

City of Albuquerque

P.O. BOX 1293 ALBUQUEPIUE, NEW MEXICO 87103

December 16, 1932

Jeff Mortensen, P.E. Jeff Mortensen & Associates 6010-B Midway Park Boulevard, NE Albuquerque, New Mexico 87109

RE: DRAINAGE PLAN FOR PINNACLE VIEW ESTATES, TNIT II (J-23/D9C3) ENGINEER'S STAMP DATED NOVEMEER 12, 1992

Dear Mr. Mortensen:

Based on the information provided on the referenced submittal received November 13, 1992 for Grading Certification, the only outstanding concern Hydrology has prior to acceptance is that your developer committed to construct the low flow channel when he began development of Unit III. The attached City's letter dated March 2, 1992 identified the requirements for construction of the low flow channel.

It has come to my attention from the Engineer of Thit III, that the developer of Unit III is not the same developer of Unit II. Since we are dealing with a different developer on Unit III it appears that the fair way to resolve this issue would be that the total cost for the low flow channel be prorated per the number of lots on Unit II and Unit III.

The City would like to ask that both developers work out an agreement and provide a copy of this agreement to the City so we can approve your Certification. It is my understanding that there may be some other construction items that the developers will have to share costs, I would hope that this item could be included.

If you should have any questions, please do not hesitate to call me at 768-2666.

PUBLIC WORKS DEPARTMENT

Jeff Mortensen, P.E. Jeff Mortensen & Associates 6010-b Midway Park boulevard, NE Albuquerque, NM 87109 Page 2

Cordially,

Gilbert Aldaz, P.E. & P.S. Civil Engineer/Hydrology

xc: Dan Hogan , Hydrology Division Manager Fred Aguirre, City Hydrologist

Lynda Michelle DeVanti, DRC Scott McGee, Issacson & Arfman

GA/wp+3143



City of Albuquerque

P.O. BOX 1293 ALEUQUERQUE, NEW MEXICO 87103

March 1, 1992

Jeff Mortensen, P.E. Jeff Mortensen & Associates .6010-B Midway Park Boulevard, NE Albuquerque, New Mexico 87109

RE: DRAINAGE PLAN FOR PINNACLE VIEW ESTATES, UNIT II (J-23/D9C3) ENGINEER'S STAMP DATED DECEMBER 20, 1991

Dear Mr. Mortensen:

Dan Hogan, Hydrology Division Manager, identified a problem that me and you overlooked. The problem is that the contrate portion of the Lomas Channel does not connect with the bottom of the desilting basin, resulting in ponding between the end of the channel and the pond bottom. The real concern is that the channel does not carry nuisance flows, meaning this new subdivision will aggravate this ponding situation.

It is my understanding you and Dan agreed to construct this low flow channel to eliminate the ponding as part of Unit III, and that you will include it in the infrastructure list for that phase. It be sure this is your intent could you please submit a letter of commitment signed by the owner to build this in the future with Unit III.

The other concern I have is Certification of Grading should have been included in the infrastructure list. Due to both our oversights, Fred has requested that you amend the infrastructure list and get new signatures at DR3.

I would like to request that the letter of commitment and revised infrastructure list be submitted prior to managing off on Work Order plans.

If you should have any questions, please do not hesitate to call me at 763-2650.

Cordializa

Gilbert Aldaz, P.E. & P.S. Civil Engineer/Hydrology

xc: Dan Hogan , Hydrology Division Manager Fred Aguirre, City Hydrologist Roger Green, DRC Chairman

GA wp+3143

PUBLIC WORKS DEFARTMENT

Walter H. Nickerson, Jr., P.E. Assistant Director Public Works ENGINEERING GROUP

Telephone (505) 768-2500

DF TNAGE INFORMATION SHEET 920552 PINNACLO VIEW PROJECT TITLE: ESTATES II ZONE ATLAS/DRNG. FILE #: J 23/09C3 work order #: 3467.91 DRB #: 92-32 EPC #: LEGAL DESCRIPTION: PINNACLE VIEW CESTATES, UNIT JT CITY ADDRESS: ENGINEERING FIRM: JEFF MORTENSEN & ASSOC. CONTACT: JEFF MORTENSIA ADDRESS: 6010-B MIDWAY PARK BLVO NE PHONE: 345-4250 OWNER: NEWMAN Homes CONTACT: PAUL NEWMAN PHONE: 294-7789 ADDRESS: ARCHITECT: ___ CONTACT: ADDRESS: PHONE: SURVEYOR: JEFF MORTENSEN & ASSOC CONTACT: JEFF MORTENSEN ADDRESS: 4010-B MIDWAY PARK BLVD NE PHONE: 345-4-250 CONTRACTOR: SUMBAICE MECHANICAL CONTACT: CARLOS SPISSS ADDRESS: CHECK TYPE OF APPROVAL SOUGHT: TYPE OF SUBMITTAL: DRAINAGE REPORT SKETCH PLAT APPROVAL DRAINAGE PLAN PRELIMINARY PLAT APPROVAL S. DEV. PLAN FOR SUB'D. APPROVAL CONCEPTUAL GRADING & DRAINAGE PLAN GRADING PLAN S. DEV. PLAN FOR BLDG. PERMIT APPROVAL EROSION CONTROL PLAN SECTOR PLAN APPROVAL FINAL PLAT APPROVAL ENGINEER'S CERTIFICATION

GRADING PLAN

EROSION CONTROL PLAN

ENGINEER'S CERTIFICATION

OTHER

PRE-DESIGN MEETING:

YES

NO

COPY PROVIDED

S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

SECTOR PLAN APPROVAL

FINAL PLAT APPROVAL

BUILDING PERMIT APPROVAL

CERTIFICATE OF OCCUPANCY APPROVAL

GRADING PERMIT APPROVAL

S.A.D. DRAINAGE REPORT

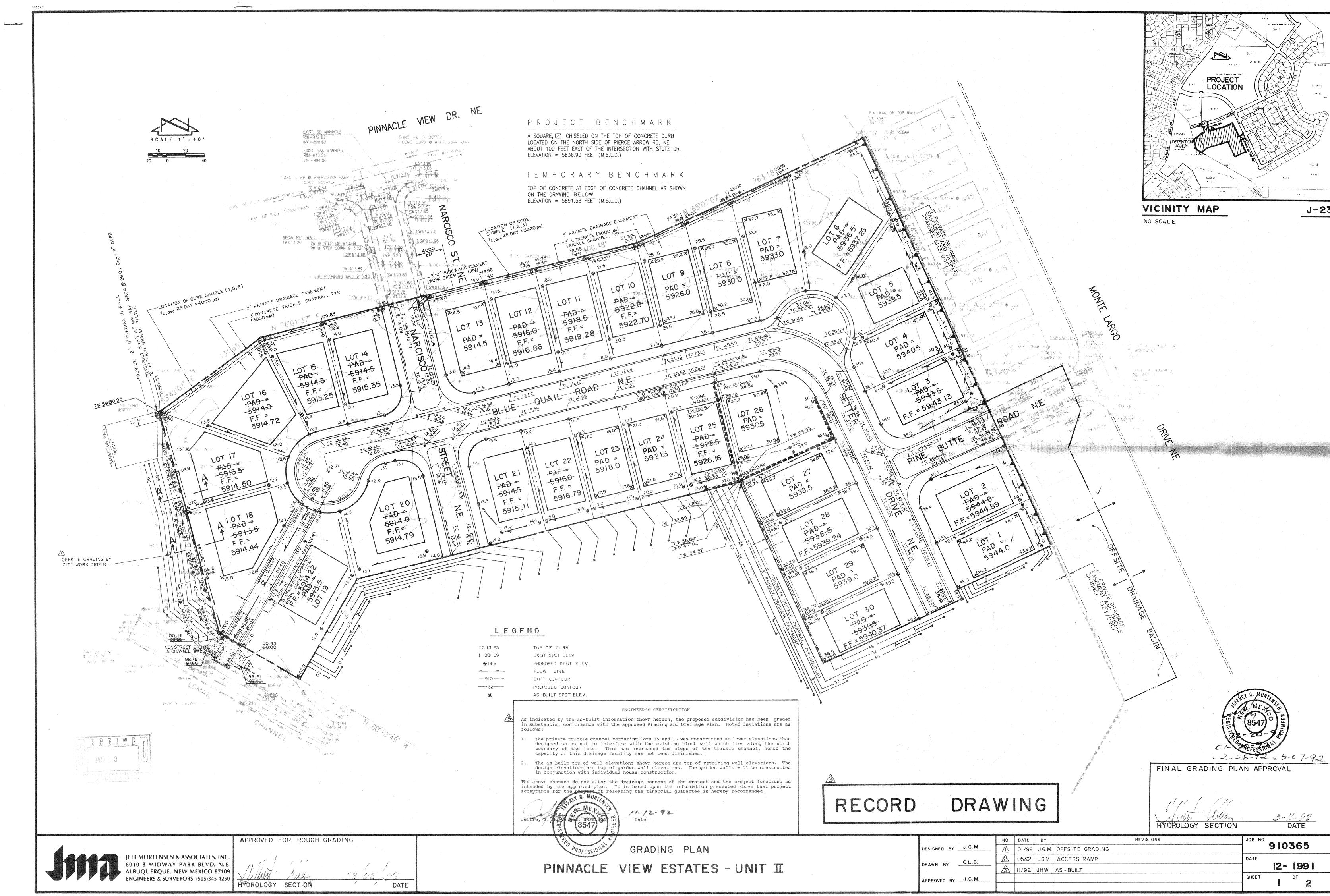
DRAINAGE REQUIREMENTS (I.S. J.A.)

OTHER

(SPECIFY)

DATE SUBMITTED: 11-13-92

BY: JEFFREY G. NICKTENSEN



1. Vicinity Map 2. Grading Plan

3. Calculations 4. Grading Notes

5. Typical Sections

Harry Dark

As shown by the Vicinity Map, the site is located within the Embudo Hills Area, immediately east of the Lomas Detention Basin. The site is bounded on the north by Pinnacle View Estates-Unit I, on the east by existing residential development, and the south by the Upper Lomas Channel. The Upper Lomas Channel drains from southeast to northwest and discharges to the Lomas Detention Basin which, as stated above, is situated to the west of the site.

As shown by Panel 31 of 50 of the National Flood Insurance Program Flood Insurance Rate Maps for the City of Albuquerque, New Mexico, dated October 13, 1984, this site does not lie within a designated flood hazard zone. This site does lie adjacent to areas of designated flooding characterized by constructed drainage improvements. These areas are the Lomas Detention Basin and the Upper Lomas Channel. According to the above referenced mapping, 100-year flows are confined to these facilities.

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 the proposed improvements, and 4) continuity between existing and proposed grades. As shown by this plan, the site presently slopes from east to west toward the Lomas Detention Basin. Minor offsite flows are received from Pine Butte Road and a portion of seven residential lots which discharge to Pine Butte Road. This offsite contributing area is shown on the preceding Grading Plan. The runoff generated by this small offsite area is quantified in the calculations hereon. These offsite flows will be accepted and conveyed through the site within the developed roadway system. The streets will drain in a westerly direction to the Blue Quail Road N.E. cul-de-sac. Runoff will exit the cul-de-sac by a public concrete drainage channel. This channel will discharge to the Upper Lomas Channel just upstream of its discharge to the Lomas Detention Basin. The calculations shown hereon indicate that the streets and the channel will both have sufficient capacity to convey the 100-year developed runoff calculated for this site and the offsite basin previously identified.

The discharge of developed runoff from the lots to the public streets is encouraged. In several instances, however, the rear yard portion of the lots will need to drain to a private drainage easement. The private drainage easement will lie along the rear lot line of the lots. A private drainage facility designated as a trickle channel will be constructed within this easement. The trickle channel will accept the runoff generated by the rear yard portion of the site and will convey that runoff to public right-of-way where it will discharge through a sidewalk culvert. The need for this cross-lot drainage in the rear yard areas is necessary so that the rear yards do not require additional filling, thereby creating an adverse grade situation with adjacent residential lots. The majority of the adjoining lots which could be impacted are already developed residentially. This decision has been made in view of the recent awareness and sensitivity to grade separations at property lines.

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 to calculate the peak rate of discharge while the SCS Method has been used to quantify the volume of runoff generated. Both Methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II, coupled with the Mayor's Emergency Rule dated October 14, 1986. As shown by these calculations, the development of this site will increase the amounts of runoff generated within the project. The design flow for the hydraulic computations has been based upon the 100-year developed peak discharge plus the 100-year offsite flow, as calculated. The hydraulic computations demonstrate that the streets will have capacity to convey this design flow. For the purpose of analysis, the minimum slope has been utilized for calculation. The public drainage channel hydraulics have been analyzed for capacity using the Manning Equation for Open Channel Flow and by the Weir Equation for the channel entrance conditions. Both sets of calculations indicate that the structure will have adequate capacity to receive and convey the runoff generated by this site and the designated offsite basin. Lastly, the capacity of the private trickle channel has been analyzed. The private trickle channel, under its minimum slope conditions of 1%, will have a capacity of slightly greater than 8 cfs. The maximum number of lots discharging to the trickle channel is 8. This represents approximately 27% of the site. By proportion, that portion of the site which could discharge through this channel, in a worst case scenario, would be approximately 6 cfs, thereby demonstrating that the trickle channel will have adequate capacity to handle the runoff it will receive. The runoff received by the trickle channel will be conveyed to a point of discharge to public right-of-way. From that point, the runoff will be carried within the streets to the previously mentioned public drainage channel. The outfall for this site is the Upper Lomas Channel.

The lots shown on the grading plan will result from the subdivision of Tract H-1-A-1, Unit 1, Embudo Hills DRB-91-321. The property to the south of these lots shall be designated as Tract H-1-A-2, Unit 1940/ MER GRADING MER Embudo Hills. The development of Tract H-1-A-1 will constitute the first 30 lots of an overall development which is shown by Amended Site Development Plan. The Amended Site Development Plan will reduce the total number of lots collectively for the two tracts. Each tract will discharge its runoff to the Lomas Channel. The development of Tract H-1-A-2 shall be required to discharge its runoff directly to the channel and shall not discharge its runoff via Narcisco Street to Blue Quail Road. The discharge of runoff from Tract H-1-A-2 to Blue Quail Road would overtax the capacity of the public drainage channel entrance conditions. Because of this, a separate channel will be required to drain the latter development. The further subdivision of Tract H-1-A-2 will require a separate submittal to more thoroughly address the hydrologic and hydraulic characteristics of that development.

RECORD

DRAWING

JMA #910365 HYDROLOGIC CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey, Plate 32: Te - Tesajo-Millett Stony Sandy Loams Hydrologic Soil Group: A Existing Pervious CN = 54 (DPM Plate 22.2 C-3

Pasture or Range Land: fair condition) Developed Pervious CN = 39 (DPM Plate 22.2 C-3 Open Space: good condition)

Time of Concentration/Time to Peak

 $T_C = 0.0078 L^{0.77}/S^{0.385}$ (Kirpich Equation)

 $T_D = T_C = 10 \text{ min.}$ Point Rainfall

 $P_6 = 2.55$ in. (DPM Plate 22.2 D-1)

Rational Method

Discharge: Q = CiA

where C varies $i = P_6 (6.84) T_C^{-0.51} = 5.39 in/hr$ $P_6 = 2.55$ in (DPM Plate 22.2D-1) $T_C = 10 \text{ min (minimum)}$ A = area, acres

SCS Method

Volume: V = 3630(DRO) A

Where DRO = Direct runoff in inches A = area, acres

Existing Condition

 $A_{total} = 278,800 \text{ sf} = 6.4 \text{ Ac}$ Undeveloped area = 278,800 sf (1.0)C = 0.40 (Weighted average per Emergency Rule, 1/14/86) $Q_{100} = CiA = 0.40(5.39)(6.4) = 13.8 cfs$ % impervious = -0-% Composite CN = 54 (DPM Plate 22.2 C-3) DRO = 0.10 in (DPM Plate 22.2 C-4) $V_{100} = 3630 \text{ (DRO)A} = 2300 \text{ cf}$

<u>Developed Condition</u>

 $A_{total} = 278,800 \text{ sf} = 6.4 \text{ Ac}$ Roof area = 60,000 sf (0.22)Paved area = 105,200 sf (0.38)Landscaped area = 113,600 sf (0.40)C = 0.66 (Weighted average per Emergency Rule, 1/14/86) $Q_{100} = CiA = 0.66(5.39)(6.4) = 22.8 cfs$ % impervious = 60 % Composite CN = 74 (DPM Plate 22.2 C-3) DRO = 0.65 in (DPM Plate 22.2 C-4) $V_{100} = 3630 \text{ (DRO)A} = 15,100 \text{ cf}$

Offsite Basin

 $A_{total} = 22,600 \text{ sf} = 0.52 \text{ Ac}$ Roof area = 9200 sf (0.41) Paved area = 4400 sf (0.19)Landscaped area = 9000 sf (0.40) C = 0.65 (Weighted average per Emergency Rule, 1/14/86) $Q_{100} = CiA = 0.65(5.39)(0.52) = 1.8 cfs$

 $\Delta Q_{100} = 22.8 - 13.8 = 9 \text{ cfs (increase)}$ $\Delta V_{100} = 15,100 - 2300 = 12,800 \text{ cf (increase)}$

ENGINEER'S CERTIFICATION As indicated by the as-built information shown hereon, the proposed subdivision has been graded in substantial conformance with the approved Grading and Drainage Plan. Noted deviations are as The private trickle channel bordering Lots 15 and 16 was constructed at lower elevations than designed so as not to interfere with the existing block wall which lies along the north boundary of the lots. This has increased the slope of the trickle channel, hence the capacity of this drainage facility has not been diminished.

The as-built top of wall elevations shown hereon are top of retaining wall elevations. The design elevations are top of garden wall elevations. The garden walls will be constructed in conjunction with individual house construction.

ainage concept of the project and the project functions as is based upon the information presented above that project GARDEN WALL -INSTALL 12" PREFORMED EXPANSION JOINT +3000 PS/ CON

NOTE: TOOL 1/2" THEAMSVERSE CONST, RUCTION

TYPICAL TRICKLE CHANNEL SECTION SCALE: 1" = 1'0"

* MOST OF THE CHANNEL WAS CONSTRUCTED
W/ 3000 PSI CONCRETE; LOCATIONS OF CORE SAMPLES & TEST RESULTS SHOWN ON

Using DPM Plate 22.3 D-1 for S = 0.0050 and D = 0.70,

Using DPM Plate 22.3 D-1 for S = 0.0800 and D = 0.70,

1. DESIGN FLOW

2. STREET CAPACITY

a. Minimum Slope (0.0050)

 $Q_{1/2} = 26$ cfs and v = 3.5 fps

 $Q_{capacity} = 2 \times Q_{1/2} = 52 \text{ cfs}$

b. Maximum Slope (0.0800)

@Q_{Design} = 25 cfs

and v = 2.6 cfs

@Q_{Design} = 25 cfs,

Then $Q_{1/2} = 12$ cfs,

and v = 6.5 cfs

 $D \times V = 2.3 << 6.5$

3. CHANNEL HYDRAULICS

 $R^{2/3} = 1.40$

S = 0.0840

 $S^{1/2} = 0.29$

d = 0.15 feet

v = 9 fps

Let n = 0.013

 $Q_{100} = 25 \text{ cfs}$

Where L = 19'

Let n = 0.013

 $R^{2/3} = 0.54$

D = 0.35 feet,

 $Q = (1.49/n)AR^{2/3}S^{1/2}$ (Manning Equation)

 $A = w \times d = 19 \times 2 = 38 \text{ sf}$

W = 20 - 2(0.50) = 19

R = A/p = 38/23 = 1.65

4. CHANNEL ENTRANCE HYDRAULICS

H = 0.67 (curb height)

 $O = 3.33LH^{3/2}$ (Weir Equation)

Qcapacity = 35 cfs

0 Opesign = 25 cfs, $0 \text{ H}^3/2 = 0/(3.33\text{L})$

A = 2(0.67) = 1.34 sf

R = A/F = 0.40

Proportion = 8/30 = 0.27

Qcapacity = 8.3 cfs Maximum # of lots served = 8

S = 0.01(min)

d = 2 feet (minimum)

 $Q_{capacity} = 1768 \text{ cfs} >> Q_{100}$

 $Q_{1/2} > 70 \text{ cfs}$

Then $Q_{1/2} = 12$ cfs, D = 0.52 feet,

HYDRAULIC COMPUTATIONS

 $Q_{Design} = Q_{100} + Q_{Offsite} = 24.6 \text{ cfs} \frac{1}{2} 25 \text{ cfs}$

GRADING NOTES:

1. ALL FILL SHALL BE COMPACTED TO A MINIMUM OF 90% ASTM D-1557; HOUSE PADS SHALL BE COMPACTED AT 95%

2. THE PAD ELEVATIONS SHOWN HEREON ARE FOR ROUGH GRADING PURPOSES.

3. FINISHED FLOOR ELEVATIONS MAY VARY FROM THE PAD ELEVATIONS AND WILL BE DETERMINED AS A FUNCTION OF INDIVIDUAL HOUSE DESIGN.

4. FINISHED FLOOR ELEVATIONS SHOULD BE ESTABLISHED AT A MINIMUM OF 6 INCHES ABOVE PAD ELEVATIONS; DEVIATIONS FROM THESE GUIDELINES MUST BE BASED ON THE RECOMMENDATIONS AND/OR DESIGN OF A COMPETENT DESIGN PROFESSIONAL.

5. NO CROSS-LOT DRAINAGE WILL BE ALLOWED UNLESS PROVIDED FOR BY PRIVATE DRAINAGE EASEMENT.

6. RETAINING WALLS SHALL BE CONSTRUCTED BY THE DEVELOPER.

7. YARD (GARDEN) WALLS SHALL BE CONSTRUCTED BY THE LOT OWNER OR ITS BUILDER.

8. THE FINISHED GRADING OF EACH LOT SHALL BE ACCOMPLISHED BY THE LOT OWNER OR ITS BUILDER. RUNOFF SHOULD BE DIRECTED TO THE STREETS OR DRAINAGE EASEMENT (IF AVAILABLE).

9. MAXIMUM SLOPES SHALL BE 3:1; MINIMUM SLOPES SHALL BE 1%.

10. TWO (2) WORKING DAYS PRIOR TO ANY EXCAVATION, CONTRACTOR MUST CONTACT NEW MEXICO ONE CALL SYSTEM, 260-1990, FOR LOCATION OF EXISTING UTILITIES.

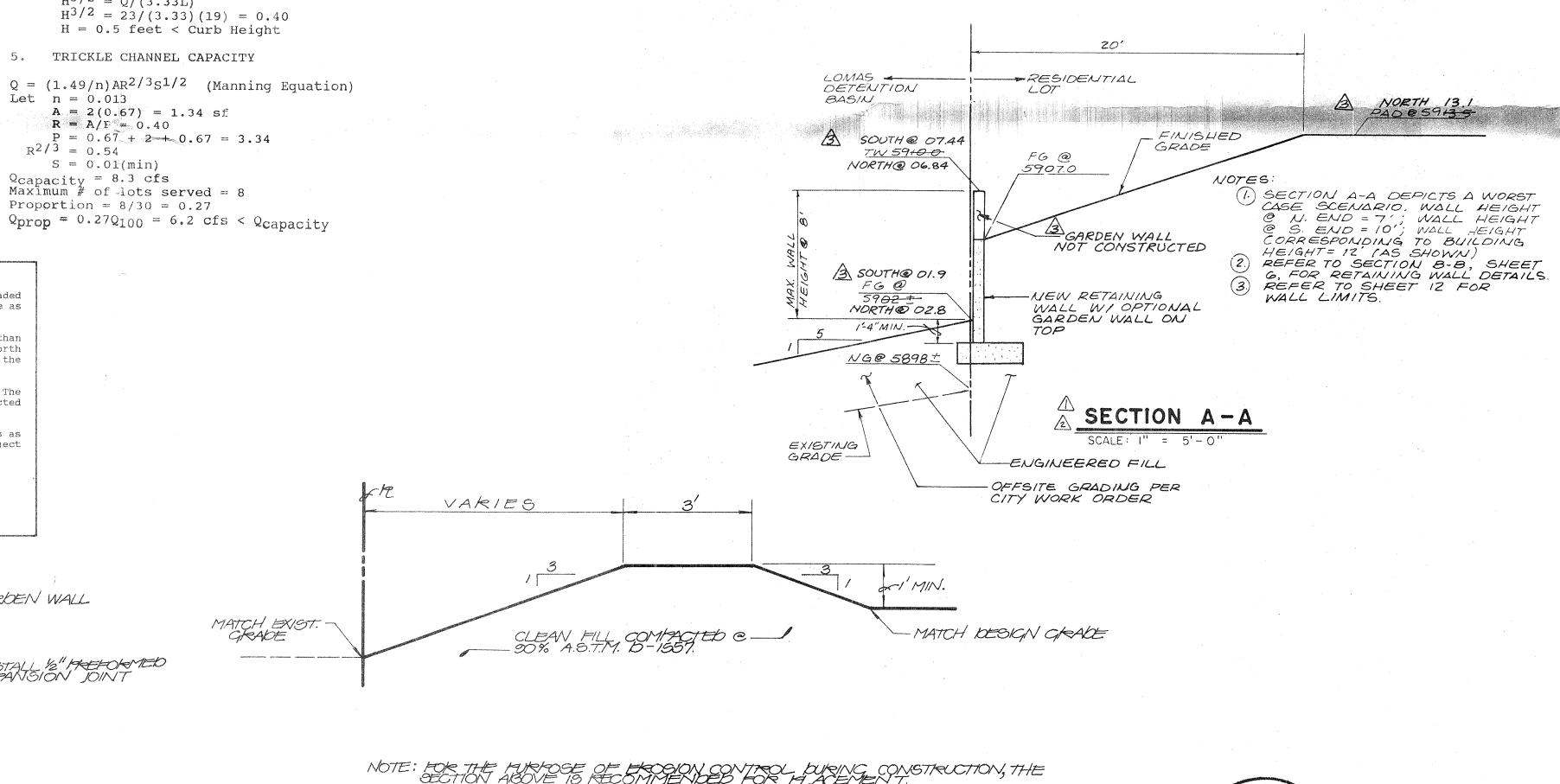
11. IF ANY UTILITY LINES, PIPELINES, OR UNDERGROUND UTILITY LINES ARE SHOWN ON THESE DRAWINGS, THEY ARE SHOWN IN AN APPROXIMATE MANNER ONLY, AND SUCH LINES MAY EXIST WHERE NONE ARE SHOWN. IF ANY SUCH EXISTING LINES ARE SHOWN, THE LOCATION IS BASED UPON INFORMATION PROVIDED BY THE OWNER OF SAID UTILITY, 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.

12. 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.

13. 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.

14. THE CONTRACTOR SHALL SECURE "TOPSOIL DISTURBANCE PERMIT" PRIOR TO BEGINNING CONSTRUCTION. AN EXCAVATION PERMIT IS REQUIRED FOR ALL WORK WITHIN PUBLIC RIGHT-OF-WAY.

15. CONTRACTOR SHALL CONTACT MR. GLENN JURGENSON, STORM DRAIN MAINTENANCE, C.O.A., 9805 CENTRAL AVENUE N.E., (505) 291-6214 PRIOR TO COMMENCEMENT AND FOLLOWING COMPLETION OF ALL GRADING WITHIN THE LOMAS DETENTION BASIN AND LOMAS CHANNEL RIGHT-OF-WAY.



TYPICAL INTERIM EROSION CONTROL BERM SECTION



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

DRAINAGE PLAN, CALCULATIONS, GRADING NOTES & SECTION PINNACLE VIEW ESTATES - UNIT I

		AND AND SHOULD					en.
	NO.	DATE	BY	REVISIONS	JOB NO.		_
DESIGNED BY J.G. M.	Δ	01/92	J.G.M.	OFFSITE GRADING	910365		
DRAWN BY J.M.C.	2	02/92	JGM	REVISE SECTION B-B	DATE	12-1991	
	<u> </u>	11/92	JHW	AS - BUILT			
APPROVED BY J.G.M.					SHEET	OF	
					- Section Sect	2 2	