

SANTA MONICA DRIVE, N.E.

(60' RIGHT OF WAY)

ANASTASIA STREET

CONC. CURB AND GUTTER

TRACT CDS-1A  
8.4419 Ac.

UNDEVELOPED VACANT LOT

N'LY 42' OF 46' NON-EXCLUSIVE  
ACCESS EASEMENT

DRAINAGE CERTIFICATION  
FOR  
(ADDITION TO GRACE CHURCH GRADING AND DRAINAGE PLAN-  
ENGINEER'S STAMP DATED 8-5-08 D18/D026B)

I, I. ARSENIO MARTINEZ, NMPE 7875, OF THE FIRM ACM ENGINEERING SERVICES HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED AND WILL DRAIN IN SUBSTANTIAL COMPLIANCE WITH AND IN ACCORDANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED 8-5-08. THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY NMPS 14269 OF THE FIRM WAYJOHN SURVEYING. I FURTHER CERTIFY THAT I HAVE PERSONALLY VISITED THE PROJECT SITE ON 10-20-2009 AND HAVE DETERMINED BY VISUAL INSPECTION THAT THE SURVEY DATA PROVIDED IS REPRESENTATIVE OF ACTUAL SITE CONDITIONS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR "CERTIFICATE OF PERMANENT OCCUPANCY."

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

*I. Arsenio Martinez*  
I. ARSENIO MARTINEZ, NMPE 7875  
October 20, 2009

6901 SAN ANTONIO DRIVE, N.E.  
(RIGHT-OF-WAY VARIES)

PROPOSED GRADING & DRAINAGE PLAN - PHASE III  
Scale: 1" = 30 ft

0 10 20 30 40 FT

RECEIVED

OCT 21 2009

HYDROLOGY  
SECTION

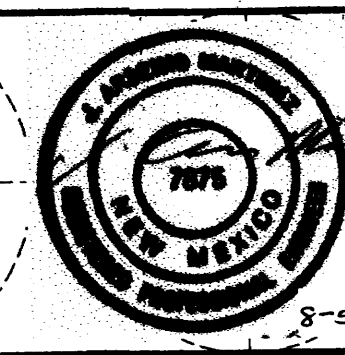
## LEGEND

- TC = 20.00 Top of Curb
- FL = 19.37 Flow Line
- SW = 20.10 Top of Sidewalk
- Existing Contour
- Proposed Contour
- Existing Spot Elevation
- Proposed Spot Elevation
- Existing Fire Hydrant
- Existing Manhole
- Proposed Asphalt
- Proposed Sidewalk
- Basin Boundary
- Gas Line
- Existing Sewer Line
- Existing Water Line
- Existing Water Valve

+ As Built - Spot Elevations

SECTION THRU EXISTING WALL  
No Scale  
(For Information Only)

No.	Date	Issue Notes
D	10/20/09	As-Built
E	1/10/09	Change for Wayjo Survey
C	10/26/08	Per COA Comments
B	10/17/08	Re-submitted due to Owner's changes
A	8/7/08	DRB Notes



Design Firm: ACM ENGINEERING SERVICES  
6615 Tesoro Pl NE, Albuquerque, NM 87113  
(505) 822-0757

Electronic Copy of Final Document  
Original Sealed Document w/ Arsenio Martinez

Project Title: ADDITION TO GRACE CHURCH  
6901 San Antonio Dr NE, Albuquerque, NM  
FINAL GRADING & DRAINAGE

Drawing Title: PROPOSED GRADING & DRAINAGE

Project Manager: Archie Martinez

Drawn By: Chris Burk

Reviewed By: Archie Martinez

Date: 08/05/08

CAD File Name:

Project ID: #08-12

Scale: As Shown

Drawing No:

GD-1 of 3

of

23

GRADING &amp; DRAINAGE - AS BUILT



EROSION CONTROL MEASURES:

THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR MANAGEMENT OF STORM RUNOFF DURING CONSTRUCTION. CONTRACTOR SHALL INSURE THAT THE FOLLOWING MEASURES ARE TAKEN:

- ADJACENT PROPERTY SHALL BE PROTECTED AT ALL TIMES BY CONSTRUCTION OF BERMS, DIKES, SWALES, PONDS, AND OTHER TEMPORARY GRADING AS REQUIRED TO PREVENT STORM RUNOFF FROM LEAVING THE SUBJECT SITE AND ENTERING ADJACENT PROPERTIES.
- ADJACENT PUBLIC RIGHT-OF-WAYS SHALL BE PROTECTED AT ALL TIMES FROM STORM WATER RUNOFF FROM THE SUBJECT SITE. NO SEDIMENT BEARING WATER SHALL BE PERMITTED TO ENTER PUBLIC STREET RIGHT-OF-WAYS.
- THE CONTRACTOR SHALL IMMEDIATELY AND THOROUGHLY REMOVE ANY AND ALL SEDIMENT FROM PUBLIC STREETS THAT HAS BEEN ERODED FROM THE SUBJECT SITE AND DEPOSITED THEREON.

CONSTRUCTION NOTES:

- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE AT 260-1990 FOR THE ACTUAL FIELD LOCATION OF THE EXISTING SURFACE OR SUB-SURFACE UTILITIES.
- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION (S) OF ALL POTENTIAL OBSTRUCTIONS: SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM OF DELAY.
- ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
- ALL CONSTRUCTION WITHIN PUBLIC STREET RIGHT-OF-WAY (S) SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE/BERNALILLO COUNTY STANDARDS AND PROCEDURES.

GENERAL NOTES:

- PERIMETER BOUNDARY CORNERS HAVE BEEN FIELD ESTABLISHED BY OWNER'S SURVEY OF THE SUBJECT PROPERTY.
- NO SEARCH HAS BEEN MADE FOR EASEMENTS OF RECORD WITHIN THE SUBJECT SITE OTHER THAN THOSE SHOWN HEREON.
- REFER TO "ARCHITECTURAL SITE PLAN" FOR FIELD LAYOUT OF THE PROPOSED IMPROVEMENTS.

NOTICE TO CONTRACTOR:

- AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THIS PLAN MUST BE SUBMITTED AT THE TIME OF APPLICATION OF THIS PERMIT.
- ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT SHALL, EXCEPT AS OTHERWISE STATED OR PROVIDED FOR HEREON, BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE CITY OF ALBUQUERQUE STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION.
- TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, (260-1990) FOR LOCATION OF EXISTING UTILITIES.

Page 1 of 6

- PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATIONS OF ALL OBSTRUCTIONS, SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OR SURVEYOR SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.

- BACKFILL COMPACTONS SHALL BE ACCORDING TO RESIDENTIAL STREET USE.

- MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.

NOTE: ALL WORK WITHIN PUBLIC EASEMENT SHALL BE PERFORMED UNDER SEPARATE PERMIT.

LEGAL DESCRIPTION:

TRACT CDS-1A, BLK. 20 OF TRACT A, UNIT A, NORTH ALBUQUERQUE ACRES LYING WITHIN SECTION 24 TOWNSHIP 11 NORTH, RANGE 3 EAST, NMPM, CITY OF ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO.

BENCH MARK REFERENCE:

BENCH MARK 10- D18 LOCATED ON THE NORTHWEST CORNER OF THE INTERSECTION OF LOUISIANA BVD AND JAKE PARK AVE NE ON A ACS BRASS CAP STAMPED "10-18D" SET ON TOP OF A CONCRETE POST FLUSH WITH GROUND. ELEVATION 5319.15 FEET.

SITE LOCATION:

AS SHOWN ON THE VICINITY MAP HEREON, THE SUBJECT SITE IS LOCATED AT 6901 LOUISIANA BD NE BETWEEN SAN PEDRO BD AND LOUISIANA BD IN THE CITY OF ALBUQUERQUE, BERNALILLO COUNTY, STATE OF NEW MEXICO, ZONE ATLAS MAP D-18-Z.

DRAINAGE COMMENTS FOR THE SUBJECT SITE:

- THE SUBJECT SITE AS SHOWN ON FEMA MAP 350002 F (NUMBER 350002, PANEL 0137 OF 825 SUFFIX F) DATED NOVEMBER 19, 2003, LIES WITHIN AN UNSHADED FLOOD ZONE "X". A PROPERTY IN UNSHADED ZONE "X" IS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN.
- THE SITE IS PRESENTLY A DEVELOPED PARCEL WITH AN EXISTING CHURCH, OFFICE AND CLASSROOM BUILDINGS; PAVED PARKING LOTS TO THE EAST AND NORTH OF THE BUILDINGS; LANDSCAPED AREAS (LAWN, GRAVEL AND NATURAL VEGETATION); AND A DETENTION POND ON THE NORTHWEST CORNER OF THE PROPERTY.
- AS SHOWN BY THE PLAN HEREIN AND THE ARCHITECTURAL PLANS, IT IS PROPOSED TO INSTALL A NEW GYMNASIUM BUILDING AND ADDITIONAL CLASSROOM BUILDINGS TO THE NORTH AND EAST OF THE EXISTING BUILDINGS. APPROXIMATELY 20,000 SQ. FT OF NEW BUILDING SPACE.
- THIS GRADING AND DRAINAGE PLAN COMPLIES WITH REFERENCES No. 3 & 4 BELOW.
- THE RUNOFF DISCHARGE FOR BASIN A: THE EAST, NORTH PORTIONS OF THE WEST PARKING LOTS, THE VACANT LOT ON THE NORTHEAST CORNER OF PROPERTY AND THE PORTIONS OF THE EXISTING AND NEW FACILITIES WILL FLOW ONTO THE EXISTING POND ON THE NORTHWEST CORNER OF PROPERTY.
- THE RUNOFF DISCHARGE FOR BASIN B: THE HANDICAP PARKING AREA, THE VACANT AREA ON THE SOUTHWEST CORNER OF THE PROPERTY, A PROTION OF THE PARKING LOT ON THE WEST, AND PORTIONS OF THE EXISTING FACILITIES WILL FLOW ONTO SAN ANTONIO BD THROUGH A SWALE AND A PROPOSED SIDEWALK CULVERT AT THE SOUTHWEST CORNER OF THE PROPERTY; THE RUNOFF DISCHARGE FOR THE COURTYARD AREA WILL FLOW INTO A PROPOSED STORM INLET, THEN OUT THROUGH TWO PROPOSED 6" PVC PIPES AND A PROPOSED SIDEWALK CULVERT ONTO SAN ANTONIO BD.

CONSTRUCTION OF SANTA MONICA STREET:

THE SANTA MONICA STREET IMPROVEMENTS WILL BE COMPLETED BY ANOTHER CONTRACT.

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REFERENCES:

- CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL, VOL. 2. DESIGN CRITERIA, CHAPTER 22, DRAINAGE, FLOOD CONTROL AND EROSION CONTROL, DATED JULY 1997.
- CITY OF ALBUQUERQUE STANDARDS SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986.
- FULL DEVELOPMENT AND DRAINAGE PLAN FOR "GRACE CHURCH" PREPARED BY TIERRA WEST DEVELOPMENT MANAGEMENT SERVICES, JOB # 920033, DATED 12-29-93.
- GRADING PLAN FOR "GRACE CHURCH ADDITION" PREPARED BY APPLIED ENGINEERING & SURVEYING, INC. PROJECT # 02093, DATED APRIL 23, 2002.

DRAINAGE CALCULATIONS:

TOTAL SITE AREA: 8.44 ACRES

PRECIPITATION ZONE: 3

PEAK INTENSITY: 5.38

RAINFALL: 100-YR. STORM FOR 6 HRS.

TIME OF CONCENTRATION, T<sub>c</sub> = 12 MINUTES.

LAND TREATMENT METHOD (TABLE A-9) FOR CALCULATION OF PEAK DISCHARGE Q<sub>p</sub>:

EXISTING CONDITIONS FOR OFFSITE FLOWS FROM ADJACENT LOTS: NONE

PEAK DISCHARGE Q<sub>p</sub>:

EXISTING CONDITIONS:

TREATMENT	AREA (AC.)	FACTOR	Q <sub>p</sub> (CFS)
A	2.55	1.87	4.77
B	0.33	2.60	0.86
C	2.41	3.45	8.31
D	3.15	5.02	15.81
TOTALS:	8.44		29.75

PROPOSED DEVELOPED CONDITIONS:

BASIN A: RUNOFF DIVERTED DIRECTLY ONTO THE POND:

TREATMENT	AREA (AC.)	FACTOR	Q <sub>p</sub> (CFS)
A	1.47	1.87	2.75
B	0	2.60	0
C	0.97	3.45	3.34
D	3.01	5.02	15.11
TOTALS:	5.45		21.20

BASIN B: RUNOFF DIVERTED DIRECTLY ONTO SAN ANTONIO BD:  
[Q<sub>p</sub> = 30.33 - 19.00 = 11.33 CFS]

TREATMENT	AREA (AC.)	FACTOR	Q <sub>p</sub> (CFS)
A	0.77	1.87	1.44
B	0	2.60	0
C	1.10	3.45	3.80
D	1.12	5.02	5.62
TOTALS:	2.99		10.86

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TOTAL PROPOSED FLOWS Q<sub>p</sub> : 21.20 + 10.86 = 32.06 CFS

NET INCREASE OF Q<sub>p</sub> = 32.06 - 29.75 = 2.31 CFS

ALLOWABLE DISCHARGE Q<sub>p</sub> = 8.44 (AC) X 2.67 (CFS/AC) = 22.53 CFS

PONDING REQUIREMENTS: Q<sub>p</sub> = 32.06 - 22.53 = 9.53 CFS

HYDROGRAPH COMPUTATIONS FOR BASIN A:

A<sub>T</sub> = 5.45 AC.; A<sub>0</sub> = 3.01 AC.; T<sub>c</sub> = 0.20 HRS; Q<sub>p</sub> = 21.20 CFS

E = (E<sub>A</sub>A<sub>A</sub> + E<sub>B</sub>A<sub>B</sub> + E<sub>C</sub>A<sub>C</sub> + E<sub>D</sub>A<sub>D</sub>) / (A<sub>A</sub> + A<sub>B</sub> + A<sub>C</sub> + A<sub>D</sub>)

= [(0.66 X 1.47) + (0.62 X 0) + (1.29 X .97) + (2.36 X 3.01)] / 5.45 = 1.71 INCHES

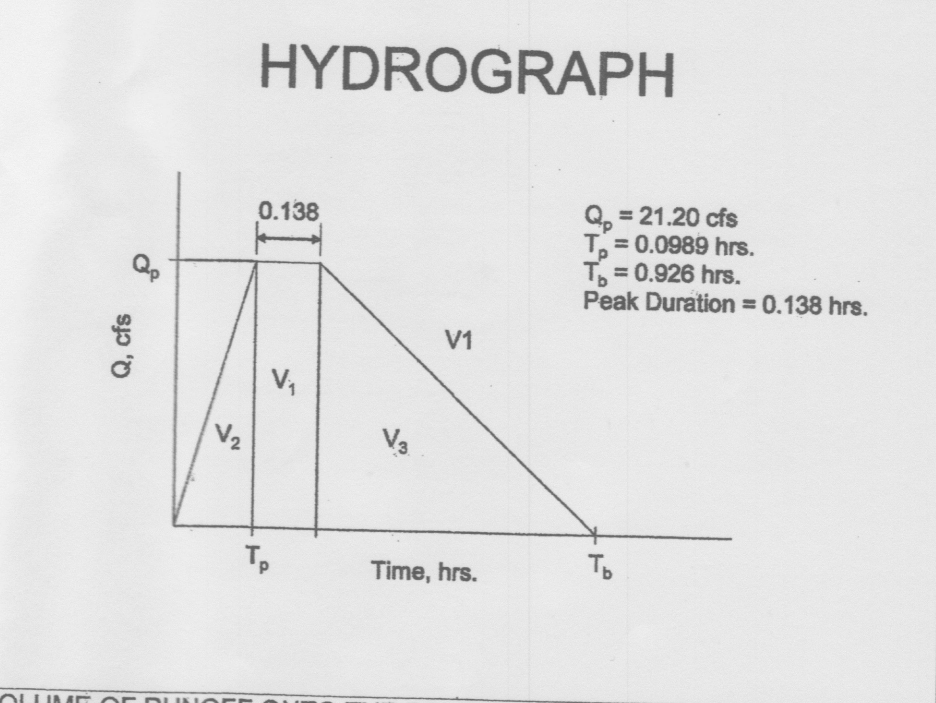
T<sub>p</sub> = [(0.7 X T<sub>c</sub>) + (1.6 - A<sub>0</sub>/A<sub>T</sub>)] / 12

= [(0.7 X .2) + (1.6 - 3.014/5.45)] / 12 = 0.0989 HRS.

T<sub>B</sub> = (2.107 X E X A<sub>T</sub> / Q<sub>p</sub>) - (0.25 X A<sub>0</sub>/A<sub>T</sub>)

= (2.107 X 1.71 X 5.45/21.20) = 0.926 HRS.

DURATION OF PEAK = (0.25 X 3.01/5.45) = 0.138 HRS.



VOLUME OF RUNOFF ONTO THE POND FOR THE T<sub>B</sub> = 0.926:

V<sub>1</sub> = 21.20 CFS X 0.138 X 3600 = 10,532 CF

V<sub>2</sub> = 21.20 CFS X 0.0989 X 3600 = 7,548/2 = 3,774 CF

V<sub>3</sub> = 21.20 CFS X [(.926 - (.0989 + .138)] X 3600 = 52,592/2 = 26,296 CF

TOTAL RUNOFF VOLUME (POND) = 10,532 + 3,774 + 26,296 = 40,602 CF

OR,

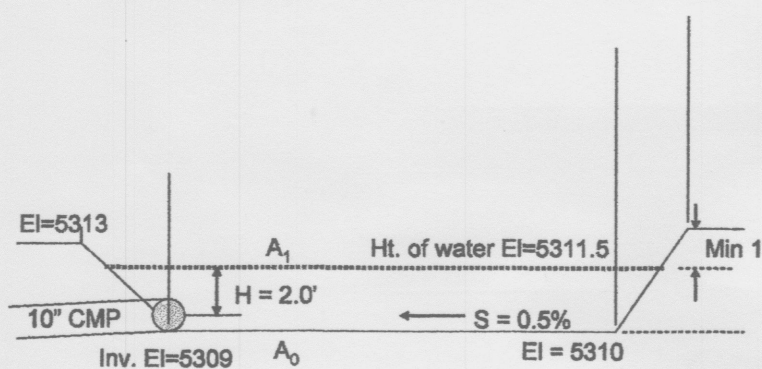
V<sub>960</sub> = [E X (A<sub>A</sub> + A<sub>B</sub> + A<sub>C</sub> + A<sub>D</sub>)]12, FOR A 6-HR STORM

[1.71 X 5.45] / 12 = 0.777 X 43,560 = 33,830 CF

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SIZE OF POND:

POND HYDRAULICS



A<sub>0</sub> = 18,300 SF; A<sub>1</sub> = 22,600 SF; H = 2 FT

VOLUME (AVG) = [A<sub>0</sub> + A<sub>1</sub>]/2 X H

= (18,300 + 22,600) / 2 X 2' = 40,450 CF

DESIGN OF THE PROPOSED 10" CMP PIPING FOR DRAINING THE POND:

THE MANNING'S EQUATIONS:

$V = \frac{1.49}{N} R^{2/3} S^{1/2}$   
WHERE, S = 0.0142  
N = 0.022 FOR CORRUGATED METAL PIPE  
R = D/4 = (0.833/4) = 0.21

$V = \frac{1.49}{.022} X (.21)^{2/3} X (.0142)^{1/2} = 2.84 \text{ FPS}$

Q = AV = [3.14 X (0.833)<sup>2</sup> / 4 X 2.84 = 1.54 CFS

THE VELOCITY HEAD (GRAVITY FLOW) EQUATION:

Q = C A [2gh]<sup>1/2</sup>  
Where C = 0.6 for an orifice  
g = 32.2 fps  
h = 2'  
D<sub>pipe</sub> = 10" = 0.833'

Q = 0.6 x 3.14/4 x (0.833)<sup>2</sup> x [64.4 x 2]<sup>1/2</sup> = 3.68 cfs

TIME REQUIRED DRAINING THE STANDING WATER IN THE POND (THE RUNOFF FROM BASIN A):

T = V/Q = 40,600 / 1.54 = 26,363 / 3600 = 7.3 HRS.

OR,

T = 40,600 / 3.68 = 11,032 / 3600 = 3.0 HRS.

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THEREFORE, THE PROPOSED 10" CMP PIPE SHOULD DRAIN THE RUNOFF DISCHARGE OF BASIN A ONTO THE POND BETWEEN 3 TO 7 HOURS.

HYDRAULIC ANALYSIS OF THE EXISTING SIDEWALK CULVERT (WEIR EQUATION):

Q = 3.68 CFS; H = 0.58 FT; L = 3.0 FT; C = 3.33

Q = C L H<sup>1.5</sup>

Q 3.33 X 3 X [58]<sup>1.5</sup> = 4.41 CFS

THUS, THE EXISTING SIDEWALK CULVERT SHOULD HANDLE THE DISCHARGE FLOWS THROUGH THE 10" CMP.

DESIGN OF THE PROPOSED 2 - 6" PVC PIPING FOR THE COURTYARD (Q = 2.31 CFS):

MANNING'S EQUATIONS:  
 $V = \frac{1.49}{N} R^{2/3} S^{1/2}$

WHERE, S = 0.0107  
N = 0.008 FOR PVC PIPE  
R = D/4 = 6/4 X 12 = 0.125

$V = \frac{1.49}{.007} X (.125)^{2/3} X (.0107)^{1/2} = 5.47 \text{ FPS}$

Q = AV = (3.14 X 0.5<sup>2</sup> / 4) X 5.47 = 1.08 CFS X 2 PIPES = 2.16 CFS

THUS, TWO PIPES 6" DIA SHOULD HANDLE THE REQUIRED FLOW OF 2.31 CFS. SINCE THE PIPES ARE DESIGNED TO FLOW HALF-FULL (R=D/4).

HYDRAULIC ANALYSIS OF THE TWO PROPOSED SIDEWALK CULVERTS:

Q = 2.16 CFS; H = 0.63 FT; L = 2.0 FT; C = 3.33

Q = C L H<sup>1.5</sup>

Q 3.33 X 1.5 X [63]<sup>1.5</sup> = 2.50 CFS

THUS, AN 18" WIDE SIDEWALK CULVERT SHOULD HANDLE THE DISCHARGE FLOWS THROUGH THE 2 - 6" PVC PIPING.

HYDRAULIC ANALYSIS OF THE PROPOSED SIDEWALK CULVERT:

Q = 8.15 CFS; H = 0.63 FT; L = 5.0 FT; C = 3.33

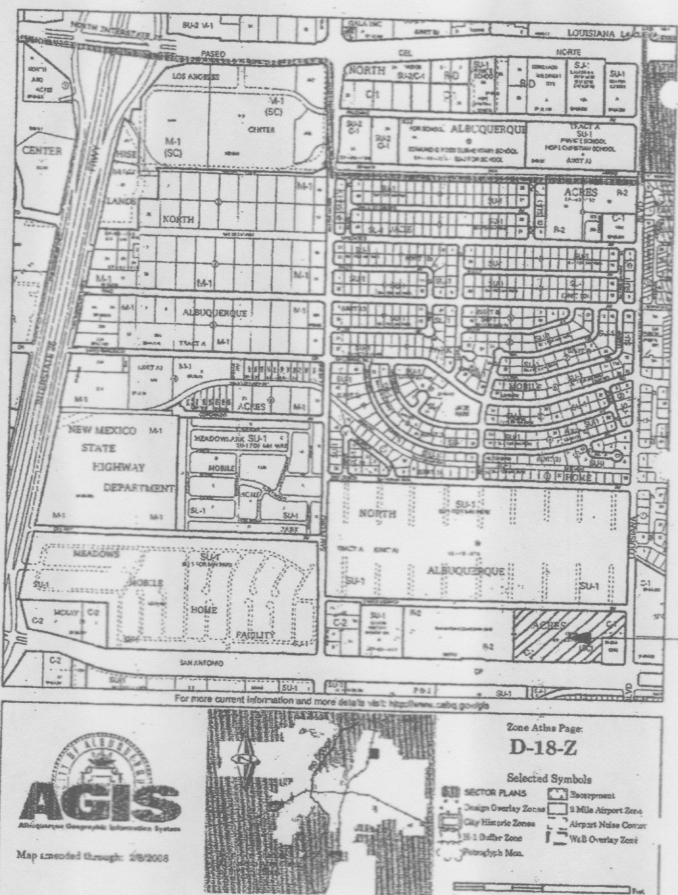
Q = C L H<sup>1.5</sup>

Q 3.33 X 5 X [63]<sup>1.5</sup> = 8.33 CFS

THUS, A 5" WIDE SIDEWALK CULVERT SHOULD HANDLE THE DISCHARGE FLOWS FROM BASIN B (HANDICAP PARKING AND EXISTING WEST SIDE PARKING LOT AND PORTIONS OF THE VACANT LOT).

TABLE A-4. LAND TREATMENTS	
Treatment	Land Condition
A	Soil uncompacted by human activity with 0 to 10 percent slopes. Native grasses, weeds and shrubs in typical densities with minimal disturbance to grading, ground cover and infiltration capacity.
B	Irrigated lawns, parks and golf courses with 0 to 10 percent slopes. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes greater than 10 percent and less than 20 percent.
C	Soil compacted by human activity. Minimal vegetation. Unpaved parking, roads, trails. Most vacant lots. Gravel or rock on plastic (desert landscaping). Irrigated lawns and parks with slopes greater than 10 percent. Native grasses, weeds and shrubs, and soil uncompacted by human activity with slopes at 20 percent or greater. Native grass, weed and shrub areas with clay or clay loam soils and other soils of very low permeability as classified by SCS Hydrologic Soil Group D.
D	Impervious areas, pavement and roofs.

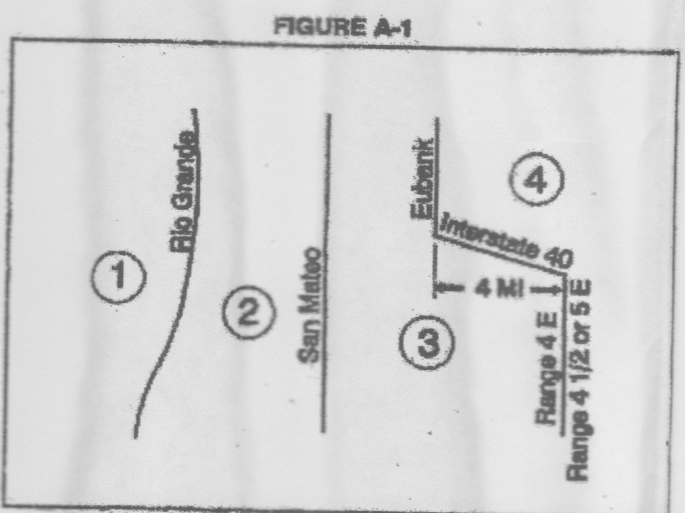
Most watersheds contain a mix of land treatments. To determine proportional treatments, measure respective subareas. In lieu of specific measurement for treatment D, the areal percentages in TABLE A-5 may be employed.



LOCATION PLAN

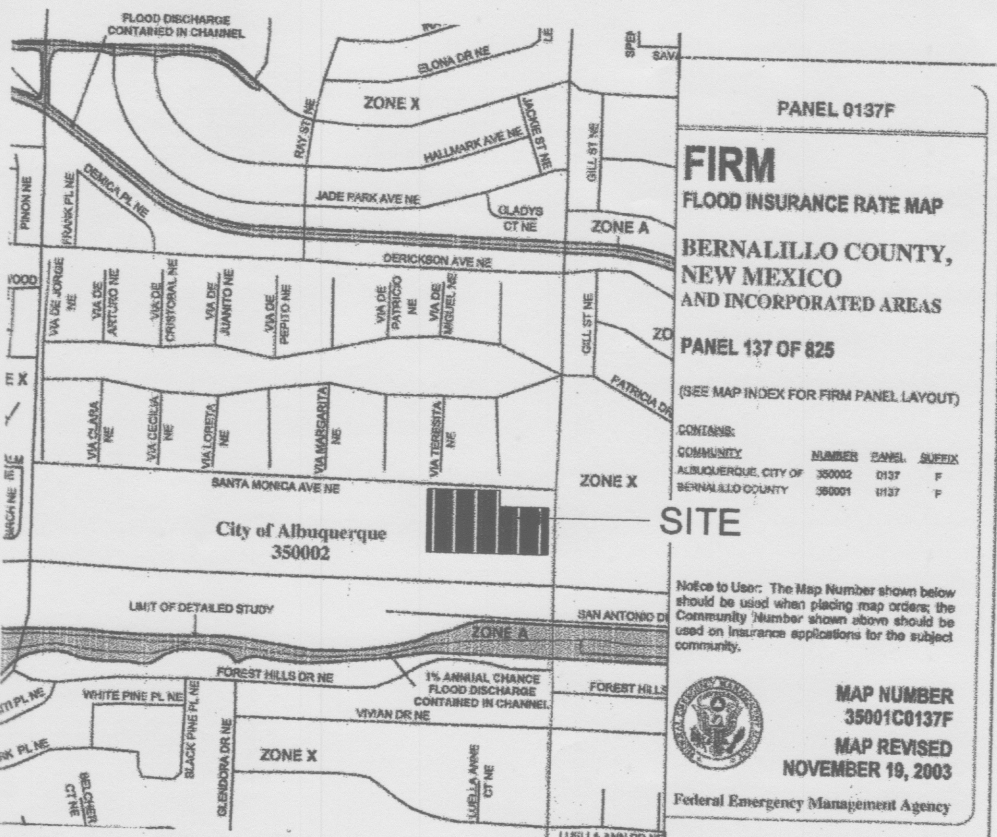
TABLE A-1. PRECIPITATION ZONES	
Zone	Location
1	West of the Rio Grande
2	Between the Rio Grande and San Mateo
3	Between San Mateo and Eubank, North of Interstate 40; and between San Mateo and the East boundary of Range 4 East, South of Interstate 40
4	East of Eubank, North of Interstate 40; and East of the East boundary of Range 4 East, South of Interstate 40

TABLE A-9. PEAK DISCHARGE (CFS/ACRE)				
Zone	Treatment		100-YR. [2-YR., 10-YR.]	
	A	B	C	D
1	1.29 [0.00, 0.24]	2.03 [0.03, 0.76]	2.87 [0.47, 1.49]	4.37 [1.69, 2.89]
2	1.56 [0.00, 0.38]	2.28 [0.08, 0.95]	3.14 [0.60, 1.71]	4.70 [1.86, 3.14]
3	1.87 [0.00, 0.58]	2.60 [0.21, 1.19]	3.45 [0.78, 2.00]	5.02 [2.04, 3.39]
4	2.20 [0.05, 0.87]	2.92 [0.38, 1.45]	3.73 [1.00, 2.26]	5.25 [2.17, 3.57]



Where a watershed extends across a zone boundary, use the zone which contains the largest portion of the watershed.

TABLE A-10. PEAK INTENSITY (IN/HR AT t <sub>c</sub> = 0.2 hour)		
Zone	Intensity	100-YR. [2-YR., 10-YR.]
1	4.70 [1.84, 3.14]	
2	5.05 [2.04, 3.41]	
3	5.38 [2.21, 3.65]	
4	5.61 [2.34, 3.83]	



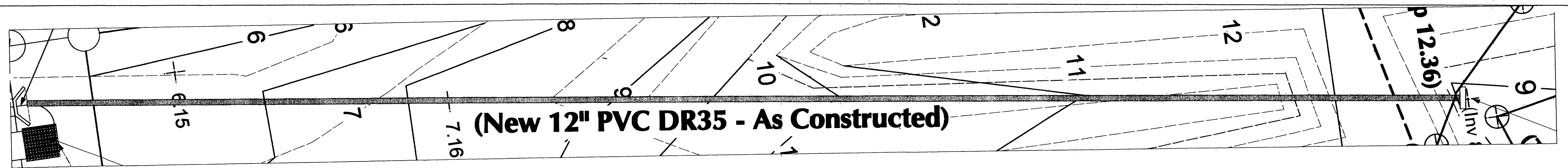
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OCT 21 2009  
HYDROLOGY SECTION

C 10/21/09 AS-BUILT		ACM ENGINEERING SERVICES 6615 Tesoro Pl NE, Albuquerque, NM 87113 (505) 822-0757		ADDITION to GRACE CHURCH 6901 San Antonio Dr NE, Albuquerque, NM FINAL GRADING & DRAINAGE		Project Manager Archie Martinez		Project ID #08-12	
B 10/17/08 Re-submitted due to Owner changes		Electronic Copy of Final Document Original Sealed Document w/ Arsenio Martinez		Drawing Title CALCULATIONS		Drawn By Chris Burk		Scale As Shown	
A 8/7/08 DRB Notes		Drawing Title CALCULATIONS		Date 8/5/08		Reviewed By Archie Martinez		Drawing No. GD-2 of 3	
No. Date Issue Notes		Drawing Title CALCULATIONS		Date 8/5/08		Reviewed By Archie Martinez		Drawing No. GD-2 of 3	
								of 23	

FINAL GRADING & DRAINAGE

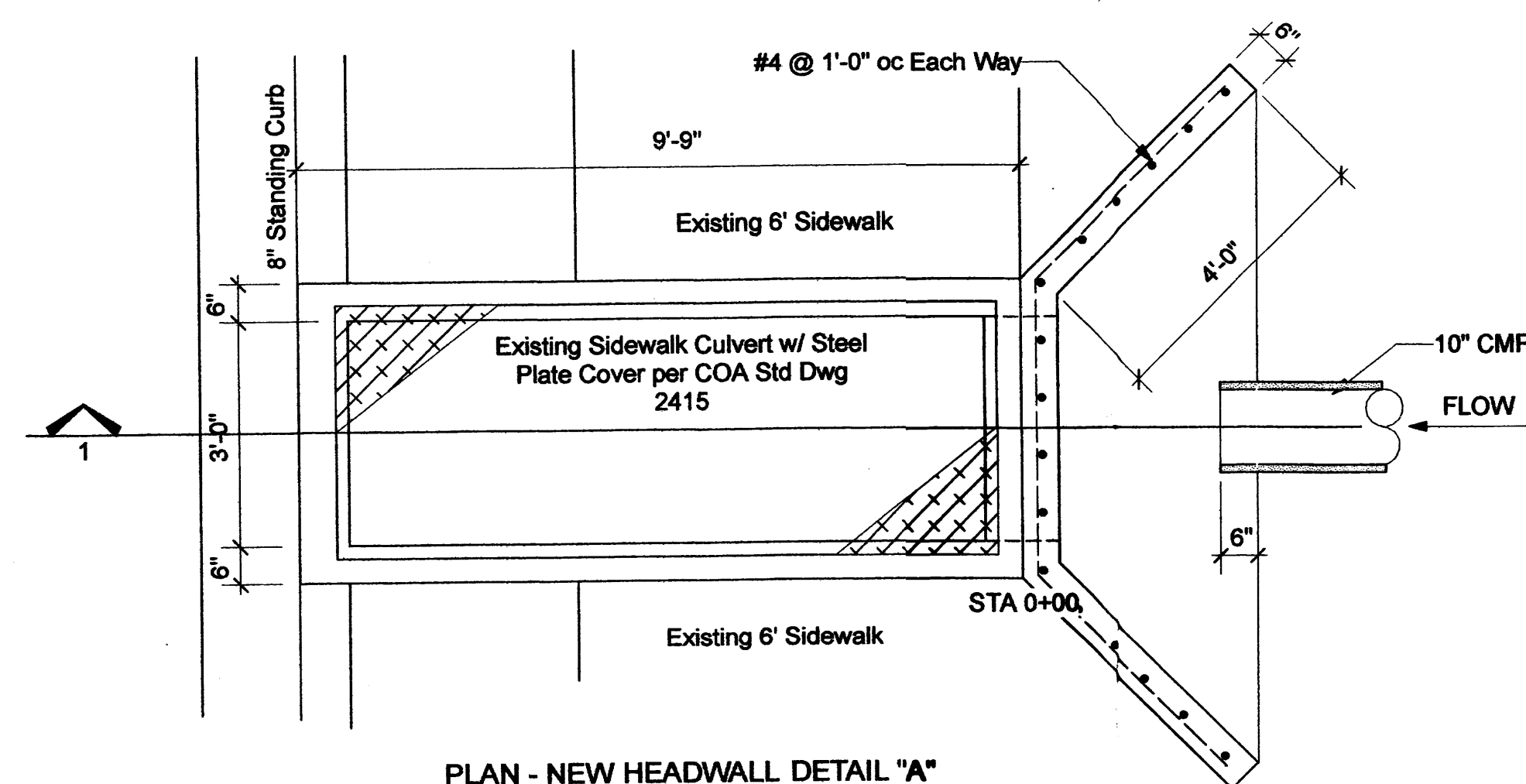
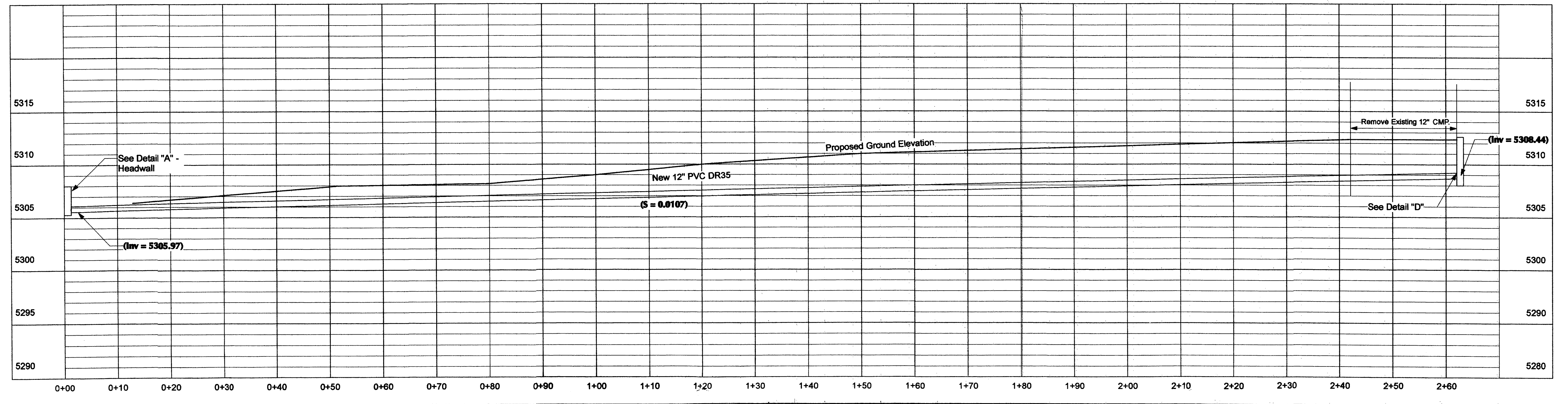
FINAL GRADING & DRAINAGE



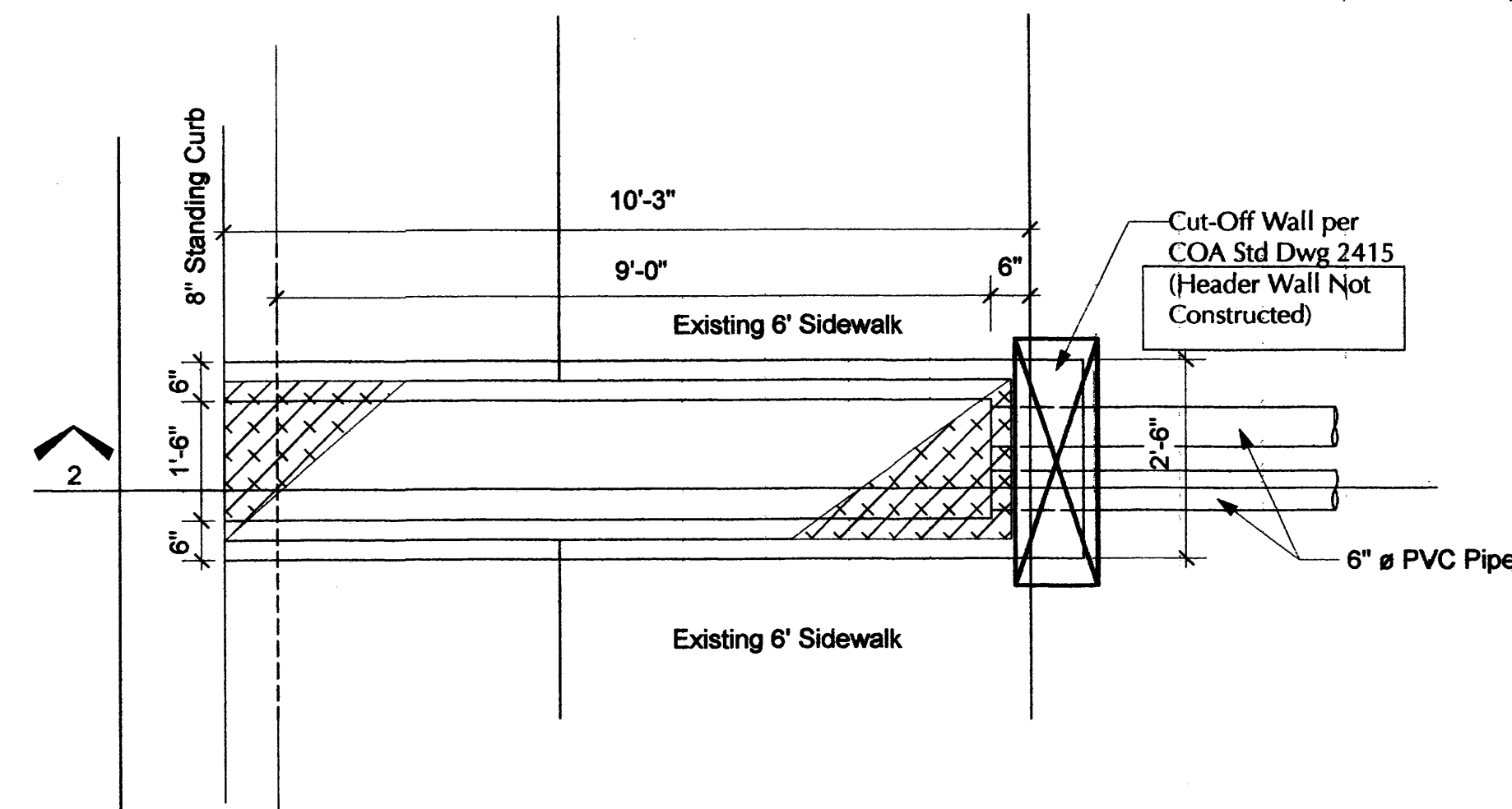


PLAN OF PROPOSED 12" PVC  
Scale: 1" = 40 ft

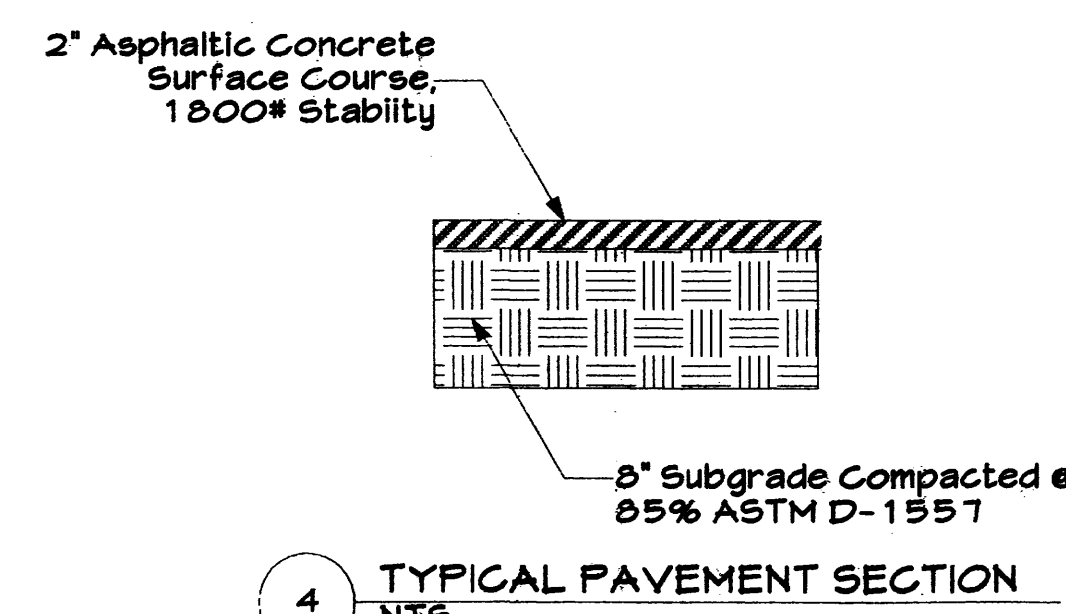
Scale:  
Vertical - 1" = 5'  
Horizontal - 1" = 40'



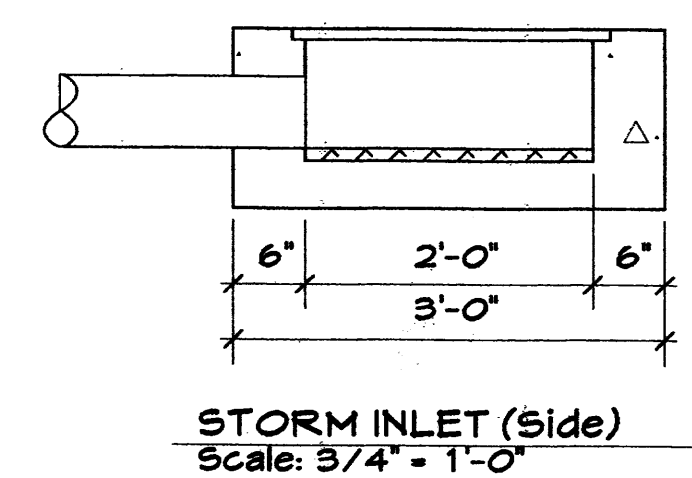
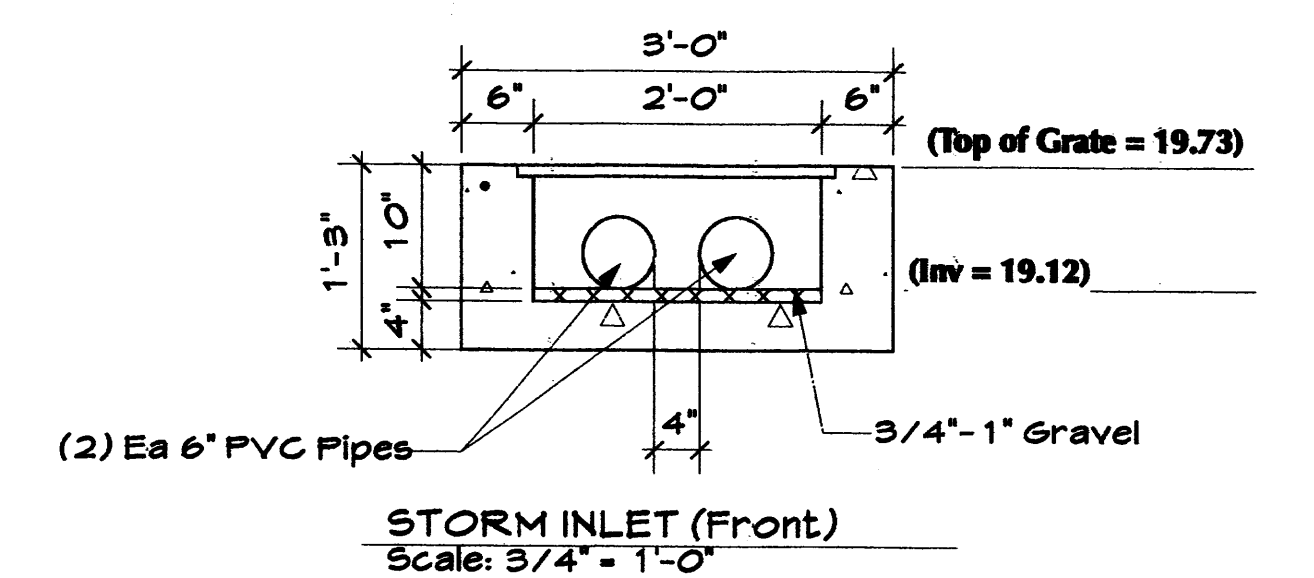
PLAN - NEW HEADWALL DETAIL "A"  
Scale: 1/2" = 1'-0"



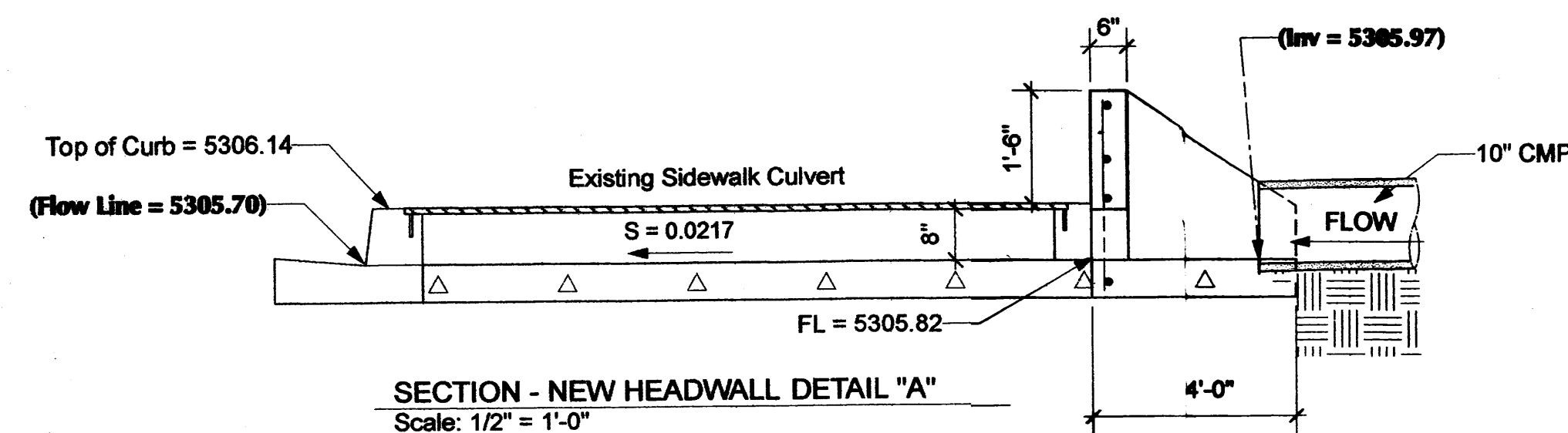
PLAN - CULVERT w/ CUT-OFF WALL - DETAIL "B"  
Scale: 1/2" = 1'-0"



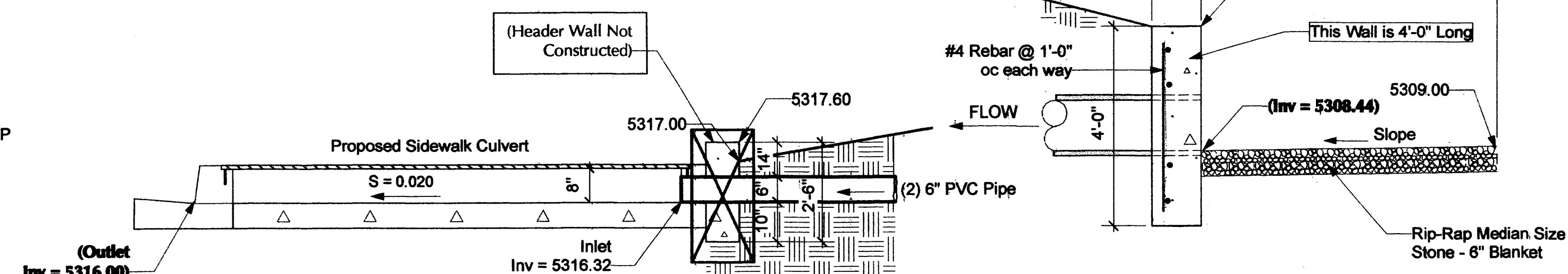
4 TYPICAL PAVEMENT SECTION  
NTS



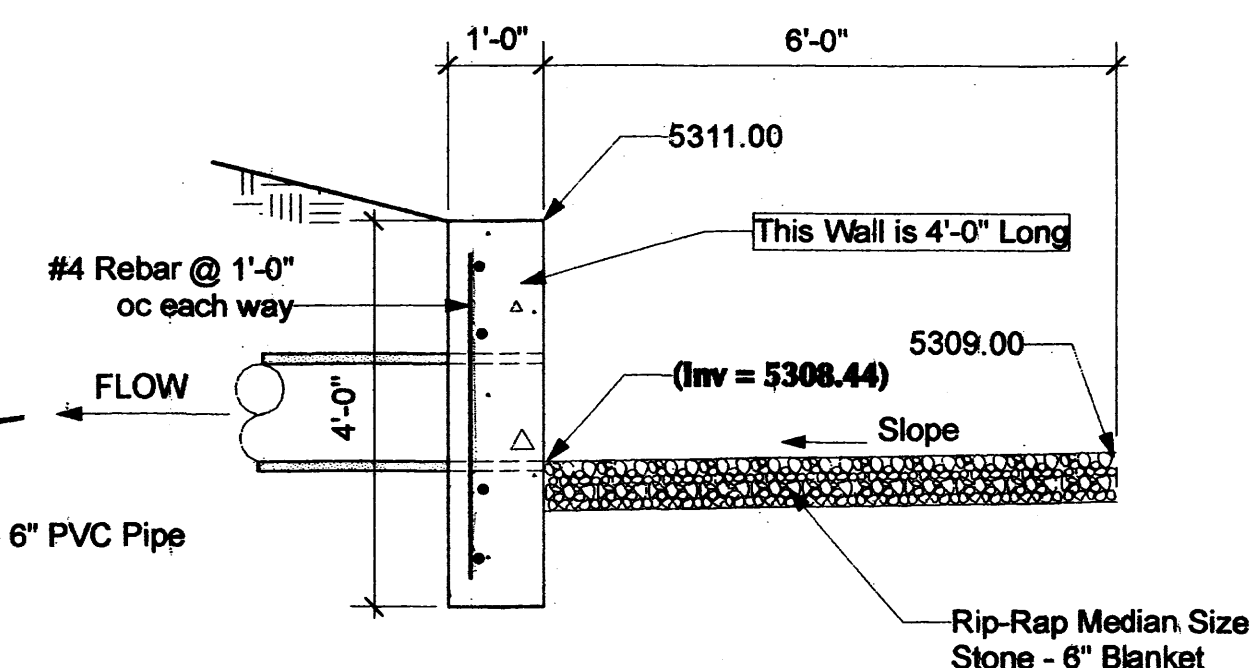
STORM INLET (Conc. or Plastic) w/ GRATE  
Scale: 3/4" = 1'-0"



SECTION - NEW HEADWALL DETAIL "A"  
Scale: 1/2" = 1'-0"



SECTION - CULVERT w/ CUT-OFF WALL - DETAIL "B"  
Scale: 1/2" = 1'-0"



POND OUTLET - DETAIL "D"  
Scale: 1/2" = 1'-0"

NOTE: Items in (Parentheses) are As-Built

No.	Date	Issue Notes	Design Firm	Project Title	Project Manager	Project ID
E	10/20/09	As-Built	ACM ENGINEERING SERVICES	ADDITION to GRACE CHURCH	Archie Martinez	#08-12
D	1/10/09	Changes for Waylon Survey	6615 Tesoro Pl NE, Albuquerque, NM 87113	6901 San Antonio Dr NE, Albuquerque, NM	Chris Burk	Scale: As Shown
C	10/26/08	Per COA Comments	(505) 822-0757	FINAL GRADING & DRAINAGE	Archie Martinez	Drawing No. GD-3 of 3
B	10/17/08	Re-Submitted due to Owner Changes			Date: 8/5/08	of
A	8/7/08	DRB Notes			CAD File Name	23
No.	Date	Issue Notes	Consent: Electronic Copy of Final Document Original Sealed Document w/ Arsenio Martinez	Drawing Title: PLAN and PROFILE DETAILS		



