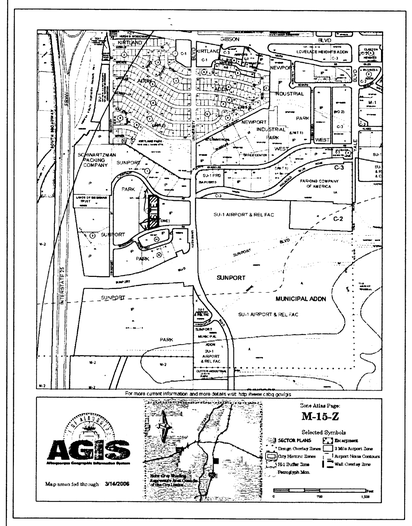
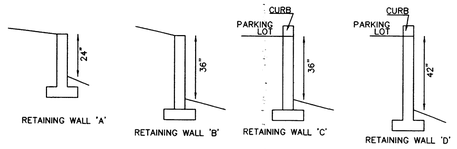
VICINITY MAP

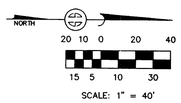


RETAINING WALL PROFILES



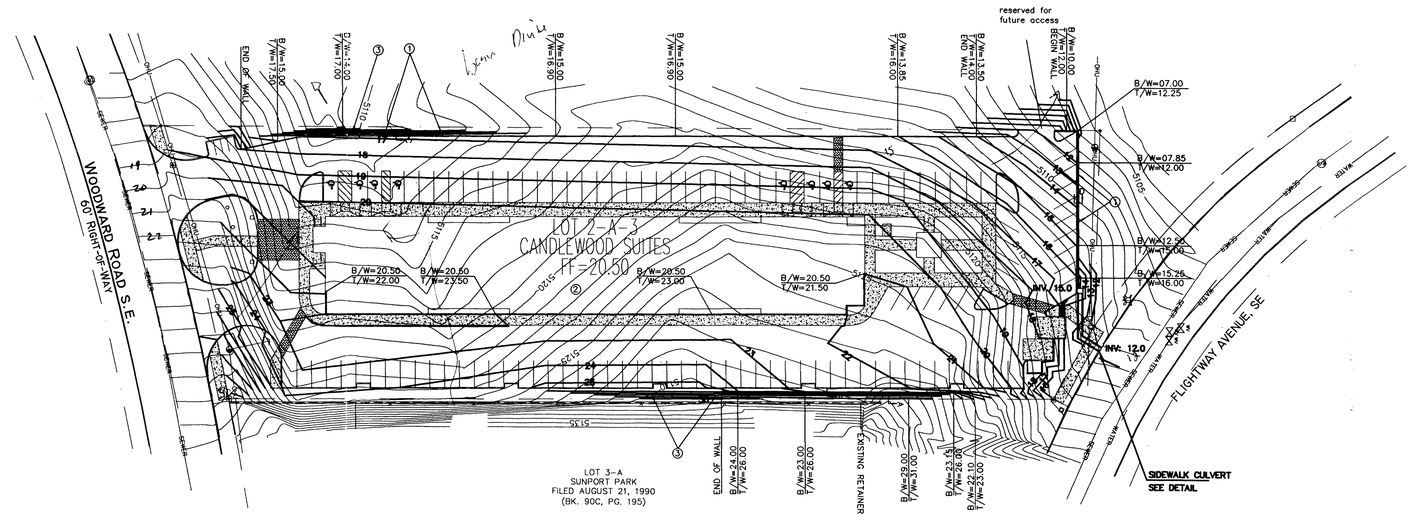
RETAINING WALL LENGHTS:
RETAINING WALL A – LENGTH =38.1'
RETAINING WALL B – LENGTH =141.1'
RETAINING WALL C – LENGTH =423.0'
RETAINING WALL D – LENGTH =104.0'

RETAINING WALL PROFILE NOTES:
- NOT FOR CONSTRUCTION, FOR ILLUSTRATION PURPOSES ONLY. CONSTRUCTION DESIGN BY OTHERS
- WALL HEIGHT VARIES WITH TOPOGRAPHY
- DEPTHS OF RETAINING WALLS ARE FOR CROSS SECTION LOCATIONS SHOWN ON SIGHT DRAWING



SCALE: 1" = 40'

PHASE 2
VACANT
LOT 2-A-2
FUTURE DEVELOPMENT



SURVEY INFORMATION

TOPOGRAPHIC SURVEY WAS PROVIDED TO ENGINEER BY SURVEYS SOUTHWEST, LTD. THE BASIS OF ELEVATIONS FOR THIS SURVEY WAS A PREVIOUS TOPOGRAPHIC SURVEY OF PROPERTY LOCATED DIRECTLY ACROSS WOODWARD ROAD SE, PERFORMED BY SURVEYOR IN DECEMBER 2002.

OFFSITE FLOW INFORMATION

THE LOT DIRECTLY TO THE EAST OF THE SITE DRAINS ONTO THE EAST EDGE OF THE SITE. THE NORTHERN HALF OF THIS DRAINAGE WILL BE CONVEYED TO FLIGHWAY AVE. VIA SWALE AND SIDEWALK CULVERT. THE SOUTH PORTION OF THIS OFFSITE DRAINAGE WILL BE CONVEYED TO THE EAST HALF OF THE PARKING LOT THEN DRAINED TO FLIGHWAY AVE. VIA SIDEWALK CULVERT ALONG WITH FLOWS GENERATED ON THE NORTH HALF OF THE SITE.

DRAINAGE NOTES:

- ROOF DRAINAGE CONVEYED TO PARKING LOTS VIA GUTTER AND DOWNSPOUT. SEE ROOF PLAN FOR LOCATIONS.
- ALL ELEVATIONS GIVEN ARE TO TOP OF PROPOSED GRADE

DRAINAGE CONCEPT

THE SITE CURRENTLY DRAINS EAST TO WEST WITH FLOWS BEING DIVIDED IN APPROXIMATELY THE MIDDLE OF THE SITE TO CONVEY DRAINAGE TO THE NW AND SW. THE PROPOSED GRADING AND DRAINAGE PLAN WOULD ESSENTIALLY SPLIT THE SITE IN HALF ALONG AN EAST/WEST LINE. THE NORTH HALF OF THE SITE WILL BE DRAINED VIA A SIDEWALK CULVERT INTO FLIGHTWAY AVENUE. THE SOUTH HALF OF THE SITE WILL BE DRAINED ONTO WOODWARD ROAD VIA THE PROPOSED DRIVEWAY ENTRANCE.

NOTICE TO CONTRACTOR

PROPOSED CONTOURS AND SPOT ELEVATIONS SHOWN ARE TO FINISH SURFACES AND ARE PROVIDED FOR THE PURPOSE OF SHOWING FLOW ROUTING.

CONTRACTOR IS RESPONSIBLE FOR THE ABATEMENT OF SEDIMENT ONTO ADJOINING PUBLIC RIGHTS-OF-WAY DURING CONSTRUCTION AND FOR THE REMOVAL OF ANY SEDIMENT DEPOSITED IN PUBLIC RIGHT-OF-WAY.

CONTRACTOR SHALL OBTAIN A "TOPSOIL DISTURBANCE PERMIT" PRIOR TO ANY GRADING OR CONSTRUCTION.

CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AN EPA NPDES, PHASE 2 PERMIT. DUE TO THE SIZE OF THE SITE, A SWPPP WILL BE REQUIRED.

CONTRACTOR SHALL VERIFY EXISTING GRADES AT SOUTH END OF SITE WHERE NEW CONC. CHANNEL TO BE INSTALLED. SEVERE EROSION MAY NOT BE REFLECTED IN EXISTING TOPOGRAPHIC DATA.

KEYED NOTES

(1) RETAINING WALL TOP ELEVATION DOES NOT INCLUDE THE 0.5 FT CURBING ASSOCIATED WITH THE PARKING LOT

(2) RETAINING WALL SHALL BE INCORPORATED INTO THE FOUNDATION AND FOOTER PLAN OF THE BUILDING

(3) ALL SLOPES EXCEEDING 3:1 SHALL BE PROTECTED FROM EROSION. THIS PROTECTION SHALL CONSIST OF GEOTEXTILE FABRIC STAPLED TO THE SOIL WITH 3"-4" ROCK PLACED ON TOP OF GEOTEXTILE, OR EQUAL AS RECOMMENDED BY THE ARCHITECT IN THE LANDSCAPE PLAN

OTHER NOTES

RETAINING WALL DESIGN BY OTHERS
- T/W INDICATES TOP OF WALL ELEVATION
- B/W INDICATES BOTTOM OF WALL ELEVATION, NOT INCLUDING SUBGRADE ELEV. FOR FOOTER

TRAFFIC CIRCULATION PLAN BY OTHERS

ONSITE HYDROLOGY

THE TABLE BELOW SHOWS THE FULLY DEVELOPED CONDITIONS OF THE SITE.

DRAINAGE DATA

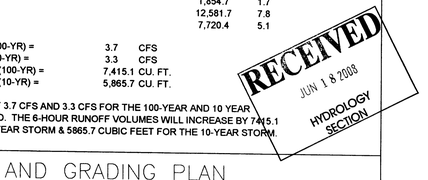
THIS SITE LIES WITHIN PRECIPITATION ZONE 2

Condition	Return Table 4 (Years)	Treatment Type	Area (sq. ft.)	Precip. (in.)	Runoff Table A-9 (cfs/ac)	Volume (cu. Ft.)	Rate (cfs)
EXISTING	100	A	0	0.53	1.56	0.0	0.00
		B	79,486	0.78	2.28	5,166.6	4.16
		C	0	1.13	3.14	0.0	0.00
		D	0	2.12	4.70	0.0	0.00
EXISTING	10	A	0	0.13	0.38	0.0	0.00
		B	79,486	0.28	0.95	1,854.7	1.73
		C	0	0.52	1.71	0.0	0.00
		D	0	1.34	3.14	0.0	0.00
DEVELOPED	100	A	0	0.53	1.56	0.0	0.00
		B	13,082	0.78	2.28	850.3	0.68
		C	0	1.13	3.14	0.0	0.00
		D	66,404	2.12	4.70	11,731.4	7.16
DEVELOPED	10	A	0	0.13	0.38	0.0	0.00
		B	13,082	0.28	0.95	305.2	0.29
		C	0	0.52	1.71	0.0	0.00
		D	66,404	1.34	3.14	7,415.1	4.79
TOTAL (EXT)	100					5,166.6	4.2
	10					1,854.7	1.7
TOTAL (DEV)	100					12,581.7	7.8
	10					7,720.4	5.1

FLOW RATE INCREASES (100-YR) = 3.7 CFS
FLOW RATE INCREASES (10-YR) = 3.3 CFS
6-HOUR RUNOFF INCRESE (100-YR) = 7,415.1 CU. FT.
6-HOUR RUNOFF INCRESE (10-YR) = 5,865.7 CU. FT.

FLOW RATE INCREASES OF 3.7 CFS AND 3.3 CFS FOR THE 100-YEAR AND 10 YEAR STORMS MAY BE EXPECTED. THE 6-HOUR RUNOFF VOLUMES WILL INCREASE BY 7415.1 CUBIC FEET FOR THE 100-YEAR STORM & 5865.7 CUBIC FEET FOR THE 10-YEAR STORM.

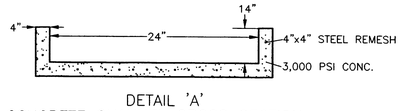
6-18-08



LEGAL DESCRIPTION AND FLOOD ZONE

Lot numbered Two-A-Three (2-A-3) in Block numbered Two (2) of SUNPORT PARK, Albuquerque, New Mexico, as the same is shown and designated on the plat thereof filed in the office of the County Clerk of Bernalillo County, New Mexico.

The above described property is located within Zone "X" (No flood hazard), Community Panel No. 350002 0342 E, dated November 19, 2003, and is not located within a Special Flood Hazard Boundary indicated by FEMA Flood Insurance Rate Maps. Determination of Flood Hazard is by graphic plotting only.



DETAIL 'A'
CONCRETE CHANNEL CROSS SECTION

DRAINAGE CHANNEL CAPACITY CALCULATION:
USE MANNINGS EQUATION
Q = (1.49/n)(A)(Rh)^2/3(SQ.RT.(S))
n = 0.013 FOR CONCRETE
Rh = A/P (RECTANGULAR CHANNEL, FULL FLOW CONDITIONS) = 0.545 FT.
S = 0.083 FT/FT (AT LOWEST SLOPE)
A = 2.4 SQ.FT. (RECTANGULAR CHANNEL)
Q(CAPACITY) = 52.8 CFS

FLOW CAPACITY >> THAN MAXIMUM CALCULATED FLOW THRU CHANNEL (Qmax = 3.7 cfs)

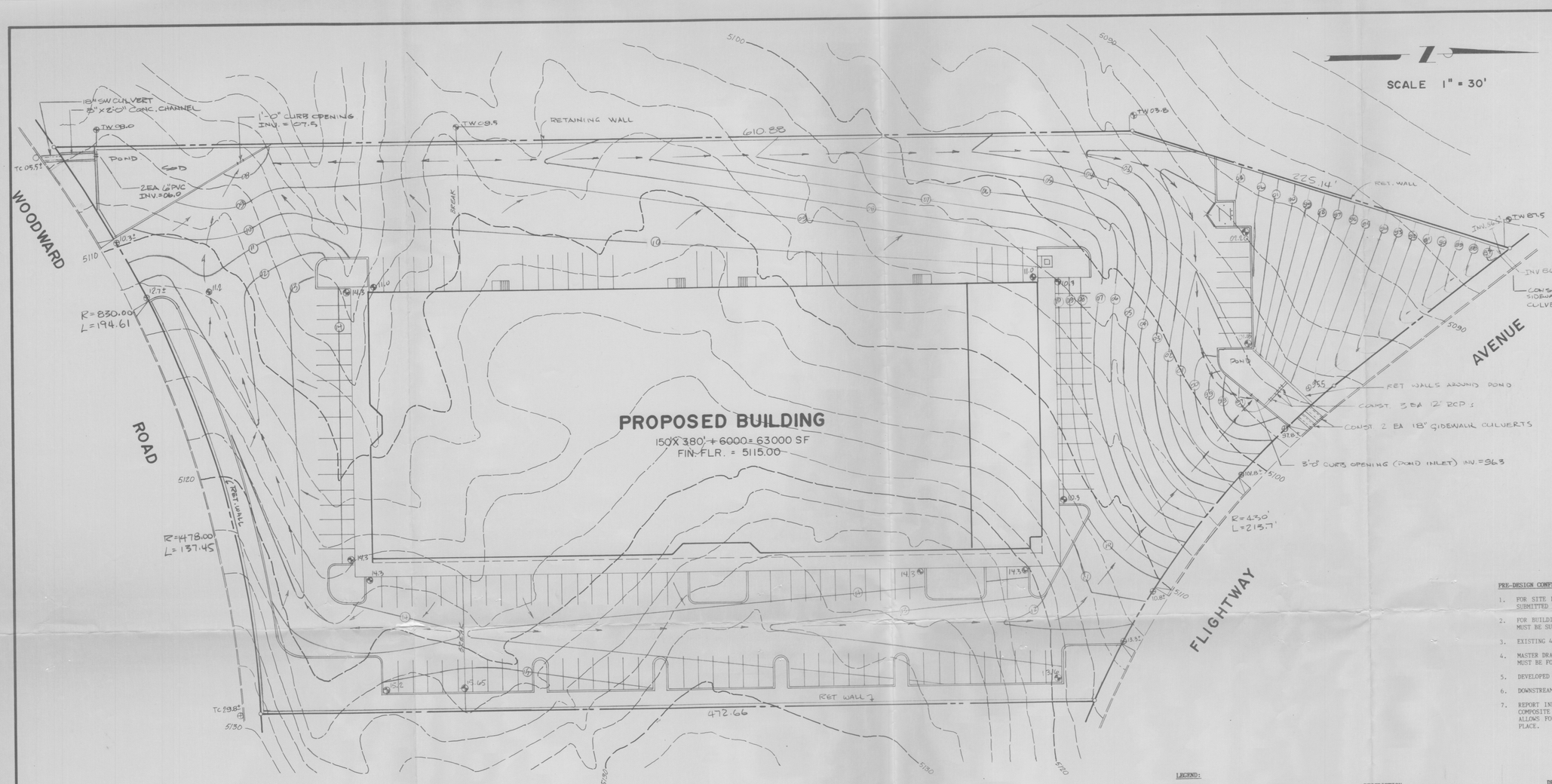
I, THOMAS JOHNSTON, NEW MEXICO REGISTERED PROFESSIONAL ENGINEER NO. 17158, DO HEREBY CERTIFY THAT I INSPECTED THIS SITE ON JANUARY 10, 2008, AND THAT, AS OF THAT DATE, THERE HAD BEEN NO RECENT ALTERATION OF GRADE OR EVIDENCE OF GRADING

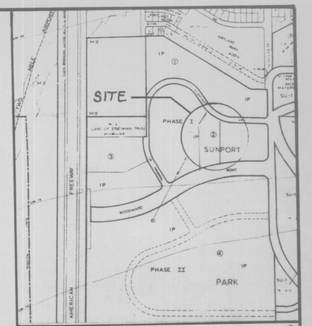
THOMAS JOHNSTON, NMPE NO. 17158

DRAINAGE AND GRADING PLAN

CANDLEWOOD SUITES
LOT 2-A-3, BLOCK 4-B, SUNPORT PARK
FOR: KAREEM KASAM

TIC ENGINEERING, INC.
330 LOUISIANA BLVD. NE
ALBUQUERQUE, NM 87108
(505)266-7256
Fax: (505) 255-2887





VICINITY MAP NORTH M-15

FLOODWAY MAP NORTH NO. 35

PRE-DESIGN CONFERENCE FINDINGS:

1. FOR SITE DEVELOPMENT PLAN APPROVAL A CONCEPTUAL DRAINAGE PLAN MUST BE SUBMITTED FOR REVIEW.
2. FOR BUILDING PERMIT APPROVAL A DRAINAGE PLAN PER THE D.P.M. GUIDELINES MUST BE SUBMITTED FOR REVIEW.
3. EXISTING 42" R.C.P. ON TRANSPORT STREET.
4. MASTER DRAINAGE PLAN PREPARED BY ANDREW, ASBURY & ROBERTS, INC. (M15/D23) MUST BE FOLLOWED.
5. DEVELOPED RUNOFF ACROSS LOT LINES WILL REQUIRE EASEMENTS OR A REPLAT.
6. DOWNSTREAM ANALYSIS WILL BE REQUIRED TO GRANT FREE DISCHARGE.
7. REPORT INDICATES A "C" OF 0.70 FOR DEVELOPED CONDITIONS. COMPARE YOUR COMPOSITE "C" AND DETERMINE WHAT PERCENT INCREASE IS COMPUTED. REPORT ALLOWS FOR FREE DISCHARGE ONTO THE STREETS AND STORM SEWER SYSTEMS IN PLACE.

CRITERIA:

THIS GRADING AND DRAINAGE PLAN HAS BEEN PREPARED IN ACCORDANCE WITH THE CRITERIA SET FORTH IN THE CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL, AND IN ACCORDANCE WITH CRITERIA ESTABLISHED IN THE APPROVED DRAINAGE REPORT FOR SUNPORT PARK, PHASE I, ANDREWS, ASBURY & ROBERTS, INC., CONSULTING ENGINEERS, ALBUQUERQUE, NEW MEXICO.

EXISTING CONDITIONS:

THE SITE IS BOUNDED ON THE NORTH BY FLIGHTWAY AVENUE AND ON THE SOUTH BY WOODWARD ROAD. THE TERRAIN OF THE SITE IS RELATIVELY STEEP HAVING SLOPES ON THE ADJACENT STREETS OF SEVEN TO EIGHT PERCENT (7% to 8%). THE GENERAL AREA WHERE THE SITE IS LOCATED IS UNDEVELOPED EXCEPT FOR THE STREETS WHICH ARE PAVED WITH CURB AND GUTTER. THE UNDEVELOPED LAND IS COVERED WITH NATIVE BRUSH AND GRASSES. STORM WATER RUNOFF FLOWS FROM EAST TO WEST, WITH LITTLE ENTERING THE ADJACENT STREETS AND MOST OF IT FLOWING ONTO ADJACENT PROPERTY TO THE WEST AND FINALLY INTO TRANSPORT STREET SE WHERE IT IS COLLECTED BY A COMBINATION OF STREETS AND STORM DRAINS AND CARRIED BY A MAJOR STORM DRAIN TO THE A.M.A.F.C.A. SOUTH DIVERSION CHANNEL.

DEVELOPED CONDITIONS:

THE MASTER DRAINAGE REPORT ASSUMED THAT IN THE FINAL DEVELOPED CONDITION, THE WEIGHTED "C" FACTOR WILL BE 0.70. IF THE ACTUAL "C" FACTOR IS LESS THAN OR EQUAL TO 0.70, NO PONDING WILL BE REQUIRED. HOWEVER, IN DEVELOPING THE SITE AS SHOWN ON THE PLAN, THE WEIGHTED "C" FACTOR DOES EXCEED 0.70 AND, THEREFORE, MINIMAL PONDING IS REQUIRED. THE PONDING ONLY HAS TO BE ENOUGH TO REDUCE THE ON-SITE ONE-HUNDRED-YEAR PEAK RUNOFF RATE TO THE QUANTITY THAT IT WOULD BE IF THE WEIGHTED "C" FACTOR WERE 0.70. SEVENTY FIVE PERCENT (75%) OF THE TOTAL RUNOFF FROM THE SITE IS TO BE DIRECTED TO FLIGHTWAY AVENUE AND TWENTY FIVE PERCENT (25%) IS TO BE DISCHARGED TO WOODWARD ROAD.

SOIL INFORMATION:

SOIL IS BkD, BLUEPOINT-KOKAN ASSOCIATION, HILLY, HYDROLOGIC SOIL GROUP "A".

RAINFALL, 100-YEAR, 6-HOUR:

(REFER TO D.P.M. PLATE 22.2 D-1.)
P_6 = 2.3 INCHES.

TIME OF CONCENTRATION:

USE TEN (10) MINUTES, MINIMUM TIME OF CONCENTRATION.

SITE IMPERVIOUSNESS:

SURFACE TYPE	"C"	CN	DIRECT RUNOFF	EXISTING	DEVELOPED
BUILDING	0.90	98	2.10	-	57608
ASPHALT AND CONCRETE	0.95	98	2.10		110372
LANDSCAPING	0.25	39	0.10		28620
UNDEVELOPED	0.40	68	0.35	196600	
TOTAL				196600	196600

RAINFALL INTENSITY:

(REFER TO D.P.M. PLATE 22.2 D-2.) $I = P_6 \times 6.84 \times 10^{-0.51} = 4.86$ INCHES PER HOUR.

WEIGHTED RUNOFF COEFFICIENTS:

EXISTING CONDITIONS: $C_w = 0.40$

DEVELOPED CONDITIONS:

$$C_w = \frac{(57608 \times 0.90 + 110372 \times 0.95 + 28620 \times 0.25)}{196600} = 0.83$$

PEAK RUNOFF:

USE RATIONAL EQUATION, $Q_{100} = CIA$; $Q_{10} = 0.657(Q_{100})$

EXISTING CONDITIONS:
$Q_{100} = 0.40 \times 4.86 \times 4.51 = 8.77$ CFS; $Q_{10} = 0.657 \times 8.77 = 5.76$ CFS.

DEVELOPED CONDITIONS:
$Q_{100} = 0.83 \times 4.86 \times 4.51 = 18.19$ CFS; $Q_{10} = 0.657 \times 18.19 = 11.96$ CFS

6-HOUR VOLUME:

(USE S.C.S. METHOD: V = (AREA X DIRECT RUNOFF)/12)

EXISTING CONDITIONS:
$V_{100} = (196600 \times 0.35)/12 = 5734$ CF; $V_{10} = 0.657 \times 5734 = 3767$ CF

DEVELOPED CONDITIONS:
$V_{100} = (167980 \times 2.10 + 28620 \times 0.10)/12 = 29635$ CF;
$V_{10} = 0.657 \times 29635 = 19470$ CF

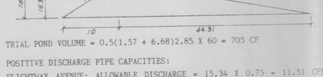
OFF-SITE FLOW:

THE AREA LYING EAST OF THE SITE IS BOUNDED ON THE NORTH BY FLIGHTWAY AVENUE, ON THE SOUTH BY WOODWARD ROAD, AND ON THE EAST BY UNIVERSITY BOULEVARD. APPROXIMATELY 125,000 SF OF THIS AREA PRESENTLY DRAINS ON THE SITE.
$Q = CIA = 0.40 \times 4.86 \times 2.87 = 5.58$ CFS
$Q_{10} = 0.657 \times 5.58 = 3.67$ CFS.
$V_{100} = (125{,}000 \times 0.35)/12 = 3646$ CF; $V_{10} = 0.657 \times 3646 = 2395$ CF

PONDING REQUIREMENTS:

THE PONDS ARE REQUIRED TO DETAIN SUFFICIENT VOLUME SO THAT THE DISHCARGE RATE DOES NOT EXCEED THE 100-YEAR RUNOFF RATE FOR A "C" FACTOR OF 0.70.
$Q = 0.70 \times 4.86 \times 4.51 = 15.34$ CFS
THE PONDED VOLUME IS CALCULATED IN ACCORDANCE WITH D.P.M. PLATE 22.2 E-1.

$T = 2V/60Q = 2 \times 29635 / 60 \times 18.19 = 54.31$ MIN.



TRIAL POND VOLUME = 0.5(1.57 + 6.68)2.85 X 60 = 705 CF

POSITIVE DISCHARGE PIPE CAPACITIES:

FLIGHTWAY AVENUE: ALLOWABLE DISCHARGE = 15.34 X 0.75 = 11.51 CFS TRY 12" DIAMETER OUTLET - USE ORIFICE EQUATION - POND DEPTH = 1.5' H = 1.0'

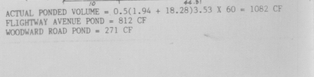
$Q = CA(2GH)^{1/2} = 0.6 \times 0.7609 (2 \times 32.2 \times 1.0)^{1/2} = 3.66$ CFS
11.51 / 3.66 = 3.14 PIPES. USE 3-12" RCP CULVERTS. 3 X 3.66 = 10.98 CFS

WOODWARD ROAD: ALLOWABLE DISCHARGE = 15.34 X 0.25 = 3.83 CFS. TRY 8" OUTLET.

$Q = 0.6 \times 0.3535 (2 \times 32.2 \times 1.17) = 1.84$ CFS
3.83 / 1.84 = 2.08 PIPES; USE 2-8" DIAMETER PIPES, Q = 2 X 1.84 = 3.68CFS

ACTUAL REQUIRED POND VOLUME:

ACTUAL Q = 10.98 + 3.68 = 14.66 CFS



ACTUAL PONDED VOLUME = 0.5(1.94 + 18.28)3.53 X 60 = 1082 CF
FLIGHTWAY AVENUE POND = 812 CF
WOODWARD ROAD POND = 271 CF

LEGEND:

EXISTING	NEW	DESCRIPTION
5120	20	CONTOUR
98.6	114.3	SPOT ELEVATION
		FLOWLINE
		DRAINAGE AREA BOUNDARY
		PROPERTY LINE
		RETAINING WALL
	TC/TA	TOP OF CURB / TOP ASPHALT
	TW	TOP OF WALL

EROSION CONTROL NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE FOLLOWING:

1. NO SEDIMENT-BEARING WATER SHALL BE ALLOWED TO DISCHARGE FROM THE SITE DURING CONSTRUCTION.
2. DURING GRADING OPERATIONS AND UNTIL THE PROJECT HAS BEEN COMPLETED, ALL ADJACENT PROPERTY, RIGHTS-OF-WAY, AND EASEMENTS SHALL BE PROTECTED FROM FLOODING BY RUNOFF FROM THE SITE.
3. SHOULD THE CONTRACTOR FAIL TO PREVENT SEDIMENT BEARING WATER FROM ENTERING PUBLIC RIGHT-OF-WAY, HE SHALL PROMPTLY REMOVE FROM THE PUBLIC RIGHT-OF-WAY ANY AND ALL SEDIMENTATION ORIGINATING FROM THE SITE.
4. CONTROL OF SEDIMENT LADEN WATERS WILL BE ACCOMPLISHED BY USE OF A COMPACTED EARTH BERM OF ADEQUATE HEIGHT. THE BERM SHALL BE LOCATED ALONG THE DOWNSTREAM PERIMETER OF THE PROPERTY.

BENCH MARK:

FOR THE PURPOSE OF THIS CONCEPTUAL GRADING AND DRAINAGE PLAN, THE CONTOURS FROM SUNPORT PARK TOPOGRAPHIC MAP - PHASE I, ANDREWS, ASBURY & ROBERTS, INC., WERE USED. GRADES AT DRIVEWAYS WERE ESTIMATED.

CITY OF ALBUQUERQUE

DRAINAGE FACILITIES WITHIN CITY RIGHT-OF-WAY (S.O. 19)

NOTICE TO CONTRACTOR

1. AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN CITY RIGHT-OF-WAY. AN APPROVED COPY OF THESE PLANS MUST BE SUBMITTED AT THE TIME OF APPLICATION FOR THIS PERMIT.
2. ALL WORK DETAILED ON THIS PLAN TO BE PERFORMED UNDER CONTRACT, EXCEPT AS STATED OR PROVIDED FOR HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986.
3. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE, 765-1234, FOR LOCATION OF EXISTING UTILITIES.
4. 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 SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
5. BACKFILL COMPACTION SHALL BE ACCORDING TO_____ STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. THE ADDRESS OF THE PROPERTY SERVED IS_____

APPROVALS:

HYDROLOGY_____ (NAME) _____ (DATE)

INSPECTOR_____ (NAME) _____ (DATE)

CONSTRUCTION_____ (NAME) _____ (DATE)

LEGAL DESCRIPTION:

SUNPORT PARK, PORTION OF LOTS 1, 2, AND 3, BLOCK 2.

RECEIVED
JUN - 4 1990
HYDROLOGY DIVISION

FRANK D. LOVELADY
NEW MEXICO
9512
REGISTERED PROFESSIONAL ENGINEER
6/1/90

CONCEPTUAL GRADING AND DRAINAGE PLAN

PROPOSED FACILITY FOR

FRONTIER SYSTEMS, INC.

ALBUQUERQUE, NEW MEXICO