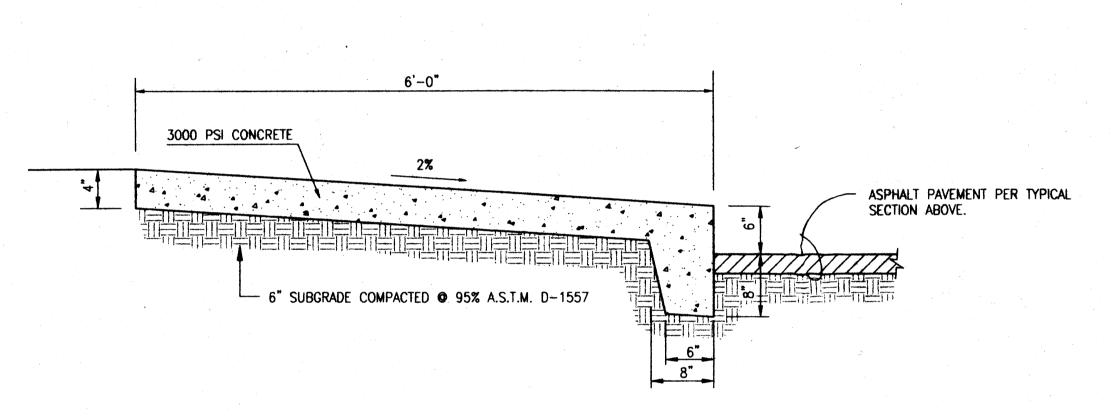
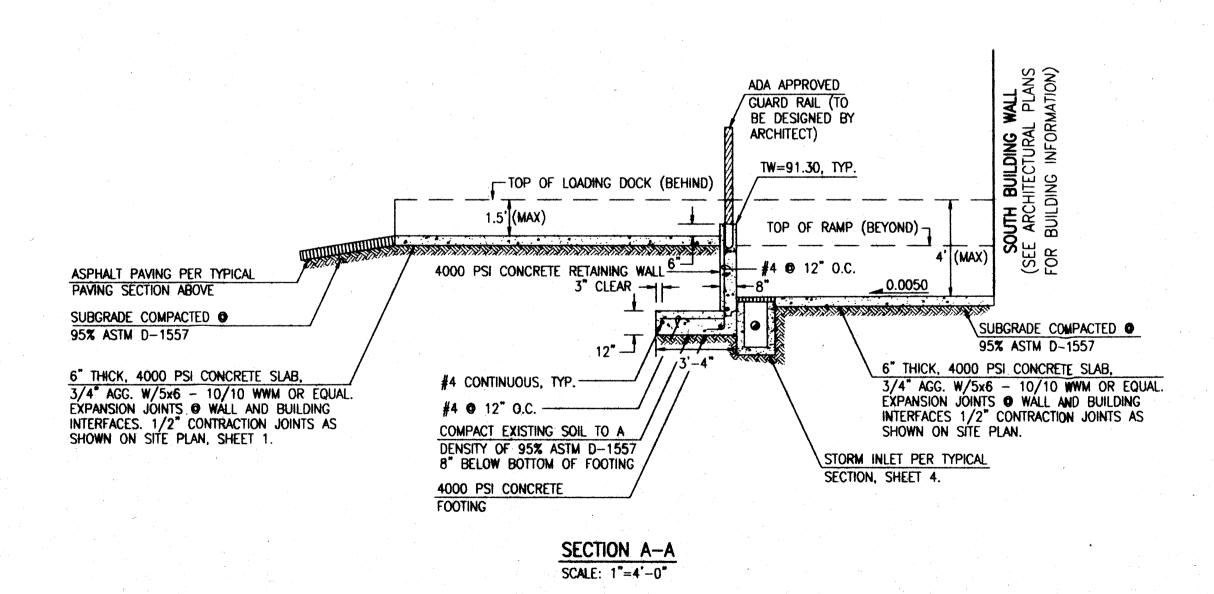


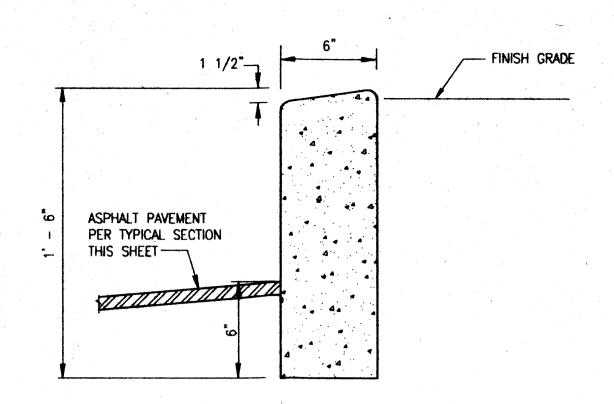
TYPICAL PAVEMENT SECTION

SCALE: 1" = 5"



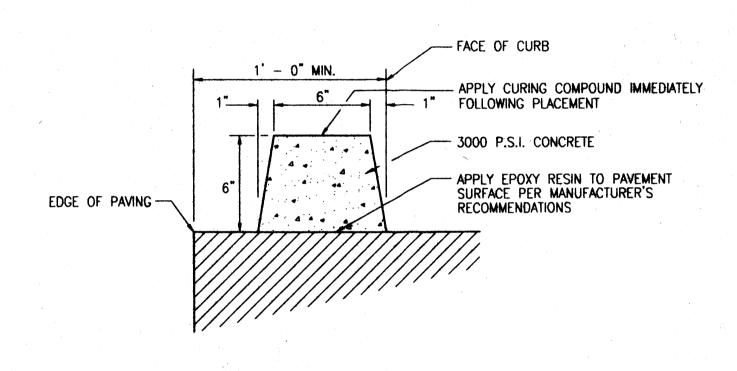
TURNDOWN SIDEWALK SECTION
SCALE: 1" = 1'-0"





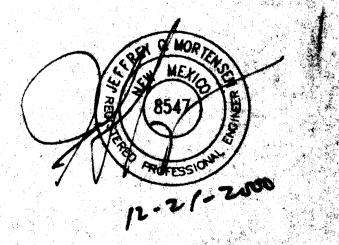
TYPICAL HEADER CURB SECTION

SCALE: 1" = 6"



TYPICAL EXTRUDED CONCRETE CURB SECTION

SCALE: 1" = 6"

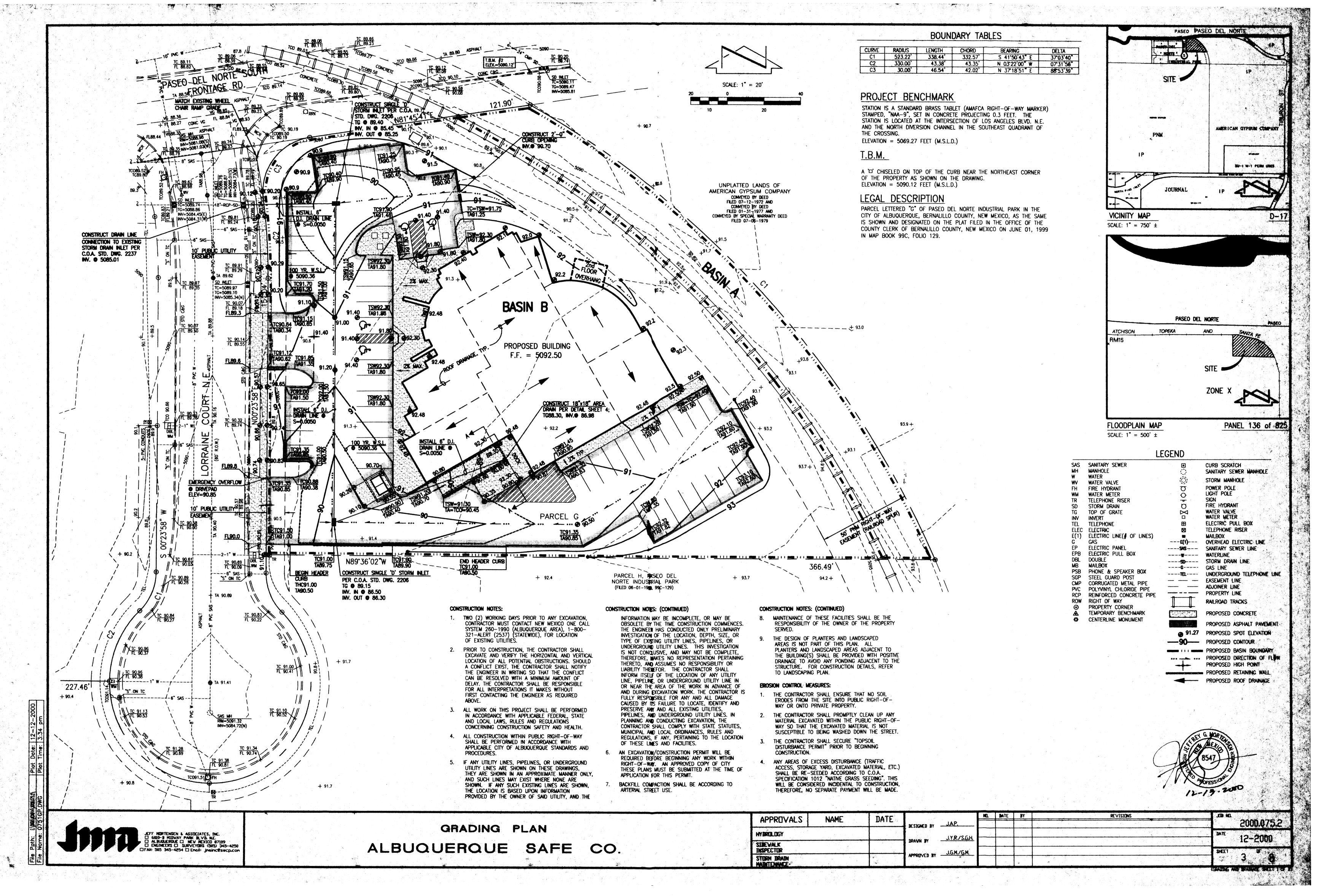


JEFF HURTENSEN & ASSUCIATES, INC.

| 6010-8 HIDVAY PARK BLVB. NE.
| ALBUGUERQUE | NEV NEXICO 87109
| ENGINEERS | SURVEYURS (505) 345-4250
| FAX: 505 345-4254 | Email: jnainceswcp.com

PAVING SECTIONS AND DETAILS ALBUQUERQUE SAFE CO.

	NC.	BATE	BY	REVISIONS	,CDB NO.
ESIGNED BY JAP.					2000.075,1
S.G.H./J.Y.R.					MIE 12-2000
RAVN BY S.U.F., J. I.K.					ic cuv
PPROVED BY J.G.M./G.M.					SHET O



CALCULATIONS

1. PRECIPITATION ZONE = 2

II. $P_{6,100} = P_{360} = 2.35$ IN.

CALCULATIONS (CONTINUED) b. PIPE INLET CAPACITY (ORIFICE EQUATION) $Q=CA (2gh)^{1/2}$ $A = 0.20 \text{ SF } (6^{\circ} \text{ PIPE})$ g = 32.2 FPS C = 0.6h = 5.0 FTQ = 2.2 CFSc. PIPE DISCHARGE CAPACITY (USING FLOWMASTER BY HAESTAD METHODS WITH HAZEN-WILLIAMS EQUATION) $P_0 = 0$ $Z_{\star} = 90.30$ $Z_2 = 85.01$ L = 50 FTC = 130.0Q = 2.5 CFS*THEREFORE PIPE INLET CAPACITY GOVERNS 4. HYDROGRAPH CALCULATIONS a. BASE TIME $t_{\rm B} = 2.107E(A_{\rm T} / Q_{\rm p}) - 0.25(A_{\rm D} / A_{\rm T})$ E = 1.76 iN. $A_T = 1.34 \text{ AC}.$ $Q_D = 5.5 \text{ CFS}$ $A_{D} = 0.91 \text{ AC}.$ $t_{\rm B} = 0.74$ HR. = 44 MIN. b. TIME TO PEAK $t_p = 0.7 t_C + (1.6 - A_D / A_T)/12$ $t_{c} = 0.2 \text{ HR}.$ $A_{D} = 0.91 \text{ AC}.$ $A_T = 1.34 AC.$ $t_{\rm p} = 0.22$ HR. = 13 MIN.

c. TIME OF PEAK $t_{PK} = 0.25(A_D / A_T)$ $A_{\rm D} = 0.91$ AC. $A_{T} = 1.34 \text{ AC}.$ $t_{PK} = 0.17 \text{ HR.} = 10 \text{ MIN.}$ 5. POND VOLUME CALCULATIONS (AVERAGE END AREA METHOD) a. SOUTH POND ELEVATION AREA (SF) VOLUME (CF) Σ VOLUME (CF) b. LOADING DOCK Σ VOLUME (CF)

ELEVATION AREA (SF) VOLUME (CF) c. NORTH POND

d. Σ PONDS = 4780 + 415 + 2530 = 7725CF > V_{RORD} . 100 YEAR WATER SURFACE LEVEL (WSL) = 5090.36

VIII. COMPARISON

 $\Delta V_{100} = 820 - 820 = 0 \text{ CF } / 0.0 \text{ AC. FT. (NO CHANGE)}$ $\Delta Q_{100} = 0.6 - 0.6 = 0.0 \text{ CFS (NO CHANGE)}$

 $\Delta V_{100} = 8,540 - 5,500 = 3,040 \text{ CF } / 0.0698 \text{ AC. FT. (INCREASE)}$ $\Delta Q_{100} = 4.2 - 2.3 = 1.7 \text{ CFS (DECREASE)}$

C. \(\Sigma \) BASINS (ENTIRE SITE)

 $\Delta V_{100} = [(8,540 + 820) - (5,500 + 820)]$ = 3,040 CF / 0.0698 AC. FT. (INCREASE)

 $\Delta Q_{100} = [(4.2 + 0.6) - (2.2 + 0.6)]$ = 2.0 CFS (DECREASE)

DRANAGE PLAN

INTRODUCTION AND EXECUTIVE SUMMARY

THIS SUBMITTAL IS MADE IN SUPPORT OF SITE DEVELOPMENT PLAN FOR BUILDING PERMIT, BUILDING PERMIT AND SO-19 APPROVALS FOR THE PROPOSED ALBUQUERQUE SAFE COMPANY SITE, THE PROPOSED DEVELOPMENT INCLUDES THE CONSTRUCTION OF TWO-STORY, 17,900 SQUARE FOOT BUILDING, A 53 SPACE ASPHALT PAVED PARKING LO WITH TWO DRIVEPAD ENTRANCES TO LORRAINE COURT NE, AS WELL AS ASSOCIATED LANDSCAPING IMPROVEMENTS, THE SITE, LOCATED ON LORRAINE COURT IN THE PASEO del norte industrial park in albuquerque's northeast heights, is south of PASEO DEL NORTE AND WEST OF JEFFERSON STREET. THE PROPOSED IMPROVEMENTS ARE IN ACCORDANCE WITH A PREVIOUSLY APPROVED MASTER DRAINAGE PLAN. THE DESIGNED OUTFALL, VIA CONTROLLED DISCHARGE, IS TO AN EXISTING STORM DRAIN LOCATED AT THE NORTHWEST CORNER OF THE SITE. THERE WILL BE AN EXCHANGE OF CURRENTLY UNDEVELOPED LAND FOR AN AREA OF IMPERVIOUS PAVING AND BUILDING IMPROVEMENTS. AS A RESULT, THE HYDROLOGY OF THE SITE WILL BE IMPACTED AS DEMONSTRATED IN THE DRAINAGE CALCULATIONS CONTAINED HEREON, WITH A DECREASE OF 2.0 CFS IN PEAK DISCHARGE DUE TO PROPOSED DETENTION PONDING. THERE WILL be no downstream impact experienced as discharge from this site will remain WITHIN THE ALLOWABLE DISCHARGE ESTABLISHED BY THE MASTER DRAINAGE PLAN AS WELL AS PREVIOUS SUBMITTALS IN THIS AREA. A DRAINAGE INFORMATION SHEET IS INCLUDED WITH THIS SUBMITTAL. NO INFRASTRUCTURE IS ANTICIPATED, HENCE AN INFRASTRUCTURE LIST IS NOT INCLUDED WITH THIS SUBMITTAL. FURTHERMORE, NO PLATTING IS PROPOSED.

REFERENCES AND BACKGROUND DOCUMENTS

THE FOLLOWING IS A BRIEF LIST OF DRAINAGE PLANS RELEVANT TO THE DEVELOPMENT OF THIS SITE:

MASTER DRAINAGE PLAN, PASEO DEL NORTE INDUSTRIAL PARK, DATED 11-18-98, PREPARED BY JEFF MORTENSEN AND ASSOCIATES INC. (D-17/D-67). THIS PLAN ESTABLISHES THE ALLOWABLE DISCHARGE FROM THE SUBJECT PROPERTY TO BE 2.5 CFS. THIS VALUE IS A RESULT OF PRIOR DOWNSTREAM CAPACITY ANALYSIS.

ENGINEER'S CERTIFICATION, MASTER DRAINAGE PLAN, PASEO DEL NORTE INDUSTRIAL PARK, DATED 01-28-99, PREPARED BY JEFF MORTENSEN AND ASSOCIATES INC. (D-17/D-67). THIS PLAN ILLUSTRATES CONFORMANCE WITH THE IMPROVEMENTS PROPOSED AS PART OF THE CONCEPTUAL GRADING PLAN AND MASTER DRAINAGE PLAN.

TRULY NOLEN GRADING AND DRAINAGE PLAN, DATED 05-00, PREPARED BY JEFF MORTENSEN AND ASSOCIATES INC. (D17/D67C). THIS PLAN ILLUSTRATES CONFORMANCE WITH THE MASTER DRAINAGE PLAN FOR THIS AREA.

PROJECT DESCRIPTION

AS SHOWN BY THE VICINITY MAP, THE SITE IS LOCATED AT THE SOUTHEAST CORNER OF LORRAINE COURT AND THE PASEO DEL NORTE SOUTH FRONTAGE ROAD APPROXIMATELY 800 FEET WEST OF JEFFERSON STREET NE. THE SITE IS ZONED IP. THE LEGAL DESCRIPTION IS: PARCEL G, PASEO DEL NORTE INDUSTRIAL PARK. AS SHOWN BY PANEL 136 OF 825 OF THE NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAPS, BERNALILLO COUNTY, NEW MEXICO, AND INCORPORATED AREAS, DATED SEPTEMBER 20, 1996, THIS SITE DOES NOT LIE WITHIN, NOR UPSTREAM OF A DESIGNATE FLOOD HAZARD ZONE. THE PROPOSED IMPROVEMENTS INCLUDE CONSTRUCTION OF A TWO-STORY, 17,900 SQUARE FOOT BUILDING, A 53 SPACE ASPHALT PAVED PARKING LOT WITH TWO DRIVEPAD ENTRANCES TO LORRAINE COURT NE, AS WELL AS ASSOCIATED LANDSCAPING IMPROVEMENTS. A SITE VISIT CONDUCTED BY THIS OFFICE CONFIRMED THAT THE SITE APPEARS AS IS ILLUSTRATED ON THE A.L.T.A./A.C.S.M. LAND TITLE SURVEY PREPARED BY JEFF MORTENSEN AND ASSOCIATES, INC. SEPTEMBER 1999.

AT PRESENT, THIS SITE IS UNDEVELOPED AND CONSISTS OF TWO DRAINAGE BASINS, BASINS A AND B AS ILLUSTRATED ON THE ACCOMPANYING GRADING PLAN. BASIN A CONSISTS OF THAT PORTION OF THE PROPERTY WHICH LIES EAST OF THE EXISTING RAILROAD SPUR AT THE EAST END OF THE SITE. THIS AREA DRAINS SOUTHEAST TO NORTHWEST VIA A GRADED FLOWLINE INTO THE PASEO DEL NORTE SOUTH FRONTAGE road and into the existing storm drain inlet located therein. Basin B CONSISTS OF THAT PORTION OF THE PROPERTY WEST OF THE RAILROAD SPUR. THIS AREA DRAINS SOUTHEAST TO NORTHWEST VIA SHEETFLOW AND EXPERIENCES FREE DISCHARGE INTO LORRAINE COURT AND THE STORM DRAIN INLETS LOCATED THEREIN PRELIMINARY ROUGH GRADING WAS ACCOMPLISHED IN CONJUNCTION WITH THE CONSTRUCTION OF THE PASEO DEL NORTE INDUSTRIAL PARK. AN EXISTING 18" PUBLIC storm drain, with a single type 'c' and single type 'a' storm inlet, is located AT THE WEST END OF THE SITE WITHIN THE LORRAINE COURT RIGHT-OF-WAY. THIS DRAINAGE FACILITY WAS CONSTRUCTED IN ACCORDANCE WITH THE MASTER drainage plan for the purpose of providing an outfall for developed RUNOFF FROM THE PASEO DEL NORTE INDUSTRIAL PARK. OFFSITE FLOWS DO NOT ENTER THE SITE FROM LORRAINE COURT OR THE PASEO DEL NORTE SOUTH FRONTAGE ROAD TO THE WEST AND NORTH RESPECTIVELY, WHICH ARE DEVELOPED STREETS WITH CURB AND GUTTER. OFFSITE FLOWS DO NOT ENTER THE SITE FROM PARCEL H TO THE SOUTH WHICH EXHIBITS PARALLEL TOPOGRAPHY AND IS SEPARATED BY AN EARTHEN BERM AT THE PROPERTY LINE. OFFSITE FLOWS DO NOT ENTER THE SITE FROM THE EAST AS AN EXISTING RAISED RAILROAD SPUR SERVING PNM SEPARATES THE EAST PORTION OF THE SITE FROM THE PROPERTIES ADJACENT TO THE EAST. AS ILLUSTRATED ON THE CONCEPTUAL GRADING PLAN AND IN THE MASTER DRAINAGE PLAN FOR THIS SITE, THE ALLOWABLE DISCHARGE FROM THIS SITE INTO THE AFOREMENTIONED STORM DRAIN IS 2.5 CFS. WITH FREE DISCHARGE FROM THE SITE, THIS ALLOWABLE DISCHARGE IS

DEVELOPED CONDITIONS

THE PROPOSED DEVELOPMENT CONSISTS OF NEW BUILDING CONSTRUCTION WITH ASSOCIATED PARKING AND LANDSCAPING IMPROVEMENTS. RUNOFF FROM BASIN A will continue in historic flowpaths from southeast to northwest and into THE STORM DRAIN INLET AND ASSOCIATED STORM DRAIN SYSTEM WITHIN THE PASEO DEL NORTE SOUTH FRONTAGE ROAD. DEVELOPED AND UNDEVELOPED RUNOFF FROM BASIN B WILL BE DIRECTED TO ONE OF THREE PROPOSED STORM DRAIN INLETS. AN AREA DRAIN AT THE BOTTOM OF THE LOADING DOCK RAMP AT THE SOUTHWEST CORNER OF THE BUILDING WILL CONVEY RUNOFF FROM THE RAMP AREA TO A SECOND STORM INLET VIA A 6" DRAIN LINE. THIS SECOND STORM DRAIN INLET, LOCATED NEAR THE SOUTHWEST CORNER OF THE SITE WILL ACCEPT RUNOFF FROM THE SOUTH PORTION OF THE SITE AS WELL AS APPROXIMATELY HALF OF THE WEST PORTION OF THE SITE IN ADDITION TO THAT RUNOFF FROM THE LOADING DOCK AREA. THIS STORM DRAIN INLET IN TURN CONVEYS RUNOFF TO THE THIRD STORM DRAIN INLET LOCATED NEAR THE NORTHWEST CORNER OF THE SITE. THIS INLET ACCEPTS THE PREVIOUSLY DISCUSSED RUNOFF FROM THE FIRST TWO INLETS IN ADDITION TO RUNOFF FROM THE NORTHWEST CORNER OF THE SITE. A GRADED FLOWLINE ON THE WEST SIDE OF THE RAILROAD SPUR WILL CONVEY UNDEVELOPED RUNOFF INTO THE IMPROVED ASPHALT PAVED PARKING LOT AND INTO THE THIRD STORM DRAIN INLET. RUNOFF FROM THIS INLET EXITS, VIA CONTROLLED DISCHARGE THROUGH A 6" DRAIN LINE, INTO THE BACK OF AN EXISTING STORM DRAIN INLET WITHIN LORRAINE COURT. SURROUNDING EACH OF THE THREE INLETS ARE DETENTION PONDING AREAS VARYING IN SIZE FROM 415 TO 2040 CUBIC FEET IN VOLUME. COMBINED, THESE PONDING AREAS ARE LARGER THAN THE REQUIRED POND VOLUME CALCULATED AS PART OF THE HYDROGRAPH CALCULATIONS CONTAINED HEREON. IF THE DISCHARGE TO THE EXISTING STORM DRAIN INLET WERE TO BECOME CLOGGED, RUNOFF WOULD OVERFLOW INTO LORRAINE COURT AND INTO THE EXISTING PUBLIC STORM DRAIN INLET.

DRAINAGE PLAN (CONTINUED)

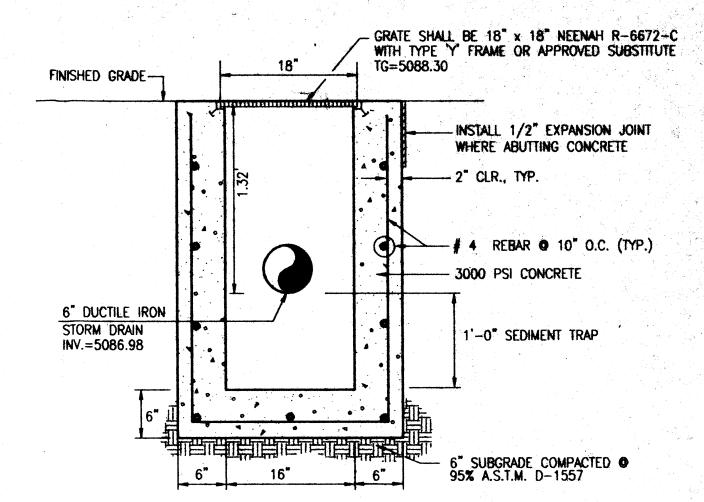
THE GRADING PLAN SHOWS: 1) EXISTING GRADES INDICATED BY SPOT ELEVATIONS AND CONTOURS AT 10" INTERVALS AS TAKEN FROM THE A.L.T.A./A.C.S.M. SURVEY PREPARED BY JEFF MORTENSEN AND ASSOCIATES, INC. IN SEPTEMBER OF 1999 2) PROPOSED grades indicated by spot elevations and contours at 1.0" intervals, 3) the LIMIT AND CHARACTER OF THE EXISTING IMPROVEMENTS, 4) THE LIMIT AND CHARACTER OF THE PROPOSED IMPROVEMENTS, AND 5) CONTINUITY BETWEEN EXISTING AND PROPOSED GRADES. THE GRADING PLAN APPEARS ON SHEET 1 OF 2 OF THIS SUBMITTAL.

CALCULATIONS

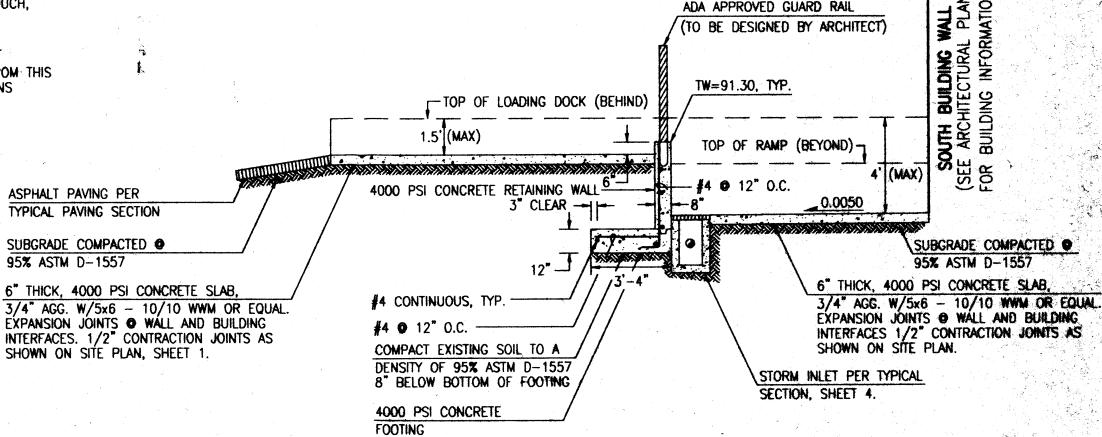
THE CALCULATIONS CONTAINED HEREIN ANALYZE BOTH THE EXISTING AND DEVELOPED CONDITIONS FOR THE 100 YEAR, 6-HOUR RAINFALL EVENT. THE PROCEDUR for 40—acre and smaller basins, as set forth in the revision of section 22.2, HYDROLOGY OF THE DEVELOPMENT PROCESS MANUAL, VOLUME 2, DESIGN CRITERIA, DATED JANUARY, 1993, HAS BEEN USED TO QUANTIFY THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED. ALSO CONTAINED HEREIN ARE CALCULATIONS FOR POND VOLUME, UTILIZING THE AVERAGE END AREA METHOD, PIPE INLET CAPACITY, UTILIZING THE ORIFICE EQUATION, PIPE DISCHARGE CAPACITY UTILIZING THE HAZEN-WILLIAMS EQUATION, AS WELL AS CALCULATIONS FOR A HYDROGRAPH PER SUBSECTION A-8, HYDROGRAPH FOR SMALL WATERSHED. AS DEMONSTRATED BY THESE CALCULATIONS THERE WILL BE A GROSS INCREASE IN THE PEAK RATE OF DISCHARGE AND VOLUME OF RUNOFF GENERATED BY THIS SITE. AS FURTHER DEMONSTRATED BY HYDROGRAPH AND ORIFICE CALCULATIONS, THE PROPOSED DETENTION POND WILL RESTRICT THE PEAK RATE OF DISCHARGE FROM THIS SITE TO 2.2 CFS WHICH IS A NET DECREASE IN THE PEAK RATE OF RUNOFF GENERATED BY THIS SITE.

THE PROPOSED CONTROLLED DISCHARGE OF RUNOFF FROM THIS SITE TO THE DOWNSTREAM DRAINAGE FACILITY IS APPROPRIATE DUE TO THE FOLLOWING FACTORS:

- THIS PLAN IS CONSISTENT WITH THE REQUIREMENTS ESTABLISHED BY THE PREVIOUSLY APPROVED CONCEPTUAL GRADING AND MASTER DRAINAGE PLAN FOR THIS SITE, AS WELL AS WITH GRADING AND DRAINAGE PLANS FOR NEARBY PROPERTIES WITHIN THE PASEO DEL NORTE INDUSTRIAL PARK.
- DEVELOPED AND UNDEVELOPED RUNOFF WILL BE CONVEYED TO THE DRAINAGE FACILITIES DESIGNED AND CONSTRUCTED FOR THE PURPOSE OF PROVIDING AN OUTFALL FOR STORM RUNOFF FROM THIS PROPERTY
- THERE ARE NO IMPROVEMENTS PROPOSED WITHIN BASIN A. INASMUCH, THIS BASIN REMAINS UNAFFECTED BY THIS SUBMITTAL, ALLOWING HISTORIC DRAINAGE PATTERNS TO CONTINUE UNALTERED.
- THE COMBINATION OF DETENTION PONDING AND CONTROLLED DISCHARGE RESULTS IN A NET DECREASE IN PEAK DISCHARGE FROM THIS SITE, BRINGING THE SITE INTO COMPLIANCE WITH THE RESTRICTIONS ESTABLISHED BY THE MASTER DRAINAGE PLAN FOR THIS SITE.



TYPICAL STORM INLET SECTION SCALE: 1'' = 1' - 0''

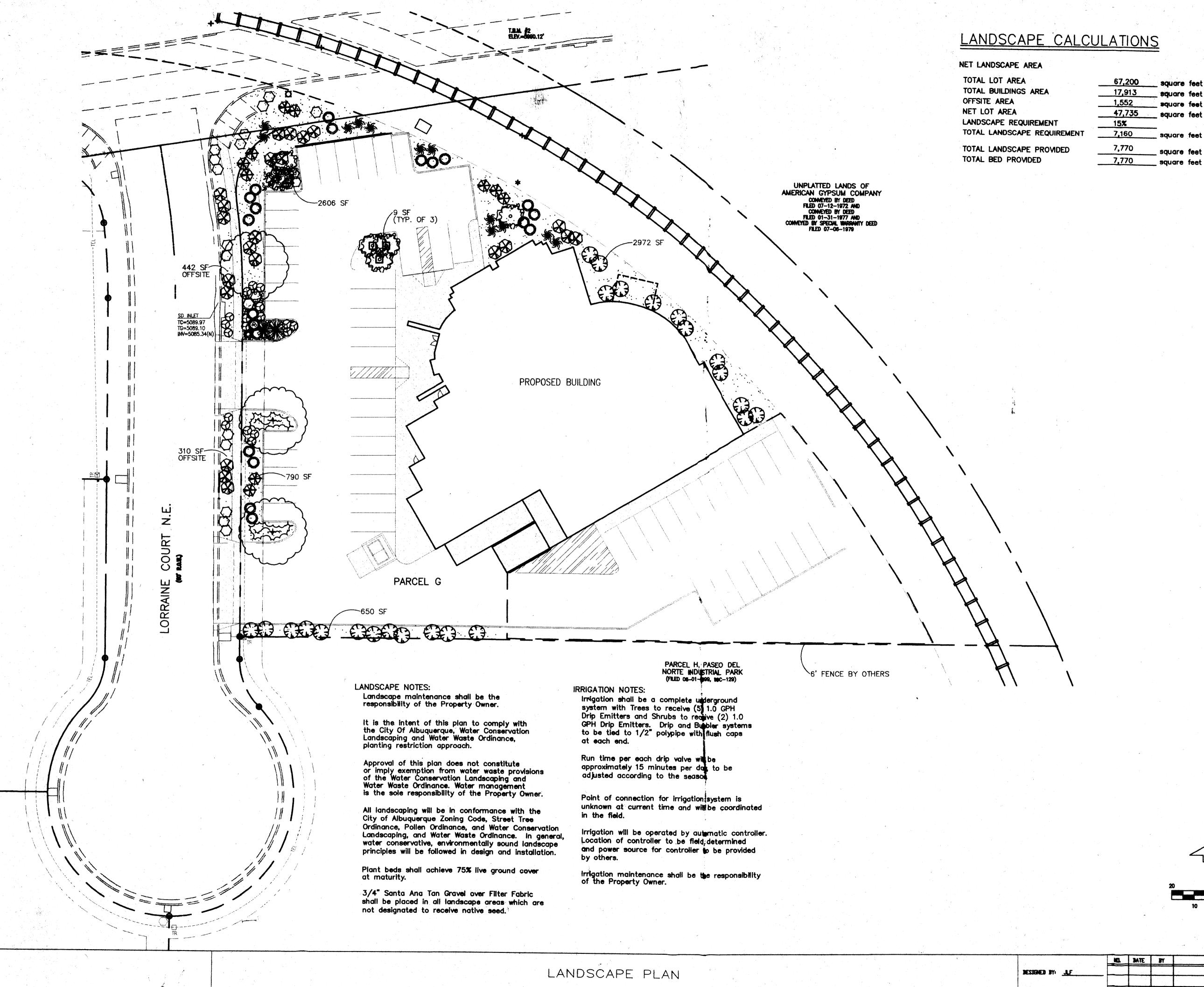


1 tp = 10 MIN tp = 13 MINV_{POND} = 4030 CF ORELEASE = 2.2 OFS TIME (MINUTES)

HYDROGRAPH

DRAINAGE PLAN, CALCULATIONS, HYDROGRAPH AND SECTIONS ALBUQUERQUE SAFE CO.

REVISIONS NO. DATE BY 2000,075.2 12-2000



67,200 square feet 17,913 square feet 47,735 square feet square feet

PLANT LEGEND

ASH (H) OR HONEY LOCUST (H) 4
Fraxinus pennsylvanica
Gleditsia triacanthos
2" Cal.



WASHINGTON HAWTHORN (H) 6 Crataegus phaenopyrum 15 Gal.



PALM YUCCA (L) 2



MAIDENGRASS (M) 12 Miscanthus sinensis 5 Gal.



ROSEMARY (M) 20 Rosmarinus officianalis 5 Gal. INDIAN HAWTHORN (M) 22 Raphiolepis indica 5 Gal.



PHOTINIA (M) 10



Photinia frasera 5 Gal.



AUTUMN SAGE (M) 20



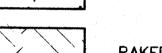
CHAMISA (L) 24 Chrysothamnus nauseosus 1 Gal.





OVERSIZED GRAVEL & BOULDERS





RAKED EARTH



COMMERCIAL GRADE STEEL EDGING





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Cont. Lic. #26458 7909 Edith N.E. Albuquerque, NM 87184 Ph. (505) 898-9690 Fax (505) 898-7737 it@hilltoplandscaping.com

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ALBUQUERQUE SAFE CO.

REVISIONS 2000.075.1 11-2000 APPROVED BY JO

