



FIRM PANEL, REVISION NOVEMBER 2012 Per LOMR Case 11-06-2877P

GRADING & DRAINAGE PLAN

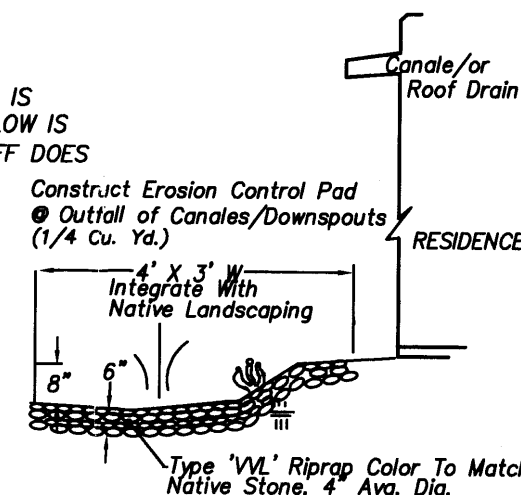
THE RESIDENTIAL HOME PROJECT IS LOCATED IN UNIT 3 OF NORTH ALBUQUERQUE ACRES APPROXIMATELY 11 MILES FROM THE DOWNTOWN CORE OF ALBUQUERQUE, NM. THE GRADING AND DRAINAGE SCHEME HEREON IS IN COMPLIANCE WITH THE BERNALILLO COUNTY FLOOD HAZARD ORDINANCE, NO. 88-46, AND CITY STORM DRAINAGE ORDINANCE. THE PLAN IS REQUIRED IN ORDER TO FACILITATE THE OWNER'S REQUEST FOR BUILDING PERMIT. THE PLAN SHOWS:

- EXISTING CONTOURS, SPOT ELEVATIONS, AND EXISTING DRAINAGE PATTERNS.
- PROPOSED IMPROVEMENTS: 1. RESIDENTIAL HOME SITE, GRAVEL-CONCRETE DRIVEWAY, WELL AND SEPTIC SYSTEM, AND NEW GRADE ELEVATIONS.
- CONTINUITY BETWEEN EXISTING AND PROPOSED ELEVATIONS.
- QUANTIFICATION AND ACCEPTANCE OF UPSTREAM OFFSITE FLOWS WHICH CONTRIBUTE TO THE DEVELOPED FLOWS GENERATED BY THE IMPROVEMENTS.
- UPSTREAM ANALYSIS AS TO WATER SURFACE MODEL AND EROSION SETBACK AND EROSION CONTROL.

THE PURPOSE OF THE PLAN IS TO ESTABLISH CRITERIA FOR CONTROLLING STORM RUNOFF AND EROSION, AND ESSENTIALLY ALLOWING HISTORIC FLOWS TO CONTINUE TO DRAIN THROUGH THE PROPERTY. PRESENTLY, THE SITE IS BOUNDED ON THE EAST, WEST AND SOUTH BY UNDEVELOPED PROPERTY. ALAMEDA AVENUE ON THE NORTH IS AN IMPROVED, ASPHALT ROADWAY ALONG THE PROJECT FRONTAGE. THE SITE GENERALLY FALLS FROM EAST TO WEST AT APPROX. 3.5 PERCENT. ALL OFFSITE FLOWS ARE QUANTIFIED ON THE PLAN, AND ADDRESSED IN THE CALCULATIONS.

A PORTION OF THE SITE IS ENCOMBERED BY A DESIGNATED FEMA FLOODPLAIN.

HISTORICAL SITE RUNOFF OUTFALL LOCATIONS WILL REMAIN UNCHANGED IN DEVELOPMENT. SINCE ALAMEDA AVE IS IMPROVED MINIMAL GRADING IS PROPOSED WITHIN THE CITY R.O.W. LIMITED FREE DISCHARGE OF DEVELOPED FLOW IS ACCEPTABLE SINCE DOWNSTREAM CAPACITY (LA CUEVA CHANNEL) EXISTS, AND THE TOTAL DEVELOPED RUN-OFF DOES NOT EXCEED THE ZONE 3 MAXIMUM ESTABLISHED IN THE NAA MASTER DRAINAGE PLAN.





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4. QUANTIFICATION AND ACCEPTANCE OF UPSTREAM OFFSITE FLOWS WHICH CONTRIBUTE TO THE DEVELOPED FLOWS GENERATED BY THE IMPROVEMENTS.
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I, PHILIP W. CLARK, A PROFESSIONAL ENGINEER LICENSED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW MEXICO, DO HEREBY CERTIFY THAT I HAVE VISITED THE SITE SHOWN HEREON, AND THAT THE CONTOURS SHOWN REPRESENT THE EXISTING GROUND CONDITIONS, AND DO FURTHER CERTIFY THAT NO SIGNIFICANT EARTHWORK OF ANY KIND, NOR DISTURBANCE OF THE EXISTING GROUND HAS OCCURRED ON THIS SITE SINCE THE CONTOURS WERE DETERMINED.

PHILIP W. CLARK NPPE #10265

DESIGN CRITERIA

HYDROLOGIC METHODS PER SECTION 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL (DPH) REVISED JANUARY 1993 FOR CITY OF ALBUQUERQUE, ADOPTED BY THE COUNTY OF BERNALILLO DISCHARGE RATE: $Q = Q_{PEAK} \times AREA$. "Peak Discharge Rates For Small Watersheds" VOLUMETRIC DISCHARGE: $VOLUME = E \times WEIGHTED \times AREA$ $P100 = 2.60$ Inches, Zone 3 Time of Concentration, $T_C = 10$ Minutes DESIGN STORM: 100-YEAR/6-HOUR, 10-YEAR/6-HOUR [] = 10 YEAR VALUES

HISTORIC CONDITIONS PER EXIST. LOT

100% A PROJECT AREA = 0.89 ACRES, WHERE EXCESS PRECIP. "Weighted" = 0.66 In. [0.19] PEAK DISCHARGE, $Q100 = 1.7$ CFS [0.51], WHERE UNIT PEAK DISCHARGE "A" = 1.9 CFS/AC. [0.60] THEREFORE: $VOLUME 100 = 2123$ CF [611]

DEVELOPED CONDITIONS DETERMINE LAND TREATMENTS, PEAK DISCHARGE AND VOLUMETRIC DISCHARGE FOR STUDY AREA

LAND TREATMENT	AREA	Q Peak	E
UNDEVELOPED	0.43 Ac. (48%) A	1.87 [0.58]	0.66 [0.19]
LANDSCAPING	0.17 Ac. (20%) B	2.60 [1.19]	0.92 [0.36]
COMPACTED SOIL & Slopes > 15%	0.14 Ac. (15%) C	3.45 [2.00]	1.29 [0.62]
ROOF - PAVEMENT	0.15 Ac. (17%) D	5.02 [3.39]	2.36 [1.50]
	0.89 Ac.		

THEREFORE: $E_{Weighted} = 1.09$ In. [XXX] & $Q100 = 2.5$ CFS $Q10 = 1.24$ CFS

CALC. 1ST FLUSH, $P(4-6MO.) = 0.6"$ Per Table 2 Water Qual. Storm PRO-RATE: $17\% / 20\% \times 0.85 \times 0.09 = 0.0765$ INCHES $\times 0.89$ (43560/12) = 244 CF ADDITIONAL DE-SILTATION PROVIDED IN RIPRAP EROSION CONTROL PADS

UPSTREAM ANALYSIS - SEE HEC-RAS WATER SURFACE MODEL OF LA CUEVA, ON FILE WITH CITY HYDROLOGY (Ref: C-20/D35) (REVISED 11.8.12) PER RTI STUDY, $Q100 = 3090$ CFS AT VENTURA ST. (SEE LOMR2012)

EROSION SET BACK ANALYSIS - PER SEDIMENT EROSION DESIGN GUIDE (SEDG)

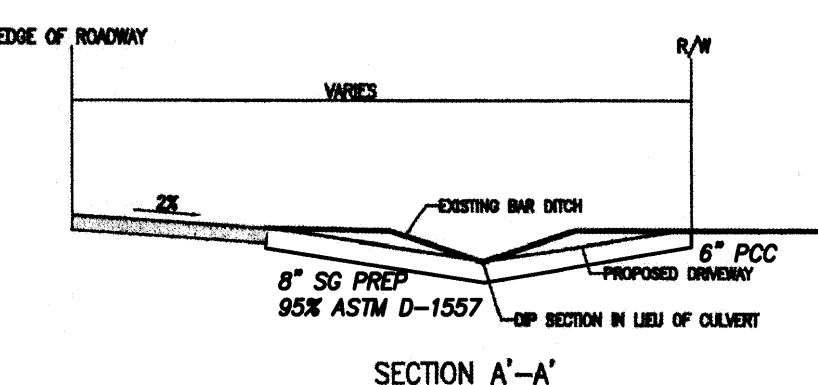
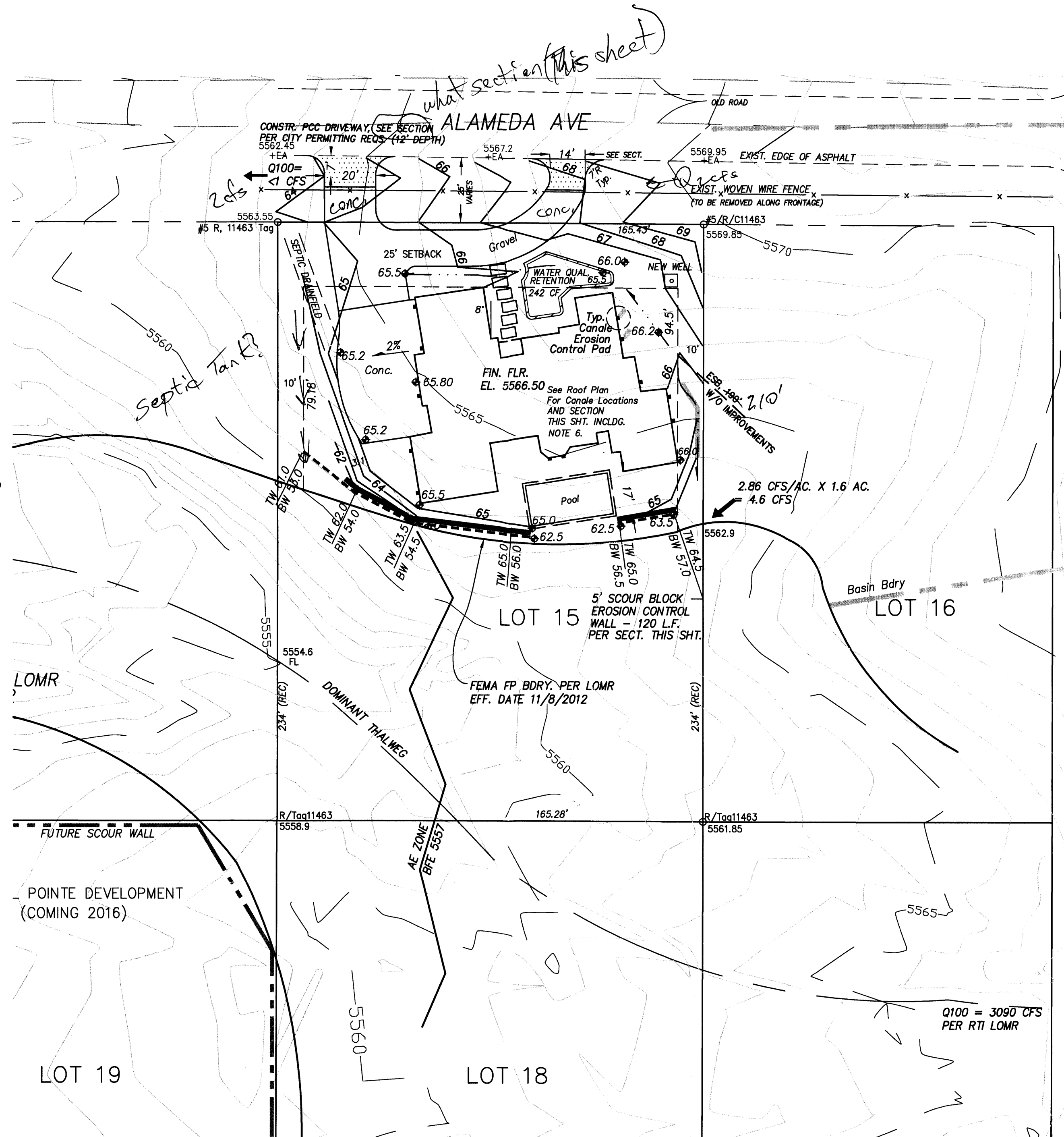
$Q_{100} = 3090$ CFS...LA CUEVA ARROYO

$Q_{10} = 0.20$ 618 CFS $W_D = 4.6$ 60 FEET

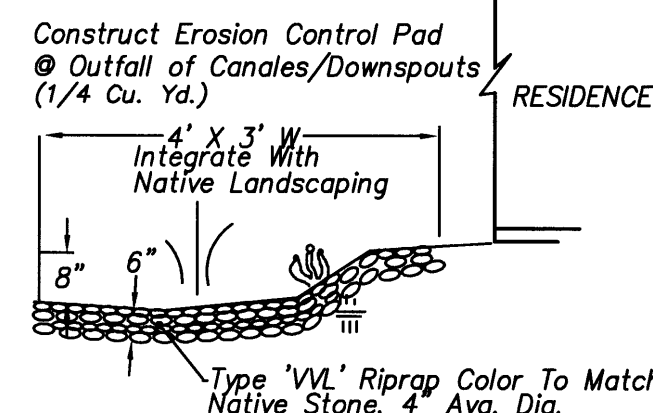
$LAMDA = [0.8 + 4 \log Q_{10}] W_D = 718$ FEET λ BANK SETBACK = $LAMDA/4 = 179$ FEET

CENTER LINE SETBACK = $BSS + W_D/2 = 190$ FEET

THEREFORE: EROSION CONTROL IMPROVEMENTS REQUIRED - PER DISCUSSION WITH CITY AND AMAFCA CONSTRUCT SCOUR WALL ON SOUTH SIDE OF FOOTPRINT

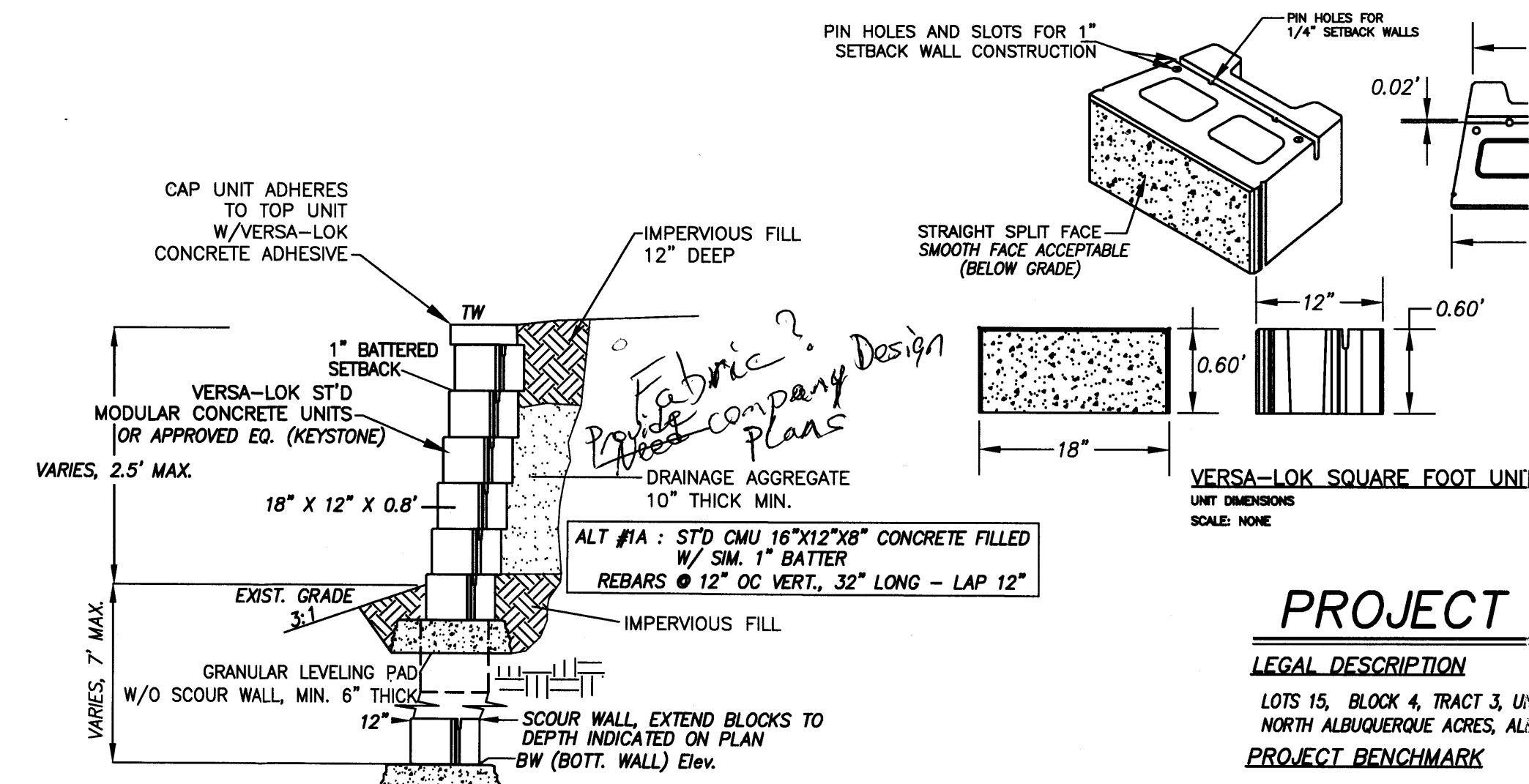


DRIVEWAY SECTION



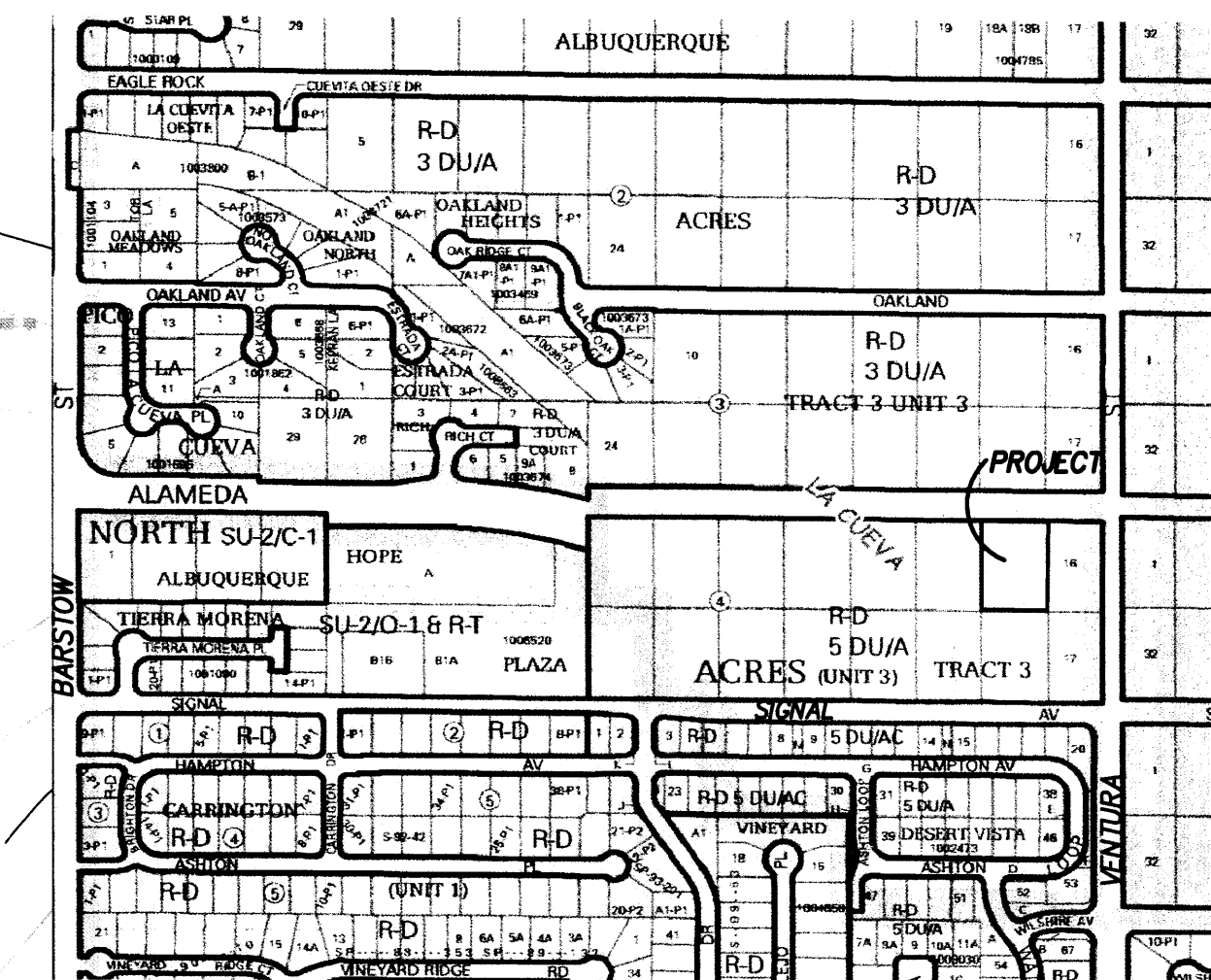
EROSION CONTROL PAD

NO SCALE



RETAINING WALL SECTION

W/ SCOUR WALL



VICINITY MAP

ZONE C-20

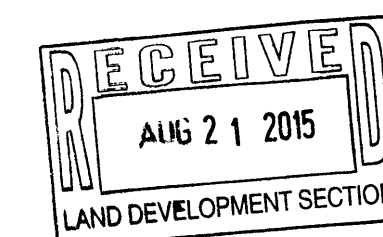
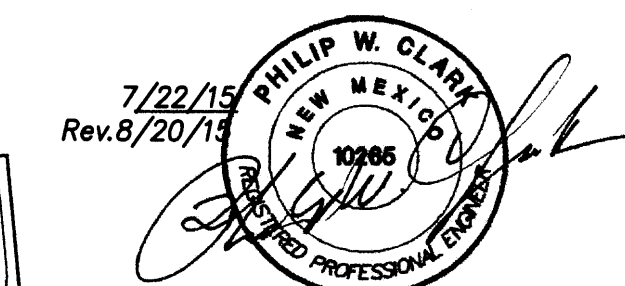
NOTES

ALL WORK WITHIN THE CITY R.O.W. SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, W/ 8 UPDATES.

1. PERIMETER FENCING AROUND THE PROPERTY IS NOT PROPOSED. CONSTRUCTION OF FUTURE FENCING SHALL PERMIT THE PASSING OF DRAINAGE TO AND FROM HISTORIC OUTFALL AND ENTRANCE LOCATIONS. OWNER SHALL MAINTAIN FENCING AND KEEP FREE OF ALL DEBRIS, WEEDS, AND/OR OBSTRUCTIONS.
2. THIS PLAN SHOWS A FIXED PERCENTAGE OF LAND TREATMENT A REMAINING IN AN UNDISTURBED CONDITION. IF A GREATER AREA IS DISTURBED A REVISED PLAN MAY BE REQUIRED PER CITY PLANNING/ENGINEERING DEVELOPMENT UNLESS THE COMPOSITE TREATMENT IS < ALLOWABLE).
3. CONTACT THE CITY OF ALBUQUERQUE PLANNING FOR ACCESS PERMIT @ PLAZA DEL SOL . 924-3991
4. REVEGETATE ALL AREAS DISTURBED DUE TO CONSTRUCTION PER CITY OF ALBUQ. SPEC. 1012, NATIVE SEED MIX.
5. MAXIMUM SITE GRADING WITHOUT EROSION PROTECTION: 3 HORIZONTAL TO 1 VERTICAL, 3:1.
6. RIPRAP STONE SHOWN ON THIS PLAN IS SMOOTH RIVER-RUN COBBLES, TYPE VVL IN COMPLIANCE WITH AMAFCA GUIDELINES, 4" AVERAGE DIA. NATIVE STONE, AND BURIED TO 6" DEPTH (UNO). SEE EROSION CONTROL PAD, THIS SHEET. SEE ROOF PLAN FOR CANALE LOCATIONS.
7. CONTRACTOR SHALL ENSURE THAT NO SITE SOILS/SEDIMENT OR SILT ENTER THE RIGHT-OF-WAYS DURING CONSTRUCTION.

LEGEND

+24.0	EXIST. SPOT ELEVATION
10	EXIST. CONTOUR
24.0	NEW SPOT ELEVATION
12	NEW CONTOUR
---	EXIST. CURB & GUTTER
---	NEW SWALE
---	DRAINAGE DIRECTION
---	NEW P.C.C. CONCRETE
---	NEW RIPRAP, BURIED
---	NEW RETAINING & SCOUR WALL
---	TOP OF WALL, RETAINING
BW =	BOTTOM ELEV. OF SCOUR WALL
BFE	BASE FLOOD ELEVATION (SEE FEMA REV'D MAP NOV. 08, 2012)
FL	FLOWLINE
EG	EXIST. GRADE



PROJECT DATA

LEGAL DESCRIPTION

LOTS 15, BLOCK 4, TRACT 3, UNIT 3 NORTH ALBUQUERQUE ACRES, ALBUQUERQUE, NEW MEXICO

PROJECT BENCHMARK

THE BASIS OF ELEVATIONS FOR THIS SURVEY IS ACS BENCHMARK 7-019, ELEVATION OF WHICH IS 5485.72. BENCHMARK IS LOCATED AT THE INTERSECTION OF BARSTOW ST. AND MODESTO AVE.

TOPOGRAPHIC DESIGN SURVEY

COMPILED BY CLARK CONSULTING ENGINEERS FROM DESIGN SURVEY BY PHILIP W. TURNER P.S., DATED JULY 2014, NAVD83 DATUM.

Clark Consulting Engineers 19 Ryan Road Edgewood, New Mexico 87015 Tele: (505) 281-2444 Fax: (505) 281-2444	
DATE	REVISION
8/20/15	ADDR. CITY COMM.
LOT 15, BLK. 4, TR. 3, UNIT 3 NORTH ALBUQ. ACRES, ALBUQ. NEW MEXICO THE JONES HOME Grading, Site, and Drainage Plan w/ On-Site Erosion Control Berm Plan / Section	
DESIGNED BY: PWC	DRAWN BY: CCE
CHECKED BY: PWC	DATE: JUL2015
JOB #: J. Jones	FILE #: G/D
SHEET 1 OF 1	



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PHILIP W. CLARK NMPE #10285

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DISCHARGE RATE: $Q = Q_{PEAK} \times AREA$, "Peak Discharge Rates For Small Watersheds"
VOLUMETRIC DISCHARGE: $VOLUME = E \times WEIGHTED \times AREA$
 $P100 = 2.60$ inches, Zone 3 Time of Concentration, $TC = 10$ Minutes
DESIGN STORM: 100-YEAR/6-HOUR, 10-YEAR/6-HOUR [] = 10 YEAR VALUES

HISTORIC CONDITIONS PER EXIST. LOT

100% A
PROJECT AREA = 0.89 ACRES, WHERE EXCESS PRECIP. "Weighted" = 0.66 in. [0.19]
PEAK DISCHARGE, $Q100 = 1.7$ CFS [0.51], WHERE UNIT PEAK DISCHARGE "A" = 1.9 CFS/AC. [0.60]
THEREFORE: $VOLUME 100 = 2123$ CF [617]

DEVELOPED CONDITIONS DETERMINE LAND TREATMENTS, PEAK DISCHARGE AND VOLUMETRIC DISCHARGE FOR STUDY AREA

	AREA	TREATMENT	Q Peak	E
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(REVISED 11.8.12)
PER RTI STUDY, $Q100 = 3090$ CFS AT VENTURA ST. (SEE LOMR2012)

EROSION SET BACK ANALYSIS - PER SEDIMENT EROSION DESIGN GUIDE (SEDG)

$Q_{100} = 3090$ CFS...LA CUEVA ARROYO
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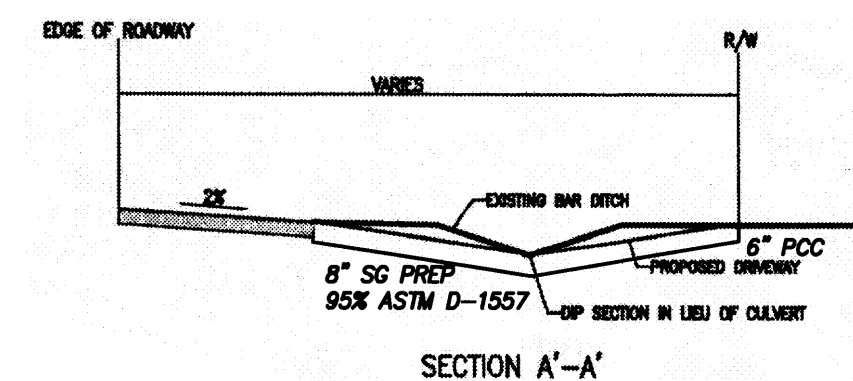
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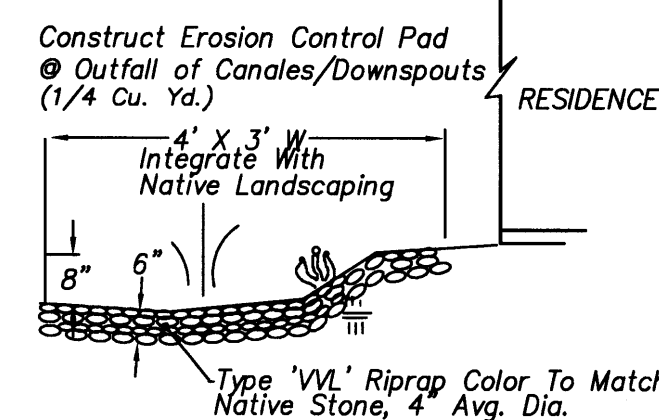
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EROSION CONTROL PAD

NO SCALE



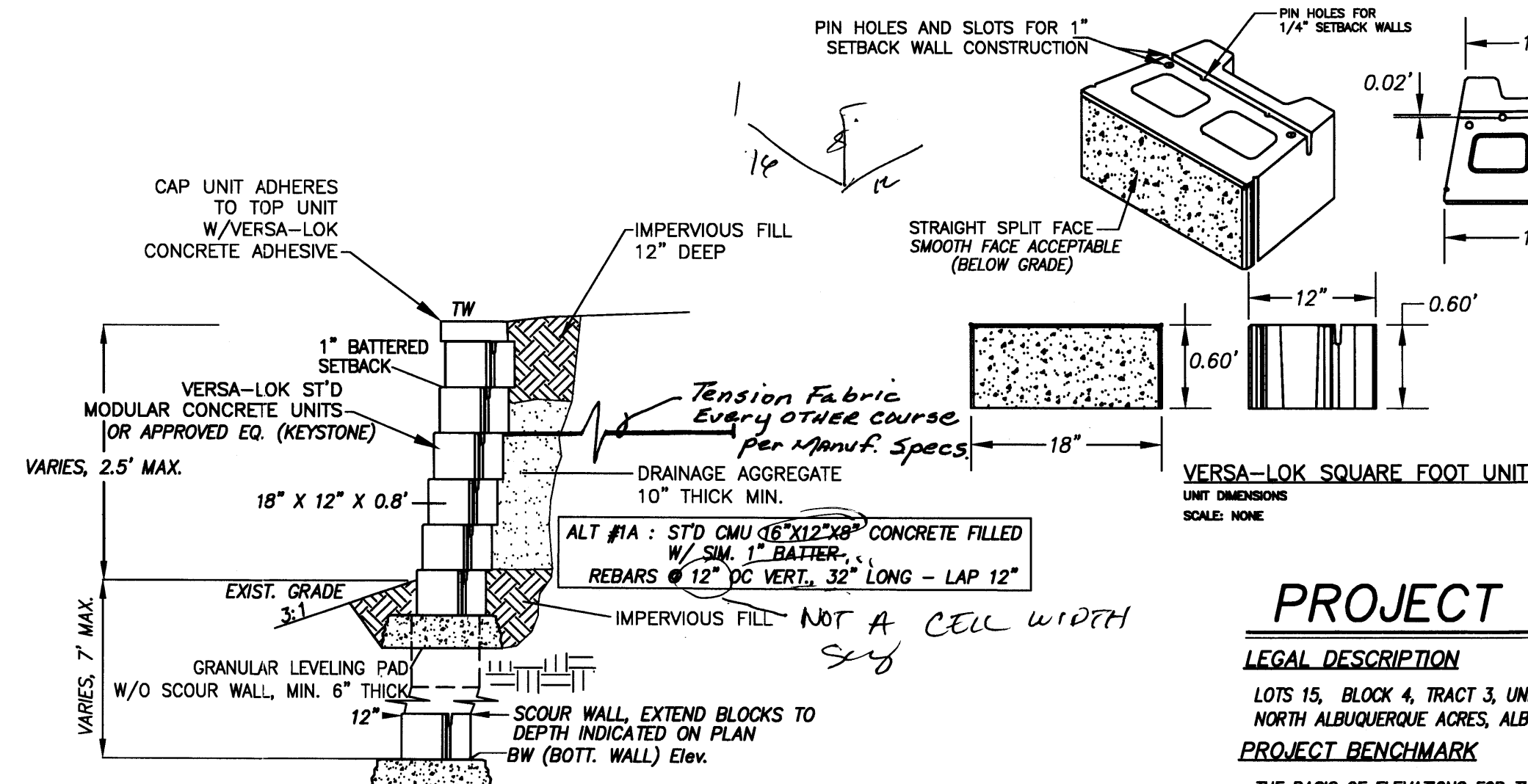
DRIVEWAY SECTION



RETAINING WALL SECTION

NTS

W/ SCOUR WALL



PROJECT DATA

LEGAL DESCRIPTION

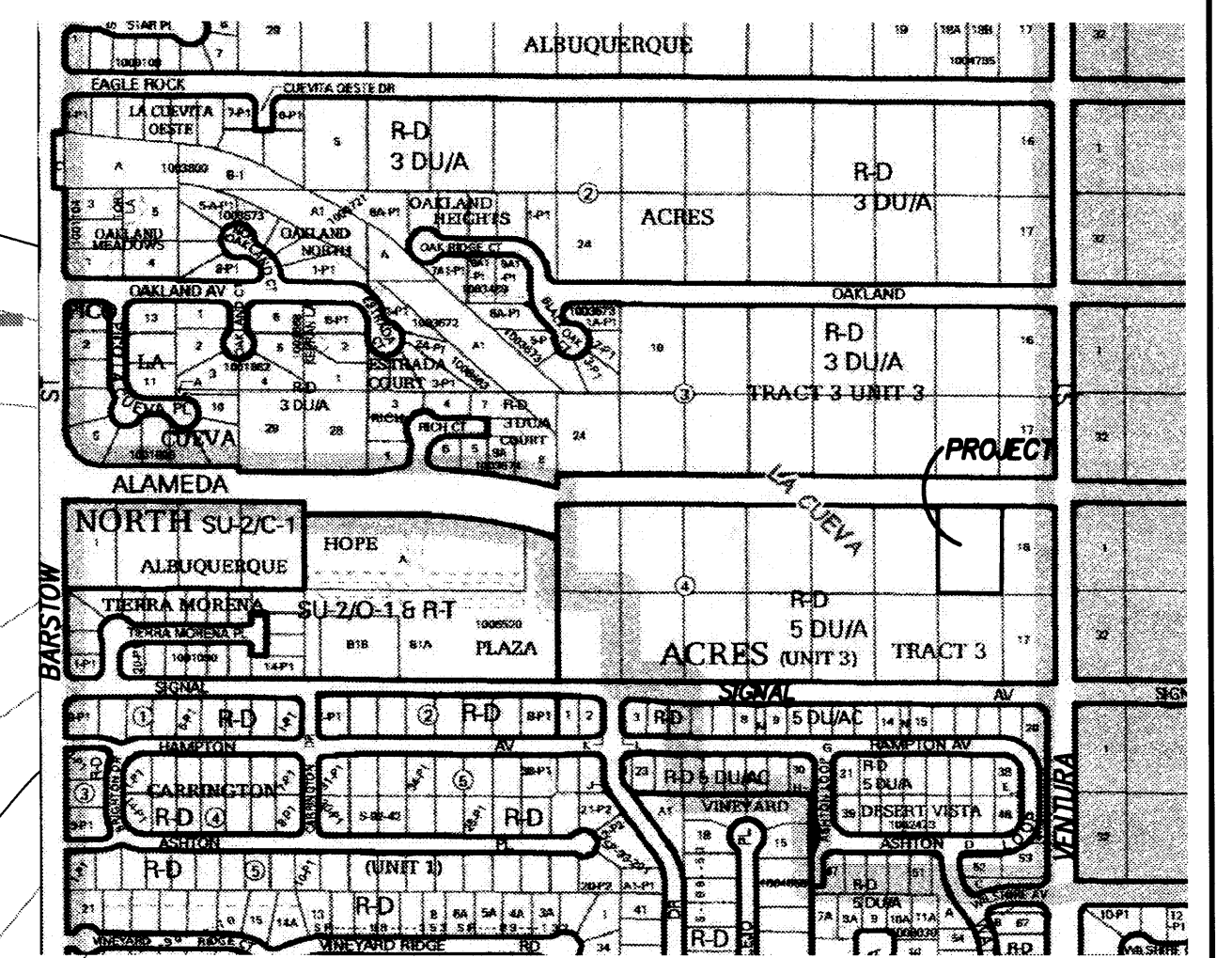
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VICINITY MAP

ZONE C-20

NOTES

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---	NEW RIPRAP, BURIED
---	NEW RETAINING & SCOUR WALL
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BW =	BOTTOM ELEV. OF SCOUR WALL
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FL	FLOWLINE
EG	EXIST. GRADE

7/22/15
Rev. 8/28/15
9/2/15
PHILIP W. CLARK
NEW MEXICO
REGISTERED PROFESSIONAL ENGINEER

Clark Consulting Engineers

19 Ryan Road
Edgewood, New Mexico 87015
Tel: (505) 281-2444 Fax: (505) 281-2444

DATE: REVISION: LOT 15, BLK. 4, TR. 3, UNIT 3
8/20/15 ADDR. CITY COMM. NORTH ALBUQ. ACRES, ALBUQ. NEW MEXICO

8/28/15 *** RND. 2 THE JONES HOME
1/2/15 Add T. F. Grading, Site, and Drainage Plan

w/ On-Site Erosion Control
Berm Plan / Section

DESIGNED BY: PWC DRAWN BY: CCE JOB #: J. Jones SHEET
CHECKED BY: PWC DATE: JUL2015 FILE #: G/D 1 OF 1