

CITY OF ALBUQUERQUE



May 20, 2016

David Soule, P.E.
Rio Grande Engineering
PO Box 93924
Albuquerque NM 87199

**Re: Azar-Menaul Townhomes, Grading and Drainage Plan
Engineer's Stamp Date 5/17/2015 (H22/D078)**

Dear Mr. Soule,

Based upon the information provided in your submittal received 5-17-15, the grading and Drainage Plan is approved for Building Permit, Grading Permit, and SO-19 Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

PO Box 1293

Albuquerque

New Mexico 87103

This project requires a National Pollutant Discharge Elimination System (NPDES) permit for storm water discharge for disturbing one acre or more and a Topsoil Disturbance Permit for disturbing $\frac{3}{4}$ of an acre or more. You are also required to obtain an Erosion Sediment Control Plan approval for this project. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology as well. 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 924-3999.

www.cabq.gov

Sincerely,

Shahab Biazar, P.E.
City Engineer, Planning Dept.
Development Review Services

C: e-mail



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Azar- Menaul Townhomes Building Permit #: _____ City Drainage #: H22D078
DRB#: 1007786 EPC#: _____ Work Order#: _____
Legal Description: Tract 2a Indian Hills
City Address: 11910 Menaul Blvd NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE
Address: PO BOX 93924, ALBUQUERQUE, NM 87199
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM
Owner: Westwind Apartments, llc Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____
Architect: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____
Other Contact: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

☐ ENGINEER/ ARCHITECT CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☐ DRAINAGE REPORT
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 5/17/16 By: DAVID SOULE

COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: _____

10

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☒ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☒ GRADING PERMIT APPROVAL
☒ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____

RECEIVED
MAY 17 2016
LAND DEVELOPMENT SECTION

David Soule

Subject: FW: Indian Ridge Subd.

Rudy E. Rael, CE, CFM

Engineer Associate, Hydrology

Planning Department

600 2nd St. NW Suite 201

Albuquerque NM 87102

Rudy, Please find the responses to your written comments dated 5/12/16. The initial comments area in black and our response as to how we addressed are in blue:

- There are some darkened lines throughout the site, are these all retaining walls?
YES, I HAVE ADDED LABLES TO CLARIFY, WE HAVE TOP AND BOTTOMS CALLED OUT
- Provide a detail for all retaining walls.
I HAVE ATTACHED, THESE ARE PART OF SEPARATE PERMIT
- How will flows leave the back yards? Provide turn blocks 3" above grade.
WE HAVE ADDED TO NOTE TO PLAN AND ADDED TO NOTE#3
- Provide a detail where the block wall and the 8" HDPE intersect each other.
I HAVE ADDED NOTE TO PLAN TO CLARIFY THE PIPE RUNS UNDER WALL
BOTTOM OF WALL=75.00, TOP OF PIPE=74.00
- Provide elevations around the exterior of the perimeter.
I HAVE ADDED
- Show roof flows.
THE ROOFS ARE PITCH SO I HAVE ADDED ROOF DRAIN PATTERN ON SE BUILDING
AND LABELED AS
TYPICAL
- Provide a note requiring a separate permit for all walls is required.
I HAVE ADDED AS NOTE#4
- Show the extension of the sidewalk culvert 2 feet passed the property line.
I HAVE CORRECTED THE DRAWING TO BE GRAPHICALLY CORRECT
- The NW corner of the sites spot elevation is higher than the invert out, please correct.
WE HAVE CORRECTED THIS TYPO.

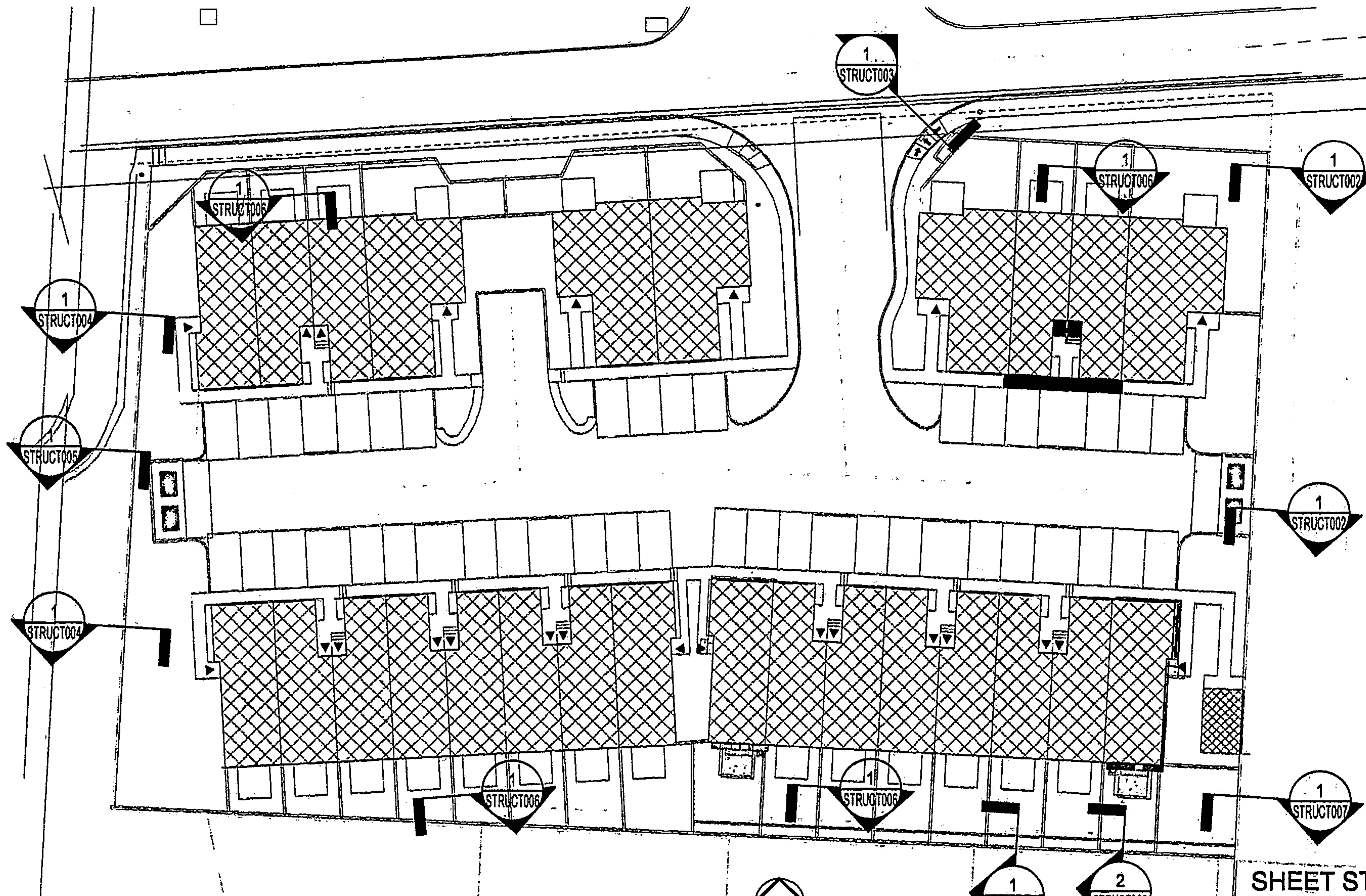
David Soule

Rio Grande Engineering

PO Box 93924

Albuquerque, NM 87199

5/17/2016



1 SITE WALLS PLAN
Scale: 1" = 30'-0"

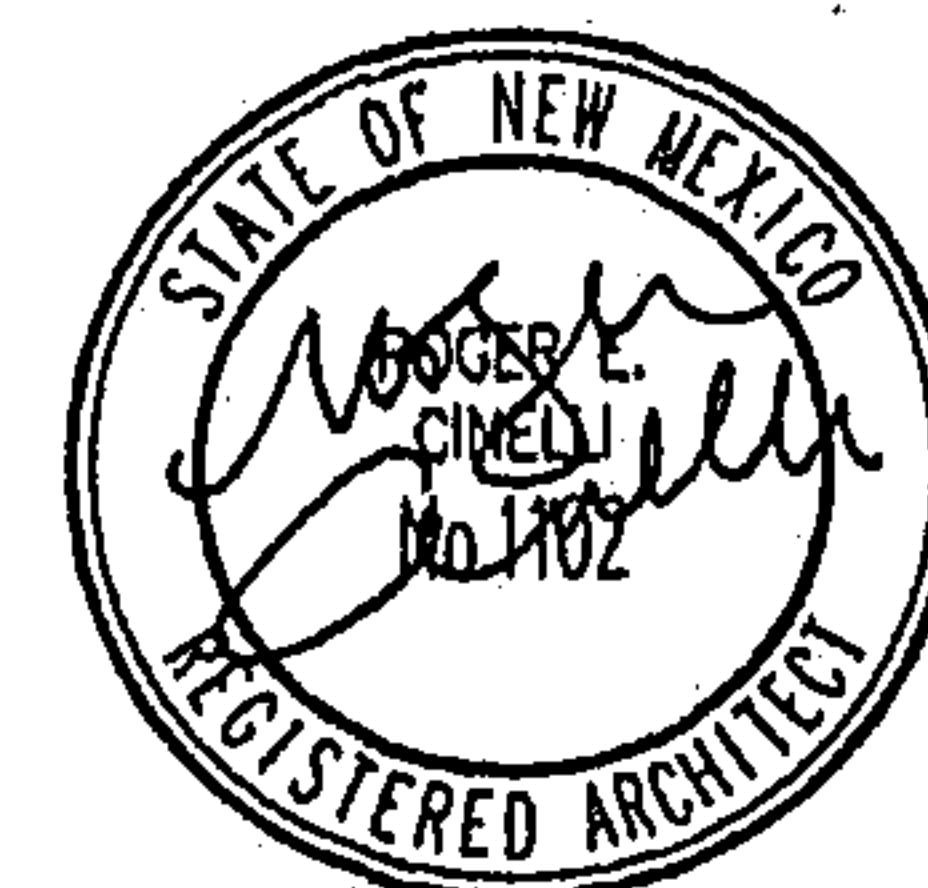


Cinelli
ARCHITECTS

Roger Cinelli & Assoc.
2418 Manuel Torres Lane N.W.
Albuquerque, New Mexico 87107
(505) 243-8211

SHEET STRUCT001

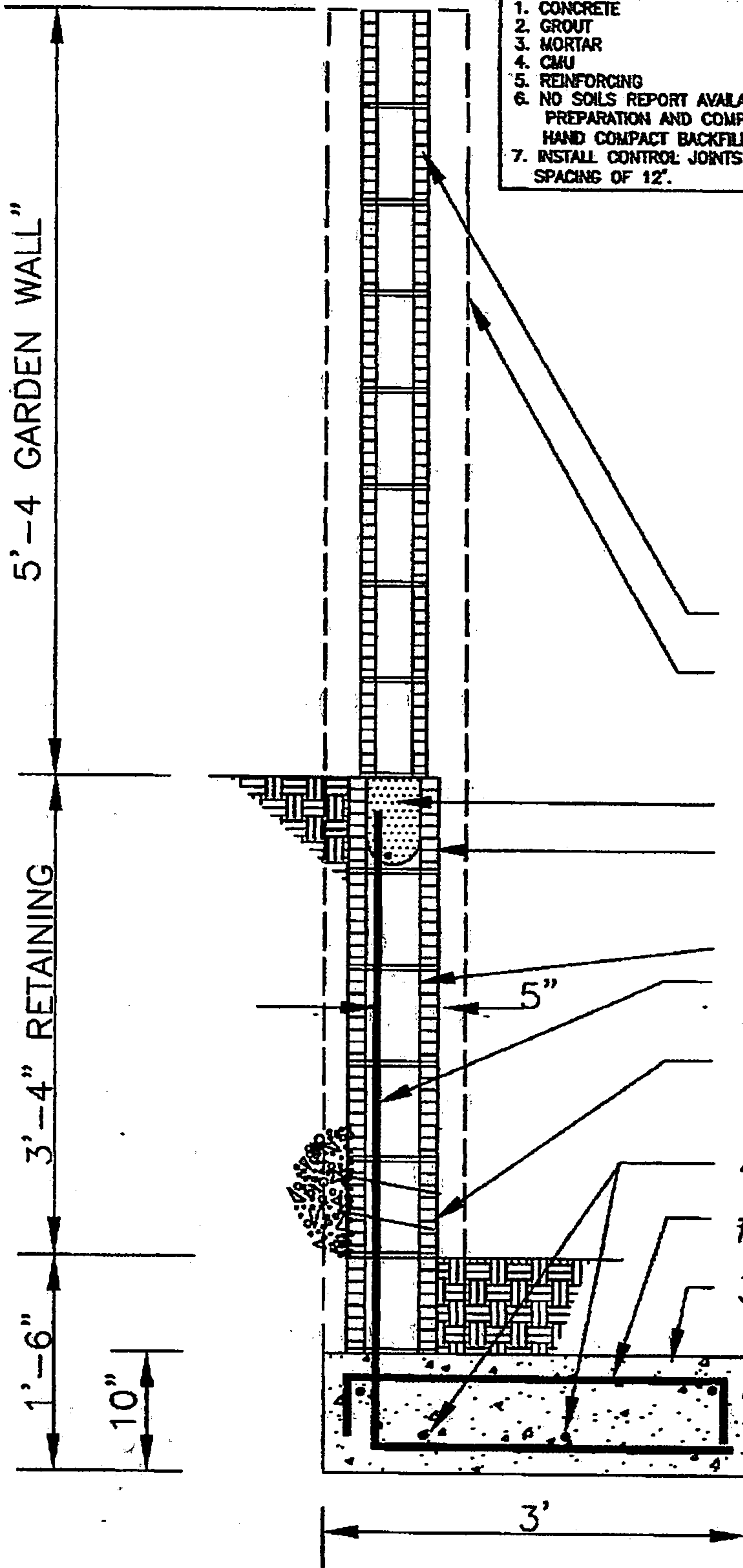
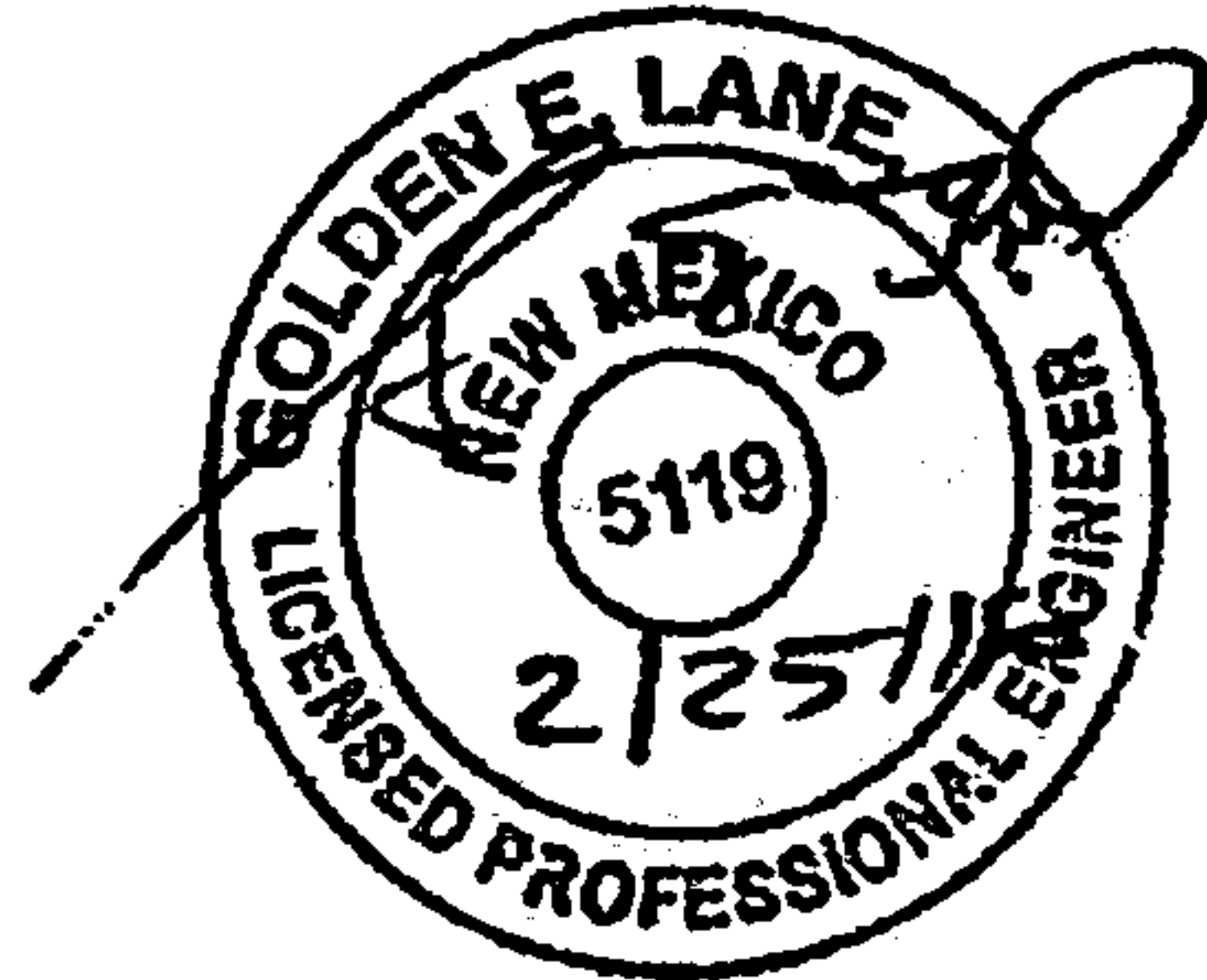
INDIAN RIDGE PATIO HOMES
11,910 MENAUL BLVD. N.E.
ALBUQUERQUE, NEW MEXICO
SITE WALLS PLAN



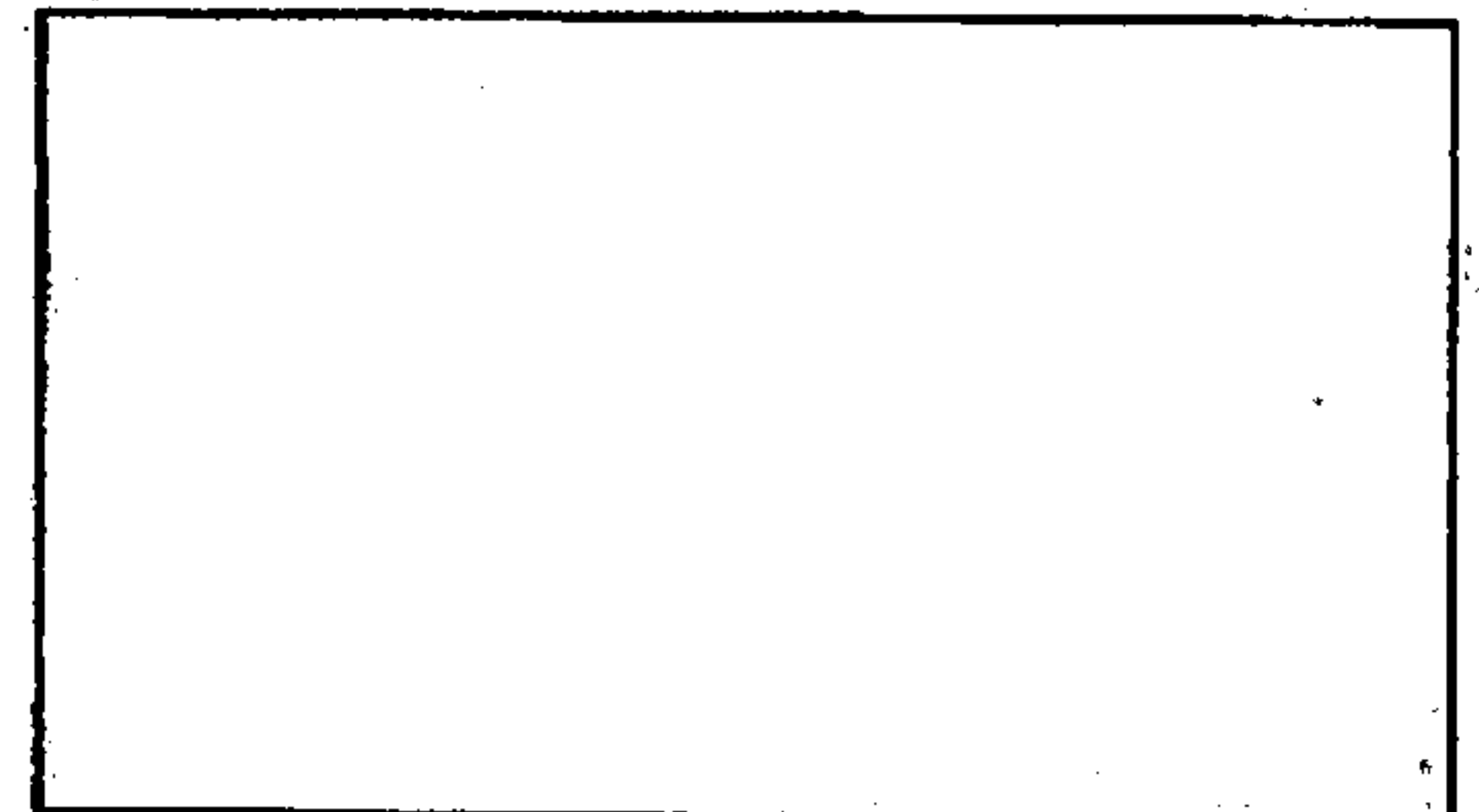
3/10/18

GENERAL NOTES

1. CONCRETE 3000 psi
2. GROUT 2500 psi
3. MORTAR TYPE S
4. CMU TYPE N-1
5. REINFORCING GRADE 40
6. NO SOILS REPORT AVAILABLE. CONTRACTOR RESPONSIBLE FOR PROPER SUBGRADE PREPARATION AND COMPACTION TO ACHIEVE A MINIMUM BEARING CAPACITY OF 1500 PSF. HAND COMPACT BACKFILL IN 12" LIFTS.
7. INSTALL CONTROL JOINTS WITH ONE VERTICAL BAR EACH SIDE OF JOINT AT A MAXIMUM SPACING OF 12'.



- 6" CMU
- 12" PILASTER BEYOND 12' O.C. W/2-#4 VERTICAL ANCHORED INTO FOOTING
- BOND BEAM W/1-#5 CONT.
- GROUT ALL CELLS SOLID
- BELOW BOND BEAM PILASTER
- 8" CMU
- #4 @ 24" O.C. WITH ONE BAR IN CELLS EACH SIDE OF PILA
- 3" DIA. WEEP HOLE WITH 1 CUBIC FOOT GRAVEL 10' O.C.
- 4-#4 CONTINUOUS
- #4 @ 24" O.C.
- 3" CLEAR COVER ALL REBAR



MASONRY RETAINING WALL/FENCE

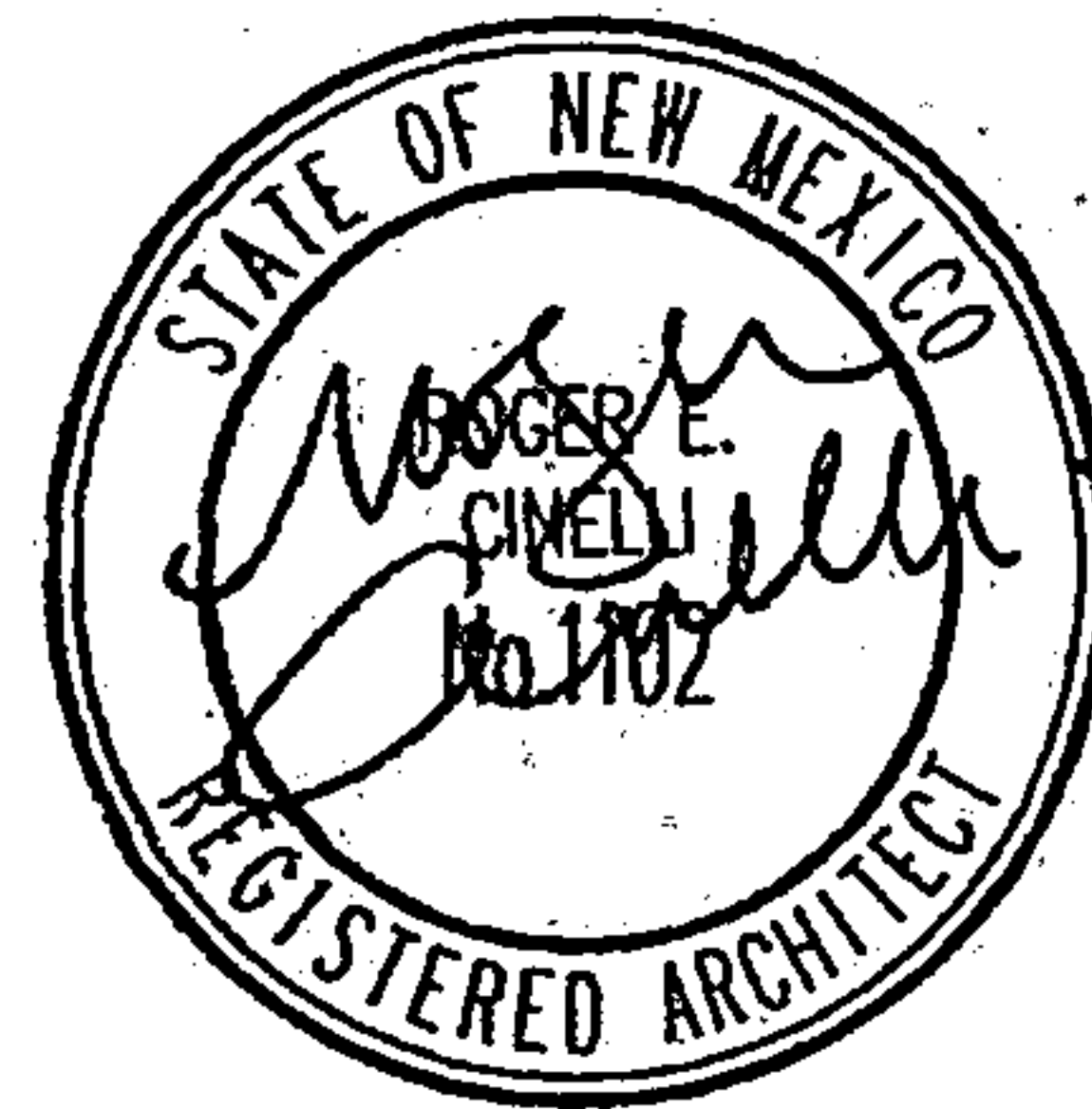
SCALE: 3/4" = 1'-0"

STRUCT002

RETAINING WALL W/
#4'S @ 32" O.C.
(GROUT ALL CELLS) -
PROVIDE ASPHALTIC
WATERPROOFING

CMU BOND BEAM
W/ 1 - #4 CONT.

2" DIA. WEEP HOLES
@ 10'-0" W/ 1 CU. FT. GRAVEL
(OR ELIMINATE EVERY OTHER
HEAD JOINT WITH CONTINUOUS
GRAVEL



FOR 2' RETAINER
021516

GENERAL NOTES

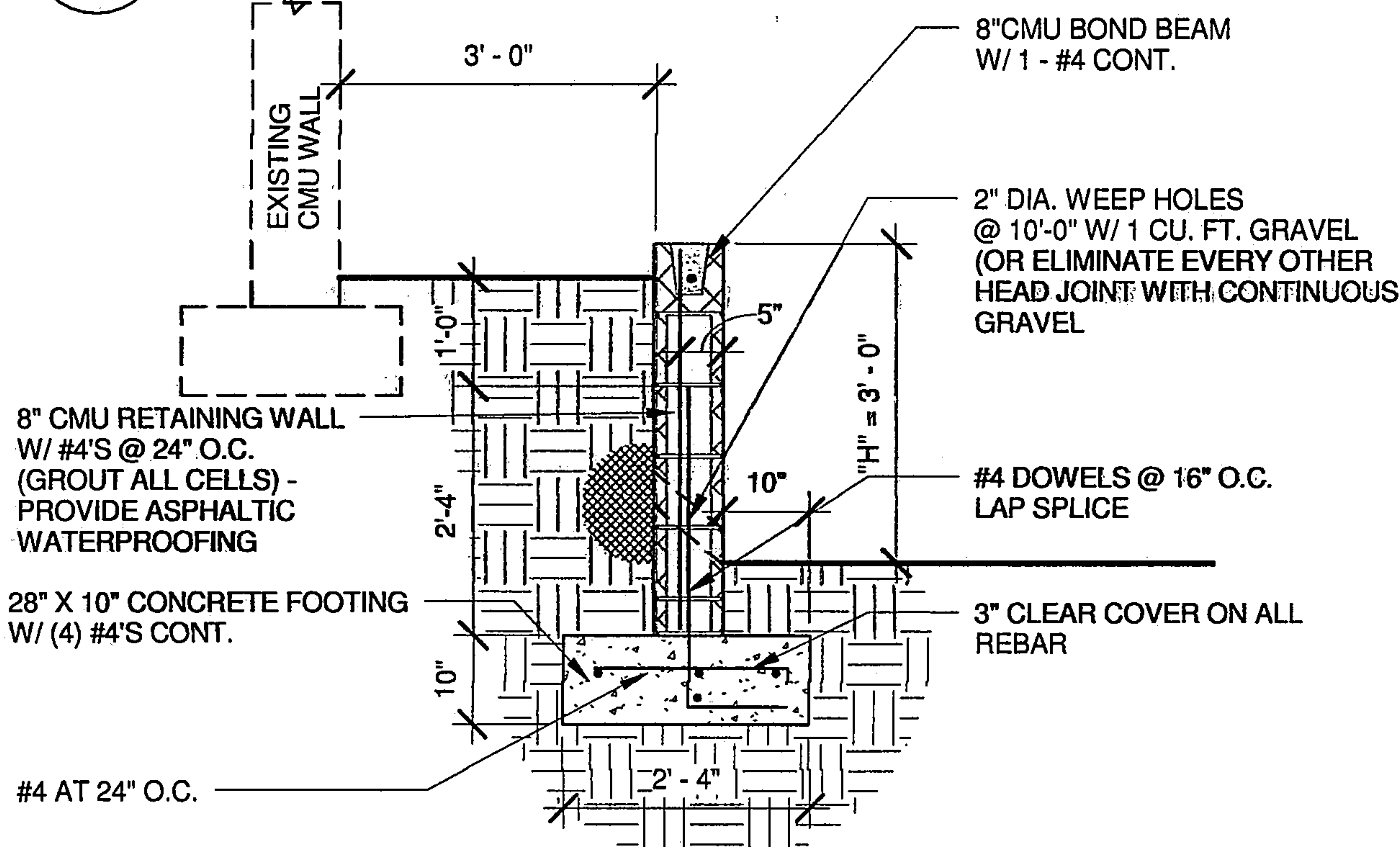
1. CONCRETE 3000 PSI
2. GROUT 2500 PSI
3. MORTAR TYPE S
4. CMU TYPE N-1
5. REINFORCING GRADE 40
6. CONTRACTOR RESPONSIBLE FOR PROPER SUBGRADE PREPARATION AND COMPACTION TO ACHIEVE A MINIMUM BEARING CAPACITY OF 1500 PSF. HAND COMPACT IN 8" LIFTS.

2'-4" X 10" CONCRETE FOOTING
W/ (3) #4'S CONT.

ALTERNATE BENDS

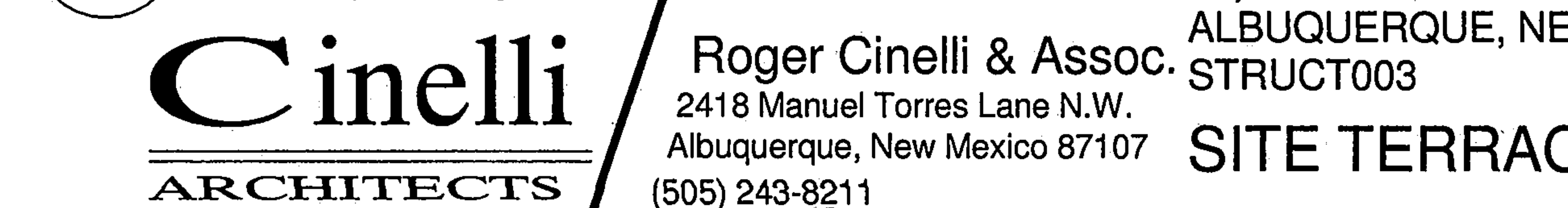
1 2' TERRACE WALL

Scale: 1/2" = 1'-0"



2 3' TERRACE WALL

Scale: 1/2" = 1'-0"



INDIAN RIDGE PATIO HOMES

11,910 MENAUL BLVD. N.E.
ALBUQUERQUE, NEW MEXICO
STRUCT003

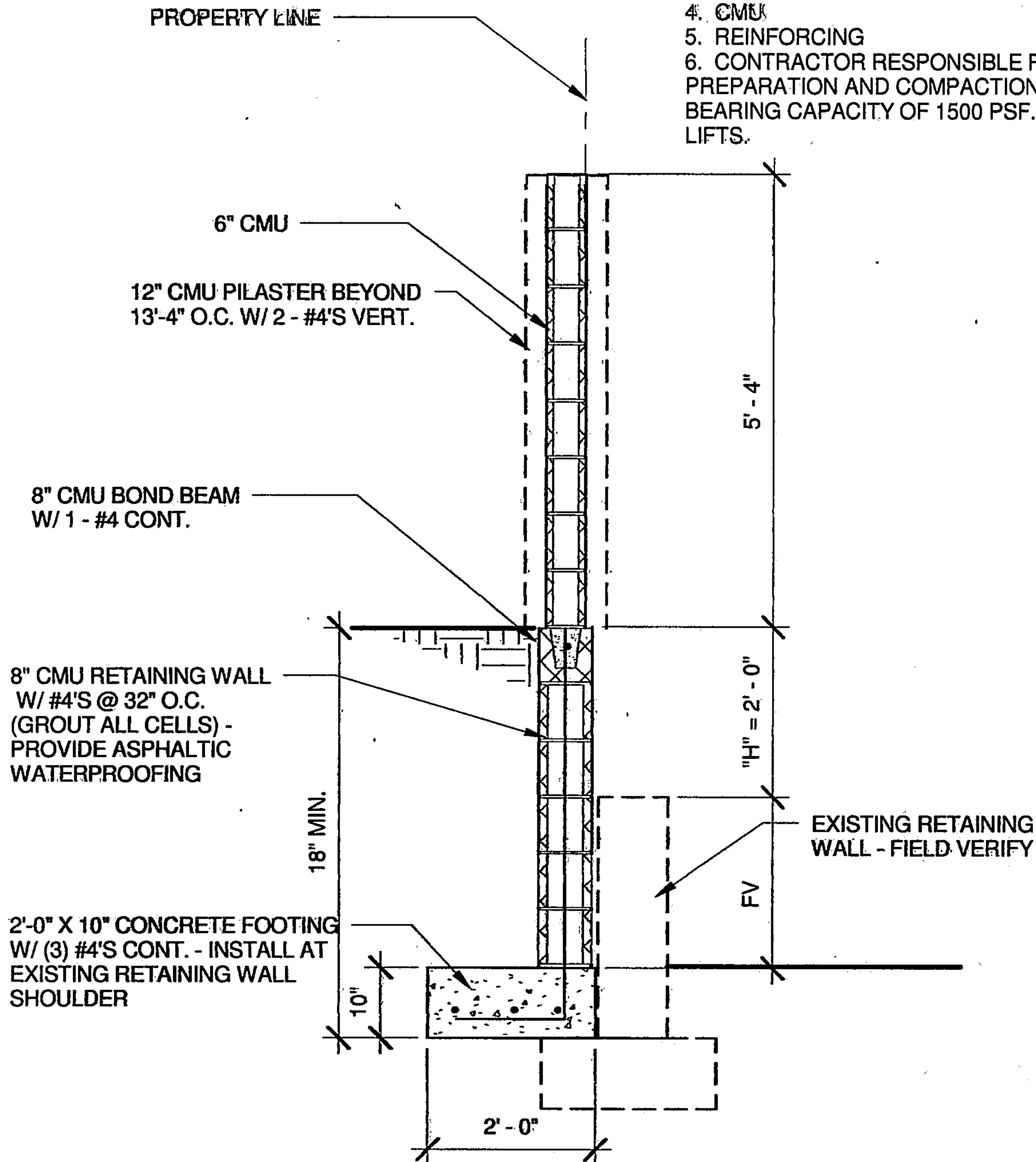
SITE TERRACE WALLS

Cinelli
ARCHITECTS

Roger Cinelli & Assoc.
2418 Manuel Torres Lane N.W.
Albuquerque, New Mexico 87107
(505) 243-8211

GENERAL NOTES

1. CONCRETE 3000 PSI
2. GROUT 2500 PSI
3. MORTAR TYPE S
4. CMU TYPE N-1
5. REINFORCING GRADE 40
6. CONTRACTOR RESPONSIBLE FOR PROPER SUBGRADE PREPARATION AND COMPACTION TO ACHIEVE A MINIMUM BEARING CAPACITY OF 1500 PSF. HAND COMPACT IN 8" LIFTS.



WEST PROPERTY LINE WALL WITH 2' RETAINAGE

1

Scale: 1/2" = 1'-0"



2/15/16

INDIAN RIDGE PATIO HOMES

11,910 MENAUL BLVD. N.E.
ALBUQUERQUE, NEW MEXICO
STRUCT004

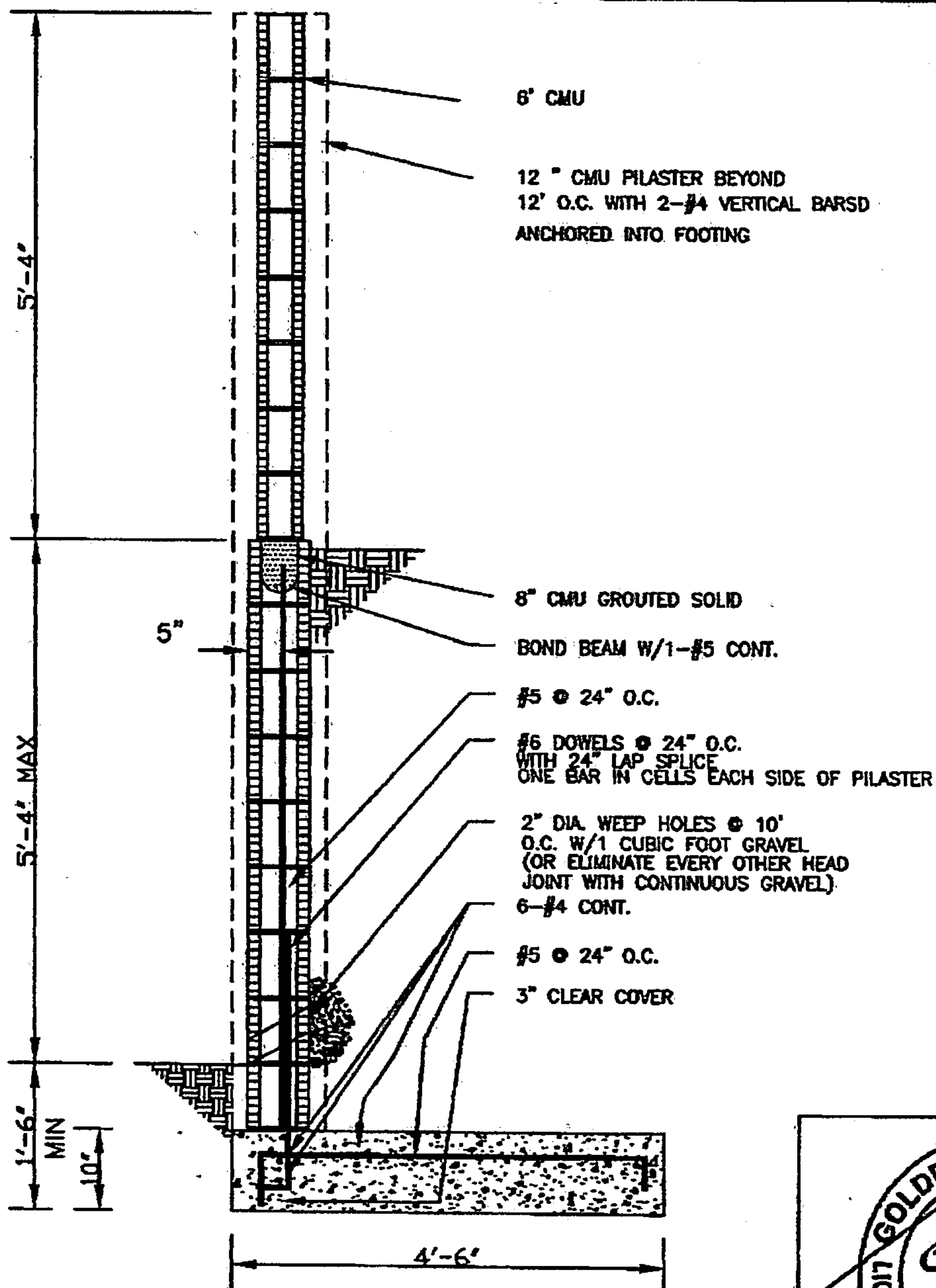
SITE RETAINING WALL

Cinelli
ARCHITECTS

Roger Cinelli & Assoc.
2418 Manuel Torres Lane N.W.
Albuquerque, New Mexico 87107
(505) 243-8211

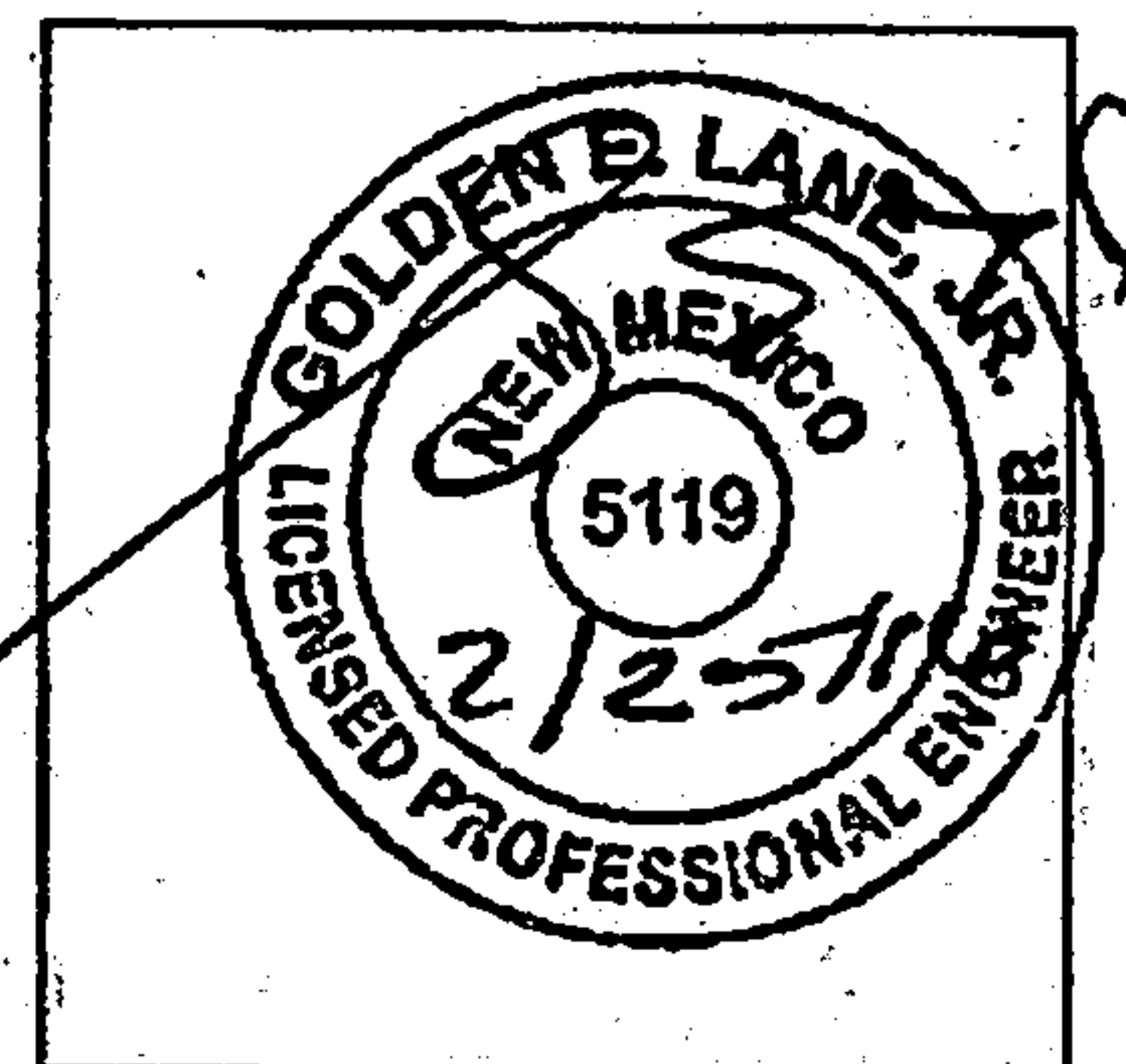
GENERAL NOTES

1. CONCRETE 3000 psi
2. GROUT 2500 psi
3. MORTAR TYPE S
4. CMU TYPE N-I
5. REINFORCING GRADE 40
6. NO SOILS REPORT AVAILABLE. CONTRACTOR RESPONSIBLE FOR PROPER SUBGRADE PREPARATION AND COMPACTION TO ACHIEVE A MINIMUM BEARING CAPACITY OF 1500 PSF. HAND COMPACT BACKFILL IN 8" LIFTS.



5'-4" CMU RETAINING WALL

SCALE: 1/2" = 1'-0"



STRUCT005

GENERAL NOTES

12" CMU PILASTER BEYOND
12'-0" O.C. W/ 2 - #4'S VERT.
ANCHORED INTO FOOTING

6" CMU

6" CMU BOND-BEAM
W/ 1 - #4 CONT.

6" CMU RETAINING WALL
W/ #4'S @ 32" O.C. WITH ONE
BAR IN CELLS EACH SIDE OF
PILASTER
(GROUT ALL CELLS) -
PROVIDE ASPHALTIC
WATERPROOFING

24" X 10" CONCRETE
FOOTING W/ (3)
#4'S CONT.

ALTERNATE BENDS

1. CONCRETE 3000 PSI
2. GROUT 2500 PSI
3. MORTAR TYPE S
4. CMU TYPE N-1
5. REINFORCING GRADE 40
6. NO SOILS REPORT AVAILABLE. CONTRACTOR RESPONSIBLE FOR PROPER SUBGRADE PREPARATION AND COMPACTION TO ACHIEVE A MINIMUM BEARING CAPACITY OF 1500 PSF. HAND COMPACT IN 8" LIFTS.
7. INSTALL CONTROL JOINTS WITH ONE VERTICAL BAR EACH SIDE OF JOINT AT AT MAXIMUM SPACING OF 12'

3" DIA. WEEP HOLES
@ 10'-0" W/ 1 CU. FT. GRAVEL
(OR ELIMINATE EVERY OTHER
HEAD JOINT WITH CONTINUOUS
GRAVEL)

3" CLEAR COVER ON ALL
REBAR

"H" = 1' - 6"

8"
10"

2' - 0"

COURTYARD WALL WITH 18" RETAINAGE

1

Scale: 1/2" = 1'-0"



2/15/16

INDIAN RIDGE PATIO HOMES

11,910 MENAUL BLVD. N.E.
ALBUQUERQUE, NEW MEXICO
STRUCT006

SITE RETAINING WALL

Cinelli
ARCHITECTS

Roger Cinelli & Assoc.
2418 Manuel Torres Lane N.W.
Albuquerque, New Mexico 87107
(505) 243-8211

PROPERTY LINE

GENERAL NOTES

12" CMU PILASTER BEYOND
12'-0" O.C. W/ 2 - #4'S VERT.
ANCHORED INTO FOOTING

6" CMU

6'-0"

6" CMU BOND BEAM
W/ 1 - #4 CONT.

6" CMU RETAINING WALL
W/ #4'S @ 32" O.C. WITH ONE
BAR IN CELLS EACH SIDE OF
PILASTER
(GROUT ALL CELLS) -
PROVIDE ASPHALTIC
WATERPROOFING

24" X 10" CONCRETE
FOOTING
W/ (3) #4'S CONT.

#4 AT 24" O.C.

1. CONCRETE 3000 PSI
2. GROUT 2500 PSI
3. MORTAR TYPE S
4. CMU TYPE N-1
5. REINFORCING GRADE 40
6. NO SOILS REPORT AVAILABLE. CONTRACTOR RESPONSIBLE FOR PROPER SUBGRADE PREPARATION AND COMPACTION TO ACHIEVE A MINIMUM BEARING CAPACITY OF 1500 PSF. HAND COMPACT IN 8" LIFTS.
7. INSTALL CONTROL JOINTS WITH ONE VERTICAL BAR EACH SIDE OF JOINT AT AT MAXIMUM SPACING OF 12'

3" DIA. WEEP HOLES
@ 10'-0" W/ 1 CU. FT. GRAVEL
(OR ELIMINATE EVERY OTHER
HEAD JOINT WITH CONTINUOUS
GRAVEL

3" CLEAR COVER ON ALL
REBAR

"H" = 2'-0"

1'-6" MIN.

2'-0"

PROPERTY LINE WALL WITH 2' RETAINAGE

1

Scale: 1/2" = 1'-0"



2/15/16

INDIAN RIDGE PATIO HOMES

11,910 MENAUL BLVD. N.E.
ALBUQUERQUE, NEW MEXICO
STRUCT007

SITE RETAINING WALL

Cinelli
ARCHITECTS

Roger Cinelli & Assoc.
2418 Manuel Torres Lane N.W.
Albuquerque, New Mexico 87107
(505) 243-8211

PHASE 2

DEMOLITION & PAD

FIXED OPS EXCEPT EXPENSES

PHASE 1

PHASE 2

DEMOLITION & PAD

DEMOLITION & PAD

PHASE 1

PHASE 4

DEMOLITION

SHOWROOM & SERVICE DRIVE

PHASE 3

PHASE 4

DEMOLITION

DEMOLITION

PHASE 3

SHOWROOM & SERVICE DRIVE

LEGEND

Area of building construction

Area of site construction

Existing building to remain

Area of demolition

PHASING PLAN





City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

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

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

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

City Address: 5995 Alameda NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: milller family group Contact: _____

Address: _____

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

Architect: john mahony Contact: _____

Address: _____

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

Surveyor: CONSTRUCTION SURVEY INCORPORATED Contact: JOHN GALLEGOS

Address: _____

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

Contractor: _____ Contact: _____

Address: _____

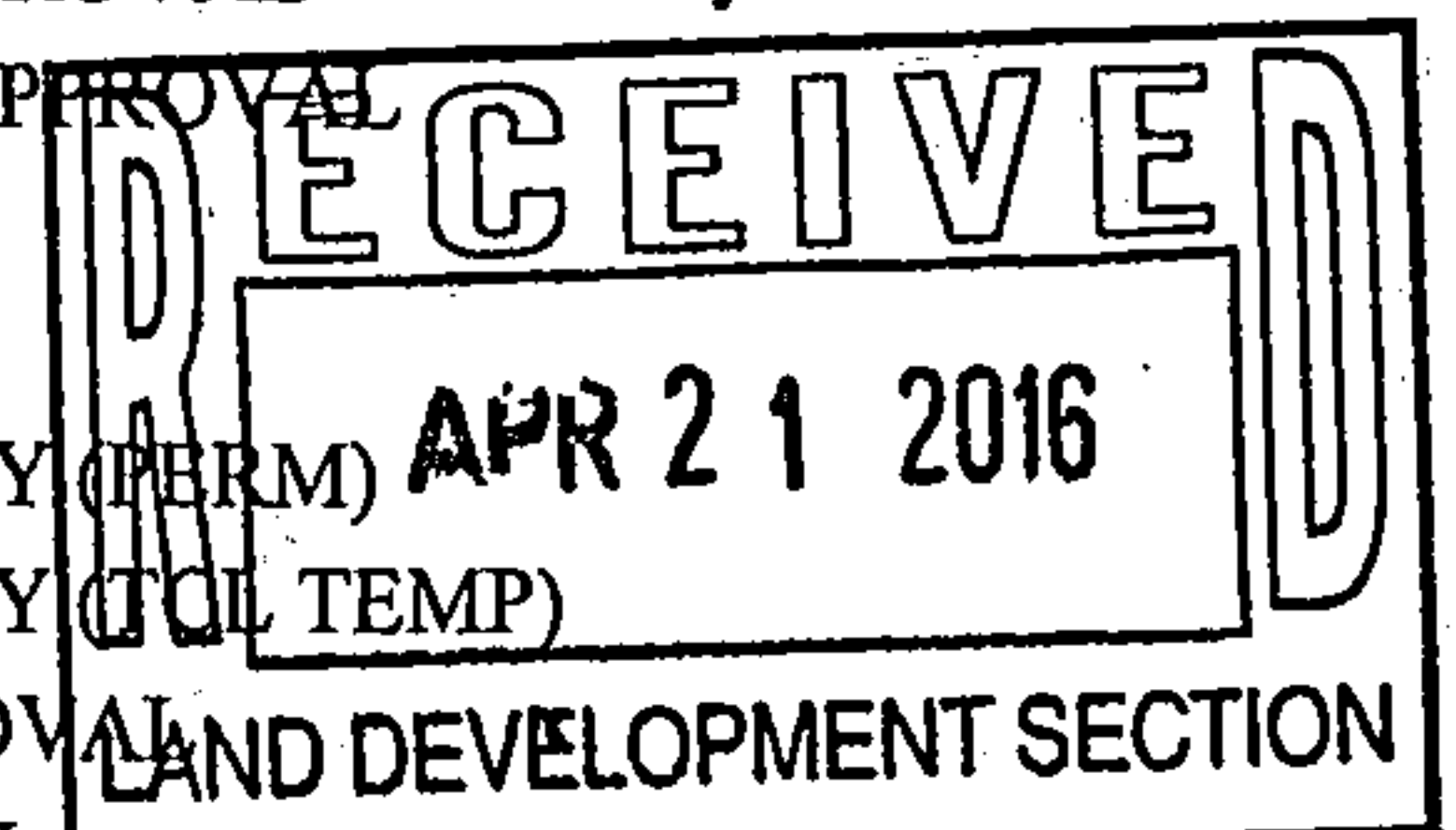
Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF SUBMITTAL:

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

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☐ SIA/FINANCIAL GUARANTEE RELEASE
- ☐ PRELIMINARY PLAT APPROVAL
- ☐ S. DEV. PLAN FOR SUB'D APPROVAL
- ☐ S. DEV. FOR BLDG. PERMIT APPROVAL
- ☐ SECTOR PLAN APPROVAL
- ☐ FINAL PLAT APPROVAL
- ☐ CERTIFICATE OF OCCUPANCY (PERM)
- ☒ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ☐ FOUNDATION PERMIT APPROVAL
- ☐ BUILDING PERMIT APPROVAL
- ☐ GRADING PERMIT APPROVAL
- ☐ PAVING PERMIT APPROVAL
- ☐ WORK ORDER APPROVAL
- ☐ GRADING CERTIFICATION
- ☐ SO-19 APPROVAL
- ☐ ESC PERMIT APPROVAL
- ☐ ESC CERT. ACCEPTANCE
- ☐ OTHER (SPECIFY)



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

DATE SUBMITTED: 4/20/15 By: _____

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

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

Approved 30 day TCL - CO - TEMP

Rael, Rudy E.

From: Rael, Rudy E.
Sent: Thursday, May 12, 2016 1:59 PM
To: 'David Soule (david@riograndeengineering.com)'
Cc: Abiel X. Carrillo
Subject: Indian Ridge Subd.

Hello David, here are a few comments for this subdivision.

- There are some darkened lines throughout the site, are these all retaining walls?
- Provide a detail for all retaining walls.
- How will flows leave the back yards? Provide turn blocks 3" above grade.
- Provide a detail where the block wall and the 8" HDPE intersect each other.
- Provide elevations around the exterior of the perimeter.
- Show roof flows.
- Provide a note requiring a separate permit for all walls is required.
- Show the extension of the sidewalk culvert 2 feet passed the property line.
- The NW corner of the sites spot elevation is higher than the invert out, please correct.

Any questions give me a call or Abiel Carrillo.

Rudy E. Rael, CE, CFM
Engineer Associate, Hydrology
Planning Department
600 2nd St. NW Suite 201
Albuquerque NM 87102
(505) 924-3977

David Soule

Subject: FW: H22D078 - Azar-Menaul Townhomes - Stamp Date 1-7-16

From: Abiel X. Carrillo [<mailto:acarrillo@cabq.gov>]

Sent: Thursday, January 28, 2016 4:24 PM

To: David Soule

Cc: Cherne, Curtis

Subject: H22D078 - Azar-Menaul Townhomes - Stamp Date 1-7-16

David,

This email is being sent in lieu of an attached comment letter in order to expedite the response for initial reviews. Responses to comments should continue to be included in the re-submittal. A reply to this email with responses to comments will not be considered a re-submittal.

In reviewing the above-referenced submittal for SO-19, I noticed two items that need to be addressed that I did not notice in the DRB review for Site Plan:

1. The SO-19 general notes need to be included on the Sheet. (ADDED SO 19 NOTE)
2. The sidewalk culvert needs to reference the City's standard detail, and extend two feet behind the sidewalk. The extension needs to be called out. (CALLED OUT)
3. Make sure you have at least submitted an ESC plan to the Stormwater Engineer (since the project site is over an acre in size). Starting February 1st, an approved ESC plan will be required prior to Hydrology's approval of any grading plan. (SUBMITTED AND APPROVED)

Since the comments are very minor, I am open to you swapping out the sheet in the submittal (I know sometimes you can edit existing plans), or you can just re-submit through the normal process.

If you do swap out the sheet if you can just bring an original and email me (not plndrs@cabq) the replacement sheet.

Thanks,

Abiel Carrillo, P.E.

Principal Engineer - Hydrology

Planning Department

Development Review Services Division

City of Albuquerque

505-924-3986

acarrillo@cabq.gov

600 2nd Street NW

Albuquerque, NM 87102

4/21/2016



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Azar- Menaul Townhomes Building Permit #: _____ City Drainage #: H22D078
DRB#: 1007786 EPC#: _____ Work Order#: _____
Legal Description: Tract 2a Indian Hills
City Address: 11910 Menaul Blvd NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE
Address: PO BOX 93924, ALBUQUERQUE, NM 87199
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: Westwind Apartments, llc Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Architect: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Other Contact: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

- ☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

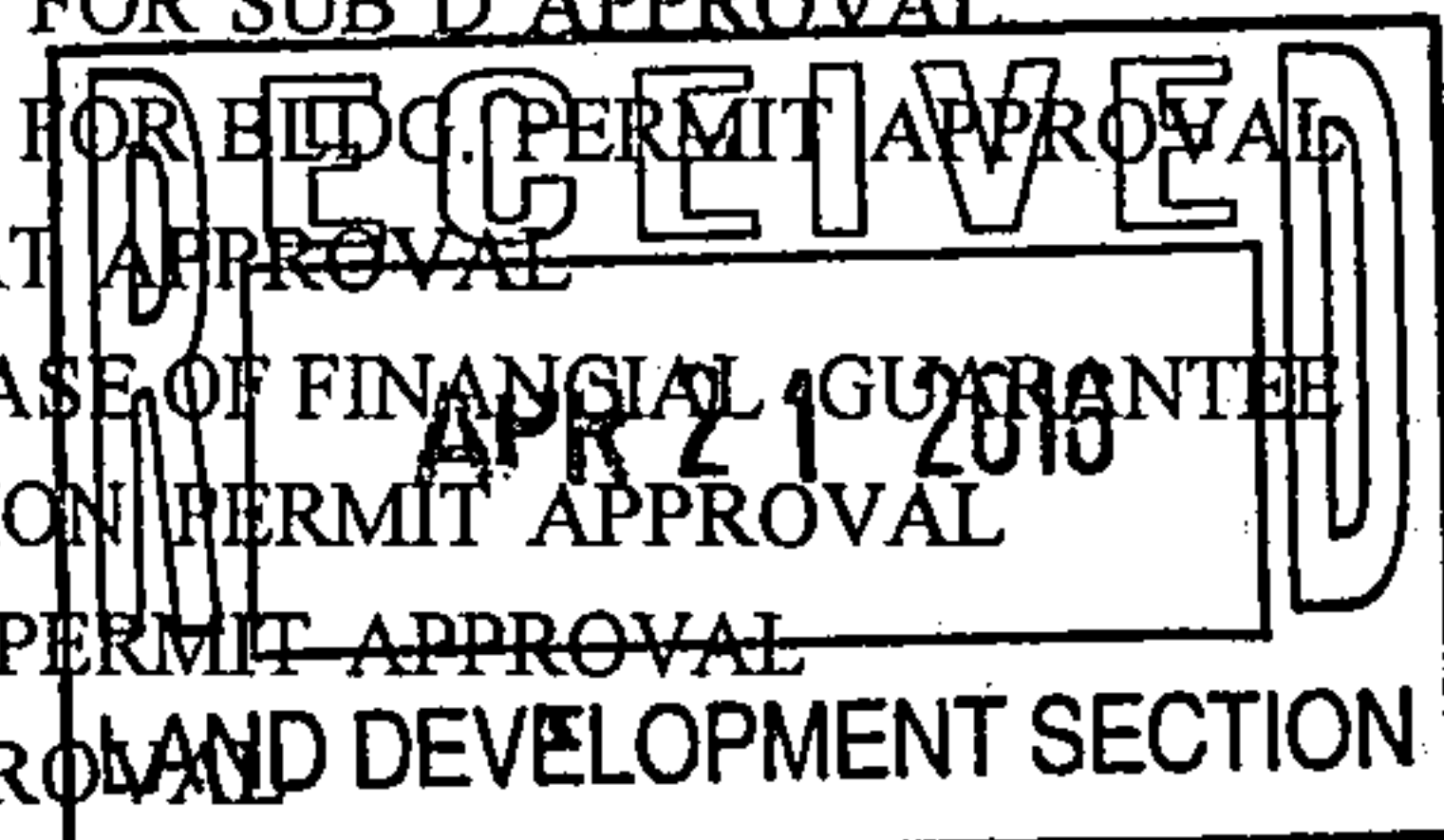
- ☐ ENGINEER/ ARCHITECT CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☐ DRAINAGE REPORT
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 4/21/16 By: DAVID SOULE

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☒ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☒ GRADING PERMIT APPROVAL
☒ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____



COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

FC as condition of CO

Abiel X. Carrillo

From: Abiel X. Carrillo
Sent: Thursday, January 28, 2016 4:24 PM
To: 'David Soule'
Cc: Cherne, Curtis
Subject: H22D078 - Azar-Menaul Townhomes - Stamp Date 1-7-16

David,

This email is being sent in lieu of an attached comment letter in order to expedite the response for initial reviews. Responses to comments should continue to be included in the re-submittal. A reply to this email with responses to comments will not be considered a re-submittal.

In reviewing the above-referenced submittal for SO-19, I noticed two items that need to be addressed that I did not notice in the DRB review for Site Plan:

1. The SO-19 general notes need to be included on the Sheet.
2. The sidewalk culvert needs to reference the City's standard detail, and extend two feet behind the sidewalk. The extension needs to be called out.
3. Make sure you have at least submitted an ESC plan to the Stormwater Engineer (since the project site is over an acre in size). Starting February 1st, an approved ESC plan will be required prior to Hydrology's approval of any grading plan.

Since the comments are very minor, ~~I am open to you swapping out the sheet in the submittal~~ (I know sometimes you can edit existing plans), or you can just re-submit through the normal process.

~~If you do swap out the sheet if you can just bring an original and email me (not plndrs@cabq) the replacement sheet.~~

Thanks,

AC

Abiel Carrillo, P.E.

Principal Engineer - Hydrology

Planning Department

Development Review Services Division

City of Albuquerque

505-924-3986

acarrillo@cabq.gov

600 2nd Street NW

Albuquerque, NM 87102



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Azar- Menaul Townhomes Building Permit #: _____ City Drainage #: H22DD78
DRB#: 1007786 EPC#: _____ Work Order#: _____
Legal Description: Tract 2a Indian Hills
City Address: 11910 Menaul Blvd NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE
Address: PO BOX 93924, ALBUQUERQUE, NM 87199
Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: Westwind Apartments, llc Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Architect: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Other Contact: _____ Contact: _____
Address: _____
Phone#: _____ Fax#: _____ E-mail: _____

Check all that Apply:

DEPARTMENT:

- ☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ ARCHITECT CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☐ DRAINAGE REPORT
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)

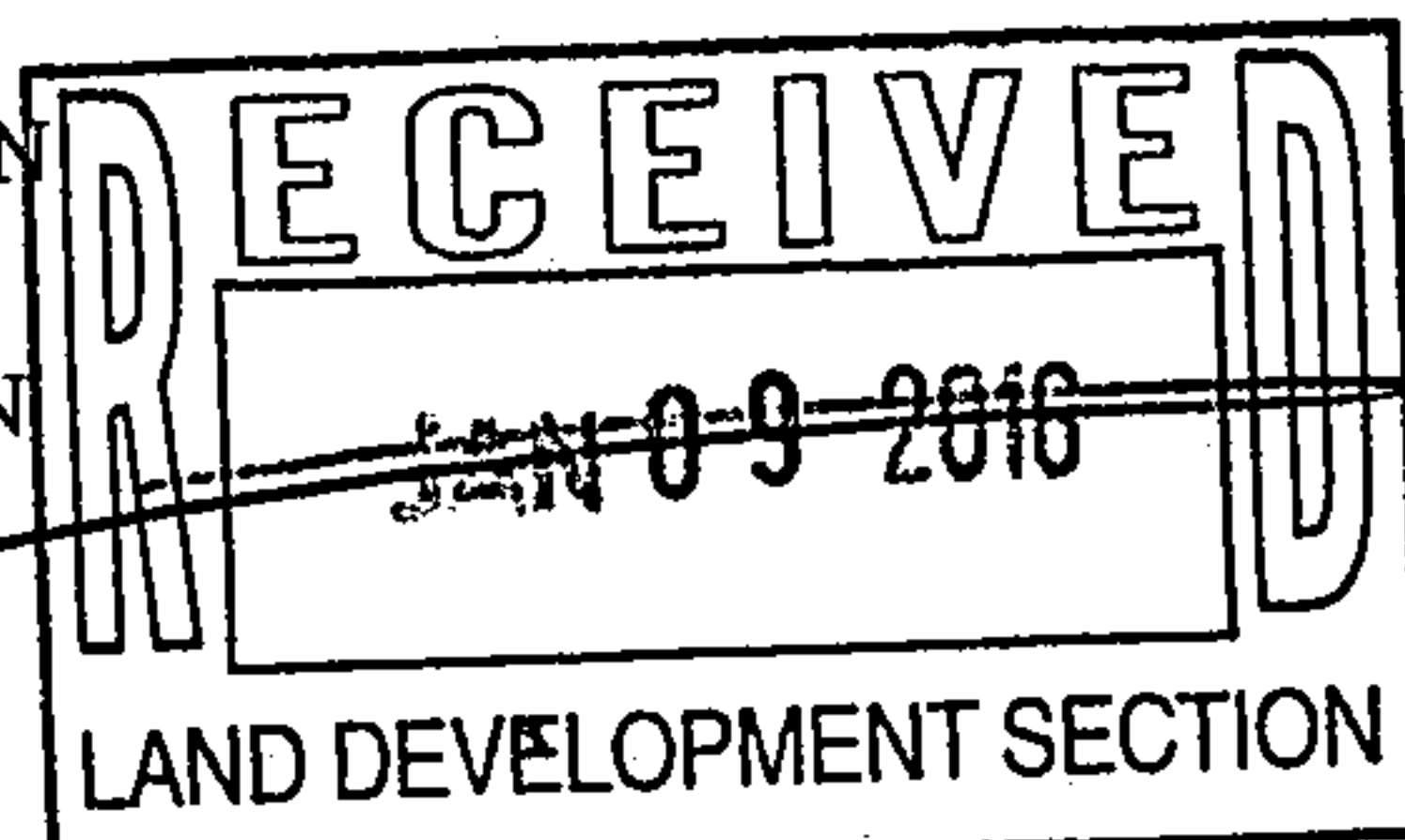
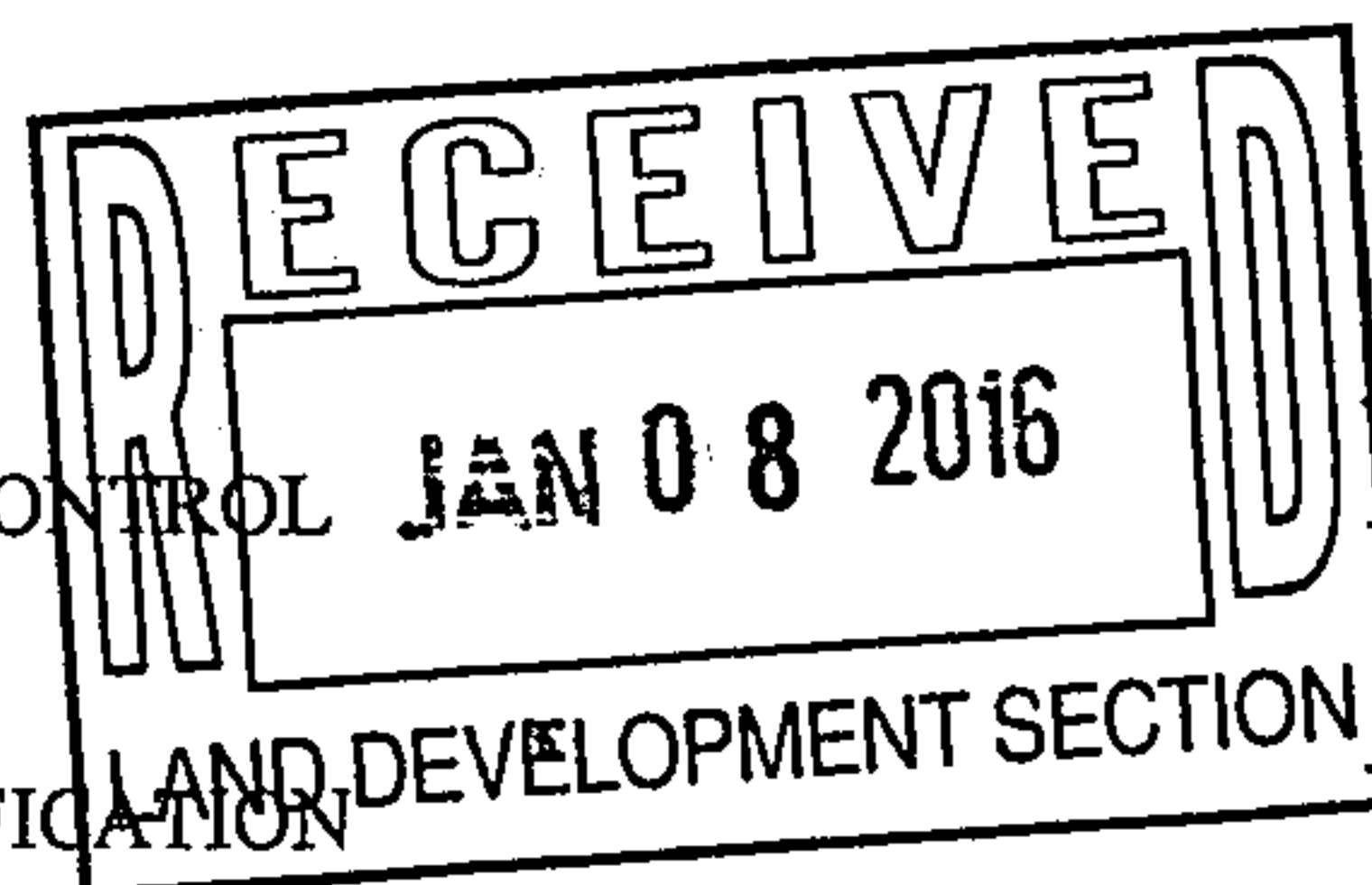
☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☒ Yes ☐ No

DATE SUBMITTED: 1/7/16

By: DAVID SOULE

COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: _____



CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
☐ PRELIMINARY PLAT APPROVAL
☐ SITE PLAN FOR SUB'D APPROVAL
☒ SITE PLAN FOR BLDG. PERMIT APPROVAL
☐ FINAL PLAT APPROVAL
☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☒ GRADING PERMIT APPROVAL
☒ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____

January 7, 2016

Mr. Abiel Carrillo, PE
Principal Engineer
Hydrology Department
Public Works Department
City of Albuquerque

**RE: Revised Grading Plan
Azar Apartments
(Tract 2A Indian Ridge drb#1007786)
Albuquerque, New Mexico**

Dear Mr. Carrillo:

The purpose of this letter is to accompany the enclosed revised grading plan. The plan has been revised to accommodate your written comments dated 1/6/16. The following is a summary of your comment and the narrative as to how we addressed

1. Use of Detention vs. Retention and overflow pipe to describe NW pond is conflicting.
I believe the report was not available for your review at the time these comments were formulated. The drainage concept is to have proposed peak flow rate less than or equal to the historic rate. The ponds act as detention ponds with water quality storage below the outfall invert of 5673.50. The ponds are detention with storage.
2. Reconsider placing the plastic pipe under wall. Is it needed?
As shown in the drainage report, this pond routes the peak flow thru this detention pond and the pipes control the discharge rate, the turned blocks are for emergency overflow
3. Show roof flow splits and show how first flush is contained
We have created a basin map within the report, this plan is pretty busy and i chose to address the basins in an exhibit.
4. Fix labeling
We have corrected the misspelled words
5. Low spot w of unit A4 if street crowned, show general flow patterns
We have corrected the spot elevation and added flow areas and designated a flow line
6. Describe first flush scheme on the plan.
The drainage report includes the calculations and specifics on how the first flush in managed onsite.

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

Sincerely,

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





City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 09/2015)

Project Title: Azar- Menaul Townhomes Building Permit #: _____ City Drainage #: H22D078

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

Legal Description: Tract 2a Indian Hills

City Address: 11910 Menaul Blvd NE

Engineering Firm: RIO GRANDE ENGINEERING Contact: DAVID SOULE

Address: PO BOX 93924, ALBUQUERQUE, NM 87199

Phone#: 505.321.9099 Fax#: 505.872.0999 E-mail: DAVID@RIOGRANDEENGINEERING.COM

Owner: Westwind Apartments, llc Contact: _____

Address: _____

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

Architect: _____ Contact: _____

Address: _____

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

Other Contact: _____ Contact: _____

Address: _____

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

Check all that Apply:

DEPARTMENT:

- ☒ HYDROLOGY/ DRAINAGE
☐ TRAFFIC/ TRANSPORTATION
☐ MS4/ EROSION & SEDIMENT CONTROL

TYPE OF SUBMITTAL:

- ☐ ENGINEER/ ARCHITECT CERTIFICATION
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN
☐ DRAINAGE MASTER PLAN
☐ DRAINAGE REPORT
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT (TCL)
☐ TRAFFIC IMPACT STUDY (TIS)
☐ EROSION & SEDIMENT CONTROL PLAN (ESC)
☐ OTHER (SPECIFY) _____

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ☒ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY
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☐ SIA/ RELEASE OF FINANCIAL GUARANTEE
☐ FOUNDATION PERMIT APPROVAL
☒ GRADING PERMIT APPROVAL
☒ SO-19 APPROVAL
☐ PAVING PERMIT APPROVAL
☐ GRADING/ PAD CERTIFICATION
☐ WORK ORDER APPROVAL
☐ CLOMR/LOMR
☐ PRE-DESIGN MEETING
☐ OTHER (SPECIFY) _____

IS THIS A RESUBMITTAL?: ☐ Yes ☒ No

DATE SUBMITTED: 11/15/15 By: DAVID SOULE

COA STAFF: _____ ELECTRONIC SUBMITTAL RECEIVED: _____

VERBAL
NO PER
1/6/16
DR.B.
A.C.
1/6/16

\$ 30.00
RECEIVED
NOV 18 2015
LAND DEVELOPMENT SECTION

DRAINAGE REPORT

For

AZAR-MENAU TOWN HOMES
Albuquerque, New Mexico

Prepared by

Rio Grande Engineering
PO Box 93924
Albuquerque, New Mexico 87199

NOVEMBER 2015



David Soule P.E. No. 14522

[illegible]

Appendix

Map

2

PURPOSE

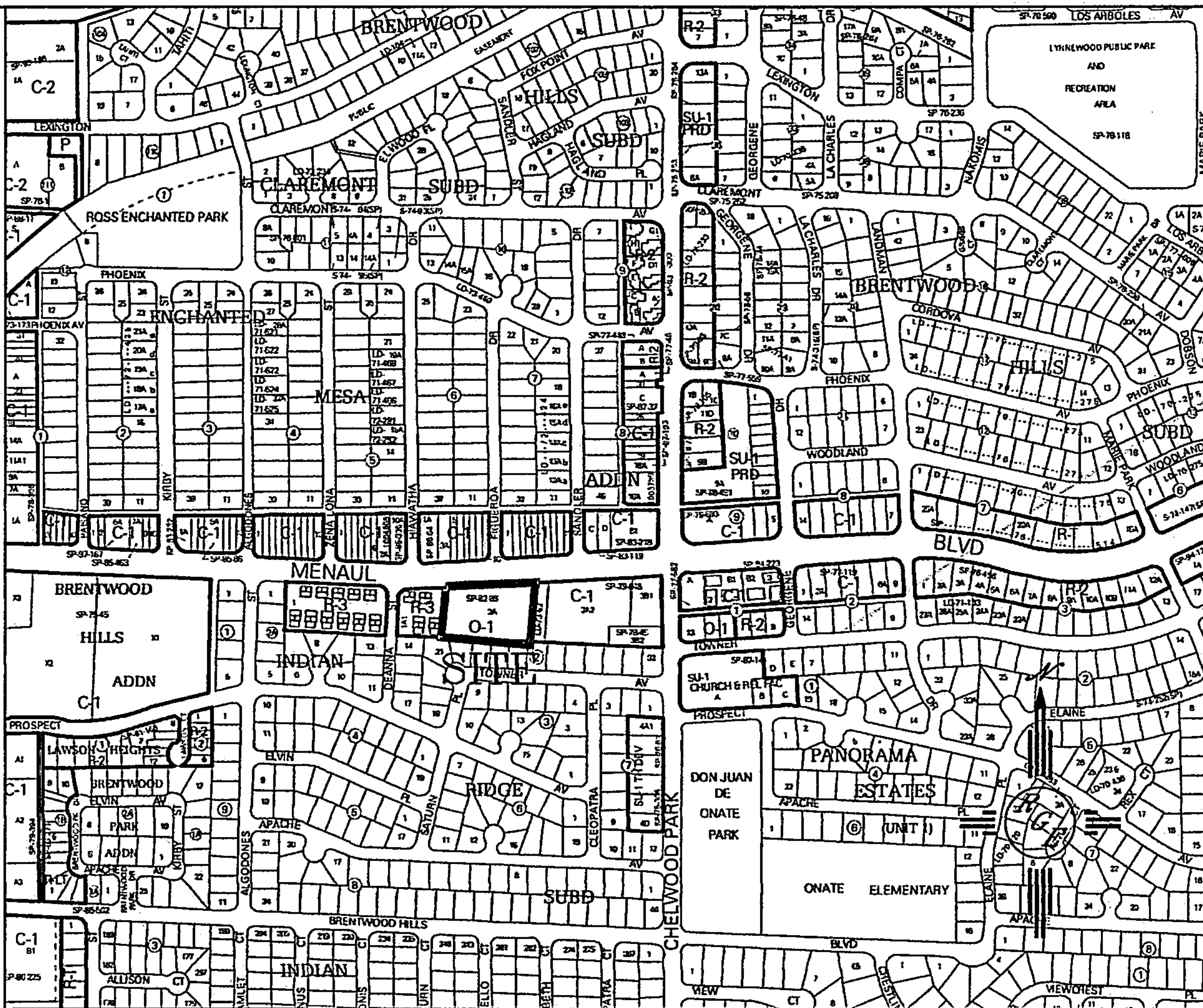
The purpose of this report is to provide the Drainage Management Plan for the development of a 1.7 acre apartment complex located at 11910 Menaul. This plan was prepared in accordance with the City of Albuquerque design regulations, utilizing the City of Albuquerque's Development Process Manual drainage guidelines. This report will demonstrate that the grading does not adversely affect the surrounding properties, nor the upstream or downstream facilities.

INTRODUCTION

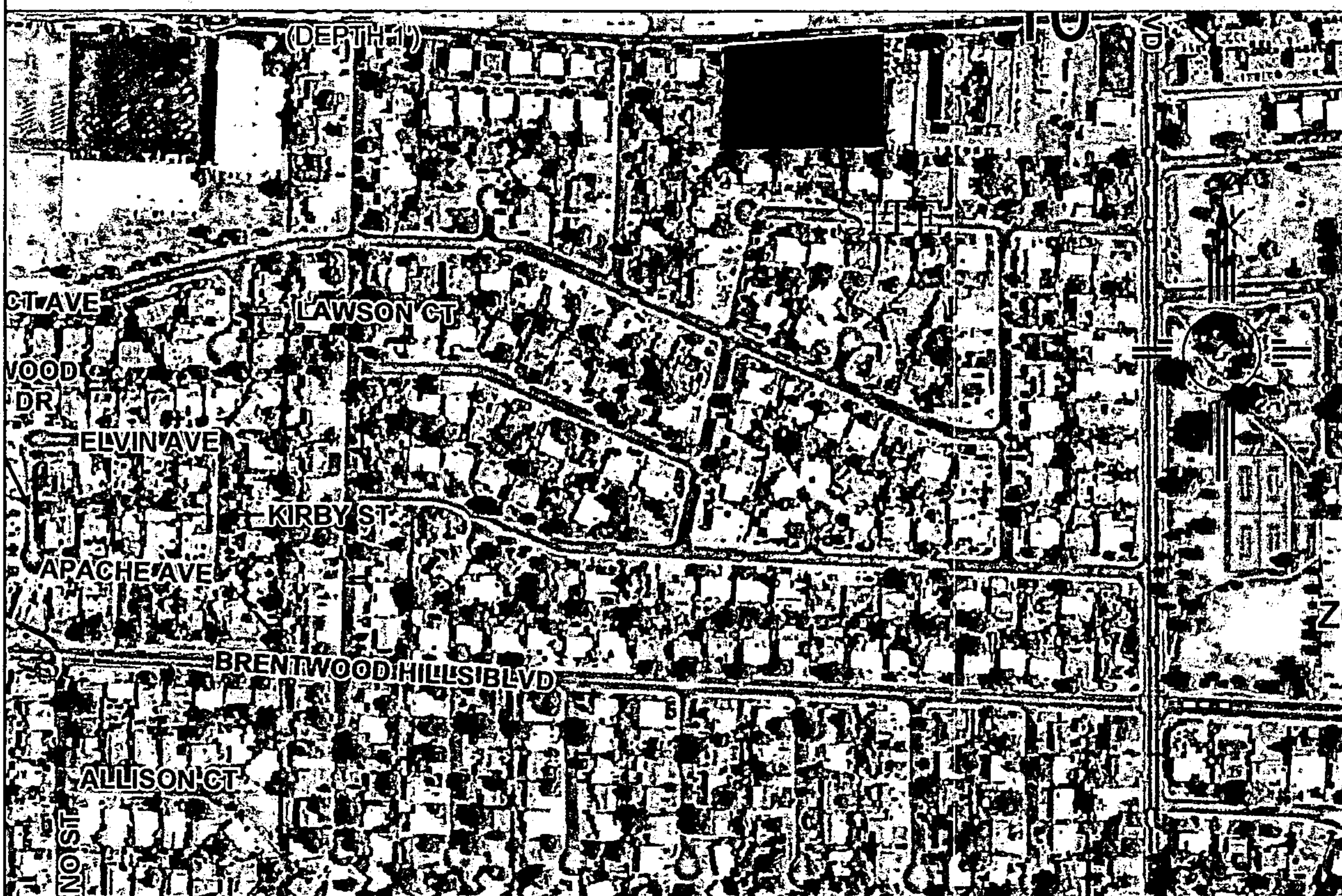
The subject of this report, as shown on the Exhibit A, is a 1.7-acre parcel of land located on the south side of Menaul between Juan tabo and Tramway Northeast. The legal description of this site is tract 2A, Indian Ridge Subdivision. As shown on FIRM map35013C0375H, the entire site is located within Flood Zone X. The site does not appear to have been graded in the past, yet has significant pedestrian activity. The site contains native grasses and hard packed paths. Due to the upstream construction of a parking lot with curbs and a block wall, the site is not affected by any upland flows from the east. The site is surrounded by fully developed sites on all sides with walls on the south side and fencing on the west side, with Menaul Boulevard on the north. The site currently free discharges as sheet flow to the adjacent lot to the west where it passes thru the adjacent site entering Menaul down stream. The development of the site will require the site to discharge at a rate equal to or less than the existing conditions and retain the first flush water quality volume onsite.

EXISTING CONDITIONS

The site is currently undeveloped and not impacted by upland flows. The site is located in flood zone x. The site currently discharges 4.05 cfs as sheet flow to the site to the west. This flow passes thru the site entering Menaul at Deanna Street, two hundred feet west of this site. All downstream improvements are in place and maintained by the city of Albuquerque.



VICINITY MAP:



FIRM MAP:

FM35001C0375H

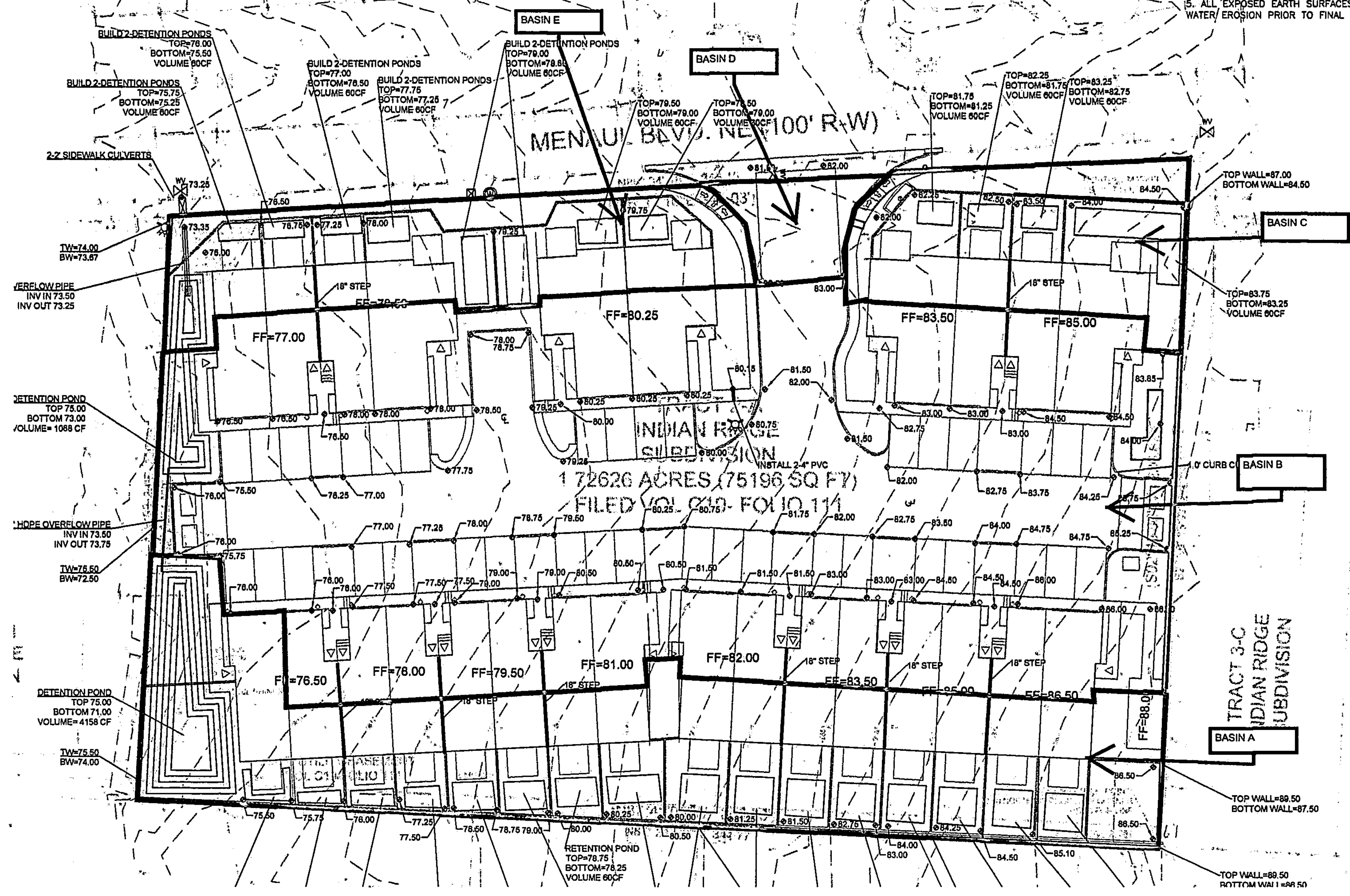
PROPOSED CONDITIONS

The proposed improvements consist of a new 26 unit apartment complex. A drainage sub basin map and hydraulic spread sheet is included in appendix A. The proposed development will have small ponds located in the rear yard of each unit. This pond will capture the rear 1/3 of the roof and discharge to the next down stream yard via turned blocks within the wall, the rear yard outfalls will be a large pond located at the west property line. The front 2/3 of each building and the parking field will discharge via sheet flow within the drive isle to the same western pond. The western pond consists of two basins, hydraulically connected via a 12" pipe. The two basins will function as one pond. This pond will act as a detention pond that will reduce the peak discharge. The outfall is two 8" pipes. A stage-storage chart is included in appendix B. A model of this site and pond routing was performed using AHYMO, and located within appendix B. As shown the site will discharge 4.03 cfs to Menaul via 2- 2' sidewalk culverts. In the event of clogging, the western wall is 1' higher than the top of pond, and the pond will discharge to Menaul via the sidewalk culverts. As shown in appendix B, the sidewalk culverts, and 2' curb cut into pond have adequate capacity. The first flush volume in excess of the required 1482 cubic feet is contained onsite within the small rear yard ponds and the dead storage volume in the ponds below the outfall.

SUMMARY AND RECOMMENDATIONS

This project is a development of multifamily residential infill development within the fully developed northeast heights watershed. The development of this site will retain the first flush volume onsite. The site will discharge less than existing conditions via a detention pond to Menaul. The pond has an emergency overflow to Menaul. The drainage structures have been adequately sized. The development of this site will not negatively impact the upstream nor down stream facilities. Since this site exceed 1 acre, an erosion and sediment Control Plan will be required, a NPDES permit will also be required prior to any construction activity.

RECORDS OF THE CONTRACTOR.
5. ALL EXPOSED EARTH SURFACES MUST BE PROTECTED FROM WATER/ EROSION PRIOR TO FINAL (CITY) ACCEPTANCE OF A



Weighted E Method

MENAU TOWN HOMES

											100-Year, 6-hr.			10-day
Basin	Area (sf)	Area (acres)	Treatment A		Treatment B		Treatment C		Treatment D		Weighted E (ac-ft)	Volume (ac-ft)	Flow cfs	Volume (ac-ft)
			%	(acres)	%	(acres)	%	(acres)	%	(acres)				
#EXISTING ONSITE DISCHARGE	75196	1.726	80%	1.38101	20.0%	0.345	0.0%	0	0%	0.000	0.856	0.123	4.05	0.123
BASIN A	17998	0.413	0%	0	50.0%	0.207	15.0%	0.06198	35%	0.145	1.683	0.058	1.59	0.077
BASIN B	43020	0.988	0%	0	4.0%	0.040	4.0%	0.0395	92%	0.909	2.530	0.208	5.03	0.329
BASIN C	5795	0.133	0%	0	47.0%	0.063	13.0%	0.01729	40%	0.053	1.753	0.019	0.53	0.027
BASIN D	1340	0.031	0%	0	0.0%	0.000	0.0%	0	100%	0.031	2.640	0.007	0.16	0.011
BASIN E	7043	0.162	0%	0	47.0%	0.076	14.0%	0.02264	39%	0.063	1.742	0.023	0.64	0.032
OVERALLPROSPED	75196	1.726	0%	0	22.3%	0.385	8%	0.141	70%	1.200	2.196	0.316	7.95	0.476

Equations:

Weighted E = Ea*Aa + Eb*Ab + Ec*Ac + Ed*Ad / (Total Area)

Volume = Weighted D * Total Area

Flow = Qa * Aa + Qb * Ab + Qc * Ac + Qd * Ad

Where for 100-year, 6-hour storm (zone 4)

Ea= 0.8	Qa= 2.2
Eb= 1.08	Qb= 2.92
Ec= 1.46	Qc= 3.73
Ed= 2.64	Qd= 5.25

FIRST FLUSH REQUIREMENT
1481.3 CUBIC FEET
1980 CUBIC FEET PROVIDED

Pond volume required	
FIRST FLUSH REQUIRED	1481.34 cf
FIRST FLUSH PROVIDED	715.00 cf
EXISTING ONSITE DISCHARGE	1.59 CFS
PROPOSED ONSITE DISHCARGE	7.95 CFS
UPLAND	4.05 CFS

NARRATIVE

THIS SITE IS AN INFILL DEVELOPMENT OF AN EXISTING SITE. THIS SITE CURRENTLY FREE DISCHARGES 4.05 CFS. THE PROPOSED IMPROVEMENTS REDUCE THE DISCHARGE TO LESS THAN EXISTING. THE FIRST FLUSH VOLUME OF1482 CUBIC FEET IS CAPTURED ON SITE

PONROUTING121415.txt

*S AHYMO - MENAUL
*S POND ROUTING

START TIME=0.0 PUNCH CODE=0

RAINFALL TYPE=1
QUARTER=0.0 ONE= 2.20 IN
SIX= 2.90 IN DAY= 3.70 IN DT = 0.05 HR

COMPUTE NM HYD ID=1 HYD NO=101 DA= .002697 SQ MI
PER A=00 PER B=22 PER C=8 PER D=70
TP=-.144 MASSRAIN=-1

PRINT HYD ID=1 CODE=20

* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR
ROUTE RESERVOIR ID=2 HYD NO=102 INFLOW=1 CODE=3
OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)
0.00 0.00 73.00
2.74 0.0533 74.00
4.34 0.118 75.00

PRINT HYD ID=2 CODE=20

FINISH

AHYMO.OUT

AHYMO PROGRAM (AHYMO-S4) - Version: S4.01a - Rel: 01a
 RUN DATE (MON/DAY/YR) = 11/13/2015
 START TIME (HR:MIN:SEC) = 17:12:00 USER NO.=
 RioGrandeSingleA41963517
 INPUT FILE = and Settings\Owner\Desktop\2015 JOBS\1569-MENAU
 TOWNHOMES\PONROUTING121415.txt

*S AHYMO - MENAU
 *S POND ROUTING

START TIME=0.0 PUNCH CODE=0

RAINFALL TYPE=1
 QUARTER=0.0 ONE= 2.20 IN
 SIX= 2.90 IN DAY= 3.70 IN DT = 0.05 HR

6-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
 AREAS (NM & AZ) - D1

DT = 0.050000 HOURS			END TIME = 6.000000 HOURS			
0.0000	0.0047	0.0095	0.0146	0.0201	0.0259	0.0323
0.0415	0.0561	0.0718	0.0881	0.1056	0.1235	0.1418
0.1608	0.1800	0.2012	0.2234	0.2472	0.2763	0.3081
0.3508	0.3991	0.4587	0.5383	0.6279	0.7825	1.0229
1.4348	1.7243	1.9526	2.0673	2.1679	2.2402	2.2976
2.3477	2.3844	2.4181	2.4459	2.4701	2.4926	2.5127
2.5318	2.5487	2.5648	2.5804	2.5955	2.6079	2.6148
2.6216	2.6284	2.6346	2.6409	2.6469	2.6529	2.6588
2.6644	2.6699	2.6753	2.6806	2.6859	2.6909	2.6958
2.7007	2.7055	2.7103	2.7148	2.7194	2.7238	2.7282
2.7325	2.7368	2.7410	2.7452	2.7493	2.7534	2.7574
2.7614	2.7654	2.7692	2.7731	2.7769	2.7807	2.7844
2.7881	2.7917	2.7953	2.7989	2.8024	2.8059	2.8094
2.8128	2.8162	2.8196	2.8229	2.8262	2.8295	2.8327
2.8359	2.8391	2.8422	2.8453	2.8484	2.8515	2.8546
2.8576	2.8606	2.8635	2.8665	2.8694	2.8723	2.8751
2.8780	2.8808	2.8836	2.8864	2.8892	2.8919	2.8946
2.8973	2.9000					

COMPUTE NM HYD ID=1 HYD NO=101 DA= .002697 SQ MI
 PER A=00 PER B=22 PER C=8 PER D=70
 TP=-.144 MASSRAIN=-1

K = 0.078480HR TP = 0.144000HR K/TP RATIO = 0.545000 SHAPE
 CONSTANT, N = 7.106428
 UNIT PEAK = 6.8997 CFS UNIT VOLUME = 0.9981 B = 526.28
 P60 = 2.2000
 AREA = 0.001888 SQ MI IA = 0.10000 INCHES INF = 0.04000
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
 0.050000

K = 0.138025HR TP = 0.144000HR K/TP RATIO = 0.958506 SHAPE
 CONSTANT, N = 3.686303

AHYMO.OUT
 UNIT PEAK = 1.8749 CFS UNIT VOLUME = 0.9932 B = 333.69
 P60 = 2.2000
 AREA = 0.000809 SQ MI IA = 0.46000 INCHES INF = 1.13800
 INCHES PER HOUR
 RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=1 CODE=20

PARTIAL HYDROGRAPH 101.00

TIME	TIME	FLOW	TIME	TIME	FLOW	TIME	FLOW
	FLOW			FLOW			
HRS	HRS	CFS	HRS	HRS	CFS	HRS	CFS
0.000	0.0		2.000	1.2		4.000	0.1
6.000	0.1		3.000	0.1		5.000	0.1
	1.000	0.5					

RUNOFF VOLUME = 2.21484 INCHES = 0.3186 ACRE-FEET
 PEAK DISCHARGE RATE = 7.73 CFS AT 1.500 HOURS BASIN AREA = 0.0027 SQ. MI.

* ROUTE THE TOTAL FLOW THROUGH THE PROPOSED RESERVOIR

ROUTE RESERVOIR ID=2 HYD NO=102 INFLOW=1 CODE=3
 OUTFLOW(CFS) STORAGE(AC-FT) ELEV(FT)
 0.00 0.00 73.00
 2.74 0.0533 74.00
 4.34 0.118 75.00

* * * * *

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	73.00	0.000	0.00
0.15	0.00	73.00	0.000	0.00
0.30	0.00	73.00	0.000	0.00
0.45	0.00	73.00	0.000	0.00
0.60	0.03	73.00	0.000	0.00
0.75	0.29	73.03	0.002	0.09
0.90	0.40	73.08	0.004	0.21
1.05	0.57	73.12	0.007	0.34
1.20	1.01	73.20	0.011	0.55
1.35	2.51	73.39	0.021	1.08
1.50	7.73	74.12	0.061	2.93
1.65	5.19	74.77	0.103	3.97
1.80	2.51	74.71	0.099	3.87
1.95	1.42	74.38	0.078	3.34
2.10	0.92	74.01	0.054	2.76
2.25	0.64	73.67	0.035	1.82
2.40	0.47	73.45	0.024	1.22
2.55	0.27	73.30	0.016	0.81
2.70	0.18	73.19	0.010	0.53
2.85	0.14	73.13	0.007	0.35
3.00	0.11	73.09	0.005	0.24
3.15	0.09	73.06	0.003	0.17
3.30	0.08	73.05	0.003	0.13

AHYMO.OUT				
3.45	0.07	73.04	0.002	0.10
3.60	0.07	73.03	0.002	0.09
3.75	0.07	73.03	0.002	0.08
3.90	0.06	73.03	0.001	0.07
4.05	0.06	73.02	0.001	0.07
4.20	0.06	73.02	0.001	0.07
4.35	0.06	73.02	0.001	0.06
4.50	0.06	73.02	0.001	0.06
4.65	0.06	73.02	0.001	0.06
4.80	0.06	73.02	0.001	0.06
4.95	0.06	73.02	0.001	0.06
5.10	0.06	73.02	0.001	0.06
5.25	0.06	73.02	0.001	0.06
5.40	0.06	73.02	0.001	0.06
5.55	0.06	73.02	0.001	0.06
5.70	0.06	73.02	0.001	0.06
5.85	0.06	73.02	0.001	0.06
6.00	0.06	73.02	0.001	0.06
6.15	0.03	73.02	0.001	0.06
6.30	0.01	73.01	0.001	0.04
6.45	0.00	73.01	0.000	0.02
6.60	0.00	73.01	0.000	0.01
6.75	0.00	73.00	0.000	0.01
6.90	0.00	73.00	0.000	0.00

PEAK DISCHARGE = 4.028 CFS - PEAK OCCURS AT HOUR 1.70
 MAXIMUM WATER SURFACE ELEVATION = 74.805
 MAXIMUM STORAGE = 0.1054 AC-FT INCREMENTAL TIME= 0.050000HRS

PRINT HYD ID=2 CODE=20

PARTIAL HYDROGRAPH 102.00

TIME	TIME	FLOW	TIME	TIME	FLOW	TIME	FLOW
	FLOW			FLOW			
HRS	HRS	CFS	HRS	HRS	CFS	HRS	CFS
	CFS			CFS			
6.000	0.000	0.0	2.000	3.1	4.000	0.1	
	0.1						
7.000	1.000	0.3	3.000	0.2	5.000	0.1	
	0.0						

RUNOFF VOLUME = 2.21473 INCHES = 0.3186 ACRE-FEET
 PEAK DISCHARGE RATE = 4.03 CFS AT 1.700 HOURS BASIN AREA = 0.0027 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 17:12:00

OPENINGS

Weir Equation:

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

Q = 1.52 cfs

C = 2.95

H = 0.5 ft

L = Length of weir

2' SIDEWALK CULVERT (EACH)/ 2' CURB CUT

$$Q = 2.95 \times 2 \times 0.67^{1.5} = 3.23$$