

F19/D16A

1 Plan



City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 3, 1982

Mr. Dennis Lister
Tom Mann & Associates
811 Dallas N.E.
Albuquerque, N.M. 87110

RE: LOT 58, PENN SQUARE REVISED DRAINAGE PLAN

Dear Dennis:

Per our conversation of March 2, 1982, this office should be supplied with the following information:

1. The status of the Bohannon-Huston Master Plan for the area and the basis used for designing the site to free discharge (this solution may have been a directive from the City Hydrology Staff).
2. Written permission must be obtained from the adjacent land owner stating that he:
 - a. Has revised the plan;
 - b. Concurs with the grading;
 - c. and understands that runoff is being directed to his property.

If I can answer any further questions concerning the above matters, please call.

Very truly yours,

Brian G. Burnett
Civil Engineer/Hydrology

DBS/tal

MUNICIPAL DEVELOPMENT DEPARTMENT

Richard S. Heller, P.E., City Engineer



811 DALLAS N.E. - ALBUQUERQUE - NEW MEXICO - 87110 - 505-265-5611

20692
March 1, 1982

Mr. Brian G. Burnett
Engineering/Hydrology Division
City of Albuquerque
P. O. Box 1293
Albuquerque, New Mexico 87103

Re: Lot 58, Penn Square
Revised Drainage Plan

Dear Brian:

Transmitted herewith for your approval are two (2) copies of the revised drainage and grading plan for the subject project. Please give this matter your immediate attention.

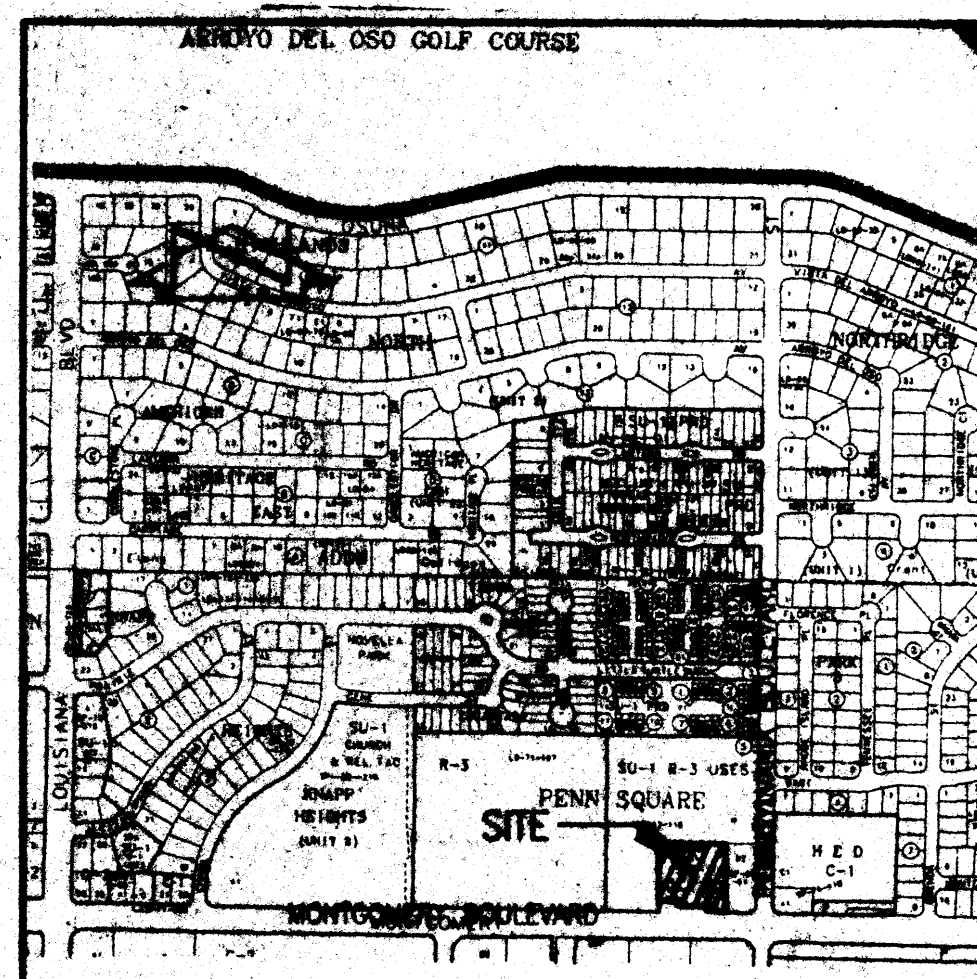
If you have any questions, please do not hesitate to call.

Yours truly,

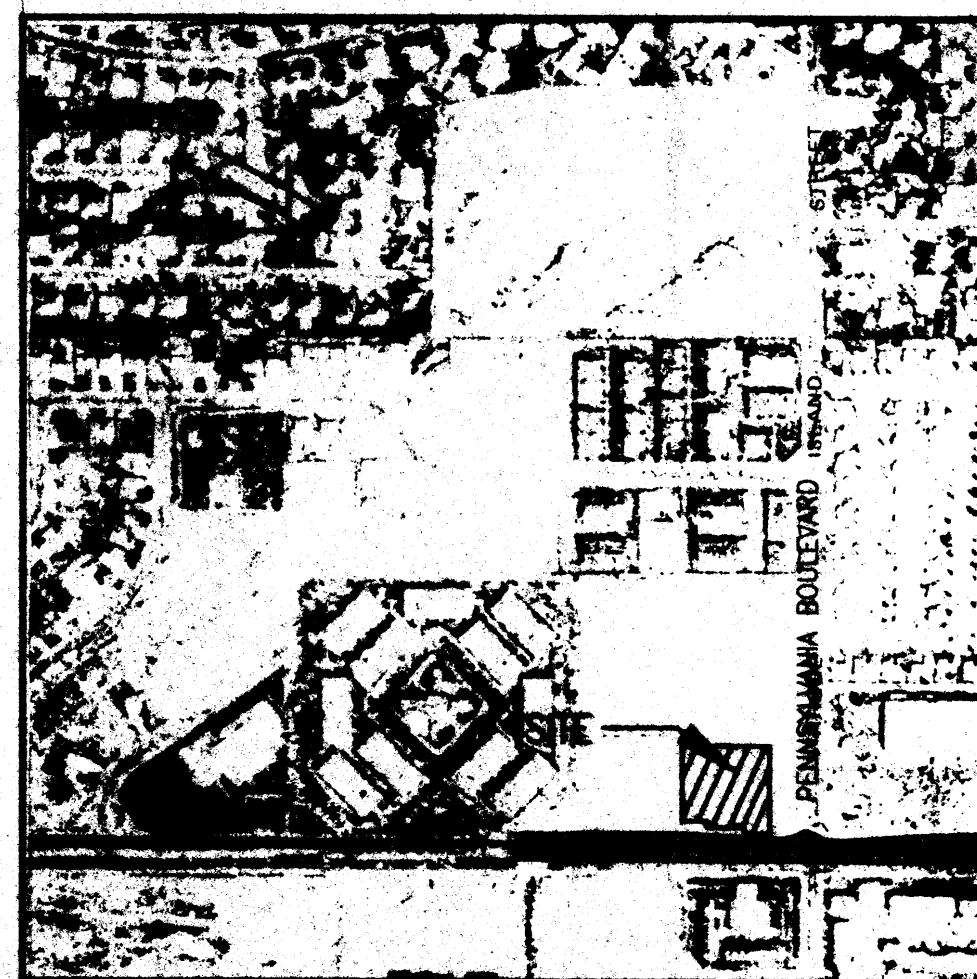
TOM MANN & ASSOCIATES, INC.

1000 G & 1322
Dennis A. Long
ENGINEER
Junior Engineer

DAL:bb
Encls. (2)



VICINITY MAP
SCALE: 1" = 750'



A.I.R.M.
SCALE: 1" = 500'

LEGAL DESCRIPTION:

ALL OF TRACT LETTERED "N" OF PENN. SQUARE, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT ENTITLED "SUMMARY PLAT OF TRACT N, PENN. SQUARE, ALBUQUERQUE, NEW MEXICO, JANUARY, 1985", AS FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON FEBRUARY 15, 1985 IN VOLUME C26, FOLIO 83.

PROJECT BENCH MARK:

CITY OF ALBUQUERQUE BENCH MARK "S-619A", A STANDARD ACS BRASS TABLET STAMPED "S-619A 1978", SET FLUSH WITH THE CURB, LOCATED AT THE INTERSECTION OF MONTGOMERY BLVD. N.E. AND PENNSYLVANIA STREET N.E. ELEVATION = 5364.26 FEET (M.S.L.D.).

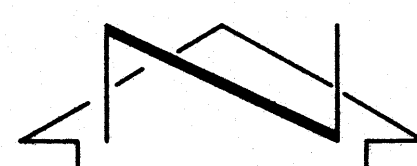
T.B.M.

T.B.M. = FINISHED FLOOR ELEVATION = 5361.2 FEET (M.S.L.D.)

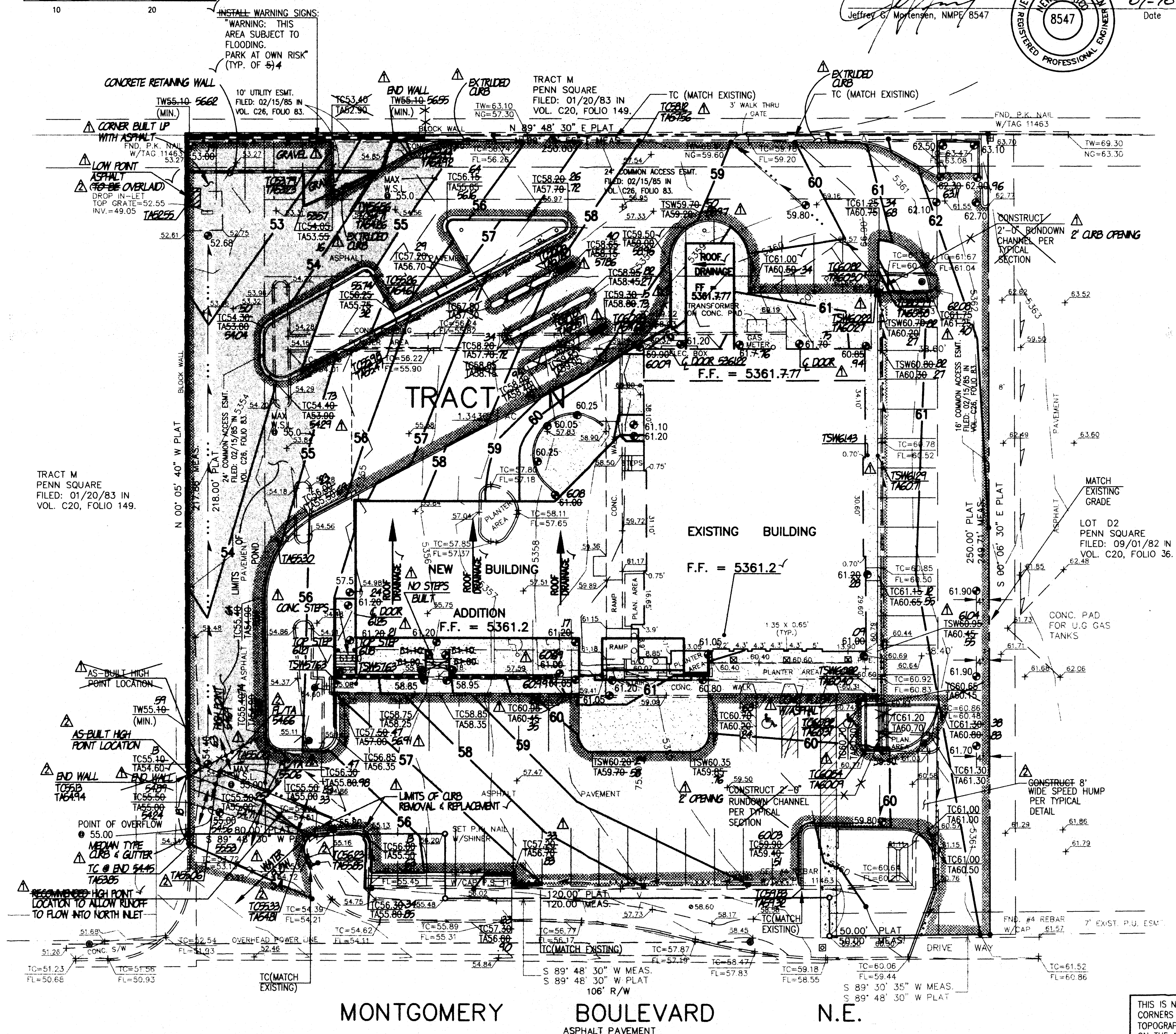
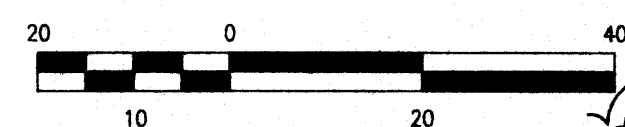
LEGEND

●	LIGHT POLE
⊠	TELEPHONE BOX
⊞	ELECTRIC BOX
○	SAN. SEW. CLN.-OUT
⊙	WATER METER
---	EXISTING CONTOUR
---	EXISTING SPOT ELEVATION
---	PROPOSED CONTOUR
---	PROPOSED SPOT ELEVATION
---	EXISTING FLOW DIRECTION
---	PROPOSED FLOW DIRECTION
---	TOP OF CURB
---	FLOW LINE
---	TOP OF WALL
---	NATURAL GROUND
---	SPEED HUMP
---	HIGH POINT
---	PROPOSED RETAINING WALL
---	DETENTION POND LIMITS
---	PROPOSED CONCRETE
---	PROPOSED ASPHALT
---	PROPOSED TOP OF CURB
---	PROPOSED TOP OF ASPHALT
---	PROPOSED TOP OF SIDEWALK

AS-BUILT LEGEND	
△ TC57.56-47	AS-BUILT ELEVATION
△ TSW60.02	AS-BUILT ELEVATION
△ TA56.70	AS-DESIGNED = AS-BUILT



SCALE: 1" = 20'



MONTGOMERY

BOULEVARD

N.E.

△ DRAINAGE RECERTIFICATION

As indicated by the as-built information shown hereon, the New Mexico Educators Federal Credit Union project has been graded and drained in substantial compliance with the approved Grading and Drainage Plan. All corrections set forth in the First Drainage Certification have been satisfied. It is based upon the information presented hereon that issuance of a Permanent Certificate of Occupancy is hereby recommended. The information shown hereon was obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.

Jeffrey B. Mortensen, NMPE 8547
Date: 02-05-97



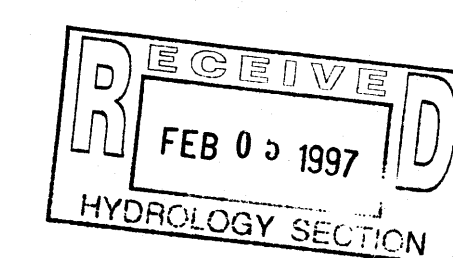
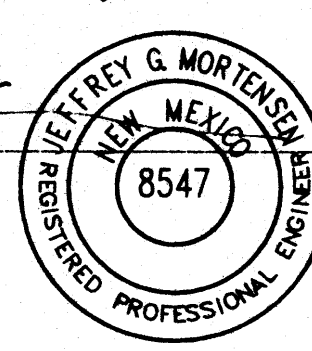
△ FIRST DRAINAGE CERTIFICATION

As indicated by the as-built information shown hereon, the New Mexico Educators Federal Credit Union project has been graded and drained in substantial compliance with the approved Grading and Drainage Plan with the following exceptions:

- The speed hump located near the southeast corner of the site was not built. The speed hump must be built to be in compliance with the approved Master Drainage Plan so that offsite flows from the east do not enter the site.
- The waterblock at the southwest entrance to the site was constructed incorrectly. This allows the southern portion of the site to drain directly onto Montgomery Blvd. N.E. This area must be reconstructed to satisfy the intent of the approved plan.
- There is a birdbath in the asphalt paving north of the existing storm inlet. The contractor must overlay this area to remove the birdbath and provide positive drainage to the inlet.

It is based upon the information and recommendations presented hereon that issuance of a Temporary Certificate of Occupancy is hereby recommended. The Contractor has indicated that 30 days will be sufficient time in which to accomplish the corrections following which a recertification will be submitted. The information shown hereon was obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.

Jeffrey B. Mortensen, NMPE 8547
Date: 01-10-97



BPLW

Architects & Engineers, Inc.

2400 Louisiana Blvd. NE
AFC #5 Suite 400
Albuquerque, New Mexico 87110
(505) 881-2759

49 West First Street
Suite 100
Mesa, Arizona 85201
(602) 827-2759

Designing to Shape the Future

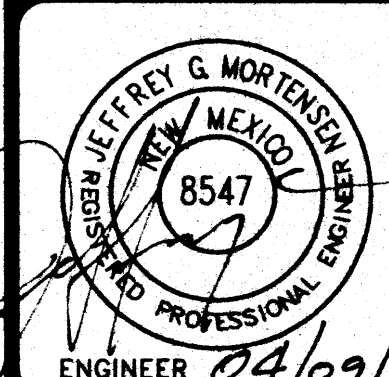
Construction Notes:

- Two (2) working days prior to any excavation, contractor must contact New Mexico One Call System 260-1990 (Albuquerque Area), 1-800-321-ALERT(2537) (Statewide), for location of existing utilities.
- 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 in writing so that the conflict can be resolved with a minimum amount of delay. The Contractor shall be responsible for all interpretations it makes without first contacting the Engineer as required above.
- 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.
- All construction within public right-of-way shall be performed in accordance with applicable City of Albuquerque Standards and Procedures.
- If any utility lines, pipelines, or underground utility lines are shown on these drawings, they are shown in an approximate manner only, and such lines may exist where none are shown. If any such existing lines are shown, the location is based upon information provided by the owner of said utility, and the information may be incomplete, or may be obsolete by the time construction commences. The engineer has conducted only preliminary investigation of the location, depth, size, or type of existing utility lines, pipelines, or underground utility lines. This investigation is not conclusive, and may not be complete, therefore, makes no representation pertaining thereto, and assumes no responsibility or liability therefor. The contractor shall inform itself of the location of any utility line, pipeline, or underground utility line in or near the area of the work in advance of and during excavation work. The contractor is fully responsible for any and all damage caused by its failure to locate, identify and preserve any and all existing utilities, pipelines, and underground utility lines. In planning and conducting excavation, the contractor shall comply with state statutes, municipal and local ordinances, rules and regulations, if any, pertaining to the location of these lines and facilities.
- The design of planters and landscaped areas is not part of this plan. All planters and landscaped areas adjacent to the building(s) shall be provided with positive drainage to avoid any ponding adjacent to the structure. For construction details, refer to landscaping plan.

Erosion Control Measures:

- The contractor shall ensure that no soil erodes from the site into public right-of-way or onto private property.
- 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.
- The contractor shall secure "Topsoil Disturbance Permit" prior to beginning construction.

REV.	DESCRIPTION	DATE
1	FINAL CERTIFICATION	01/28/97
2	AS-BUILT AND CERTIFY	01/11/97



ENGINEER 04/09/97 ARCHITECT

**NEW MEXICO
EDUCATORS
SERVICE CORP.**
7517 Montgomery NE
Albuquerque, New Mexico

PROJECT NO.	DATE
951143	3-15-96

GRADING PLAN

DRAWING NO.
C2.1
SHEET OF

THIS IS NOT A BOUNDARY SURVEY. APPARENT BOUNDARY CORNERS ARE SHOWN FOR INFORMATION ONLY. TOPOGRAPHIC AND BOUNDARY INFORMATION ARE BASED ON THE A.L.T.A. SURVEY PREPARED BY ANTHONY HARRIS DATED NOV. 02, 1995.

DRAINAGE PLAN

The following items concerning the New Mexico Educators Service Corporation Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations
4. F.I.R.M. Panel

As shown by the Vicinity Map, the site is located approximately 130 feet northwest of the intersection of Pennsylvania Street N.E. and Montgomery Boulevard N.E. on Montgomery Boulevard N.E. At present, the site is developed as a restaurant along with associated paving and landscaping. The sites to the north and west are developed as multi-family residential. The site to the east is an existing commercial development. Montgomery Boulevard N.E. lies to the south which is a fully improved public street.

As shown by Panel 17 of 50 of the National Flood Insurance Program Flood Insurance Rate Maps published by F.E.M.A. for the City of Albuquerque, New Mexico dated October 14, 1983, the site lies adjacent to a designated flood hazard zone in Montgomery Boulevard N.E. The site presently drains to the northwest corner of the site to an existing storm inlet, therefore, not contributing to the existing flood hazard zone. Overflow runoff from this existing ponding area will, however, enter Montgomery Boulevard N.E. via the existing driveway situated at the southwest corner of the site.

The Grading Plan shows: 1) existing grades indicated by spot elevations and contours at 1'0" intervals, as shown on the Topographic Survey prepared by Anthony L. Harris, NMPE 11463 bearing the date of November 02, 1995, 2) proposed grades indicated by spot elevations and contours at 1'0" intervals, 3) the limit and character of the existing improvements as shown on the above referenced survey, 4) the limit and character of the proposed improvements, and 5) continuity between existing and proposed grades. As shown by this Plan, the proposed improvements consist of the removal and replacement of existing asphalt paving, the construction of a building addition, and the reconstruction of the paved parking areas. Landscaping will be provided in accordance with the approved Site Development Plan. In order to be consistent with the existing drainage pattern and so as not to aggravate the existing flood hazard zone, the site will continue to drain to the northwest corner. At this point, runoff will accumulate and pond. In the existing condition, this ponding area can contain less than half of the V_{100} before overflowing to Montgomery Boulevard N.E. With the regrading of the site, as proposed hereon, the capacity of the pond will be increased to approximately 90 percent of the V_{100} . This will significantly decrease the amount of runoff which overflows to Montgomery Boulevard N.E. In order to accommodate the ponding in this portion of the site, an additional retaining wall must be constructed or the existing wall must be removed and reconstructed in order to retain runoff which accumulates in the ponding area.

Offsite flows do not enter the site from the north and west due to the fact that physical barriers are presently in place. Montgomery Boulevard lies to the south of the site and is improved as a public City street. As indicated by the F.I.R.M. Panel 17, the flooding within Montgomery Boulevard N.E. does not enter this site. Runoff generated by the commercial site to the east will not enter the site due to a proposed waterblock which is consistent with the approved Master Drainage Plan prepared by Bohannon-Huston, bearing the date of May 1977.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Procedure for 40-acre and Smaller Basins, as set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated January, 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, a slight decrease in the runoff volume and discharge rate is expected.

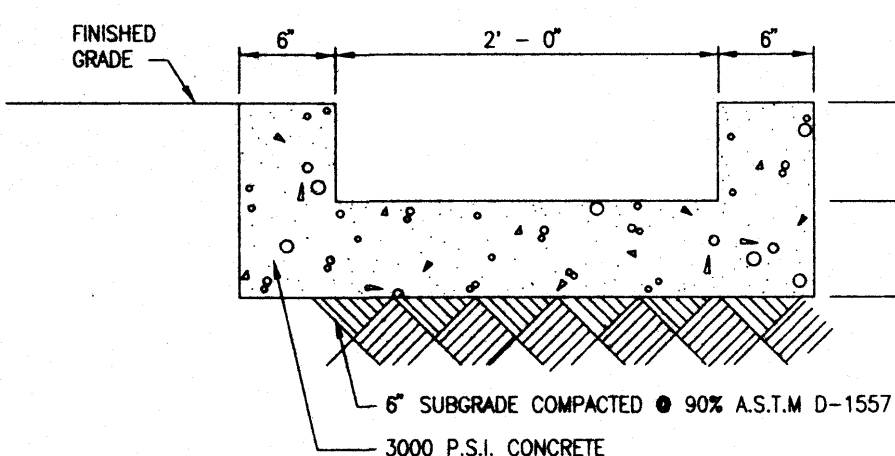
FIRST DRAINAGE CERTIFICATION

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1. The speed hump located near the southeast corner of the site was not built. The speed hump must be built to be in compliance with the approved Master Drainage Plan so that offsite flows from the east do not enter the site.
2. The waterblock at the southwest entrance to the site was constructed incorrectly. This allows the southern portion of the site to drain directly onto Montgomery Blvd. N.E. This area must be reconstructed to satisfy the intent of the approved plan.
3. There is a birdbath in the asphalt paving north of the existing storm inlet. The contractor must overlay this area to remove the birdbath and provide positive drainage to the inlet.

It is based upon the information and recommendations presented hereon that issuance of a Temporary Certificate of Occupancy is hereby recommended. The Contractor has indicated that 30 days will be sufficient time in which to accomplish the corrections following which a recertification will be submitted. The information shown hereon was obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.

Jeffrey G. Mortensen, NMPE 8547
Date 01-10-97



△ TYPICAL RUN-DOWN SECTION
SCALE: 1" = 5'-0" (NOT USED)

CALCULATIONS

Site Characteristics

1. Precipitation Zone = 3
2. $P_{6,100} = P_{360} = 2.60"$
3. Total Area (A_T) = 59,700 sf = 1.37 acre
4. Existing Land Treatment
Treatment Area (sf/ac) %
B 5,000/0.11 08
D 54,700/1.26 92
5. Developed Land Treatment
Treatment Area (sf/ac) %
B 6,420/0.15 11
D 53,280/1.22 89

Existing Condition

1. Volume
 $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$
 $E_W = (0.92)(0.11) + (2.36)(1.26) / 1.37 = 2.24"$
 $V_{100} = (E_W / 12) A_T$
 $V_{100} = (2.24 / 12) 1.37 = 0.26$ ac.ft.; 11,140 cf
2. Peak Discharge
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = (2.60)(0.11) + (5.02)(1.26) = 6.6$ cf

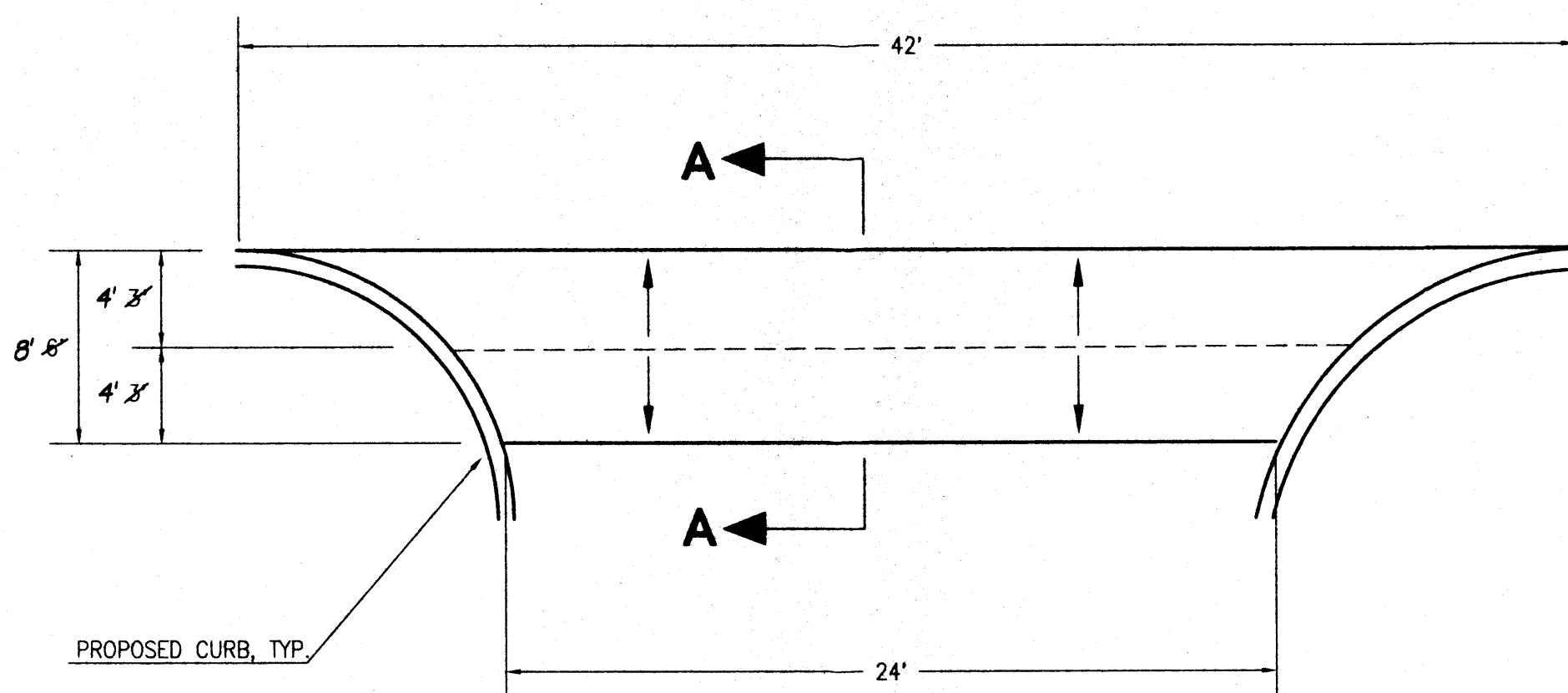
Pond Volume Calculations (Per the Average End Area Method)

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
52.55	0	84	84
53	375	1,787	1,871
54	3,200	3,006	4,877
54.60	6,820		
V_{max} (Existing) = 4,877 cf			

DRAINAGE RECERTIFICATION

As indicated by the as-built information shown hereon, the New Mexico Educators Federal Credit Union project has been graded and drained in substantial compliance with the approved Grading and Drainage Plan. All corrections set forth in the First Drainage Certification have been satisfied. It is based upon the information presented hereon that issuance of a Permanent Certificate of Occupancy is hereby recommended. The information shown hereon was obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.

Jeffrey G. Mortensen, NMPE 8547
Date 02-05-97



△ TYPICAL SPEED HUMP DETAIL
SCALE: 1" = 5'-0" (NOT USED)

Developed Condition

1. Volume
 $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$
 $E_W = (0.92)(0.15) + (2.36)(1.22) / 1.37 = 2.20"$
 $V_{100} = (E_W / 12) A_T$
 $V_{100} = (2.20 / 12) 1.37 = 0.25$ ac.ft.; 10,940 cf
2. Peak Discharge
 $Q_p = Q_{pA} A_A + Q_{pB} A_B + Q_{pC} A_C + Q_{pD} A_D$
 $Q_p = Q_{100} = (2.60)(0.15) + (5.02)(1.22) = 6.5$ cf

Pond Volume Calculations (Per the Average End Area Method)

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
52.55	0	335	335
53	1,490	2,945	3,280
54	4,400	6,300	9,580
55	8,200		

V_{max} (Developed) = 9,580 cf V_{max} WSL @ 55.00

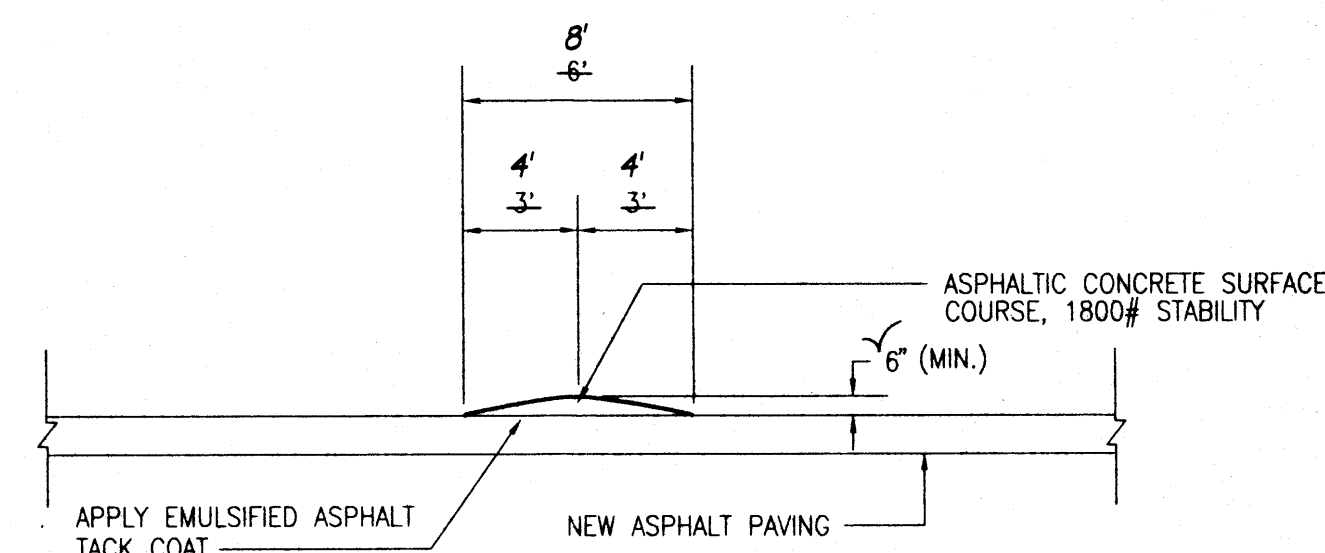
V_{max} (Developed) > V_{max} (Existing)

Pipe Discharge Capacity (Pressure Condition)

$Q = CA(2gh)^{0.5}$
Use 12" discharge pipe (Exist.)
Let $C = 0.6$
 $A = 0.7854$ sf
 $g = 32.2$
 $h = (55.00 - 49.05 - 0.50) = 5.45$ ft.
Therefore $Q = 8.8$ cfs > Q_{100}

Comparison

1. $\Delta V_{100} = 11,140 - 10,940 = 200$ cf (decrease)
2. $\Delta Q_{100} = 6.6 - 6.5 = 0.1$ cf (decrease)



△ SECTION A-A
SCALE: 1" = 5'-0" (NOT USED)

BPLW

Architects & Engineers, Inc.

2400 Louisiana Blvd. NE
AFC #5 Suite 400
Albuquerque, New Mexico 87110
(505) 881-2759

49 West First Street
Suite 100
Mesa, Arizona 85201
(602) 827-2759

Designing to Shape the Future

Construction Notes:

1. Two (2) working days prior to any excavation, contractor must contact New Mexico One Call System 260-1990 (Albuquerque Area), 1-800-321-ALERT(2537) (Statewide), for location of existing utilities.
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Erosion Control Measures:

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3. The contractor shall secure "Topsail Disturbance Permit" prior to beginning construction.

REV.	DESCRIPTION	DATE
△	FINAL CERTIFICATION	02/05/97
△	AS-BUILT AND CERTIFY	01/10/97

Jeffrey G. Mortensen, NMPE 8547
Date 03-15-96

ARCHITECT

NEW MEXICO
EDUCATORS
SERVICE CORP.
7517 Montgomery NE
Albuquerque, New Mexico

PROJECT NO.
951143

DATE
3-15-96

DRAINAGE PLAN, CALCULATIONS,
SECTIONS AND DETAILS

DRAWING NO.

C2.2
SHEET OF



DRAWING NO. C2.1
SHEET OF

Designing to Shape the Future

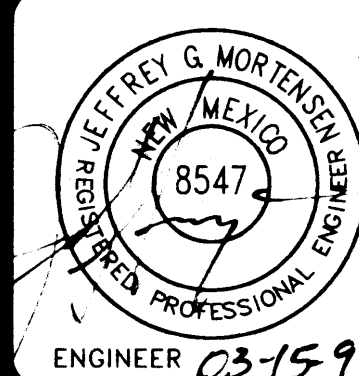
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AS-BUILT AND CERTIFY
REV. DESCRIPTION DATE



ARCHITECT

NEW MEXICO
EDUCATORS
SERVICE CORP.
7517 Montgomery NE
Albuquerque, New Mexico

PROJECT NO. 951143 DATE 3-15-96

DRAINAGE PLAN, CALCULATIONS,
SECTIONS AND DETAILS

DRAWING NO.

C2.2
SHEET SHT1 OF

DRAINAGE PLAN

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- Vicinity Map
- Grading Plan
- Calculations
- F.I.R.M. Panel

As shown by the Vicinity Map, the site is located approximately 130 feet northwest of the intersection of Pennsylvania Street N.E. and Montgomery Boulevard N.E. At present, the site is developed as a restaurant along with associated paving and landscaping. The sites to the north and west are developed as multi-family residential. The site to the east is an existing commercial development. Montgomery Boulevard N.E. lies to the south which is a fully improved public street.

As shown by Panel 17 of 50 of the National Flood Insurance Program Flood Insurance Rate Maps published by F.E.M.A. for the City of Albuquerque, New Mexico dated October 14, 1983, the site lies adjacent to a designated flood hazard zone in Montgomery Boulevard N.E. The site presently drains to the northwest corner of the site to an existing storm inlet, therefore, not contributing to the existing flood hazard zone. Overflow runoff from this existing ponding area will, however, enter Montgomery Boulevard N.E. via the existing driveway situated at the southwest corner of the site.

The Grading Plan shows: 1) existing grades indicated by spot elevations and contours at 1'0" intervals, as shown on the Topographic Survey prepared by Anthony L. Harris, NMPS 11463 bearing the date of November 02, 1995, 2) proposed grades indicated by spot elevations and contours at 1'0" intervals, 3) the limit and character of the existing improvements as shown on the above referenced survey, 4) the limit and character of the proposed improvements, and 5) continuity between existing and proposed grades. As shown by this Plan, the proposed improvements consist of the removal and replacement of existing asphalt paving, the construction of a building addition, and the reconstruction of the paved parking areas. Landscaping will be provided in accordance with the approved Site Development Plan. In order to be consistent with the existing drainage pattern and so as not to aggravate the existing flood hazard zone, the site will continue to drain to the northwest corner. At this point, runoff will accumulate and pond. In the existing condition, this ponding area can contain less than half of the V_{100} before overflowing to Montgomery Boulevard N.E. With the regrading of the site, as proposed hereon, the capacity of the pond will be increased to approximately 90 percent of the V_{100} . This will significantly decrease the amount of runoff which overflows to Montgomery Boulevard N.E. In order to accommodate the ponding in this portion of the site, an additional retaining wall must be constructed or the existing wall must be removed and reconstructed in order to retain runoff which accumulates in the ponding area.

Offsite flows do not enter the site from the north and west due to the fact that physical barriers are presently in place. Montgomery Boulevard lies to the south of the site and is improved as a public City street. As indicated by the F.I.R.M. Panel 17, the flooding within Montgomery Boulevard N.E. does not enter this site. Runoff generated by the commercial site to the east will not enter the site due to a proposed waterblock which is consistent with the approved Master Drainage Plan prepared by Bohannon-Huston, bearing the date of May 1977.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Procedure for 40-acre and Smaller Basins, as set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated January, 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, a slight decrease in the runoff volume and discharge rate is expected.

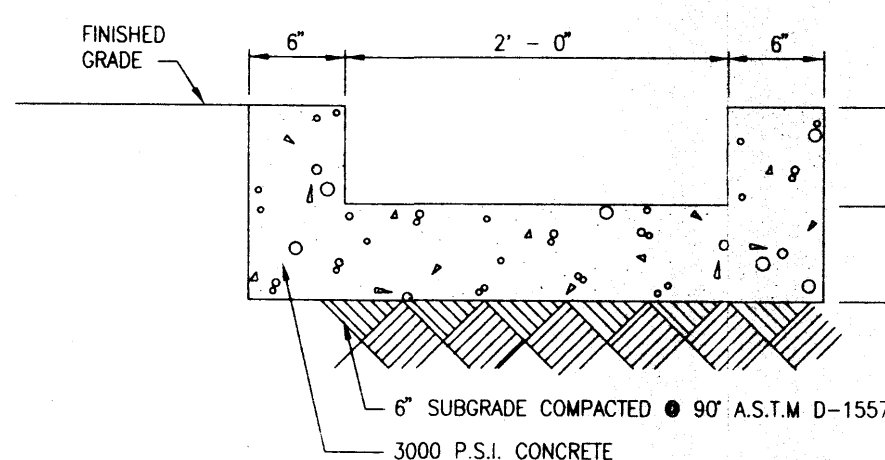
FIRST DRAINAGE CERTIFICATION

As indicated by the as-built information shown hereon, the New Mexico Educators Federal Credit Union project has been graded and drained in substantial compliance with the approved Grading and Drainage Plan with the following exceptions:

- The speed hump located near the southeast corner of the site was not built. The speed hump must be built to be in compliance with the approved Master Drainage Plan so that offsite flows from the east do not enter the site.
- The waterblock at the southwest entrance to the site was constructed incorrectly. This allows the southern portion of the site to drain directly onto Montgomery Blvd. N.E. This area must be reconstructed to satisfy the intent of the approved plan.
- There is a birdbath in the asphalt paving north of the existing storm inlet. The contractor must overlay this area to remove the birdbath and provide positive drainage to the inlet.

It is based upon the information and recommendations presented hereon that issuance of a Temporary Certificate of Occupancy is hereby recommended. The Contractor has indicated that 30 days will be sufficient time in which to accomplish the corrections following which a recertification will be submitted. The information shown hereon was obtained by me or under my direct supervision and is true and correct to the best of my knowledge and belief.

Jeffrey G. Mortensen, NMPE 8547 Date 03-10-97



TYPICAL RUNDOWN SECTION
SCALE: 1" = 1' - 0" (NOT USED)

CALCULATIONS

Site Characteristics

- Precipitation Zone = 3
- $P_{6,100} = P_{360} = 2.60"$
- Total Area (A_T) = 59,700 sf = 1.37 acre
- Existing Land Treatment
Treatment Area (sf/ac) %
B 5,000/0.11 08
D 54,700/1.26 92
- Developed Land Treatment
Treatment Area (sf/ac) %
B 6,420/0.15 11
D 53,280/1.22 89

Existing Condition

- Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$

$$E_W = (0.92)(0.11) + (2.36)(1.26) / 1.37 = 2.24"$$

$$V_{100} = (E_W / 12) A_T$$

$$V_{100} = (2.24 / 12) 1.37 = 0.26 \text{ ac.ft.}; 11,140 \text{ cf}$$

- Peak Discharge

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$

$$Q_p = Q_{100} = (2.60)(0.11) + (5.02)(1.26) = 6.6 \text{ cf}$$

Pond Volume Calculations (Per the Average End Area Method)

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
52.55	0	84	84
53	375	1,787	1,871
54	3,200	3,006	4,877
54.60	6,820		

$$V_{\text{max}} (\text{Existing}) = 4,877 \text{ cf}$$

Developed Condition

- Volume

$$E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$$

$$E_W = (0.92)(0.15) + (2.36)(1.22) / 1.37 = 2.20"$$

$$V_{100} = (E_W / 12) A_T$$

$$V_{100} = (2.20 / 12) 1.37 = 0.25 \text{ ac.ft.}; 10,940 \text{ cf}$$

- Peak Discharge

$$Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$$

$$Q_p = Q_{100} = (2.60)(0.15) + (5.02)(1.22) = 6.5 \text{ cf}$$

Pond Volume Calculations (Per the Average End Area Method)

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
52.55	0	335	335
53	1,490	2,945	3,280
54	4,400	6,300	9,580
55	8,200		

$$V_{\text{max}} (\text{Developed}) = 9,580 \text{ cf} \quad V_{\text{max}} \text{ WSL } \Phi 55.00$$

$$V_{\text{max}} (\text{Developed}) > V_{\text{max}} (\text{Existing})$$

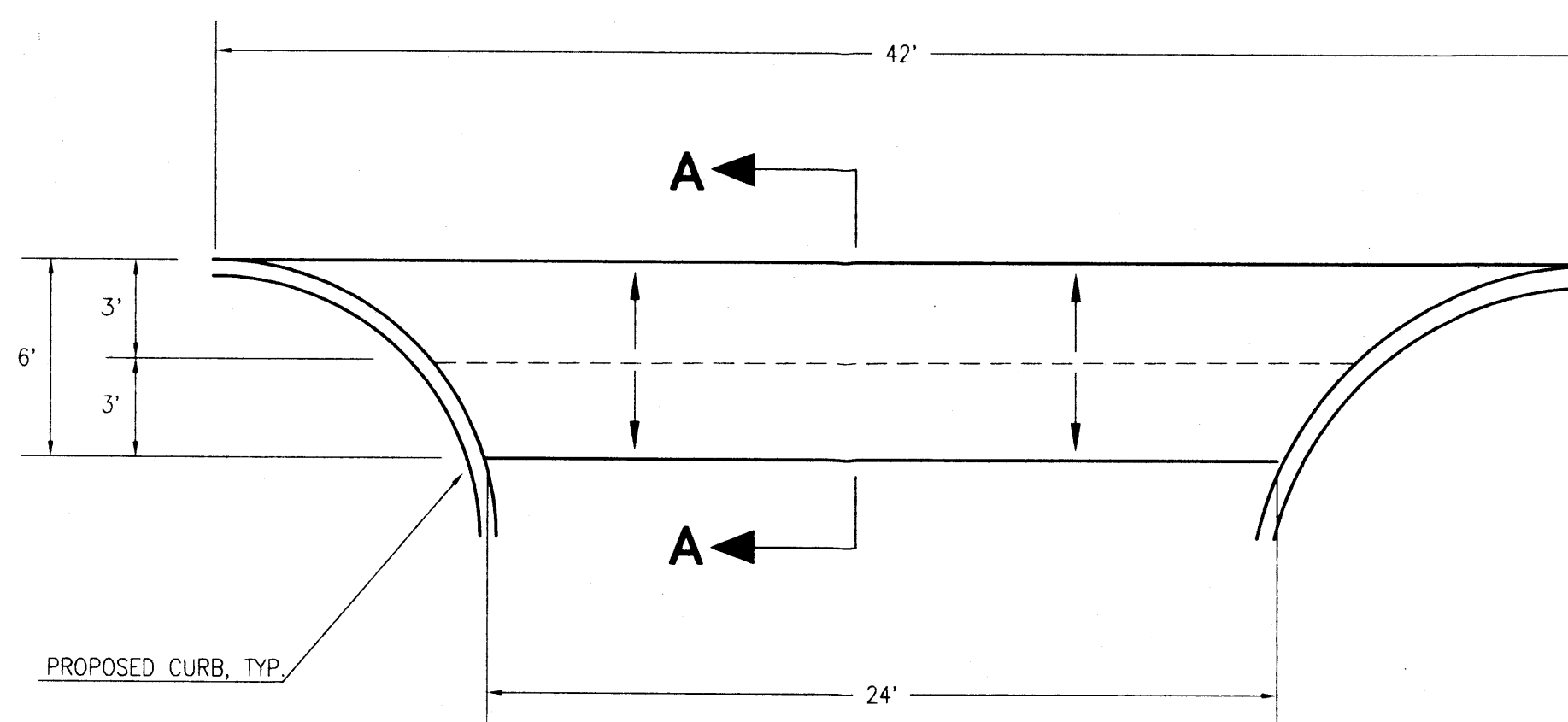
Pipe Discharge Capacity (Pressure Condition)

$$Q = CA(2gh)^{0.5}$$

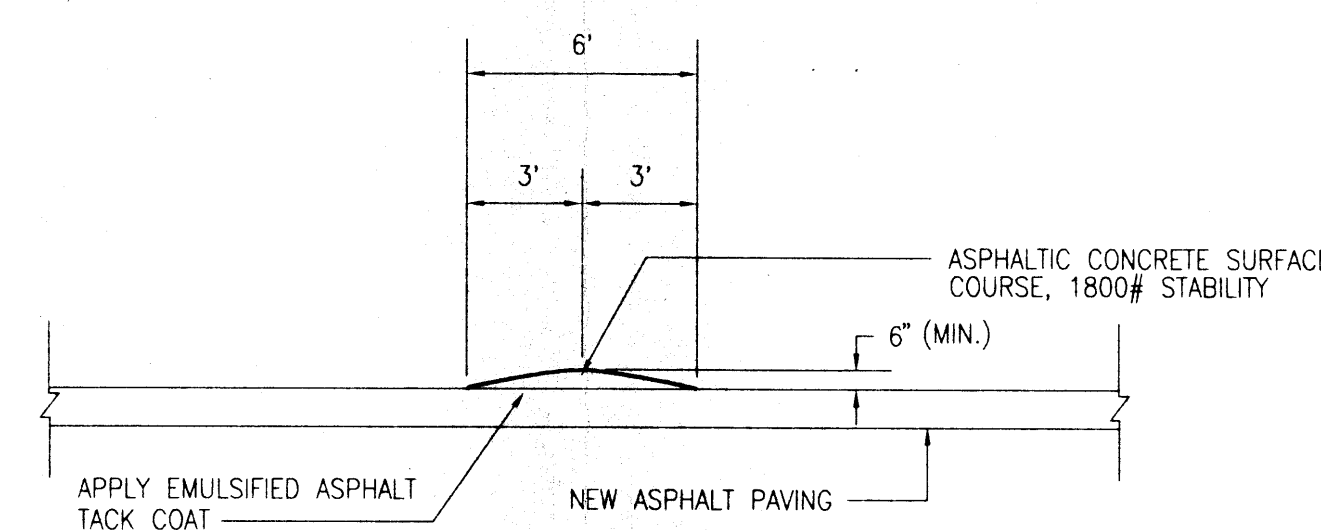
Use 12" discharge pipe (Exist.)
Let $C = 0.6$
 $A = 0.7854 \text{ sf}$
 $q = 32.2$
 $h = (55.00 - 49.05 - 0.50) = 5.45 \text{ ft.}$
Therefore $Q = 8.8 \text{ cfs} > Q_{100}$

Comparison

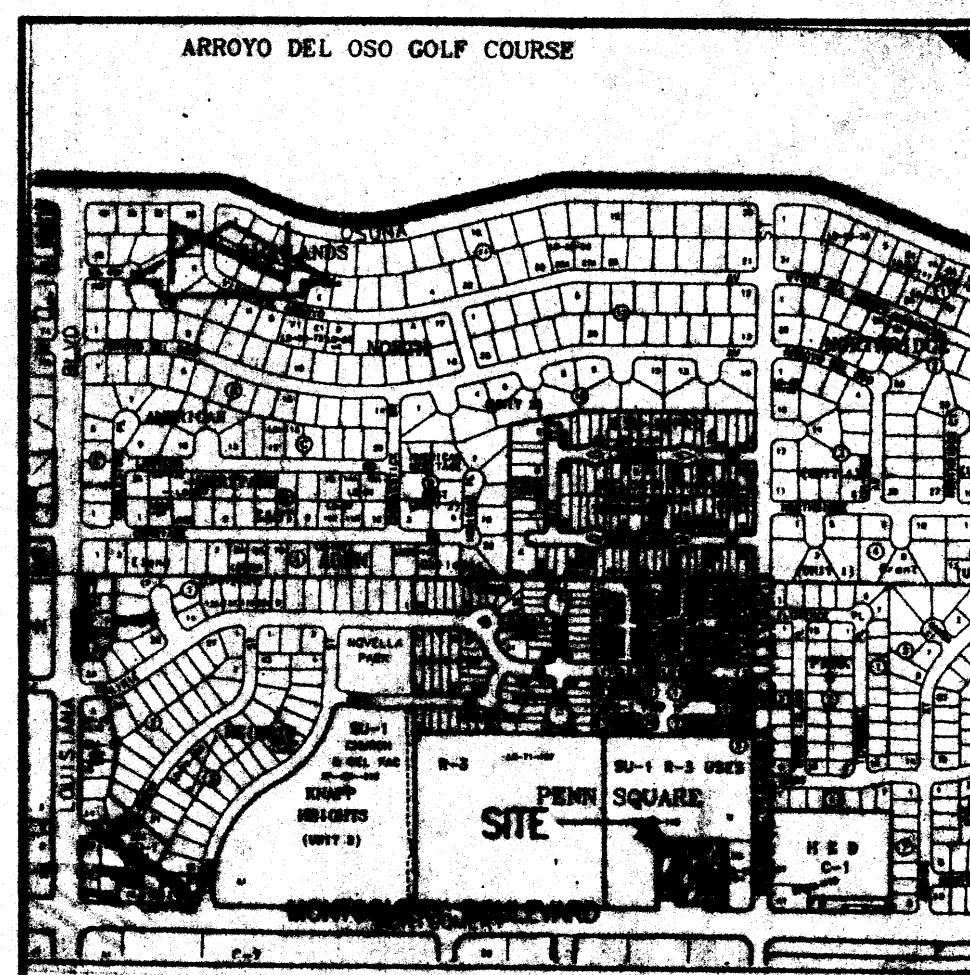
- $\Delta V_{100} = 11,140 - 10,940 = 200 \text{ cf} (\text{decrease})$
- $\Delta Q_{100} = 6.6 - 6.5 = 0.1 \text{ cf} (\text{decrease})$



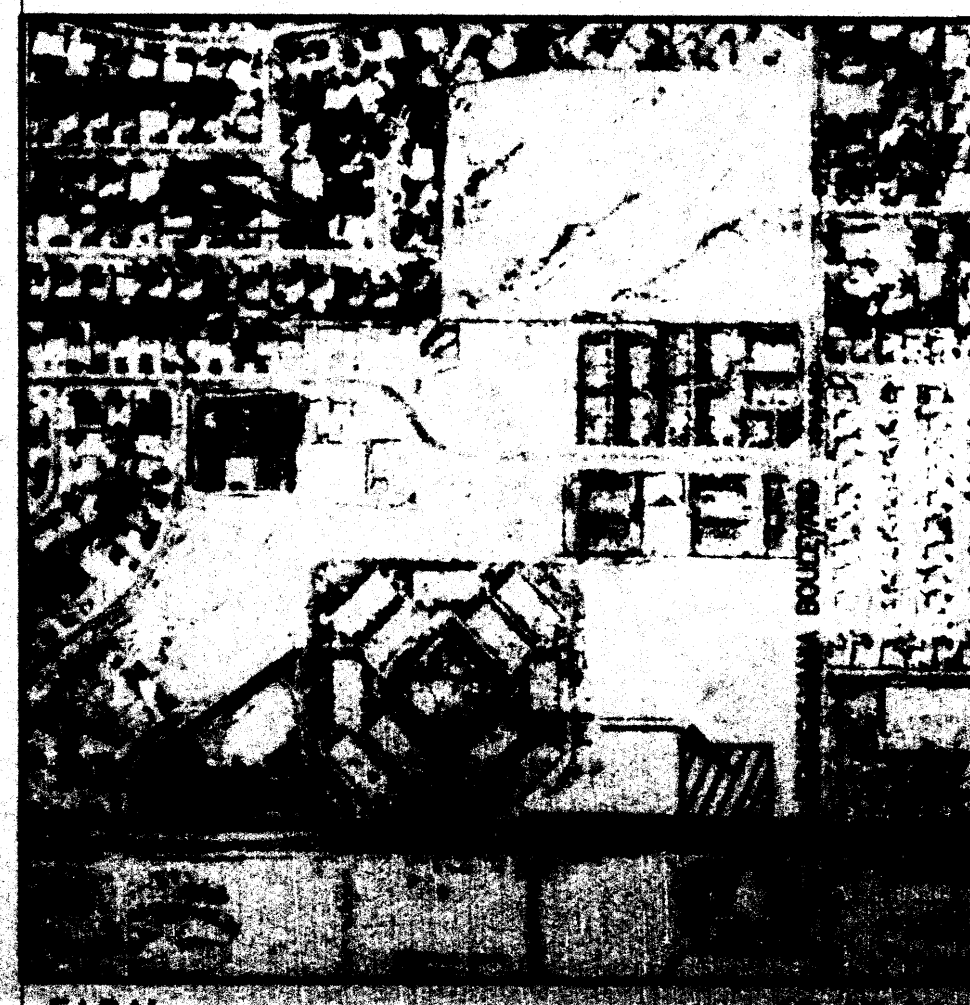
TYPICAL SPEED HUMP DETAIL
SCALE: 1" = 5'-0" (NOT BUILT)



SECTION A-A
SCALE: 1" = 5'-0" (NOT BUILT)



VICINITY MAP
SCALE: 1" = 750'

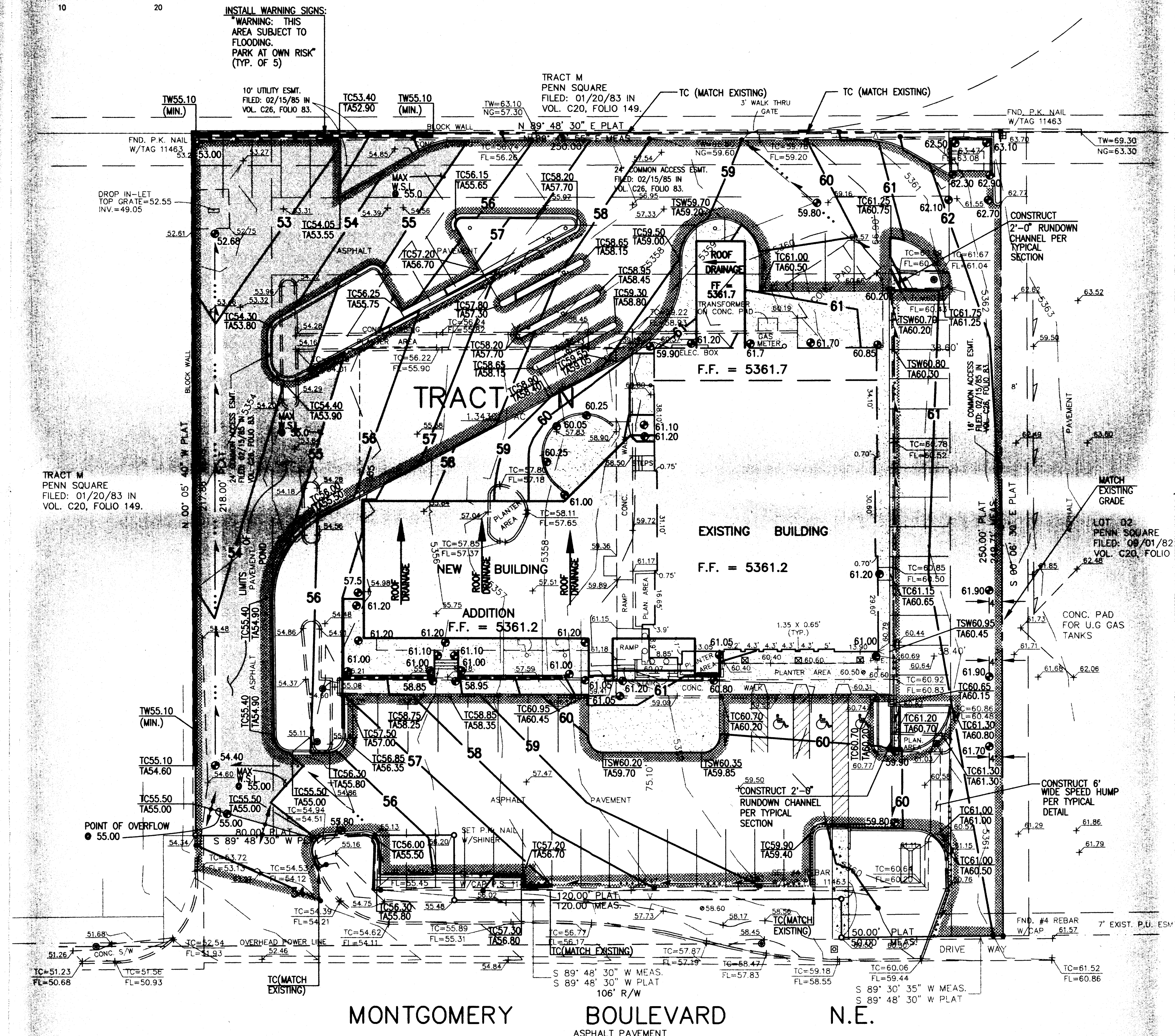
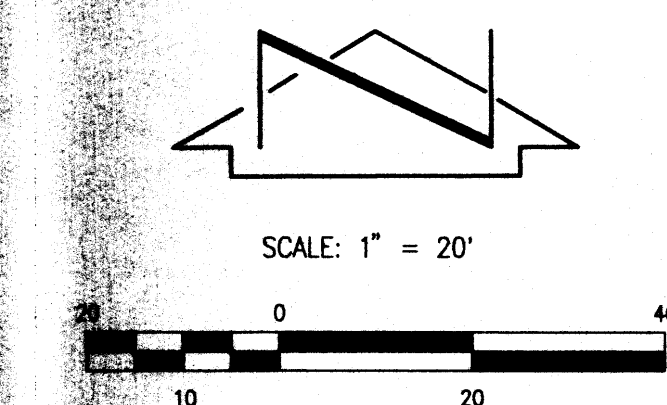
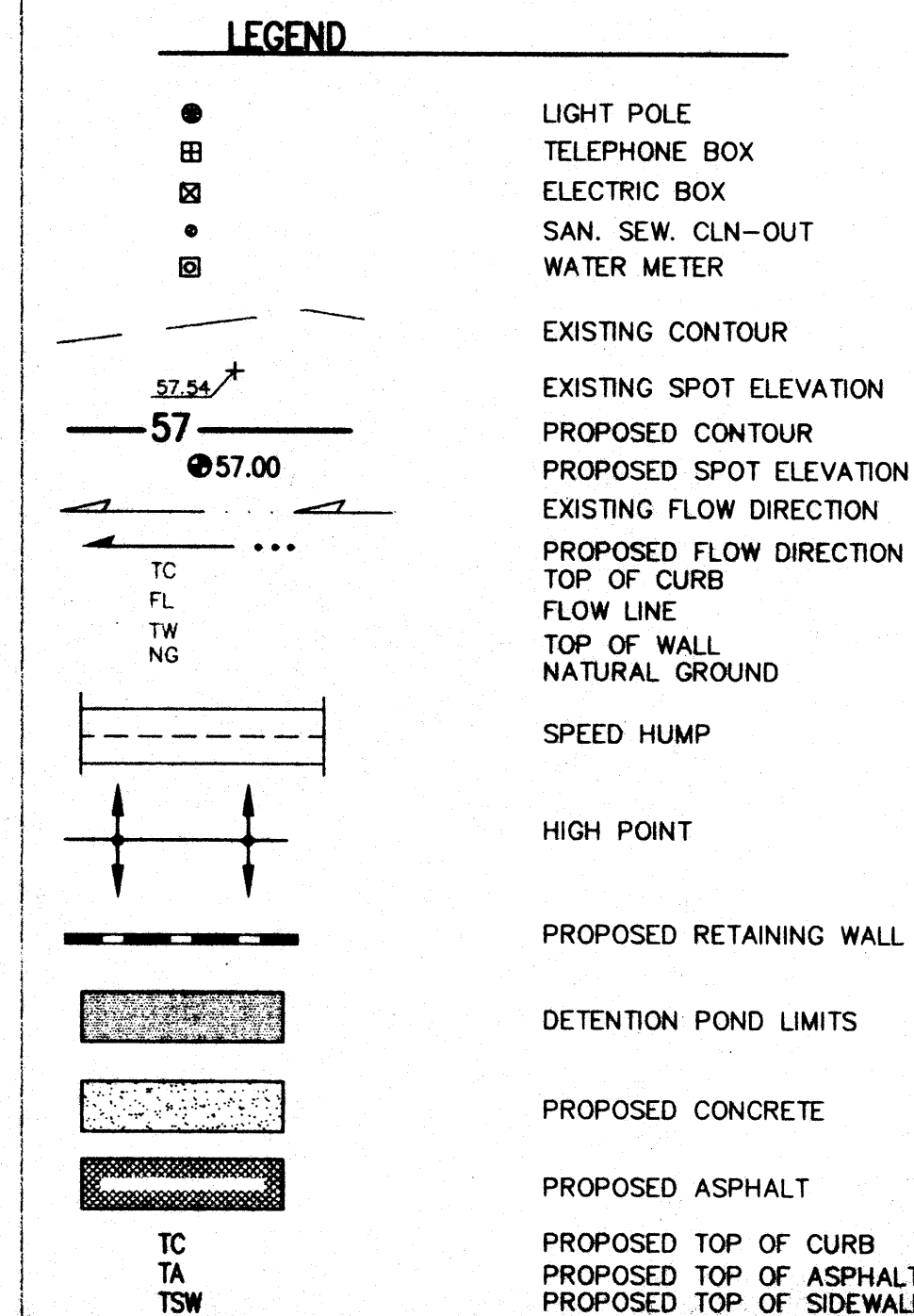


AIR PHOTO
SCALE: 1" = 500'

LEGAL DESCRIPTION:
ALL OF TRACT LETTERED "N" OF PENN SQUARE, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT ENTITLED "SUMMARY PLAT OF TRACT N, PENN SQUARE, ALBUQUERQUE, NEW MEXICO, JANUARY, 1985," AS FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON FEBRUARY 15, 1985 IN VOLUME C26, FOLIO 83.

PROJECT BENCH MARK:
CITY OF ALBUQUERQUE BENCH MARK "5-G19A", A STANDARD ACS BRASS TABLET STAMPED "5-G19A 1978", SET FLUSH WITH THE CURB, LOCATED AT THE INTERSECTION OF MONTGOMERY BLVD. N.E. AND PENNSYLVANIA STREET N.E. ELEVATION = 5364.26 FEET (M.S.L.D.).

I.B.M.
I.B.M. = FINISHED FLOOR ELEVATION = 5361.2 FEET (M.S.L.D.)



INSTALL WARNING SIGNS:
WARNING: THIS AREA SUBJECT TO FLOODING. PARK AT OWN RISK (TYP. OF 5)

10' UTILITY ESMIT.
FILED: 02/15/85 IN VOL. C26, FOLIO 83.

TRACT M PENN SQUARE
FILED: 01/20/83 IN VOL. C20, FOLIO 149.

EXISTING BUILDING
F.F. = 5361.2

NEW BUILDING
ADDITION
F.F. = 5361.2

THIS IS NOT A BOUNDARY SURVEY. APPARENT BOUNDARY CORNERS ARE SHOWN FOR INFORMATION ONLY. TOPOGRAPHIC AND BOUNDARY INFORMATION ARE BASED ON THE A.L.T.A. SURVEY PREPARED BY ANTHONY HARRIS DATED NOV. 02, 1995.

BPLW
Architects & Engineers, Inc.
2400 Louisiana Blvd. NE
AFC #5 Suite 400
Albuquerque, New Mexico 87110
(505) 881-2759
49 West First Street
Suite 100
Mesa, Arizona 85201
(602) 827-2759

Designing to Shape the Future

- Construction Notes:**
- Two (2) working days prior to any excavation, contractor must contact New Mexico One Call System 260-1990 (Albuquerque Area), 1-800-321-ALERT(2537) (Statewide), for location of existing utilities.
 - 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 in writing so that the conflict can be resolved with a minimum amount of delay. The Contractor shall be responsible for all interpretations it makes without first contacting the Engineer as required above.
 - 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.
 - All construction within public right-of-way shall be performed in accordance with applicable City of Albuquerque Standards and Procedures.
 - If any utility lines, pipelines, or underground utility lines are shown on these drawings, they are shown in an approximate manner only, and such lines may exist where none are shown. If any such existing lines are shown, the location is based upon information provided by the owner of said utility, and the information may be incomplete, or may be obsolete by the time construction commences. The engineer has conducted only preliminary investigation of the location, depth, size, or type of existing utility lines, pipelines, or underground utility lines. This investigation is not conclusive, and may not be complete, therefore, makes no representation pertaining thereto, and assumes no responsibility or liability therefor. The contractor shall inform itself of the location of any utility line, pipeline, or underground utility line in or near the area of the work in advance of and during excavation work. The contractor is fully responsible for any and all damage caused by its failure to locate, identify and preserve any and all existing utilities, pipelines, and underground utility lines. In planning and conducting excavation, the contractor shall comply with state statutes, municipal and local ordinances, rules and regulations, if any, pertaining to the location of these lines and facilities.
 - The design of planters and landscaped areas is not part of this plan. All planters and landscaped areas adjacent to the building(s) shall be provided with positive drainage to avoid any ponding adjacent to the structure. For construction details, refer to landscaping plan.
- Erosion Control Measures:**
- The contractor shall ensure that no soil erodes from the site into public right-of-way or onto private property.
 - 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.
 - The contractor shall secure "Topsoil Disturbance Permit" prior to beginning construction.

REV.	DESCRIPTION	DATE

SEAL OF THE STATE OF NEW MEXICO
JERRY G. MORTENSEN
8547
REGISTERED PROFESSIONAL ENGINEER
04/09/96 ARCHITECT

NEW MEXICO EDUCATORS SERVICE CORP.
7517 Montgomery NE
Albuquerque, New Mexico

PROJECT NO. 951142 DATE 3-15-96

GRADING PLAN

DRAWING NO. C2.1
SHEET OF

DRAINAGE PLAN

The following items concerning the New Mexico Educators Service Corporation Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations
4. F.I.R.M. Panel

As shown by the Vicinity Map, the site is located approximately 130 feet northwest of the intersection of Pennsylvania Street N.E. and Montgomery Boulevard N.E. on Montgomery Boulevard N.E. At present, the site is developed as a restaurant along with associated paving and landscaping. The sites to the north and west are developed as multi-family residential. The site to the east is an existing commercial development. Montgomery Boulevard N.E. lies to the south which is a fully improved public street.

As shown by Panel 17 of 50 of the National Flood Insurance Program Flood Insurance Rate Maps published by F.E.M.A. for the City of Albuquerque, New Mexico dated October 14, 1983, the site lies adjacent to a designated flood hazard zone in Montgomery Boulevard N.E. The site presently drains to the northwest corner of the site to an existing storm inlet, therefore, not contributing to the existing flood hazard zone. Overflow runoff from this existing ponding area will, however, enter Montgomery Boulevard N.E. via the existing streetpad situated at the southwest corner of the site.

The Grading Plan shows: 1) existing grades indicated by spot elevations and contours at 1'0" intervals, as shown on the Topographic Survey prepared by Anthony L. Harris, dated 11/4/53 bearing the date of November 02, 1955, 2) proposed grades indicated by spot elevations and contours at 1'0" intervals, 3) the limit and character of the existing improvements as shown on the above referenced survey, 4) the limit and character of the proposed improvements, and 5) continuity between existing and proposed grades. As shown by this Plan, the proposed improvements consist of the removal and replacement of existing asphalt paving, the construction of a building addition, and the reconstruction of the paved parking areas. Landscaping will be provided in accordance with the approved Site Development Plan. In order to be consistent with the existing drainage pattern and so as not to aggravate the existing flood hazard zone, the site will continue to drain to the northwest corner. At this point, runoff will accumulate and pond. In the existing condition, this ponding area can contain less than half of the V_{100} before overflowing to Montgomery Boulevard N.E. With the regrading of the site, as proposed hereon, the capacity of the pond will be increased to approximately 50 percent of the V_{100} . This will significantly decrease the amount of runoff which overflows to Montgomery Boulevard N.E. In order to accommodate the ponding in this portion of the site, an additional retaining wall must be constructed or the existing wall must be removed and reconstructed in order to retain runoff which accumulates in the ponding area.

Offsite flows do not enter the site from the north and west due to the fact that physical barriers are presently in place. Montgomery Boulevard lies to the south of the site and is improved as a public City street. As indicated by the F.I.R.M. Panel 17, the flooding within Montgomery Boulevard N.E. does not enter this site. Runoff generated by the commercial site to the east will not enter the site due to a proposed wall block which is consistent with the approved Master Drainage Plan prepared by Bohannon-Huston, bearing the date of May 1977.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Procedure for 40-acre and Smaller Basins, set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated January, 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, a slight decrease in the runoff volume and discharge rate is expected.

CALCULATIONS

Site Characteristics

1. Precipitation Zone = 3
2. $P_{6,100} = P_{360} = 2.60"$
3. Total Area (A_T) = 59,700 sf = 1.37 acre
4. Existing Land Treatment
Treatment Area (sf/ac) %
B 5,000/0.11 08
D 54,700/1.26 92
5. Developed Land Treatment
Treatment Area (sf/ac) %
B 6,420/0.15 11
D 53,280/1.22 89

Existing Condition

1. Volume
 $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$
 $E_W = (0.92)(0.11) + (2.36)(1.26) / 1.37 = 2.24"$
 $V_{100} = (E_W / 12) A_T$
 $V_{100} = (2.24 / 12) 1.37 = 0.26$ ac.ft.; 11,140 cf
2. Peak Discharge
 $Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
 $Q_p = Q_{100} = (2.60)(0.11) + (5.02)(1.26) = 6.6$ cf

Pond Volume Calculations (Per the Average End Area Method)

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
52.55	0	84	84
53	375	1,787	1,871
54	3,200	3,006	4,877
54.60	6,820		

V_{max} (Existing) = 4,877 cf

Developed Condition

1. Volume
 $E_W = (E_A A_A + E_B A_B + E_C A_C + E_D A_D) / A_T$
 $E_W = (0.92)(0.15) + (2.36)(1.22) / 1.37 = 2.20"$
 $V_{100} = (E_W / 12) A_T$
 $V_{100} = (2.20 / 12) 1.37 = 0.25$ ac.ft.; 10,940 cf
2. Peak Discharge
 $Q_p = Q_{PA} A_A + Q_{PB} A_B + Q_{PC} A_C + Q_{PD} A_D$
 $Q_p = Q_{100} = (2.60)(0.15) + (5.02)(1.22) = 6.5$ cf

Pond Volume Calculations (Per the Average End Area Method)

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
52.55	0	335	335
53	1,490	2,945	3,280
54	4,400	6,300	9,580
55	8,200		

V_{max} (Developed) = 9,580 cf V_{max} WSL @ 55.00

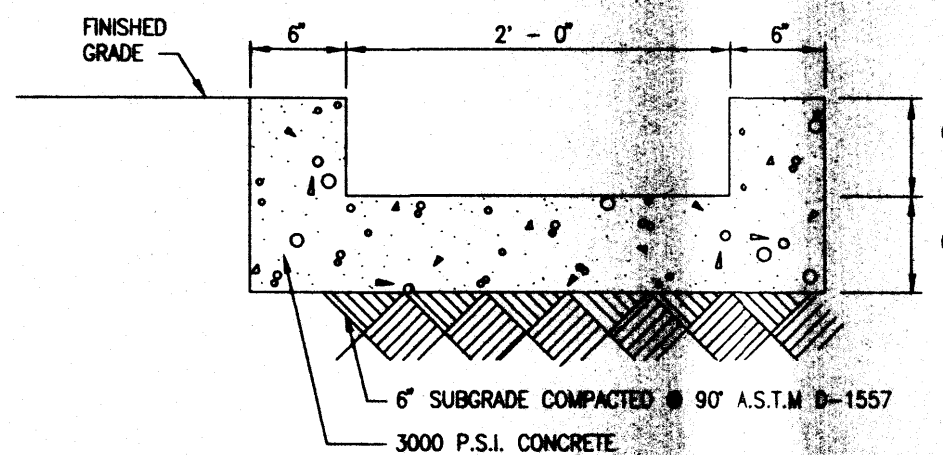
V_{max} (Developed) > V_{max} (Existing)

Pipe Discharge Capacity (Pressure Condition)

$Q = CA(2gh)^{0.5}$
Use 12" discharge pipe (Exist.)
Let $C = 0.6$
 $A = 0.7854$ sf
 $g = 32.2$
 $h = (55.00 - 49.05 - 0.50) = 5.45$ ft.
Therefore $Q = 8.8$ cfs > Q_{100}

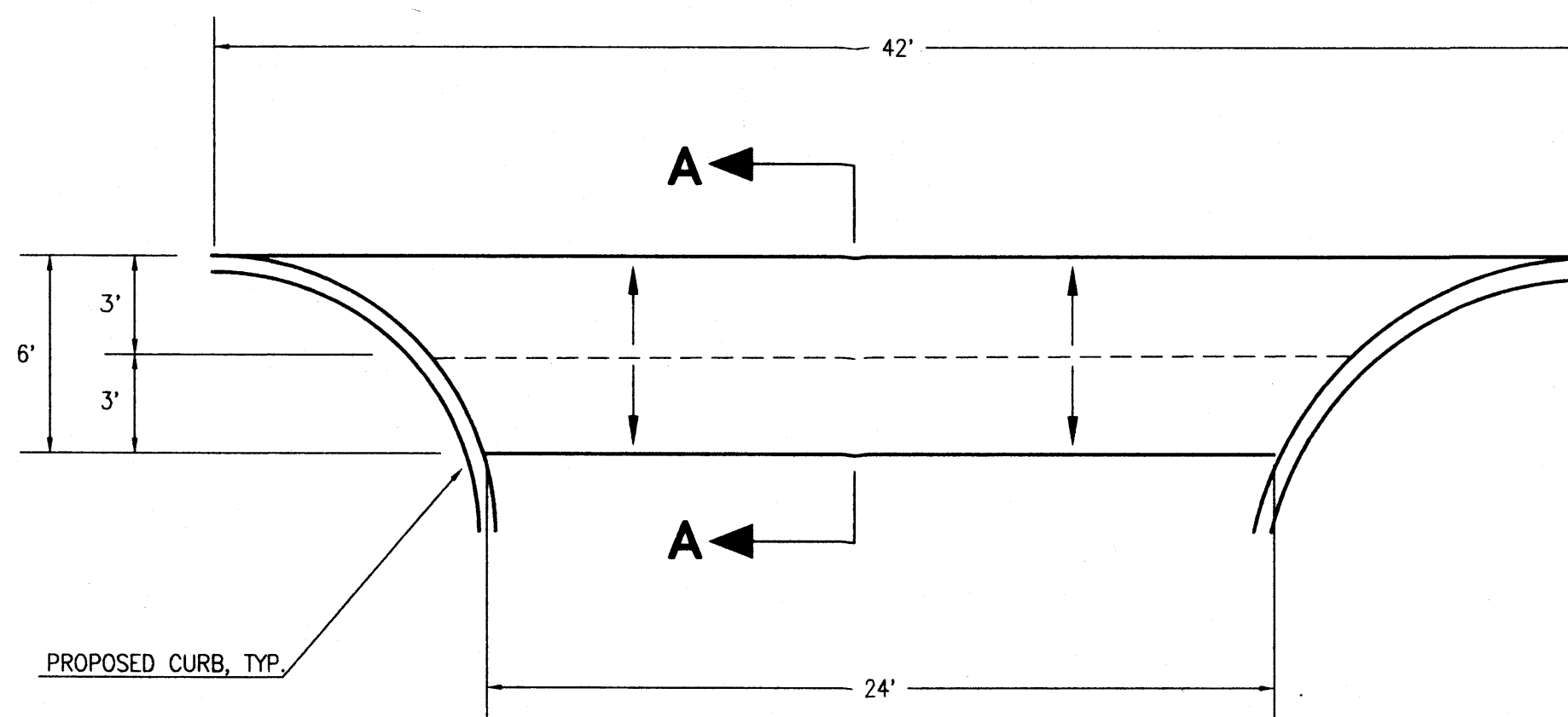
Comparison

1. $\Delta V_{100} = 11,140 - 10,940 = 200$ cf (decrease)
2. $\Delta Q_{100} = 6.6 - 6.5 = 0.1$ cf (decrease)



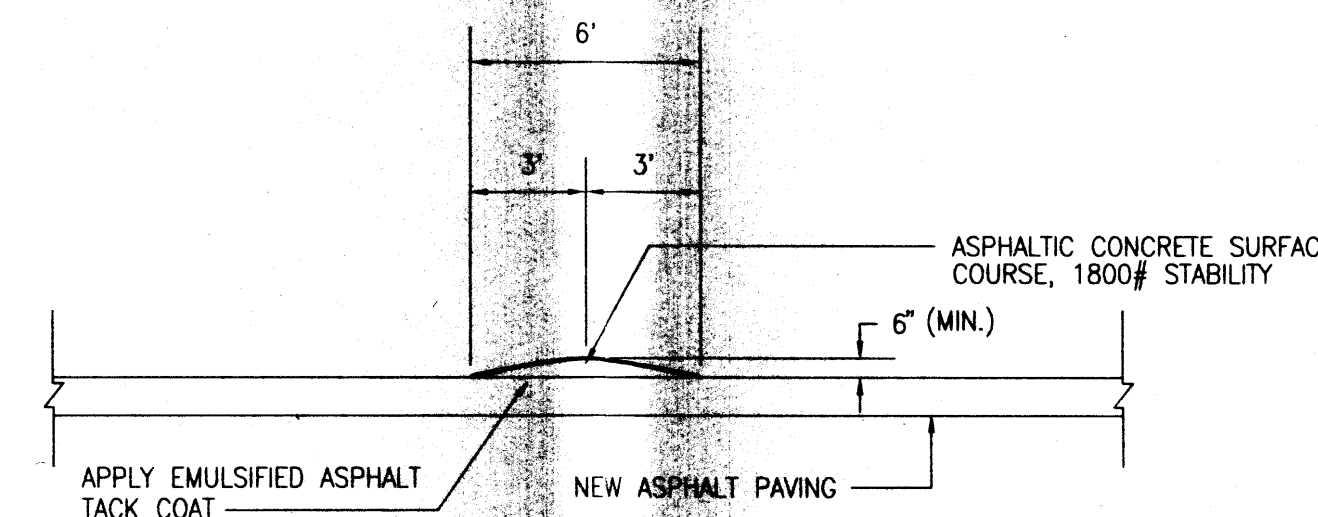
TYPICAL RUNDOWN SECTION

SCALE: 1" = 5'-0"



TYPICAL SPEED HUMP DETAIL

SCALE: 1" = 5'-0"



SECTION A-A

SCALE: 1" = 5'-0"

BPLW

Architects & Engineers, Inc.

2400 Louisiana Blvd. NE
AFC #5 Suite 400
Albuquerque, New Mexico 87110
(505) 881-2759

49 West First Street
Suite 100
Mesa, Arizona 85201
(602) 827-2759

Designing to Shape the Future

Construction Notes:

1. Two (2) working days prior to any excavation, contractor must contact New Mexico One Call System 260-1990 (Albuquerque Area), 1-800-321-ALERT(2537) (Statewide), 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 in writing so that the conflict can be resolved with a minimum amount of delay. The Contractor shall be responsible for all interpretations it makes without first contacting the Engineer as required above.
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.
5. If any utility lines, pipelines, or underground utility lines are shown on these drawings, they are shown in an approximate manner only, and such lines may exist where none are shown. If any such existing lines are shown, the location is based upon information provided by the owner of said utility, and the information may be incomplete, or may be obsolete by the time construction commences. The engineer has conducted only preliminary investigation of the location, depth, size, or type of existing utility lines, pipelines, or underground utility lines. This investigation is not conclusive, and may not be complete, therefore, makes no representation pertaining thereto, and assumes no responsibility or liability therefor. The contractor shall inform itself of the location of any utility line, pipeline, or underground utility line in or near the area of the work in advance of and during excavation work. The contractor is fully responsible for any and all damage caused by its failure to locate, identify and preserve any and all existing utilities, pipelines, and underground utility lines. In planning and conducting excavation, the contractor shall comply with state statutes, municipal and local ordinances, rules and regulations, if any, pertaining to the location of these lines and facilities.
6. The design of planters and landscaped areas is not part of this plan. All planters and landscaped areas adjacent to the building(s) shall be provided with positive drainage to avoid any ponding adjacent to the structure. For construction details, refer to landscaping plan.

Erosion Control Measures:

1. The contractor shall ensure that no soil erodes from the site into public right-of-way or onto private property.
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.
3. The contractor shall secure "Topsoil Disturbance Permit" prior to beginning construction.

REV.	DESCRIPTION	DATE



ARCHITECT

**NEW MEXICO
EDUCATORS
SERVICE CORP.**
7517 Montgomery NE
Albuquerque, New Mexico

PROJECT NO.

951142

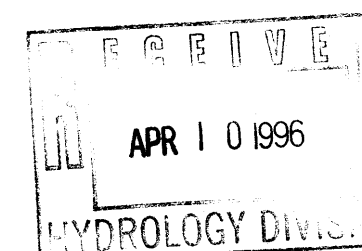
DATE

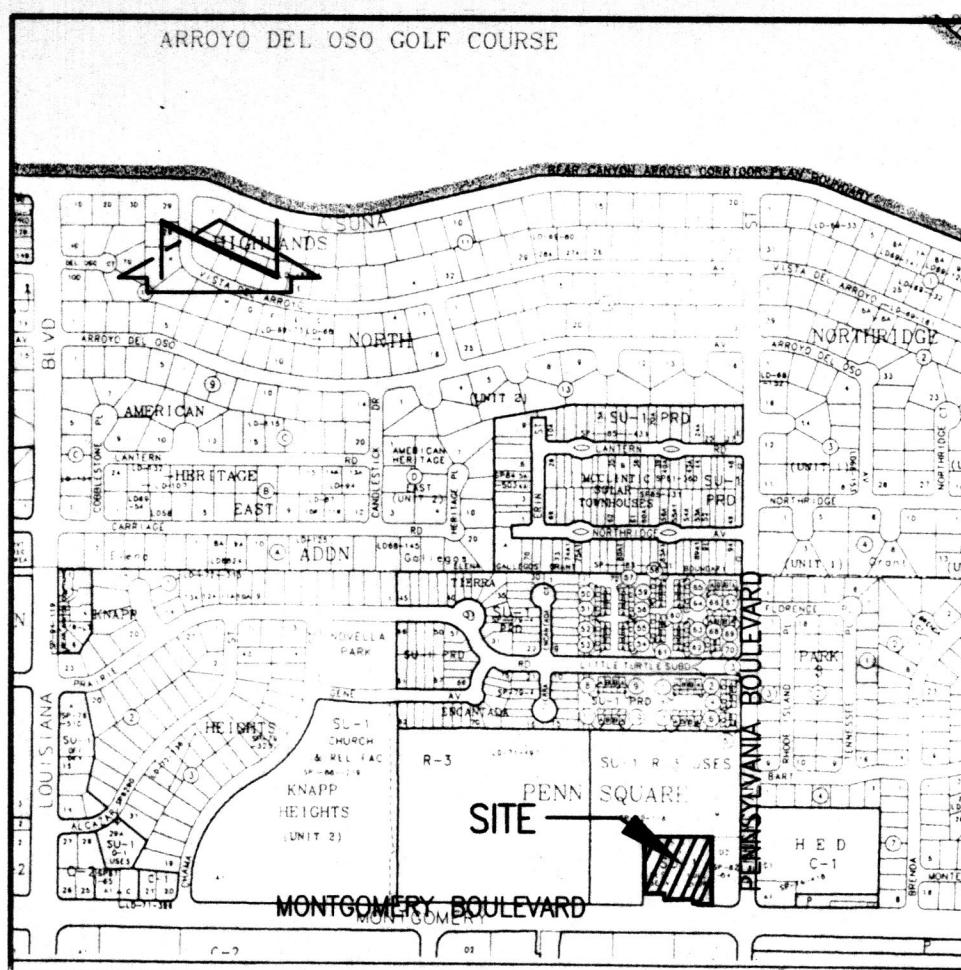
3-15-96

**DRAINAGE PLAN, CALCULATIONS,
SECTIONS AND DETAILS**

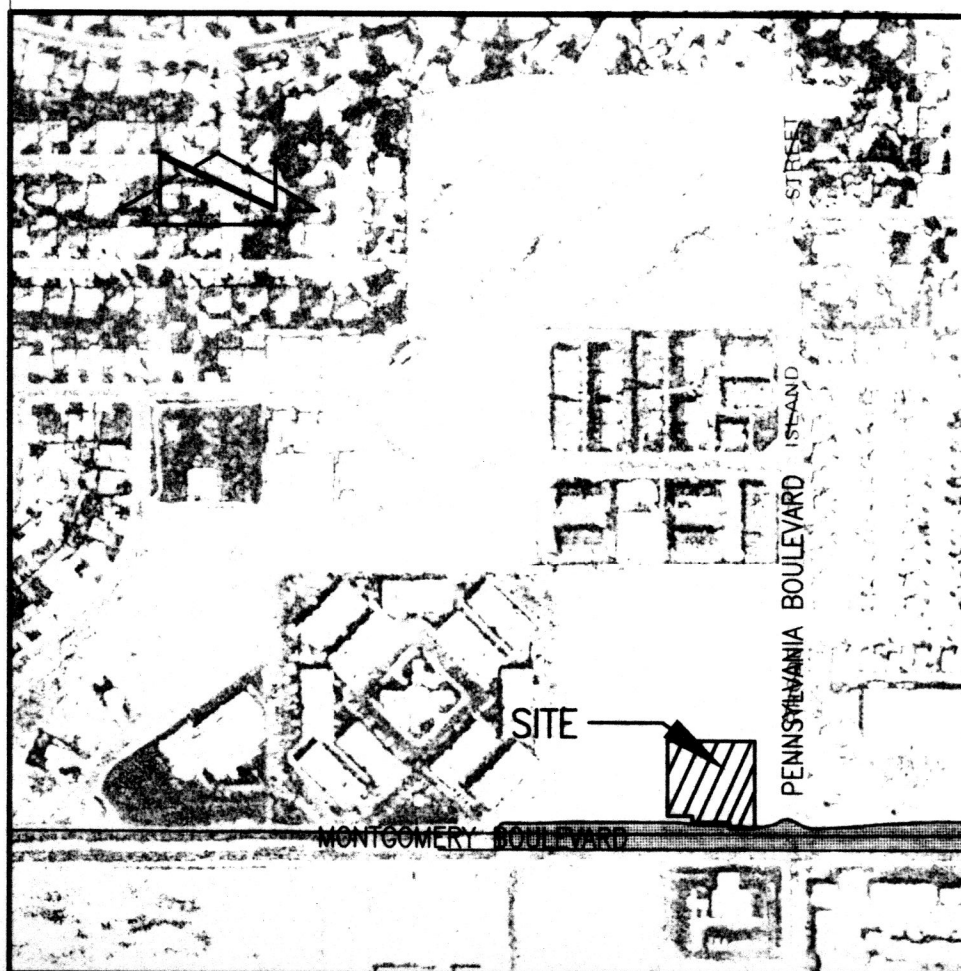
DRAWING NO.

C2.2
SHEET SHT1 OF





VICINITY MAP
SCALE: 1" = 750'

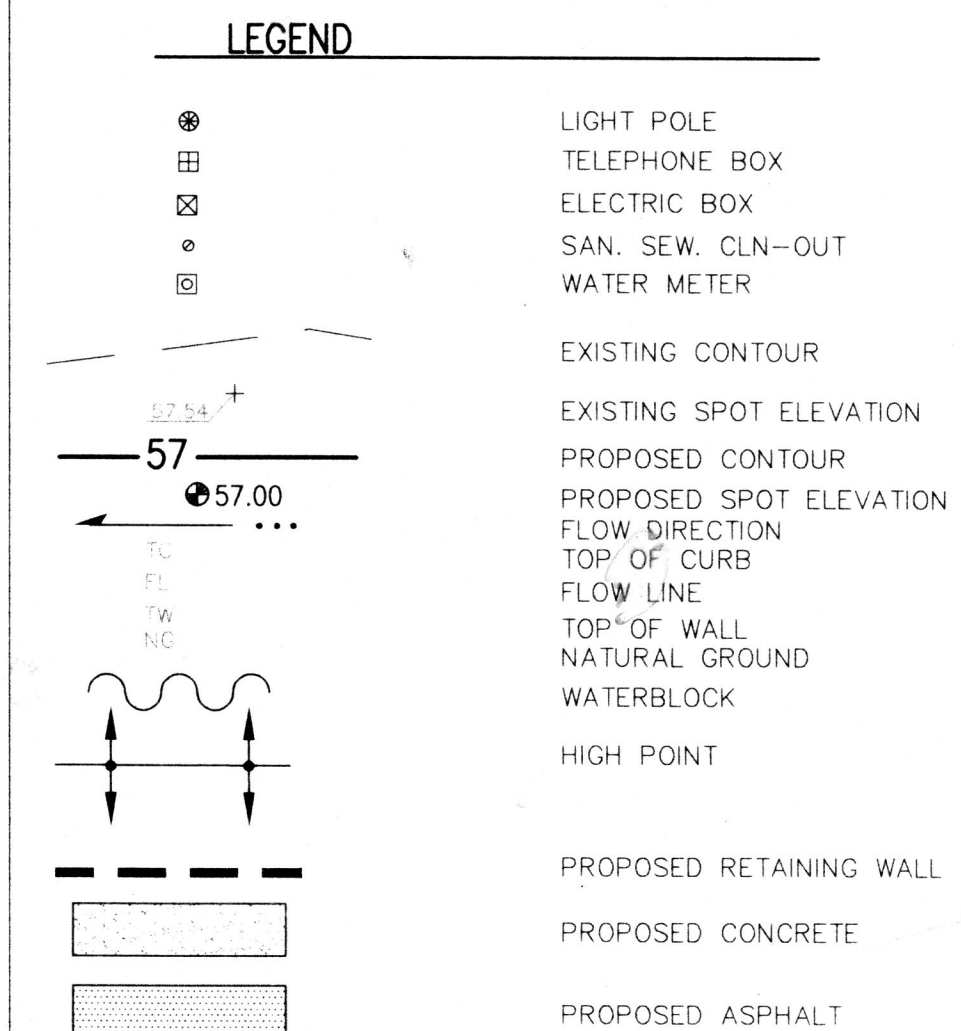


F.I.R.M.
SCALE: 1" = 500'

LEGAL DESCRIPTION:
ALL OF TRACT LETTERED "N" OF PENN. SQUARE, AS THE SAME IS SHOWN AND DESIGNATED ON THE PLAT ENTITLED "SUMMARY PLAT OF TRACT N, PENN. SQUARE, ALBUQUERQUE, NEW MEXICO, JANUARY, 1985", AS FILED IN THE OFFICE OF THE COUNTY CLERK OF BERNALILLO COUNTY, NEW MEXICO ON FEBRUARY 15, 1985 IN VOLUME C26, FOLIO 83.

PROJECT BENCH MARK:
CITY OF ALBUQUERQUE BENCH MARK "5-G19A", A STANDARD ACS BRASS TABLET STAMPED "5-G19A 1978", SET FLUSH WITH THE CURB, LOCATED AT THE INTERSECTION OF MONTGOMERY BLVD. N.E. AND PENNSYLVANIA STREET N.E. ELEVATION = 5364.26 FEET (M.S.L.D.)

T.B.M.
T.B.M. = FINISHED FLOOR ELEVATION = 5361.2 FEET (M.S.L.D.)



LINE	TABLE
L1	N 00° 00' 30" W, 12.00'
L2	N 00° 00' 30" W, 20.00'

CONCEPTUAL DRAINAGE PLAN

The following items concerning the New Mexico Educators Service Corporation Conceptual Drainage Plan are contained herein:

1. Vicinity Map
2. Grading Plan
3. Calculations
4. F.I.R.M. Panel

As shown by the Vicinity Map, the site is generally located at the northwest corner of the intersection of Pennsylvania Street N.E. and Montgomery Boulevard N.E. At present, the site is developed as a restaurant along with associated paving and landscaping. The site to the north and west are developed as multi-family residential. The site to the east is on existing commercial development. Montgomery Boulevard N.E. lies to the south which is a fully improved public street.

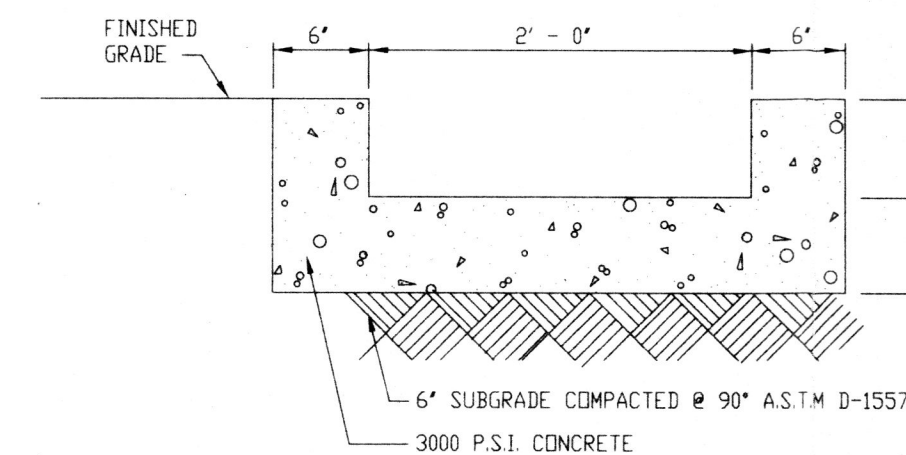
As shown by Panel 17 of 50 of the National Flood Insurance Program Flood Insurance Rate Maps published by F.E.M.A. for the City of Albuquerque, New Mexico dated October 14, 1993, the site lies adjacent to a designated flood hazard zone in Montgomery Boulevard N.E. The site presently drains to the northwest corner of the site to an existing storm inlet, therefore, not contributing to the existing flood hazard zone. Overflow runoff from this existing ponding area will, however, enter Montgomery Boulevard N.E. via the existing driveway situated at the southwest corner of the site.

The Grading Plan shows: 1) existing grades indicated by spot elevations and contours at 1'0" intervals, as shown on the Topographic Survey prepared by Anthony L. Harris, NMPS 11463 bearing the date of November 02, 1995, 2) proposed grades indicated by spot elevations and contours at 1'0" intervals, 3) the limit and character of the existing improvements as shown on the above referenced survey, 4) the limit and character of the proposed improvements, and 5) continuity between existing and proposed grades. As shown by this Plan, the proposed improvements consist

of the removal and replacement of existing asphalt paving, the construction of a building addition, and the reconstruction of the paved parking areas. Landscaping will be provided in accordance with the approved Site Development Plan. In order to be consistent with the existing drainage pattern and so as not to aggravate the existing flood hazard zone, the site will continue to drain to the northwest corner. At this point, runoff will accumulate and pond. In the existing condition, this ponding area can contain less than half of the V=100-S before overflowing to Montgomery Boulevard N.E. With the regrading of the site, as proposed hereon, the capacity of the pond will be increased to approximately 90 percent of the V=100-S. This will significantly decrease the amount of runoff which overflows to Montgomery Boulevard N.E. In order to accommodate the ponding in this portion of the site, an additional retaining wall must be constructed or the existing wall must be removed and reconstructed in order to retain runoff which accumulates in the ponding area.

Offsite flows do not enter the site from the north and west due to the fact that physical barriers are presently in place. Montgomery Boulevard lies to the south of the site and is improved as a public City street. As indicated by the F.I.R.M. Panel 17, the flooding within Montgomery Boulevard N.E. does not enter this site. Runoff generated by the commercial site to the east will not enter the site due to a proposed waterblock which is consistent with the approved Master Drainage Plan prepared by Bohannon-Huston, bearing the date of May 1977.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Procedure for 40-acre and Smaller Basins, as set forth in the Revision of Section 22.2, Hydrology of the Development Process Manual, Volume 2, Design Criteria, dated January, 1993, has been used to quantify the peak rate of discharge and volume of runoff generated. As shown by these calculations, a slight decrease in the runoff volume and discharge rate is expected.



TYPICAL RUNDOWN SECTION

SCALE: 1" = 1' - 0"

CALCULATIONS

Site Characteristics

1. Precipitation Zone = 3
2. $P_{6,100} = P_{360} = 2.60"$
3. Total Area (A_T) = 59,700 sf = 1.37 acre
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
B	5,000/0.11	08
D	54,700/1.26	92
5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	6,420/0.15	11
D	53,280/1.22	89

Existing Condition

1. Volume

$$E_w = (E_{A^A} + E_{B^B} + E_{C^C} + E_{D^D}) / A_T$$

$$E_w = (0.92)(0.11) + (2.36)(1.26) / 1.37 = 2.24"$$

$$V_{100} = (E_w / 12) A_T$$

$$V_{100} = (2.24 / 12) 1.37 = 0.26 \text{ ac.ft.}; 11,140 \text{ cf}$$
2. Peak Discharge

$$Q_p = Q_{PA^A} + Q_{PB^B} + Q_{PC^C} + Q_{PD^D}$$

$$Q_p = Q_{100} = (2.60)(0.11) + (5.02)(1.26) = 6.6 \text{ cf}$$

Pond Volume Calculations (Per the Average End Area Method)

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
52.55	0		
53	375	84	84
54	3,200	1,787	1,871
54.60	6,820	3,006	4,877

V_{max} (Existing) = 4,877 cf

Developed Condition

1. Volume

$$E_w = (E_{A^A} + E_{B^B} + E_{C^C} + E_{D^D}) / A_T$$

$$E_w = (0.92)(0.15) + (2.36)(1.22) / 1.37 = 2.20"$$

$$V_{100} = (E_w / 12) A_T$$

$$V_{100} = (2.20 / 12) 1.37 = 0.25 \text{ ac.ft.}; 10,940 \text{ cf}$$
2. Peak Discharge

$$Q_p = Q_{PA^A} + Q_{PB^B} + Q_{PC^C} + Q_{PD^D}$$

$$Q_p = Q_{100} = (2.60)(0.15) + (5.02)(1.22) = 6.5 \text{ cf}$$

Pond Volume Calculations (Per the Average End Area Method)

Elev (ft)	Area (sf)	Vol (cf)	Σ Vol (cf)
52.55	0		
53	1,185	266	266
54	4,500	2,842	3,108
55	8,730	6,615	9,723

V_{max} (Developed) = 9,723 cf V_{max} WSL @ 55.00

V_{max} (Developed) > V_{max} (Existing)

Comparison

1. $\Delta V_{100} = 11,140 - 10,940 = 200 \text{ cf}$ (decrease)
2. $\Delta Q_{100} = 6.6 - 6.5 = 0.1 \text{ cf}$ (decrease)

THIS IS NOT A BOUNDARY SURVEY. APPARENT BOUNDARY CORNERS ARE SHOWN FOR INFORMATION ONLY. TOPOGRAPHIC AND BOUNDARY INFORMATION ARE BASED ON THE A.L.T.A. SURVEY PREPARED BY ANTHONY HARRIS DATED NOV. 02, 1995.

Jma

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BPLW

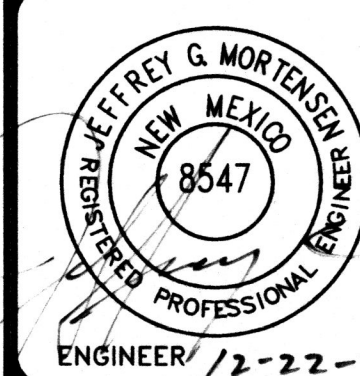
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