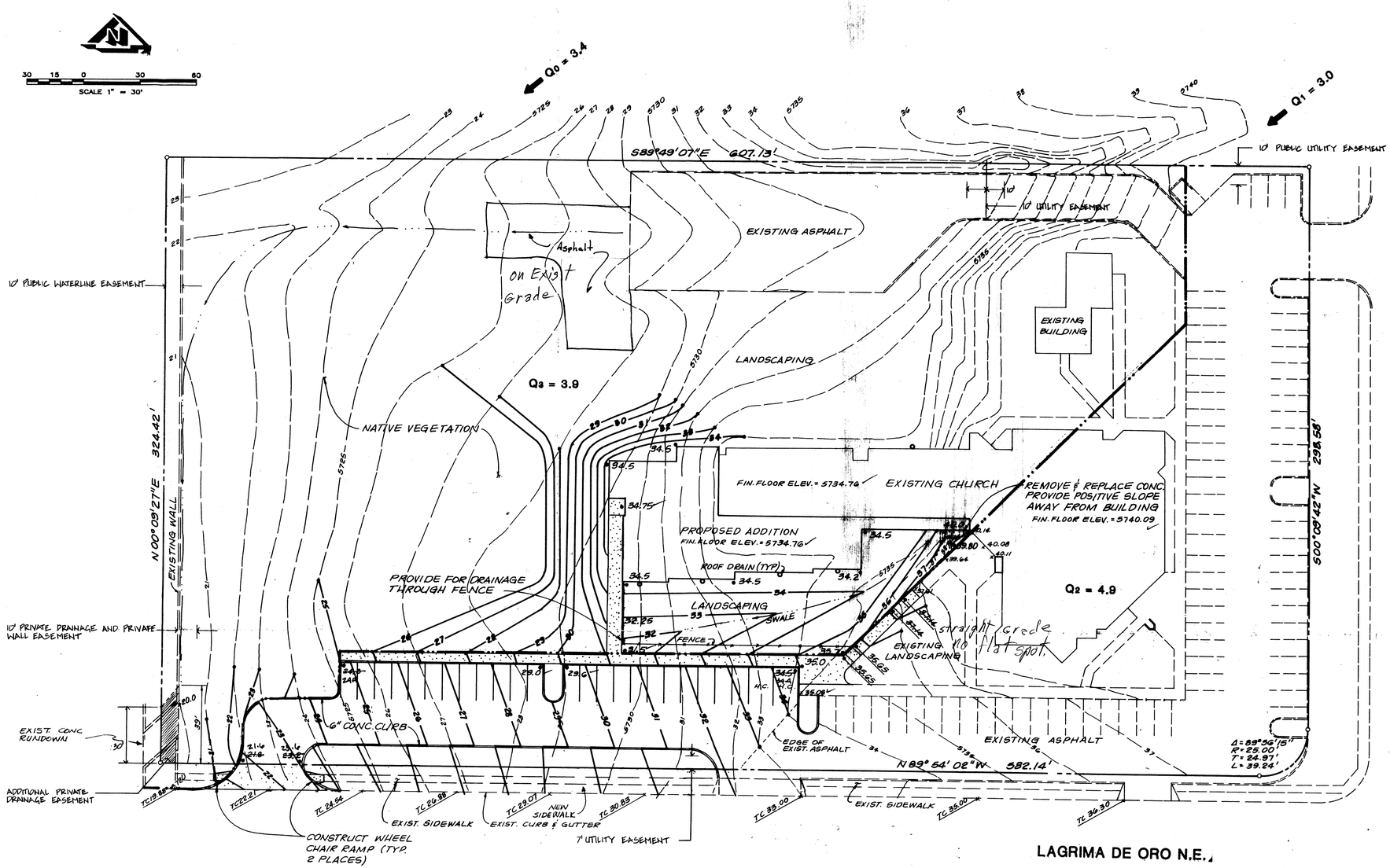


DRAINAGE PLAN

The following items concerning the St. Stephen's Methodist Church Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the vicinity map, are located on Juan Tabo Boulevard NE and north of La Grima de Oro Street. The site is currently developed and this project is an addition to the existing facilities. The site to the north is undeveloped and the site to the west is developed as the La Vida Llena Retirement facilities. The site does not lie within a designated Flood Hazard Zone.

The site slopes from east to west with a north to south cross slope. An existing drainage way lies along the north property line. It was cut off by Juan Tabo and only serves the site to the north and the St. Stephen's site. Offsite flows from the north do not enter the project site. The project site is higher than La Vida Llena to the west. A drainage facility was constructed along the west property line of the project site by La Vida Llena to divert the flows from the project site and the site to the north to La Grima de Oro and around La Vida Llena. On September 11, 1990 in a letter to Bohannan Huston, the City acknowledged that St. Stephen's has a free discharge to La Grima de Oro. Therefore, all flows from the project site plus any flows form the site to the north will be conveyed to La Grima de Oro at the southwest corner of the project site through existing drainage facilities.

The Grading Plan shows 1) existing and proposed grades, indicated by spot elevations and contours at 1'-0" intervals, 2) continuity between existing and proposed elevations, 3) the limit and character of existing improvements, and 4) the limit and character of proposed improvements. As shown by this plan, the proposed improvements consist of an additional building and parking on the south side of the project site. Runoff from the roof will be conveyed across a landscaped area to the parking area. The parking area will drain to the street through a drive pad. The remaining portion of the site will continue to drain through the existing facilities to the street.

The Calculations, which appear below, analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational and SCS Methods have been used for this analysis in accordance with the City of Albuquerque Development Process Manual, Volume II. As shown by these calculations, the rate and volume of runoff will increase.

CALCULATIONS

From the Development Process Manual, Volume II, Section 22.
Precipitation Zone = 4
Area of Site = 4.51 acres

Offsite Flows

Area Q_E

Land Treatment Areas	Existing
A	2.4
B	0.0
C	0.1
D	1.5
Total	4.0

Volume of Runoff - Existing, From Table A-8
E=(0.80*2.4 + 0.1*1.46 + 2.64*1.5)/4.0 = 1.51 inches
V=EA= 1.51*4.0/12 = 0.50 acre feet

Rate of Runoff - Existing, From Table A-9
Q=(2.20*2.4 + 3.73*0.1 + 5.25*1.5)/4.0 = 3.4 cfs

Area Q_1

Land Treatment Areas	Existing
A	0.67
B	0.0
C	0.0
D	0.23
Total	0.90

Volume of Runoff - Existing, From Table A-8
E=(0.80*0.67 + 2.64*0.23)/0.9 = 0.29 inches
V=EA= 0.29*0.9/12 = 0.02 acre feet

Rate of Runoff - Existing, From Table A-9
Q=(2.20*0.67 + 5.25*0.23)/0.9 = 3.0 cfs

On Site Flows

Area Q_2

Land Treatment Areas	Existing	Proposed
A	0.0	0.0
B	0.23	0.23
C	0.32	0.0
D	0.93	1.25
Total	1.48	1.48

Volume of Runoff - Existing, From Table A-8
E=(1.06*0.23 + 1.46*0.32 + 2.64*0.93)/1.48 = 2.14 inches
V=EA= 2.14*1.48/12 = 0.26 acre feet

Volume of Runoff - Proposed, From Table A-8
E=(1.06*0.23 + 2.64*1.25)/1.48 = 2.39 inches
V=EA= 2.39*1.48/12 = 0.29 acre feet
Increase in Volume of Runoff = 0.29 - 0.26 = 0.03 acre feet

Rate of Runoff - Existing, From Table A-9
Q=(2.92*023 + 3.73*0.32 + 5.25*0.93)/1.48 = 4.6 cfs

Rate of Runoff - Proposed, From Table A-9
Q=(2.92*0.23 + 5.25*1.25)/1.48 = 4.9 cfs
Increase in Rate of Runoff = 4.9 - 4.6 = 0.3 cfs

Area Q_3

Land Treatment Areas	Existing	Proposed
A	0.11	0.11
B	0.42	0.48
C	1.97	1.81
D	0.53	0.63
Total	3.03	3.03

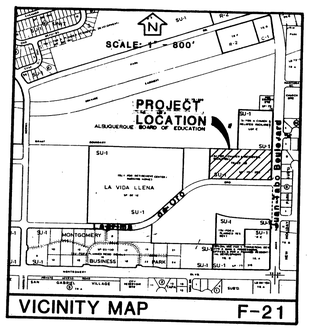
Volume of Runoff - Existing, From Table A-8
E=(0.80*0.11+1.06*0.42+1.46*1.97+2.64*0.53)/3.03 = 1.59 inches
V=EA= 1.59*3.03/12 = 0.40 acre feet

Volume of Runoff - Proposed, From Table A-8
E=(0.80*0.11+1.06*0.48+1.46*1.81+2.64*0.63)/3.03 = 1.62 inches
V=EA= 1.62*3.03/12 = 0.41 acre feet
Increase in Volume of Runoff = 0.41 - 0.40 = 0.01 acre feet

Rate of Runoff - Existing, From Table A-9
Q=(2.20*0.11+2.92*0.42+3.73*1.97+5.25*0.53)/3.03 = 3.8 cfs

Rate of Runoff - Proposed, From Table A-9
Q=(2.20*0.11+2.92*0.48+3.73*1.81+5.25*0.63)/3.03 = 3.9 cfs
Increase in Rate of Runoff = 3.9 - 3.8 = 0.1 cfs

Channel Capacity
Q = 1.49/n A R^0.67 S^0.5
A = 0.5*12*0.8 = 4.8 sf
R^0.67 = (4.8/12)^0.67 = 0.54
S^0.5 = (0.0077)^0.5 = 0.0877
Q = 1.49/0.03*4.8*0.54*0.0877 = 11.3 cfs
Therefore, channel at 0.8 feet depth will convey off site plus onsite flows of 3.4+3.0+4.9 = 11.3 cfs.



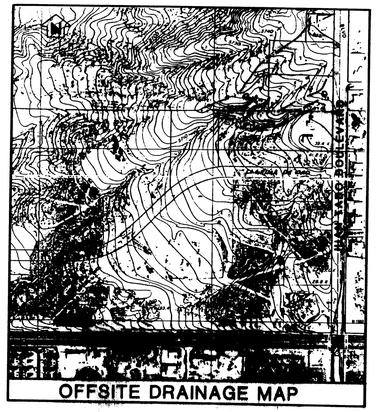
PROJECT BENCHMARK
ACS BRASS TABLET SET IN TOP OF CONCRETE POST FLUSH WITH CURB ON SOUTH MEDIAN OF JUAN TABO/ MONTGOMERY INTERSECTION. ACS STA. #JT-1A. ELEV. = 5721.25

ADDRESS
4601 JUAN TABO N.E.

LEGAL DESCRIPTION
TRACT 55-1, A REPLAT OF TRACT 55, ST. STEPHEN'S METHODIST CHURCH

LEGEND

- 21 — EXISTING CONTOUR
- 23 — PROPOSED CONTOUR
- x 28.3 EXIST. SPOT ELEVATION
- • 29.5 PROP. SPOT ELEVATION
- SWALE WITH DIRECTION OF FLOW
- ROOF DRAIN
- NEW CONCRETE



ENGINEER'S CERTIFICATION:
"This project was constructed in substantial compliance with this Grading Plan."

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
STATE OF NEW MEXICO
THOMAS T. MANN, JR.
3792
3/28/94

REGISTERED PROFESSIONAL ENGINEER AND LAND SURVEYOR
STATE OF NEW MEXICO
THOMAS T. MANN
3792
6.4.93
10.27.93

RECEIVED
MAR 29 1994

CIVIL ENGINEER: THOMAS T. MANN JR. PE LIC.# 3792	DRAINAGE & GRADING PLAN	DATE 6.24.93
RD Habiger & Associates, Inc. 11930 Menaul NE, Suite #221 Albuquerque, New Mexico 87112 (505) 293-1443	ST. STEPHEN'S UNITED METHODIST CHURCH ALBUQUERQUE NM	SHEET 2
		2 OF 3

DRAINAGE PLAN

I. INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT IS LOCATED IN NORTHEAST ALBUQUERQUE NEAR MONTGOMERY BLVD. NE AND JUAN TABO BLVD. NE AND REPRESENTS A MODIFICATION WITHIN AN INFILL SITE. FREE DISCHARGE FROM THE SITE INTO LAGRIMA DE ORO RD. NE THROUGH NEW AND EXISTING DRIVEWAYS AS WELL AS THROUGH AN EXISTING CONCRETE RUNDOWN WHICH IS LOCATED WITHIN AN EXISTING PRIVATE DRAINAGE EASEMENT. THE CONCEPT OF FREE DISCHARGE WILL BE UTILIZED AS ALLOWED BY THE PREVIOUSLY APPROVED DRAINAGE PLAN FOR THE SITE (F-21/D13). OFFSITE FLOWS ENTER THE SITE FROM THE NORTH AND WILL BE ACCEPTED AND CONVEYED THROUGH THE SITE AND INTO LAGRIMA DE ORO RD. NE.

THIS SUBMITTAL IS MADE IN SUPPORT OF SITE DEVELOPMENT PLAN FOR APPROVAL BY THE EPC. A SEPARATE SUBMITTAL WILL BE PREPARED AND SUBMITTED FOR BUILDING PERMIT APPROVAL.

II. PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THE SITE IS LOCATED AT THE NORTHWEST CORNER OF JUAN TABO BLVD. NE AND LAGRIMA DE ORO ROAD NE. THE CURRENT LEGAL DESCRIPTION IS TRACT SS-1, ST. STEPHEN?S METHODIST CHURCH. AS SHOWN BY PANEL 144 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS PUBLISHED BY FEMA FOR BERNALILLO COUNTY, NEW MEXICO, REVISED APRIL 2, 2002, THIS SITE DOES NOT LIE WITHIN NOR ADVERSELY IMPACT A DESIGNATED FLOOD HAZARD ZONE (ZONE A).

III. BACKGROUND DOCUMENTS

THE FOLLOWING DOCUMENTS WERE USED IN THE PREPARATION OF THIS PLAN:

1) GRADING AND DRAINAGE PLAN FOR ST. STEPHEN?S UNITED METHODIST CHURCH (F-21/D13), PREPARED BY TOM MANN ASSOCIATES, INC., OCTOBER 27, 1982. THIS PLAN WAS FOR A NEW BUILDING ADDITION. THESE IMPROVEMENTS TOOK PLACE BEFORE LAGRIMA DE ORO WAS BUILT; THEREFORE THE DRAINAGE SCHEME UTILIZED DETENTION PONDING OF STORMWATER.
2) GRADING AND DRAINAGE PLAN FOR ST. STEPHEN?S UNITED METHODIST CHURCH (F-21/D13), PREPARED BY THOMAS T. MANN, JR., OCTOBER 27, 1993. THIS PLAN STATES THAT FREE DISCHARGE FROM THE SITE INTO LAGRIMA DE ORO RD. NE HAS BEEN ALLOWED BY THE CITY. OFFSITE FLOWS GENERATED BY LOT C-1 LOCATED TO THE NORTH AND ENTERING THE SITE AT TWO LOCATIONS ALONG THE NORTH PROPERTY LINE WERE CALCULATED TO BE 3.4 CFS AND 3.0 CFS. THESE OFFSITE FLOWS ENTER THE SITE AT THE NORTHWEST AND NORTHEAST PORTIONS OF THE SITE, RESPECTIVELY.
3) REPLAT OF LOTS 29 AND 30, LANDS OF FERRARI-ESQUIBEL-PALMER RECORDED ON OCTOBER 10, 1990, VOL. 90C, FOLIO 241, PREPARED BY BOHANNON HUSTON INC. THIS PLAT DEPICTS THE OFFSITE DRAINAGE EASEMENT WHICH SERVES THE SITE AND IS LOCATED NEAR THE SITE?S SOUTHWEST CORNER.
4) REPLAT OF TRACT SS, ST. STEPHEN'S UNITED METHODIST CHURCH, RECORDED ON OCTOBER 18, 1990, VOL. 90C, FOLIO 258, PREPARED BY BOHANNON HUSTON INC. THIS PLAT DEPICTS THE ONSITE DRAINAGE EASEMENTS WHICH SERVES THE SITE AS WELL AS TRACT C-2 AND LOT A LOCATED NORTH OF THE SITE.

IV. EXISTING CONDITIONS

CURRENTLY, THE SITE IS DEVELOPED AND CONSISTS OF A MULTI-LEVEL BUILDING, ASPHALT PAVED PARKING, LANDSCAPING, AND A PORTION OF UNDEVELOPED LAND. OFFSITE FLOWS AS QUANTIFIED BY THE PREVIOUSLY APPROVED DRAINAGE PLAN ENTER THE SITE FROM LOT C-1 TO THE NORTH. ALL RUNOFF GENERATED BY THE SITE DISCHARGES INTO LAGRIMA DE ORO RD. NE. THE SOUTHEASTERLY PORTION OF THE SITE DISCHARGES INTO LAGRIMA DE ORO RD. NE THROUGH THREE EXISTING DRIVE ENTRANCES TO THE SITE ALONG LAGRIMA DE ORO. THE REMAINING PORTION OF THE SITE, AS WELL AS THE OFFSITE FLOWS WHICH ENTER THE SITE, DRAIN INTO LAGRIMA DE ORO RD. NE THROUGH AN EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE WITHIN AN EXISTING PRIVATE DRAINAGE EASEMENT. THE DRAINAGE EASEMENT IS LOCATED PARTIALLY WITHIN THE PROJECT SITE WITH THE REMAINING PORTION LOCATED WITHIN THE BOUNDARY OF TRACT A WEST OF THE SITE. THE RUNDOWN AND EASEMENT IS OWNED, OPERATED, AND MAINTAINED BY EACH UNDERLYING PROPERTY OWNER. AN EXISTING 10? WIDE PRIVATE DRAINAGE EASEMENT LOCATED ALONG THE WEST PROPERTY LINE IS CURRENTLY IN PLACE AND WAS CREATED IN ORDER TO PROVIDE A CORRIDOR FOR THE CONVEYANCE OF THE OFFSITE FLOWS INTO THE EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE. LAGRIMA DE ORO RD NE CONVEYS FLOWS INTO MORRIS ST. NE WHICH IN TURN CONVEYS FLOWS INTO MONTGOMERY BLVD. NE.

V. PHASE 1 DEVELOPED CONDITIONS

PHASE 1 WILL CONSIST OF A NEW BUILDING ADDITION WITH A BASEMENT LEVEL. THE FINISHED GRADE ON THE NORTH SIDE OF THE NEW ADDITION WILL BE AT THE BASEMENT LEVEL TO ALLOW GROUND LEVEL ACCESS TO THE BUILDING AT THE NORTH SIDE. AS A RESULT, A SUMP CONDITION WITHOUT AN OVERFLOW WILL BE CREATED. THIS AREA WILL DRAIN VIA A PRIVATE STORM INLET AND PRIVATE STORM DRAIN PIPE TOWARD THE SOUTHWEST AND WILL DISCHARGE INTO THE EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE THROUGH A NEW PIPE OUTLET STRUCTURE. THE REMAINDER OF THE SITE WILL REMAIN UNCHANGED AND WILL CONTINUE TO DRAIN INTO LAGRIMA DE ORO RD. NE THROUGH THE EXISTING DRIVEWAYS. BECAUSE OF THE SUMP CONDITION AT THE NORTH SIDE OF THE NEW ADDITION, THE PRIVATE STORM DRAIN WILL UTILIZE TWO STORM DRAIN PIPES WHICH TOGETHER POSSESS TWICE THE REQUIRED HYDRAULIC CAPACITY. OFFSITE FLOWS FROM THE NORTH WILL CONTINUE TO BE ACCEPTED AND CONVEYED THROUGHOUT THE SITE AND WILL CONTINUE TO DISCHARGE INTO LAGRIMA DE ORO RD. NE THROUGH THE EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE.

VI. FUTURE DEVELOPED CONDITIONS

THE FUTURE DEVELOPMENT WILL CONSIST OF THREE NEW BUILDING ADDITIONS AND THE CONSTRUCTION OF A NEW ASPHALT PAVED PARKING LOT ON THE WEST SIDE OF THE SITE AS WELL AS THE REPAVING OF THE EXISTING PARKING LOT. THE EASTERN PORTION OF THE SITE WILL CONTINUE TO DRAIN INTO LAGRIMA DE ORO RD. NE THROUGH NEW AND EXISTING PAVED DRIVEWAYS. THE WESTERN PORTION OF THE SITE WHICH WILL CONSIST OF THE NEW PAVED PARKING LOT WILL DRAIN INTO LAGRIMA DE ORO RD. NE THROUGH THE EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE. THE FINISHED GRADE ALONG THE WEST WALL OF THE PHASE 1 ADDITION WILL BE CUT DOWN TO THE BASEMENT LEVEL ALLOWING ENTRANCE TO THE WEST SIDE OF THE BUILDING THROUGH THE BASEMENT FROM GROUND LEVEL AND MATCHING THE PHASE 1 FINISHED GRADE ON THE NORTH SIDE OF THE BUILDING. THIS AREA WILL DRAIN TO A NEW PRIVATE STORM INLET AND STORM DRAIN PIPE WHICH WILL CONNECT INTO THE PHASE 1 PRIVATE STORM DRAIN SYSTEM WHICH DISCHARGES INTO THE EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE. THIS SYSTEM WILL ALSO HAVE TWICE THE REQUIRED HYDRAULIC CAPACITY BECAUSE OF THE SUMP CONDITION WITH NO OVERFLOW. OFFSITE FLOWS FROM THE NORTH WILL AGAIN CONTINUE TO BE ACCEPTED AND CONVEYED THROUGHOUT THE SITE. THIS WILL BE ACCOMPLISHED THROUGH THE USE OF CONCRETE TRICKLE CHANNELS WHICH WILL CONVEY THE OFFSITE FLOWS INTO THE NEW PAVED PARKING LOT IN THE WESTERN PORTION OF THE SITE. THE FLOWS WILL THEN DISCHARGE INTO LAGRIMA DE ORO RD. NE THROUGH THE EXISTING CONCRETE RUNDOWN AT THE SOUTHWEST CORNER OF THE SITE.

VII. GRADING PLAN

THE GRADING PLAN SHOWS: 1) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS AS TAKEN FROM TOPOGRAPHIC SURVEY PREPARED BY JEFF MORTENSEN & ASSOC., INC., DATED JANUARY 2001, 2) PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS, 3) THE LIMIT AND CHARACTER OF THE EXISTING IMPROVEMENTS, 4) THE LIMIT AND CHARACTER OF THE PROPOSED IMPROVEMENTS, AND 5) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES.

VIII. CALCULATIONS

THE CALCULATIONS CONTAINED HEREIN ANALYZE BOTH THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT. THE PROCEDURE FOR 40-ACRE AND SMALLER BASINS, AS SET FORTH IN THE REVISION OF SECTION 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY, 1993, HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED. THE CAPACITIES OF THE PRIVATE STORM DRAIN PIPES AND THE EXISTING CONCRETE RUNDOWN WERE CALCULATED USING MANNING'S EQUATION.

IX. CONCLUSION

THE CONTINUED FREE DISCHARGE FROM THE SITE INTO LAGRIMA DE ORO RD. NE IS APPROPRIATE DUE TO THE FOLLOWING:

1) THE DEVELOPMENT REPRESENTS A MODIFICATION TO AN EXISTING DEVELOPED SITE WITHIN AN INFILL AREA.
2) THE DEVELOPMENT CONFORMS WITH THE PREVIOUSLY APPROVED DRAINAGE PLAN WHICH ALLOWS FREE DISCHARGE FROM THE SITE.
3) THE APPARENT DOWNSTREAM CAPACITY OF LAGRIMA DE ORO ROAD NE AS STATED BY THE PREVIOUSLY APPROVED DRAINAGE PLAN FOR THE SITE.
4) THE DEVELOPMENT WILL NOT HAVE A NEGATIVE IMPACT ON DOWNSTREAM FLOOD HAZARD ZONES.

THE EXISTING CONCRETE DRAINAGE RUNDOWN AND PRIVATE DRAINAGE EASEMENT LOCATED AT THE SOUTHWEST CORNER OF THE SITE IS PRIVATELY OWNED, OPERATED, AND MAINTAINED BY THE OWNERS OF TRACT SS-1 AND TRACT A.

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Plot Time:	2:16 pm

CALCULATIONS

I. PRECIPITATION ZONE = 4

II. $P_{6,100} = P_{360} = 2.90$ IN

III. TOTAL AREA (A_T) = 196,500 SF / 4.51 AC

IV. EXISTING LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
B	14,605/0.34	08
C	82,775/1.90	42
D	99,120/2.28	50

V. PHASE 1 DEVELOPED LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
B	4,270/0.10	02
C	82,775/1.90	42
D	109,455/2.51	56

VI. FULLY DEVELOPED LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
B	23,400/0.54	12
D	173,100/3.97	88

VII. EXISTING CONDITION

A. VOLUME

$E_W = (E_AA_A+E_BA_B+E_CA_C+E_DA_D)/A_T$

$E_W = [1.08(0.34) + 1.46(1.90) + 2.64(2.28)]/4.51 = 2.03$ IN

$V_{100,6-HR} = (E_W/12)A_T$

$V_{100,6-HR} = (2.03/12)4.51 = 0.7634$ AC-FT = 33,250 CF

B. PEAK DISCHARGE

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = 2.92(0.34) + 3.73(1.90) + 5.25(2.28) = 20.0$ CFS

C. EXISTING RUNDOWN CAPACITY

$Q = 1.486/n\ AR^{2/3}\ S^{1/2}$

WHERE:
n = 0.013
A = 3.35 SF (TRIANGULAR SECTION 10.0? WIDTH, 0.67? DEPTH)
P = 10.65
R = A/P = 0.31 FT
S = 0.027

THEN:
Q_{CAP} = 29.1 CFS

D. OFFSITE FLOWS

$Q_{OFFSITE}$ = 3.0 + 3.4 = 6.4 CFS (FROM PREVIOUS DRAINAGE PLAN)

E. DISCHARGE TO RUNDOWN

$Q = 0.5Q_{100} + Q_{OFFSITE} = 10.0 + 6.4 = 16.4$ CFS

VIII. DEVELOPED CONDITIONS

A. PHASE I

1. VOLUME

$E_W = (E_AA_A+E_BA_B+E_CA_C+E_DA_D)/A_T$

$E_W = [1.08(0.10) + 1.46(1.90) + 2.64(2.51)]/4.51 = 2.11$ IN

$V_{100,6-HR} = (E_W/12)A_T$

$V_{100,6-HR} = (2.11/12)4.51 = 0.7924$ AC-FT = 34,515 CF

2. PEAK DISCHARGE

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = 2.92(0.10) + 3.73(1.90) + 5.25(2.51) = 20.6$ CFS

3. PRIVATE STORM DRAIN

A. DRAINAGE BASIN
$A_T = A_D = 0.67$ AC

$Q_{100} = 5.25(0.67) = 3.5$ CFS

B. PIPE CAPACITY

$Q = 1.486/n\ AR^{2/3}\ S^{1/2}$

WHERE:
n = 0.012 (DIP)
A = 1.767 SF (18? PIPE)
R = D/4 = 0.375 FT
S = 0.007

OK

THEN:
$Q = 9.5$ CFS $> 2Q_{100} = 3.5(2) = 7.0$ CFS

C. DISCHARGE TO RUNDOWN

$Q = 0.5Q_{100} + Q_{OFFSITE} = 10.3 + 6.4 = 16.7$ CFS

B. FULLY DEVELOPED CONDITION

1. VOLUME

$E_W = (E_AA_A+E_BA_B+E_CA_C+E_DA_D)/A_T$

$E_W = [1.08(0.54) + 2.64(3.97)]/4.51 = 2.45$ IN

$V_{100,6-HR} = (E_W/12)A_T$

$V_{100,6-HR} = (2.45/12)4.51 = 0.9220$ AC-FT = 40,160 CF

2. PEAK DISCHARGE

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = 2.92(0.54) + 5.25(3.97) = 22.4$ CFS

E. DISCHARGE TO RUNDOWN

$Q = 0.5Q_{100} + Q_{OFFSITE} = 11.2 + 6.4 = 17.6$ CFS

XI. COMPARISON

A. EXISTING VS. PHASE I DEVELOPED

$\Delta V_{100,6-HR}$ = 34,515 - 33,250 = 1,265 CF (INCREASE)

ΔQ_{100} = 20.6 - 20.0 = 0.6 CFS (INCREASE)

B. EXISTING VS. FUTURE DEVELOPED

$\Delta V_{100,6-HR}$ = 40,160 - 33,250 = 6,910 CF (INCREASE)

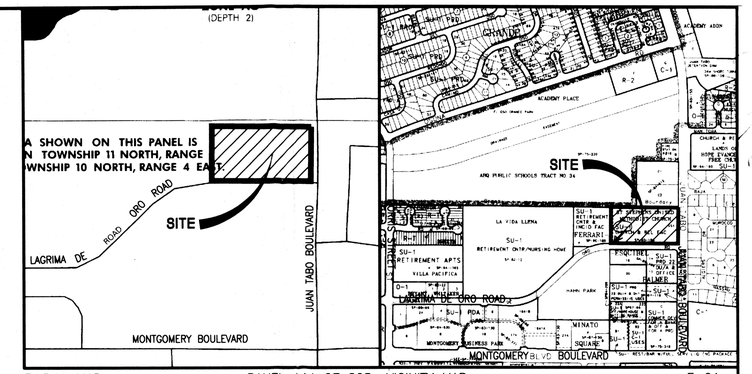
ΔQ_{100} = 22.4 - 20.0 = 2.4 CFS (INCREASE)

C. RUNDOWN CAPACITY

1. EXISTING
Q_{CAP} = 29.1 CFS > 16.4 CFS

2. PHASE I
Q_{CAP} = 29.1 CFS > 16.7 CFS

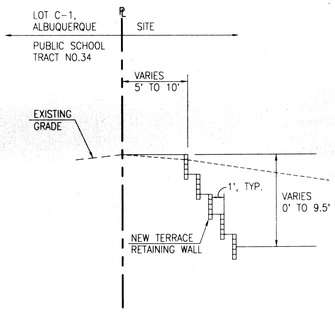
3. FULLY DEVELOPED
Q_{CAP} = 29.1 CFS > 17.6 CFS



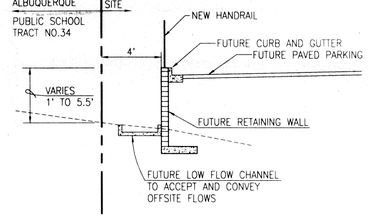
F.I.R.M. MAP
SCALE: 1"= 500'±

PANEL 144 OF 825 VICINITY MAP
SCALE: 1"= 750'±

F-21



SECTION A-A (PHASE 1)
SCALE: 1"= 6'



SECTION B-B (FUTURE)
SCALE: 1"= 6'

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NOV 06 2002
HYDROLOGY SECTION

2001.077.2

JEFFREY L. MORTENSEN
NEW MEXICO
9857477
REGISTERED PROFESSIONAL ENGINEER
11-05-2002

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ALBUQUERQUE OFFICE
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ENGINEERS SURVEYORS (505) 345-4250
FAX: 505 345-4254 Email: jmainc@swcp.com

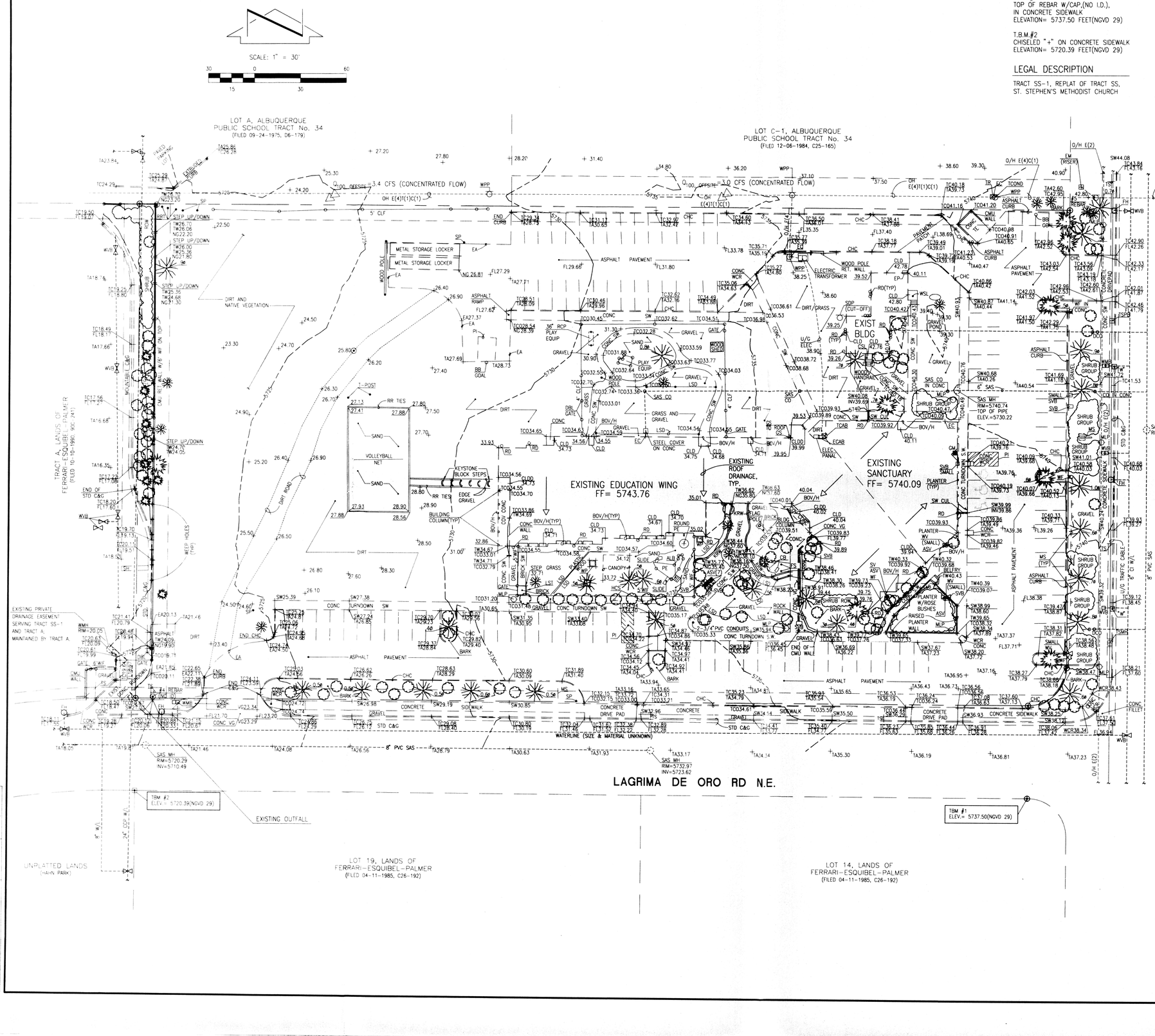
SAINT STEPHEN'S UNITED METHODIST CHURCH
Juan Tabo, N.E.
Albuquerque, New Mexico

PROJECT NO:	-
DRAWN BY:	TRF
CHECKED BY:	RDH
DATE:	10/31/02

REVISIONS:
1 -
2 -
3 -

DRAINAGE PLAN, CALCULATIONS, SECTIONS

SHEET: SDP-4
OF: 8



T.B.M.

T.B.M.#1
TOP OF REBAR W/CAP,(NO I.D.), IN CONCRETE SIDEWALK
ELEVATION= 5737.50 FEET(NGVD 29)

T.B.M.#2
CHISELED "+" ON CONCRETE SIDEWALK
ELEVATION= 5720.39 FEET(NGVD 29)

LEGAL DESCRIPTION

TRACT SS-1, REPLAT OF TRACT SS, ST. STEPHEN'S METHODIST CHURCH

PROJECT BENCHMARK

STANDARD ACS BRASS TABLET STAMPED"ASC JT-1A" SET IN TOP OF A CONCRETE POST FLUSH WITH TOP OF CURB OF THE SOUTH MEDIAN NOSE AT THE INTERSECTION OF MONTGOMERY BOULEVARD N.E. AND JUAN TABO BOULEVARD N.E. ELEV= 5721.248(NGVD 29)

LEGEND

ALB	ARCHED LADDER BARS
ASV	ANTI-SIPHON VALVE
BOU/H	BUILDING OVERHANG
C&G	CURB AND GUTTER
CB	CONCRETE BENCH
CCP	CONCRETE CYLINDER PIPE
CHC	CONCRETE HEADER CURB
CI	CAST IRON
CLD	CENTERLINE DOOR
CLDD	CENTERLINE DOUBLE DOOR
CLF	CHAIN LINK FENCE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
CONC	CONCRETE
COV CONC	COVERED CONCRETE
CSL	CONCRETE STEPS AND LANDING
CUL	CULVERT
DCO	DOUBLE CLEAN OUT
DD	DOUBLE DOOR
EA	EDGE OF ASPHALT
EC	ELECTRIC CABINET
ELEC	ELECTRIC
EP	ELECTRIC PANAL
FH	FIRE HYDRANT
FL	FLOWLINE
FS	FLAG STONE
GS	GAS SERVICE
HCS	HANDICAP SIGN
INV	INVERT
KRW	KEYSTONE ROCK WALL
LST	LANDSCAPE TIMBER
MH	MANHOLE
MLP	METAL LIGHT POLE
MS	METAL SIGN
O/H C(1)	OVERHEAD COMMUNICATION(NO. OF LINES)
O/H E(4)	OVERHEAD ELECTRIC(NO. OF LINES)
O/H T(1)	OVERHEAD TELEPHONE(NO. OF LINES)
PB	PARKING BUMPER
PE	PLAYGROUND EQUIPMENT
PI	PAINTED ISLAND
PVC	POLYVINYL CHOLRIDE
RD	ROOF DRAIN
RET	RETAINING
RRW	ROCK RETAINING WALL
SAS	SANITARY SEWER LINE
SDP	SERVICE DROP POLE
SH	SPEED HUMP
SP	STEEL POLE
SVB	SPRINKLER VALVE BOX
SW	SIDE WALK
TA	TOP OF ASPHALT
TC	TOP OF CURB
TCOND	TELEPHONE CONDUIT
TE	TRASH ENCLOSURE
TR	TELEPHONE RISER
TS	TRAFFIC SIGN
TSMH	TRAFFIC SIGNAL MANHOLE
TSPB	TRAFFIC SIGNAL PULL BOX
U/G	UNDERGROUND
VG	VALLEY GUTTER
W/L	WATER LINE
WCR	WHEEL CHAIR RAMP
WF	WATER FAUCET
WIF	WROUGHT IRON FENCE
WMB	WATER METER BOX
WP	WOOD PLANTER
WPP	WOOD POWER POLE
WSL	WOOD STEPS AND LANDING
WVB	WATER VALVE BOX

NOTE:
THIS IS NOT A BOUNDARY SURVEY. BOUNDARY DATA SHOWN HEREON WAS TAKEN FROM A TOPOGRAPHIC SURVEY PREPARED BY JEFF MORTENSEN & ASSOCIATES DATED JANUARY 2002, AND IS SHOWN FOR ORIENTATION PURPOSES ONLY.

RECEIVED NOV 06 2002 HYDROLOGY SECTION

2001.077.2

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File Name: 107721EC.DWG
Plot Date: 11-05-2002
Plot Time: 12:14 pm

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER 11-05-2002

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SAINT STEPHEN'S UNITED METHODIST CHURCH
Juan Tabo, N.E.
Albuquerque, New Mexico

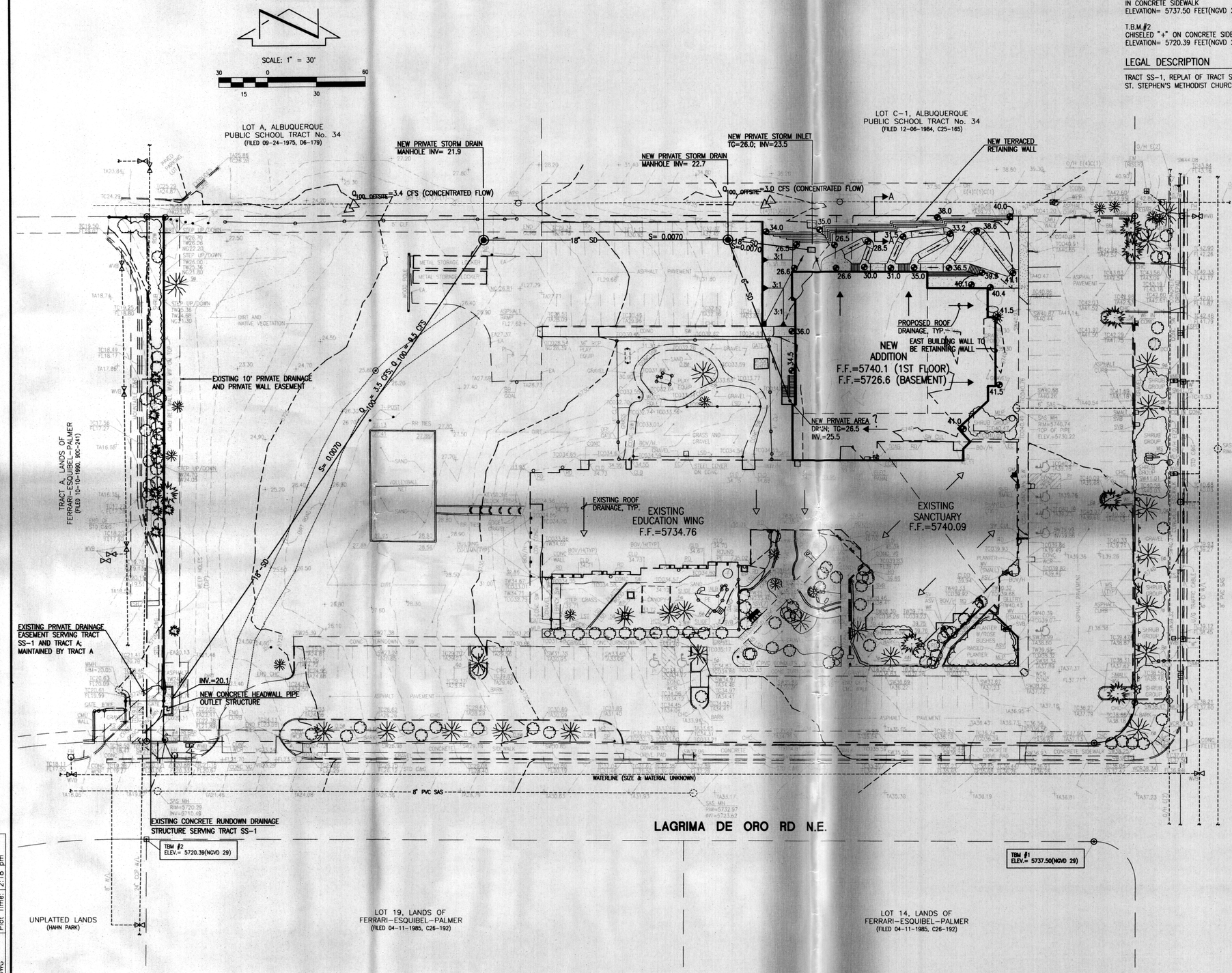
PROJECT NO: -
DRAWN BY: TRF
CHECKED BY: RDH

DATE: 10/31/02

REVISIONS:
1 -
2 -
3 -

EXISTING CONDITIONS PLAN

SHEET: SDP-5
OF: 8



T.B.M.

T.B.M.#1
TOP OF REBAR W/CAP,(NO I.D.), IN CONCRETE SIDEWALK
ELEVATION= 5737.50 FEET(NGVD 29)

T.B.M.#2
CHISELED "+" ON CONCRETE SIDEWALK
ELEVATION= 5720.39 FEET(NGVD 29)

LEGAL DESCRIPTION

TRACT SS-1, REPLAT OF TRACT SS, ST. STEPHEN'S METHODIST CHURCH

PROJECT BENCHMARK

STANDARD ACS BRASS TABLET STAMPED"ASC JT-1A" SET IN TOP OF A CONCRETE POST FLUSH WITH TOP OF CURB OF THE SOUTH MEDIAN NOSE AT THE INTERSECTION OF MONTGOMERY BOULEVARD N.E. AND JUAN TABO BOULEVARD N.E. ELEV= 5721.248(NGVD 29)

LEGEND

ALB	ARCHED LADDER BARS
ASV	ANTI-SIPHON VALVE
BOU/H	BUILDING OVERHANG
C&G	CURB AND GUTTER
CB	CONCRETE BENCH
CCP	CONCRETE CYLINDER PIPE
CHC	CONCRETE HEADER CURB
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CLD	CENTERLINE DOOR
CLDD	CENTERLINE DOUBLE DOOR
CLF	CHAIN LINK FENCE
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COV CONC	COVERED CONCRETE
CSL	CONCRETE STEPS AND LANDING
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EC	ELECTRIC CABINET
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GS	GAS SERVICE
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INV	INVERT
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MLP	METAL LIGHT POLE
MS	METAL SIGN
O/H C(1)	OVERHEAD COMMUNICATION(NO. OF LINES)
O/H E(4)	OVERHEAD ELECTRIC(NO. OF LINES)
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PB	PARKING BUMPER
PE	PLAYGROUND EQUIPMENT
PI	PAINTED ISLAND
PVC	POLYVINYL CHOLRIDE
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RET	RETAINING
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WMB	WATER METER BOX
WP	WOOD PLANTER
WPP	WOOD POWER POLE
WSL	WOOD STEPS AND LANDING
WVB	WATER VALVE BOX

EROSION CONTROL MEASURES:

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY.
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.
3. WHEN APPLICABLE, THE CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" PRIOR TO BEGINNING CONSTRUCTION.
4. UNLESS FINAL STABILIZATION IS OTHERWISE PROVIDED FOR, ANY AREAS OF EXCESS DISTURBANCE (TRAFFIC ACCESS, STORAGE YARD, EXCAVATED MATERIAL, ETC.) SHALL BE RE-SEEDED ACCORDING TO C.O.A. SPECIFICATION 1012 "NATIVE GRASS SEEDING". THIS WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION, THEREFORE, NO SEPARATE PAYMENT WILL BE MADE.

RECEIVED
NOV 06 2002
HYDROLOGY SECTION

NOTE:
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2001.077.2

File Path: E:\WORK\2001\077\2\
File Name: 107725.DWG
Plot Date: 11-05-2002
Plot Time: 2:18 pm

REGISTERED PROFESSIONAL ENGINEER
JEFFREY G. MORTENSEN
NEW MEXICO
8547
11.05.2002

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SAINT STEPHEN'S UNITED METHODIST CHURCH
Juan Tabo, N.E.
Albuquerque, New Mexico

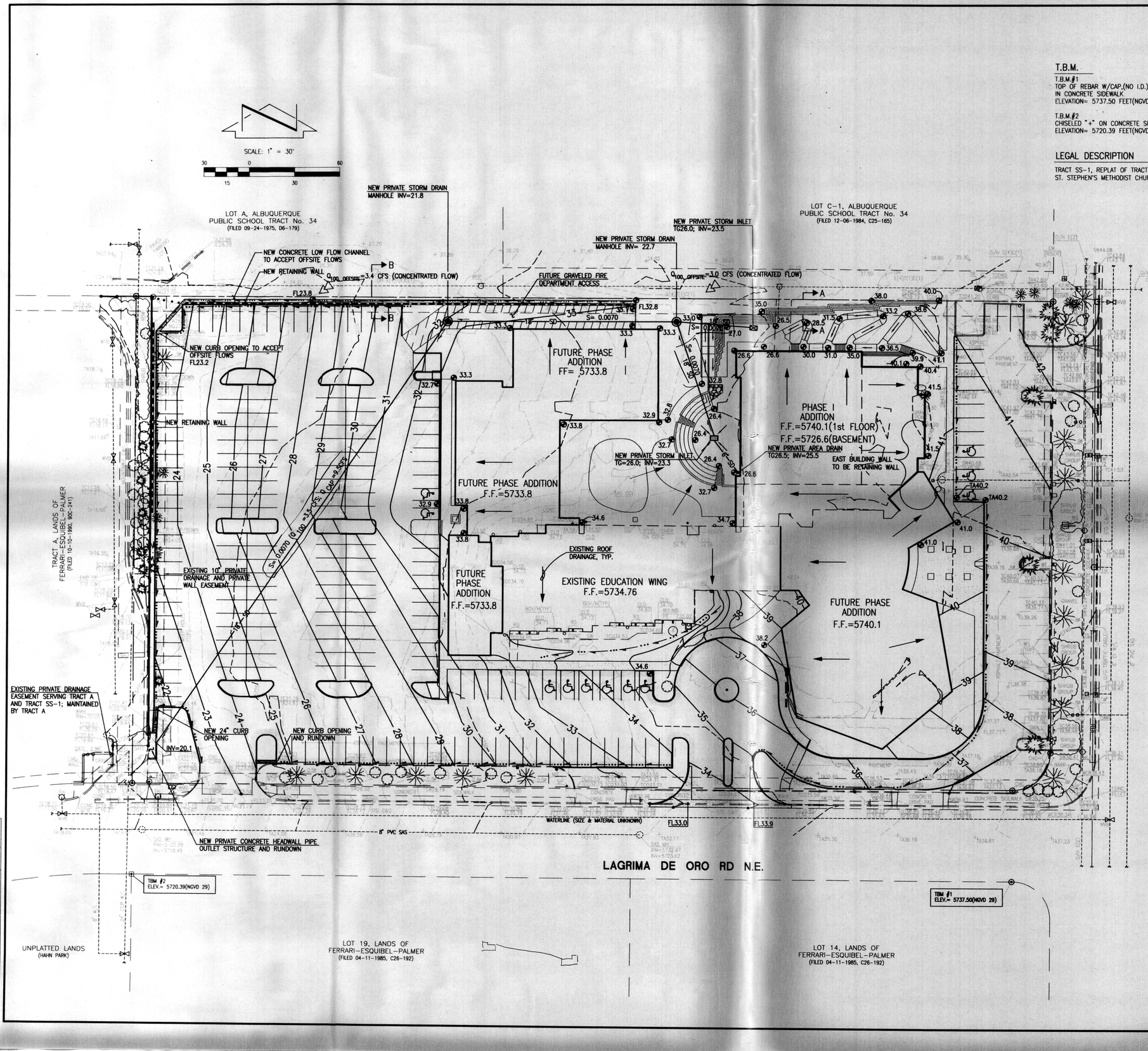
PROJECT NO: -
DRAWN BY: TRF
CHECKED BY: RDH

DATE: 10/31/02

REVISIONS:
1 -
2 -
3 -

PHASE I CONCEPTUAL GRADING PLAN

SHEET: SDP-6
OF: 8



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IN CONCRETE SIDEWALK
ELEVATION= 5737.50 FEET(NGVD 29)

T.B.M.#2
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ELEVATION= 5720.39 FEET(NGVD 29)

LEGAL DESCRIPTION

TRACT SS-1, REPLAT OF TRACT SS,
ST. STEPHEN'S METHODIST CHURCH

PROJECT BENCHMARK

STANDARD ACS BRASS TABLET STAMPED"ASC JT-1A" SET IN TOP OF A CONCRETE POST FLUSH WITH TOP OF CURB OF THE SOUTH MEDIAN NOSE AT THE INTERSECTION OF MONTGOMERY BOULEVARD N.E. AND JUAN TABO BOULEVARD N.E. ELEV= 5721.248(NGVD 29)

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BOU/H	BUILDING OVERHANG
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WMB	WATER METER BOX
WP	WOOD PLANTER
WPP	WOOD POWER POLE
WSL	WOOD STEPS AND LANDING
WVB	WATER VALVE BOX
TA18.74	EXISTING SPOT ELEVATION
	EXISTING CONTOUR
26.6	PROPOSED SPOT ELEVATION
31	PROPOSED CONTOUR
SD	PROPOSED STORM DRAIN
	PROPOSED CONCRETE
	PROPOSED ASPHALT
	EXISTING CURB
	FUTURE CURB
	HIGH POINT
	NEW RETAINING WALL
	GRAVEL

EROSION CONTROL MEASURES:

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2001.077.2

RECEIVED
NOV 06 2002
HYDROLOGY SECTION

REGISTERED PROFESSIONAL ENGINEER
JEFFREY G. MORTENSEN
NEW MEXICO
8547
11-05-2002

ARCHITECT OF RECORD:
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FAX: 505 345-4254 ☐ Email: jmaine@swcp.com

SAINT STEPHEN'S UNITED METHODIST CHURCH

Juan Tabo, N.E.
Albuquerque, New Mexico

PROJECT NO:	-
DRAWN BY:	TRF
CHECKED BY:	RDH
DATE:	10/31/02
REVISIONS:	
1	-
2	-
3	-

MASTER CONCEPTUAL GRADING PLAN

SHEET: SDP-7
OF: 8

File Path: B:\WORK\2001077A\
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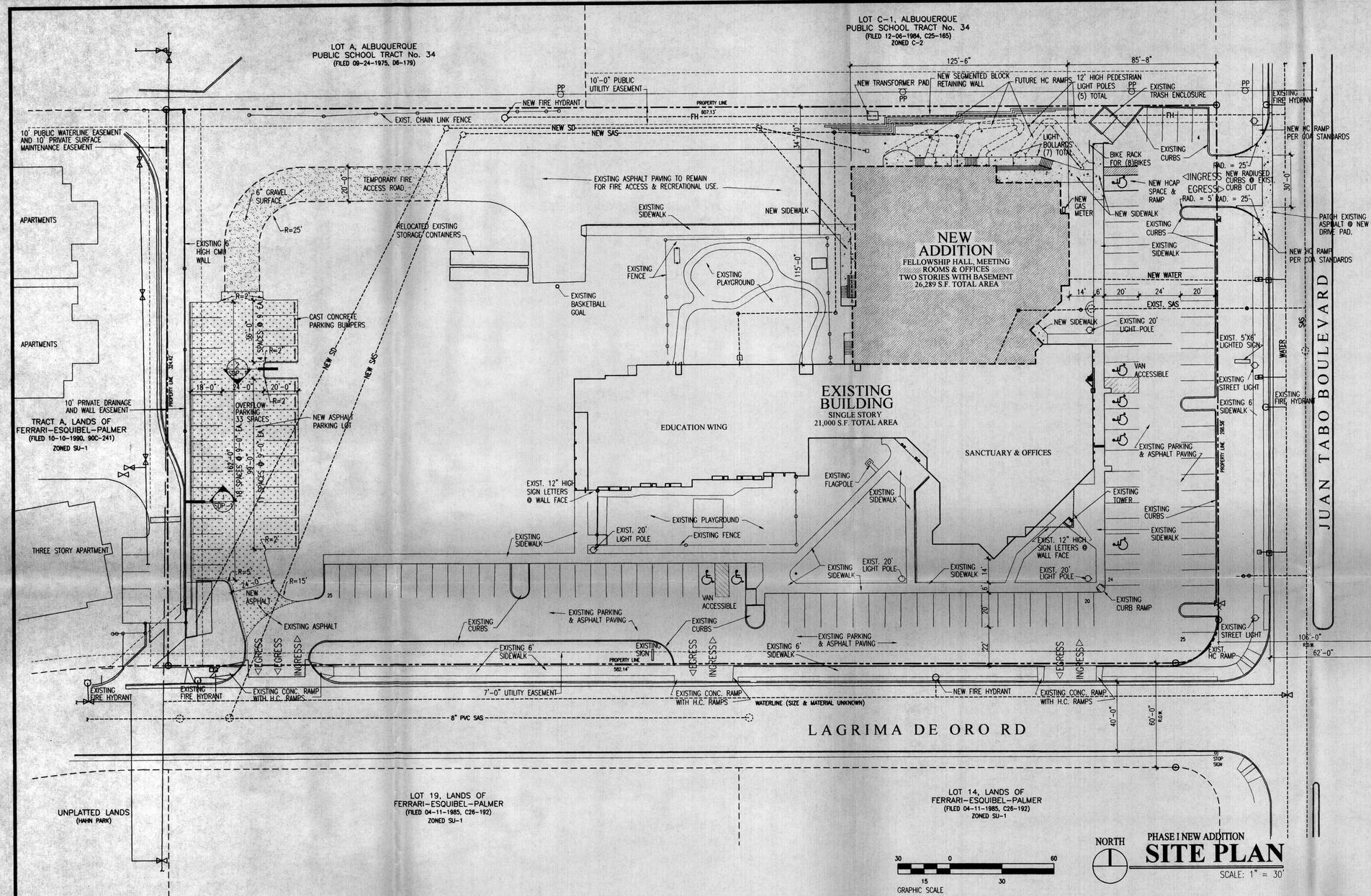
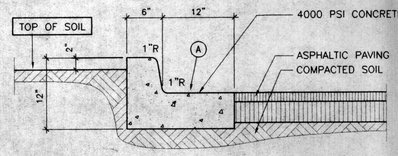
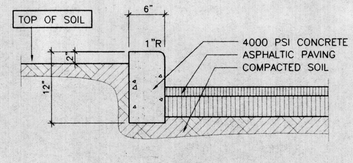
Plot Date: 11-05-2002
Plot Time: 2:20 pm



(A) SLOPE TOP OF GUTTER 1/8" PER FT. AWAY OR TOWARD CURB IN DIRECTION OF DRAINAGE SEE CIVIL FOR DIRECTION.



CURB & GUTTER (1 / DD-1)
SCALE: 1"=1'-0"



STAND-UP CURB (2 / DD-1)
SCALE: 1"=1'-0"

PROJECT INFORMATION

PROJECT: SITE DEVELOPMENT PLAN AMENDMENT AND BUILDING ADDITION

LOCATION: 4601 JUAN TABO, N.E.

OWNER: ST. STEPHEN'S UNITED METHODIST CHURCH

ARCHITECT: R.D. HABIGER AND ASSOCIATES

LEGAL DESCRIPTION: TRACT SS-1, ST. STEPHEN'S UNITED METHODIST CHURCH

CURRENT ZONING CLASSIFICATION: SU-1 FOR CHURCH & INCIDENTAL FACILITIES

GROSS BUILDING AREA:

EXISTING BLDG.	21,000	S.F.
NEW ADDITION	26,289	S.F.
TOTAL AREA	47,289	S.F.

OCCUPANT LOAD:

WORSHIP/FELLOWSHIP–	500
OFFICE–	10
EDUC. STAFF–	10
TOTAL–	520

TOTAL LOT AREA: 4.5124 ACRES +/–

PARKING ANALYSIS:

WORSHIP– 500/4=	125 SPACES
OFFICE AREA –	10 SPACES
EDUCATION–	10 SPACES
10% REDUCTION FOR BUS ROUTE (14)SPACES	
TOTAL REQUIRED PARKING SPACES=	131 SPACES
SPACES PROVIDED= INCLUDING 8 HANDICAP	131 SPACES
BICYCLE SPACES PROVIDED=	8 SPACES

TYPICAL PARKING SPACE DIMENSION– 9'–0" X 20'–0"
SPACES W/ 2'–0" OVERHANG– 9'–0" X 18'–0"

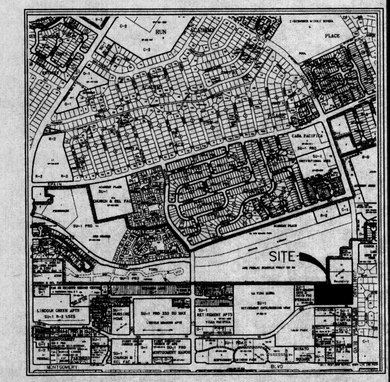
RELATED CASES:

EPC–	02EPC 01682
EPC–	Z-93-88
DRB–	DRB-93-328

PROJECT NO. 1002329
CASE NO. 03-0000200

SITE DEVELOPMENT PLAN APPROVAL FOR ST. STEPHEN'S UNITED METHODIST CHURCH AT 4601 JUAN TABO, N.E. ALBUQUERQUE, NEW MEXICO. APPROVED EPC CASE NO. 02EPC 01682.

TRAFFIC ENGINEER, TRANSPORTATION DIVISION	2-19-03 DATE
PARKS & RECREATION DEPARTMENT	2/19/03 DATE
PUBLIC WORKS / WATER UTILITIES DIVISION	2/19/03 DATE
CITY ENGINEER, ENGINEERING DIVISION / AMAFCA	DATE
SOLID WASTE	DATE
APPROVAL & CONDITIONAL ACCEPTANCE: AS SPECIFIED BY THE DEVELOPMENT PROCESS MANUAL	
CITY PLANNER, ALBUQUERQUE PLANNING DEPARTMENT	2/19/03 DATE



VICINITY MAP — ZONE ATLAS PAGE E-21

ARCHITECT OF RECORD:
RD HABIGER & ASSOCIATES, INC.
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ASSOCIATE ARCHITECT
T A T E F I S H B U R N
A R C H I T E C T
BOX 2941 CORRALES NEW MEXICO 87048 PHONE 505 899 9238 FAX 899 9328

NEW ADDITION FOR SAINT STEPHENS UNITED METHODIST CHURCH
4601 Juan Tabo, N.E.
Albuquerque, New Mexico 87111

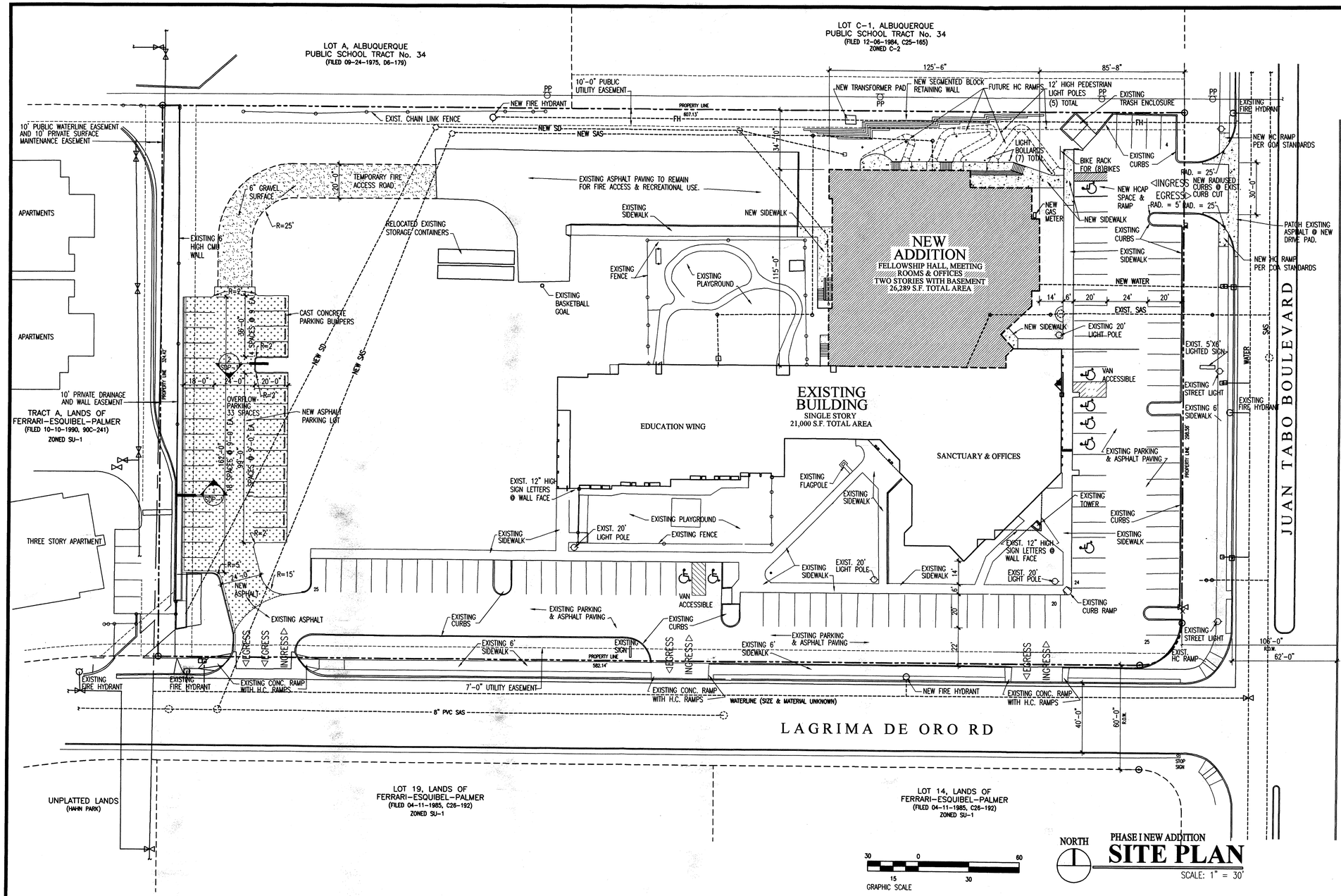
PROJECT NO: -
DRAWN BY: TRF
CHECKED BY: RDH

DATE: 02/06/03

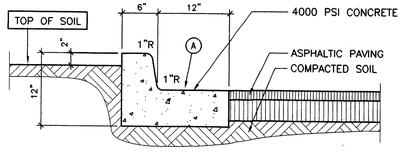
REVISIONS:
1 -
2 -
3 -

SITE DEVELOPMENT PLAN

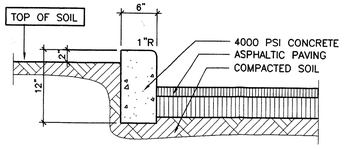
SHEET: SDP-1
OF: 8



(A) SLOPE TOP OF GUTTER 1/8" PER FT. AWAY OR TOWARD CURB IN DIRECTION OF DRAINAGE SEE CIVIL FOR DIRECTION.



CURB & GUTTER (1 / DD-1)
SCALE: 1"=1'-0"



STAND-UP CURB (2 / DD-1)
SCALE: 1"=1'-0"

PROJECT INFORMATION

PROJECT: SITE DEVELOPMENT PLAN AMENDMENT AND BUILDING ADDITION

LOCATION: 4601 JUAN TABO, N.E.

OWNER: ST. STEPHEN'S UNITED METHODIST CHURCH

ARCHITECT: R.D. HABIGER AND ASSOCIATES

LEGAL DESCRIPTION: TRACT SS-1, ST. STEPHEN'S UNITED METHODIST CHURCH

CURRENT ZONING CLASSIFICATION: SU-1 FOR CHURCH & INCIDENTAL FACILITIES

GROSS BUILDING AREA:

EXISTING BLDG.	21,000	S.F.
NEW ADDITION	26,289	S.F.
TOTAL AREA	47,289	S.F.

OCCUPANT LOAD:

WORSHIP/FELLOWSHIP-	500
OFFICE-	10
EDUC. STAFF-	10
TOTAL-	520

TOTAL LOT AREA: 4.5124 ACRES +/-

PARKING ANALYSIS:

WORSHIP- 500/4=	125 SPACES
OFFICE AREA -	10 SPACES
EDUCATION-	10 SPACES
10% REDUCTION FOR BUS ROUTE (14)	SPACES
TOTAL REQUIRED PARKING SPACES=	131 SPACES
SPACES PROVIDED=	131 SPACES INCLUDING 8 HANDICAP
BICYCLE SPACES PROVIDED=	8 SPACES

TYPICAL PARKING SPACE DIMENSION- 9'-0" X 20'-0"
SPACES W/ 2'-0" OVERHANG- 9'-0" X 18'-0"

RELATED CASES:

EPC-	02EPC 01682
EPC-	Z-93-88
DRB-	DRB-93-328

PROJECT NO. 1002329
CASE NO. 03-0000200

SITE DEVELOPMENT PLAN APPROVAL FOR ST. STEPHEN'S UNITED METHODIST CHURCH AT 4601 JUAN TABO, N.E. ALBUQUERQUE, NEW MEXICO. APPROVED EPC CASE NO. 02EPC 01682.

Richard Dourte — 2-19-03
TRAFFIC ENGINEER, TRANSPORTATION DIVISION — DATE

Christina Sandoval — 2/19/03
PARKS & RECREATION DEPARTMENT — DATE

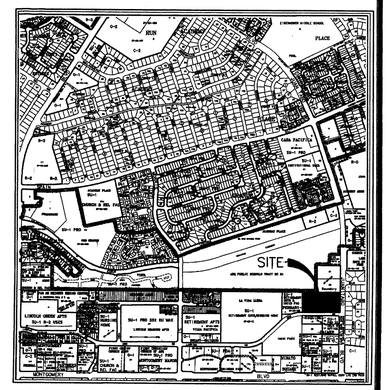
Roger A Green — 2/19/03
PUBLIC WORKS/WATER UTILITIES DIVISION — DATE

CITY ENGINEER, ENGINEERING DIVISION / AMAFCA — DATE

SOLID WASTE — DATE

APPROVAL & CONDITIONAL ACCEPTANCE: AS SPECIFIED BY THE DEVELOPMENT PROCESS MANUAL

Shesan Makon — 2/19/03
CITY PLANNER, ALBUQUERQUE PLANNING DEPARTMENT — DATE



VICINITY MAP ZONE ATLAS PAGE F-21

RECEIVED
FEB 06 2004
HYDROLOGY SECTION

ARCHITECT OF RECORD:
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ASSOCIATE ARCHITECT
TATE FISHBURN ARCHITECT
BOX 2941 CORRALES NEW MEXICO 87048 PHONE 505 899 9308 FAX 899 9328

NEW ADDITION FOR SAINT STEPHENS UNITED METHODIST CHURCH
4601 Juan Tabo, N.E.
Albuquerque, New Mexico 87111

PROJECT NO: -
DRAWN BY: TRF
CHECKED BY: RDH

DATE: 02/06/03

REVISIONS:
1 -
2 -
3 -

SITE DEVELOPMENT PLAN

SHEET: SDP-1
OF: 8

DRAINAGE PLAN

I. INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT LOCATED IN THE NORTHEAST HEIGHTS NEAR THE MONTGOMERY BLVD. NE AND JUAN TABO BLVD. NE INTERSECTION REPRESENTS A MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA. THE DRAINAGE CONCEPT WILL CONSIST OF FREE DISCHARGE FROM THE SITE INTO LAGRIMA DE ORO ROAD NE THROUGH EXISTING DRIVEWAYS AS WELL AS THROUGH AN EXISTING CONCRETE RUNDOWN WHICH IS LOCATED WITHIN AN EXISTING PRIVATE DRAINAGE EASEMENT. THE CONCEPT FOR FREE DISCHARGE HAS BEEN PREVIOUSLY ESTABLISHED BY PREVIOUSLY APPROVED MASTER DRAINAGE PLAN (F-21/D13) PREPARED BY THIS OFFICE, 11-05-2002. OFFSITE FLOWS FROM THE NORTH WILL BE ACCEPTED AND CONVEYED THROUGH THE SITE TO BE DISCHARGED INTO LAGRIMA DE ORO ROAD NE.

THIS SUBMITTAL IS MADE IN SUPPORT OF GRADING AND DRAINAGE PERMIT APPROVAL FOR PHASE 2 DEVELOPMENT.

II. PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THE SITE IS LOCATED AT THE NORTHWEST CORNER OF JUAN TABO BLVD. NE AND LAGRIMA DE ORO ROAD NE. THE CURRENT LEGAL DESCRIPTION IS TRACT SS-1, ST. STEPHEN'S METHODIST CHURCH. AS SHOWN BY PANEL 144 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS PUBLISHED BY FEMA FOR BERNALILLO COUNTY, NEW MEXICO, REVISED APRIL 2, 2002. THIS SITE DOES NOT LIE WITHIN NOR ADVERSELY IMPACT A DESIGNATED FLOOD HAZARD ZONE (ZONE A).

III. BACKGROUND DOCUMENTS

THE FOLLOWING PLANS WERE USED IN THE PREPARATION OF THIS DRAINAGE SUBMITTAL:

A. (F-21/D13) SAINT STEPHEN'S UNITED METHODIST CHURCH MASTER DRAINAGE PLAN, PREPARED BY JEFF MORTENSEN & ASSOCIATES, INC., DATED NOVEMBER 05, 2002 AND APPROVED 12/05/2002 FOR SITE PLAN FOR BUILDING PERMIT ACTION BY THE DRB. THIS PREVIOUS PLAN ESTABLISHED THE DRAINAGE CONCEPT OF FREE DISCHARGE, QUANTIFIED THE OFFSITE FLOWS FROM THE PROPERTY TO THE NORTH, ESTABLISHED THE HYDROLOGY OF THE SITE UNDER FULL BUILDOUT (22.4 CFS), EVALUATED THE HYDROLOGY AND HYDRAULICS FOR THE SUMP CONDITION AT THE NORTH SIDE OF THE EXISTING NORTH BUILDING, AND DELINEATED OVERALL PROJECT PHASING. THIS SUBMITTAL ADDRESSES THE FUTURE DEVELOPED CONDITIONS SECTION OF THE MDP (WHICH INCLUDES THIS PHASE 2), FOLLOWING THE SITE HYDROLOGY ESTABLISHED WITHIN THE MDP, AND USES THE MDP OFFSITE FLOW VALUE CALCULATIONS TO EVALUATE THE PHASE 2 LOW-FLOW CHANNEL CAPACITY.

B. DRAINAGE CERTIFICATION FOR SAINT STEPHEN'S UNITED METHODIST CHURCH GRADING AND DRAINAGE PLAN (PHASE 1), PREPARED BY JEFF MORTENSEN & ASSOCIATES, INC., DATED 03/02/2004. THE OUTFALL FOR THIS SITE AT THE SOUTHWEST CORNER OF THE SITE WAS BUILT UNDER THIS PHASE 1 PLAN. THIS PREVIOUS PLAN PROVIDES RECORD INFORMATION THAT IS USED AS THE BASE PLAN FOR THIS SUBMITTAL AND DEMONSTRATES NO OUTSTANDING DRAINAGE REQUIREMENTS FOR THIS SITE.

IV. EXISTING CONDITIONS

CURRENTLY, THE SITE IS DEVELOPED AND CONSISTS OF A MULTI-LEVEL BUILDING, ASPHALT PAVED PARKING, LANDSCAPING, AND A PORTION OF UNDEVELOPED LAND. OFFSITE FLOWS AS QUANTIFIED BY THE PREVIOUSLY APPROVED DRAINAGE PLAN ENTER THE SITE FROM LOT C-1 TO THE NORTH. ALL RUNOFF GENERATED BY THE SITE DISCHARGES INTO LAGRIMA DE ORO ROAD NE. THE EASTERN PORTION OF THE SITE IS FULLY DEVELOPED, AND DRAINS VIA EXISTING PAVING IMPROVEMENTS TO LAGRIMA DE ORO ROAD NE, THIS PORTION OF THE SITE IS NOT AFFECTED BY THIS PHASE 2 DEVELOPMENT. THE WESTERN PORTION OF THE SITE IS UNDEVELOPED LAND THAT DRAINS EAST TO WEST ONTO THE EXISTING PHASE 1 PAVED WEST PARKING LOT ALONG THE SOUTHWEST BORDERS OF THE SITE. RUNOFF COLLECTS AGAINST AN EXISTING PHASE 1 CURB AND GUTTER ALONG THE WEST PROPERTY EDGE AND IS DIRECTED SOUTH INTO LAGRIMA DE ORO ROAD NE THROUGH AN EXISTING CONCRETE RUNDOWN OUTFALL LOCATED AT THE SOUTHWEST CORNER OF THE SITE WITHIN AN EXISTING PRIVATE DRAINAGE EASEMENT. THIS OUTFALL WAS CONSTRUCTED DURING PHASE 1 OF SITE DEVELOPMENT. LAGRIMA DE ORO ROAD NE CONVEYS ALL RUNOFF FLOWS INTO MORRIS STREET NE WHICH IN TURN CONVEYS FLOWS INTO MONTGOMERY BLVD NE.

V. DEVELOPED CONDITIONS

THE PROPOSED DEVELOPMENT WILL CONSIST OF PHASE 2 PARKING LOT EXPANSION ON THE WEST SIDE OF THE SITE AS DELINEATED AS PART OF THE FUTURE DEVELOPED CONDITIONS IN THE ABOVE REFERENCED MASTER DRAINAGE PLAN. THE EASTERN PORTION OF THE CHURCH SITE WILL NOT BE AFFECTED BY PHASE 2 DEVELOPMENT. THE PHASE 2 PAVED PARKING LOT WILL CONTINUE TO DRAIN FROM EAST TO WEST AND COLLECT ALONG THE CURB AND GUTTER THAT WILL BE EXTENDED FROM THE PHASE 1 WEST PARKING LOT ALONG THE REMAINING LENGTH OF THE WEST PROPERTY EDGE. ALL COLLECTED RUNOFF ALONG THE EXISTING AND PROPOSED CURB AND GUTTER WILL BE DIRECTED TO LAGRIMA DE ORO ROAD NE PER THE EXISTING CONDITIONS.

THE PHASE 2 PARKING LOT WILL REQUIRE FILL IN ORDER TO NOT BLOCK OFFSITE FLOWS FROM THE NORTH, A CONCRETE LOW FLOW CHANNEL IS PROPOSED BETWEEN THE NORTH PROPERTY LINE AND THE NORTH EDGE OF THE PARKING LOT. THE CONCRETE LOW FLOW CHANNEL IS SIZED FOR THE 100-YEAR EXISTING CONDITIONS OFFSITE FLOW AND CONVEYS THAT FLOW SOUTH TO DISCHARGE ONTO THE PHASE 1 WEST PARKING LOT. FROM THAT POINT, THE ACCEPTED OFFSITE FLOWS DISCHARGE TO LAGRIMA DE ORO ROAD NE AS DELINEATED IN THE ABOVE MENTIONED MASTER DRAINAGE PLAN.

VI. GRADING PLAN

THE GRADING PLAN SHOWS: 1) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS AS TAKEN FROM TOPOGRAPHIC SURVEY PREPARED BY THIS OFFICE AND DATED JANUARY 2001 AND DRAINAGE CERTIFICATION FOR PHASE 1 OF THIS PROJECT DATED 3-2-2004, 2) PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS, 3) THE LIMIT AND CHARACTER OF EXISTING IMPROVEMENTS, AND 5) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES.

VII. CALCULATIONS

HYDROLOGIC CALCULATIONS ARE NOT PROVIDED WITH THIS SUBMITTAL AS THE ABOVE REFERENCED MDP CONTAINS REPRESENTATIVE CALCULATIONS FOR FULL DEVELOPMENT OF THE SITE. THE MDP CALCULATION FOR OFFSITE FLOWS IS USED IN THE EVALUATION OF LOW FLOW CHANNEL CAPACITY. MANNING'S EQUATION FOR OPEN CHANNEL FLOW WAS USED TO EVALUATE THE CONCRETE LOW FLOW CHANNEL.

VIII. CONCLUSION

THE CONTINUED FREE DISCHARGE FROM THE SITE INTO LAGRIMA DE ORO ROAD NE IS APPROPRIATE DUE TO THE FOLLOWING:

1) THE DEVELOPMENT REPRESENTS A MODIFICATION TO AN EXISTING SITE WITH AN INFILL AREA.

2) THE PROPOSED DRAINAGE CONCEPT CONFORMS TO THE PREVIOUSLY APPROVED MASTER DRAINAGE PLAN THAT ALLOWS FOR THE FREE DISCHARGE FROM THE SITE.

3) AVAILABLE DOWNSTREAM CAPACITY OF LAGRIMA DE ORO ROAD NE AS JUSTIFIED BY THE PREVIOUSLY APPROVED MASTER DRAINAGE PLAN FOR THIS SITE.

4) THE DEVELOPMENT WILL NOT HAVE AN ADVERSE IMPACT ON DOWNSTREAM FLOOD HAZARD ZONES.

5) THE PROPOSED IMPROVEMENTS WILL RESULT IN A MODEST INCREASE IN DEVELOPED RUNOFF DUE TO REPLACING EXISTING PERVIOUS LAND TREATMENT WITH IMPERVIOUS ASPHALT PAVING.

6) OFFSITE FLOWS WILL CONTINUE TO BE ACCEPTED AND CONVEYED THROUGH THE SITE.

7) THE EXISTING CONCRETE DRAINAGE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE IS PRIVATELY OWNED, OPERATED, AND MAINTAINED BY THE OWNERS OF TRACT SS-1 AND NEIGHBORING TRACT A.TE. R

CALCULATIONS

I. LOW FLOW CHANNEL CAPACITY (MANNING'S EQN)

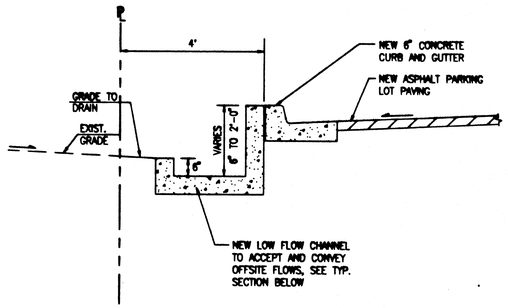
$Q = 1.486/n\ AR^{2/3}\ S^{1/2}$

WHERE:

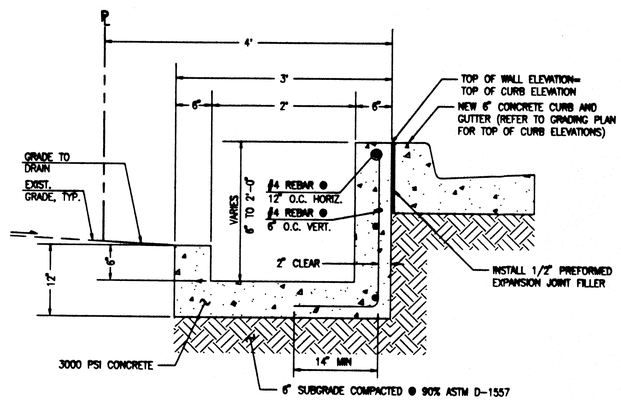
n = 0.013
A = 2(0.5) = 1.0 SF
P = 0.5+2.0+0.5 = 3 FT
R = A/P = 1/3 = 0.33 FT
$R^{2/3}$ = 0.48
S = 0.0050 (MIN)

THEN:

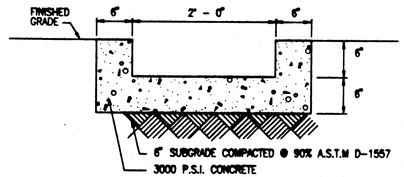
$Q = 3.9\ CFS > Q_{OFFSITE} = 3.4\ CFS$



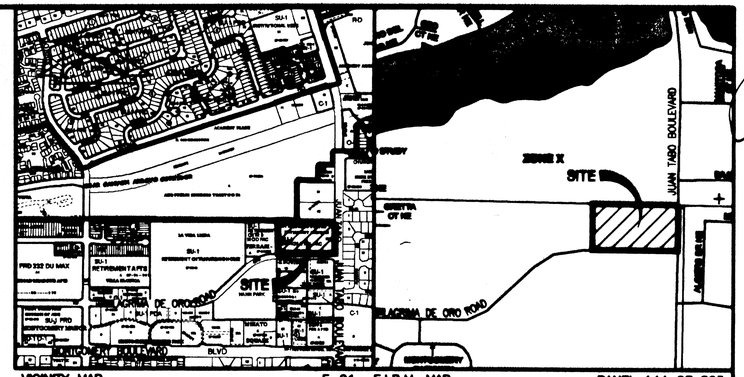
SECTION A-A
SCALE: 1" = 2'- 0"



TYPICAL LOW FLOW CHANNEL SECTION
SCALE: 1" = 1'- 0"



TYPICAL RUNDOWN SECTION
SCALE: 1" = 1' - 0"



VICINITY MAP F-21
SCALE: 1"= 750'±

F.I.R.M. MAP PANEL 144 OF 825
SCALE: 1"= 500'±

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM 260-1990 (ALBUQUERQUE AREA), 1-800-321-ALERT(2537) (STATEWIDE), FOR LOCATION OF EXISTING UTILITIES.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INTERPRETATIONS IT MAKES WITHOUT FIRST CONTACTING THE ENGINEER AS REQUIRED ABOVE.
3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
5. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS CONDUCTED ONLY PRELIMINARY INVESTIGATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THIS INVESTIGATION IS NOT CONCLUSIVE, AND MAY NOT BE COMPLETE, THEREFORE, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.
6. THE DESIGN OF PLANTERS AND LANDSCAPED AREAS IS NOT PART OF THIS PLAN. ALL PLANTERS AND LANDSCAPED AREAS ADJACENT TO THE BUILDING(S) SHALL BE PROVIDED WITH POSITIVE DRAINAGE TO AVOID ANY PONDING ADJACENT TO THE STRUCTURE. FOR CONSTRUCTION DETAILS, REFER TO LANDSCAPING PLAN.

EROSION CONTROL MEASURES:

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY.
2. THE CONTRACTOR SHALL PROMPTLY CLEAN UP ANY MATERIAL EXCAVATED WITHIN THE PUBLIC RIGHT-OF-WAY SO THAT THE EXCAVATED MATERIAL IS NOT SUSCEPTIBLE TO BEING WASHED DOWN THE STREET.
3. WHEN APPLICABLE, CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" FROM THE CITY AND/OR FILE A NOTICE OF INTENT (N.O.I.) WITH THE EPA PRIOR TO BEGINNING CONSTRUCTION.
4. UNLESS FINAL STABILIZATION IS OTHERWISE PROVIDED FOR, ANY AREAS OF EXCESS DISTURBANCE (TRAFFIC ACCESS, STORAGE YARD, EXCAVATED MATERIAL, ETC.) SHALL BE RE-SEEDED ACCORDING TO C.O.A. SPECIFICATION 1012 "NATIVE GRASS SEEDING". THIS WILL BE CONSIDERED INCIDENTAL TO CONSTRUCTION, THEREFORE, NO SEPARATE PAYMENT WILL BE MADE.

PROJECT BENCHMARK

STANDARD ACS BRASS TABLET STAMPED "ASC JT-14" SET IN TOP OF A CONCRETE POST FLUSH WITH TOP OF CURB OF THE SOUTH MEDIAN NOSE AT THE INTERSECTION OF MONTGOMERY BOULEVARD N.E. AND JUAN TABO BOULEVARD N.E. ELEV= 5721.248(NGVD 29)

T.B.M.

T.B.M.#1
TOP OF REBAR W/CAP,(NO I.D.),
IN CONCRETE SIDEWALK
ELEVATION= 5737.50 FEET(NGVD 29)

T.B.M.#2
CHISELED "+" ON CONCRETE SIDEWALK
ELEVATION= 5720.39 FEET(NGVD 29)

LEGAL DESCRIPTION

TRACT SS-1, REPLAT OF TRACT SS,
ST. STEPHEN'S METHODIST CHURCH

LEGEND

ALB	ARCHED LADDER BARS
ASV	ANTI-SIPHON VALVE
BOU/H	BUILDING OVERHANG
C&G	CURB AND GUTTER
CB	CONCRETE BENCH
CCP	CONCRETE CYLINDER PIPE
CHC	CONCRETE HEADER CURB
CI	CAST IRON
CLD	CENTERLINE DOOR
CLDD	CENTERLINE DOUBLE DOOR
CLF	CHAIN LINK FENCE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
CONC	CONCRETE
COV CONC	COVERED CONCRETE
CSL	CONCRETE STEPS AND LANDING
CUL	CULVERT
DCO	DOUBLE CLEAN OUT
DD	DOUBLE DOOR
EA	EDGE OF ASPHALT
EC	ELECTRIC CABINET
ELEC	ELECTRIC
EP	ELECTRIC PANAL
FH	FIRE HYDRANT
FL	FLOWLINE
FS	FLAG STONE
GS	GAS SERVICE
HCS	HANDICAP SIGN
INV	INVERT
KRW	KEYSTONE ROCK WALL
LST	LANDSCAPE TIMBER
MH	MANHOLE
MLP	METAL LIGHT POLE
MS	METAL SIGN
O/H C(1)	OVERHEAD COMMUNICATION(NO. OF LINES)
O/H E(4)	OVERHEAD ELECTRIC(NO. OF LINES)
O/H T(1)	OVERHEAD TELEPHONE(NO. OF LINES)
PB	PARKING BUMPER
PE	PLAYGROUND EQUIPMENT
PI	PAINTED ISLAND
PVC	POLYVINYL CHOLRIDE
RD	ROOF DRAIN
RET	RETAINING
RRW	ROCK RETAINING WALL
SAS	SANITARY SEWER LINE
SDP	SERVICE DROP POLE
SH	SPEED HUMP
SP	STEEL POLE
SVB	SPRINKLER VALVE BOX
SW	SIDE WALK
TA	TOP OF ASPHALT
TC	TOP OF CURB
TCOND	TELEPHONE CONDUIT
TE	TRASH ENCLOSURE
TG	TOP OF GRATE
TR	TELEPHONE RISER
TS	TRAFFIC SIGN
TSMH	TRAFFIC SIGNAL MANHOLE
TSPB	TRAFFIC SIGNAL PULL BOX
TW	TOP OF WALL
U/G	UNDERGROUND
VG	VALLEY GUTTER
W/L	WATER LINE
WCR	WHEEL CHAIR RAMP
WF	WATER FAUCET
WIF	WROUGHT IRON FENCE
WMB	WATER METER BOX
WP	WOOD PLANTER
WPP	WOOD POWER POLE
WSL	WOOD STEPS AND LANDING
WVB	WATER VALVE BOX

2001.077.7

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JUN 06 2007
HYDROLOGY SECTION

File Path: [illegible] | Plot Date: 06-04-2007
File Name: 10777DPC1_R.DWG | Plot Time: 08:40 am

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JEFFREY G. MORTENSEN
NEW MEXICO
6547
REGISTERED PROFESSIONAL ENGINEER
06/06/2007

WEST PARKING LOT
SAINT STEPHEN'S
UNITED METHODIST CHURCH
Juan Tabo, N.E.
Albuquerque, New Mexico

PROJECT NO: -
DRAWN BY: JLP/RRW
CHECKED BY: JGM

DATE: 06-2007

REVISIONS:
1 -
2 -
3 -

PHASE 2 DRAINAGE PLAN, CALCULATIONS, SECTIONS

SHEET: C-1
OF:

BOUNDARY TABLE

CURVE	RADIUS	LENGTH	CHORD	BEARING	DELTA
C1	25.00'	39.09'	35.23'	S 45°11'56" W	89°34'54"

LEGEND

ALB	ARCHED LADDER BARS	ELEC	ELECTRIC	RET	RETAINING	WCR	WHEEL CHAIR RAMP
ASV	ANTI-SIPHON VALVE	EP	ELECTRIC PANAL	RRW	ROCK RETAINING WALL	WF	WATER FAUCET
BOU/H	BUILDING OVERHANG	FH	FIRE HYDRANT	SAS	SANITARY SEWER LINE	WF	WROUGHT IRON FENCE
C&G	CURB AND GUTTER	FL	FLOWLINE	SDP	SERVICE DROP POLE	WMB	WATER METER BOX
CB	CONCRETE BENCH	FS	FLAG STONE	SH	SPEED HUMP	WP	WOOD PLANTER
CCP	CONCRETE CYLINDER PIPE	GS	GAS SERVICE	SP	STEEL POLE	WPP	WOOD POWER POLE
CHC	CONCRETE HEADER CURB	HCS	HANDICAP SIGN	SVB	SPRINKLER VALVE BOX	WSL	WOOD STEPS AND LANDING
CI	CAST IRON	INV	INVERT	SW	SIDE WALK	WVB	WATER VALVE BOX
CLD	CENTERLINE DOOR	KRW	KEYSTONE ROCK WALL	TA	TOP OF ASPHALT		
CLDD	CENTERLINE DOUBLE DOOR	LST	LANDSCAPE TIMBER	TC	TOP OF CURB		PROPOSED CONCRETE
CLF	CHAIN LINK FENCE	MH	MANHOLE	TCOND	TELEPHONE CONDUIT		PROPOSED ASPHALT PAVEMENT
CMU	CONCRETE MASONRY UNIT	MLP	METAL LIGHT POLE	TE	TRASH ENCLOSURE	08	PROPOSED CONTOUR
CO	CLEAN OUT	MS	METAL SIGN	TR	TELEPHONE RISER	25.41	PROPOSED SPOT ELEVATION
CONC	CONCRETE	O/H C(1)	OVERHEAD COMMUNICATION(NO. OF LINES)	TS	TRAFFIC SIGN		PROPOSED FLOWLINE
COV CONC	COVERED CONCRETE	O/H E(4)	OVERHEAD ELECTRIC(NO. OF LINES)	TSMH	TRAFFIC SIGNAL MANHOLE		
CSL	CONCRETE STEPS AND LANDING	O/H T(1)	OVERHEAD TELEPHONE(NO. OF LINES)	TSPB	TRAFFIC SIGNAL PULL BOX		
CUL	CULVERT	PB	PARKING BUMPER	TW	TOP OF WALL		
DCO	DOUBLE CLEAN OUT	PE	PLAYGROUND EQUIPMENT	U/G	UNDERGROUND		
DD	DOUBLE DOOR	PI	PAINTED ISLAND	VG	VALLEY GUTTER		
EA	EDGE OF ASPHALT	PVC	POLYVINYL CHOLORIDE	W/L	WATER LINE		
EC	ELECTRIC CABINET	RD	ROOF DRAIN				

SCALE: 1" = 30'

30 0 60

15 30

PROJECT BENCHMARK

STANDARD ACS BRASS TABLET STAMPED "ASC JT-1,4" SET IN TOP OF A CONCRETE POST FLUSH WITH TOP OF CURB OF THE SOUTH MEDIAN NOSE AT THE INTERSECTION OF MONTGOMERY BOULEVARD N.E. AND JUAN TABO BOULEVARD N.E. ELEV= 5721.248(NGVD 29)

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T.B.M.#1
TOP OF REBAR W/CAP,(NO I.D.),
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ELEVATION= 5737.50 FEET(NGVD 29)

T.B.M.#2
CHISELED "+" ON CONCRETE SIDEWALK
ELEVATION= 5720.39 FEET(NGVD 29)

LEGAL DESCRIPTION

TRACT SS-1, REPLAT OF TRACT SS,
ST. STEPHEN'S METHODIST CHURCH

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM 260-1990 (ALBUQUERQUE AREA), 1-800-321-ALERT(2537) (STATEWIDE), FOR LOCATION OF EXISTING UTILITIES.
2. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL EXCAVATE AND VERIFY THE HORIZONTAL AND VERTICAL LOCATION OF ALL POTENTIAL OBSTRUCTIONS. SHOULD A CONFLICT EXIST, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INTERPRETATIONS IT MAKES WITHOUT FIRST CONTACTING THE ENGINEER AS REQUIRED ABOVE.
3. ALL WORK ON THIS PROJECT SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS CONCERNING CONSTRUCTION SAFETY AND HEALTH.
4. ALL CONSTRUCTION WITHIN PUBLIC RIGHT-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE CITY OF ALBUQUERQUE STANDARDS AND PROCEDURES.
5. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, AND THE INFORMATION MAY BE INCOMPLETE, OR MAY BE OBSOLETE BY THE TIME CONSTRUCTION COMMENCES. THE ENGINEER HAS CONDUCTED ONLY PRELIMINARY INVESTIGATION OF THE LOCATION, DEPTH, SIZE, OR TYPE OF EXISTING UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES. THIS INVESTIGATION IS NOT CONCLUSIVE, AND MAY NOT BE COMPLETE, THEREFORE, MAKES NO REPRESENTATION PERTAINING THERETO, AND ASSUMES NO RESPONSIBILITY OR LIABILITY THEREFOR. THE CONTRACTOR SHALL INFORM ITSELF OF THE LOCATION OF ANY UTILITY LINE, PIPELINE, OR UNDERGROUND UTILITY LINE IN OR NEAR THE AREA OF THE WORK IN ADVANCE OF AND DURING EXCAVATION WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGE CAUSED BY ITS FAILURE TO LOCATE, IDENTIFY AND PRESERVE ANY AND ALL EXISTING UTILITIES, PIPELINES, AND UNDERGROUND UTILITY LINES. IN PLANNING AND CONDUCTING EXCAVATION, THE CONTRACTOR SHALL COMPLY WITH STATE STATUTES, MUNICIPAL AND LOCAL ORDINANCES, RULES AND REGULATIONS, IF ANY, PERTAINING TO THE LOCATION OF THESE LINES AND FACILITIES.
6. THE DESIGN OF PLANTERS AND LANDSCAPED AREAS IS NOT PART OF THIS PLAN. ALL PLANTERS AND LANDSCAPED AREAS ADJACENT TO THE BUILDING(S) SHALL BE PROVIDED WITH POSITIVE DRAINAGE TO AVOID ANY PONDING ADJACENT TO THE STRUCTURE. FOR CONSTRUCTION DETAILS, REFER TO LANDSCAPING PLAN.

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3. WHEN APPLICABLE, CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" FROM THE CITY AND/OR FILE A NOTICE OF INTENT (N.O.I.) WITH THE EPA PRIOR TO BEGINNING CONSTRUCTION.
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NOTE:
THIS IS NOT A BOUNDARY SURVEY. BOUNDARY DATA SHOWN HEREON WAS TAKEN FROM A BOUNDARY SURVEY PREPARED BY JEFF MORTENSEN & ASSOCIATES, INC., DATED JANUARY 2002, AND IS SHOWN FOR ORIENTATION PURPOSES ONLY. TOPOGRAPHIC INFORMATION TAKEN FROM DRAINAGE CERTIFICATION BY JMA (NMPE 8547) DATED 03-02-2004

2001.077.7

GREGORY JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

ARCHITECT OF RECORD:
RD HABIGER & ASSOCIATES, INC.
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1011 ELEVENTH AVENUE SW ALBUQUERQUE NEW MEXICO 87102
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CIVIL ENGINEERING • LAND DEVELOPMENT • SURVEYING
6010-A MIDWAY PARK BLVD. NE
ALBUQUERQUE, NEW MEXICO 87109
PHONE: 505.345.4283 FAX: 505.345.4254
www.highmesacg.com

WEST PARKING LOT
SAINT STEPHEN'S
UNITED METHODIST CHURCH
Juan Tabo, N.E.
Albuquerque, New Mexico

PROJECT NO: -
DRAWN BY: JLP/SRW
CHECKED BY: JGM
DATE: 06-2007

REVISIONS:
1 -
2 -
3 -

PHASE 2
GRADING PLAN

SHEET: C-2
OF:

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File Name: 10777GPC2R2.DWG
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Plot Time: 09:39 am

DRAINAGE PLAN

I. INTRODUCTION AND EXECUTIVE SUMMARY

THIS PROJECT LOCATED IN THE NORTHEAST HEIGHTS NEAR THE MONTGOMERY BLVD. NE AND JUAN TABO BLVD. NE INTERSECTION REPRESENTS A MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL SITE. THE DRAINAGE CONCEPT WILL CONSIST OF FREE DISCHARGE FROM THE SITE INTO LAGRIMA DE ORO RD. NE THROUGH NEW AND EXISTING DRIVEWAYS AS WELL AS THROUGH AN EXISTING CONCRETE RUNDOWN WHICH IS LOCATED WITHIN AN EXISTING PRIVATE DRAINAGE EASEMENT. THE CONCEPT FOR FREE DISCHARGE HAS BEEEN PREVIOUSLY ESTABLISHED BY PREVIOUSLY APPROVED MASTER DRAINAGE PLAN (F-21/D13) PREPARED BY THIS OFFICE, 11-05-2002. OFFSITE FLOWS FROM THE NORTH WILL CONTINUE TO BE ACCEPTED AND CONVEYED THROUGH THE SITE TO BE DISCHARGED INTO LAGRIMA DE ORO RD. NE.
THIS SUBMITTAL IS MADE IN SUPPORT OF BUILDING PERMIT APPROVAL FOR PHASE

II. PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THE SITE IS LOCATED AT THE NORTHWEST CORNER OF JUAN TABO BLVD. NE AND LAGRIMA DE ORO ROAD NE. THE CURRENT LEGAL DESCRIPTION IS TRACT SS-1, ST. STEPHEN?S METHODIST CHURCH. AS SHOWN BY PANEL 144 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS PUBLISHED BY FEMA FOR BERNALILLO COUNTY, NEW MEXICO, REVISED APRIL 2, 2002, THIS SITE DOES NOT LIE WITHIN NOR ADVERSELY IMPACT A DESIGNATED FLOOD HAZARD ZONE (ZONE A).

III. BACKGROUND DOCUMENTS

THE FOLLOWING PLAN WAS USED IN THE PREPARATION OF THIS DRAINAGE SUBMITTAL:

(F-21/D13) SAINT STEPHEN'S UNITED METHODIST CHURCH MASTER DRAINAGE PLAN, PREPARED BY JEFF MORTENSEN & ASSOCIATES, INC., DATED NOVEMBER 05, 2002 AND APPROVED 12/05/2002 FOR SITE PLAN FOR BUILDING PERMIT ACTION BY THE DRB. THIS PREVIOUS PLAN ESTABLISHED THE DRAINAGE CONCEPT OF FREE DISCHARGE, QUANTIFIED THE OFFSITE FLOWS FROM THE PROPERTY TO THE NORTH, ESTABLISHED THE HYDROLOGY OF THE SITE UNDER FULL BUILDOUT (22.4 CFS), EVALUATED THE HYDROLOGY AND HYDRAULICS FOR THE SUMP CONDITION AT THE NORTH SIDE OF THE PROPOSED ADDITION, AND DELINEATED OVERALL PROJECT PHASING. THIS SUBMITTAL ADDRESSES PHASE 1 ONLY.

IV. EXISTING CONDITIONS

CURRENTLY, THE SITE IS DEVELOPED AND CONSISTS OF A MULTI-LEVEL BUILDING, ASPHALT PAVED PARKING, LANDSCAPING, AND A PORTION OF UNDEVELOPED LAND. OFFSITE FLOWS AS QUANTIFIED BY THE PREVIOUSLY APPROVED DRAINAGE PLAN ENTER THE SITE FROM LOT C-1 TO THE NORTH. ALL RUNOFF GENERATED BY THE SITE DISCHARGES INTO LAGRIMA DE ORO RD. NE. THE SOUTHEASTERLY PORTION OF THE SITE DISCHARGES INTO LAGRIMA DE ORO RD. NE THROUGH THREE EXISTING DRIVE ENTRANCES TO THE SITE ALONG LAGRIMA DE ORO. THE REMAINING PORTION OF THE SITE, AS WELL AS THE OFFSITE FLOWS THAT ENTER THE SITE, DRAIN INTO LAGRIMA DE ORO RD. NE THROUGH AN EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE WITHIN AN EXISTING PRIVATE DRAINAGE EASEMENT. THE DRAINAGE EASEMENT IS LOCATED PARTIALLY WITHIN THE PROJECT SITE WITH THE REMAINING PORTION LOCATED WITHIN THE BOUNDARY OF TRACT A WEST OF THE SITE. THE RUNDOWN AND EASEMENT IS OWNED, OPERATED, AND MAINTAINED BY EACH UNDERLYING PROPERTY OWNER. AN EXISTING 10' WIDE PRIVATE DRAINAGE EASEMENT LOCATED ALONG THE WEST PROPERTY LINE IS CURRENTLY IN PLACE AND WAS CREATED IN ORDER TO PROVIDE A CORRIDOR FOR THE CONVEYANCE OF THE OFFSITE FLOWS INTO THE EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE. LAGRIMA DE ORO RD NE CONVEYS FLOWS INTO MORRIS ST. NE WHICH IN TURN CONVEYS FLOWS INTO MONTGOMERY BLVD. NE.

V. DEVELOPED CONDITIONS

THE PROPOSED DEVELOPMENT WILL CONSIST OF THOSE IMPROVEMENTS DELINEATED AS PHASE 1 ON THE ABOVE REFERENCED MASTER DRAINAGE PLAN. THE PROPOSED IMPROVEMENTS WILL CONSIST OF A NEW BUILDING ADDITION WITH A BASEMENT LEVEL IN THE NORTHEAST PORTION OF THE SITE ALONG WITH A PAVED PARKING LOT ON THE WEST EDGE OF THE SITE. THE FINISHED GRADE ON THE NORTH SIDE OF THE NEW ADDITION WILL BE AT THE BASEMENT LEVEL TO ALLOW GROUND LEVEL ACCESS TO THE BUILDING ON THE NORTH. AS A RESULT, A SUMP CONDITION WITHOUT AN OVERFLOW WILL BE CREATED. THIS AREA WILL DRAIN VIA A PRIVATE STORM INLET AND PRIVATE STORM DRAIN PIPE TO THE SOUTHWEST AND WILL DISCHARGE INTO THE EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE. THE REMAINDER OF THE SITE WILL REMAIN UNCHANGED AND WILL CONTINUE TO DRAIN TO LAGRIMA DE ORO RD. NE THROUGH THE EXISTING CURBCUTS. IN RECOGNITION OF THE SUMP CONDITION AT THE NORTH SIDE OF THE NEW ADDITION, THE PRIVATE STORM DRAIN HAS BEEN SIZED FOR TWICE THE CALCULATED DISCHARGE RATE FOR THE ANTICIPATED CONTRIBUTING AREA. OFFSITE FLOWS FROM THE NORTH WILL CONTINUE TO BE ACCEPTED AND CONVEYED THROUGH THE SITE AND WILL CONTINUE TO DISCHARGE INTO LAGRIMA DE ORO RD. NE THROUGH THE EXISTING CONCRETE RUNDOWN LOCATED AT THE SOUTHWEST CORNER OF THE SITE.

VI. GRADING PLAN

THE GRADING PLAN SHOWS: 1) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS AS TAKEN FROM TOPOGRAPHIC SURVEY PREPARED BY THIS OFFICE AND DATED JANUARY 2001, 2) PROPOSED GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'-0" INTERVALS, 3) THE LIMIT AND CHARACTER OF THE EXISTING IMPROVEMENTS, 4) THE LIMIT AND CHARACTER OF THE PROPOSED IMPROVEMENTS, AND 5) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES.

VII. CALCULATIONS

THE CALCULATIONS CONTAINED HEREIN ANALYZE BOTH THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100-YEAR, 6-HOUR RAINFALL EVENT. THE PROCEDURE FOR 40-ACRE AND SMALLER BASINS, AS SET FORTH IN THE REVISION OF SECTION 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY, 1993, HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED. AS SHOWN BY THESE CALCULATIONS, THE PROPOSED DEVELOPMENT WILL RESULT IN A MODEST INCREASE IN DEVELOPED RUNOFF. THE CAPACITIES OF THE PRIVATE STORM DRAIN WAS EVALUATED USING FEILD'S HYDRAULICS CALCULATOR FOR GRAVITY FLOW IN PIPES. THE CONCRETE RUNDOWN WAS EVALUATED USING THE WEIR EQUATION FOR ENTRANCE CONDITIONS, THE MANNING'S EQUATION FOR OPEN CHANNEL FLOW AND THE CONCEPT OF DISCHARGE BEING PROPORTIONAL TO THE PERCENTAGE OF CONTRIBUTING AREA. AS SHOWN BY THESE CALCULATIONS, THE PRIVATE STORM DRAIN WILL HAVE ADEQUATE CAPACITY TO PASS 2-TIMES THE CALCULATED 100-YEAR RUNOFF FOR THE CONTRIBUTING AREA. THE RUNDOWN WILL HAVE SUFFICIENT CAPACITY TO RECEIVE ITS PROPORTIONAL FLOW AND TO CONVEY THAT FLOW TO THE APPROVED DOWNSTREAM PRIVATE DRAINAGE EASEMENT.

VIII. CONCLUSION

THE CONTINUED FREE DISCHARGE FROM THE SITE INTO LAGRIMA DE ORO RD. NE IS APPROPRIATE DUE TO THE FOLLOWING:

1) THE DEVELOPMENT REPRESENTS A MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA.
2) THE PROPOSED DRAINAGE CONCEPT CONFORMS TO THE PREVIOUSLY APPROVED MASTER DRAINAGE PLAN THAT ALLOWS FOR THE FREE DISCHARGE FROM THE SITE.
3) AVAILABLE DOWNSTREAM CAPACITY OF LAGRIMA DE ORO ROAD NE AS JUSTIFIED BY THE PREVIOUSLY APPROVED MASTER DRAINAGE PLAN FOR THIS SITE.
4) THE DEVELOPMENT WILL NOT HAVE AN ADVERSE IMPACT ON DOWNSTREAM FLOOD HAZARD ZONES.
5) THE PROPOSED IMPROVEMENTS WILL RESULT IN A MODEST INCREASE IN DEVELOPED RUNOFF.
6) OFFSITE FLOWS WILL CONTINUE TO BE ACCEPTED AND CONVEYED THROUGH THE SITE.

THE EXISTING CONCRETE DRAINAGE RUNDOWN AND PRIVATE DRAINAGE EASEMENT LOCATED AT THE SOUTHWEST CORNER OF THE SITE ARE PRIVATELY OWNED, OPERATED, AND MAINTAINED BY THE OWNERS OF TRACT SS-1 AND TRACT A.

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Plot Date: 03-01-2004
Plot Time: 1:12 pm

CALCULATIONS

I. PRECIPITATION ZONE = 4

II. $P_{6,100} = P_{360} = 2.90$ IN

III. TOTAL AREA (A_T) = 196,500 SF / 4.51 AC

IV. EXISTING LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
B	14,605/0.34	08
C	82,775/1.90	42
D	99,120/2.28	50

V. DEVELOPED LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
B	4,270/0.10	02
C	73,175/1.68	37
D	119,055/2.73	61

VI. EXISTING CONDITION

A. VOLUME

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

$E_W = [1.08(0.34) + 1.46(1.90) + 2.64(2.28)]/4.51 = 2.03$ IN

$V_{100,6\text{-HR}} = (E_W/12)A_T$

$V_{100,6\text{-HR}} = (2.03/12)4.51 = 0.7634$ AC-FT = 33,250 CF

B. PEAK DISCHARGE

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = 2.92(0.34) + 3.73(1.90) + 5.25(2.28) = 20.0$ CFS

VII. DEVELOPED CONDITIONS

1. VOLUME

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

$E_W = [1.08(0.10) + 1.46(1.68) + 2.64(2.73)]/4.51 = 2.17$ IN

$V_{100,6\text{-HR}} = (E_W/12)A_T$

$V_{100,6\text{-HR}} = (2.17/12)4.51 = 0.8140$ AC-FT = 35,460 CF

2. PEAK DISCHARGE

$Q_P = Q_{PA}A_A + Q_{PB}A_B + Q_{PC}A_C + Q_{PD}A_D$

$Q_P = Q_{100} = 2.92(0.10) + 3.73(.68) + 5.25(2.73) = 20.9$ CFS

3. PRIVATE STORM DRAIN

A. DRAINAGE BASIN

$A_T = A_D = 0.67$ AC

$Q_{100} = 5.25(0.67) = 3.5$ CFS

B. INLET GRATE CAPACITY

$Q = CLH^{3/2}$ (WEIR EQN.)

WHERE:
C = 2.7
L = 10.8' (PERIMETER OF 'D' INLET)
H = 0.4'
THEN:
Q = 7.4 CFS > $2Q_{100}$ = 7.0 CFS

C. PIPE CAPACITY

$Q = 1.486/n\ AR^{2/3}\ S^{1/2}$
(FEILD'S HYDRAULICS CALCULATOR)

WHERE:
n = 0.013
D=18"
$Q=2Q_{100}$=7 CFS
S = 0.0040
THEN S= 0.0042

LET S=0.0060, Q_{CAP} = 8.3 CFS

D. PROPOSED RUNDOWN CAPACITY

1. DESIGN FLOW
A=70,000 SF
$\%A_T$=70,000/196,500 = 0.36
$Q_{SITE} = 0.36\ Q_{100,ULT}$=8.1 CFS
$Q_{100,ULT}$=22.4 CFS
$Q_{RUNDOWN}=Q_{SITE}+Q_{OFFSITE}$=8.1+3.4=11.5 CFS

2. ENTRANCE CONDITIONS (WEIR EQN.)
Q=CLH 3/2
WHERE Q=11.5 CFS
H=0.5'
C=3.0
THEN L=10.8'
LET W=11'

3. OPEN CHANNEL FLOW (MANNING'S EQN)
$Q = 1.486/n\ AR^{2/3}\ S^{1/2}$
WHERE:
n = 0.013
A = 4(0.5) = 2.0 SF (MIN.)
P = 4+2 (0.5) = 5 FT (MIN.)
$R = A/P = 0.40$ FT
$R^{2/3} = 0.54$
S = 0.0426
THEN:
Q = 25 CFS > $Q_{RUNDOWN}$ = 11.5 CFS

XI. COMPARISON

A. VOLUME

$\Delta V_{100,6\text{-HR}}$ = 35,460 - 33,250 = 2,210 CF (INCREASE)

B. PEAK DISCHARGE

ΔQ_{100} = 20.9 - 20.0 = 0.9 CFS (INCREASE)

DRAINAGE CERTIFICATION FOR PERMANENT CERTIFICATE OF OCCUPANCY

I, JEFFREY G. MORTENSEN, NMPE 8547, OF THE FIRM JEFF MORTENSEN & ASSOCIATES, INC., HEREBY CERTIFY THAT THIS PROJECT HAS BEEN GRADED AND DRAINED IN SUBSTANTIAL COMPLIANCE WITH THE DESIGN INTENT OF THE APPROVED PLAN DATED 04-02-2003, THE RECORD INFORMATION EDITED ONTO THE ORIGINAL DESIGN DOCUMENT HAS BEEN OBTAINED BY ME OR UNDER MY DIRECT SUPERVISION AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATION IS SUBMITTED IN SUPPORT OF A REQUEST FOR PERMANENT CERTIFICATE OF OCCUPANCY.

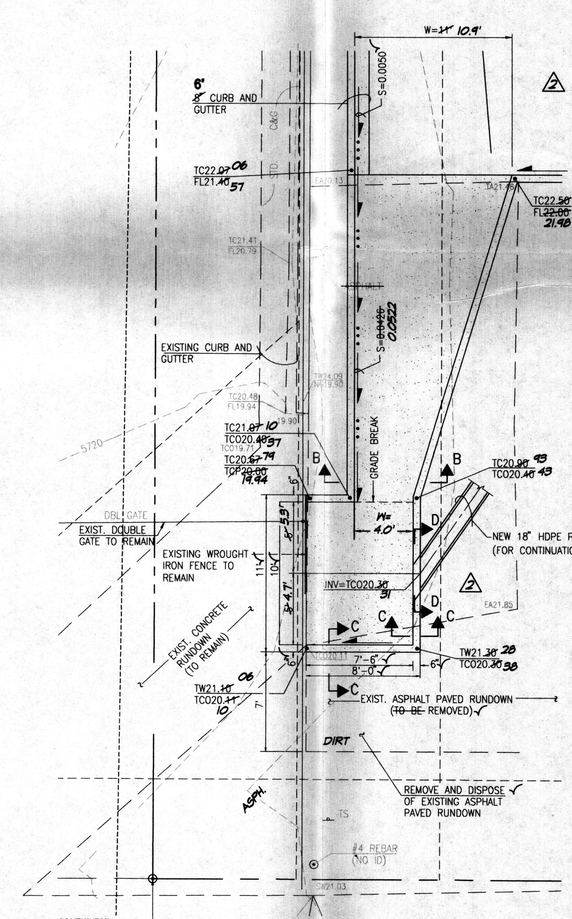
THIS CERTIFICATION PROVIDES ADDITIONAL VERIFICATION DATA NOT AVAILABLE AT THE TIME THAT A REQUEST WAS MADE FOR TEMPORARY CERTIFICATE OF OCCUPANCY. IT REMAINS THAT ADJACENT PROPERTIES ARE NOT BEING ADVERSELY IMPACTED AND THAT THE DEVELOPED RUNOFF GENERATED BY THIS SITE IS BEING DISCHARGED IN ACCORDANCE WITH THE INTENT OF THE APPROVED PLAN REFERENCED ABOVE.

THE RECORD INFORMATION PRESENTED HEREON IS NOT NECESSARILY COMPLETE AND INTENDED ONLY TO VERIFY SUBSTANTIAL COMPLIANCE WITH THE INTENT OF THE GRADING AND DRAINAGE ASPECTS OF THIS PROJECT. THIS PLAN DOES NOT EVALUATE NOR CERTIFY ADA COMPLIANCE. THOSE RELYING ON THIS RECORD DOCUMENT ARE ADVISED TO OBTAIN INDEPENDENT VERIFICATION OF ITS ACCURACY BEFORE USING IT FOR ANY OTHER PURPOSE.

JEFFREY G. MORTENSEN, NMPE 8547

03-02-2004
DATE

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER



DETAIL 1 C-2
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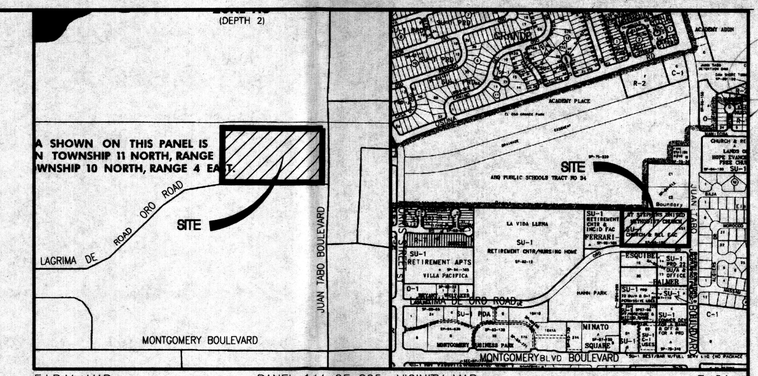
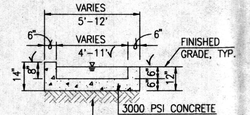


F.I.R.M. MAP — PANEL 144 OF 825 — VICINITY MAP — F-21
SCALE: 1"= 500'± — SCALE: 1"= 750'±



1 SECTION B-B
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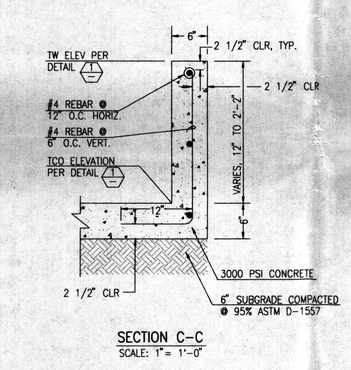
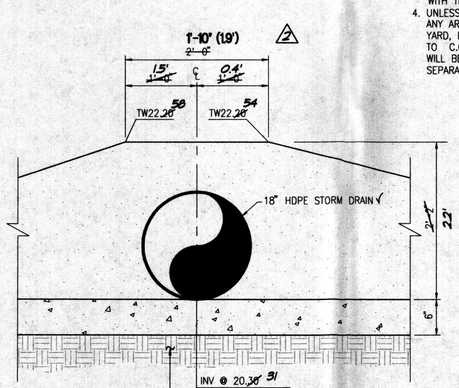


SECTION C-C
SCALE: 1"= 1'-0"



SECTION D-D
SCALE: 1"= 1'-0"

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2 RECORD INFORMATION
4.78 RECORD INFORMATION
✓ RECORD INFORMATION = AS-DESIGNED
@ 28.60 9.16 RECORD INFORMATION

RECEIVED
MAR 03 2004
HYDROLOGY SECTION

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER
04-02-2003

ARCHITECT OF RECORD:
RD HABIGER & ASSOCIATES, INC.
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SAINT STEPHEN'S
UNITED METHODIST CHURCH
Juan Tabo, N.E.
Albuquerque, New Mexico

PROJECT NO: -
DRAWN BY: JMA
CHECKED BY: JGM

DATE: 04/01/2003

REVISIONS:
1 DRAINAGE CERT FOR TEMP C.O. -
2 DRAINAGE CERT FOR PERM. C.O. -
3 -

DRAINAGE PLAN, CALCULATIONS, SECTIONS

SHEET: C-1
OF:

2001.077.4

BOUNDARY TABLE

CURVE	RADIUS	LENGTH	CHORD	BEARING	DELTA
C1	25.00'	39.09'	35.23'	S 45°11'55" W	89°34'54"

SCALE: 1" = 30'

30 0 60

15 30

2 RECORD INFORMATION

4.78 RECORD INFORMATION

✓ RECORD INFORMATION = AS-DESIGNED

28.66 4.16 RECORD INFORMATION

T.B.M.

T.B.M.#1
TOP OF REBAR W/CAP,(NO I.D.),
IN CONCRETE SIDEWALK
ELEVATION= 5737.50 FEET(NGVD 29)

T.B.M.#2
CHISELED "+" ON CONCRETE SIDEWALK
ELEVATION= 5720.39 FEET(NGVD 29)

LEGAL DESCRIPTION

TRACT SS-1, REPLAT OF TRACT SS,
ST. STEPHEN'S METHODIST CHURCH

PROJECT BENCHMARK

STANDARD ACS BRASS TABLET STAMPED"ASC JT-1A" SET IN TOP OF A CONCRETE POST FLUSH WITH TOP OF CURB OF THE SOUTH MEDIAN NOSE AT THE INTERSECTION OF MONTGOMERY BOULEVARD N.E. AND JUAN TABO BOULEVARD N.E. ELEV= 5721.248(NGVD 29)

LEGEND

ALB	ARCHED LADDER BARS
ASV	ANTI-SIPHON VALVE
BOU/H	BUILDING OVERHANG
C&G	CURB AND GUTTER
CB	CONCRETE BENCH
CCP	CONCRETE CYLINDER PIPE
CHC	CONCRETE HEADER CURB
CI	CAST IRON
CLD	CENTERLINE DOOR
CLDD	CENTERLINE DOUBLE DOOR
CLF	CHAIN LINK FENCE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT
CONC	CONCRETE
COV CONC	COVERED CONCRETE
CSL	CONCRETE STEPS AND LANDING
CUL	CULVERT
DCO	DOUBLE CLEAN OUT
DD	DOUBLE DOOR
EA	EDGE OF ASPHALT
EC	ELECTRIC CABINET
ELEC	ELECTRIC
EP	ELECTRIC PANAL
FH	FIRE HYDRANT
FL	FLOWLINE
FS	FLAG STONE
GS	GAS SERVICE
HCS	HANDICAP SIGN
INV	INVERT
KRW	KEYSTONE ROCK WALL
LST	LANDSCAPE TIMBER
MH	MANHOLE
MLP	METAL LIGHT POLE
MS	METAL SIGN
O/H C(1)	OVERHEAD COMMUNICATION(NO. OF LINES)
O/H E(4)	OVERHEAD ELECTRIC(NO. OF LINES)
O/H T(1)	OVERHEAD TELEPHONE(NO. OF LINES)
PB	PARKING BUMPER
PE	PLAYGROUND EQUIPMENT
PI	PAINTED ISLAND
PVC	POLYVINYL CHOLRIDE
RD	ROOF DRAIN
RET	RETAINING
RRW	ROCK RETAINING WALL
SAS	SANITARY SEWER LINE
SDP	SERVICE DROP POLE
SH	SPEED HUMP
SP	STEEL POLE
SVB	SPRINKLER VALVE BOX
SW	SIDE WALK
TA	TOP OF ASPHALT
TC	TOP OF CURB
TCOND	TELEPHONE CONDUIT
TE	TRASH ENCLOSURE
TR	TELEPHONE RISER
TS	TRAFFIC SIGN
TSMH	TRAFFIC SIGNAL MANHOLE
TSPB	TRAFFIC SIGNAL PULL BOX
TW	TOP OF WALL
U/G	UNDERGROUND
VG	VALLEY GUTTER
W/L	WATER LINE
WCR	WHEEL CHAIR RAMP
WF	WATER FAUCET
WIF	WROUGHT IRON FENCE
WMB	WATER METER BOX
WP	WOOD PLANTER
WPP	WOOD POWER POLE
WSL	WOOD STEPS AND LANDING
WVB	WATER VALVE BOX

LOT A, ALBUQUERQUE PUBLIC SCHOOL TRACT No. 34 (FILED 09-24-1975, D6-179)

LOT C-1, ALBUQUERQUE PUBLIC SCHOOL TRACT No. 34 (FILED 12-06-1984, C25-165)

TRACT A, LANDS OF FERRARI-ESQUIBEL-PALMER (FILED 10-10-1990, 90C-241)

2 CONSTRUCT ~~4' DIA TYPE 'C'~~ PRIVATE STORM DRAIN MANHOLE PER C.O.A. STD. DWG. 2101
RIM= ~~25.8~~ 42
INV IN= ~~22.76~~ 47
INV OUT= ~~22.46~~ 55

2 CONSTRUCT ~~SINGLE 'D'~~ PRIVATE STORM INLET PER C.O.A. STD. DWG. 2206
TG=~~26.38~~; INV=~~24.15~~ 68 ~~23.83~~

NEW PRIVATE FIRE LINE (CITY_PROJ. #706881)

$Q_{100, OFFSITE}$=3.4 CFS (CONCENTRATED FLOW)

$Q_{100, OFFSITE}$=3.0 CFS (CONCENTRATED FLOW)

NEW TERRACED RETAINING WALL (TO BE DESIGNED BY STRUCTURAL ENGINEER)

S 89°50'20" E 324.23'

160'

607.32'

S 00°01'01" W 298.54'

10' PUBLIC UTILITY EASEMENT

EXISTING 10' PRIVATE DRAINAGE AND PRIVATE WALL EASEMENT

2 CONSTRUCT ~~4' DIA TYPE 'C'~~ PRIVATE STORM DRAIN MANHOLE PER C.O.A. STD. DWG. 2101
RIM= ~~32.8~~ 34
INV IN= ~~24.85~~ (6") 24.74
INV IN= ~~24.00~~ (18") 23.45
INV OUT= ~~23.87~~ 23.55

2 INSTALL ~~18" HDPE~~ PRIVATE STORM DRAIN @ S=0.0060

2 INSTALL ~~18" HDPE~~ PRIVATE STORM DRAIN @ S= 0.0060

2 INSTALL ~~4' DIA TYPE 'C'~~ PRIVATE STORM DRAIN MANHOLE PER C.O.A. STD. DWG. 2101
RIM= ~~24.98~~ 30
INV IN= ~~20.98~~ 76
INV OUT= ~~20.68~~ 71

2 INSTALL 6" HDPE PRIVATE STORM DRAIN @ S= 0.0100

2 CONSTRUCT PRIVATE AREA DRAIN PER TYPICAL SECTION, SHEET C-3; TG=~~27.66~~ 07
INV.=~~26.00~~ 25.43

NEW CONC C/G & SW

CONC STEPS & LANDINGS

97.17 BTM STEPS

NEW ADDITION
F.F.=5740.10 (1ST FLOOR)
F.F.=5727.10 (BASEMENT)

PROPOSED ROOF DRAINAGE, TYP.

EAST BUILDING WALL TO BE RETAINING

EXISTING EDUCATION WING
F.F.=5734.76

EXISTING SANCTUARY
F.F.=5740.09

EXISTING ROOF DRAINAGE, TYP.

EXISTING PRIVATE DRAINAGE EASEMENT SERVING TRACT SS-1 AND TRACT A; MAINTAINED BY TRACT A

~~CONSTRUCT~~ CONCRETE HEADWALL PIPE OUTLET STRUCTURE AND RUNDOWN PER TYPICAL DETAIL, C-1

EXISTING CONCRETE RUNDOWN DRAINAGE STRUCTURE SERVING TRACT SS-1

MATCH EXISTING GRADE

N 00°08'14" E

N 89°55'04" W 582.22'

S 00°01'01" W

8" PVC SAS

16" WATERLINE

NEW PUBLIC WATER LINE BY CITY W.O. #706881

JUAN TABO BOULEVARD N.E.

LAGRIMA DE ORO RD N.E.

TBM #2 ELEV.= 5720.39(NGVD 29)

TBM #1 ELEV.= 5737.50(NGVD 29)

SAS MH RIM=5720.29 INV=5710.49

SAS MH RIM=5732.97 INV=5723.62

SAS MH RIM=5740.74 TOP OF PIPE ELEV.=5730.22

SAS MH RIM=5740.90

UNPLATTED LANDS (HAHN PARK)

LOT 19, LANDS OF FERRARI-ESQUIBEL-PALMER (FILED 04-11-1985, C26-192)

LOT 14, LANDS OF FERRARI-ESQUIBEL-PALMER (FILED 04-11-1985, C26-192)

LOT C-1, ALBUQUERQUE PUBLIC SCHOOL TRACT NO.34 — SITE

VARIES 5' TO 10'

EXISTING GRADE

1', TYP.

VARIES 0' TO 9.5'

NEW TERRACED RETAINING WALL (REFER TO DESIGN BY STRUCTURAL ENGINEER)

SECTION A-A
SCALE: 1" = 6'

NOTE:
THIS IS NOT A BOUNDARY SURVEY. BOUNDARY DATA SHOWN HEREON WAS TAKEN FROM A BOUNDARY SURVEY PREPARED BY JEFF MORTENSEN & ASSOCIATES, INC., DATED JANUARY 2002, AND IS SHOWN FOR ORIENTATION PURPOSES ONLY.

2 SEE SHEET C-1 FOR CERT.

2001.077.3 4

File Path: D:\WORK\2001077A\
File Name: 1077-4G3C.DWG
Plot Date: 03-01-2004
Plot Time: 1:11 pm

03-02-2004
JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER
02-02-2003

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JMA
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SAINT STEPHEN'S UNITED METHODIST CHURCH

Juan Tabo, N.E.
Albuquerque, New Mexico

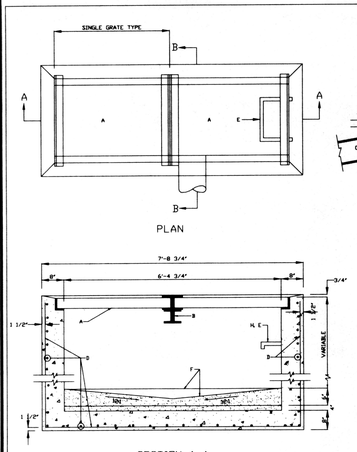
PROJECT NO: -
DRAWN BY: JMA
CHECKED BY: JGM

DATE: 04/01/2003

REVISIONS:
1 DRAINAGE CERT FOR TEMP C.O. -
2 DRAINAGE CERT FOR PERM. CO
3 -

PHASE I
GRADING PLAN

SHEET: C-2
OF:



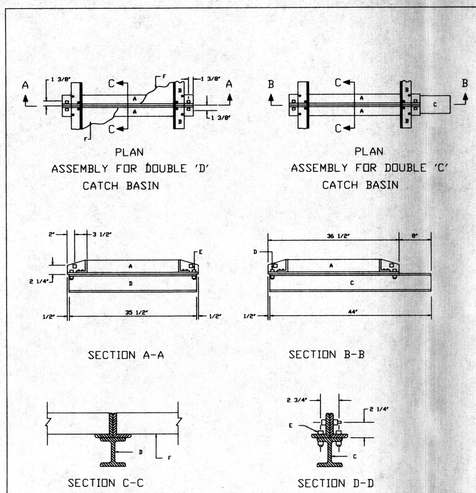
GENERAL NOTES:

1. FOR SINGLE GRATE TYPE STORM INLET DELETE CENTER SUPPORT AND MOVE ONE END WALL TO FORM NEW SINGLE GRATE INLET.
2. STORM INLET GUTTER TRANSITION WILL BE SHOWN ON THE CONSTRUCTION PLANS.
3. OUTLET PIPE SIZE. PER DESIGN REQUIREMENT.
4. FOR FRAME & GRATING, SEE DWG 2216, 2220 & 2221.
5. FOR CENTER SUPPORT ASSEMBLY. SEE DWG 2215.

CONSTRUCTION NOTES:

A. FRAME & GRATE
B. CENTER SUPPORT ASSEMBLY.
C. CUT ONE HORIZONTAL AND ONE VERTICAL BAR MAX. AT PIPE OPENING.
D. NO. 4 BARS AT 6' O.C. EACH WAY.
E. USE STANDARD STEPS. SEE DWG 2229.
F. CONC. FILL. SEE NOTE C DWG 2201.
G. INVERT PER DESIGN.
H. INSTALL STEPS ON DOWNSTREAM FACE.

REVISIONS	CITY OF ALBUQUERQUE
12-15-92	DRAINAGE STORM INLET DOUBLE 'D' DWG. 2206
	AUG. 1986



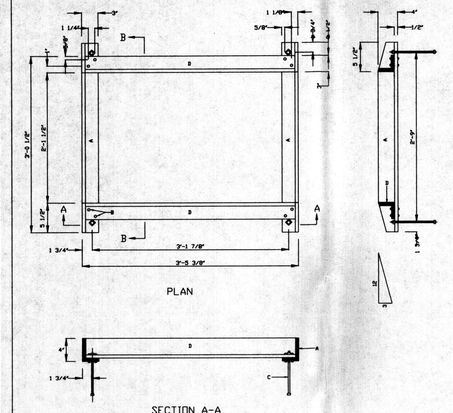
GENERAL NOTES:

1. ALL BOLTS USED IN CENTER SUPPORT ASSEMBLY SHALL BE 1/2".
2. FRAME MAY BE RIVETED OR WELDED.
3. BOLTS (NOT RIVETS OR WELDS) SHALL BE USED TO JOIN TWO OR MORE FRAMES TOGETHER AND TO THE WF BEAM.
4. AFTER CLEANING SURFACE OF SCALE, RUST, ETC., GRATING FRAME AND CENTER SUPPORT SHALL BE PAINTED WITH ONE SHOP COAT RED OXIDE, TWO FINISH COATS ALUMINUM PAINT (AASHTO M 69).
5. FOR SINGLE TYPE CATCH BASIN, MOVE ONE END WALL TO FROM NEW SINGLE GRATE CATCH BASIN.

CONSTRUCTION NOTES:

A. 4" X 3" X 1/2" X 36 1/2"
B. 3 1/2" X 3" X 3/8" X 40 3/8"
C. 5 X 5 WF 18.5 FLANGE BEAM, FOR CATCH BASIN TYPE 'DOUBLE 'C'.
D. 5 X 5 WF 18.5 FLANGE BEAM, FOR CATCH BASIN TYPE 'DOUBLE 'D'.
E. 1/2" BOLTS, WITH NUTS TO SECURE ANGLE TO BEAM
F. FOR FRAME AND GRATE SEE DWGS. 2216, 2220, 2221.

REVISIONS	CITY OF ALBUQUERQUE
	DRAINAGE STORM INLET CENTER SUPPORT ASSEMBLY DWG.2215
	AUG. 1986



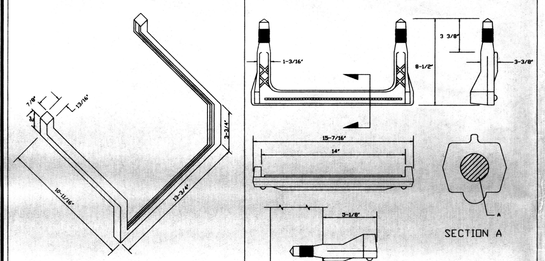
GENERAL NOTES:

1. ALL EXPOSED METAL PARTS SHALL BE PAINTED PRIOR TO ASSEMBLY. WELDING, MACHINING AND DRILLING SHALL BE DONE PRIOR TO PAINTING. ALL DIMENSIONS ARE FINISHED DIMENSIONS.
2. ALL PARTS SHALL BE OF STRUCTURAL STEEL, GRADE 36.
3. AFTER CLEANING SURFACE OF SCALE, RUST, ETC., GRATING AND FRAME SHALL BE PAINTED WITH ONE SHOP COAT RED OXIDE, TWO FINISH COATS ALUMINUM PAINT (AASHTO M 69).
4. FRAME MAY BE WELDED OR RIVETED.

CONSTRUCTION NOTES:

A. 4" X 3" X 1/2" X 3'- 1/2"∠ .
B. 2 - 3/8" RIVETS AT EACH CORNER, SEE GENERAL NOTE NO. 5.
C. 4 - 1/2" X 8" BOLTS WITH SQUARE HEAD & NUT AT EACH CORNER FOR ANCHORING FRAME INTO CONCRETE WALL.
D. 3 - 1/2" X 3" X 3/8" X 3 - 4 - 3/8" ∠ .

REVISIONS	CITY OF ALBUQUERQUE
	DRAINAGE STORM INLET FRAME DWG.2216
	AUG. 1986



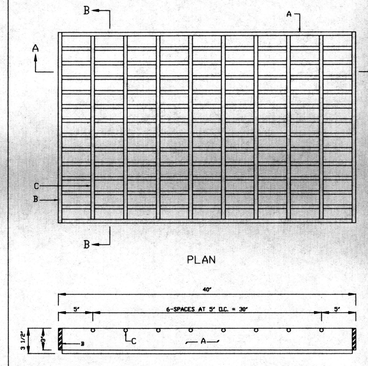
GENERAL NOTES:

1. ALUMINUM STEP, ALCOA NO 12653A OR APPROVED EQUAL.
2. ALTERNATE STEP SHALL BE POLYPROPYLENE - MOLDED OVER 1/2" STEEL REINFORCEMENT MODEL NO. PS-2-PFS, M.A. INDUSTRIES IN. OR APPROVED EQUAL.
3. STORM INLETS: INLETS GREATER THAN 4' DEEP SHALL HAVE STEPS INSTALLED IN DOWNSTREAM FACE OR INLET WALLS. STEPS SHALL PROTRUDE 7" FROM THE WALL AND BE CENTERED 12" FROM FACE OF CURB. STEPS SHALL BE 12" APART, WITH THE TOP STEP +/- 18" FROM TOP OF FRATE AND THE BOTTOM STEP NO MORE THAN 16" ABOVE THE CONCRETE FILL IN THE BOTTOM OF THE INLET.
4. DRAINAGE CHANNELS: CHANNELS SHALL HAVE STEPS FOR ACCESS AND RESCUE INSTALLED ER DETAILS ON DWG. 2261. STEPS SHALL BE INSTALLED ON BOTH SIDES OF THE CHANNEL AND SHALL BE LOCATED IMMEDIATELY BEFORE THE INLET AND AFTER OUTLET TRANSITIONS FOR CROSSING STRUCTURES OR AS NOTES ON THE PLANS.

CONSTRUCTION NOTES:

A. 1/2" GRATE 60 STEEL REINFORCEMENT.

REVISIONS	CITY OF ALBUQUERQUE
08-20-92	DRAINAGE STEP DETAILS DWG. 2229
	AUG. 1986



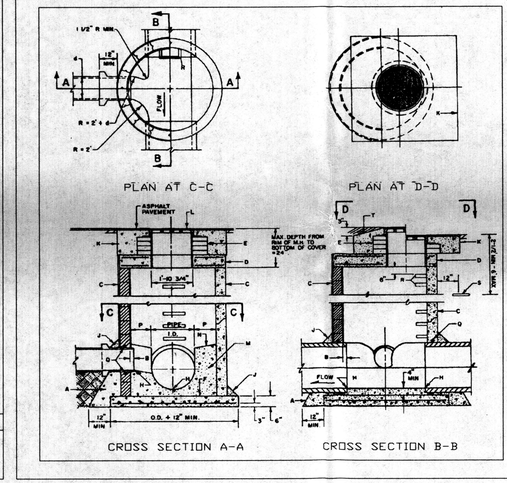
GENERAL NOTES:

1. ALL BARS SHALL BE STRUCTURAL GRADE STEEL, GRADE A36.
2. THE GRATE SHALL BE WELDED WITH 1/8" FILLET WELD AROUND BOTH SIDES OF CROSS BARS. 1/4" FILLET WELD BOTH SIDES OF BEARING BARS TO END BARS.
3. AFTER CLEANING SURFACE OF SCALE, RUST, OILS, ETC., PAINT GRATE WITH ONE SHOP COAT RED OXIDE, TWO FINISH COATS OF ALUMINUM PAINT (AASHTO M 69).
4. ALL CROSS BARS SHALL BE FLUSH WITH TOP OF GRATE.
5. GRIND WELDS FLUSH WITH BEARING BARS.
6. WHEN INSTALLED IN FRAME, PUSH TIGHT TO ONE SIDE. OTHER SIDE SHALL HAVE 1/2" MAX. OPENING. SPACERS WELDED TO FRAME MAY BE USED IF REQUIRED TO KEEP 1/2" SPACE OR LESS.

CONSTRUCTION NOTES:

A. BEARING BARS. (13) 1/2" X 3 1/2" X 29".
B. END BARS (2) 1/2" X 3" X 25".
C. CROSS BARS. (7) 1/2" DIA. X 24.

REVISIONS	CITY OF ALBUQUERQUE
08-20-92	DRAINAGE STORM INLET DWG. 2220
	AUG. 1986



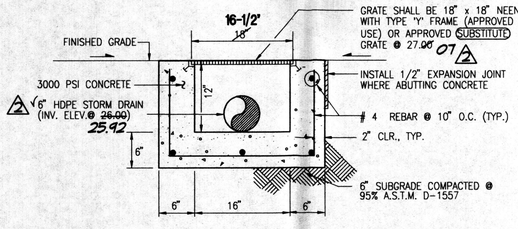
GENERAL NOTES:

1. USE TYPE "C" MANHOLE FOR DEPTHS OF LESS THAN 6' MEASURED F ROM INVERT TO RIM.
2. CONTRACTOR HAS OPTION TO CONSTRUCT TYPE "C" MANHOLE IN LIEU OF TYPE "E" MANHOLE FOR DEPTHS OF 6' OR MORE.
3. DESIGN APPLIES TO 4' TO 6' I.D. MANHOLES
4. MANHOLE GREATER THAN 18' IN DEPTH SHALL ONLY BE CONSTRUCTION PRECAST CONCRETE SECTIONS.
5. USE NON-SHRINK GROUT FOR JOINTS, FILLETS AND PENETRATIONS.
6. COMPACT ALL BACKFILL AROUND MANHOLE TO 95%.
7. POSITION MANHOLE OPENING OVER THE UPSTREAM SIDE OF MAIN LINE.

CONSTRUCTION NOTES:

A. CONCRETE PIPE SUPPORTS SHALL EXTEND OUTSIDE OF MANHOLE TO BELL OF FIRST JOINT AND SHALL CRADLE PIPE TO SPRING LINE NOT APPLICABLE FLEXIBLE PIPE.
B. PIPE PENETRATION INTO MANHOLE SHALL BE FLUSH TO 2" MAX., MEASURED AT SPRINGLINE OF PIPE.
C. MANHOLE MAY BE CONSTRUCTED OF CONCRETE BLOCK, GR.MS BRICK, POURED CONCRETE OF PRECAST REINFORCED CONCRETE IF BLOCK OR BRICK PLASTER INSIDE AND OUT WITH 1/2" MORTAR. SEE DWG. 2118 FOR DETAILS.
D. PRECAST CONCRETE COVER, SEE DWG. 2107.
E. USE MAX., 4 COURSES GR. MS BRICK ON UNPAVED STREET FOR FUTURE ADJUSTMENT OF MANHOLE FRAME TO PAVEMENT GRADE. PLASTER INSIDE WITH 1/2" MORTAR
F. CONCRETE BASE TO BE POURED IN PLACE, USING NO. 4 BARS AT 6" O.C. EA. WAY FOR MANHOLE DEPTH OF 16' OR GREATER. NO. 4 BARS AT 12" O.C. EA. WAY FOR MANHOLE LESS THAN 16' IN DEPTH.
H. INVERT ELEVATION OF STUB OR LATERAL AS SHOWN ON PLANS.
J. 6" GROUT FILLET ON UPPER HALF OF PIPE AND AROUND BASE.
K. USE A 5'X5' CONCRETE PAD IN ALL AREAS.
L. FRAME AND COVER, SEE DWG. 2110.
M. CONCRETE, SEE SECTION 101.
N. SLOPE 1" PER FT. FROM PIPE CROWN.
P. SHELF TO BE 9" WIDE MIN.
Q. APPROVED WATERSTOP TO BE COMPATIBLE WITH TYPE OF PIPE.
R. STEPS TO BE INSTALLED AS PER SPEC. SECTION 920.
S. END (IN UNPAVED AREAS).
T. IN UNPAVED AREAS SET FRAME TO GRADE AND SLOPE OF PAD.

REVISIONS	CITY OF ALBUQUERQUE
12/14/91	MANHOLE TYPE 'C' DWG. 2101
	AUG. 1986



TYPICAL AREA DRAIN SECTION

SCALE: 1" = 1' - 0"

RECEIVED
MAR 03 2004
HYDROLOGY SECTION

2001.077.3 4

2 SEE SHEET C-1 FOR CERT.

03-01-2004

JEFFREY G. MORTENSEN
NEW MEXICO
8547
REGISTERED PROFESSIONAL ENGINEER
12-22-2003

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SAINT STEPHEN'S
UNITED METHODIST CHURCH
Juan Tabo, N.E.
Albuquerque, New Mexico

PROJECT NO: -
DRAWN BY: JMA
CHECKED BY: JGM

DATE: 04/01/2003

REVISIONS:
1 DRAINAGE CERT FOR TEMP. C.O. -
2 DRAINAGE CERT FOR PERM. C.O. -
3 -

STORM DRAIN DETAILS

SHEET: C-3
OF:

File Path: L:\WORK\JOBS\077A\
File Name: 077ASDC.DWG
Plot Date: 03-01-2004
Plot Time: 1:08 pm