HYDROLOGY K15/D42 1 PLAN

K15/D42

1 Plan

CITY OF ALBUQUERQUE

DRAINAGE PLAN

TVI MAIN CAMPUS
ALBUQUERQUE, NEW MEXICO

PHASE XVI

LOCATION AND DESCRIPTION:

CONSTRUCTION OF PHASE XVI AT THE MAIN CAMPUS OF TVI IS LOCATED EAST OF THE SOUTHEAST INTERSECTION OF UNIVERSITY BOULEVARD AND COAL AVENUE S.E. IN ALBUQUERQUE, NEW MEXICO. PHASE XVI, CONTAINING APPROXIMATELY 0.8448 ACRES, IS PRESENTLY PARTIALLY DEVELOPED AND SLOPES FROM THE EAST TO THE WEST WITH AN AVERAGE SLOPE OF 16 PERCENT. THE SITE IS NOT LOCATED WITHIN A FLOOD PLAIN.

EXISTING CONDITIONS:

PRESENTLY, DEVELOPED RUNOFF FLOWS THROUGH THE PAVED PARKING LOT OF TVI VIA EXISTING GRADES TO THE NORTHWEST CORNER OF THE SITE. THE RUNOFF DISCHARGES ONTO UNIVERSITY AND COAL BY FLOWING OVER THE SIDEWALK AND INTO THE STREET. THE RUNOFF THEN FLOWS TO THE SOUTH ON UNIVERSITY WHERE IT IS INTERCEPTED BY A CATCH BASIN ON UNIVERSITY. RUNOFF FROM THIS SITE DOES NOT ENTER A FLOOD PLAIN. NO OFF-SITE RUNOFF ENTERS THE SITE DUE TO EXISTING ELEVATIONS.

PROPOSED CONDITIONS:

PROPOSED DEVELOPMENT OF PHASE XVI INCLUDES A SCIENCE SCHOOL BUILDING, LANDSCAPING, AND CONSTRUCTION OF A SIDEWALK CULVERT AT THE SOUTHEAST CORNER OF UNIVERSITY AND COAL. DUE TO PROPOSED DEVELOPMENT, FLOW FROM THE SITE WILL INCREASE FROM 2.279 CFS TO 3.4798 CFS. ANALYSIS POINT 3704, AS SHOWN IN VOLUME II OF THE ALBUQUERQUE MASTER DRAINAGE PLAN, IS LOCATED IN UNIVERSITY BOULEVARD, DOWNSTREAM FROM THE SITE. THE DATA INDICATES NO OVERLAND FLOWS AND EXISTENCE OF ADEQUATE STORM DRAIN FACILITIES. THIS DATA IS BASED ON FULLY DEVELOPED CONDITIONS OF THE SITE. AS A RESULT, RUNOFF FROM THE PHASE XVI IS DESIGNED TO FREELY DISCHARGE ACROSS THE TVI PARKING LOT AND DISCHARGE ONTO UNIVERSITY AND COAL. THE SIDEWALK AT THE SOUTHEAST CORNER OF THE INTERSECTION OF UNIVERSITY AND COAL WILL BE MODIFIED TO ELIMINATE THE 10-YEAR STORM WATERS FROM FLOWING OVER THE SIDEWALK VIA 2-2 FOOT WIDE SIDEWALK CULVERTS.

PHASE XVI - CALCULATIONS:

Area = 0.8448 acres
i = 2.2 in./hr. Plate 22.2 D-2

6-hour, 100-year rainfall = 2.3 in. Plate 22.2 D-1
i = (2.2)(2.3) = 5.06 in./hr.

EXISTING ON-SITE CONDITIONS:

SURFACE TYPE	"C" VALUE	A (ACRES)	"C"X A	COMPOSITE "C"=CXA/A
Streets, Drives, Walks	0.95	0.2112	0.2006	
Roofs	0.90	-0-	-0-	
Lawns & Landscaping	0.25	-0-	-0-	
Undeveloped	0.40	0.6336	0.2534	
TOTAL		0.8448	0.4540	0.5374

Q(100) = (0.5374)(0.8448)(5.064) = 2.2779 cfs
Q(10) = (0.657)(2.2972) = 1.5093 cfs
CN = 72 Plate 22.2 C-2
Direct Runoff = 0.45 in. Plate 22.2 C-4
V(100) = (0.45)(0.8448)(43560)/12 = 1379.9808 cu. ft.
V(10) = (0.657)(1379.9808) = 906.6424 cu. ft.

PROPOSED ON-SITE CONDITIONS:

SURFACE TYPE	"C" VALUE	A (ACRES)	"C"X A	COMPOSITE "C"=CXA/A
Streets, Drives, Walks	0.95	0.2540	0.2413	
Roofs	0.90	0.4465	0.4018	
Lawns & Landscaping	0.25	0.1443	0.0351	
Undeveloped	0.40	-0-	-0-	
TOTAL		0.8448	0.6792	0.8040

Q(100) = (0.8040)(0.8448)(5.06) = 3.4368 cfs
Q(10) = (0.657)(3.4368) = 2.2580 cfs
CN = 93 Plate 22.2 C-3
Direct Runoff = 1.5 in. Plate 22.2 C-4
V(100) = (1.5)(0.8448)(43560)/12 = 4599.7560 cu. ft.
V(10) = (0.657)(4599.9360) = 3022.7560 cu. ft.

SIDEWALK CULVERT CALCULATIONS:

Area = 4.9988 acres
i = 2.2 in./hr. Plate 22.2 D-2
6-hour, 100-year rainfall = in. Plate 22.2 D-1
i = (2.2)(2.3) = 5.06 in./hr.

PROPOSED ON-SITE CONDITIONS:

SURFACE TYPE	"C" VALUE	A (ACRES)	"C"X A	COMPOSITE "C"=CXA/A
Streets, Drives, Walks	0.95	3.7067	3.5214	
Roofs	0.90	1.1478	1.0330	
Lawns & Landscaping	0.25	0.1443	0.0351	
Undeveloped		-0-	-0-	
TOTAL		4.9988	4.5895	0.9181

Q(100) = (0.9181)(5.06)(4.9988) = 23.2229 cfs
Q(10) = (0.657)(23.2229) = 15.2574 cfs

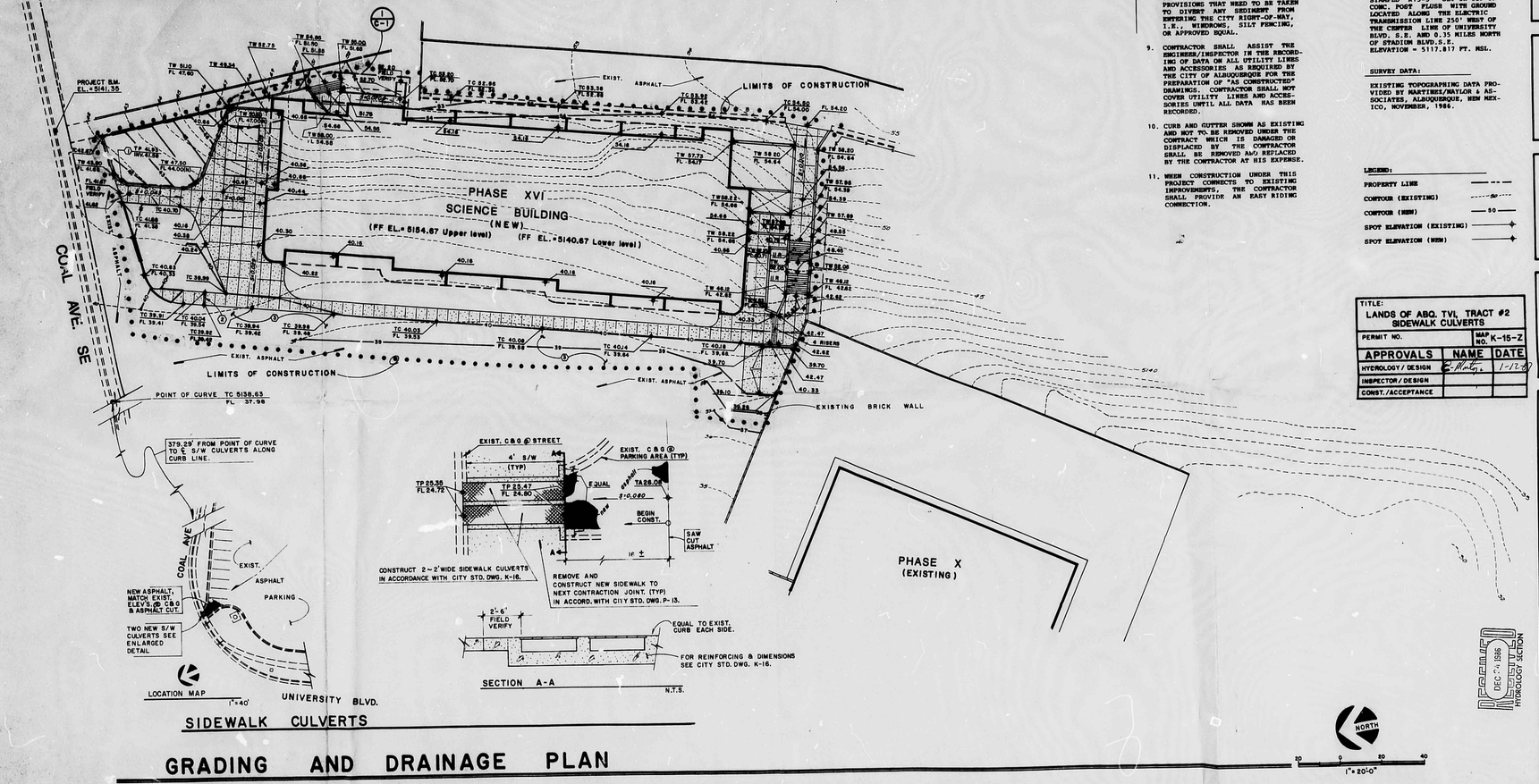
MANNING EQUATION:

$$Q = 1.486 \frac{A}{n} R^{2/3} S^{1/2}$$

S = 0.02
n = 0.015

$$15.2574 = \frac{1.486}{0.015} (W)(.50W)^{2/3} (0.02)^{1/2}$$

W = 4.0
Use 2-- ft. wide sidewalk culverts.



SIDEWALK CULVERTS

GRADING AND DRAINAGE PLAN

KEYED NOTES:

1. 4" PVC DRAIN PIPE. PROVIDE A 12"X12" CAST-IN-PLACE CONCRETE SPLASH PAN AT GRADE. OUTLET DRAIN AT FACE OF RETAINING WALL. (FIELD VERIFY INVERT ELEVATION)
2. SIDEWALK CULVERT 1' WIDE, CONSTRUCT IN ACCORDANCE WITH CITY STD. DWG. K-16 (TYP).
3. SAW-CUT AND REMOVE EXISTING ASPHALT. MATCH NEW ASPHALT TO EXISTING ELEVATIONS AT LIMITS OF CONSTRUCTION.

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 THESE PLANS TO BE PERFORMED, EXCEPT AS OTHERWISE STATED OR PROVIDED HEREON, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF ALBUQUERQUE INTERIM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1985.
3. TWO 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 CONSTRUCTIONS. 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 ARTERIAL STREET USE.
6. MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING PERMIT TO CONSTRUCT FACILITY WITHIN CITY RIGHT-OF-WAY.
8. CONTRACTOR IS RESPONSIBLE FOR EROSION CONTROL DURING THE CONSTRUCTION PHASE, INCLUDING ANY PROVISIONS THAT NEED TO BE TAKEN TO DIVERT ANY SEDIMENT FROM ENTERING THE CITY RIGHT-OF-WAY, I.E., WINDROWS, SILT FENCING, OR APPROVED EQUAL.
9. CONTRACTOR SHALL ASSIST THE ENGINEER/INSPECTOR IN THE RECORDING OF DATA ON ALL UTILITY LINES AND ACCESSORIES AS REQUIRED BY THE CITY OF ALBUQUERQUE FOR THE PREPARATION OF "AS CONSTRUCTED" DRAWINGS. CONTRACTOR SHALL NOT COVER UTILITY LINES AND ACCESSORIES UNTIL ALL DATA HAS BEEN RECORDED.
10. CURB AND GUTTER SHOWN AS EXISTING AND NOT TO BE REMOVED UNDER THE CONTRACT WHICH IS DAMAGED OR DISPLACED BY THE CONTRACTOR SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
11. WHEN CONSTRUCTION UNDER THIS PROJECT CONNECTS TO EXISTING IMPROVEMENTS, THE CONTRACTOR SHALL PROVIDE AN EASY RIDING CONNECTION.

VICINITY MAP K-15-Z
FLOOD HAZARD BDY. MAP / PANEL No. 29

LEGAL DESCRIPTION:

LANDS OF THE ALBUQUERQUE TECHNICAL AND VOCATIONAL INSTITUTE, TRACT 2, ALBUQUERQUE, NEW MEXICO. APPROXIMATELY 600' EAST FROM THE S.E. INTERSECTION OF COAL AVE. S.E. AND UNIVERSITY BLVD. S.E.

BENCH MARK DATA:

PROJECT BENCH MARK: LOCATED ON COAL AVE. S.E. MARKED WITH A 60D NAIL ON THE SOUTH CURB, NORTH OF PROJECT SITE.
ELEVATION = 5141.35 FT. (SEE PLAN)

ACS BENCH MARK: THE STATION IS A STANDARD ACS BRASS TABLET, STAMPED "K15-5" SET IN TOP OF CONC. POST FLUSH WITH GROUND LOCATED ALONG THE ELECTRIC TRANSMISSION LINE 250' WEST OF THE CENTER LINE OF UNIVERSITY BLVD. S.E. AND 0.35 MILES NORTH OF STADIUM BLVD.S.E.
ELEVATION = 5117.817 FT. MSL.

SURVEY DATA:

EXISTING TOPOGRAPHING DATA PROVIDED BY MARTINEZ/BAYLOR & ASSOCIATES, ALBUQUERQUE, NEW MEXICO, NOVEMBER, 1986.

LEGEND:

PROPERTY LINE
CONTOUR (EXISTING) 50
CONTOUR (NEW) 50
SPOT ELEVATION (EXISTING)
SPOT ELEVATION (NEW)

TITLE: LANDS OF ABQ. TVI, TRACT #2 SIDEWALK CULVERTS		
PERMIT NO.		MAP NO. K-15-Z
APPROVALS	NAME	DATE
HYDROLOGY / DESIGN	E. Martinez	1-12-87
INSPECTOR / DESIGN		
CONST. / ACCEPTANCE		

PERMIT DEC 24 1986 HYDROLOGY SECTION

DEAN/HUNT/KRUEGER and ASSOCIATES inc.
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checked:
date: 12-22-86

revisions:

STATE OF NEW MEXICO REGISTERED #225 EDWARD W. KRUEGER PROFESSIONAL ENGINEER

STATE OF NEW MEXICO REGISTERED PROFESSIONAL ENGINEER VICTOR J. MARTINEZ

GRADING PLAN

PHASE XVI
SCIENCE BUILDING
ALBUQUERQUE TECHNICAL-VOCATIONAL INSTITUTE
ALBUQUERQUE, NEW MEXICO

sheet no: C-2

CITY OF ALBUQUERQUE
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CITY OF ALBUQUERQUE