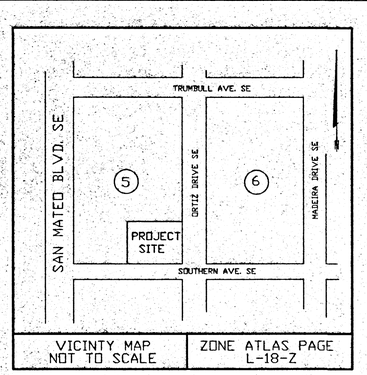


LEGAL DESCRIPTION

LOTS 22,23, AND 24, OF BLOCK 5 OF THE ESPERANZA ADDITION

PROJECT BENCHMARK

BENCH MARK IS ACS 18-L 1B
ELEVATION = 5290.93 FEET (M.S.L.D.)

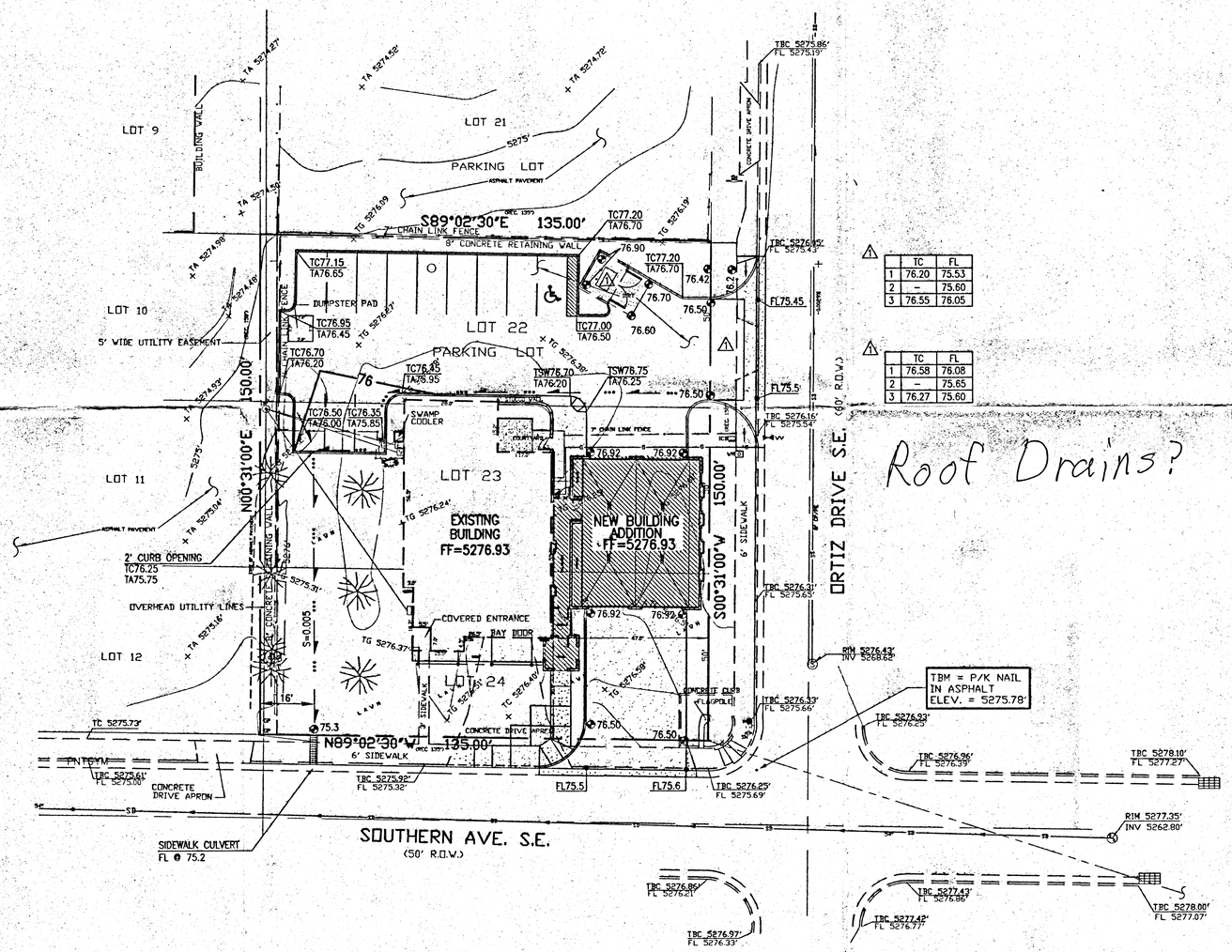
T.B.M.

A P.K. NAIL IN THE ASPHALT NEAR THE SE CORNER OF THE SITE AS SHOWN ON THE DRAWING.
ELEVATION = 5275.78 FEET (M.S.L.D.)

NOTE:
THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION TAKEN FROM TOPOGRAPHIC SURVEY BY CLINT SHERRILL & ASSOC. DATED 1-15-97 AND IS SHOWN FOR ORIENTATION ONLY.

LEGEND

+TA 5274.52'	EXISTING SPOT ELEVATION
5275'	EXISTING CONTOUR
76.70	PROPOSED SPOT ELEVATION
76	PROPOSED CONTOUR
	DIRECTION OF FLOW
	PROPOSED CONCRETE



	TC	FL
1	76.20	75.53
2	–	75.60
3	76.55	76.05

	TC	FL
1	76.58	76.08
2	–	75.65
3	76.27	75.60

Roof Drains?

CONCEPTUAL GRADING PLAN

SCALE: 1"=20'-0"

REVISIONS

1 5/97 REVISE REFUSE PAD AND PRIVATE ENTRANCE

DRAINAGE PLAN

The following items concerning the Fire Station No. 11 Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

As shown by the Vicinity Map, the site is located at the northwest corner of the intersection of Southern Avenue S.E. and Ortiz Drive S.E. At present, the site is developed as a City of Albuquerque Fire Station.

As shown by Panel 354 of 825 of the National Flood Insurance Program Flood Insurance Rate Maps published by F.E.M.A. for the County of Bernalillo, New Mexico dated September 20, 1996, this site lies within a designated flood hazard zone. The associated zone is designated AO with a depth of one foot. The flooding in the adjacent streets has been mitigated, however, through construction of the 54" storm drain within Southern Avenue S.E. These improvements were constructed by the City of Albuquerque as part of the "Highland Detention Basin" storm drain projects. Furthermore, the fire station is an existing building. The proposed addition will house the fire trucks.

The Grading Plan shows: 1) existing grades indicated by spot elevations and contours at 1'0" intervals as shown on the Topographic Survey by Clint Sherrill & Associates dated 1/15/97, 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 by Clint Sherrill & Associates, 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 a new building addition to an existing City of Albuquerque fire station. At present, the site generally drains from east to west and in effect may be draining onto adjacent properties. As part of the proposed improvements, developed runoff will be directed into Southern Avenue S.E. via a new sidewalk culvert. The sidewalk culvert will be sized to handle the 100-year, 6-hour rainfall event. Due to the fact that this is a modification to an existing site within an infill area, the relatively minor increase in runoff, the proximity of the site to public storm drain facilities, and the fact that this project will improve existing drainage conditions, the free discharge of runoff from this site to public right-of-way is appropriate.

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 minor increase in runoff is anticipated due to the proposed construction.

Offsite flows do not impact this site. The sites to the north and east are both topographically lower and therefore do not contribute offsite flows. The site is bounded on the east and south by existing public streets. As previously stated, a public storm drain system has been constructed within Southern Avenue S.E. to alleviate the flooding indicated by the F.I.R.M. maps. Due to the presence of the new storm drain facilities, offsite flows are not anticipated from these adjacent streets.

CALCULATIONS

Site Characteristics

1. Precipitation Zone = 3
2. $P_{6,100} = P_{360}$ = 2.60 in.
3. Total Area (A_T) = 20,250 sf/0.46 ac
4. Existing Land Treatment

Treatment	Area (sf/ac)	%
B	9,000/0.21	46
C	7,000/0.16	35
D	4,250/0.09	19

5. Developed Land Treatment

Treatment	Area (sf/ac)	%
B	5,910/0.14	30
D	14,340/0.32	70

Existing Condition

1. Volume

$E_W = (E_AA_A+E_BA_B+E_CA_C+E_DA_D)/A_T$

$E_W = (0.92)(0.21)+(1.29)(0.16)+(2.36)(0.09)/0.46 = 1.33$ in.

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

$V_{100} = (1.33/12)0.46 = 0.05$ ac.ft.; 2,180 cf

2. Peak Discharge

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

$Q_p = Q_{100} = (2.60)(0.21)+(3.45)(0.16)+(5.02)(0.09) = 1.6$ cfs

Developed Condition

1. Volume

$E_W = (E_AA_A+E_BA_B+E_CA_C+E_DA_D)/A_T$

$E_W = (0.92)(0.14)+(2.36)(0.32)/0.46 = 1.92$ in.

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

$V_{100} = (1.92/12)0.46 = 0.07$ ac.ft.; 3,050 cf

2. Peak Discharge

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

$Q_p = Q_{100} = (2.60)(0.14)+(5.02)(0.32) = 2.0$ cfs

Comparison

1. $\Delta V_{100} = 3,050 - 2,180 = 870$ cf; 0.02 ac.ft. (increase)
2. $\Delta Q_{100} = 2.0 - 1.6 = 0.4$ cfs (increase)

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fax (505) 268-7755
A Professional Corporation

CITY OF ALBUQUERQUE FIRE DEPARTMENT

RENOVATION OF
FIRE STATION NO. 11
5403 Southern SE
Albuquerque, New Mexico

Description
CONCEPTUAL GRADING & DRAINAGE PLAN

Date JAN. 31, 1997

Sheet

JEFFREY G. MORTENSEN NEW MEXICO 8547 REGISTERED PROFESSIONAL ENGINEER

01-31-97
05-05-97

JEFF MORTENSEN & ASSOCIATES, INC.
☐ 6010-B MIDWAY PARK BLVD. N.E.
☐ ALBUQUERQUE ☐ NEW MEXICO 87109
☐ ENGINEERS ☐ SURVEYORS (505) 345-4250

970062

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DRAINAGE PLAN

THE FOLLOWING ITEMS CONCERNING THE FIRE STATION NO. 11 DRAINAGE PLAN ARE CONTAINED HEREON:

1. VICINITY MAP
2. GRADING PLAN
3. CALCULATIONS

AS SHOWN BY THE VICINITY MAP, THE SITE IS LOCATED AT THE NORTHWEST CORNER OF THE INTERSECTION OF SOUTHERN AVENUE S.E. AND ORTIZ DRIVE S.E. AT PRESENT, THE SITE IS DEVELOPED AS A CITY OF ALBUQUERQUE FIRE STATION.

AS SHOWN BY PANEL 354 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS PUBLISHED BY F.E.M.A. FOR THE COUNTY OF BERNALILLO, NEW MEXICO DATED SEPTEMBER 20, 1996, THIS SITE LIES WITHIN A DESIGNATED FLOOD HAZARD ZONE. THE ASSOCIATED ZONE IS DESIGNATED AO WITH A DEPTH OF ONE FOOT. THE FLOODING IN THE ADJACENT STREETS HAS BEEN MITIGATED, HOWEVER, THROUGH CONSTRUCTION OF THE 54" STORM DRAIN WITHIN SOUTHERN AVENUE S.E. THESE IMPROVEMENTS WERE CONSTRUCTED BY THE CITY OF ALBUQUERQUE AS PART OF THE "HIGHLAND DETENTION BASIN" STORM DRAIN PROJECTS. FURTHERMORE, THE FIRE STATION IS AN EXISTING BUILDING. THE PROPOSED ADDITION WILL HOUSE THE FIRE TRUCKS.

THE GRADING PLAN SHOWS: 1) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 1'0" INTERVALS AS SHOWN ON THE TOPOGRAPHIC SURVEY BY CLINT SHERRILL & ASSOCIATES DATED 1/15/97, 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 BY CLINT SHERRILL & ASSOCIATES, 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 A NEW BUILDING ADDITION TO AN EXISTING CITY OF ALBUQUERQUE FIRE STATION. AT PRESENT, THE SITE GENERALLY DRAINS FROM EAST TO WEST AND IN EFFECT MAY BE DRAINING ONTO ADJACENT PROPERTIES. AS PART OF THE PROPOSED IMPROVEMENTS, DEVELOPED RUNOFF WILL BE DIRECTED INTO SOUTHERN AVENUE S.E. VIA A NEW SIDEWALK CULVERT. THE SIDEWALK CULVERT WILL BE SIZED TO HANDLE THE 100-YEAR, 6-HOUR RAINFALL EVENT. DUE TO THE FACT THAT THIS IS A MODIFICATION TO AN EXISTING SITE WITHIN AN INFILL AREA, THE RELATIVELY MINOR INCREASE IN RUNOFF, THE PROXIMITY OF THE SITE TO PUBLIC STORM DRAIN FACILITIES, AND THE FACT THAT THIS PROJECT WILL IMPROVE EXISTING DRAINAGE CONDITIONS, THE FREE DISCHARGE OF RUNOFF FROM THIS SITE TO PUBLIC RIGHT-OF-WAY IS APPROPRIATE.

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 MINOR INCREASE IN RUNOFF IS ANTICIPATED DUE TO THE PROPOSED CONSTRUCTION.

OFFSITE FLOWS DO NOT IMPACT THIS SITE. THE SITES TO THE NORTH AND EAST ARE BOTH TOPOGRAPHICALLY LOWER AND THEREFORE DO NOT CONTRIBUTE OFFSITE FLOWS. THE SITE IS BOUNDED ON THE EAST AND SOUTH BY EXISTING PUBLIC STREETS. AS PREVIOUSLY STATED, A PUBLIC STORM DRAIN SYSTEM HAS BEEN CONSTRUCTED WITHIN SOUTHERN AVENUE S.E. TO ALLEVIATE THE FLOODING INDICATED BY THE F.I.R.M. MAPS. DUE TO THE PRESENCE OF THE NEW STORM DRAIN FACILITIES, OFFSITE FLOWS ARE NOT ANTICIPATED FROM THESE ADJACENT STREETS.

CALCULATIONS

SITE CHARACTERISTICS

1. PRECIPITATION ZONE = 3
2. $P_{6,100} = P_{360} =$ 2.60 IN.
3. TOTAL AREA (A_T) = 20,250 sf/0.46 AC
4. EXISTING LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
B	9,000/0.21	46
C	7,000/0.16	35
D	4,250/0.09	19

5. DEVELOPED LAND TREATMENT

TREATMENT	AREA (SF/AC)	%
B	5,910/0.14	30
D	14,340/0.32	70

EXISTING CONDITION

1. VOLUME

$E_W = (E_AA_A+E_BA_B+E_CA_C+E_DA_D)/A_T$

$E_W = (0.92)(0.21)+(1.29)(0.16)+(2.36)(0.09)/0.46 = 1.33$ in.

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

$V_{100} = (1.33/12)0.46 = 0.05$ AC.FT.; 2,180 CF

2. PEAK DISCHARGE

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

$Q_p = Q_{100} = (2.60)(0.21)+(3.45)(0.16)+(5.02)(0.09) = 1.6$ CFS

DEVELOPED CONDITION

1. VOLUME

$E_W = (E_AA_A+E_BA_B+E_CA_C+E_DA_D)/A_T$

$E_W = (0.92)(0.14)+(2.36)(0.32)/0.46 = 1.92$ in.

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

$V_{100} = (1.92/12)0.46 = 0.07$ AC.FT.; 3,050 CF

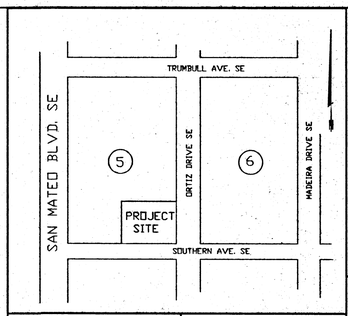
2. PEAK DISCHARGE

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

$Q_p = Q_{100} = (2.60)(0.14)+(5.02)(0.32) = 2.0$ CFS

COMPARISON

1. $\Delta V_{100} = 3,050 - 2,180 =$ 870 CF; 0.02 AC.FT. (INCREASE)
2. $\Delta Q_{100} = 2.0 - 1.6 = 0.4$ CFS (INCREASE)



VICINTY MAP NOT TO SCALE | ZONE ATLAS PAGE L-18-Z

NOTE:
THIS IS NOT A BOUNDARY SURVEY. BOUNDARY INFORMATION TAKEN FROM TOPOGRAPHIC SURVEY BY CLINT SHERRILL & ASSOC. DATED 1-15-97 AND IS SHOWN FOR ORIENTATION ONLY.

LEGAL DESCRIPTION

LOTS 22,23, AND 24, OF BLOCK 5 OF THE ESPERANZA ADDITION

LEGEND

+ TA 5274.52'	EXISTING SPOT ELEVATION
5275'	EXISTING CONTOUR
76.70	PROPOSED SPOT ELEVATION
76	PROPOSED CONTOUR
	DIRECTION OF FLOW
	PROPOSED CONCRETE

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE
N/A	CLINT SHERRILL & ASSOC.	1/15/97

PROJECT BENCHMARK

BENCH MARK IS ACS 18-L 18

ELEVATION = 5290.93 FEET (M.S.L.D.)

T.B.M.

A P.K. NAIL IN THE ASPHALT NEAR THE SE CORNER OF THE SITE AS SHOWN ON THE DRAWING.

ELEVATION = 5275.78 FEET (M.S.L.D.)

AS BUILT INFORMATION

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

MICRO-FILM INFORMATION

RECORDED BY:
DATE
VOL
PAGE

ENGINEER'S SEAL

JEFFREY M. MORTENSEN, NEW MEXICO, 9547, REGISTERED PROFESSIONAL ENGINEER
02-02-98

NO.	DATE	REMARKS	DESIGN	Date	BY
		Revisions			
1	1/98	ADD SIDEWALK CULVERTS AND ROOF DRAINAGE	J.G.M.	01-97	JGM
2	5/97	REVISE REFUSE PAD AND PRIVATE ENTRANCE	D.L.M.	01-98	JGM
			J.G.M.	01-98	

Designed By
Drawn By
Checked By

JEFF MORTENSEN & ASSOCIATES, INC.
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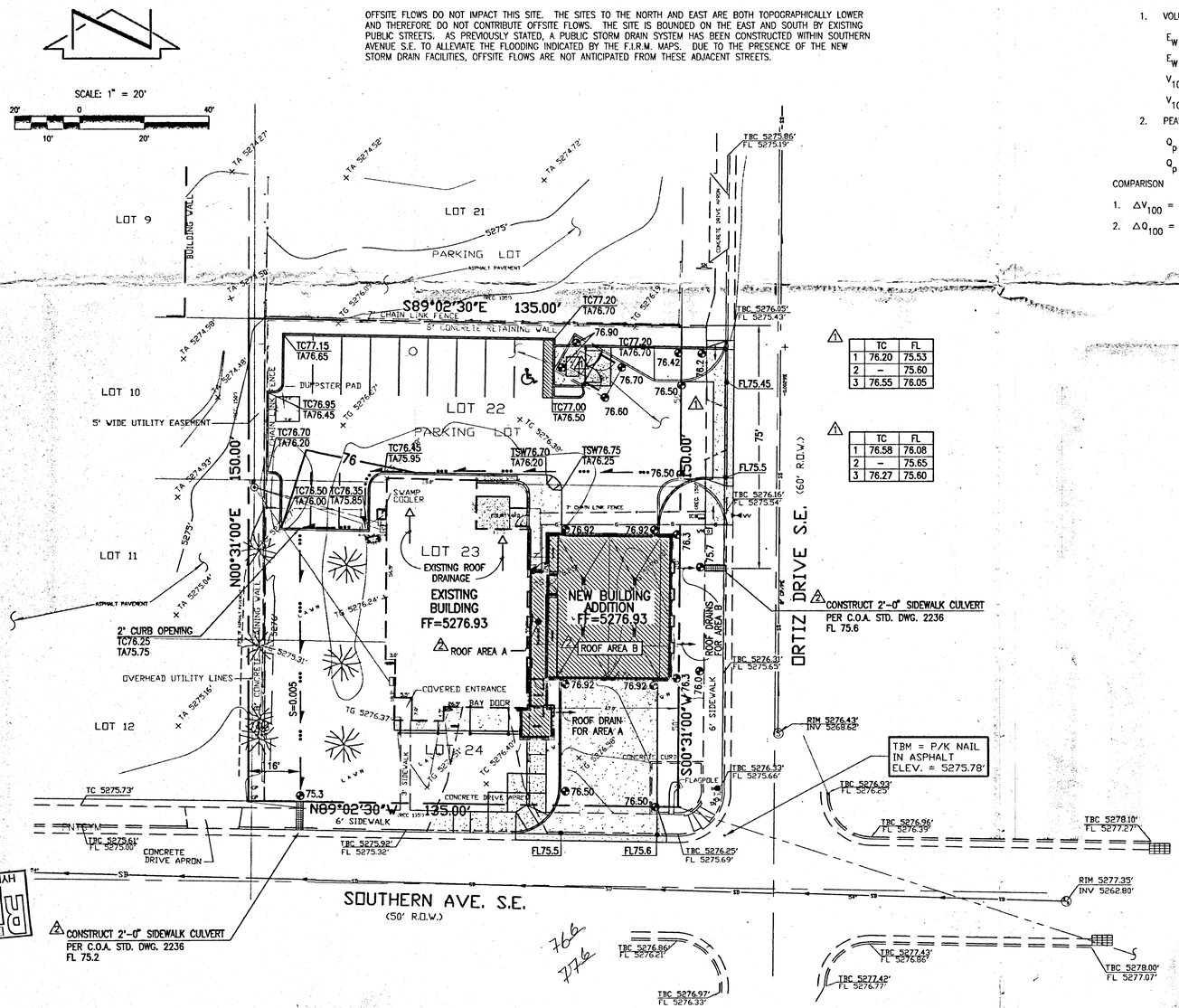
CITY OF ALBUQUERQUE
ALBUQUERQUE FIRE DEPARTMENT

TITLE: GRADING AND DRAINAGE PLAN
FIRE STATION NO. 11

Design Review Committee | City Engineer Approval | Last Design Update | Mo./Day/Yr. | Mo./Day/Yr.

City Project No. 5472.91 | Zone Map No. L-18 | Sheet C-1

970062



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776

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