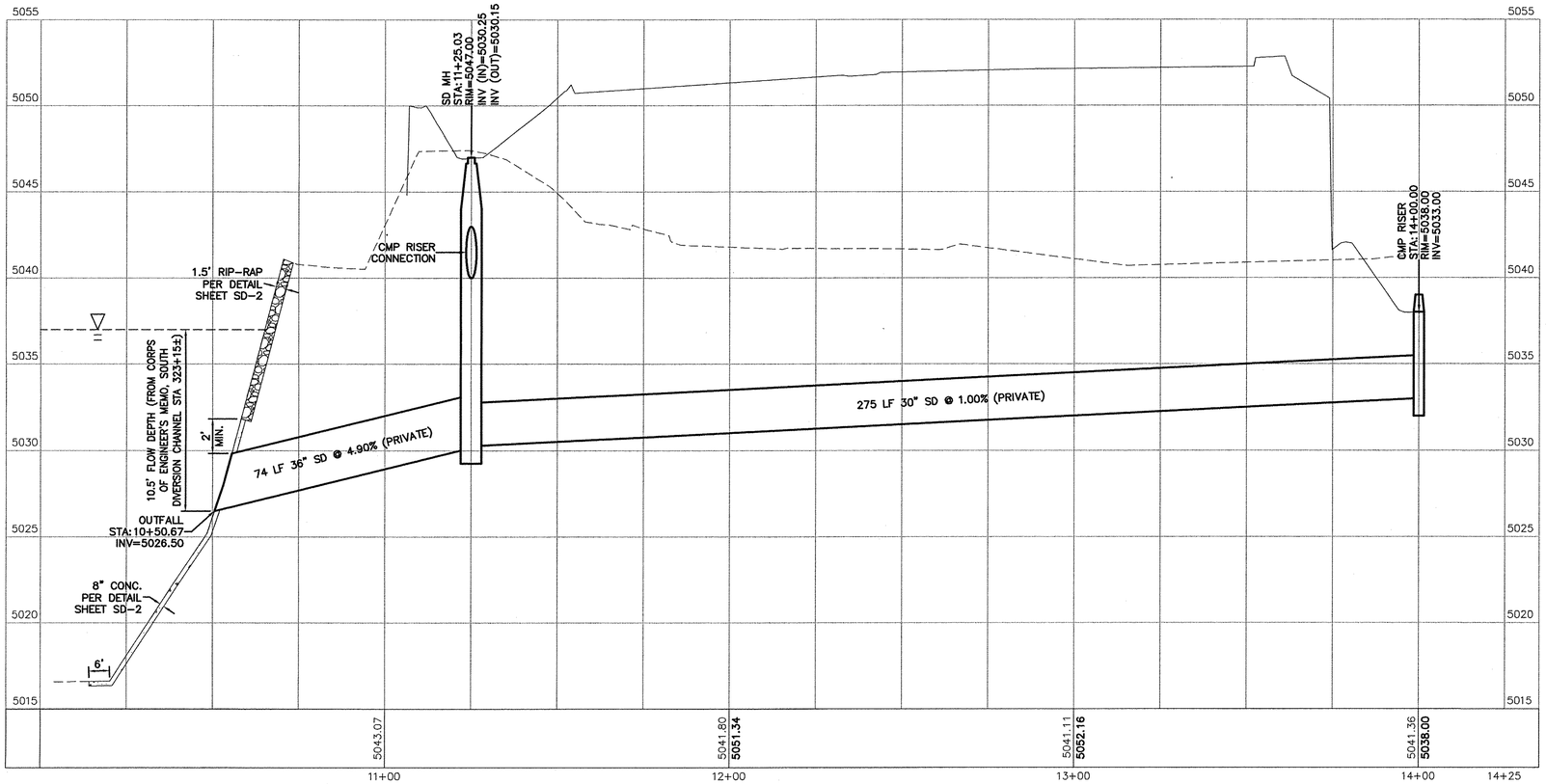
DRAWN BY: DY
DATE: 9/15/15
2015044-RWALLS
SHEET # RW-3
JOB # 2015044



LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- BUILDING
- SIDEWALK
- SCREEN WALL
- RETAINING WALL
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- 30" SD — STORM SEWER LINE
- 8" SAS — SANITARY SEWER LINE
- 8" WL — WATERLINE
- SINGLE CLEAN OUT
- EXISTING SD MANHOLE
- EXISTING INLET
- EXISTING SAS MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING POWER POLE
- EXISTING GAS VALVE
- OHU — EXISTING OVERHEAD UTILITIES
- EX. UGE — EXISTING UNDERGROUND UTILITIES
- EX. 2" GAS — EXISTING GAS
- EX. 8" SAS — EXISTING SANITARY SEWER LINE
- EX. 12" WL — EXISTING WATER LINE
- EX. 30" RCP — EXISTING STORM SEWER LINE



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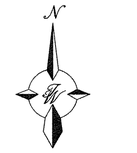

SCALE: HORIZ. 1"=20'
VERT. 1"=4'

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STORM DRAIN PLAN AND PROFILE

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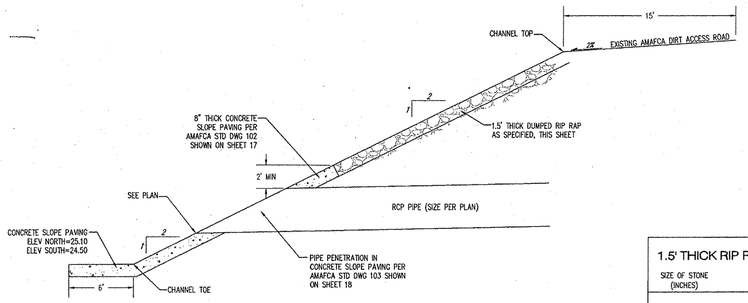
DRAWN BY: DY
DATE: 9/15/15
2015044-SD
SHEET #: SD-1
JOB #: 2015044



ROCK CHANNEL PIPE PENETRATION (SIDE VIEW)

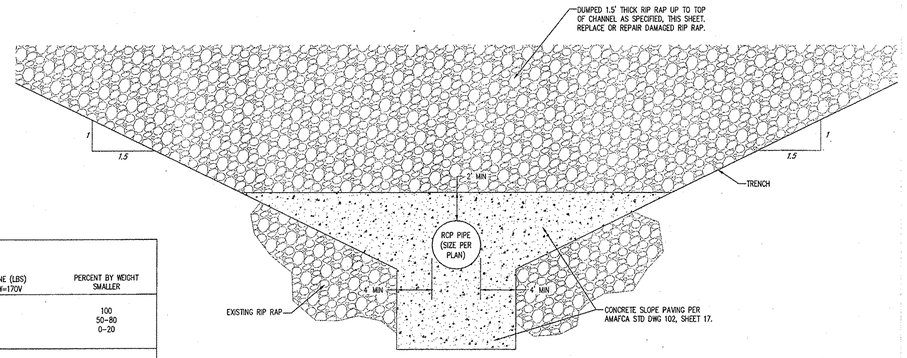
N.T.S.

1.5' THICK RIP RAP:

SIZE OF STONE (INCHES)	WEIGHT OF STONE (LBS) $W_{50}=0.750^{*}3, W=170V$	PERCENT BY WEIGHT SMALLER
12	125	100
9	50	50–80
6	15	0–20

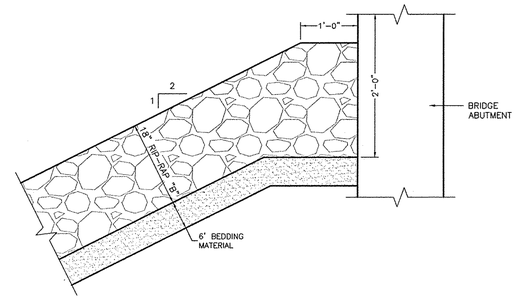
6" BEDDING:

STANDARD SIZE U.S. STANDARD	PERCENT BY WEIGHT PASSING
4-INCH	100
3-INCH	80–100
3/4-INCH	45–65
NO. 4	25–45
NO. 40	0–20
NO. 200	0–5



SOUTH DIVERSION ROCK CHANNEL PIPE PENETRATION

N.T.S.



TYPICAL RIPRAP SECTION • BRIDGE ABUTMENT

NTS

Bill of Materials

C.M. Riser _____Diam., _____Lin. Ft., Metal thickness = _____" (_____Gage)

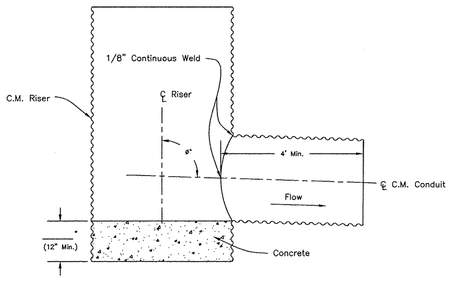
C.M. Conduit _____Diam., _____Lin. Ft., Metal thickness = _____" (_____Gage)

ø Angle = _____ Degrees

Volume of Concrete = _____Cu. Yds.

Concrete Table

Riser Diameter (Inches)	Volume of Concrete (Cu. Yds./Inch)
18	.0055
21	.0074
24	.0097
30	.0152
36	.0218

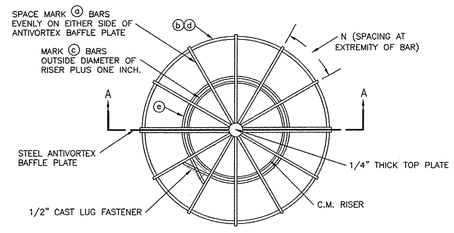


Section on Centerline

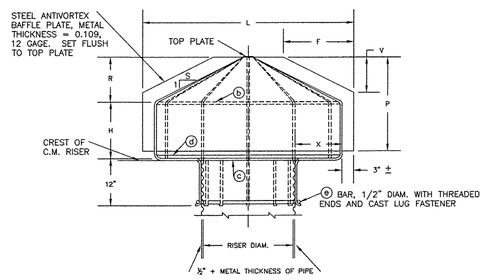
Notes:

1. The maximum diameter of the C.M. riser shall be 36".
2. The maximum height of the C.M. riser measured from the top of the riser to the invert of the C.M. conduit shall be 13 feet.

USDA Natural Resources Conservation Service — United States Department of Agriculture	C.M. RISER DETAILS (ROUND CONCRETE BASE) CLIENT: #### COUNTY: ####	Designed #### Date #### Drawn Date 07/14 Checked Approved	File Name WI-261 Sheet XX of ####



PLAN VIEW



SECTION A–A

ALL BARS FORMING CONICAL TRASH RACK ARE MARK (o) BARS, UNLESS OTHERWISE NOTED.

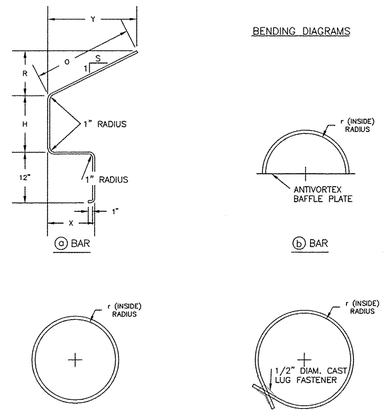
WI-275 Page 1 of 3

USDA Natural Resources Conservation Service — United States Department of Agriculture	CONICAL TRASH RACK AND BAFFLE PLATE FOR 18" TO 36" DIAM. C.M. RISERS CLIENT: #### COUNTY: ####	Designed #### Date #### Drawn Date 07/14 Checked Approved	File Name WI-275 Sheet XX of ####

NOTES:

1. WELD 4 MARK (a) BARS TO BAFFLE PLATE AND TO TOP PLATE. WELD MARK (c) AND MARK (d) BARS TO 4 MARK (o) BARS. WELD MARK (b) BAR TO MARK (o) BARS. WELD REMAINING MARK (a) BARS TO MARK (b), MARK (c), AND MARK (d) BARS AND TOP PLATE.
2. THE TRASH RACK AND ANTIVORTEX BAFFLE PLATE, MAY BE FABRICATED AS A UNIT, OR TRASH RACK MAY BE FABRICATED IN IDENTICAL HALVES AND ATTACHED TO BAFFLE PLATE WITH 1/2" DIAM. U BOLTS SPACED APPROXIMATELY 12 INCHES CENTER TO CENTER ALONG THE VERTICAL AND INCLINED SECTIONS OF THE MARK (o) BARS NEXT TO THE PLATE.
3. ALL BARS ARE SMOOTH ROUND BARS.
4. COAT WITH A RUST INHIBITIVE PAINT.

BENDING DIAGRAMS



WI-275 Page 2 of 3

TABLE OF DIMENSIONS AND QUANTITIES

(o) BARS 5/8" DIAMETER									ANTIVORTEX BAFFLE PLATE			
H	R	X	Y	S	O	TOTAL LENGTH	NO. REQ'D	N	L	P	F	V
INCHES	INCHES	INCHES	INCHES		INCHES			INCHES		INCHES	INCHES	INCHES
18" DIAMETER CORRUGATED METAL RISER												
9	14–1/8	6	14–1/8	1	20	4'	10	11–7/16	3'	21	8	8
21" DIAMETER CORRUGATED METAL RISER												
12	9–1/4	9	18–1/2	2	20–5/8	4' 6–5/8"	12	12–3/8	4"	18	12	6
24" DIAMETER CORRUGATED METAL RISER												
15	11–3/8	12	22–3/4	2	25–3/8	5' 5–3/8"	12	14–13/16	4'–6"	24	18	9
30" DIAMETER CORRUGATED METAL RISER												
18	9–1/2	15	28–1/2	3	30	6' 4"	14	15–13/16	6'	24	21	7
36" DIAMETER CORRUGATED METAL RISER												
21	12–1/2	21	37–5/8	3	39–1/2	7'10–1/2"	16	17–5/16	7'–6"	30	30	10

TABLE OF DIMENSIONS AND QUANTITIES

(b) BARS 5/8" DIAMETER			(c) BARS 5/8" DIAMETER			(d) BARS 5/8" DIAMETER			(e) BARS 5/8" DIAMETER			TOP PLATE
NO. REQ'D.	r INCHES	LENGTH INCHES	NO. REQ'D	r INCHES	LENGTH INCHES	NO. REQ'D	r INCHES	LENGTH INCHES	NO. REQ'D	r INCHES	LENGTH INCHES	DIAM. INCHES
18" DIAMETER CORRUGATED METAL RISER												
2	14–5/16	46	1	10	62–10	1	14–5/16	92	1	10–1/4	73	3
21" DIAMETER CORRUGATED METAL RISER												
2	18–13/16	60	1	11–1/2	72–1/4	1	18–13/16	120	1	11–3/4	82–1/2	3–1/2
24" DIAMETER CORRUGATED METAL RISER												
2	23–5/16	74	1	13	81–8	1	23–5/16	148	1	13–1/4	91–1/2	3–1/2
30" DIAMETER CORRUGATED METAL RISER												
2	29–5/16	93	1	16	100–1/2	1	29–5/16	186	1	16–1/4	111	4
36" DIAMETER CORRUGATED METAL RISER												
2	38–3/8	121–1/2	1	19	119–5	1	38–3/8	243	1	19–1/4	129	4

WI-275 Page 3 of 3

ENGINEER'S SEAL RONALD R. BOHANNAN P.E. #7868	MULTI-SPECIALTY CLINIC 2901 TRANSPORT ST, S.E. STORM DRAIN DETAILS TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858–3100 www.tierrawestllc.com	DRAWN BY DY DATE 9/11/15 2015044–SD DETAILS SHEET # SD–2 JOB # 2015044	