# DRAINAGE CALCULATIONS

### I. REFERENCES:

- A. CITY OF ALBUQUERQUE DEVELOPMENT PROCESS MANUAL (DPM) VOL. 2 DESIGN CRITERIA, CHAPTER 22: DRAINAGE, FLOOD CONTROL, AND **EROSION CONTROL**
- SOIL SURVEY OF BERNALILLO COUNTY AND PARTS OF SANDOVAL AND VALENCIA COUNTIES, NEW MEXICO, UNITED STATES DEPARTMENT OF AGRICULTURAL, SOIL CONSERVATION SERVICE.
- C. FLOODWAY, FLOOD BOUNDARY AND FLOODWAY MAP, CITY OF ALBUQUERQUE, NEW MEXICO, PANEL 35 OF 50. D. ZONE ATLAS PAGE M-16-Z.

#### II. GENERAL INFORMATION:

- A. SOIL TYPE (REF. B. PAGE 49) SOIL TYPE IS GLENDALE (Gk) LOAM, HYDROLOGIC SOIL GROUP "B".
- IMPERMOUSNESS:

TYPE OF SURFACE	EXISTING SQ. FT.	AREA ACRES	PROPOSED SQ. FT.	AREA ACRES
BUILDING ROOF CONCRETE SURFACES ASPHALT SURFACES LANDSCAPING UNDEVELOPED	3519 176 1708 -0- 8972	0.0739 0.0040 0.0392 -0- 0.2060	4432 917 5296 3089 650	0.1017 0.0211 0.1216 0.0707 0.0149
SITE TOTAL	14375	0.3300	14375	0.3300

C. "C" FACTOR (SEE AMENDMENT TO THE DPM JAN. 19, 1986)

1. PROPOSED IMPERVIOUS SURFACE	ES "C"	AREA	Cx
BUILDING ROOF	0.90	0.1017	0.0915
CONCRETE SURFACES	0.95	0.0211	0.0200
ASPHALT SURFACES	0.95	0.1216	0.1155
LANDSCAPE	0.25	0.6707	0.0177
UNDEVELOPED SURFACE	0.40	0.0149	0.0060
TOTAL		0.3300	0.2507

DEVELOPED WEIGHTED "C" FACTOR 0.2507/0.3300 = 0.76

2. EXISTING IMPERVIOUS SURFACES	"C"	AREA	CxA
BUILDING ROOF	0.90	0.0739	0.0665
CONCRETE SURFACES	0.95	0.0040	0.0038
ASPHALT SURFACES	0.95	0.0392	0.0372
LANDSCAPE	0.25	-0-	-0-
UNDEVELOPED SURFACE	0.40	0.2060	0.0824
TOTAL		0.3300	0.1899

EXISTING WEIGHTED "C" FACTOR 0.1819/0.3300 = 0.58

- D. RAINFALL, 100 YEAR, 6 HOUR P(6); (SEE REF. A, PLATE 22.2) D-1); P(6) = 2.30 INCHES
- E. TIME OF CONCENTRATION, To; To 10 MINUTES; USE 10 MINUTES (MINIMUM VALUE) FOR CALCULATIONS.
- RAINFALL INTENSITY, I; (SEE REF. A, PLATE 22.2 D-2)  $I = P(6) \times 6.84 \times Tc EXP (-0.51)$ = 2.30 × 6.84 × 10 EXP (-0.51)

### III. PEAK DISCHARGE:

- A. EXISTING CONDITIONS. (USE RATIONAL EQUATION)  $Q(100) = 0.58 \times 4.86 \times 0.33 = 0.93 \text{ CFS}$  $Q(10) = 0.657 \times 0.93 = 0.61$  CFS (REF. A, PLATE 22.2 D-1)
- B. DEVELOPED CONDITIONS.  $Q(100) = 0.76 \times 4.86 \times 0.33 = 1.22 CFS$  $Q(10) = 0.657 \times 1.22 = 0.80 CFS (REF. A, PLATE 22.2 D-1)$
- IV. VOLUMES (SCS MEHTOD, DEVELOPED ONLY)

= 4.86 IN/HR

COMPOSITE RUNOFF CURVE NUMBER (SEE PLATE 22.2, C-3) 80% IMPERVIOUS, CN = 92. DIRECT RUNOFF (SEE REF. A, PLATE 22.2, C-4)  $Q = (P-0.2S)^2/P + 0.8S$  P = 23 S = 0.87Q = (2.3-0.2(.87) / 2.3 + 0.8(.87)Q = 1.51 INCHES OR 0.123 FT. VOLUME: V = QA  $V = 1.51/12 \times 14375 \text{ S.F.}$ 

#### V = 1808 CU. FT. V. FLOOD INFORMATION:

A. THE PROPOSED SITE DOES NOT LIE WITHIN A DESIGNATED 100 YEAR FLOOD ZONE. REF. C, PANEL 35 OF 50.

### VI. CONCLUSIONS:

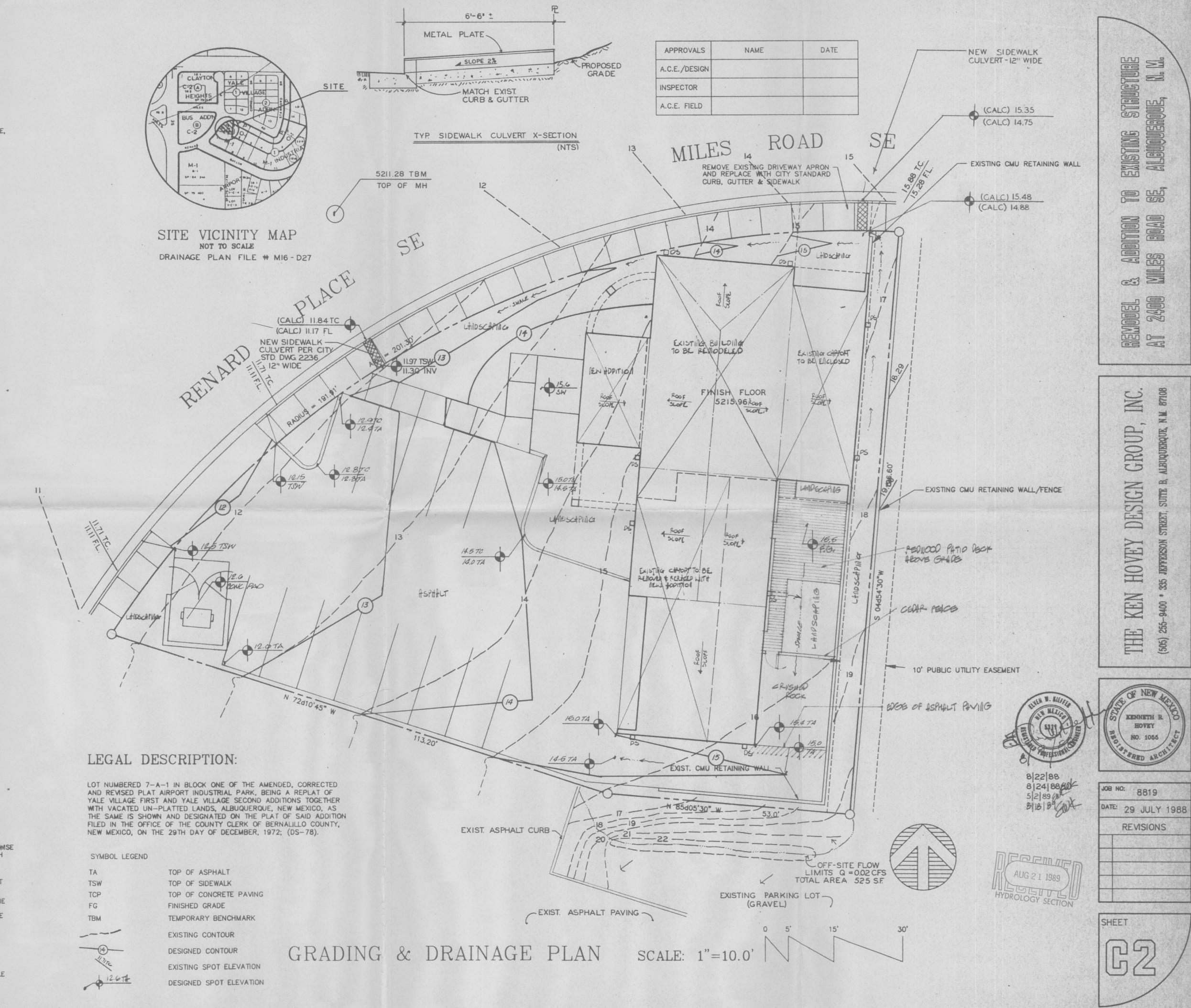
A. THE SITE IS AN INFILL DEVELOPMENT WITH THE LOT PARTIALLY DEVELOPED. THE EXISTING DRAINAGE SCHEME WILL NOT BE ALTERED DUE TO THIS NEW ADDITION. THE IMPERVIOUSNESS CONSISTS OF EXISTING ASPHALT, CONCRETE PAVING AND A SMALL BUILDING. THE SITE DRAINAGE IS FROM EAST TO WEST AS SHOWN AND IS FREELY DISCHARGED INTO THE RIGHT-OF-WAY. ALL PROPERTY ADJACENT TO AND IN THE VICINITY OF THIS LOT ARE DISCHARGED FREELY INTO THE RIGHT-OF-WAY.

## VIL NOTICE TO CONTRACTOR

- AN EXCAVATION/CONSTRUCTION PERMIT WILL BE REQUIRED BEFORE BEGINNING ANY WORK WITHIN THE 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 CITY OF ALBUQUERQUE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 1986.
- TWO WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATION 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 TO ARTERIAL STREET USE.
- MAINTENANCE OF THESE FACILITIES SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE PROPERTY SERVED.

### BENCHMARK INFORMATION:

TEMPORARY BENCHMARK AS SHOWN HEREON IS THE CENTER OF MANHOLE IN THE STREET AND BEARS ELEVATION 5211.28 (MSL); REFERENCED TO CITY BENCHMARK 1-M16 AND BEARS ELEVATION 5189.847 (MSL).



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