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File 1993-0083 Name: North Crest Village Subdivision - Final Plan/Plat

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		A few items are denoted with an asterisk (*), which means they are to be scanned for permanent record on the ISYS retrieval system. In some instances, items are found on the list but are not present in the scanned electronic development file because they are already scanned elsewhere on the system. These scanned documents are denoted with (**) and will be found on the ISYS query system in their designated categories. Documents specific to certain files, not found in the standard checklist materials, are listed at the bottom of the page. Remaining items, (not selected for scanning), will be listed and marked present. This index can serve as a quick guide for the contents of each file.
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		***Review Sheet Summary**
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		***City Council staff report and exhibits**
		***Summary sheet of final conditions**

DOCUMENT DESCRIPTION:

X	X	Correspondence	X		Street Plan - not approved plan
X	X	Subsurface Soils Exploration - 5/6/93	X		Street Profile - not approved plan
X	X	Development Improvements Agreement - not signed - scanned with file	X		7TH Street Cross Sections- not approved plan
X	X	Planning Commission Minutes - 5/4/93, 8/3/93, 9/7/93 - **	X		Utility Composite - not approved plan
X	X	Drainage Report - 6/30/93	X		Water and Sewer Plan - not approved plan
X	X	Written approval from Utility Coordinating Committee - 8/11/93			
X		Declaration of Restrictive Covenants - Bk 2041/Pg 958			
X		E-mails			
X		List of construction costs for Northcrest Subdivision			
X	X	Northcrest Subdivision Plat - GIS Historical Maps - **			
X		Planning Commission Notice of hearing mail-outs - for 8/3/93			

DEVELOPMENT APPLICATION

Community Development Department
250 North 5th Street Grand Junction, CO 81501
(303) 244-1430

Do NOT Remove From Office

A

Receipt _____
Date _____
Rec'd By _____
File No. #83 93

We, the undersigned, being the owners of property situated in Mesa County, State of Colorado, as described herein do hereby petition this:

PETITION	PHASE	SIZE	LOCATION	ZONE	LAND USE
[X] Subdivision Plat/Plan	[ ] Minor [X] Major [ ] Resub	10 AC	NE HEMLOCK DR & 7th ST.	PR-2 RSF	20 SF LOTS
[ ] Rezone				From: To:	
[ ] Planned Development	[ ] ODP [ ] Prelim [ ] Final				
[ ] Conditional Use					
[ ] Zone of Annex					
[ ] Text Amendment					
[ ] Special Use					
[ ] Vacation					[ ] Right-of-Way [ ] Easement

[X] PROPERTY OWNER [ ] DEVELOPER [X] REPRESENTATIVE

NORTH CREST DEVELOPMENT, LLC. Kay Scott mgr. c/o Gregg Cranston		Thomas A. Logue
Name	Name	Name
1401 North 1st Street		227 So. 9th Street
Address	Address	Address
Grand Junction, CO. 81501		Grand Jct. CO 81501
City/State/Zip	City/State/Zip	City/State/Zip
241-4000		245-4099
Business Phone No.	Business Phone No.	Business Phone No.

NOTE: Legal property owner is owner of record on date of submittal.

We hereby acknowledge that we have familiarized ourselves with the rules and regulations with respect to the preparation of this submittal, that the foregoing information is true and complete to the best of our knowledge, and that we assume the responsibility to monitor the status of the application and the review comments. We recognize that we or our representative(s) must be present at all hearings. In the event that the petitioner is not represented, the item will be dropped from the agenda, and an additional fee charged to cover rescheduling expenses before it can again be placed on the agenda.

Thomas A. Logue — 6/1/93
Signature of Person Completing Application — Date

Roy C Scott

Signature of Property Owner(s) - Attach Additional Sheets if Necessary

REVIEW COMMENTS

FILE #83-93 **TITLE HEADING:** Final Plan/Plat - North Crest Village Subdivision

LOCATION: NE corner of Hemlock Drive & 7th Street

PETITIONER: North Crest Development Company, LLC

PETITIONER'S ADDRESS/TELEPHONE: c/o Gregg Cranston
1401 North 1st Street
Grand Junction, CO 81501
241-4000

PETITIONER'S REPRESENTATIVE: Thomas A. Logue

STAFF REPRESENTATIVE: Karl Metzner

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED ON OR BEFORE 5:00 P.M., JULY 27, 1993.

PARKS & RECREATION DEPARTMENT **7/6/93**
Don Hobbs **244-1542**

Open space fee calculated at 20 units @ $225 each = $4,500.

U.S. WEST **7/8/93**
Leon Peach **244-4964**

New or additional telephone facilities necessitated by this project may result in a "contract" and up-front monies required from developer, prior to ordering or placing of said facilities. For more information, please call Leon Peach 244-4964.

CITY POLICE DEPARTMENT **7/15/93**
Martyn Currie **244-3563**

No comments.

UTE WATER **7/15/93**
Gary R. Mathews **244-7491**

Ute Water has an 18" main line on the west side of 26 1/2 Road. Adequate domestic and fire flow requirements exist. Valves are installed at the main line. Installation of valves required for all fire plugs.

Policies and fees in effect at the time of application will apply.

CITY DEVELOPMENT ENGINEER **7/14/93**
Gerald Williams **244-1591**

See attached comments, red-lined text and red-lined drawings.

CITY UTILITIES ENGINEER **7/15/93**
Bill Cheney **244-1590**

WATER - Ute

1. Minimum deflection radius for 8" PVC pipe is 200 feet. Radius shown on plat is 174', therefore bends shall be required.
2. The waterline shall be looped and not dead end as shown.

SEWER - City/County Sewer System

1. Minimum 20' easement required for new sewer line installations unless approved otherwise.
2. Show all utilities on "Utilities Composite" which should be a part of this submittal.
3. Show street name on plan/profile sheet.

COMMUNITY DEVELOPMENT DEPARTMENT **7/19/93**
Karl Metzner **244-1439**

Building envelopes should be designated on odd shaped lots to reduce confusion about setbacks. Show all proposed fencing, screening and access signage, if any. Suggest petitioner review possibility of pedestrian access to Flower Street.

GRAND VALLEY WATER USERS **7/19/93**
G.W. Klapwyk **242-5065**

Any comments previously made by Grand Valley Water Users Association, including those of mid-April, 1993 (File #44-93), remain unchanged (copy attached).

Concerning the "Irrigation Plan" as attached hereto, the headgates to control irrigation water to the subdivision, each feeding a 6" pipe, should be the type shown on the drawing (screw type) and not slide gates as stated. True slide gates are short lived and not sturdy enough for extended use in this case.

GRAND JUNCTION FIRE DEPARTMENT **7/19/93**
George Bennett **244-1400**

Provide written documentation that the fire flow demand can be met.

CITY DEVELOPMENT ENGINEER **7/19/93**
Gerald Williams **244-1591**

See attached comments, red-lined text and red-lined drawings.

PUBLIC SERVICE COMPANY **7/20/93**
Dale Clawson **244-2695**

Electric: This is in GVRPL service area.
Gas: No objection.

Review Comments
on
North Crest Village
#83-93
7/19/93

Itemized comments refer to red-lined numbers on attached plans and reports. However, for comment #1, while some notes may be red-lined, most are not.

General

1. Red-lined drawings and report are submitted attached. In general, many of the comments made in the 4/20/93 letter are not addressed, nor has the required features and information per SSID manual checklists been provided. These make up the bulk of the deficiencies, are to be considered as already established comments (of which most are not repeated here), and must be addressed the same as any other comment.

Plat

2. Show building set backs on lots 9, 10, 13, and 15.

3. Plat dedication must be corrected. See the attached guidelines. (To be sent separate. SRW)

4. Easement delineation and labeling is inadequate. See the attached red-lined plat.

5. Show ROW width.

Sheet ST-1

6. Cross-sections are required on N. 7th Street per SSID IX-27 from Nina Mae Court to Central Drive at 50 foot spacing. Slope of new asphalt must be within 1% and 3%, inclusive, and may not have greater than a 2% algebraic change with existing asphalt. Remove the "2 %" cross slope from the typical street section for 7th Street.

7. Curb, gutter, sidewalk, and the 17' pavement widening must be provided along the full length of the subdivision; that is, from Station 0+00 to 6+59.73. Provide delineators at 30' spacing along the alignment where the asphalt curb is currently proposed, and move the asphalt curb to the northern limits of the project, angled only as required to maintain positive slope. Provide a new taper at the south end of the project as shown.

8. Identify "right" or "left" on station equation at the end of the cul-de-sac.

9. Either provide a centerline profile for Hemlock Court (per SSID) or show in plan view the grades and location of cross-section pavement warp at the valley gutter and at the cul-de-sac. Maximum pavement grades in the cul-de-sac is 3%, and minimum is 1%. Provide design slopes at critical locations, (at 7+16.11 left and 8+62.61 left).

10. Revise the drawing per comments on other sheets and note 1.

Sheet St-2

11. See note 10.

12. Provide invert elevation at the new catch basin.

13. Call out the 12 PVC between the manhole and control structure.

14. Station the shallow manhole.

15. Call out where the V-pan detail may be found.

16. Label the manhole in the profile drawing.

17. Station the grade changes on the V-pan in the profile, and provide grades.

Sheet St-3

18. See Note 10.

19. Provide station and identification.

20. The end of curb returns (ECRs) are based upon a 30 foot flow-line radius (per 4/20/93 letter) -- revise the stationing.

21. Define TBW (provide legends and list of abbreviations per SSID!).

22. See Note 7.

23. 150', not 100'.

24. If these are PI elevations, call them out as such.

Sheet ST-4

25. See note 10.

26. Specify size of opening.

27. The proposed low-level outlet must be capable of taking nuisance waters without back-up out of the proposed V-pan. The V-pan should be deeper. (See also 4/20/93 letter, Site Plan - F2).

Sheet WS-1

28. See note 10.

29. Add to note 3 "including waterline pressure testing".

30. Show the waterline with bends as required. The radius is too tight without them.

31. An 8 inch waterline should not be used north of the last fire hydrant. Use a 4 inch line unless Ute Water indicates otherwise.

32. Provide a sewer tap for lot 20.

33. Show pavement replacement for the sewer tap under existing asphalt.

Sheet SW-2

34. See note 1.

Sheet 1R-1

35. See note 10.

36. What is the top of ditch elevation? The top of the standpipe must be higher.

37. Correct the easement name.

Drainage Report

38. Design points 3 and 4 under Section IV are not shown on the map, nor is the description for point 4 correct.

39. Correct wording on page B-1.

40. On page B-2, the same errors were made that were commented on in the 4/20/93 letter, where it was indicated that "Q_o would be based upon Q_{max}, which is the historic runoff "(See comment F1). Also, from comment F8, the maximum release rates from the pond will be the historic minus direct runoff (from area A). On page B-5, you have shown that Q_{max} equals 2.6 cfs and 14.5 cfs for the 2 and 100 year storms, respectively. These values should be used on page B-2 to determine Q_o. This will

significantly affect your volume calculations.

41. Provide calculations for the drain trough under the sidewalk and for the concrete V-pan. The 100-year flow must be contained with the easement.

Improvements Agreement

42. City inspection fees may be 0.2% of the total (revised) cost of improvements. Also, add "As-built Drawings" to the list as item V-13.

RESPONSE TO REVIEW COMENTS

July 27, 1992

Title: NORTH CREST SUBDIVISION, Final Plat and Plan

File No: 83-93

Location: 600 ft. North of G Road, East of 7th. Street

RESPONSE TO PARKS & RECREATION:

The $4,500.00 open space fee will be paid prior to recording of the final plat.

RESPONSE TO U.S. WEST:

Comments do not require response.

RESPONSE TO CITY POLICE DEPARTMENT

Comments do not require response.

RESPONSE TO UTE WATER

Comments do not require a response.

RESPONSE TO CITY DEVELOPMENT ENGINEER.

1. Set backs have been added to the final plat for Lots 9, 10, 13, and 15.
2. Final Plat dedication has been revised.
3. Easement delineation and labeling has been revised.
4. Right-of-way width has been added to the final plat.
5. Cross sections for 7th. Street have been prepared, and been transmitted to the department under separate cover.
6. The street plans have been revised to depict the 17 ft. widening of 7th. to run the full length of the subdivision.
7. "Right" and "left" station equation at the end of the cul-de-sac have been added to the plans.
8. Centerline profiles for Hemlock Court have been added to the street profile sheet.
9. The invert elevation, a call out for the 12" PVC, a station for the shallow manhole, a call out for the V-pan detail, a label for the manhole in the profile and stationing for the grade changed on the V-pan have been added to Sheet ST-2.
10. The stationing for the curb returns at 7th. Street is correct for a 30 ft. flowline radius as requested.
11. "TBW" has been defined on the plans.
12. The size of the curb opening has been defined.
13. The low-level outlet entrance will be modified to be capable of taking nuisance waters and will be transmitted by separate cover.
14. Waterline pressure testing has been added to note 3 of the water plans.
15. Bends have been added to the water main.

ROSE T WARD
736 TULIP DRIVE
GRAND JUNCTION CO 81506

JOYCE L WEISSER
555 SANTA CLARA AVENUE
GRAND JUNCTION CO 81503

CARL ANDERSON
MARILYN
701 GALAXY DR
GRAND JUNCTION CO 81506

RICHARD W FOSTER
SHARON G
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D E
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JANE ANN
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CGS COMPANY
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CALEEN S
721 GALAXY DR
GRAND JUNCTION CO 81506

WALTER W MOSHER
MAUREEN E
723 GALAXY DR
GRAND JUNCTION CO 81506

WAYNE D CALLAHAN
PATRICIA A
718 GALAXY DR
GRAND JUNCTION CO 81506

RAMON J WEISS
CLARICE J
722 GALAXY LN
GRAND JUNCTION CO 81506

HAROLD D REESBERG
BETTY M-MARK REESBERG
724 GALAXY
GRAND JUNCTION CO 81506

MARY FRANCES MCCANDLESS
717 CENTAURI DR
GRAND JUNCTION CO 81506

THURMAN E RIDDLE
SHARON LORITA
715 CENTAURI DR
GRAND JUNCTION CO 81506

16. Ute Water prefers that the 8" water main be extended to the termination point of the system. Reduction to a 4" main requires the installation of about five fittings in order to meet Ute's requirements for main reductions.
17. Location of the pavement replacement has been added to the plans.
18. A sewer tap has been added for Lot 20.
19. The ditch elevation has been added to the irrigation plans.
20. A revised drainage report and grading plan for the detention pond will be transmitted under separate cover.

RESPONSE TO CITY UTILITIES ENGINEER.

WATER

1. Bends have been added to the proposed 8 inch water main.
2. The Ute Water Conservancy District will not accept new water mains into their system which are not constructed within a dedicated road right-of-way. Therefore, a looped main is not provided.

SEWER

1. The sewer easement has been increased to 20 feet in width.
2. All utilities have been added to an Utilities Composit
3. The street name has been added to the profile.

RESPONSE TO COMMUNITY DEVELOPMENT

Building set backs have been added on the final plat for lots 9, 10, 13, and 15. The development proposal includes the construction of a "split" rail fence 48 inches high along the Seventh Street right-of-way. Any project signage will be constructed in accordance with the City's sign code. Based on testimony given by the residents in the vicinity of Flower Street a pedestrian access is not proposed between Hemlock Court and Flower Street. Adjoining neighbors indicated that they did not want an access between North Crest and their subdivision as it would reduce the amount of

MICHAEL W WIIEST
DEBORAH L
736 26 1/2 ROAD
GRAND JUNCTION CO 81506

DENNIS J EDSON
734 26 1/2 RD
GRAND JUNCTION CO 81506

LEIGH R SULLIVAN
DOROTHY S
732 26 1/2 RD
GRAND JUNCTION CO 81506

RODGER E HOWARD
JACKLYN C
730 26 1/2 RD
GRAND JUNCTION CO 81506

WALTER W HALL
MARILYN JOANN
2652 CENTRAL DR
GRAND JUNCTION CO 81506

ROBERT W COE
I L
729 TULIP DR
GRAND JUNCTION CO 81506

GILBERT I ROPER
NOLA L
733 TULIP DR
GRAND JUNCTION CO 81506

KENNETH E DILLARD
DOROTHY M
735 TULIP DR
GRAND JUNCTION CO 81506

BRUCE A WARD
R T
736 TULIP DR
GRAND JUNCTION CO 81506

HAROLD F ELAM
ELIZABETH C
734 TULIP DR
GRAND JUNCTION CO 81506

ALAN M SIMPSON
LINDA G
730 TULIP DR
GRAND JUNCTION CO 81506

CARLA EDEN
2660 CENTRAL DR
GRAND JUNCTION CO 81506

H ALBRETHSEN
A J
2661 CENTRAL DR
GRAND JUNCTION CO 81506

EDGARDO F DELUCAS
JOSEPHINE E
2657 CENTRAL DR
GRAND JUNCTION CO 81506

ROBERT D SCHOOLEY
LINDA V
2655 CENTRAL DR
GRAND JUNCTION CO 81506

BILLIE L SMITH
LAURA P
2651 CENTRAL DR
GRAND JUNCTION CO 81506

W R GRAMLICH
NANCY J
1800 NUEVO RD
HENDERSON NV 89014

MICHAEL A MORELLI
CHERYL A
706 26 1/2 ROAD
GRAND JUNCTION CO 81506

ROBERT S BROWNSON
HOLLY H
2660 SACOMA CT
GRAND JUNCTION CO 81506

W R BRAY
J L
702-L GOLFMORE
GRAND JUNCTION CO 81506

ROBERT L BRAY
VICTORIA L
2660 G ROAD
GRAND JUNCTION CO 81506

ALFRED C GURMENDI
ZOILA R
114 - HILLSDALE DR
STERLING VA 22170

MERTON O SMITH
ESTATE & GENEVIEVE L
P O BOX 251
GRAND JUNCTION CO 81502

ANTHONY F PRINSTER
ETAL
P O BOX 40
GRAND JUNCTION CO 81502

ROBERT B INGELHART
LORI A
643 HUDSON BAY COURT
GRAND JUNCTION CO 81504

PHILIP L PORTER
HARRIETTE C S
565 PEACHWOOD DR
GRAND JUNCTION CO 81504

CAROL A ROWE
735 26 1/2 RD
GRAND JUNCTION CO 81506

JOHN R BYRD
RENAE A
729 26 1/2 RD
GRAND JUNCTION CO 81506

GERALD L BILLINGS
FERN D
2649 CENTRAL DR
GRAND JUNCTION CO 81506

JEFFREY R LIDDLE
SUSAN C
2647 CENTRAL DR
GRAND JUNCTION CO 81506

JEFFREY K WILLIAMS
BARBARA K
2645 CENTRAL DR
GRAND JUNCTION CO 81506

JAMES D TEPLY
JUDITH K M
2637 CENTRAL DR
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IRENE D GEBBING
LIVING TRUST
2635 CENTRAL DR
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HAROLD D POTTER
PATSY J
2636 HICKORY DR
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DAVID W DIRKS
KATHLEEN L
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THOMAS E MILLER
L A
2640 HICKORY DR
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SYBLE
2644 HICKORY DR
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ROY J LAMBERT
BLANCHE E
2615 CHESTNUT DR
GRAND JUNCTION CO 81506

WINSTON W WILLIAMS
DOTTIE F
739 26 1/2 RD
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GLADE S ISAACSON
TWILA MAE
2634 1/2 CHESTNUT DRGRAND JUNCTION
CO 81506

RICHARD T THOME
BETTY M
2644 1/2 CHESTNUT DR
GRAND JUNCTION CO 81506

BERNARD E NAVIN
CAROLYN A
2646 CHESTNUT DR
GRAND JUNCTION CO 81506

MATTHEW B BINDER
KAREN S
2644 CENTRAL DR
GRAND JUNCTION CO 81506

SHERMAN D JONES
NORMA M
2646 CENTRAL DR
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MARY L
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FRUITA CO 81521

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ZOILA R
114 - HILLSDALE DR
STERLING VA 22170

GORDON G BISHOP
CHERYL K
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718 HEMLOCK DR
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KEITH L CORDER
DOROTHY M - TRUSTEES
716 HEMLOCK DR
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JAY D SHULTZ
W E
717 26 1/2 RD
GRAND JUNCTION CO 81506

ALAN W GUERRIE
721 26 1/2 RD
GRAND JUNCTION CO 81506

VICTOR L SWAIM
THRESSEA B
723 26 1/2 RD
GRAND JUNCTION CO 81506

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TRUSTEE OF RICKS FAM TRUST
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PAUL D REAMS
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PAMELA
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MELVIN E REAMS
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E A
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KAREN A
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GRAND JUNCTION CO 81506

JEFFREY P VOGEL
ROBY ANN
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THOMAS A SPEHAR
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ALICE F
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EDWIN M JAMES
FAITH L
705 26 1/2 ROAD
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JAMES A WARNER
MARGIE L
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HELEN STAGGS
706 ASH DR RT 5
GRAND JUNCTION CO 81506

FRANK D GORDON
704 ASH DR
GRAND JUNCTION CO 81506

J T DURNELL
JULIA A
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GRAND JUNCTION CO 81506

DEW W SCOTT
701 - 26 1/2 ROAD
GRAND JUNCTION CO 81506

ALBERT W MANNEL
LAURA MAY
703 26 1/2 RD
GRAND JUNCTION CO 81506

JAMES R NOLAND
SHIRLEY A
709 26 1/2 RD
GRAND JUNCTION CO 81506

RENA I WILBERT
711 26 1/2 RD
GRAND JUNCTION CO 81506

JOHN C WARREN
EVELYN M
713 26 1/2 RD
GRAND JUNCTION CO 81506

LILA GARCIA
JAMES R - JOHN R GARCIA
715 HEMLOCK DR
GRAND JUNCTION CO 81506

DONALD B MAXEY
703 ASH DR
GRAND JUNCTION CO 81506

EDNA KIMMINAU
705 ASH DR
GRAND JUNCTION CO 81506

HOLLY J KOCH
707 ASH DR
GRAND JUNCTION CO 81506

RANDALL T ZLOMKE
LORRIE A
711 ASH DR
GRAND JUNCTION CO 81506

DAVID R FOUTS
508 33 RD
CLIFTON CO 81520

GLADE S ISAACSON
TWILA MAE
2634 1/2 CHESTNUT DR
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2644 1/2 CHESTNUT DR
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#83 93

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WAYNE D CALLAHAN
PATRICIA A
718 GALAXY DR
GRAND JUNCTION CO 81506

RAMON J WEISS
CLARICE J
722 GALAXY LN
GRAND JUNCTION CO 81506

HAROLD D REESBERG
BETTY M-MARK REESBERG
724 GALAXY
GRAND JUNCTION CO 81506

MARY FRANCES MCCANDLESS
717 CENTAURI DR
GRAND JUNCTION CO 81506

THURMAN E RIDDLE
SHARON LORITA
715 CENTAURI DR
GRAND JUNCTION CO 81506

CHARLES R BOTTINELLI
MARION J
714 GALAXY DR
GRAND JUNCTION CO 81506

THOMAS G TADVICK
CAROL L
713 CENTAURI DR
GRAND JUNCTION CO 81506

WALTER GONGAWARE
ELVA C
702 GALAXY DR
GRAND JUNCTION CO 81506

JUDITH E SNODGRASS
J D
704 GALAXY DR
GRAND JUNCTION CO 81506

CHARLES A BUSS
MARY A
706 GALAXY DR
GRAND JUNCTION CO 81506

HUBERT V MEEK
VIRGINIA A
708 GALAXY
GRAND JUNCTION CO 81506

LARRY L HEISERMAN
JOANN
2671 ALPHA PLACE
GRAND JUNCTION CO 81506

MILES KARA
M E
705 CENTAURI DR
GRAND JUNCTION CO 81506

MICHAEL E SUTHERLAND
PATRICIA L TAYLOR
703 CENTAURI DR
GRAND JUNCTION CO 81506

GREGG K KAMPF
KRISTINE R
2668 G ROAD
GRAND JUNCTION CO 81506

COLORADO WEST IMPROVEMENT INC
P O BOX 2888
GRAND JUNCTION CO 81502

LAWRENCE T WARD
ELIZABETH L
704 26 1/2 ROAD
GRAND JUNCTION CO 81506

JESSE E SZUGYE
PATRICIA M
2652 SACOMA CT
GRAND JUNCTION CO 81506

THOMAS C WORSTER
P C
2655 SACOMA CT
GRAND JUNCTION CO 81506

CHARLES W QUINN
VERA M
2657 SACOMA CT
GRAND JUNCTION CO 81506

ROY A JOSEPH
LINDA L
2654 SACOMA CT

JOEL D GALINDO
2658 SACOMA CT
GRAND JUNCTION CO 81506

MICHAEL J MCINANEY
KATHLEEN M
2653 SACOMA CT

PRELIMINARY DEVELOPMENT PLAN
FOR
NORTHCREST VILLAGE SUBDIVISION

March, 1993

Prepared For:
Gregg Cranston
1401 North 1st. Street
Grand Junction, CO 81501
303-241-4000

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#44 93

PROJECT NARRATIVE
PRELIMINARY DEVELOPMENT PLAN FOR:
NORTHCREST VILLAGE SUBDIVISION

INTRODUCTION - The Northcrest Village Subdivision property was recently annexed by the City of Grand Junction. A previous requested zone change was not accepted by the Grand Junction City Council for a planned 29 lot development. Therefore, a 20 lot subdivision is included as part of this application. The accompanying narrative statement and maps will provide sufficient data to assess the merits of the requested Preliminary Developm-ent Plan application. Information gained as a result of this review process will be utilized in the preparation of the final construction documents and final plat.

LOCATION - Northcrest Village Subdivision contains approximately 10 acres. Northcrest Village Subdivision is located in the North Grand Junction area, 600 feet north of "G" Road and east of North 7th. Street. The property is located in part of the SW 1/4 of Section 19, Township One North, Range One West, of the Ute Meridian.

EXISTING LAND USE - The vacant of any structures. Even though irrigation water is available, the site is in a fallow state. No recent agricultural production has occurred. The site is some-what affected by an existing natural drainage swale which flows to the northwest corner of the property. Topography of the property is considered to be "gently rolling" in nature. The land within Northcrest Village slopes towards the northwest at a average rate of 1.7 percent. The subject property is zoned RSF-2 by the City of Grand Junction.

SURROUNDING LAND USE -The surrounding land use in the vicinity of the subject property is considered to be of moderate intensity. Predominate uses include single family dwellings on subdivided tracts. Agricultural production is almost non-existent in the vicinity of Northcrest Village. The attached Surrounding Land Use map depicts the configuration of various properties in the area surrounding Northcrest Village. A study area was selected that includes land lying south of Interstate 70 and north of "G" Road, one quarter mile to the west and one half mile to the east. The selected Study Area best represents what is considered to the immediate neighborhood. The study area contains 129.7 acres and includes 409 individual parcels of land with a resulting density of 3.15 parcels per acre. Platted subdivisions within the study area include:

#44 93

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SUBDIVISION ZONING STATUS CHART		
SUBDIVISION NAME	ZONING	CITY/COUNTY
Melody Park	R-1-B	County
Galaxy	R-1-B	County
Nina Mae	R-1-B	County
Sunset Terrace	RSF-4	City
Rolling Acres	R-1-B	County
Terra Del Vista	R-1-B	County
Country Club Height	R-1-B	County
Bella Vista	RSF-4 & R-1-B	City/County
Sacoma Court	R-1-B	County

PROPOSED LAND USE - The proposal calls for the ultimate development of 20 single family building sites on 10 acres. Lots range in size from 10,800 square feet to 30,600. The resulting density is 2.0 dwelling units per acre. The accompanying Preliminary Site Development Plan depicts the relationship of each lot to the property boundary, roadway access, and other features of the proposed development.

In addition to the individual lot development standards presented herein, strict architectural controls will be instigated to protect the development from undesirable influences. To achieve this, a set of covenants, conditions and restrictions (C.C.& R's) will be adopted to insure ongoing protection to the future residents of Northcrest Village Subdivision and surrounding property owners. The C.C. & R's will also include provisions for ownership and maintenance of the irrigation system. A copy of a draft set of C.C.& R's has been transmitted to the Planning Department under separate cover. The accompanying Site Development Plan indicates the minimum building setbacks which will be incorporated in determining lot building envelopes.

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ACCESS - Primary access to Northcrest Village will be from North 7th. Street designated as local minor arterial by the City of Grand Junction. Review of the accompanying Surrounding Land Use Map reveal that access is available to North 12th. Street, a major north/south arterial via "G" Road which is also classified as a major arterial. Interstate 70 is located approximately one half mile north of the site.

Proposed roadway improvements call for the construction of approximately 800 feet of new public street. Internal streets will be constructed in accordance with the City's current standards for "Local Streets". The street right-of-way will also serve as a utility corridor. The proposal also

calls for additional widening and the installation of curb, gutter and sidewalk along the sites North 7th. Street frontage.
According to the Colorado Highway Department's Trip Generator, approximately 200 average total daily trips would occur after site development is complete. In 1991 Mesa County traffic counts adjacent to Northcrest Village were 2500 average daily trips.

The dedicated right-of ways and private drive also will serve as utility corridors.

UTILITY SERVICE

DOMESTIC WATER - All lots within Northcrest Village Subdivision will be served by a domestic water distribution system. An existing 18 inch water main is located within North 7th. Street and will be used to provide water service to lots within Northcrest Village Subdivision. A new 8 inch main will be extended within the property. All of the existing water mains are owned and maintained by the Ute Water Conservancy District. Fire hydrants will be placed throughout the development. Sufficient flows and pressure exist to provide adequate water supply for fire protection.

SANITARY SEWER - A new sanitary sewage collection system will be constructed to serve all lots within Northcrest Village. Sewer service will be extended from an existing 8 inch main located in North 7th. Street It is estimated that peak sewage flows generated by the lots within the development will be 5,000 gallons per day.

ELECTRIC, GAS, PHONE & CATV - Electric, gas, and communication lines will be extended to each lot within the development from existing lines located adjacent to the proposed development. Other than underground electric lines; gas and communication lines will be located in a "common trench" adjacent to the dedicated road right-of-way.

IRRIGATION WATER - According to the Grand Valley Water Users Association, 0.25 cfs of irrigation water is normally available for use by the subject property. Irrigation water is delivered to the southeast property corner through a series of open ditches. A gravity flow,underground pipeline will deliver water to each lot within Northcrest Village Subdivision.

SOILS - According to data contained within the Soil Conservation Service (SCS) soil evaluations, soil limitations are not identified as severe for identified building areas within Northcrest Village Subdivision. SCS has identified two soil classification within the property.

Pb - Persayo-Chipeta Clay Loam, Class IVs
Fr - Fruita Very Fine Sandy Loam, Class IIe

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DRAINAGE - A Drainage Report which evaluates the impacts on existing drainage patterns has been submitted to the City Engineering Department under separate cover. Most of the future drainage will be carried on the ground surface to the proposed street system and to the Northwest property corner. A new outlet control structure will be constructed within

a depressed area in a manner which will control the amount of developed storm water flows which will be discharged from the site. The site is some what affected by drainage from off-site sources particularly from land lying to the east.

DEVELOPMENT SCHEDULE - The rate at which development of Northcrest Village Subdivision, will occur is dependent upon the City's future growth and housing needs. At this point in time it is anticipated that site development will begin and be completed during the summer of 1993.

North Crest Village - File No. 44-93

COPY

The statement made, pertaining to irrigation water, in the Preliminary Development Plan for North Crest Village Subdivision (page 3) is generally accurate, but to clarify the matter a bit, it should be noted that irrigation water is delivered by the Association to the property thru a headgate located near the southeast property corner. Beyond such point of delivery the Association has no jurisdiction and the water must then be distributed and managed within the subdivision by others.

Please advise if there are any questions.

G. W. Klapwyk

G. W. Klapwyk - Manager

SUBSURFACE SOILS EXPLORATION

NORTH 7th STREET AT HEMLOCK COURT

NORTHCREST VILLAGE

GRAND JUNCTION, CO

Prepared For:

Ms. Kay Scott
c/o Mr. Gregg Cranston
1401 N. 1st Street
Grand Junction, CO

#83 93

Prepared By:

LINCOLN DeVORE, INC.
1441 Motor Street
Grand Junction, CO 81505

May 6, 1993

Lincoln DeVore, Inc.
Geotechnical Consultants
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TEL: (303) 242-8968
FAX: (303) 242-1561

May 6, 1993

Ms. Kay Scott
c/o Gregg Cranston
1401 N. 1st Street
Grand Junction, CO 81501

Re: SUBSURFACE SOILS EXPLORATION

N. 7th Street at Hemlock Ct.

Grand Junction, CO

Dear Ms. Scott:

Transmitted herein are the results of a Subsurface Soils Exploration for the proposed residential subdivision.

If you have any questions after reviewing this report, please feel free to contact this office at any time. This opportunity to provide Geotechnical Engineering services is sincerely appreciated.

Respectfully submitted,

LINCOLN DeVORE, INC.

By: Edward M. Morris
Edward M. Morris, E.I.T.
Western Slope Branch Manager
Grand Junction, Office

#83 93

Reviewed by: George D. Morris 5/7/93
George D. Morris, P.E.
Colorado Springs Office

STATE OF COLORADO

EMM/kw

LDTL Job No. 78007-J

#8 93

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INTRODUCTION

PROJECT DESCRIPTION

This report presents the results of our geotechnical evaluation performed to determine the general subsurface conditions of the site applicable to construction of approximately twenty single family residential structures. A vicinity map is included in the Appendix of this report.

To assist in our exploration, we were provided with a site development plan for the Northcrest Village Subdivision. The Boring Location Plan attached to this report is based on that plan provided to us.

The characteristics of the subsurface materials encountered were evaluated with regard to the type of construction described above. Recommendations are included herein to match the described construction to the soil characteristics found. The information contained herein may or may not be valid for other purposes. If the proposed site use is changed or types of construction proposed, other than noted herein, Lincoln DeVore should be contacted to determine if the information in this report can be used for the new construction without further field evaluations.

PROJECT SCOPE

The purpose of our exploration was to evaluate the surface and subsurface soil and geologic conditions of the site and, based on the conditions encountered, to provide recommendations pertaining to the geotechnical aspects of the

site development as previously described. The conclusions and recommendations included herein are based on an analysis of the data obtained from our field explorations, laboratory testing program, and on our experience with similar soil and geologic conditions in the area.

This report provides site specific information for the construction of single family residential structures within the Northcrest Village Subdivision. Included in this report are recommendations regarding general site development and foundation design criteria.

The scope of our geotechnical exploration consisted of a surface reconnaissance, a geophoto study, subsurface exploration, obtaining representative samples, laboratory testing, analysis of field and laboratory data, and a review of geologic literature.

Specifically, the intent of this study is to:

1. Explore the subsurface conditions to the depth expected to be influenced by the proposed construction.
2. Evaluate by laboratory and field tests the general engineering properties of the various strata which could influence the development.
3. Define the general geology of the site including likely geologic hazards which could have an effect on site development.
4. Develop geotechnical criteria for site grading and earthwork.
5. Identify potential construction difficulties and provide recommendations concerning these problems.
6. Recommend an appropriate foundation system for the anticipated structure and develop criteria for foundation design.

FIELD EXPLORATION AND LABORATORY TESTING

A field evaluation was performed on April 12, 1993, and consisted of a site reconnaissance by our geotechnical personnel and the drilling of four shallow exploration borings. These shallow exploration borings were drilled within the proposed building envelopes near the locations indicated on the Boring Location Plan. The exploration borings were located to obtain a reasonably good profile of the subsurface soil conditions. All exploration borings were drilled using a CME 45B truck mounted drill rig with continuous flight auger to depths of approximately eighteen feet. Samples were taken with a standard split spoon sampler, thin-walled Shelby tubes, and by bulk methods. Logs describing the subsurface conditions are presented in the attached figures.

Laboratory tests were performed on representative soil samples to determine their relative engineering properties. Tests were performed in accordance with test methods of the American Society for Testing and Materials or other accepted standards. The results of our laboratory tests are included in this report. The in-place moisture content and the standard penetration test values are presented on the attached drilling logs.

FINDINGS

SITE DESCRIPTION The project site is located in the Southeast Quarter of Section Thirty-five, Township One North, Range One West of the Ute Principal Meridian, Mesa County, Colorado. More specifically the site is located three miles north of the downtown district of Grand Junction, Colorado. This site is bounded on the west by North 7th Street, on the north by Melody Park Subdivision, on the south by Nina Mae Subdivision, and on the east by Galaxy Subdivision.

The topography of the site is relatively flat, with a slight overall gradient to the west. The exact direction of surface runoff on this site will be controlled by the proposed construction and therefore will be variable. In general, surface runoff is expected to travel to the storm drainage system of the proposed Hemlock Court and North 7th Street, eventually entering the Leach Creek drainage system. Surface and subsurface drainage on this site would be described as fair to poor.

GENERAL GEOLOGY AND SUBSURFACE DESCRIPTION The geologic materials encountered under the site consist of a relatively thin layer of agriculturally reworked alluvial soils and clays derived from the weathered Mancos Shale Formation, all underlain by the expansive clays of the Mancos Shale Formation. The geologic and engineering properties of the materials found in our four exploration borings will be discussed in the following sections.

The surface soils were found to be quite

thin on this site and are derived essentially from the Mancos Shale Formation. This soil type was found to range from two to four feet in thickness. This soil has been designated Soil Type I for the purposes of this report.

This Soil Type was classified as a silty clay (CL) under the Unified Classification System. This material is of low plasticity, of low to moderate permeability, and was encountered in a low density, moist to very moist condition. If this soil is found in a relatively dry condition, it may undergo mild expansion with the entry of small amounts of moisture, but will undergo long-term consolidation upon the addition of larger amounts of moisture. This soil will settle after being loaded. Due to the low bearing capacity of these soils and the influence of the underlying Mancos Shale Formation on any structures founded on this site, it is recommended all foundation systems be extended through this soil type and be founded on the underlying Mancos Shale Formation. The finer grained portion of Soil Type I contains sulfates in detrimental quantities.

The Mancos Shale Formation was encountered in all exploration borings on this site and is considered bedrock in this area of Grand Junction. This soil has been Soil Type II for this report.

This soil type was classified as a low plastic silty clay (CL) under the Unified Classification System. The Standard Penetration Tests ranged from 41 blows per foot to in excess of 100 blows per foot. Penetration tests of this magnitude indicate that the soil is weathered, somewhat stratified and of medium to high density. The moisture content

varied from 6.9% to 14%, indicating a relatively moist soil. This soil is plastic and is sensitive to changes in moisture content. With decreased moisture, it will tend to shrink, with some cracking upon desiccation. Upon increasing moisture, it will tend to expand. Expansion tests were performed on typical samples of the soil and expansive pressures on the order of 1500 to 2300 psf were found to be typical. The allowable maximum bearing value was found to be on the order of 6500 psf for that part of the formation encountered below the top one to two feet of sulfate rich, weathered shale. A minimum dead load of 1500 to 2300 psf will be required. This soil was found to contain sulfates in detrimental quantities.

The Mancos Shale Formation is often highly fractured, with fillings of soluble sulfate salts being very common. The samples obtained in this drilling program indicated virtually all fractured faces and many of the bedding planes in the upper two feet of the shale contain sulfate salt deposits. Some seams of sulfate salts up to one-eighth of an inch thick were observed.

The boring logs and related information show subsurface conditions at the date and location of this exploration. Soil conditions may differ at locations other than those of the exploratory borings. If the structure is moved any appreciable distance from the locations of the borings, the soil conditions may not be the same as those reported here. The passage of time may also result in a change in the soil conditions at the boring locations.

The lines defining the change between soil types or rock materials on the attached boring logs and soil profiles are determined by interpolation and therefore are approximations. The transition between soil types may be abrupt or may be gradual.

GROUND WATER: No free water was encountered during drilling on this site. In our opinion the true free water surface is fairly deep in this area, and hence, should not affect construction. Seepage moisture may affect construction if surface drainage is not properly controlled.

Sulfate Salts exhibit variable strength, depending upon surrounding moisture conditions and their chemistry as related to water. In addition, Sulfate Salts are soluble and may be physically removed from the soil by ground moisture conditions. Such removal may leave significant amounts of void areas within the Mancos Shale, which may affect the load bearing capacity of the formation. Many of the fractures in the Mancos Shale Formation are open, allowing the rapid transmission of water to occur. Some sandstone and siltstone strata within the Mancos Shale Formation also exhibit elevated permeability.

Data presented in this report concerning ground water levels are representative of those levels at the time of our field exploration. Groundwater levels are subject to change seasonally or by changed environmental conditions. Quantitative information concerning rates of flow into excavations or pumping capacities necessary to dewater excavations is not included and is beyond the scope of this report. If this information is desired, permeability and field pumping tests will be

required.

Due to the proximity of the Mancos Shale Formation, there exists a possibility of a perched water table developing in the alluvial soils which overlie the shale. This perched water would probably be the result of increased irrigation due to the presence of lawns and landscaping and roof run-off. The exploration holes indicate that the top of the Formation is relatively flat and that subsurface drainage would probably be quite slow. While it is believed that under the existing conditions at the time of this exploration the construction process would not be effected by any free-flow waters, it is very possible that several years after development is initiated, a troublesome perched water condition may develop which will provide construction difficulties. In addition, this potential perched water could create some problems for existing or future foundations on this tract. Therefore it is recommended that the future presence of a perched water table be considered in all design and construction of both the proposed residential structures and any subdivision improvements.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL DISCUSSION No geologic conditions were apparent during our reconnaissance which would preclude the site development as planned, provided the recommendations contained herein are fully complied with. Based on our investigation to date and the knowledge of the proposed construction, the site condition which would have the greatest effect on the planned development is the expansive characterisitics of the Mancos Shale Formation.

Since the exact magnitude and nature of the foundation loads are not precisely known at the present time, the following recommendations must be somewhat general in nature. Any special loads or unusual design conditions should be reported to Lincoln DeVore so that changes in these recommendations may be made, if necessary. However, based upon our analysis of the soil conditions and project characteristics previously outlined, the following recommendations are made.

OPEN FOUNDATION OBSERVATION Since the recommendations in this report are based on information obtained through random borings, it is possible that the subsurface materials between the boring points could vary. Therefore, prior to placing forms or pouring concrete, an open excavation observation should be performed by representatives of Lincoln DeVore. The purpose of this observation is to determine if the subsurface soils directly below the proposed foundations are similar to those encountered in our exploration borings. If the materials below the proposed foundations differ from those encountered, or in our opinion, are not

capable of supporting the applied loads, additional recommendations could be provided at that time.

No major difficulties are anticipated in the course of excavating into the surficial soils on the site. It is probable that safety provisions such as sloping or bracing the sides of excavations over four feet deep will be necessary. Any such safety provisions shall conform to reasonable industry safety practices and to all applicable OSHA regulations. The OSHA Classification for excavation purposes on this site is Soil Class A.

DRAINAGE AND GRADIENT: Adequate site drainage should be provided in the foundation areas both during and after construction to prevent the ponding of water and the saturation of the subsurface soils. We recommend that the ground surface around all structures be graded so that surface water will be carried quickly away from the buildings. The minimum gradient within ten feet of the buildings will depend on surface landscaping. We recommend that paved areas maintain a minimum gradient of 2%, and that landscaped areas maintain a minimum gradient of 8%. It is further recommended that roof drain downspouts be carried across all backfilled areas and discharged at least ten feet away from all structures. Proper discharge of roof drain downspouts may require the use subsurface piping in some areas. Planters, if any, should be so constructed that moisture is not allowed to seep into foundation areas or beneath slabs or pavements.

We recommend that a perimeter drain be placed around the exterior walls of all structures at foundation

level or below. A drain of this type includes a perforated pipe and an adequate gravel collector, the whole being wrapped in a geotextile filter fabric. We recommend that the discharge pipe for this drain be given a free gravity outlet to exit at ground surface. If "daylight" cannot be obtained, we recommend that a sealed sump and pump be used to discharge the seepage. Under no circumstances shall a "dry well" be used on this site.

To give the buildings extra lateral stability and to aid in the rapidity of runoff, it is recommended that all backfill around the buildings and in utility trenches in the vicinity of the buildings be compacted to a minimum of 85% of its maximum Proctor dry density, ASTM D 698. The native soils on this site may be used for such backfill. We recommend that all backfill be compacted using mechanical methods. No water flooding techniques of any type may be used in placement of fill on this site.

Should an automatic lawn irrigation systems be used on any of these sites, we recommend that the sprinkler heads be installed no less than five feet from any of the buildings. In addition, these heads should be adjusted so that spray from the system does not fall onto the walls of the building and that such water does not excessively wet the back-fill soils.

FOUNDATIONS

At this time Lincoln DeVore has not been informed of the individual foundation/building plans therefore, the three foundation types could be utilized for residential construction in the Northcrest Village Subdivision are recommended based on our experience in this area. The choice between these foundation types depends on the internal loading of the foundation members and the amount of excavation planned to achieve the finished lower elevations.

The three foundation types preliminarily recommended are as follows:

1. The voided wall on grade foundation system with a stemwall resting directly on the shale formation.
2. The isolated pad and grade beam foundation system in which the grade beam is voided and loads are transferred to the isolated pads.
3. The drilled pier and fully voided grade beam system with the loads transferred to the piers.

Recommendations given in this report are given for the Shallow Foundation Types No. 1 and 2 and the Deep Foundation Type No. 3.

SHALLOW FOUNDATIONS

A conventional shallow foundation system consisting of either a voided wall on grade or an isolated pad and grade beam system, resting on the relatively unweathered expansive clays of the Mancos Shale Formation, may be designed on the basis of an allowable bearing capacity of 6500 psf maximum, and a minimum dead load of 2300 psf must be maintained. Contact stresses beneath all continuous walls should be balanced to

within + or - 150 psf at all points. Isolated interior column footings should be designed for contact stresses of about 200 psf more than the average used to balance continuous walls. The criteria use for balancing will depend somewhat upon the nature of the structures. Single-story, slab on grade structures and single-story crawlspace structures may be balance on the basis of dead load only. Multi-story structures may be balanced on the basis of Dead Load plus one half live load, for up to three stories.

Stem walls for a shallow foundation system should be designed as grade beams capable of spanning at least fourteen feet. These "grade beams" should be horizontally reinforced both near the top and near the bottom. The horizontal reinforcement required should be placed continuously around the structure with no gaps or breaks. A foundation system designed in this manner should provide a rather rigid system and, therefore, be better able to tolerate differential movements associated with the expansive Mancos Shale Formation.

It must be noted the shallow foundation systems are to be founded on the weathered Mancos Shale Formation. Due to the possible presence of large amounts of soluble sulfate salts near the contact of the Mancos Shale Formation and the overlying soils, the foundation walls may be required to extend through any soluble sulfate salt concentrations.

FROST PROTECTION We recommend that the bottom of all foundation components rest a minimum of two feet below finished grade

or as required by the local building codes. Foundation components must not be placed on frozen soils.

DEEP FOUNDATIONS

A drilled Pier Foundation System may be preferred, due to the subsurface soils and water conditions. Based upon our experience in this general area, the rather poor surface and subsurface water drainage conditions of the subdivision may not allow the determination of a discreet 'upper zone of seasonal moisture change' at this time. It must be noted that a drilled pier and fully voided grade beam system is quite rigid and may reactive in an undesirable manner to differential movement of the individual piers.

DRILLED PIERS: We recommend that drilled piers have a minimum shaft length of ten feet and be embedded at least six feet into the relatively unweathered shales and claystones of the Mancos Shale Formation. At this level,these piers may be designed for a maximum end bearing capacity of 25000 psf, plus 1800 psf side support considering only the side wall area embedded in the bedrock. Due to the expansive potential of the bedrock, a minimum dead load uplift is required, consisting of a point uplift of 2400 psf and 400 psf side uplift, based on the side wall embedded in the bedrock. The overburden is soft and no supporting or uplift values are assigned to this material. The weight of the concrete in the pier may be incorporated into the required dead load.

DRILLED PIER OBSERVATION: The foundation installation for drilled piers should be continuously observed by a representative of Lincoln DeVore to determine that the recommended bearing material has been adequately penetrated and that soil conditions are as anticipated by the exploration. This observation will aid in attaining an adequate foundation system. In addition, abnormalities in the subsurface conditions encountered during foundation installation can be identified and corrective measures taken as required. Lincoln DeVore requires a minimum of one working day's notice, and a copy of the foundation plan, to schedule any field observation.

GRADE BEAMS: A reinforced concrete grade beam is recommended to carry the exterior wall loads in conjunction with the deep foundation system. We recommend that this grade beam be designed to span from bearing point to bearing point and not be allowed to rest on the ground surface between these points. We recommend a void space be left between the bottom of the grade beam and the subgrade below due to the expansive nature of the subgrade soils.

CONCRETE SLABS ON GRADE

Slabs could be placed directly on the natural soils or on a structural fill. We recommend that all slabs on grade be constructed to act independently of the other structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface.

It is recommended that the bottoms of all piers be thoroughly cleaned prior to the placement of concrete. The amount of reinforcing in each pier will depend on the magnitude and nature of loads involved. As a rule of thumb, reinforcing equal to approximately 1/2 of 1% of the gross cross-sectional concrete area should be used. Additional reinforcing should be used if structural conditions warrant. We recommend that reinforcing extend through the full length of pier.

To minimize the possibility of voids developing in the drilled piers, concrete with a slump of 5 to 6 inches is recommended. We recommend that piers be dewatered and thoroughly cleaned of all loose material prior to placing the steel cage and concrete. The pier excavation should contain no more than 2 inches of free water unless the concrete is placed by means of a tremie extending to the bottom of the pier. A free fall in excess of 5 feet is not recommended when placing concrete in drilled piers. We recommend that casing be pulled as the concrete is being placed and that a 5 foot head of concrete be maintained while pulling the casing. It is recommended that drilled piers be plumb with 2% of their length and that the shaft

maintain a constant diameter for the full length of the pier and not allowed to "mushroom" at the top.

If the slab is to be placed directly on the expansive soils or on a thin fill overlying these soils, the risk of slab movement is high and stringent mitigation techniques are recommended. No design method known at this time will prevent slab movement should moisture enter the expansive soils below. Therefore, to mitigate the effects of slab movement should they occur, we recommend the following:

1. Control joints should be placed in such a manner that no floor area exceeding 400 square feet remains without a joint. Additional joints should be placed at columns and at inside corners. These control joints should minimize cracking associated with expansive soils by controlling location and direction of cracks.

2. We recommend that all slabs on grade be isolated from structural members of the building. This is generally accomplished by an expansion joint at the floor slab / foundation interface. In addition, positive separation should be maintained between the slab and all interior columns, pipes and mechanical systems extending through the slab.

3. The slab subgrade should be kept moist 3 to 4 days prior to placing the slab. This is done by periodically sprinkling the subgrade with water. However, under no circumstances should the subgrade be kept wet by the flooding or ponding water.

4. Any partitions which will rest on the slabs on grade should be constructed with a minimum void space of 2 inches at the bottom of the wall (see figure in the Appendix). This base should allow for future upward movement of the floor slabs and minimize movement and damage in walls and floors above the slabs. This void may require rebuilding after a period of time, should heave exceed 2 inches.

The first alternative is to dispense with slab-on-grade construction and use a structural floor system. A structural floor system may be either a structural rein-

forced concrete slab or a structural wood floor system suspended with floor joists. Each system would utilize a crawl space. This alternative would substantially reduce a potential for post construction slab difficulties due to the expansive properties of the .

The second alternative is to install a three foot "buffer zone" of non-expansive, granular soil beneath the slab. This would mitigate the potential for slab movement; however, some potential for movement still exists. Should this alternative be selected, we would recommend that the following be performed:

1. Non-expansive granular soils should be selected for the "buffer zone". The granular soils should contain less than 20% of the material, by dry weight, passing the U.S. No. 200 Sieve. We recommend that the geotechnical engineer be contacted to examine the soils when they are selected, to substantiate that they comply with the recommendations.

2. The perimeter drain for the structures should be located at the elevation equal to or deeper than the "buffer zone". This is to reduce the potential for a "bathtub" effect" which may cause the slab to heave. The "bathtub effect" is created when water is allowed to seep into the "buffer zone" and then becomes trapped since the underlying clay soils have a much lower permeability rate than the "buffer zone" material. Therefore, water may accumulate in the "buffer zone" and subsequently wet the clay soils and cause them to expand.

3. All the non-bearing partitions which will be located on the slabs should be constructed with a minimum 2 inches of void space at the bottom of the wall. This space would allow for the future upward movement of the floor slabs and minimize damage to walls and roof sections above the slabs. The space may require rebuilding after a period of time, since heaving produced by the soils may exceed 2 inches.

4. We recommend that all slabs being placed on the "buffer zone" be constructed to act independently of the other

structural portions of the building. One method of allowing the slabs to float freely is to use expansion material at the slab-structure interface. Control joints should be placed 20 feet on center in each direction. These control joints should control the cracking of the slab should the under-lying soils come in contact with water.

EARTH RETAINING STRUCTURES

The active soil pressure for the design of earth retaining structures may be based on an equivalent fluid pressure of 50 pounds per cubic foot. The active pressure should be used for retaining structures which are free to move at the top (unrestrained walls). For earth retaining structures which are fixed at the top, such as basement walls, an equivalent fluid pressure of 65 pounds per cubic foot may be used. It should be noted that the above values should be modified to take into account any surcharge loads, sloping backfill or other externally applied forces. The above equivalent fluid pressures should also be modified for the effect of free water, if any.

The passive pressure for resistance to lateral movement may be considered to be 230 pcf per foot of depth. The coefficient of friction for concrete to soil may be assumed to be .3 for resistance to lateral movement. When combining frictional and passive resistance, the latter must be reduced by approximately 1/3.

We recommend that the backfill behind any retaining wall be compacted to a minimum of 85% of its maximum modified Proctor dry density, ASTM D-1557. The backfill material should be approved by the Soils Engineer prior to placing and a sufficient amount of field observation and density tests should be performed during placement. Placing backfill behind retaining walls before the wall has gained sufficient strength to resist the applied lateral earth pressures is <u>not</u> recommended.

Drainage behind retaining walls is considered critical. If the backfill behind the wall is not well drained, hydrostatic pressures are allowed to build up and lateral earth pressures will be considerably increased. Therefore, we recommend a vertical drain be installed behind any impermeable retaining walls. Because of the difficulty in placement of a gravel drain, we recommend the use of a composite drainage mat similar to Enkadrain or Miradrain. An outfall must be provided for this drain.

REACTIVE SOILS

Since groundwater in the Grand Junction area typically contains sulfates in quantities detrimental to a Type I cement, a Type II or Type I-II or Type II-V cement is recommended for all concrete which is in contact with the subsurface soils and bedrock. Calcium chloride should not be added to a Type II, Type I-II or Type II-V cement under any circumstances.

PAVEMENTS

Samples of the surficial native soils at this property that may be required to support pavements have been evaluated using the Hveem-Carmany method to determine their support characteristics. The results of the laboratory testing are as follows:

R = 15
Expansion @ 300 psi = 0
Displacement @ 300 psi = 3.84

No estimates of traffic volumes have been provided to Lincoln DeVore. However, we assume that the roads will be classified as residential. The design procedures utilized are those recognized by the Colorado Department of Highways and the 1986 AASHTO design procedure. The terminal Serviceability Index of 2.0, a Reliability of 70 and a design life of 20 years have been utilized, based on recommendations by the Highway Department. An 18 kip ESAL of 5, also recommended by the Highway Department, was used for the analysis.

Based on the soil support characteristics outlined above, the following pavement sections are recommended:

Soil Type I:

3 inches of asphaltic concrete pavement
on 6 inches of aggregate base course
on 8 inches of recompacted native material

Soil Type I:

5 inches of full depth asphaltic concrete pavement
on 8 inches of recompacted native material

We recommend that the asphaltic concrete pavement have a minimum R_t value of 95, and meet the State of Colorado requirements for a Grade C mix. In addition, the asphaltic concrete pavement should be compacted to a minimum of 95% of its maximum Hveem density. The aggregate base course should meet the requirements of State of Colorado Class 5 or Class 6 material, and have a minimum R value of 78. We recommend that the base course be compacted to a minimum of 95% of its maximum Modified Proctor dry density (ASTM D-1557), at a moisture content within + or -2% of optimum moisture. The native subgrade shall be scarified and recompacted to a minimum of 90% of their maximum Modified Proctor day density (ASTM D-1557) at a moisture content within + or -2% of optimum moisture.

LIMITATIONS

This report is issued with the understanding that it is the responsibility of the owner, or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer for the project, and are incorporated into the plans. In addition, it is his responsibility that the necessary steps are taken to see that the contractor and his sub-contractors carry out these recommendations during construction. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in acceptable or appropriate standards may occur or may result from legislation or the broadening of engineering knowledge. Accordingly, the findings of this report may be invalid, wholly or partially, by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of 3 years.

The recommendations of this report pertain only to the site investigated and are based on the assumption that the soil conditions do not deviate from those described in this report. If any variations or undesirable conditions are encountered during construction or the proposed construction will differ from that planned on the day of this report, Lincoln DeVore should be notified so that supplemental recommendations can be provided, if appropriate.

Lincoln DeVore makes no warranty, either expressed or implied, as to the findings, recommendations, specifications or professional advice, except that they were prepared in accordance with generally accepted professional engineering practice in the field of geotechnical engineering.

No Scale

13

Exploration Boring

#83 93

12

Test Boring Location Diagram

North Crest Village - Grand Junction

LINCOLN DeVORE
ENGINEERS · GEOLOGISTS

1441 MOTOR STREET
GRAND JCT., COLORADO
COLO. SPRINGS—PUEBLO

E.M. MORRIS		

BORING NO. 1

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
		(I)	LOW PLASTIC SILTY CLAY BROWN V- MOIST SULFATES				
		(II)	MANCOS SHALE SULFATE CALICHE LOW MOISTURE DENSE	S.T.		112-8	14.0%
5			SANDSTONE/SILTSTONE STRATA FRACTURED EXPANSNE	SPT	36/6 86/8		9.7%
		(II)	VERY FIRM TO DENSE	SPT	21/6 54/12		10.6%
10			LOW PLASTIC SILTY CLAY SULFATES THIN SILTSTONE STRATA		104/17		
		(II)	EXPANSIVE MOIST INCREASING DENSITY	SPT	19/6 41/12		10.8%
15			T.D.@ 15'		77/18 115/24		
			NO FREE WATER 4-13-93				

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

NORTH CREST VILLAGE, GRAND JUNCTION		
KAY SCOTT		DATE 5-5-93
JOB NO. 78007-J	DRAWN EMM	

#83 93

BORING NO. 2

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
		I	SANDY SILTY CLAY - VERY MOIST				
		II	WEATHERED MANCOS SHALE @ 1½'	ST		122.8	6.9%
		II	SULFATE CALICHE SILTSTONE STRATA MOIST				
5		II	EXPANSIVE STRATIFIED	SPT	28/6 66/12		10.4%
			VERY FIRM SULFATES WEATHERED		114/18		
		II	FRACTURED - VERY HARD				
10			INCREASING DENSITY	SPT	46/6 96/11		11.4%
			SILTY CLAY WITH SILTSTONE				
		II	GRAY - HARD - FRACTURED -	SPT	50/5		11.8%
15			SULFATES - EXPANSIVE				
			T.D. @ 17'				
			NO FREE WATER				
			4-12-93				

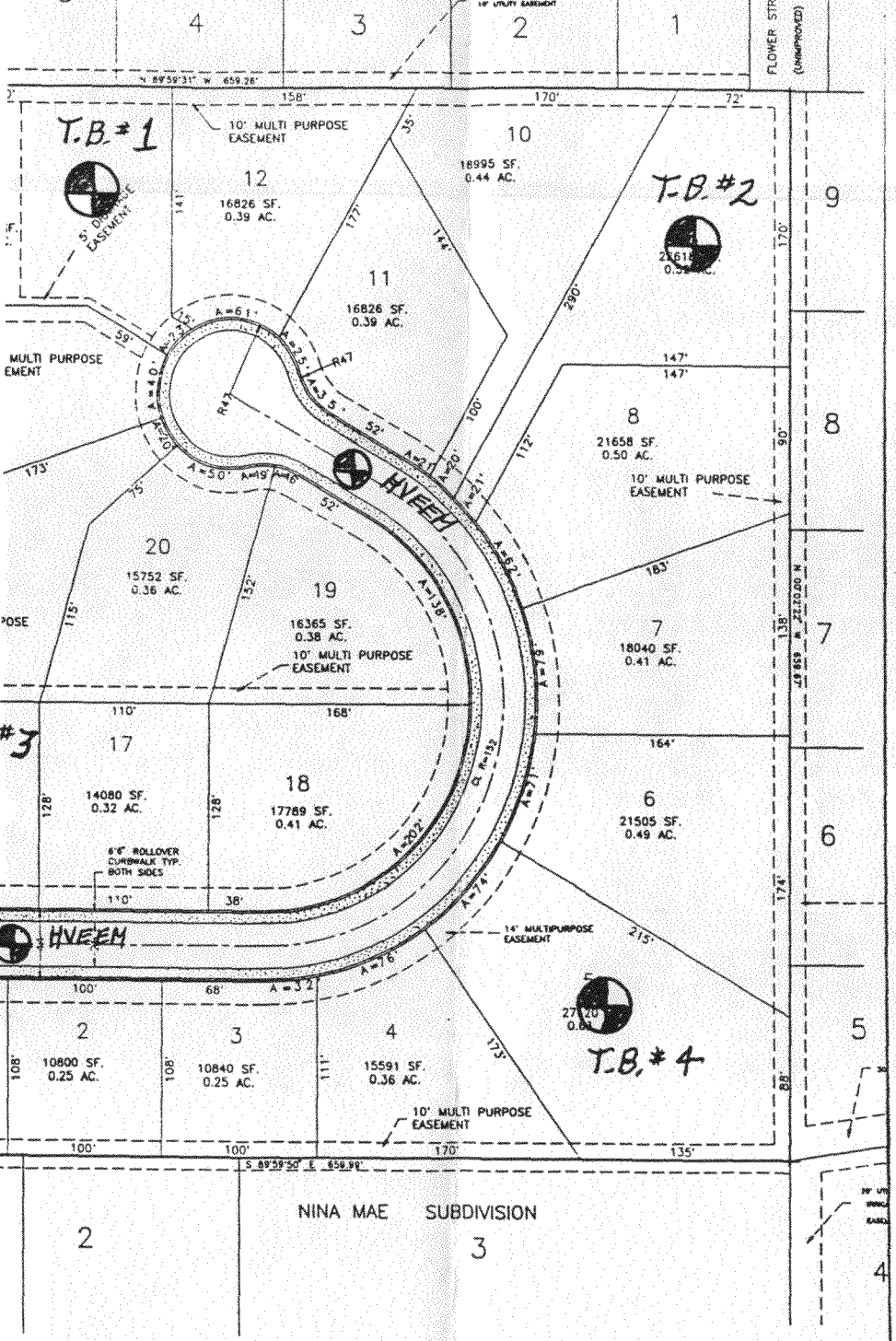
Remove from office

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

NORTH CREST VILLAGE, GRAND JUNCTION		
KAY SCOTT		DATE 5-5-93
JOB NO. 78007-J	DRAWN EMM	#83 93

From Office



No Scale

Exploration Boring

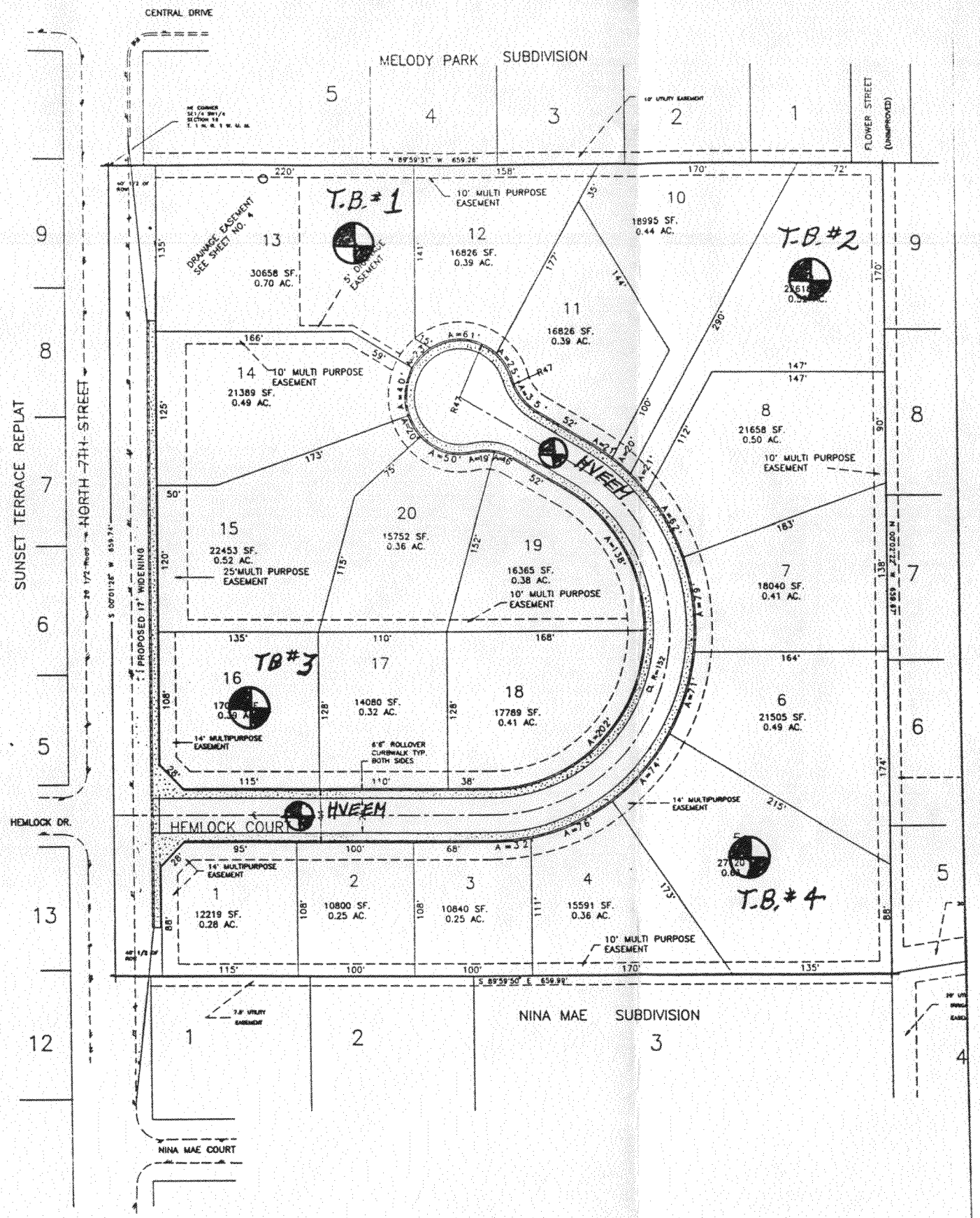
#83 93

Test Boring Location Diagram

North Crest Village - Grand Junction

LINCOLN DeVORE ENGINEERS

1441 MOTOR STREET
GRAND JCT. COLORADO
COLO. SPRINGS—PUEBLO



NO SCALE

EXPLORATION BORING

#83 93

TEST BORING LOCATION DIAGRAM

NORTH CREST VILLAGE - GRAND JUNCTION

LINCOLN DeVORE ENGINEERS · GEOLOGISTS	1441 MOTOR STREET GRAND JCT., COLORADO COLO. SPRINGS–PUEBLO	
DRAWN BY: E.M. MORRIS	SCALE	DATE
CHECKED BY	CONT. INT.	REV.

BORING NO. 3

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
			(I) SANDY SILTY CLAY - ALLUVIAL - BROWN				
		(II)	SULFATE CALICHE SL. MOIST	ST		117.0	7.3%
			MANCOS SHALE @ 2' EXPANSIVE SILTY CLAY				
5		(II)	FRACTURED - SILTSTONE	SPT	25/6 60/12		8.5%
			SILTY CLAY and SILTSTONE/SHALE INTERBEDS		10/18		
		(II)	HARD STRATA SULFATES	SPT	50/6 100/8		11.1%
10			EXPANSIVE GRAY				
			MOIST FRACTURED				
				SPT	35/6 - 80/12		9.5%
		(II)	SILTSTONE/SHALE INTERBEDS		130/16		
15			GRAY BLACK SHALE - VERY HARD				
			T.D. @ 17' SLIGHTLY MOIST				
			NO FREE WATER 4-12-93				

Field Office

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

NORTH CREST VILLAGE, GRAND JUNCTION

KAY SCOTT

DATE 5-5-93

JOB NO. 7800-J

DRAWN EMM

#83 93

BORING NO. 4

ELEVATION:

DEPTH (FT)	SYMBOL	SAMPLE	DESCRIPTION		PENETRATION RESISTANCE	IN-SITU DENSITY (PCF)	MOISTURE CONTENT (%)
		I	SILTY CLAY - SILT & SAND STRATA LOW DENSITY VERY MOIST				
			SULFATE CALICHE				
5		II	MANCOS SHALE @ 4' - LOW DENSITY	ST		98.9	9.9%
			SILTY CLAY - EXPANSIVE				
		II	SHALE/SILTSTONE INTERBEDS	SPT	60/5		11.1%
			STRATIFIED MOIST				
10			INCREASING DENSITY W/ DEPTH				
			V. FIRM EXPANSIVE - GRAY				
		II	SILTY CLAY HARD SHALE - BLACK	SPT	15/6 5"/12		10.1%
15			V-HARD - SULFATES				
			T.D. - 17½' MOIST		10"/17		
			NO FREE WATER 4-12-93				

LOG OF SUBSURFACE EXPLORATION

Lincoln DeVore, Inc.
Geotechnical Consultants

NORTH CREST VILLAGE, GRAND JUNCTION

KAY SCOTT

DATE 5-5-93

JOB NO. 78007-J

DRAWN EMH

#83 93

SUMMARY SHEET

Soil Sample SILTY CLAY (CL) Test No. T8007-J

Location NORTHCREST SUB. GRAND JUNCTION Date 4-15-93

Boring No. 4 Depth 2

Sample No. I Test by JLS

Natural Water Content (w) 12.3 %

Specific Gravity (Gs) _____ In Place Density (γ_o) 103.7 pcf

SIEVE ANALYSIS:

Sieve No.	% Passing
1 1/2"	
1"	
3/4"	
1/2"	
4	100
10	99.0
20	97.8
40	97.7
100	91.2
200	95.6

HYDROMETER ANALYSIS:

Grain size (mm)	%
.02	69.4
.005	41.0

Plastic Limit P.L. 24 %

Liquid Limit L. L. 14 %

Plasticity Index P.I. 10 %

Shrinkage Limit _____ %

Flow Index _____

Shrinkage Ratio _____ %

Volumetric Change _____ %

Lineal Shrinkage _____ %

MOISTURE DENSITY: ASTM METHOD

Optimum Moisture Content - w_o _____ %

Maximum Dry Density - γ_d _____ pcf

California Bearing Ratio (av) _____ %

REMOLD Swell: 1 Days 3.8 %

Swell against 1480 psf Wo gain 13.2 %

BEARING:

Housel Penetrometer (av) 900 psf

Unconfined Compression (qu) _____ psf

Plate Bearing: _____ psf

Inches Settlement _____

Consolidation % under psf

PERMEABILITY:

K (at 20°C) _____

Void Ratio _____

Sulfates 1500 ppm.

Remove From Office

#83 93

SOIL ANALYSIS

LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, COLORADO

SUMMARY SHEET

Soil Sample MANCOS SHALE - SILTY CLAY (CL)

Test No. 78007-J

Location NORTH CREST SUB. G-J-

Date 4-15-93

Boring No. 3 Depth 3

Sample No. II

Test by JLS

Natural Water Content (w) 7.3 %

Specific Gravity (Gs) _____

In Place Density (γ_o) 117.0 pcf

SIEVE ANALYSIS:

Sieve No.	% Passing
1 1/2"	
1"	
3/4"	100
1/2"	99.1
4	98.6
10	96.3
20	93.5
40	92.8
100	90.1
200	88.4

HYDROMETER ANALYSIS:

Grain size (mm)	%
.02	74.7
.005	47.3

Plastic Limit P.L. 18.1 %

Liquid Limit L. L. 34.3 %

Plasticity Index P.I. 16 %

Shrinkage Limit _____ %

Flow Index _____

Shrinkage Ratio _____ %

Volumetric Change _____ %

Lineal Shrinkage _____ %

MOISTURE DENSITY: ASTM METHOD

Optimum Moisture Content - w_o _____ %

Maximum Dry Density - γ_d _____ pcf

California Bearing Ratio (av) _____ %

Swell: 1 Days 5.8 %

Swell against 2262 psf Wo gain 14.3 %

BEARING:

Housel Penetrometer (av) 6500 psf

Unconfined Compression (qu) _____ psf

Plate Bearing: _____ psf

Inches Settlement _____

Consolidation % under psf

PERMEABILITY:

K (at 20°C) _____

Void Ratio _____

Sulfates 1500 ppm.

+10,000 ppm @ Caliche Zone

From Office Remove

#83 93

SOIL ANALYSIS

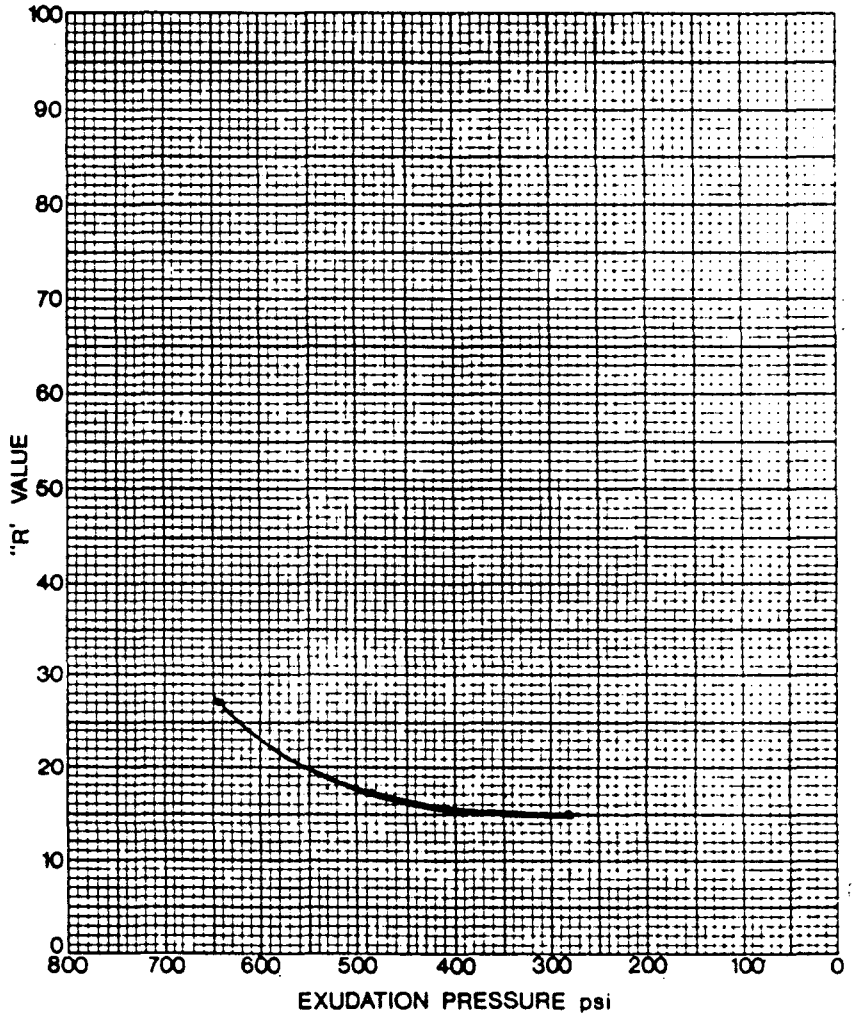
LINCOLN-DeVORE TESTING LABORATORY
COLORADO SPRINGS, COLORADO

SAMPLE:

	TEST SPECIMAN		A	B	C	D	E
	DATE TESTED		4-21	4-21	4-21		
SPECIMEN FABRICATION	Compactor Air Pressure	psi					
	Initial Moisture	%	11-9	11-9	11-9		
	Moisture at Compaction	%	16-9	17-9	18-9		
	Briquette Height	in.	2-46	2-47	2-52		
	Density	pcf	114-4	112-8	109-2		
	EXUDATION PRESSURE	psi	644	493	278		
	EXPANSION PRESSURE DIAL		6-6	3-6	0-0		
STABIL-OMETER	P_h at 1000 pounds	psi	36	46	54		
	P_h at 2000 pounds	psi	106	124	133		
	Displacement	turns	3-40	3-52	3-85		
	"R" Value		27	17	15		
	CORRECTED "R" VALUE						

EXPANSION @ 300 PSI EXUDATION PRESSURE 0
DISPLACEMENT @ 300 PSI EXUDATION PRESSURE 3.84
"R: VALUE @ 300 PSI EXUDATION PRESSURE 15

1½"	
1"	
3/4"	
1/2"	
3/8"	100
4	99.9
10	98.5
20	96.6
40	95-3
100	93.1
200	90.9
.02 mm	77.6
.005 mm	46.9



LIQUID LIMIT	24
PLASTIC LIMIT	14
PLASTICITY INDEX	10
SAND EQUIVALENT	

UCS - CL
AASHTO - A-4 (8)

Lincoln DeVore, Inc.
Geotechnical Consultants

PROPOSED HEMLOCK CL - NORTHCREST VILLAGE

KAY SCOTT

DATE 5-5-93

JOB NO. T800Y-J

DRAWN EMH

#83 93

THOMAS A. LOGUE
LAND DEVELOPMENT CONSULTANTS

June 1, 1993

#83 93

City of Grand Junction
Community Development Department
250 North 5th. Street
Grand Junction, CO 81501

RE: NORTH CREST SUBDIVISION, FINAL
File 44-93

Dear Staff:

Accompanying is the Final Plat and Plans for the North Crest Subdivision which are submitted for Public Review and Comment.

The following items have not been included with this application. These items were submitted with the Preliminary Plan Application. No changes have resulted since the original submittal:

1. Evidence of Title
2. Legal Description
3. Names and Address of surrounding property owners.
4. Adjacent Land Use and Zoning
5. Drainage Report

It is the desire of the petitioner to pay Open Space Fees in the amount of $4500.00 in conjunction with the Recording Fee at the time of the actual recording of the Final Plat an associated documents.

We welcome the opportunity to discuss the application personally with you at any time.

Respectfully,

Thomas A. Logue

Thomas A. Logue

xc: Gregg Cranston

227 SOUTH 9TH STREET • GRAND JUNCTION, COLORADO 81501
(303) 245-4099

DEVELOPMENT IMPROVEMENTS AGREEMENT

1. **Parties:** The parties to this Development Improvements Agreement ("the Agreement") are NORTH CREST DEVELOPMENT, L.L.C. ("the Developer") and **THE CITY OF GRAND JUNCTION**, Colorado ("the City").

THEREFORE, for valuable consideration, the receipt and adequacy of which is acknowledged, the Parties agree as follows:

2. **Effective Date:** The Effective Date of the Agreement will be the date that this agreement is recorded which is not sooner than recordation of the final plat for NORTH CREST SUBDIVISION.

RECITALS

The Developer seeks permission to develop property within the City to be known as NORTH CREST SUBDIVISION, which property is more particularly described on Exhibit "A" attached and incorporated by this reference (the "Property"). The City seeks to protect the health, safety and general welfare of the community by requiring the completion of various improvements in the development and limiting the harmful effects of substandard developments. The purpose of this Agreement is to protect the City from the cost of completing necessary improvements itself and is not executed for the benefit of materialmen, laborers, or others providing work, services or material to the development or for the benefit of the purchasers or users of the development. The mutual promises, covenants, and obligations contained in this Agreement are authorized by state law, the Colorado Constitution and the City's land development ordinances.

DEVELOPER'S OBLIGATION

3. **Improvements:** The Developer will design, construct and install, at its own expense, those on-site and off-site improvements listed on Exhibit "B" attached and incorporated by this reference. The Developer agrees to pay the City for inspection services performed by the City, in addition to amounts shown on Exhibit B. The City estimates that $ 500.00 will be required for City inspection of the required improvements. The Developer's obligation to complete the improvements is and will be independent of any obligations of the City contained herein.

4. **Security:** To secure the performance of its obligations under this Agreement (except its obligations for warranty under paragraph 6), the Developer will enter into an agreement which complies with either option identified in paragraph 28, or other written agreement between the City and the Developer.

5. **Standards:** The Developer will construct the Improvements according to the standards and specifications required by the City Engineer or as adopted by the City.

6. **Warranty:** The Developer warrants that the Improvements, each and every one of them, will be free from defects for a period of twelve (12) months from the date that the City Engineer accepts or approves the improvements completed by the Developer.

7. **Commencement and Completion Periods:** The improvements, each and every one of them, will be completed within 24 months from the Effective Date of this Agreement (the "Completion Period").

8. **Compliance with Law:** The developer will comply with all relevant federal, state and local laws, ordinances, and regulations in effect at the time of final approval associated with the development when fulfilling its obligations under this Agreement.

9. **Notice of Defect:** The Developer's Engineer will provide timely notice to the Developer, contractor, issuer of security and the City Engineer whenever inspection reveals, or the Developer's Engineer otherwise has knowledge, that an improvement does not conform to City standards and any specifications approved in the development application or is otherwise defective. The developer will have thirty (30) days from the issuance of such notice to correct or substantially correct the defect.

10. **Acceptance of Improvements:** The City's final acceptance and/or approval of improvements will not be given or obtained until the Developer presents a document or documents, for the benefit of the City, showing that the Developer owns the improvements in fee simple and that there are no liens, encumbrances, or other restrictions on the improvements. Approval and/or Acceptance of any improvements does not constitute a waiver by the City of any rights it may have on account of any defect in or failure of the improvement that is detected or which occurs after the approval and/or acceptance.

11. **Use of Proceeds:** The City will use funds deposited with it or drawn pursuant to any written disbursement agreement entered into between the parties only for the purpose of completing the Improvements or correcting defects in or failure of the Improvements.

12. **Events of Default:** The following conditions, occurrences or actions will constitute a default by the Developer during the Completion Period:

a. Developers failure to complete each portion of the Improvements in conformance with the agreed upon time schedule; the City may not declare a default until a fourteen (14) calendar day notice has been given to the Developer;

b. Developer's failure to demonstrate reasonable intent to correct defective construction of any improvement within the applicable correction period; the City may not declare a default until a fourteen (14) calendar day notice has been given to the Developer;

c. Developer's insolvency, the appointment of a receiver for the Developer or the filing of a voluntary or involuntary petition in bankruptcy respecting the Developer; in such event the City may immediately declare a default without prior notification to the Developer;

d. Notification to the City, by any lender with a lien on the property, of a default on an obligation; the City may immediately declare a default without prior notification to the Developer;

e. Initiation of any foreclosure action of any lien or initiation of mechanics lien(s) procedure(s) against the Property or a portion of the Property or assignment or conveyance of the Property in lieu of foreclosure; the City may immediately declare a default without prior notification to the Developer.

13. **Measure of Damages:** The measure of damages for breach of this Agreement by the Developer will be the reasonable cost of satisfactorily completing the Improvements plus reasonable City administrative expenses. For improvements upon which construction has not begun, the estimated costs of the Improvements as shown on Exhibit "B" will be prima facie evidence of the minimum cost of completion; however, neither that amount or the amount of a letter of credit, the subdivision improvements disbursement agreement or cash escrow establish the maximum amount of the Developer's liability.

14. **City's Rights Upon Default:** When any event of default occurs, the City may draw on the letter of credit, escrowed collateral, or proceed to collect any other security to the extent of the face amount of the credit or full amount of escrowed collateral, cash, or security less ninety percent (90%) of the estimated cost (as shown on Exhibit "B") of all improvements previously accepted by the City or may exercise its rights to disbursement of loan proceeds or other funds under the improvements disbursement agreement. The City will have the right to complete improvements itself or it may contract with a third party for completion, and the Developer grants to the City, its successors, assigns, agents, contractors, and employees, a nonexclusive right and easement to enter the Property for the purposes of constructing, reconstructing, maintaining, and repairing such improvements. Alternatively, the City may assign the proceeds of the letter of credit, the improvements disbursement agreement, the escrowed collateral, cash, or other funds or assets to a subsequent developer (or a lender) who has acquired the development by purchase, foreclosure or otherwise who will then have the same rights of completion as the City if and only if the subsequent developer (or lender) agrees in writing to complete the unfinished improvements and provides reasonable security for the obligation. In addition, the City may also enjoin the sale, transfer, or conveyance of lots within the development, until the improvements are completed or accepted. These remedies are cumulative in nature and are in addition to any other remedies the City has at law or in equity.

15. **Indemnification:** The Developer expressly agrees to indemnify and hold the City, its officers, employees and assigns harmless from and against all claims, costs and liabilities

of every kind and nature, for injury or damage received or sustained by any person or entity in connection with, or on account of the performance of work at the development or the Property pursuant to this Agreement. The Developer further agrees to aid and defend the City in the event that the City is named as a defendant in an action concerning the performance of work pursuant to this Agreement. The Developer further agrees to aid and defend the City in the event that the City is named as a defendant in an action concerning the performance of work pursuant to this Agreement except where such suit is brought by the Developer against the City. The Developer is not an agent or employee of the City.

16. **No Waiver:** No waiver of any provision of this Agreement by the City will be deemed or constitute a waiver of any other provision, nor will it be deemed or constitute a continuing waiver unless expressly provided for by a written amendment to this Agreement signed by both City and Developer; nor will the waiver of any default under this Agreement be deemed a waiver of any subsequent default or defaults of the same type. The City's failure to exercise any right under this Agreement will not constitute the approval of any wrongful act by the Developer or the acceptance of any improvement.

17. **Amendment or Modification:** The parties to this Agreement may amend or modify this Agreement only by written instrument executed on behalf of the City by the City Manager or his designee and by the Developer or his authorized officer. Such amendment or modification will be properly notarized before it may be effective.

18. **Attorney's Fees:** Should either party be required to resort to litigation to enforce the terms of this Agreement, the prevailing party, plaintiff or defendant, will be entitled to costs, including reasonable attorney's fees and expert witness fees, from the opposing party. If the court awards relief to both parties, the attorney's fees may be equitably divided between the parties by the decision maker.

19. **Vested Rights:** The City does not warrant by this Agreement that the Developer is entitled to any other approval(s) required by the City, if any, before the Developer is entitled to commence development or to transfer ownership of property in the development.

20. **Third Party Rights:** No person or entity who or which is not a party to this Agreement will have any right of action under this Agreement.

21. **Time:** For the purpose of computing the Abandonment and Completion Periods, and time periods for City action, such times in which war, civil disasters, or acts of God occur or exist will not be included if such times prevent the Developer or City from performing its obligations under the Agreement.

22. **Severability:** If any part, term, or provision of this Agreement is held by the courts to be illegal or otherwise unenforceable, such illegality or unenforceability will not affect the validity of any other part, term, or provision and the rights of the parties will be construed as if the part, term, or provision was never part of the Agreement.

23. **Benefits:** The benefits of this Agreement to the Developer are personal and may not be assigned without the express written approval of the City. Such approval may not be unreasonably withheld, but any unapproved assignment is void. Notwithstanding the foregoing, the burdens of this Agreement are personal obligations of the Developer and also will be binding on the heirs, successors, and assigns of the Developer, and shall be a covenant(s) running with the Property. There is no prohibition on the right of the City to assign its rights under this Agreement. The City will expressly release the original Developer's guarantee or obligations under the improvements disbursement agreement if it accepts new security from any developer or lender who obtains the Property. However, no other act of the City will constitute a release of the original Developer from his liability under this Agreement.

24. **Notice:** Any notice required or permitted by this Agreement will be deemed effective when personally delivered in writing or three (3) days after notice is deposited with the U.S. Postal Service, postage prepaid, certified, and return receipt requested, and addressed as follows:

If to Developer:
NORTH CREST DEVELOPMENT, LLC
KAY SCOTT, Manager
7713 BRISTOL SQUARE COURT
SPRINGFIELD, VIRGINA 22153

If to City:
City of Grand Junction
Community Development Director
250 N. 5th Street
Grand Junction, Colorado 81501

25. **Recordation:** Developer will pay for any costs to record a copy of this Agreement in the Clerk and Recorder's Office of Mesa County, Colorado.

26. **Immunity:** Nothing contained in this Agreement constitutes a waiver of the City's sovereign immunity under any applicable state law.

27. **Personal Jurisdiction and Venue:** Personal jurisdiction and venue for any civil action commenced by either party to this Agreement whether arising out of or relating to the Agreement, letter of credit, improvements disbursements agreement, or cash escrow agreement or any action to collect security will be deemed to be proper only if such action is commenced in Mesa County. The Developer expressly waives his right to bring such action in or to remove such action to any other court whether state or federal.

28. The **improvements guarantee** required by the City Code to ensure that the improvements described in the improvements agreement are constructed (to city standards) may be in the form of an agreement: (I) between a bank doing business in Mesa County and the City or as described in (II), below. The agreement between a bank and the City

(I) shall provide, among other things, for the bank to guarantee and warrant to the City that it shall:

a. have available money equal to the estimated costs of the required improvements, in an amount equal to the amount agreed upon in the Improvements Agreement;

b. only pay such amounts to contractors who have constructed required Improvements;

c. only pay such amounts after the bank has received the written approval of the City Engineer, or his designee; the City Engineer shall inspect within three (3) working days of request;

d. in the event the bank disburses without the City Engineer having approved such disbursement, the Bank shall pay, in addition to all other sums it would otherwise be obligated to pay, to the City the amount of the wrongful disbursement if the City Engineer determines that the work is not acceptable, based on the approved plans and specifications. The City shall use such money to cause the work to be constructed in accordance with the approved plans and specifications;

~~II. An alternative agreement may be executed for a development which is expected~~ to require not more than 10 transactions shall contain the following provisions:

a. The Finance Department of the City will act as disbursing agent and will account for disbursements to Developer contractors as required improvements are completed and accepted.

b. The City will accept a cash deposit from the Developer equal to the City approved estimate of the required improvements, for purposes of securing and guaranteeing the construction of the required sewer, water, streets, and on-site improvements in the development plan. Such deposit(s), currently estimated at approximately $_____ shall be given to the City's Finance Department, commingled with other funds of the City and specifically invested in the short term market. Interest income shall be allocated to the Developer's escrow account monthly, in the same manner as other short-term investments of the city.

c. Such interest income shall be used to reimburse the General Fund of the City for accounting and transaction costs incurred in making payments to the appropriate contractors. For purposes of this agreement, the City's costs shall be one hundred dollars ($100.00) for each check disbursement or other ~~transaction which is made. In any event the amount retained by the City for~~

~~its transaction costs shall not be less than two percent (2%) of the amount~~ deposited. After all required improvements have been made and accepted by the City, any surplus funds remaining in the account (~~in excess of the two percent minimum or the calculated transaction costs~~) shall be returned to the developer within thirty (30) days of said acceptance date. Any transaction costs which are not covered by the amount of the deposit plus accrued interest shall be paid to the City by the Developer in like manner within thirty (30) days of completion of the improvements. No guarantee as to the level of interest income or rate of return on the funds so deposited is either implied or made in this agreement; the City agrees only to keep the funds ~~invested as with other City funds.~~

d. in any event, the Developer promises to construct the required improvements to the satisfaction of the City Engineer, in accordance with the approved plans and specifications.

29. a. Conditions of Acceptance: The City shall have no responsibility or liability with respect to any street, or other improvement(s), notwithstanding the use of the same by the public, unless the street or other improvements shall have been accepted by the City.

Prior to requesting final acceptance of streets, storm drainage facilities, or other required improvements, the Developer shall furnish to the City Engineer as-built drawings in reproducible form and copies of results of all construction control tests required by City specifications.

b. Phased Development: If the City allows a street to be constructed in stages, the Developer of the first one-half street opened for traffic shall construct the adjacent curb, gutter and sidewalk in the standard location and shall construct the required width of pavement from the edge of gutter on his side of the street to enable an initial two-way traffic operation without on-street parking. That Developer is also responsible for end-transitions, intersection paving, drainage facilities, and adjustments to existing utilities necessary to open the street to traffic.

Attest:

City of Grand Junction
250 North Fifth Street
Grand Junction CO 81501

By: _____

Neva B. Lockhart
City Clerk

Mark K. Achen
City Manager

Attest:

TYPE LEGAL DESCRIPTION(S) BELOW, USING ADDITIONAL SHEETS AS NECESSARY. USE SINGLE SPACING WITH A ONE INCH MARGIN ON EACH SIDE.

****

Exhibit A

LOTS 1-20, NORTH CREST SUBDIVISION,
GRAND JUNCTION, COLORADO.

83 93

Exhibit D

#83-3

IMPROVEMENTS LIST/DETAIL

Original Do Not Remove From Office

DATE: JUNE 1, 1993
NAME OF DEVELOPMENT: NORTH CREST SUBDIVISION
LOCATION: NE HEMLOCK DR. & No. 7th STREET
PRINTED NAME OF PERSON PREPARING: THOMAS A. LOGUE

	UNITS	TOTAL QTY.	UNIT PRICE	TOTAL AMOUNT
I. SANITARY SEWER				
1. Clearing and grubbing				-0-
2. Cut and remove asphalt	LF	18	16.00	192.00
3. PVC sanitary sewer main (incl. trenching, bedding & backfill)	LF			
4. Sewer Services (incl. trenching, bedding, & backfill)	LF	1633	17.00	27,761.00
5. Sanitary sewer manhole(s)	EA	7	1200.00	8,400.00
6. Connection to existing manhole(s)	EA	1	500.00	500.00
7. Aggregate Base Course				-0-
8. Pavement replacement	LF	18	10.00	180.00
9. Driveway restoration				-0-
10. Utility adjustments				-0-
II. DOMESTIC WATER				
1. Clearing and grubbing				-0-
2. Cut and remove asphalt	LF	18	16.00	192.00
3. Water Main (incl. excavation, bedding, backfill, valves and appurtenances)	LF	931	17.00	15,827.00
4. Water services (incl. excavation, bedding, backfill, valves, and appurtenances)	EA	20	275.00	5,500.00
5. Connect to existing water line	EA	1	3000.00	3,000.00
6. Aggregate Base Course				-0-
7. Pavement Replacement	18	LF	10.00	180.00
8. Utility adjustments				-0-
III. STREETS				
1. Clearing and grubbing (Inc. w/ Earthwork)				-0-
2. Earthwork, including excavation and embankment construction	CY	2225	1.50	3338.00
3. Utility relocations	LS			1000.00
4. Aggregate sub-base course (~~square yard~~)	C			-0-
5. Aggregate base course (~~square yard~~)	CY	1270	19.50	24,765.00
6. Sub-grade stabilization	SY	4490	1.40	6,286.00
7. Asphalt or concrete pavement (square yard)	TON	1020	23.00	23,460.00
8. Curb, gutter & sidewalk (linear feet)	LF	2440	18.00	43,920.00
9. Driveway sections (square yard)				-0-
10. Crosspans & fillets	SF	1575	4.00	6300.00
11. Retaining walls/structures				-0-
12. Storm drainage system	LS			8500.00

13. Signs and other traffic control devices	EA	3	125.00	375.00
14. Construction staking	LS			1000.00
15. Dust control				-0-
16. Street lights (each)	EA	3	1000.00	3000.00
IV. LANDSCAPING				
1. Design/Architecture				-0-
2. Earthwork (includes top soil, fine grading, & berming				-0-
3. Hardscape features (includes walls, fencing, and paving)				-0-
4. Plant material and planting				-0-
5. Irrigation system				-0-
6. Other features (incl. statues, water displays, park equipment, and outdoor furniture)				-0-
7. Curbing				-0-
8. Retaing walls and structures				-0-
9. One year maintenance agreement				-0-
V. MISCELLANEOUS				
1. Design/Engineering	LS			6000.00
2. Surveying	LS			1200.00
3. Developer's inspection costs	LS			3000.00
4. Quality control testing	LS			3000.00
5. Construction traffic control	LS			2000.00
6. Rights-of-way/Easements				-0-
7. City inspection fees	LS			500.00
8. Permit fees	LS			200.00
9. Recording costs	LS			200.00
10. Bonds				-0-
11. Newsletters				-0-
12. General Construction Supervision	LS			1000.00
13. Other _____				-0-
14. Other _____				-0-

TOTAL ESTIMATED COST OF IMPROVEMENTS: $ 200,776.00

SIGNATURE OF DEVELOPER — DATE

(If corporation, to be signed by President and attested to by Secretary together with the corporate seals.)

I have reviewed the estimated costs and time schedule shown above and, base on the plan layouts submitted to date and the current costs of constructio I take no exception to the above.

CITY ENGINEER — DATE

COMMUNITY DEVELOPMENT — DATE

#83 93

DRAINAGE REPORT

FOR

NORTHCREST VILLAGE

June 30, 1993

Prepared for:

Gregg Cranston
1401 North First Street
Grand Junction, CO 81501

Prepared by:

James V. Laraby, P.E.- L.S.
227 South 9th Street
Grand Junction, CO 81501
(303) 245-4099

ENGINEER'S CERTIFICATION

I hereby certify that this report and associated drawings for **DRAINAGE REPORT** for the **Northcrest Village** was prepared by the undersigned.

6/30/93

James V. Laraby, P.E. - L.S.
State of Colorado, No. 9133

DRAINAGE REPORT

NORTHCREST VILLAGE

I. GENERAL LOCATION AND DESCRIPTION

A. Location

Northcrest Village contains approximately 10 acres. It is located in the North Grand Junction area, 660 feet north of "G" Road and east of North 7th Street. The property is part of the SE 1/4 of Section 35, Township One North, Range One West, of the Ute Meridian.

The property is to be developed into 20 single family lots with areas from 10,000 sq. ft. to 20,000 sq. ft. resulting in a gross density of 2.0 units per acre. All of the land surrounding Northcrest Village has been fully developed. The following is a summary of the adjacent subdivisions.

LOCATION	SUBDIVISION	DESCRIPTION
North	Melody Park	single family
East	Galaxy	single family
South	Nina Mae	single family, irrigation ditch
West	Sunset Terrace	single family

B. Property Description

The property is vacant of structures or dwellings. Even though irrigation water is available for the site, it appears no recent agricultural production has occurred. The site is affected by an existing natural drainage swale which flows to the northwest corner of the property. The topography is gently rolling and slopes towards the northwest at a rate of approximately 1.7 percent. The property is zoned RSF-2.

The drainage for the property flow through an existing 12" corrugated metal pipe. It appears this pipe connects to an existing drainage system with two inlets on the east side of the intersection of Central Drive and No. 7th Street. This drainage system drains west to an existing drainage swale located west of No. 7th Street on the north side of Central Avenue.

II. DRAINAGE BASINS AND SUB-BASINS

A. **Major Basin Description**. The site drains into one basin tributary to the existing pond located adjacent to North 7th Street at the northwest corner of the site. This basin collects the flow from 13.91 acres offsite located to the east and south of Northcrest. The basin is divided into three smaller sub-basins for ease in determining runoff in the streets, inlets, and storm sewer. The sub-basins are labeled as A-C, inclusive.

B. **Sub-basin Description**

1. Offsite. The flow from the east reaches the proposed detention pond along an existing swale along the north edge of Northcrest. This swale will remain as a drainage easement through the back of the residential lots. The drainage from the south flows to North 7th Street. Curb, gutter, and sidewalk improvements are planned to convey the drainage to the detention pond. An inlet will be constructed near the detention pond to route the storms through the pond.

2. Onsite. The site is divided into three minor sub-basins, A-C. The property was divided into these basins in order to provide the runoff detail for the design of individual structures.

Basin A. This area consists of 7.51 acres, including approximately 5 acres of land located south of Northcrest. This area drains to No. 7th Street and will be transported along a curb, gutter and sidewalk to an inlet located at the southeast corner of Center Drive and North 7th Street.

Basin B. This area consists of 6.84 acres, including offsites from the developed lots located east of Northcrest. This area drains to the proposed interior road and flows along the road to the end of the cul-de-sac. The runoff will flow to the detention pond through a proposed curb opening. A concrete swale will be constructed from the end of the cul-de-sac to the detention pond.

Basin C. This area consists of 9.55 acres, mainly offsite from and existing subdivision located east of Northcrest. A swale along the north property line will transport the runoff to the detention pond.

III. DRAINAGE DESIGN CRITERIA

A. **Hydrology**. Runoff computation were prepared for the two (2) year (minor) and One Hundred (100) year (major) storm frequency utilizing the Ration Method (Q=CIA) and are included in Appendix A of this report. The following information was delineated from the "INTERIM OUTLINE OF GRADING AND DRAINAGE CRITERIA", prepared by the engineering staff, City of Grand Junction, July 1992.

- C Values - Recommended Average Runoff Coefficients
- Average velocities for overland flow
- Overland flow curves
- Intensity - duration curves

Copies of the above referenced charts and graphs are included in Appendix A of this report.

The runoff is to be directed towards an existing pond which will act as a detention facility for not only for Northcrest Village, but also the tributary offsite basins.

The storage volume within the pond was determined utilizing the City's criteria. Release rates and required storage volumes were determined with the "Modified Rational Method" per City's criteria. Since the pond collects runoff from more that Northcrest Village, the acreage of the entire tributary basin was used in determining the size of the required storage volume. The calculation are shown within Appendix A of this report.

B. **Hydraulics**. The hydraulics for the specific drainage structures were designed utilizing the Weir, Orifice, and inlet design criteria as described in the "INTERIM OUTLINE OF GRADING AND DRAINAGE CRITERIA". A detailed analysis of all structures are included within Appendix B of this report.

IV. DRAINAGE FACILITY DESIGN

The following is a summary of the design points and their associated drainage structures.

Design Point	Q (2 yr)	Q (100 yr)	Comments
1	2.6	9.4	Cross pan to be constructed to transport flow north in curb & gutter along the east side of No.7th Street.
2	3.1	9.3	Standard inlet to be replace existing inlet at the southeast corner of Center Avenue and North 7th Street.
3	3.0	11.2	Curb open will be constructed. Flow to detention pond along a concrete swale.
4	3.1	11.5	Grass swale to transport runoff to detention pond.

Refer to the Drainage Plan and respective calculation for design point locations. Total flow leaving the project is as follows:

Storm	Historic (CFS)	Developed (CFS)
Two (2) year	5.7	7.0
One Hundred (100) year	23.8	26.7

The detention pond outlet is designed as a two stage outlet structure. The outlet configuration and calculations are located in Appendix B of this report.

V. CONCLUSION

This drainage study presents the drainage impact created by the development of Northcrest Village. The storm water management system presented herein provides the required storm drainage system to adequately convey the two (2) year and one (100) year storms in such a manner as to minimize the hazards of local flooding.

#63 93

Drainage Report
NorthCrest Village
Grand Junction, CO
June 30, 1993

APPENDIX A

Drainage Report
NorthCrest Village
Grand Junction, CO

APPENDIX A

Subdivision: NORTHCREST VILLAGE DESIGN STORM: 2 YEAR DATE: 7/1/93
Location: GRAND JUNCTION, COLO
TIME OF CONCENTRATION HISTORIC PAGE 1 OF 1

----SUB-BASIN----			INITIAL/OVERLAND TIME (ti)			TRAVEL TIME (Ti)				Tc CHECK (URBANIZED BASINS)			FINAL Tc	
DESIGN	AREA Ac	C	LENGTH Ft	SLOPE %	ti Min	LENGTH Ft	SLOPE %	VEL FPS	Tc Min	COMP Tc	TOTAL LENGTH	Tc (min)		REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
	a.1.1	0.4	100	1.3	12.0									
1	a.1.2	0.4				500.0	1.3	0.75	11.1	23.1				
	a.2.1	0.2	200	2.5	17.0									
2	a.2.2	0.2				290.0	1.5	0.85	5.7	22.7				
3	a.3	0.2	80	1.5	14.0	290.0	1.5	0.85	5.7	19.7				
4	a.4	0.2				400.0	1	0.75	8.9	32.0				
	b.1.1	0.2	250	1.9	21.0									
	b.1.2	0.2				270.0	2.5	1.1	4.1	25.1				
	b.2	0.2	180	1.9	18.0	450.0	1.5	0.85	8.8	26.8				
	b.3	0.2	150	3.0	15.0	380.0	2.5	1.1	5.8	20.8				
	c.1.1	0.4	100	0.5	15.0									
	c.1.2	0.4				750.0	1.8	0.95	13.2	28.2				
	c.2	0.2				430.0	2.8	1.2	6.0	34.1				
	c.3	0.2				220.0	0.9	0.65	5.6	39.8				

Subdivision: NORTHCREST VILLAGE DESIGN STORM: 100 YEAR DATE: 7/1/93
Location: GRAND JUNCTION, COLO
TIME OF CONCENTRATION HISTORIC PAGE 1 OF 1

----SUB-BASIN----			INITIAL/OVERLAND TIME (ti)			TRAVEL TIME (Ti)				Tc CHECK (URBANIZED BASINS)			FINAL Tc	
DESIGN	AREA Ac	C	LENGTH Ft	SLOPE %	ti Min	LENGTH Ft	SLOPE %	VEL FPS	Tc Min	COMP Tc	TOTAL LENGTH	Tc (min)		REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
	a.1.1	0.55	100	1.3	10.5							10.6		
1	a.1.2	0.55				500.0	1.3	0.75	11.1	21.6		12.8		
	a.2.1	0.35	200	2.5	15.0							11.1		
2	a.2.2	0.35				290.0	1.5	0.85	5.7	20.7		11.6		
3	a.3	0.35	80	1.5	11.0	290.0	1.5	0.85	5.7	16.7		10.4		
4	a.4	0.35				400.0	1.0	0.75	8.9	30.5		12.2		
	b.1.1	0.35	250	1.9	18.0							11.4		
	b.1.2	0.35				270.0	2.5	1.1	4.1	22.1		10.0		
	b.2	0.35	180	1.9	17.0	450.0	1.5	0.85	8.8	25.8		11.0		
	b.3	0.35	150	3.0	14.0	380.0	2.5	1.1	5.8	19.8		10.8		
	C.1.1	0.55	100	0.5	12.0							10.6		
	C.1.2	0.55				750.0	1.8	0.95	13.2	25.2		14.2		
	c.2	0.20				430.0	2.8	1.2	6.0	31.1		12.4		
	c.3	0.20				220.0	0.9	0.65	5.6	36.8		11.2		

Subdivision: NORTHCREST VILLAGE DESIGN STORM: 2 YEAR DATE: 7/1/93
Location: GRAND JUNCTION, COLO
TIME OF CONCENTRATION DEVELOPED CONDITIONS PAGE 1 OF 1

----SUB-BASIN----			INITIAL/OVERLAND TIME (ti)			TRAVEL TIME (Ti)				Tc CHECK (URBANIZED BASINS)			FINAL Tc	
DESIGN (1)	AREA Ac (2)	C (3)	LENGTH Ft (4)	SLOPE % (5)	ti Min (6)	LENGTH Ft (7)	SLOPE % (8)	VEL FPS (9)	Tc Min (10)	COMP Tc (11)	TOTAL LENGTH (12)	Tc (min) (13)	(14)	REMARKS
	a.1.1	0.4	100	1.3	12.0							10.6		
1	a.1.2	0.4				500.0	1.3	0.75	11.1	23.1		12.8		
	a.2.1	0.4	200	2.5	14.0							11.1		
2	a.2.2	0.4				290.0	1.5	0.85	5.7	19.7		11.6		
3	a.3	0.4	80	1.5	11.0	290.0	1.5	0.85	5.7	16.7		10.4		
4	a.4	0.4				400.0	1	0.75	8.9	32.0		12.2		
	b.1.1	0.4	250	1.9	17.0							11.4		
	b.1.2	0.4				270.0	2.5	1.1	4.1	21.1		10.0		
	b.2	0.4	180	1.9	15.0	450.0	1.5	0.85	8.8	23.8		11.0		
	b.3	0.4	150	3.0	17.0	380.0	2.5	1.1	5.8	22.8		10.8		
	c.1.1	0.4	100	0.5	15.0									
	c.1.2	0.4				750.0	1.8	0.95	13.2	28.2				
	c.2	0.4				430.0	2.8	1.2	6.0	34.1				
	c.3	0.4				220.0	0.9	0.65	5.6	39.8				

Subdivision: NORTHCREST VILLAGE DESIGN STORM: 100 YEAR DATE: 7/1/93
Location: GRAND JUNCTION, COLO
TIME OF CONCENTRATION DEVELOPED CONDITIONS PAGE 1 OF 1

----SUB-BASIN----			INITIAL/OVERLAND TIME (ti)			TRAVEL TIME (Ti)				Tc CHECK (URBANIZED BASINS)			FINAL Tc	
DESIGN	AREA Ac	C	LENGTH Ft	SLOPE %	ti Min	LENGTH Ft	SLOPE %	VEL FPS	Tc Min	COMP Tc	TOTAL LENGTH	Tc (min)		REMARKS
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
	a.1.1	0.55	100	1.3	10.5									
1	a.1.2	0.55				500.0	1.3	0.75	11.1	21.6				
	a.2.1	0.55	200	2.5	11.0									
2	a.2.2	0.55				290.0	1.5	0.85	5.7	16.7				
3	a.3	0.55	80	1.5	9.0	290.0	1.5	0.85	5.7	14.7				
4	a.4	0.55				400.0	1	0.75	8.9	30.5				
	b.1.1	0.55	250	1.9	15.0									
	b.1.2	0.55				270.0	2.5	1.1	4.1	19.1				
	b.2	0.55	180	1.9	12.0	450.0	1.5	0.85	8.8	20.8				
	b.3	0.55	150	3.0	10.0	380.0	2.5	1.1	5.8	17.8				
	c.1.1	0.55	100	0.5	12.0									
	c.1.2	0.55				750.0	1.8	0.95	13.2	25.2				
	c.2	0.55				430.0	2.8	1.2	6.0	31.1				
	c.3	0.55				220.0	0.9	0.65	5.6	36.8				

Subdivision: NORTHCREST VILLAGE DESIGN STORM: 2 YEAR DATE: 7/1/93
Location: GRAND JUNCTION, COLO
STORM DRAINAGE SYSTEM DESIGN (Rational Method Procedure) PAGE 1 OF 1

STREET	DESIGN POINT	AREA DESIG.	A (acres)	C	CA (acres)	sum CA (acres)	ti	to	Tc (min)	i (in/hr)	Q (cfs)	Slope (%)	Length L(ft)	VEL. V(fps)	t (min)
	BASIN "A"														
		a.1	3.67	0.4	1.47		23.1			1.02	1.5				
		a.2	2.16	0.4	0.86		19.7			1.02	0.9				
		a.3	0.48	0.4	0.19		20.0			1.11	0.2				
	1		6.31		2.52		23.1			1.02	2.6				
	2	a.4	1.20	0.4	0.48	3.0	23.1			1.02	3.1	1.0	400	0.75	8.9
	Total		7.51		3.00										
	BASIN B														
		b.1	3.66	0.4	1.46		21.1			1.08	1.6				
		b.2	1.66	0.4	0.66		23.8			1.00	0.7				
		b.3	1.52	0.4	0.61	2.1	17.0			1.21	2.5	1.5	260	0.85	5.1
	3		6.84		2.74	2.7	22.1			1.08	3.0				
	BASIN "C"														
		c.1	7.51	0.4	3.00		28.1			0.92	2.8				
		c.2	0.99	0.4	0.40	3.4	28.1			0.92	3.1	1.8	450	0.95	7.9
	4	c.3	1.06	0.4	0.42	3.8	36.0			0.80	3.1	0.9	220	0.65	5.6
	5		23.91		9.56	9.6	41.6			0.74	7.1				

Subdivision: NORTHCREST VILLAGE DESIGN STORM: 100 YEAR DATE: 7/1/93
Location: GRAND JUNCTION, COLO
STORM DRAINAGE SYSTEM DESIGN (Rational Method Procedure) PAGE 1 OF 1

STREET	DESIGN POINT	AREA DESIG.	A (acres)	C	CA (acres)	sum CA (acres)	ti	to	Tc (min)	i (in/hr)	Q (cfs)	Slope (%)	Length L(ft)	VEL. V(fps)	t (min)
		BASIN "A"													
		a.1	3.67	0.55	2.02		21.6			2.70	5.4				
		a.2	2.16	0.55	1.19		16.7			3.07	3.6				
		a.3	0.48	0.55	0.26		14.7			3.24	0.9				
	1		6.31		3.47		21.6			2.70	9.4				
	2	a.4	1.20	0.55	0.66	4.1	30.5			2.25	9.3	1.0	400	0.75	8.9
	Total		7.51		4.13										
		BASIN B													
		b.1	3.66	0.55	2.01		19.1			2.91	5.9				
		b.2	1.66	0.55	0.91		20.8			2.77	2.5				
		b.3	1.52	0.55	0.84	2.8	17.8			2.99	8.5	1.5	260	0.85	5.1
	3		6.84		3.76	3.8	17.8			2.99	11.2				
		BASIN "C"													
		c.1	7.51	0.55	4.13		25.2			2.51	10.4				
		c.2	0.99	0.55	0.54	4.675	22.0			2.70	12.6	1.8	550	0.95	9.6
	4	c.3	1.06	0.55	0.58	5.3	31.6			2.19	11.5	0.9	220	0.65	5.6
	5		23.91		13.15	13.2	37.3			2.03	26.7				

Drainage Report
NorthCrest Village
Grand Junction, CO

APPENDIX B

PROJECT: NORTHCREST VILLAGE BY: J. Laraby

DATE: 7/1/93

SUBJECT: RUNOFF CALCULATIONS

HISTORIC RUNOFF:	2 YEAR	100 YEAR
Drainage area (acres)		
1. Northcrest Village	10.0	10.0
Onsite is undeveloped, C:	0.2	0.4
Offsite C*A:	2.0	4.0
2. Offsite drainage area	13.9	13.9
Offsite is developed, C:	0.4	0.55
Offsite C*A:	5.6	7.6
Total Area (A):	23.9	23.9
Total C*A:	7.6	11.6
Ave Runoff coefficient(C):	0.32	0.49
Total C*A:	7.6	11.6
Time of Concentration (Tc):	39.8	36.8
Ave rainfall intensity (I):	0.76	2.04
Peak runoff rate (Q):	5.7	23.8
Developed Runoff (Q):	7.0	26.7

PROJECT: NORTHCREST VILLAGE BY: J. Laraby

DATE: 7/1/93

SUBJECT: RUNOFF CALCULATIONS

VOLUME OF POND REQUIRED
Utilizing Modified Rational Method (Pages 22-24,
Interim Outline of Grading & Drainage Criteria, City
of Grand Junction, July 1992)

Defintions

Vavg = .50 * Vmax
davg = .67 * dmax
Qo = .80 * Qmax or .75*Qmax (using pond depth instead of "h")
Qo = .065 * Qmax (weir and orifice flow)
Td2 = ((633.4CdA/(Qo-Qo^2Tcd/(81.2Cda)))^.5)-15.6
Td100= ((2925CdA(Qo-Qo^2Tcd/(234CdA)))^.5)-25
Id2 = 40.6/(Td2+15.6) (intensity at Td2)
Id100= 117/(Td100+25) (intensity at Td100)
Qd = Cd * A * Id
K = Tch/Tcd

ITEM	2 YEAR POND	100 YEAR POND
Qmax	7.1	26.7
Qo	5.68	21.4
Tc(2)	39.8	36.8
Qo^2*Tcd	1,284	16,790
Td2	21.0	22.4
Id2	1.08	2.68
Qd2	8.3	31.4
K	1.0	1.0
V	1,276	6,508

PROJECT: NORTHCREST VILLAGE BY: J. Laraby

DATE: 7/1/93

SUBJECT: RUNOFF CALCULATIONS

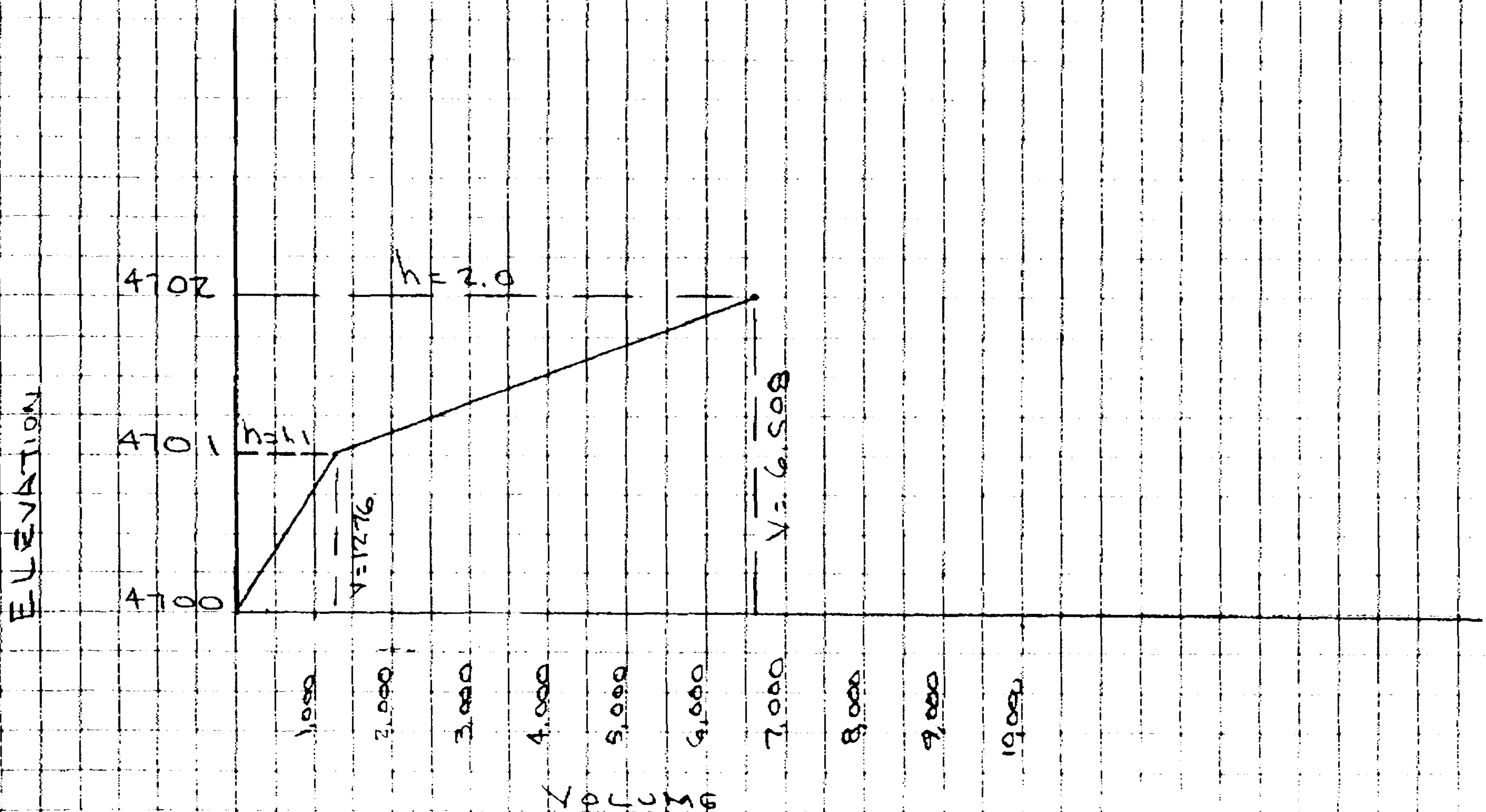
Volume of Detention Pond
Based upon grades on preliminary grading plan.

H DEPTH(FT)	AREA (S.F.)	*VOLUME (C.F.)	VOLUME SUM (C.F.)
4700	380		
		1,258	1,258
4701	2432		
		5,303	6,561
4702	8840		

*Incremental volume computed by the Conic Method
for reservoir volumes.

Volume=(1/3)*(EL2-EL1)*(Area1+Area2+sq.rt.(Area1*Area2))

Where: EL1, EL2 = Lower and upper elevations of the increment
Area1,Area2 = Areas computed for EL1, EL2, respectively
Volume = Incremental volume between EL1 and EL2



DETENTION POND

NORTHCREST VILLAGE

7-1-93

PROJECT: NORTHCREST VILLAGE BY: J. Laraby

DATE: 7/1/93

SUBJECT: RUNOFF CALCULATIONS

OUTLET @ 2 YR STORM

Q (Historic)(cfs)	5.7
Area A release	3.1
Q (from pond)	2.6
H-Depth of pond:	1.1
Size Opening(in)	10.65
h:	0.77
Q:	2.6

OUTLET FOR 100 YEAR STORM

Q (Historic)(cfs)	23.8
Area A release	9.3
Q (from pond)	14.5
H-Depth of pond:	2.0
Q(orifice)	4.2
Q(notch)	10.3

Determine size of notch: assume width = 3 times height

$Q=3.33(W - .1n*H)*H^{1.5}$

$Q=3.33(3H-.2*H)*H^{1.5}$

$Q=9.23 * H^{2.5}$

Height: 0.54 feet or 6.5 inches

Width: 1.63 feet or 19.5 inches

STAFF REVIEW

FILE # 83-93

DATE: July 29, 1993

STAFF: Karl Metzner

REQUEST: Final Plan and Plat

LOCATION: East side of 26 1/2 road, approximately 660 feet north of G road.

APPLICANT: Kay Scott c/o Greg Cranston

EXISTING LAND USE: Vacant

PROPOSED LAND USE: Residential

SURROUNDING LAND USE:
NORTH: Single family residential
EAST: Single family residential
SOUTH: Residential
WEST: Residential

EXISTING ZONING: PR-2

PROPOSED ZONING: N/A

SURROUNDING ZONING:
NORTH: RSF-2
EAST: RSF-2
SOUTH: RSF-2
WEST: RSF-4

RELATIONSHIP TO COMPREHENSIVE PLAN/POLICIES/GUIDELINES: The 7th Street Corridor Guidelines support residential development in this area.

STAFF ANALYSIS: Planning Commission previously approved a preliminary development plan for this property. The final plan is in substantial conformance with the preliminary submittal consisting of 20 single family lots on approximately 10 acres. Access is from 7th street in compliance with City engineering requirements. There are numerous technical review comments from the City Development Engineer which have not been adequately addressed. While no single comment is serious enough in itself to warrant delaying this application the total number of comments not addressed is large enough to warrant concern.

STAFF RECOMMENDATION: While staff would recommend approval of the development based on use and design, we are concerned that the numerous unaddressed comments could create problems if this item were to be approved "subject to" resolving the comments. Staff recommends that Planning Commission table this item for one month and direct that all outstanding or unresolved comments be resolved prior to receiving final approval.

RE/MAX The Grand Junction Real Estate Group, Inc.
Gregg L. Cranston, GRI, CRS
Broker Associate

RE/MAX Above the Crowd!

August 4, 1993

Karl Metzner
Planning Department
City of Grand Junction
250 North 5th. St.
Grand Junction, Colorado 81501

RE: North Crest Subdivision

Dear Sir:

In response to the Planning Commission's action on August 3, 1993, it is the understanding of the Applicant and Land Owner that any site development construction will be the sole responsibility of the Applicant and Land Owner until official Planning Commission acceptance of the Final Plat. It is further understood that the site development construction will not commence until the construction documents have been approved by the Planning staff.

We regret the technical delays and are looking forward to the next regular Planning Commission Meeting and the ultimate acceptance of the Final Plat.

Thanks again for working with us in the spirit of cooperation!

Sincerely,

Gregg Cranston
North Crest Development LLC

cc: file

1401 North 1st Street • Grand Junction, Colorado 81501-2105
Office: (303) 241-4000 Fax: (303) 241-4015 Toll Free: 1-800-777-4573

686 Step A Side Dr.
Grand Junction, CO 81506
August 3, 1993

Mesa County Planning Commission
Community Development Department
City Hall
Grand Junction, CO 81501

Dear Community Development Department,

I am writing to protest the residential development of the vacant land on 26 1/2 Road, just north of G Road. I live in the Crestridge area and walk by this lot regularly as part of my daily exercise. Pedestrians in this area share the roadway closely with cars because there are no curbs or sidewalks up and down 26 1/2 Road. The speed limits in this area (45 mph) do not consider the presence nor the safety of pedestrians or bike riders who use this street regularly. To add more housing and hence more traffic will be detrimental to the safety of those of us who use what used to be a relatively rural area for exercise. The four-way stop at the intersection of 7th and G Roads does little to deter speeders who regularly roll through the intersection without stopping.

We enjoy the area because it is quiet and less densely populated than other areas. We want to keep it a quiet, calm area in which to live. We thank you for your consideration in this matter. It is of great importance to us and others in the neighborhood.

Sincerely,

Anne Landman

Anne Landman

CITY OF GRAND JUNCTION DEVELOPMENT FILE 83-93, NORTHCREST VILLAGE SUBDIVISION LOCATED NORTHEAST OF HEMLOCK DRIVE AND 7TH STREET, IN THE CITY OF GRAND JUNCTION HAS BEEN REVIEWED AND APPROVED BY THE UTILITY COORDINATING COMMITTEE.

Gary R Mathews
CHAIRMAN

8-11-93
DATE

REVIEW COMMENTS

FILE #83-93 **TITLE HEADING:** Final Plan/Plat - North Crest Village Subdivision

LOCATION: NE corner of Hemlock Drive & 7th Street

PETITIONER: North Crest Development Company, LLC

PETITIONER'S ADDRESS/TELEPHONE: c/o Gregg Cranston
1401 North 1st Street
Grand Junction, CO 81501
241-4000

PETITIONER'S REPRESENTATIVE: Thomas A. Logue

STAFF REPRESENTATIVE: Karl Metzner

CITY DEVELOPMENT ENGINEER **8/30/93**
Gerald Williams **244-1591**

Construction drawings have been approved.

The only outstanding issue with engineering is to receive revised North 7th Street cross-sections. The previously submitted drawings incorrectly showed straight grading from the existing edge of asphalt to the gutter flowline, ignoring the gutter slope and 1/4" rise at the lip of gutter.

UTE WATER CONSERVANCY DISTRICT
POST OFFICE BOX 460
GRAND JUNCTION, COLORADO 81502-0460
TELEPHONE 242-7491
560-25 ROAD

Mr. Monty Stroup
Land Design Consultant
227 South 9th Street
Grand Junction, Colo. 81501

January 14, 1994

RE: North Crest Subdivision
Water lines installation

Dear Mr. Stroup:
Our inspector's records show that the subject water line installation has been installed in accordance with Ute Water's specifications including the 150 PSI pressure test conducted on 01-12-94. We have also received the copies of the compaction test reports.

If you have any questions or need additional information, please advise us.

Sincerely,

Ralph W. Ohm

Ralph W. Ohm, P.E.
Superintendent Distribution

CONSTRUCTION COSTS FOR N. 7TH. ST. AT NORTHCREST SUB.

ROADWAY IMPROVEMENTS #83-93

ITEM	DESCRIPTION	UNIT	QUAN.	UNIT PRICE	TOTAL
1	Excavation	CY	627	$2.20	$1,379.40
2	Sub-Grade Preperation	SY	1254	$1.05	$1,316.70
3	Class 6 ABC	CY	71	$17.70	$1,256.70
4	5" Grading C HBP	TON	345	$23.50	$8,107.50
5	7' Curb and Gutter	LF	513	$16.00	$8,208.00
6	Design Engineering	LS			$2,432.00
7	Construction Management & Supervision	LS			$1,419.00
	TOTAL ROADS				**$24,119.30**

BID SCHEDULE FOR STREET IMPROVEMENTS AT NORTH CREST SUBDIVISION

(REVISED AUG. 20, 1993)

ITEM	DESCRIPTION	UNIT	QUANITITY	UNIT PRICE	TOTAL
1	Excavation	CY	2225	$2.20	$4,895.00
2	Sub-Grade Preperation	SY	6200	$1.05	$6,510.00
3	Class 6 ABC	CY	1285	$17.70	$22,744.50
4	5" Grading C HBP	TON	1125	$23.50	$26,437.50
5	12" PVC	LF	124	$7.10	$880.40
6	Drainage Control Structure	EA	1	$650.00	$650.00
7	Shallow Manhole	EA	1	$700.00	$700.00
8	Standard Inlet	EA	1	$700.00	$700.00
9	6'- 6" Curbwalk	LF	1743	$16.00	$27,888.00
10	7'- 0" Curbwalk	LF	468	$17.00	$7,956.00
11	3'- 0" "V" Pan	LF	327	$8.85	$2,893.95
12	Trench Compaction	LF	120	$2.20	$264.00
13	Asphalt Curb	LF	55	$3.50	$192.50
14	Fillets and Cross Pan	SF	1150	$3.00	$3,450.00
15	Traffic Control Signs	EA	4	$150.00	$600.00
16	Adjust MH's & Valves	EA	10	$50.00	$500.00
17	Compliance Testing	LS		$645.00	$645.00
	TOTAL STREET IMPROVEMENTS				$107,906.85

Firm Name: ELAM CONSTRUCTION, INC.

Prepared By: JIM ROUSSEN

Date: 7/20/93

83-93
14-93
44-93

March 3, 1994

City of Grand Junction, Colorado
250 North Fifth Street
81501-2668
FAX: (303) 244-1599

Mr. Gregg Cranston
1401 N. 1st Street
Grand Junction, CO 81501

Subject: Northcrest Subdivision

Dear Mr. Cranston:

A final inspection of the streets and drainage facilities in Northcrest Subdivision was conducted on January 4, 1994. As a result of this inspection, a list of remaining items was given to Mr. Monty Stroup for completion. These items were reinspected on January 14, 1994 and found to be satisfactorily completed.

"As Built" record drawings and required test results for the streets and drainage facilities were received on January 31, 1994. These have been reviewed and found to be acceptable.

In light of the above, the streets and drainage improvements are accepted for future maintenance by the City of Grand Junction.

This acceptance is subject to a warranty of all materials and workmanship for a period of one year beginning January 4, 1994.

Thank you for your cooperation in the completion and acceptance of this project.

Sincerely,

J. Don Newton

J. Don Newton
City Engineer

cc: Jody Kliska
Doug Cline
Walt Hoyt
Kathy Portner
Land Design Consultants