HYDROLOGY

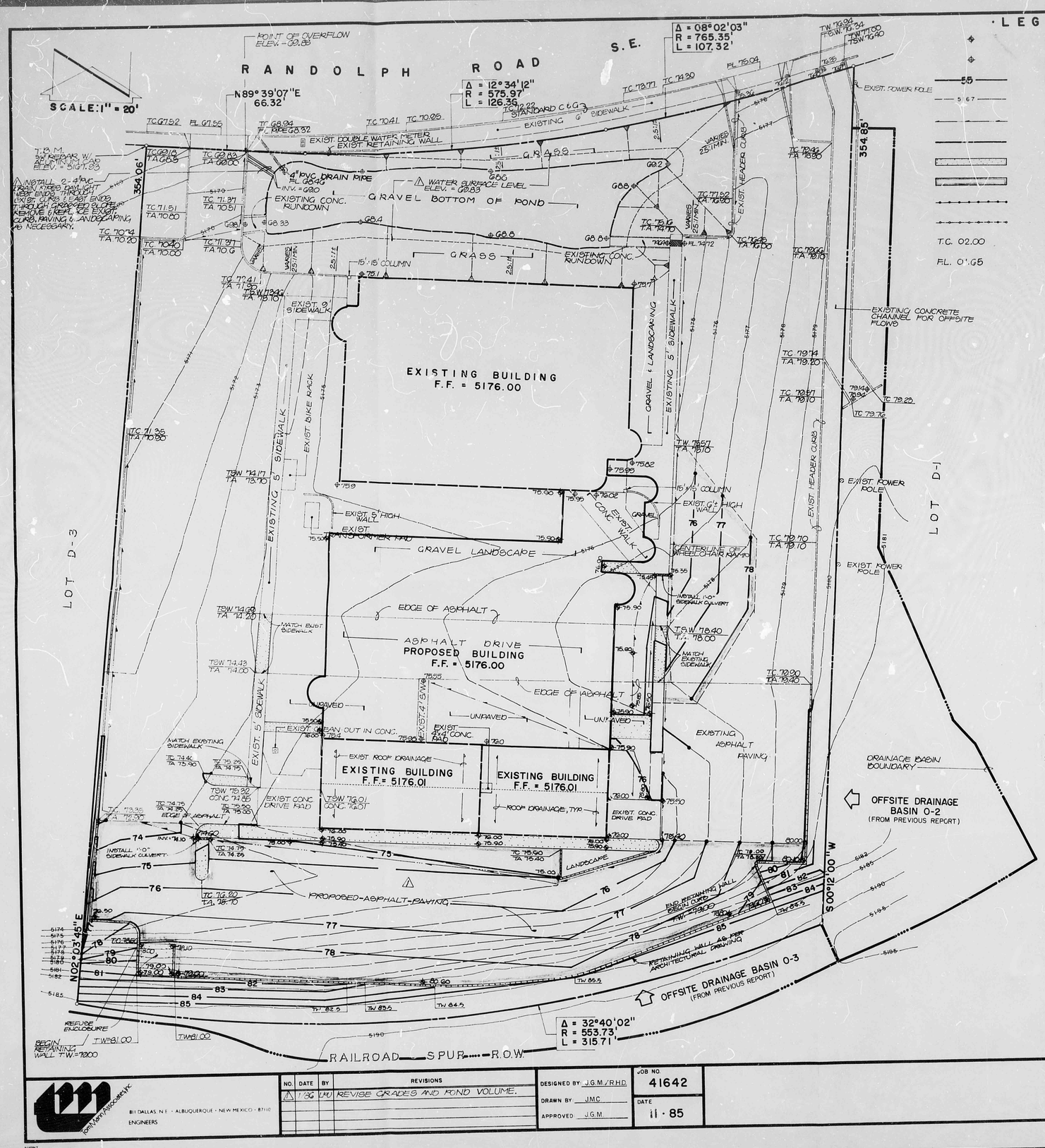
M15/D7

THREE PLANS

3 PLANS FOR

MISSION RESEARCH

MIS-D7



LEGEND

- PROPOSED SPOT ELEVATION
- EXISTING SPOT ELEVATION
- PROPOSED CONTOUR
- EXISTING CONTOUR
- SWALE
- PROPERTY LINE
- CONCRETE
- PROPOSED ASPHALT
- PROPOSED FENCE
- EXISTING FENCE
- TOP OF CURB
- FLOW LINE

T.C. 02.00
F.L. 0'.65

PROJECT BENCHMARK:

A square, □, chiseled on top of a concrete curb located on the north side of Gibson Boulevard S.E., 0.25 miles west of the intersection with Yale Boulevard (ALB. B.M. 5-L15).
Elevation = 5152.59 ft (M.S.L.D.)

TEMPORARY BENCHMARK:

Northwest Corner of Property
Elevation = 5167.93 ft (M.S.L.D.)

LEGAL DESCRIPTION:

Lot D-2, of the Replat of Parcel D, of the Replat of Tract 4, Newport Industrial Park - West, Unit 1, filed August 24, 1981, Book C-18, Page 168.

VICINITY MAP M·15
SCALE 1" = 20'

CONSTRUCTION NOTES:

1. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE 765-1234, 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 SO THAT THE CONFLICT CAN BE RESOLVED WITH A MINIMUM AMOUNT OF DELAY.
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.

EROSION CONTROL MEASURES

1. THE CONTRACTOR SHALL ENSURE THAT NO SOIL ERODES FROM THE SITE INTO PUBLIC RIGHT-OF-WAY OR ONTO PRIVATE PROPERTY. THIS CAN BE ACHIEVED BY CONSTRUCTING TEMPORARY BERMS AT THE PROPERTY LINES AND WETTING THE SOIL TO KEEP IT FROM BLOWING.
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.

DRAINAGE PLAN

The following items concerning the Mission Research Drainage Plan Update are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located on the south side of Randolph Road S.E. west of Yale Boulevard S.E. and east of University Boulevard S.E. At present, the site is developed. The adjoining parcels are undeveloped.

As shown by Plate M-15 of the Albuquerque Master Drainage Study, this site does not lie within a designated Flood Hazard Zone. Furthermore, this site has previously been analyzed by Andrews, Asbury & Robert in a report titled "Drainage Report for Lot D-2, Newport Industrial Park - West, Unit 1", dated September 17, 1981. That plan "considers the storm drainage requirements for the future developed state". With this in mind, the site has been reviewed with respect to compliance with the previously approved report. A comparative review of the existing grades and the grades proposed by the previous plan indicates that the proposed pond has been constructed to the requirements required by the previous plan. In addition, review of said drainage report reveals that this pond has been sized for the ultimate future development of the site. Because of this, additional ponding will not be required for the proposed construction. In general, the existing means of drainage control is onsite ponding with a controlled release outlet to Randolph Road S.E. From this point, the runoff reaches an existing floodway and utility easement (AMAFCA Channel) via public rights-of-way.

The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1' 0" intervals, 2) the limit and character of the existing improvements, 3) the limit and character of proposed improvements, and 4) continuity between existing and proposed elevations. As shown by this plan, the proposed improvements consist of a single building addition along with adjacent paving. This construction will be performed in compliance with the previously approved drainage report for this site. Developed runoff generated by these improvements will be directed to the previously mentioned positive discharge pond located at the north end of the site.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used for this analysis in accordance with the City of Albuquerque Development Process Manual, Volume II. As shown by these calculations, the proposed improvements will result in an increase in runoff within the site of approximately 1.4 cfs. This increase will have an insignificant affect on downstream conditions because of the positive discharge pond which is present on the site. As previously mentioned, the runoff generated by the newly created pervious area on the site will be routed through the existing positive discharge pond and discharged to Randolph Road S.E.(See further discussion below.)

A comparative review of the existing conditions at the time of the previous drainage report and the present conditions now indicates that the offsite contributing areas have not significantly changed. Because of this, the offsite flows, as analyzed in the Andrews, Asbury & Robert, report are still valid today, therefore, no offsite flows have been calculated for this drainage plan update.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 41:
BCC Bluepont Loamy Fine Sand
BKD Bluepoint-Kokan Association
Hydrologic Soil Group A

Rational Method

Discharge: $Q = CiA$
where C varies
$i = P_6 (6.84)\, T_c^{-0.51} = 4.65$ in./hr
$P_6 = 2.2$ in (DPM Plate 22.2 D-1)
$T_c = 10$ min (minimum)
A = area, acres

Volume: $V = CP_6A(1/12)$
where C varies
$P_6 = 2.2$ in (DPM Plate 22.2 D-1)
A = area, sf

Existing Condition

$A_{total} = 107{,}980$ sf $= 2.48$ Ac
$A_{imp} = 47{,}810$ sf; % impervious = 44%
$C_{imp} = 0.38$ (DPM Plate 22.2 C-1)
$Q_{100} = CiA = 0.38\,(4.65)(2.48) = 4.4$cfs
$V_{100} = CP_6A = 0.38\,(2.2/12)\,(107{,}980) = 7520$ cf

Developed Condition

$A_{total} = 107{,}980$ sf $= 2.48$ Ac
$A_{imp} = 72{,}290$ sf; % impervious = 67%
$C = 0.54$ (DPM Plate 22.2 C-1)
$Q_{100} = CiA = 0.54\,(4.65)(2.48) = 6.2$ cfs
$V_{100} = CP_6A = 0.54\,(2.2/12)(107{,}980) = 10.690$cf

Pond Volume

$V = 1/2\,[(A_{68.50} + A_{69.83})(69.83 - 68.5)]$
$= 1/2\,[(4860 + 5630)\,(1.33)$
$= 6975$ cf $>$ V required
= V required = 6,625 cf (by Hydrograph analysis)

Release Point 1 (existing)

Q release $= CA\sqrt{2gh} = 0.6$ cfs
where C = 0.75
A = 0.0873 (4"dia. pipe)
h = 1.34'

Release Point 2

Q release $= CA\sqrt{2gh} = 0.4$ cfs
where C = 0.75
A = 0.0873 (4"dia. pipe)
h = 0.66'
use two 4" dia. pipes

Comparison

$\Delta Q_{100} = 1.4 - 0.6 = 0.8$ cfs (increase)
$\Delta V_{100} = 10{,}690 - 7520 = 3170$ (increase)

Because the required pond volume was previously determined as the difference between the developed runoff and the historic runoff, the existing pond, discharging via a single 4" outlet, was undersized. Applying the "rule-of-thumb" of 0.5 cfs/acre discharge, two additional 4" PVC outlets can be added to provide a total release of 1.4 cfs (0.6 + 0.4 + 0.4) and satisfy existing and required ponding requirements.

REGISTERED PROFESSIONAL ENGINEER — ROBERT G. MUELLER — NEW MEXICO — 8947
11-07-84
11-01-86

NO.	DATE	BY	REVISIONS
1	1-86	LMJ	REVISE GRADES AND POND VOLUME.

Bohannan-Huston Inc.
8101 DALLAS N.E. · ALBUQUERQUE · NEW MEXICO · 87110
ENGINEERS

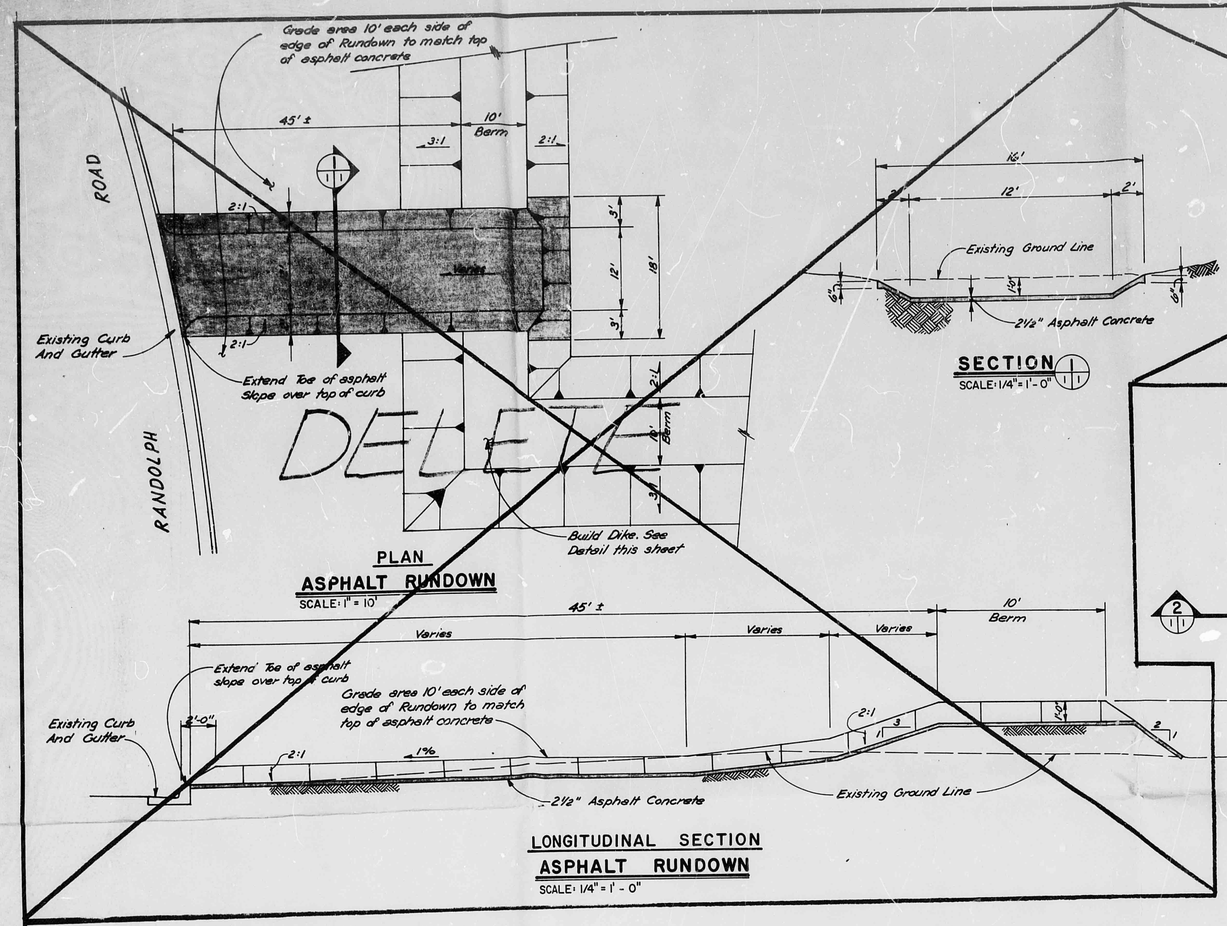
DESIGNED BY J.G.M./R.H.D.
DRAWN BY J.M.C.
APPROVED J.G.M.
JOB NO. 41642
DATE 11·85

GRADING & DRAINAGE PLAN (UPDATE)
MISSION RESEARCH

M15/D7

RECEIVED JAN 07 1986 HYDROLOGY SECTION

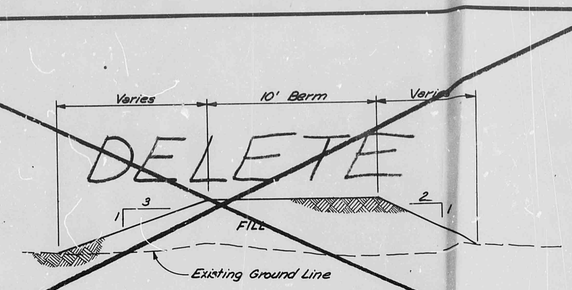
FILE NO.
SHEET 1 OF 1



PLAN
ASPHALT RUNDOWN
SCALE: 1" = 10'

LONGITUDINAL SECTION
ASPHALT RUNDOWN
SCALE: 1/4" = 1' - 0"

SECTION 1
SCALE: 1/4" = 1'-0"



TYPICAL DIKE SECTION
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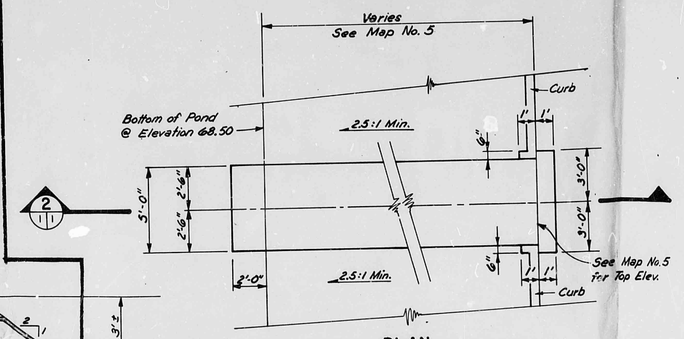
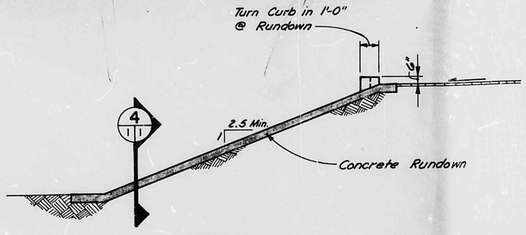


PLAN
TYPICAL CONCRETE RUNDOWN
SCALE: 1/4" = 1'-0"



SECTION 2
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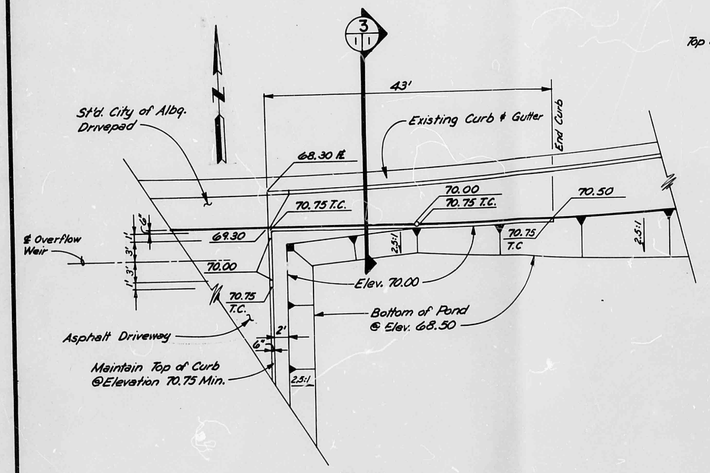
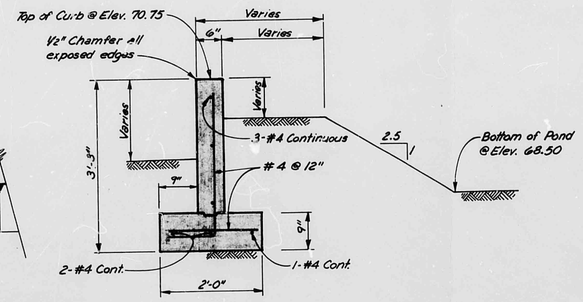
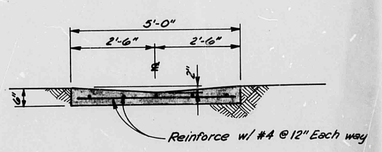


PLAN
OVERFLOW WEIR



SECTION 3
SCALE: 3/4" = 1'-0"



SECTION 4
SCALE: 1/2" = 1'-0"

M15/07

REVISED OCTOBER 16, 1981

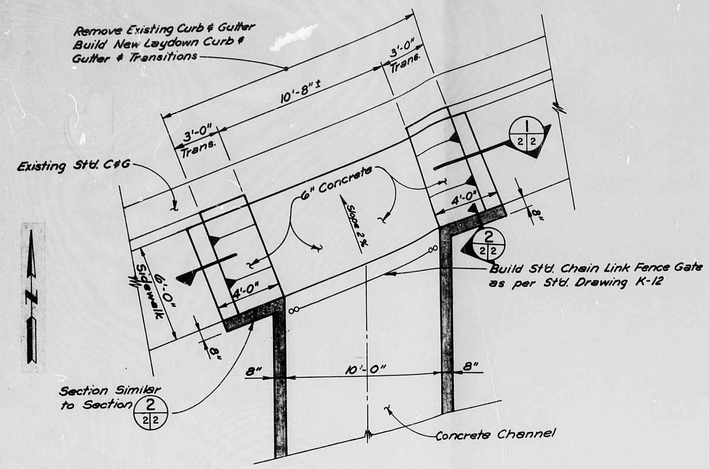
MISSION RESEARCH CORP.

NEWPORT INDUSTRIAL PARK - WEST, UNIT I
LOT D-2

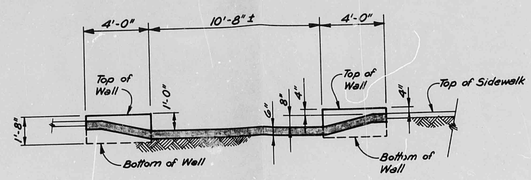
DEVELOPED CONDITIONS — DETAILS

ANDREWS, ASBURY & ROBERT, INC.
CONSULTING ENGINEERS
ALBUQUERQUE NEW MEXICO

FILE No.	DRAWN	CHECKED	DATE	SHEET
81-273	JFV	JA	Sept 1981	1 OF 2



DETAIL 'A'
SCALE: 1/4"=1'-0"



SECTION 1/2
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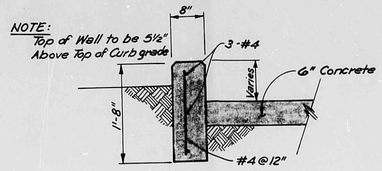

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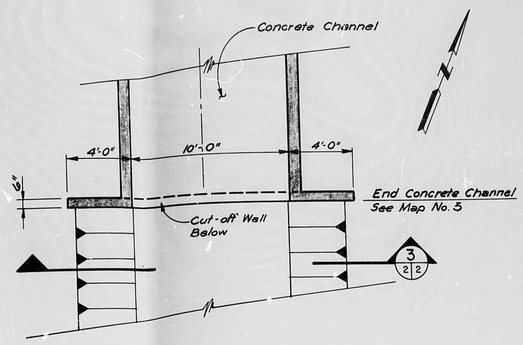
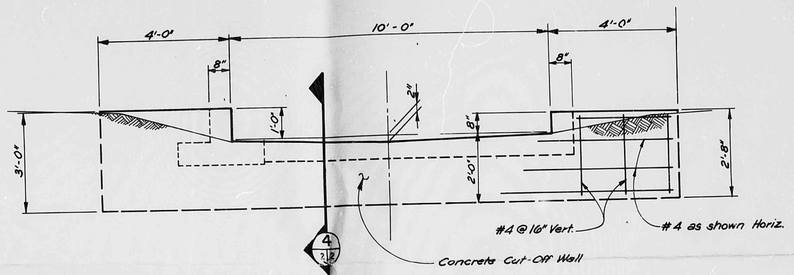


CONCRETE CHANNEL INLET
SCALE: 1/4"=1'-0"



SECTION 3/2
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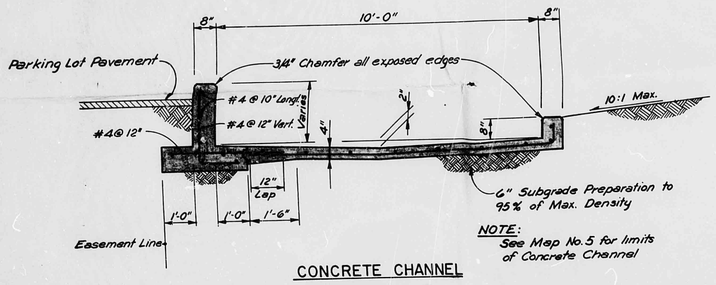
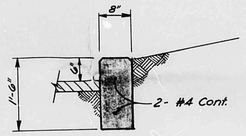


NOTE:
See Map No. 5 for limits of Concrete Channel

CONCRETE CHANNEL
SECTION 1/5 2
SCALE: 1/2"=1'-0"



TYPE 'A' CURB
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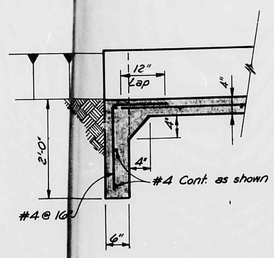

SECTION 4/2
SCALE: 3/4"=1'-0"

M15/D7

SHEET ADDED OCTOBER 16, 1981

MISSION RESEARCH CORP.

NEWPORT INDUSTRIAL PARK-WEST, UNIT I
LOT D-2

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81-273	JFV	JA	Oct. 16, 1981	2 OF 2