HYDROLOGY

E22/D8

FOUR PLANS

E 22/D8

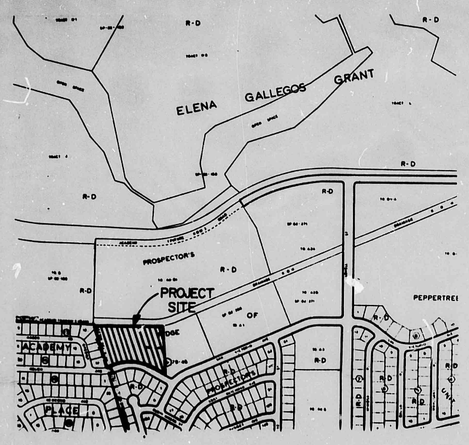
4 PLANS

DRAINAGE REPORT FOR PROSPECTOR'S POINT

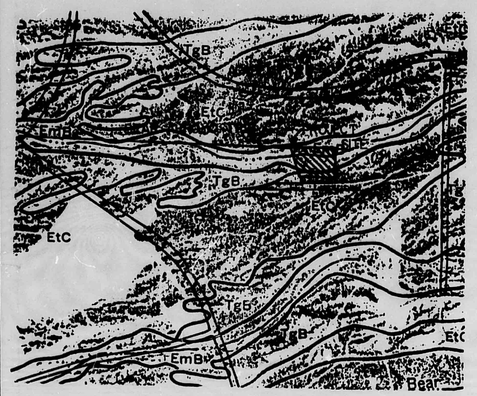
PREPARED BY

BOHANNAN — HUSTON INC.

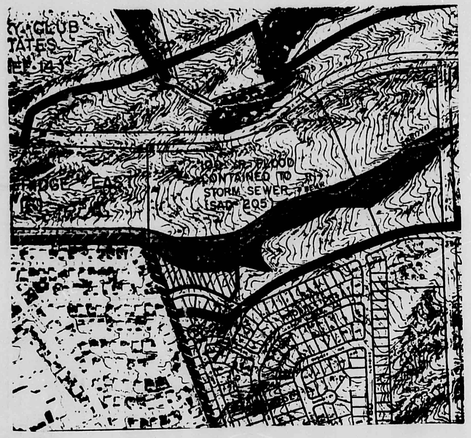
MARCH 1985



LOCATION MAP
ZONE ATLAS PAGE E-21 & 22 Z



SOILS MAP
SOURCE: SCS SOILS SURVEY
SHEET 22



FLOOD INSURANCE MAP
SOURCE: FLOODWAY MAP
SHEET 18

DRAINAGE REPORT FOR PROSPECTOR'S POINT

Purpose

The purpose of this report is to outline the drainage management plan for the development of a 4.26 acre residential site. Chapter 22 of the Development Process Manual (DPM) will be used to establish the plan.

Site Location and Description

Prospector's Point is bordered to the south by Kielich Road, to the west by Academy Place Subdivision, to the north by Bear Arroyo Tributary and to the east by a utility easement and proposed park. The property is zoned R-D; the subdivision as planned will have 6.1 DU/Ac and be developed for detached single family patio homes. At the present time, the Academy Ridge East Subdivision is being graded. The storm sewer in Bear Arroyo Tributary is being laid and backfilled.

The site slopes from the southeast to the northwest at approximately 2.5%. The SCS soil type for the site is Type B and the hydrologic soil groups included are Embudo and Tijeras.

Previous Report/Existing Conditions

Two major drainage studies provide hydrological analysis of the property, along with additional useful information. These are: the Academy/Tramway/Eubank Sector Development Plan Master Conveyance Study, prepared by Community Sciences; and the Drainage Report for the Bear Arroyo Tributary prepared by Tom Mann and Associates for SAD 205. The Drainage Report for Academy Ridge East, prepared by Bohannan-Huston, Inc., provides information to supplement the two major studies.

The Master Conveyance Study recommended constructing an open concrete channel in the Bear Arroyo Tributary with structures at street crossings. This plan was abandoned in favor of a closed conduit to be constructed in SAD-205. This conduit will run along the northern boundary of Prospector's Point and will receive the storm water runoff from the site.

The Drainage Report for the Bear Arroyo Tributary was prepared to analyze runoff generated east of Tramway Boulevard. That report recommends constructing diversion structures to divert Bear Tributary runoff into the Pino Arroyo. These diversions are to be constructed prior to SAD- 205. AMAFCA Resolution 1984-5 decrees that no development may occur within the 100-year flood plain until the diversion structures are in place and functioning. It can be seen from the flood map that approximately half of the project site falls within the 100-year floodplain. Therefore, the development and final platting of the subdivision will be subject to the AMAFCA resolution covering the floodplain easement.

The site falls within the same watershed boundary as Academy Ridge East. The pertinent watershed boundaries are San Victorio Avenue and part of Lowell Street to the south and east, and the southern boundaries of the lots on the south side of Kielich Road. As stated previously, runoff within this watershed is programmed to drain into the Bear Tributary Arroyo System.

Hydrologic Analysis

The peak flow rates for the developed and undeveloped drainage basins were determined by application of the Rational Method.

The time of concentration was calculated to be less than ten minutes for all basins. Therefore, ten minutes was used in all computations.

Rainfall intensities were determined by applying Plates 22.2 D-1 and 22.2 D-2 of the DPM. The 100-year intensity was determined to be 5.41 in/hr. The-10 year intensity is 3.55 in/hr.

The runoff coefficient for the site ranged between 0.50 to 0.63. This is based upon the developed site, including streets, being 50 - 61% impervious. A typical lot is shown on this sheet which verifies this figure.

Following is a summary of the runoff values for the site:

Basin	% Impervious	Drainage (Acres) Area	"C" Factor	Flowrate (CFS)
A	59%	1.07	0.63	3.88
B1	50%	1.09	0.57	3.57
B2	50%	1.07	0.57	3.51
C	61%	1.03	0.64	3.79

Proposed Drainage Management Plan

The scheme for managing storm water runoff in Prospector's Point assumes that the Bear Tributary pipeline will be in place, as well as the diversions to the Pino Arroyo at Tramway.

Off-Site Flows

Off-site flows entering the subdivision streets are generated only by a portion of Kielich Road. A water block existing on Kielich Road at San Victorio Avenue diverts offsite runoff to the south. Any runoff directed towards the subdivision from the park site on the east will be diverted by a swale located in the 30' utility easement. It is recommended that the grading for the future park maintain this swale arrangement.

On-Site Flows

For lots on the east side of the street, runoff will be directed to the roadway surface. Lots located on the west side of the street will discharge into a concrete rundown located in the rear of each lot. A 5' private drainage easement will be provided along the rear lot lines to convey runoff to the alley section. The concrete rundown is detailed on Sheet 2, Section A-A.

All flows will be directed to the alley at the northern boundary (See Detail B for drainage channel tie to alley) and discharged to the Bear Arroyo Tributary storm sewer through an inlet manhole to be constructed 112 feet downstream of the western site boundary. A permanent alley section will be provided along the site's north boundary (See Section C-C). Cut-off walls will be provided at each end of the alley section. Temporary asphalt paving will be constructed to direct the flow from the western site boundary to the inlet manhole, 112 feet downstream (See Section D-D). explain ? ?

An attempt has been made to minimize slopes and the need for stem walls or split pads. Some lots, however, must be provided with this solution, especially on the northwest corner lots. A block wall will be constructed between drainage areas B1 and B2 to control the need for stem walls within drainage area B2.

Erosion Control

To prevent sediment from entering the alley section and pipe system, a windrow is proposed to be constructed along the west boundary and street side of the lots. A typical detail is shown on this sheet.

Summary and Conclusions

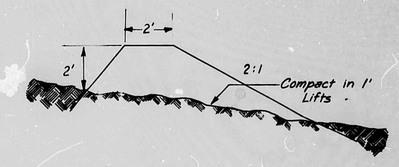
Prospector's Point is proposed as a single family residence development with densities not to exceed 6.1 DU/Acre. It is within the Bear Arroyo Tributary Watershed. This report assumes that the diversions to the Pino Arroyo from the Bear Arroyo Tributary at Tramway will be in place and that the Bear Arroyo Tributary pipeline will be complete.

Hydrologic analysis of the final development led to the following conclusions:

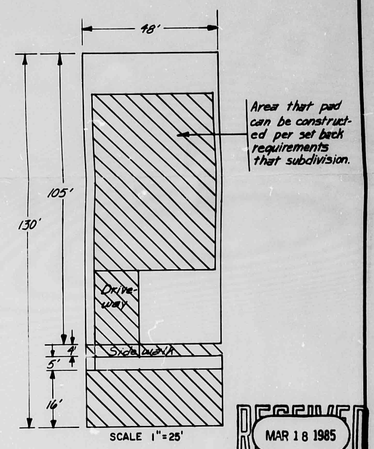
* Adding the inputs to the Bear Arroyo Tributary pipeline will not adversely affect the hydraulics of the original design of the pipeline, prepared for SAD-205.

* On-site grading will provide for lot-to-lot conveyance of backyard discharge and lot to street conveyance of discharge for those lots on the east sides of the streets.

* Development and final platting of the subdivision shall be subject to AMAFCA resolution covering the floodplain easement.



EROSION CONTROL BERM



RECEIVED MAR 18 1985 HYDROLOGY SECTION

IMPERVIOUS AREA =3,670 SQ. FT.

PERVIOUS AREA =2,570 SQ. FT.

TOTAL LOT AREA =6,240 SQ. FT.

% IMPERVIOUS = 59 %

TYPICAL LOT CONFIGURATION

Date	Revision	By

PROSPECTOR'S POINT SUBDIVISION

GRADING PLAN

Project No.

Seal: Bear Barnett 3-15-85

Job No.

Sheet 1 Of 2

Drawn By: TL

Date: 3/85

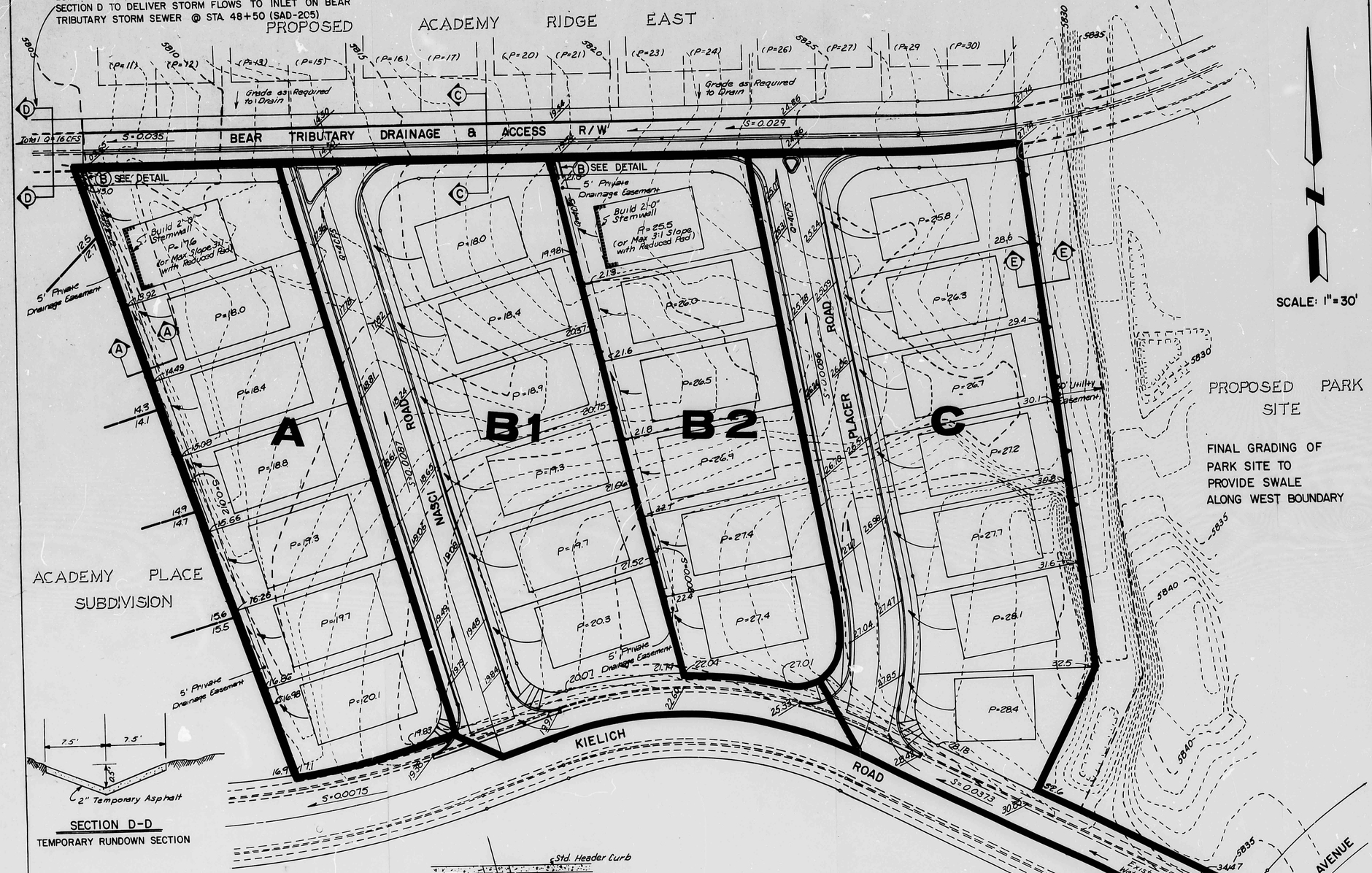
Checked By: KD

Scale: AS SHOWN

BRUNING 44-132 64256

NOTE:
BUILD CONCRETE CUTOFF WALL. PROVIDE 2" TEMPORARY ASPHALT SECTION D TO DELIVER STORM FLOWS TO INLET ON BEAR TRIBUTARY STORM SEWER @ STA. 48+50 (SAD-205)

NOTE:
PAD ELEVATIONS TAKEN FROM PRELIMINARY GRADING PLAN FOR ACADEMY RIDGE EAST



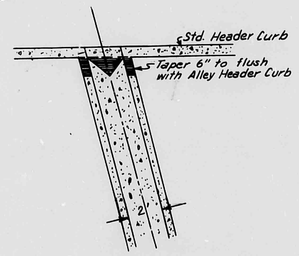
LEGEND

- FLOW DIRECTION
- BASIN BOUNDARY
- WATER BLOCK
- POSSIBLE STEM WALL
- 00.0 SPOT ELEVATIONS
- 00.0 TOP OF CURB (OR HEADER CURB) ELEV.

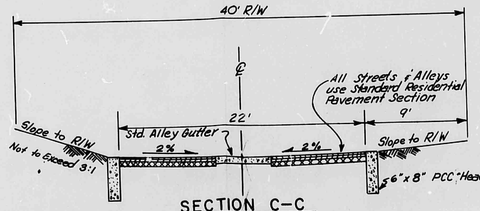
NOTES

1. NO SLOPES TO EXCEED 3:1

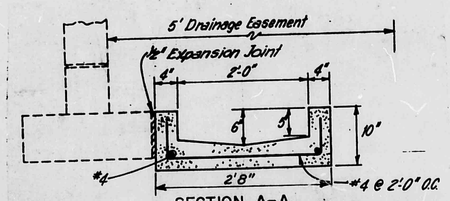
SECTION D-D
TEMPORARY RUNDOWN SECTION



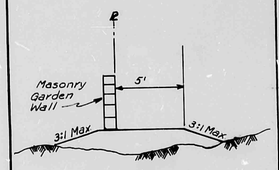
DETAIL B
DRAINAGE CHANNEL TIE TO ALLEY



SECTION C-C
TYPICAL DRAINAGE AND ACCESS ALLEY



SECTION A-A
PRIVATE DRAINAGE EASEMENT CHANNEL



SECTION E-E
TEMPORARY DIVERSION BERM

RECEIVED
MAR 18 1985
HYDROLOGY SECTION

AS BUILT INFORMATION
CONTRACTOR — DATE
WORK STAKED BY — DATE
INSPECTOR'S STAMPS
ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE

ENGINEER'S SEAL
3-15-85

NO.	DATE	REVISIONS	BY	REMARKS

DESIGN
DESIGNED BY — DATE
DRAWN BY — DATE
CHECKED BY — DATE

CITY OF ALBUQUERQUE

TITLE: PROSPECTOR'S POINT SUBDIVISION GRADING PLAN

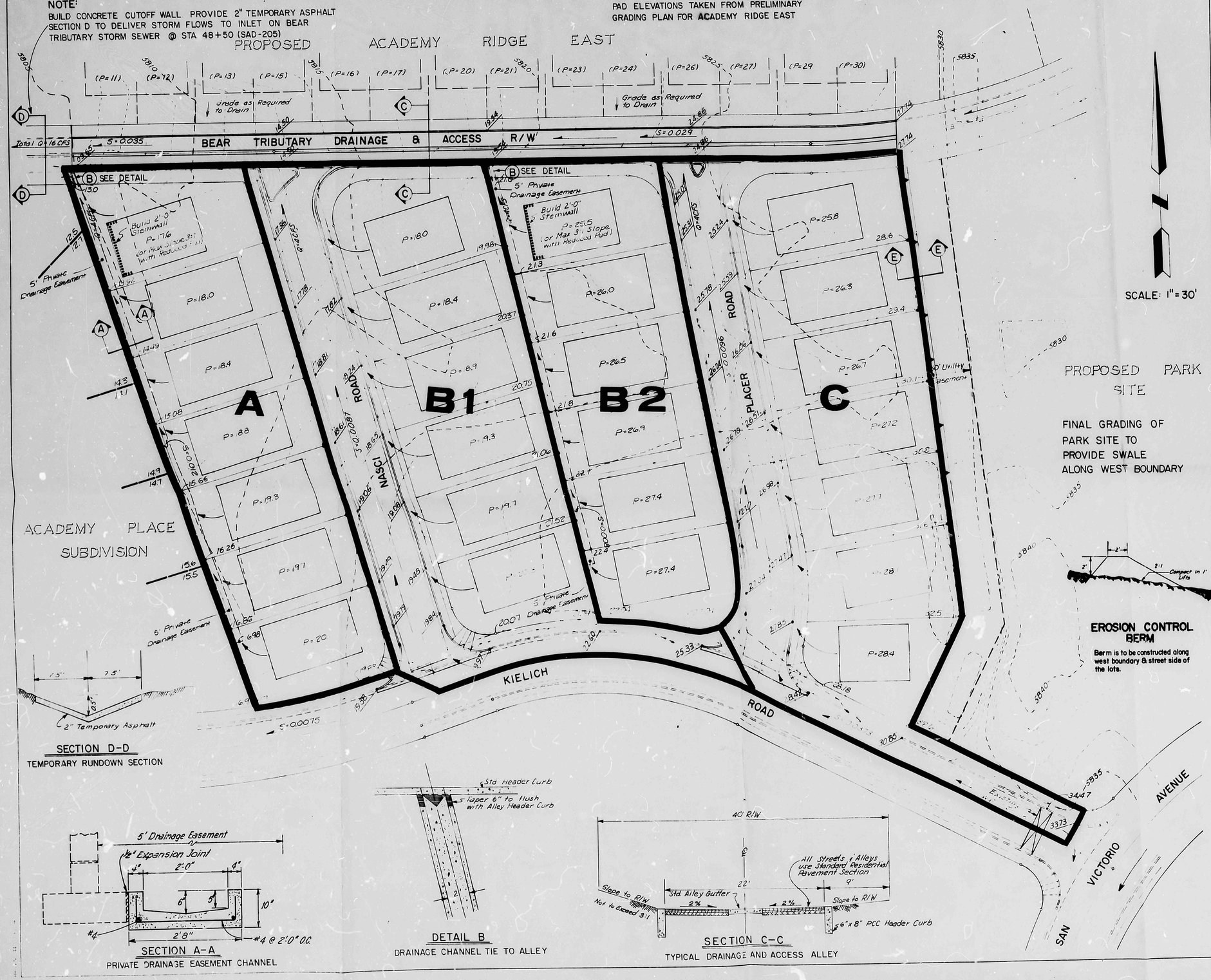
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A C E - Design			Traffic		
A C E - Hydrology			Water		

DRAWING NO. | MAP NO. | SHEET OF

BRUNING 44-132 62236

NOTE:
BUILD CONCRETE CUTOFF WALL PROVIDE 2" TEMPORARY ASPHALT SECTION D TO DELIVER STORM FLOWS TO INLET ON BEAR TRIBUTARY STORM SEWER @ STA 48+50 (SAD-205)

NOTE:
PAD ELEVATIONS TAKEN FROM PRELIMINARY GRADING PLAN FOR ACADEMY RIDGE EAST



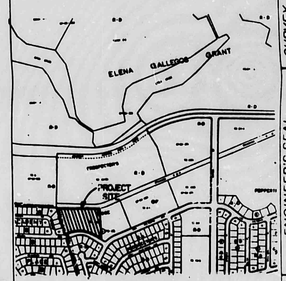
LEGEND

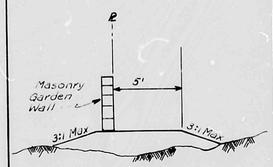
- FLOW DIRECTION
- BASIN BOUNDARY
- WATER BLOCK
- POSSIBLE STEM WALL
- 00.0 SPOT ELEVATIONS
- 00.0 TOP OF CURB (OR HEADER CURB) ELEV.

APPROVED FOR GRADING ± 1'
Hydrology — Date 4-1-85

NOTES

1. NO SLOPES TO EXCEED 3:1





AS BUILT INFORMATION
BENCH MARKS
SURVEY INFORMATION
FIELD NOTES
NO | BY | DATE
ENGINEER'S SEAL
3-15-85
REMARKS
REVISIONS
NO | DATE | BY
DESIGN
DESIGNED BY | DATE
DRAWN BY | DATE
CHECKED BY | DATE
MICRO-FILM INFORMATION
RECORDED BY | DATE
NO

CITY OF ALBUQUERQUE

TITLE: PROSPECTOR'S POINT SUBDIVISION
GRADING PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste		
A.E. Design			Traffic		
A.E. Hydrology			Water		

DRAWING NO | MAP NO | SHEET | OF

EARTH EXCAVATION

A. **General:** Earth excavation shall consist of the excavation and removal of suitable soils for use as embankment as well as the satisfactory disposal of all vegetation, debris and deleterious material encountered within the area to be graded and/or in a borrow area.

B. **Surface Maintenance:** Excavated areas shall be continuously maintained so that the surface shall be smooth and have sufficient slope to allow water to drain from the surface.

EMBANKMENT

A. **General:** The embankment shall consist of a controlled fill constructed in the areas indicated on the grading plans.

B. **Embankment Materials:** Embankment fill material shall consist of soils that conform to the following physical characteristics.

Sieve Size Square Openings	Percent Passing by Weight
6 inch	100
# 4	40 - 100
#200	10 - 50

The plasticity index of the material as determined in accordance with A.S.T.M. D-423 and D-424, shall not be more than 15.

The fill material shall be free from roots, grass, other vegetable matter, clay lumps, rocks larger than 6 inches, or other deleterious material.

Site soils from the cuts may be used for fill, provided they meet the requirements in paragraph B of EMBANKMENT. It is anticipated that some blending of soils will be required to meet specifications.

C. **Construction:**

(1) Treatment of Natural Ground Surface in the Building Areas-- Prior to construction of building pad fills, the native soils beneath each building pad shall be scarified to a minimum depth of 12 inches and watered to bring the moisture content of the upper 5.0 feet as close as practicable to the optimum moisture content. Moisture increases achieved shall be verified by a representative of the soils engineer by augering small holes to 5.0 feet and obtaining representative samples in order to confirm proper prewetting. In the event infiltration does not take place to the prescribed depth, the soils engineer's representative shall make a decision based upon the nature of the soil in question. The ground surface shall then be subjected to 20 coverages of a heavy steel drum vibratory roller (10 ton minimum weight). The upper 6 inches of the native soils shall be compacted to the minimum density specified in paragraph C(3) of this section.

Cut areas of building pads shall be watered and rolled as specified above after cutting to substantial finished grade.

(2) Treatment of Natural Ground Surfaces in Non-Building Areas-- The upper 6 inches of native soils outside building areas upon which fills are to be constructed shall be scarified, brought to a moisture content of 2 percent below optimum or higher, and compacted to requirements in C93) of this section.

(3) Compaction-- The fill shall be spread in layers not exceeding 8 inches, watered as necessary, and compacted. The moisture content at the time of compaction shall be 2 percent below optimum or higher. Compaction shall be with a vibratory roller as specified in C(1) of this section to obtain a density for building pads. Embankment outside the building pads shall be compacted to 90 percent of maximum density. Native soils beneath fills or in cuts shall be compacted to the density specified for fills in that area.

Optimum moisture and maximum density for each soil type used shall be determined in accordance with A.S.T.M. D-1557.

A. **Field Inspection and Testing:** The soils engineer shall provide continuous on-site inspection by experienced personnel during construction of controlled earthwork. The contractor shall notify the engineer at least 2 working days in advance of any field operations of the controlled earthwork, or of any resumption of operations after stoppages.

File

RECEIVED
MAY 30 1985
HYDROLOGY SECTION

AS BUILT INFORMATION

		DATE
CONTRACTOR		
WORK STAKED BY		
INSPECTORS ACCEPTANCE BY		DATE
FIELD VERIFICATION BY		DATE
DRAWINGS CORRECTED BY		DATE

MICRO-FILM INFORMATION

RECORDED BY	DATE
NO	

BENCH MARKS

ACS BRASS CAP "6-22" ELEV. 5934.53 LOCATION IS 1.2 MILES EAST OF THE INTERSECTION OF ACADEMY ROAD NE & EUBANK BLVD. NE STATION IS THEN 3.75' SOUTH ON THE SOUTH RIM OF BEAR CANYON TRIBUTARY

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE

ENGINEER'S SEAL

Sara Bentz 5-23-85

NO.	DATE	REMARKS	BY

REVISIONS

DESIGN

		DATE
DESIGNED BY	K.L.S	5/85
DRAWN BY	L.D	5/85
CHECKED BY	K.L.D	5/85

CITY OF ALBUQUERQUE
MUNICIPAL DEVELOPMENT DEPARTMENT
ENGINEERING DIVISION

TITLE: PROSPECTOR'S POINT SUBDIVISION GRADING PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
City Engineer			Liquid Waste	NA	5/29/85
A.C.E.-Design			Traffic		
A.C.E.-Hydrology			Water	NA	5/29/85

DRAWING NO.	MAP NO.	SHEET
2435	E-22	7 OF 11

BRUNING 44-132 62236