

SANTA MONICA DRIVE, N.E.

(60' RIGHT OF WAY)

ANASTASIA STREET

CONC. CURB AND GUTTER

UNDEVELOPED VACANT LOT

TRACT CDS-1A

8.4419 Ac.

(S 00° 04' 45" W)  
S 00° 10' 48" W

57

(RIGHT-OF-WAY VARIES)  
LOUISIANA BLVD, N.E.N'LY 42' OF 46' NON-EXCLUSIVE  
ACCESS EASEMENTN 89° 32' 52" W 196.30'  
(N 89° 48' 25" W) (196.30')

DRAINAGE CERTIFICATION

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

I, J. 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 10-2-2009 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.

*J. Arsenio Martinez*  
J. ARSENIO MARTINEZ, NMPE 7875

October 20, 2009

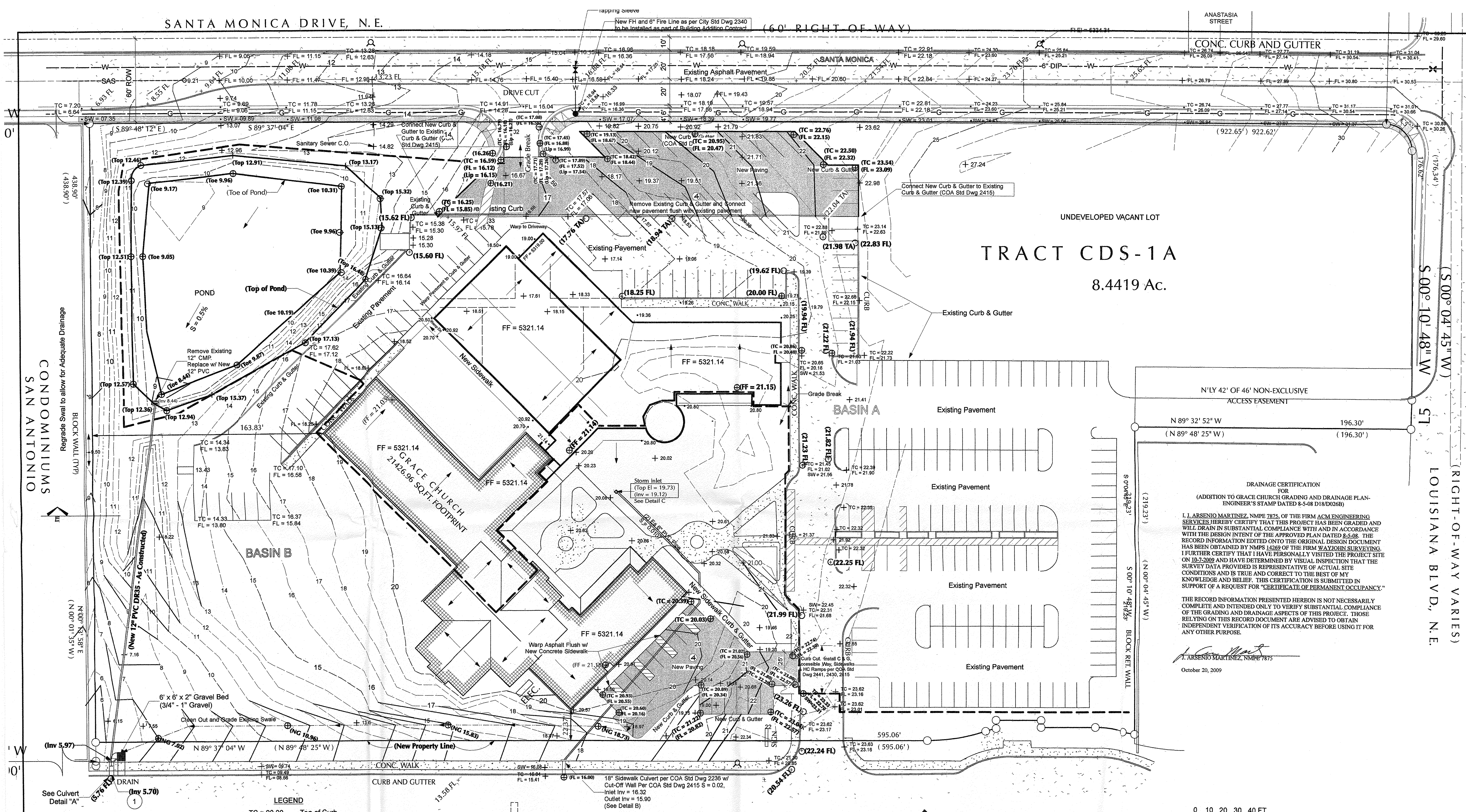
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GRADING &amp; DRAINAGE - AS BUILT



6901 SAN ANTONIO DRIVE, N.E.

(RIGHT-OF-WAY VARIES)

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

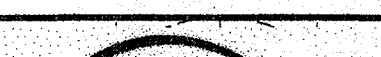
## LEGEND

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

⊕ As Built - Spot Elevations

SECTION THRU EXISTING WALL  
No Scale (For Information Only)

- 1 Construct (2) each 24" Sidewalk Culverts and (1) 12" Sidewalk Culvert per COA Std Dwg 2236. Outlet Inv = 05.91, Inlet Inv = 06.11.

|     |          |                                     |                                                                                       |                                                                                   |                                                                                        |                             |                                                                                                 |                 |                 |            |        |
|-----|----------|-------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------|-----------------|-----------------|------------|--------|
| E   | 10/20/09 | As-Built                            |  | Design Firm                                                                       | ACM ENGINEERING SERVICES<br>6615 Tesoro Pl NE, Albuquerque, NM 87113<br>(505) 822-0757 | Project Title               | ADDITION TO GRACE CHURCH<br>6901 San Antonio Dr NE, Albuquerque, NM<br>FINAL GRADING & DRAINAGE | Project Manager | Archie Martinez | Project ID | #08-12 |
| D   | 1/10/09  | Change for Wayjon Survey            |                                                                                       | Drawn By                                                                          | Chris Burk                                                                             | Scale                       | As Shown                                                                                        |                 |                 |            |        |
| C   | 10/26/08 | Per COA Comments                    |                                                                                       | Reviewed By                                                                       | Archie Martinez                                                                        | Drawing No.                 | GD-1 of 3<br>of<br>23                                                                           |                 |                 |            |        |
| B   | 10/17/08 | Re-submitted due to Owner's changes |                                                                                       | Date                                                                              | 08/05/08                                                                               |                             |                                                                                                 |                 |                 |            |        |
| A   | 8/7/08   | DRB Notes                           |                                                                                       | CAD File Name                                                                     |                                                                                        |                             |                                                                                                 |                 |                 |            |        |
| No. | Date     | Issue Notes                         | Consultant                                                                            | Electronic Copy of Final Document<br>Original Sealed Document w/ Arsenio Martinez | Drawing Title                                                                          | PROPOSED GRADING & DRAINAGE |                                                                                                 |                 |                 |            |        |

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 280-1990 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 6801 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.

Page 2 of 6

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,  $T_c$  = 12 MINUTES.

LAND TREATMENT METHOD (TABLE A-9) FOR CALCULATION OF PEAK DISCHARGE  $Q_p$ :

EXISTING CONDITIONS FOR OFFSITE FLOWS FROM ADJACENT LOTS: NONE

PEAK DISCHARGE  $Q_p$ :

EXISTING CONDITIONS:

| TREATMENT | AREA (AC.) | FACTOR | $Q_p$ (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 | $Q_p$ (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:  
 $[Q_p = 30.33 - 19.00 = 11.33 \text{ CFS}]$

| TREATMENT | AREA (AC.) | FACTOR | $Q_p$ (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       |

Page 3 of 6

TOTAL PROPOSED FLOWS  $Q_p$ :  $21.20 + 10.86 = 32.06 \text{ CFS}$

NET INCREASE OF  $Q_p = 32.06 - 29.75 = 2.31 \text{ CFS}$

ALLOWABLE DISCHARGE  $Q_p = 8.44 \text{ (AC)} \times 2.67 \text{ (CFS/AC)} = 22.53 \text{ CFS}$

PONDING REQUIREMENTS:  $Q_p = 32.06 - 22.53 = 9.53 \text{ CFS}$

HYDROGRAPH COMPUTATIONS FOR BASIN A:

$A_T = 5.45 \text{ AC}$ ;  $A_0 = 3.01 \text{ AC}$ ;  $T_c = 0.20 \text{ HRS}$ ;  $Q_p = 21.20 \text{ CFS}$

$E = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / (A_A + A_B + A_C + A_D)$

$= [(0.66 \times 1.47) + (0.62 \times 0) + (1.29 \times .97) + (2.36 \times 3.01)] / 5.45 = 1.71 \text{ INCHES}$

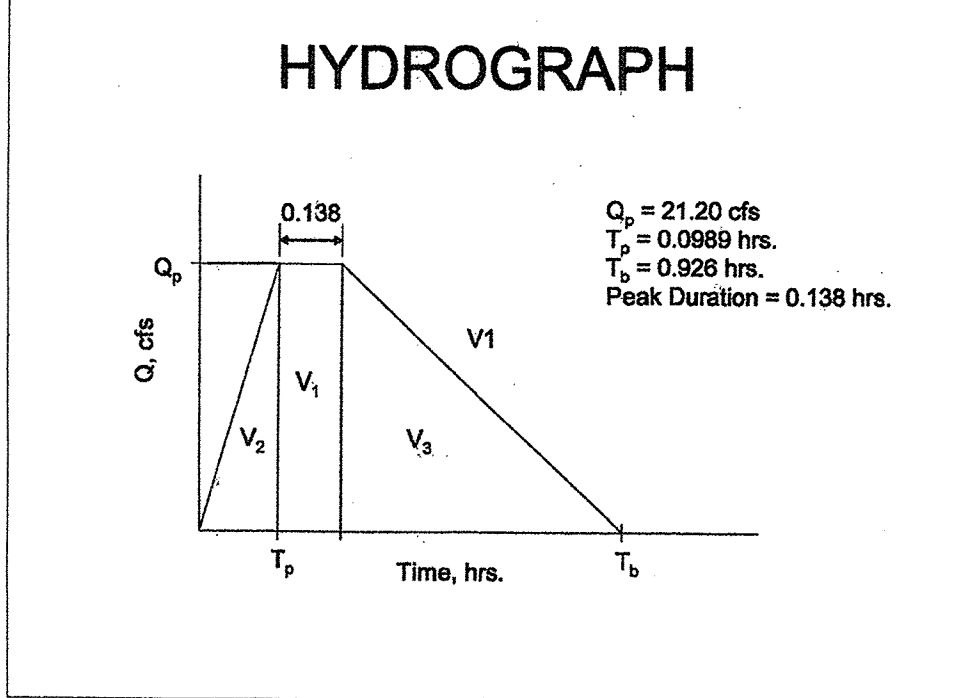
$T_p = [(0.7 \times T_c) + (1.6 - A_D/A_T)] / 12$

$= [(0.7 \times .2) + (1.6 - 3.01/5.45)] / 12 = 0.0989 \text{ HRS.}$

$T_B = (2.107 \times E \times A_T / Q_p) - (0.25 \times A_D/A_T)$

$= (2.107 \times 1.71 \times 5.45/21.20) = 0.926 \text{ HRS.}$

DURATION OF PEAK  $= (0.25 \times 3.01/5.45) = 0.138 \text{ HRS.}$



VOLUME OF RUNOFF ONTO THE POND FOR THE  $T_B = 0.926$ :

$V_1 = 21.20 \text{ CFS} \times 0.138 \times 3600 = 10,532 \text{ CF}$

$V_2 = 21.20 \text{ CFS} \times 0.0989 \times 3600 = 7,548/2 = 3,774 \text{ CF}$

$V_3 = 21.20 \text{ CFS} \times [(.926 - (.0989 \times .138)] \times 3600 = 52,592/2 = 26,296 \text{ CF}$

TOTAL RUNOFF VOLUME (POND) =  $10,532 + 3,774 + 26,296 = 40,602 \text{ CF}$

OR,

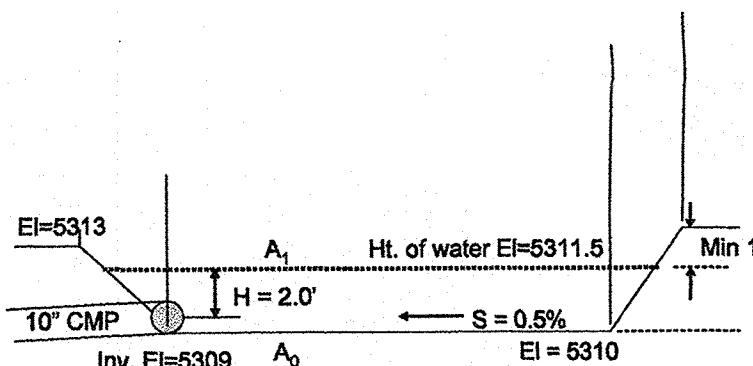
$V_{360} = [E \times (A_A + A_B + A_C + A_D)]/12$ , FOR A 6-HR STORM

$[1.71 \times 5.45] / 12 = 0.777 \times 43,560 = 33,830 \text{ CF}$

Page 4 of 6

SIZE OF POND:

POND HYDRAULICS



$A_0 = 18,300 \text{ SF}$ ;  $A_1 = 22,600 \text{ SF}$ ;  $H = 2 \text{ FT}$

VOLUME (AVG) =  $[A_0 + A_1]/2 \times H$

$= (18,300 + 22,600) / 2 \times 2' = 40,450 \text{ CF}$

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  
 $R = D/4 = (0.833/4) = 0.21$

$$V = \frac{1.49 \times (.21)^{.67} \times (.0142)^{.5}}{.022} = 2.84 \text{ FPS}$$

$$Q = AV = [3.14 \times (0.833)^2 / 4] \times 2.84 = 1.54 \text{ CFS}$$

THE VELOCITY HEAD (GRAVITY FLOW) EQUATION:

$$Q = C A [2gh]^{1/2}$$

Where  $C = 0.6$  for an orifice  
 $g = 32.2 \text{ fps}$   
 $h = 2'$   
 $D_{\text{pipe}} = 10" = 0.833'$

$$Q = 0.6 \times 3.14/4 \times (0.833)^2 \times [64.4 \times 2]^{1/2} = 3.68 \text{ cfs}$$

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

$$T = V/Q = 40,600 / 3.68 = 11,032 / 3600 = 7.3 \text{ HRS.}$$

OR,

$$T = 40,600 / 3.68 = 11,032 / 3600 = 3.0 \text{ HRS.}$$

Page 5 of 6

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):

$$Q = 3.68 \text{ CFS}; H = 0.58 \text{ FT}; L = 3.0 \text{ FT}; C = 3.33$$

$$Q = C L H^{1.5}$$

$$Q = 3.33 \times 3 \times [58]^{1.5} = 4.41 \text{ CFS}$$

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 ( $Q = 2.31 \text{ CFS}$ ):

MANNING'S EQUATIONS:  
 $V = \frac{1.49}{N} R^{2/3} S^{1/2}$   
WHERE,  $S = 0.0107$   
 $N = 0.008$  FOR PVC PIPE  
 $R = D/4 = 6/4 \times 12 = 0.125$

$$V = \frac{1.49 \times (.125)^{.67} \times (.0107)^{.5}}{.007} = 5.47 \text{ FPS}$$

$$Q = AV = (3.14 \times 0.5^2 / 4) \times 5.47 = 1.08 \text{ CFS} \times 2 \text{ PIPES} = 2.16 \text{ CFS}$$

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:

$$Q = 2.16 \text{ CFS}; H = 0.63 \text{ FT}; L = 2.0 \text{ FT}; C = 3.33$$

$$Q = C L H^{1.5}$$

$$Q = 3.33 \times 1.5 \times [63]^{1.5} = 2.50 \text{ CFS}$$

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

HYDRAULIC ANALYSIS OF THE PROPOSED SIDEWALK CULVERT:

$$Q = 8.15 \text{ CFS}; H = 0.63 \text{ FT}; L = 5.0 \text{ FT}; C = 3.33$$

$$Q = C L H^{1.5}$$

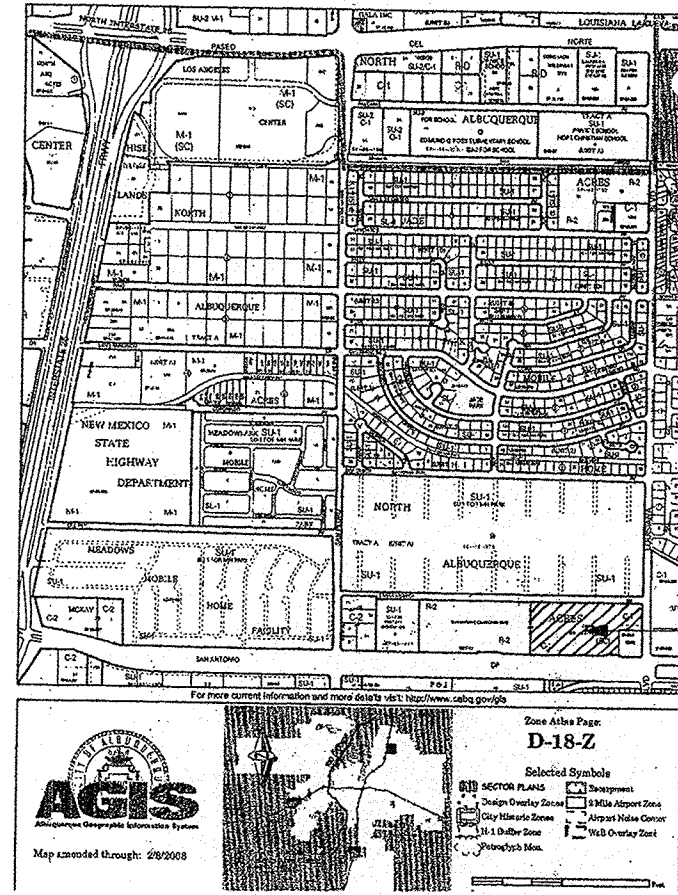
$$Q = 3.33 \times 5 \times [63]^{1.5} = 8.33 \text{ CFS}$$

THUS, A 6" 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).

Page 6 of 6

| 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

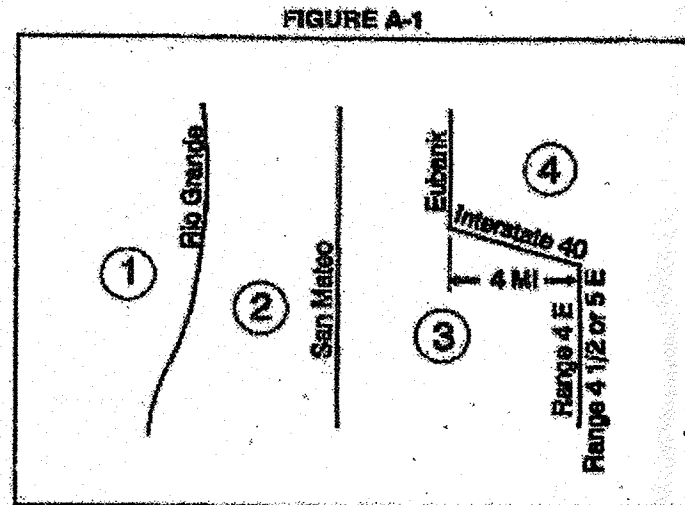
Most watersheds contain a mix of land treatments. To determine proportional treatments, measure respective subareas. In lieu of specific measurement for treatment D, the areal percentages in TABLE A-5 may be employed.



LOCATION PLAN

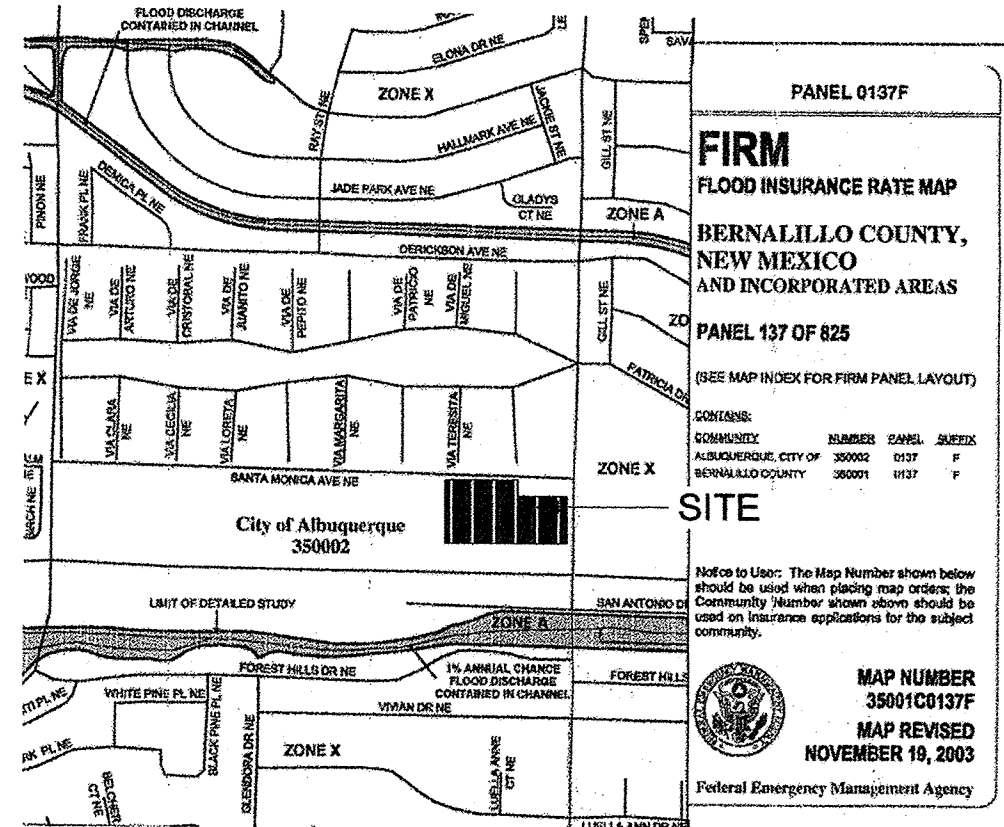
| TABLE A-1. PRECIPITATION ZONES |                                                                                                                                           |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| 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.<br>[2-YR., 10-YR.] |                      |
|                                      | A                    | B                    | C                          | D                    |
| 1                                    | 1.29<br>[0.00, 0.24] | 2.03<br>[0.03, 0.76] | 2.87<br>[0.47, 1.49]       | 4.37<br>[1.69, 2.89] |
| 2                                    | 1.56<br>[0.00, 0.38] | 2.28<br>[0.08, 0.95] | 3.14<br>[0.60, 1.71]       | 4.70<br>[1.86, 3.14] |
| 3                                    | 1.87<br>[0.00, 0.58] | 2.60<br>[0.21, 1.19] | 3.45<br>[0.78, 2.00]       | 5.02<br>[2.04, 3.39] |
| 4                                    | 2.20<br>[0.65, 0.87] | 2.92<br>[0.38, 1.45] | 3.73<br>[1.00, 2.26]       | 5.25<br>[2.17, 3.57] |



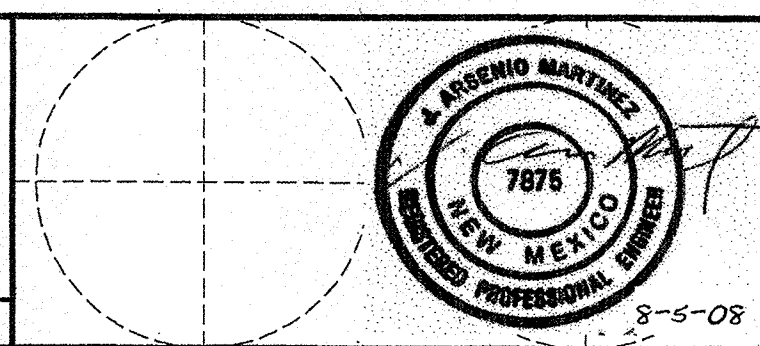
Where a watershed extends across a zone boundary, use the zone which contains the largest portion of the watershed.

| TABLE A-10. PEAK INTENSITY (IN/HR at $t_c = 0.2$ hour) |                           |
|--------------------------------------------------------|---------------------------|
| Zone                                                   | Intensity [2-YR., 10-YR.] |
| 1                                                      | 4.70'<br>[1.84, 3.14]     |
| 2                                                      | 5.05<br>[2.04, 3.41]      |
| 3                                                      | 5.38<br>[2.21, 3.65]      |
| 4                                                      | 5.61<br>[2.34, 3.83]      |



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SECTION

|     |          |                                   |
|-----|----------|-----------------------------------|
| C   | 10/24/09 | AS-BUILT                          |
| B   | 10/17/08 | Re-submitted due to Owner changes |
| A   | 8/7/08   | DRB Notes                         |
| No. | Date     | Issue Notes                       |



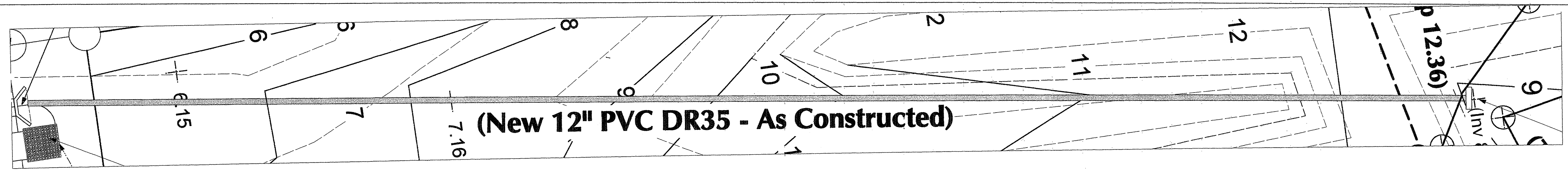
|             |                                                                                        |
|-------------|----------------------------------------------------------------------------------------|
| Design Firm | ACM ENGINEERING SERVICES<br>6615 Tesoro Pl NE, Albuquerque, NM 87113<br>(505) 822-0757 |
| Consultant  | Electronic Copy of Final Document<br>Original Sealed Document w/ Arsenio Martinez      |

|               |                                                                                                 |
|---------------|-------------------------------------------------------------------------------------------------|
| Project Title | ADDITION to GRACE CHURCH<br>6901 San Antonio Dr NE, Albuquerque, NM<br>FINAL GRADING & DRAINAGE |
| Drawing Title | CALCULATIONS                                                                                    |

|                 |                 |             |           |
|-----------------|-----------------|-------------|-----------|
| Project Manager | Archie Martinez | Project ID  | #08-12    |
| Drawn By        | Chris Burk      | Scale       | As Shown  |
| Reviewed By     | Archie Martinez | Drawing No. | GD-2 of 3 |
| Date            | 8/5/08          | of          |           |
| CAD File Name   |                 |             | 23        |

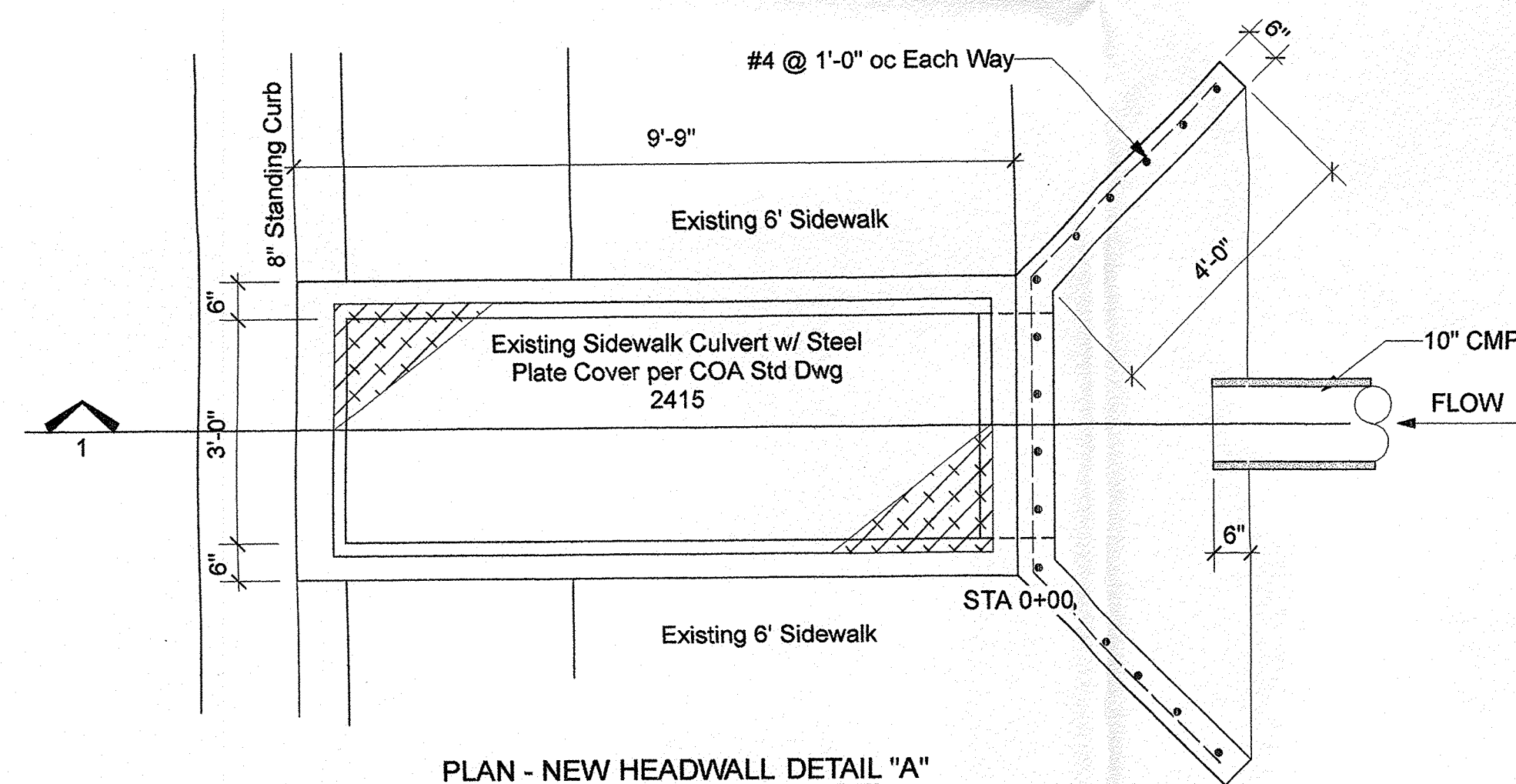
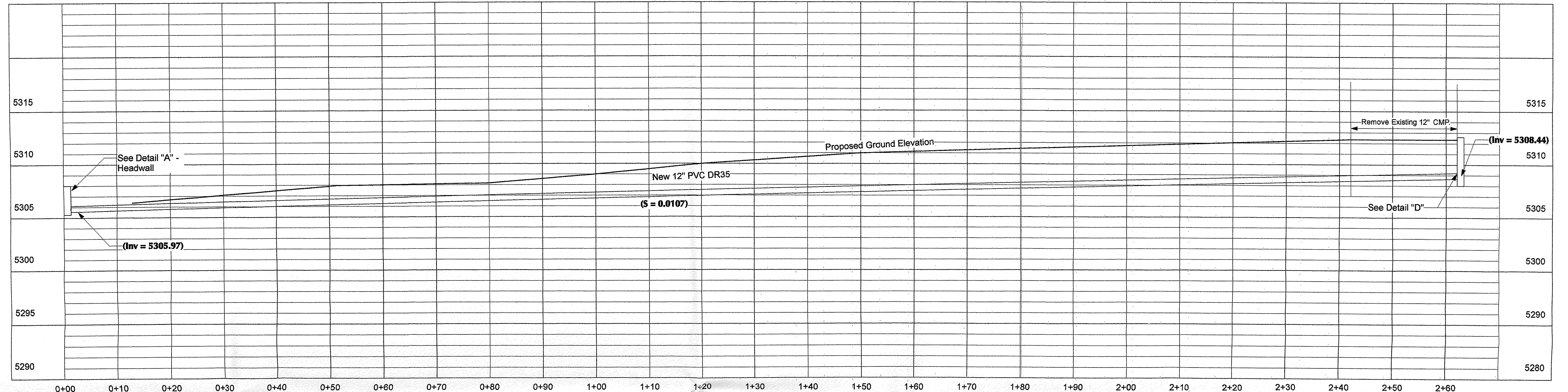
FINAL GRADING & DRAINAGE

FINAL GRADING & DRAINAGE

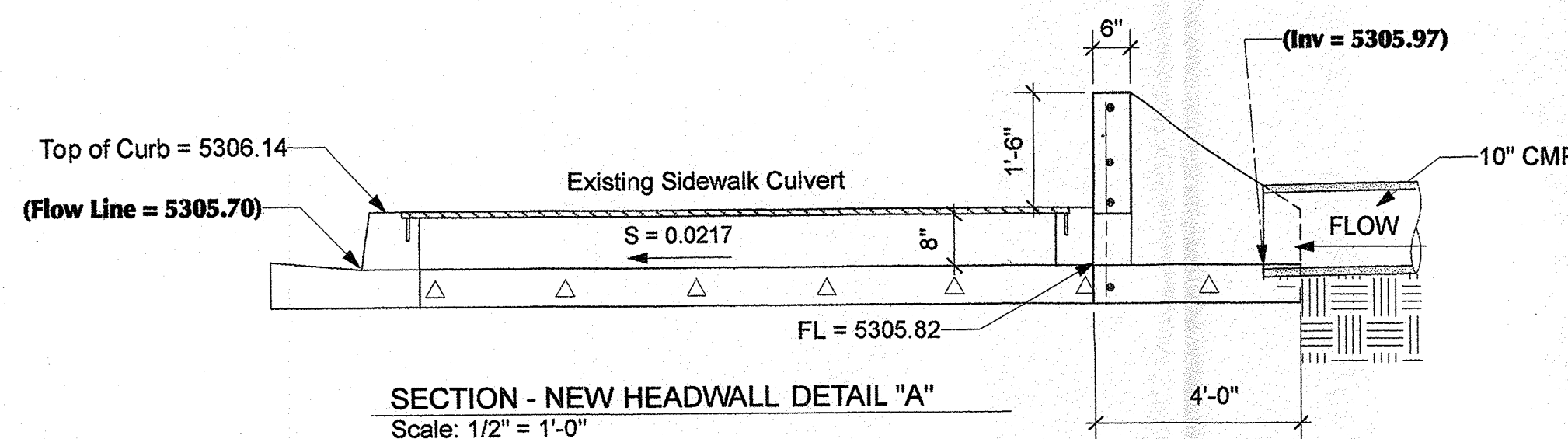


PLAN OF PROPOSED 12" PVC  
Scale: 1" = 40 ft

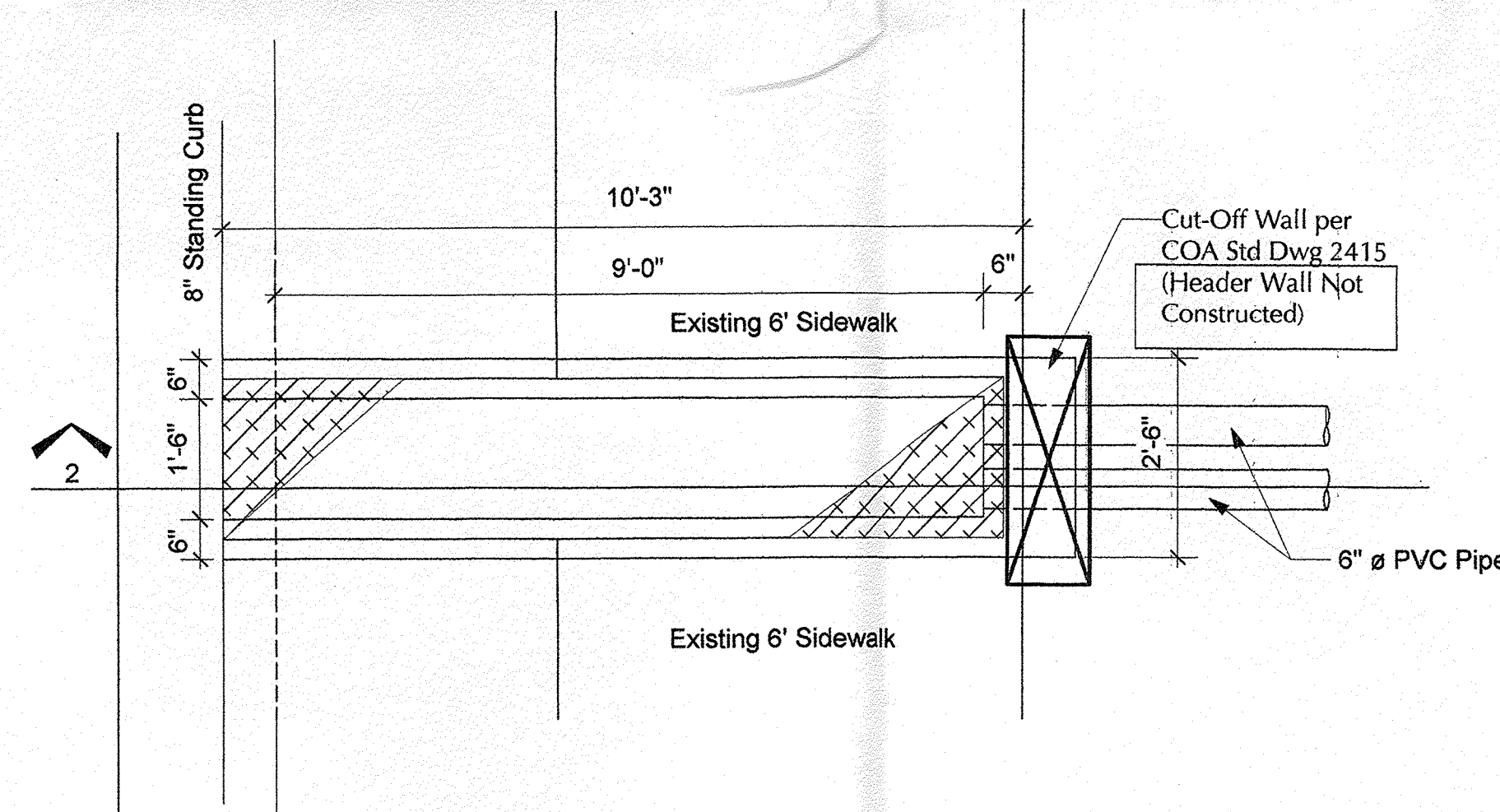
Scale:  
Vertical - 1" = 5'  
Horizontal - 1" = 40'



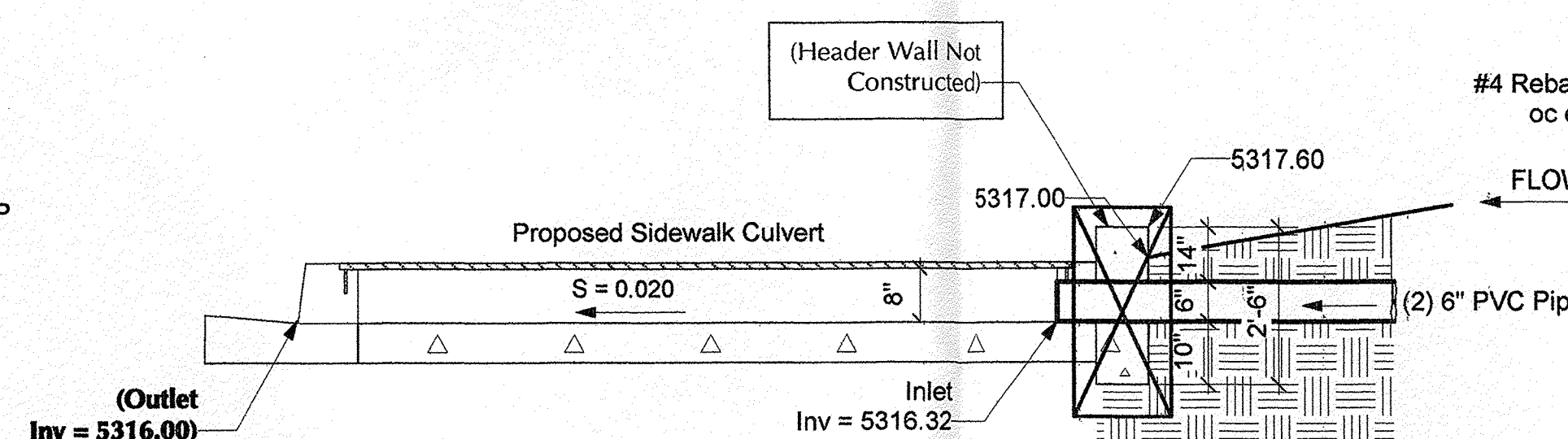
PLAN - NEW HEADWALL DETAIL "A"  
Scale: 1/2" = 1'-0"



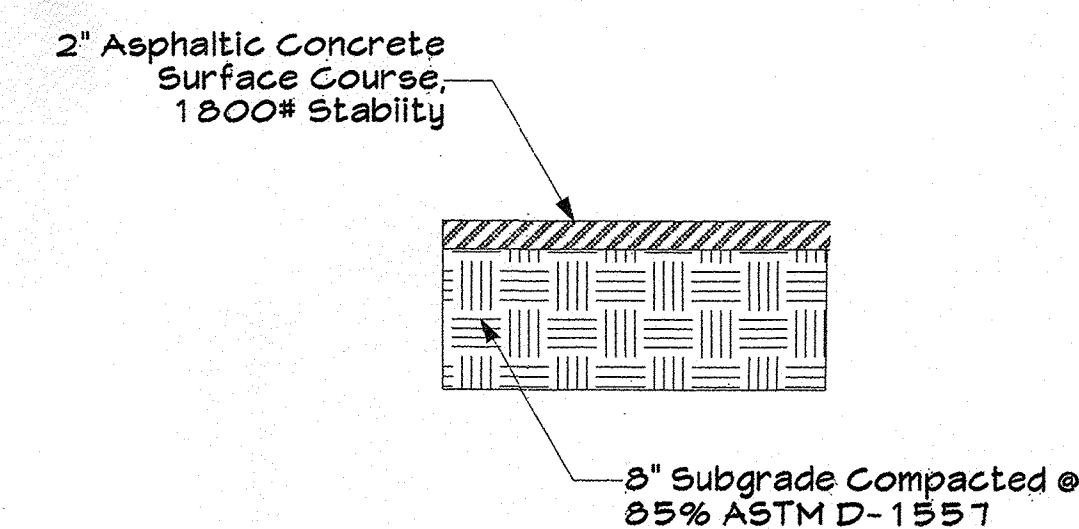
SECTION - NEW HEADWALL DETAIL "A"  
Scale: 1/2" = 1'-0"



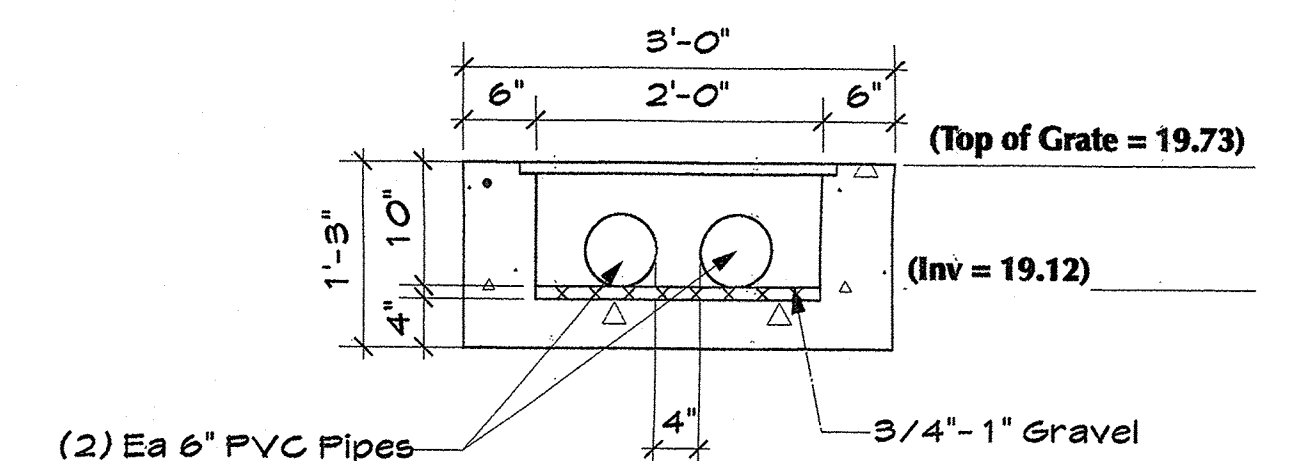
PLAN - CULVERT w/ CUT-OFF WALL - DETAIL "B"  
Scale: 1/2" = 1'-0"



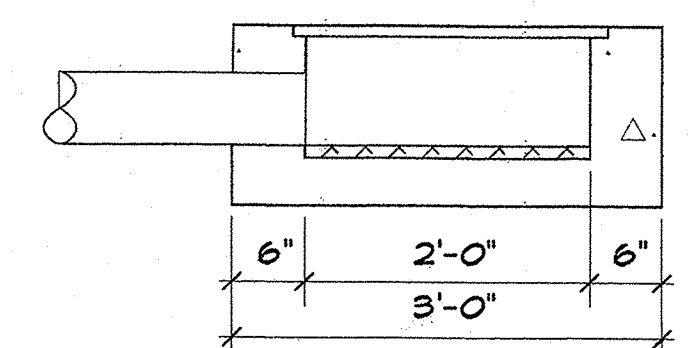
SECTION - CULVERT w/ CUT-OFF WALL - DETAIL "B"  
Scale: 1/2" = 1'-0"



4 TYPICAL PAVEMENT SECTION  
NTS

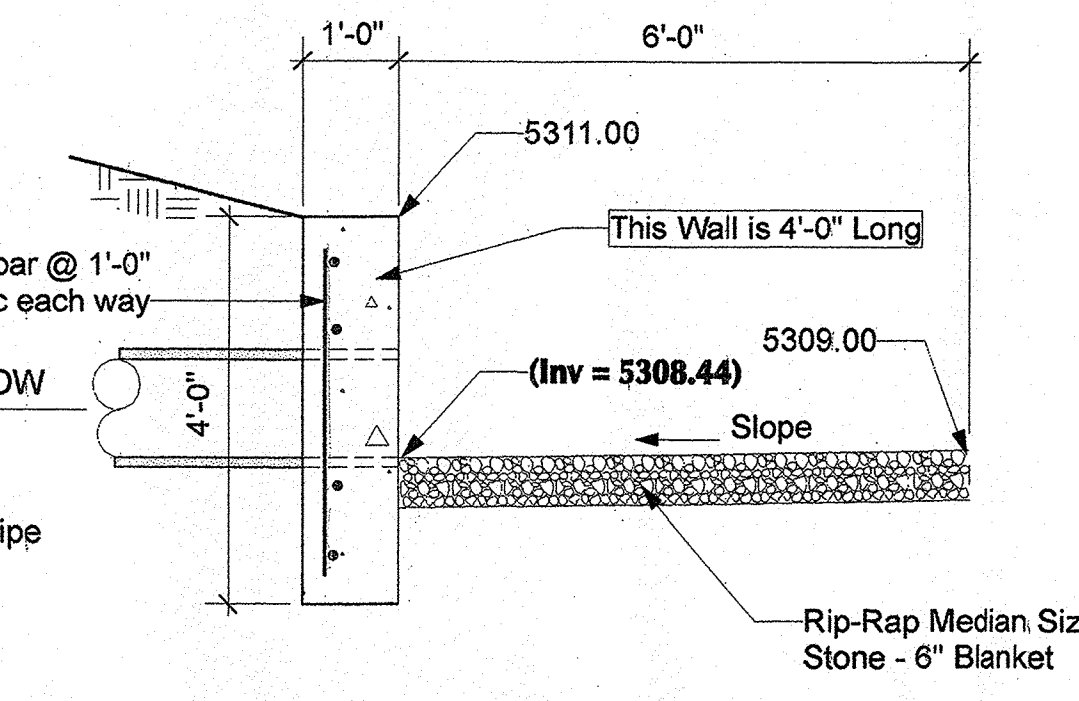


STORM INLET (Front)  
Scale: 3/4" = 1'-0"



STORM INLET (Side)  
Scale: 3/4" = 1'-0"

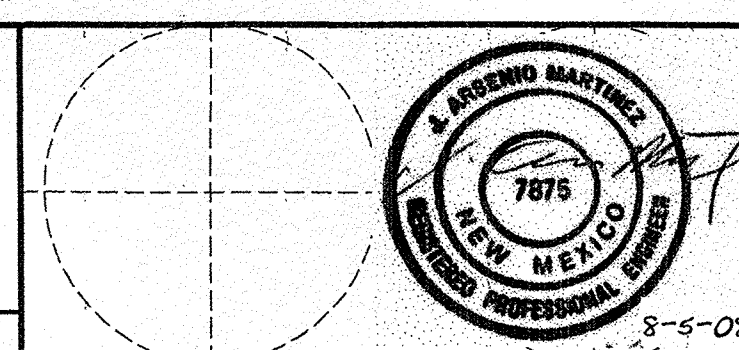
STORM INLET (Conc. or Plastic) w/ GRATE  
Scale: 3/4" = 1'-0"



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

NOTE: Items in (Parentheses) are As-Built

| No. | Date     | Issue Notes                       |
|-----|----------|-----------------------------------|
| E   | 10/20/09 | As-Built                          |
| D   | 1/10/09  | Changes for Waylon Survey         |
| C   | 10/26/08 | Per COA Comments                  |
| B   | 10/17/08 | Re-Submitted due to Owner Changes |
| A   | 8/7/08   | DRB Notes                         |



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

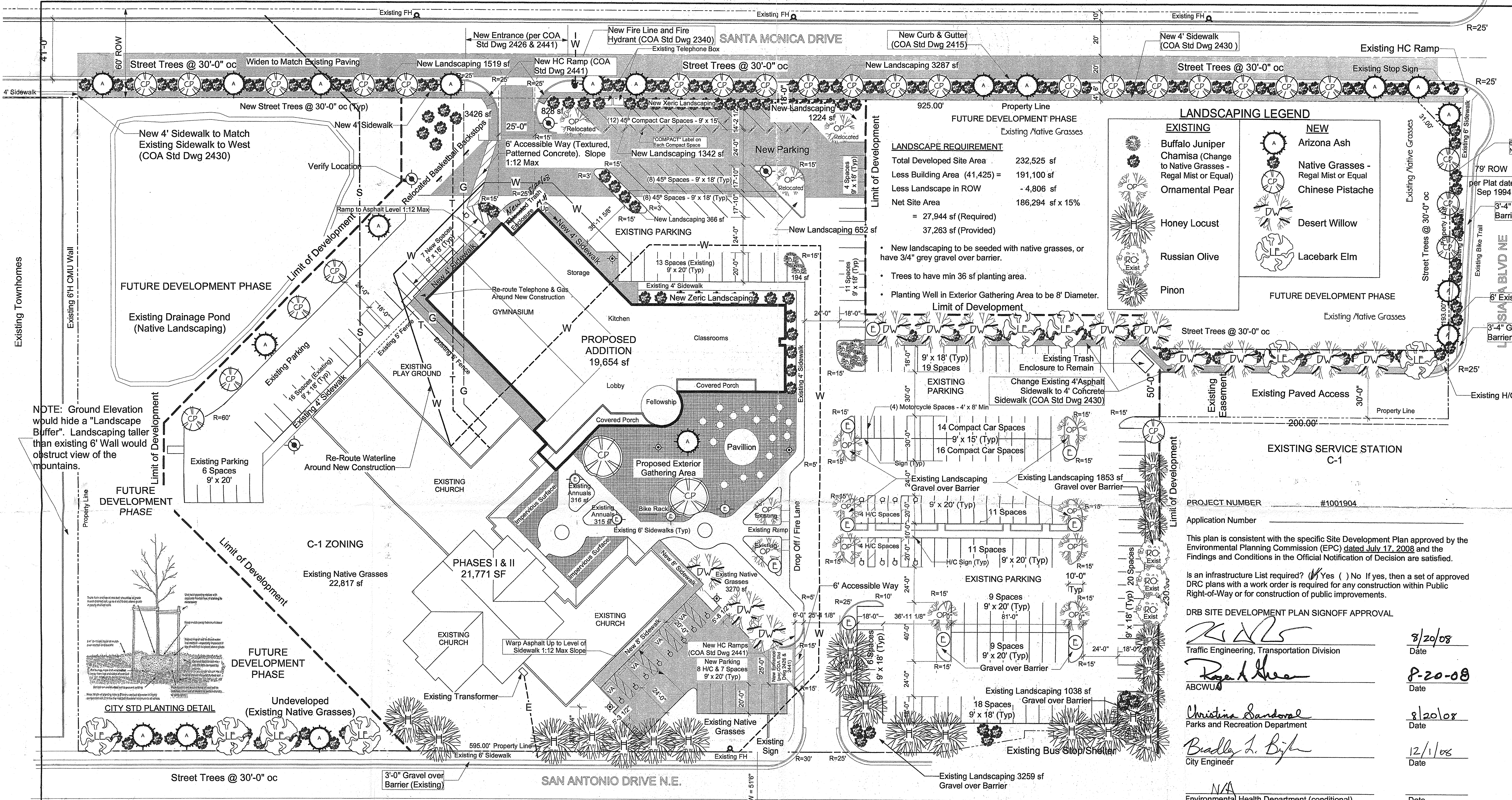
Project Manager: Archie Martinez  
Drawn By: Chris Burk  
Reviewed By: Archie Martinez  
Date: 8/5/08  
CAD File Name:   
Project ID: #08-12  
Scale: As Shown  
Drawing No.: GD-3 of 3  
of 23

RECEIVED

HYDROLOGY  
SECTION

GRADING & DRAINAGE - AS BUILT

GRADING & DRAINAGE - AS BUILT



**LANDSCAPING LEGEND**

| EXISTING                                                 | NEW                                  |
|----------------------------------------------------------|--------------------------------------|
| Buffalo Juniper                                          | Arizona Ash                          |
| Chamisa (Change to Native Grasses - Regal Mist or Equal) | Native Grasses - Regal Mist or Equal |
| Ornamental Pear                                          | Chinese Pistache                     |
| Honey Locust                                             | Desert Willow                        |
| Russian Olive                                            | Lacebark Elm                         |
| Pinon                                                    |                                      |

**LANDSCAPE REQUIREMENT**

|                               |                        |
|-------------------------------|------------------------|
| Total Developed Site Area     | 232,525 sf             |
| Less Building Area (41,425) = | 191,100 sf             |
| Less Landscape in ROW         | - 4,806 sf             |
| Net Site Area                 | 186,294 sf x 15%       |
|                               | = 27,944 sf (Required) |
|                               | 37,263 sf (Provided)   |

- New landscaping to be seeded with native grasses, or have 3/4" grey gravel over barrier.
- Trees to have min 36 sf planting area.
- Planting Well in Exterior Gathering Area to be 8' Diameter.

PROJECT NUMBER #1001904  
Application Number  
This plan is consistent with the specific Site Development Plan approved by the Environmental Planning Commission (EPC) dated July 17, 2008 and the Findings and Conditions in the Official Notification of Decision are satisfied.

Is an infrastructure List required? ☒ Yes ( ) No If yes, then a set of approved DRC plans with a work order is required for any construction within Public Right-of-Way or for construction of public improvements.

DRB SITE DEVELOPMENT PLAN SIGNOFF APPROVAL

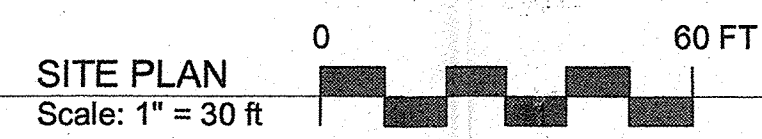
|                                              |         |
|----------------------------------------------|---------|
|                                              | 8/20/08 |
| Traffic Engineering, Transportation Division | Date    |
|                                              | 8-20-08 |
| ABCWUA                                       | Date    |
|                                              | 8/20/08 |
| City Engineer                                | Date    |
|                                              | 12/1/08 |
| Solid Waste Management                       | Date    |
|                                              | 8/20/08 |
| DRB Chairperson, Planning Department         | Date    |



**LANDSCAPE NOTES**

1. All plant material to be watered by automatic drip irrigation system. Incorporate Roof Run-Off where technically possible.
2. Owner agrees to maintain all landscaping and promptly replace dead plant material.
3. There is no high-water-use turf (except 150 sf in Play Area).
4. Landscaping at maturity will cover 75% of required landscape area.
5. Landscaping to comply with City of Albuquerque Water Ordinance Art 6-1-1-1.
6. Gravel over Barrier = 3/4" Gravel Mulch over Landscape Fabric.

|     |         |                                           |                                                |                         |                 |            |             |          |
|-----|---------|-------------------------------------------|------------------------------------------------|-------------------------|-----------------|------------|-------------|----------|
| D   | 8/7/08  | DRB Notes                                 | Project Title                                  | ADDITON to GRACE CHURCH | Project Manager | Bill Burk  | Project ID  | #08-12   |
| C   | 7/13/08 | Incorporating/Not Comments                | Drawn By                                       | 6901 San Antonio Dr NE  | Drawn By        | Chris Burk | Role        | As/Drawn |
| D   | 7/6/08  | Notes Addressing City Comments            | Reviewed By                                    | Albuquerque, NM         | Reviewed By     | Bill Burk  | Drawing No. | 1        |
| A   | 6/5/08  | Added Existing Parking Dimensions & Radii | Date                                           |                         | Date            | 05/29/08   |             | of       |
| No. | Date    | Issue/Notes                               | Electronic Copy of Final Document              |                         | CAD File Name   |            |             | 4        |
|     |         |                                           | Original/Sealed Document w/ William E Burk III |                         |                 |            |             |          |
|     |         |                                           | NY #494, AZ #44290                             |                         |                 |            |             |          |



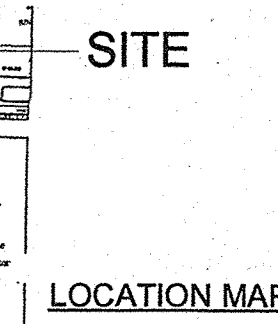
**SITE PLAN**  
Scale: 1" = 30 ft

|  |                                 |
|--|---------------------------------|
|  | Proposed New Concrete Sidewalks |
|  | Proposed New Asphaltic Paving   |
|  | Proposed Stamped Concrete       |

**OFF-STREET PARKING**

|                         | Required | Provided                 |
|-------------------------|----------|--------------------------|
| Automobile Spaces       | 128      | 233 (incl 17 H/C Spaces) |
| Motorcycle Spaces       | 4        | 4                        |
| Bicycle Spaces          | 7        | 8                        |
| 1 per 20 Parking Spaces |          |                          |

Each Accessible (H/C) Space to have pole-mounted sign per City Std VA = Van Accessible



**COLORS AND MATERIALS**  
Existing building has grey stucco with white trim, and metallic grey roof. Addition to match existing.

