

PRELIMINARY DRAINAGE REPORT
FOR
LANDMARK APARTMENTS

Prepared for:

The Neenan Company
2607 Midpoint Drive
Fort Collins, CO 80522

Prepared by:

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November 20, 2012

Job Number 223-04



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November 20, 2012

Wes Lemarque
City of Fort Collins Stormwater
700 Wood Street
Fort Collins, CO 80522-0580

RE: Preliminary Drainage Report for Landmark Apartments

Dear Wes,

I am pleased to submit for your review and approval, this Preliminary Drainage Report for Landmark Apartments. I certify that this report for the drainage design of Landmark Apartments was prepared in accordance with the criteria in the City of Fort Collins Storm Drainage Manual.

I appreciate your time and consideration in reviewing this submittal. Please call if you have any questions.

Sincerely,

Patricia Kroetch, PE

TABLE OF CONTENTS

| | |
|--|-----|
| TABLE OF CONTENTS..... | iii |
| 1. GENERAL LOCATION AND DESCRIPTION | |
| 1.1 Location | 1 |
| 1.2 Description of Property..... | 1 |
| 2. DRAINAGE BASINS AND SUB-BASINS | |
| 2.1 Major Basin Description..... | 1 |
| 2.2 Sub-Basin Description | 1 |
| 3. DRAINAGE DESIGN CRITERIA | |
| 3.1 Regulations | 2 |
| 3.2 Development Criteria Reference and Constraints | 2 |
| 3.3 Hydrologic Criteria..... | 2 |
| 3.4 Hydraulic Criteria | 2 |
| 4. DRAINAGE FACILITY DESIGN | |
| 4.1 General Concept | 2 |
| 4.2 Specific Flow Routing | 3 |
| 4.3 Drainage Summary | 3 |
| 5. REFERENCES | 4 |

APPENDICES

- A Vicinity Map
- B Hydrologic & Hydraulic Computations
- C Excerpts from Previous Reports
- C Figures and Tables

1. GENERAL LOCATION AND DESCRIPTION

1.1. Location

The proposed Landmark Apartments is located in Fort Collins near the southeast corner of the intersection of Prospect Road and Shields Street. This project is located in the Northwest Quarter of Section Twenty three, Township Seven North, Range Sixty-nine West of the Sixth Principal Meridian, in the City of Fort Collins, Larimer County, Colorado. The site is bounded on the north by Prospect Road, on the west by existing Landmark apartments and residential development, on the south by undeveloped property and on the east by existing residential development. See the Vicinity Map in Appendix A.

1.2. Description of Property

The project consists of approximately 3 acres of land with a drainage way that flows through the southwest portion of the site contained within a separate parcel of land. The proposed improvements on this site consist of 32 units in six buildings with associated drives, walks, and parking. Access is obtained on the south from the existing Landmark Apartments development. No portion of the proposed project is within a designated floodplain area. Existing drainage patterns are to the south into the existing drainage way at approximately 4% to 10%.

2. DRAINAGE BASINS AND SUB-BASINS

2.1. Major Basin Description

The proposed development does not appear to be located within any City mapped Drainage Basin based on mapping provided on the City website. The site appears to belong in the Spring Creek Drainage Basin. Water Quality extended detention is provided on site for this site and water quantity detention it being provided by a downstream detention pond.

2.2. Sub-basin Description

The site currently drains from north to south, with an existing slope of approximately 4% to 10%. With existing drainage patterns, runoff sheet flows into the existing drainage way that bisects the site and is conveyed downstream, eventually entering the Poudre River.

3. DRAINAGE DESIGN CRITERIA

3.1. Regulations

This report was prepared to meet or exceed the “City of Fort Collins Storm Drainage Design Criteria Manual” specifications. Where applicable, the criteria established in the “Urban Storm Drainage Criteria Manual” (UDFCD), 2001 has been used.

3.2. Development Criteria Reference and Constraints

The runoff from this site has been routed to conform to the requirements of the City Stormwater Department. Neither stormwater detention nor extended water quality detention are proposed for this site.

3.3. Hydrologic Criteria

Runoff computations were prepared for the 10-year minor and 100-year major storm frequencies utilizing the Rational Method. All hydrologic calculations associated with the basins are included in Appendix B of this report.

3.4. Hydraulic Criteria

All hydraulic calculations within this report have been prepared in accordance with the City of Fort Collins Drainage Criteria and are included in Appendix B of this report. There are private storm sewer improvements proposed with this project which will be sized with the final drainage report for this site. All basins will be collected in water quality ponds and released into the existing drainage way.

4. DRAINAGE FACILITY DESIGN

4.1. General Concept

The runoff from the proposed development will flow through the parking lots, enter private storm pipe and into water quality extended detention ponds. Runoff will then be released into the existing drainage way on site. No water quantity detention is provided for this development. Refer to the preliminary drainage plan in Appendix A.

4.2. Specific Flow Routing

A summary of the drainage patterns within each basin is provided in the following paragraphs.

Basin 1 (2.52 acres) is located in the northern portion of the site. Runoff from this basin will be collected in the proposed storm pipe and conveyed to the proposed Water Quality Pond 1 and be released into the existing drainage way. Basin 1 runoff is 8.3 cfs for the 10-year minor storm and 23.1 cfs for the 100-year major storm. Runoff from offsite Basins OS1 and OS2 will flow into Basin 1 and be conveyed into the existing drainage way as this flow has historically done. Water quality extended detention will not be provided for this flow.

Basin 2 (0.39 acres) is located in the south eastern portion of the site. Runoff from this basin will flow through the parking lot and into Water Quality Pond 2 and be released into the existing drainage way. Basin 2 runoff is 1.5 cfs for the 10-year storm and 3.8 cfs for the 100-year storm.

4.3. Drainage Summary

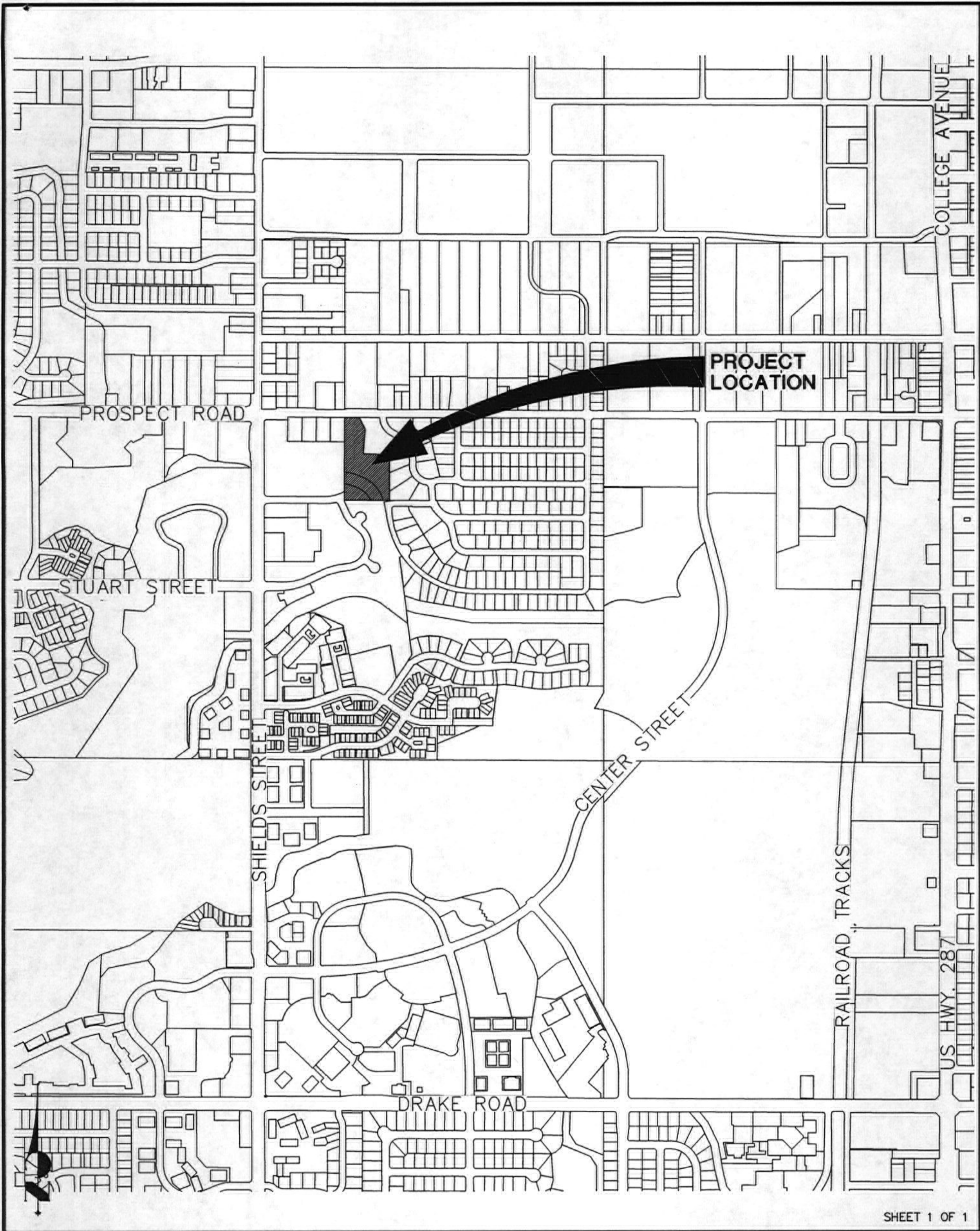
The proposed development has been divided into two subbasins which correlate to the two proposed water quality ponds. Runoff from all subbasins will be routed to the existing drainage way on site. The runoff will then flow south off site eventually entering the Poudre River.

5. REFERENCES

1. City of Fort Collins, "Storm Drainage Criteria Manual", (SDCM), dated March 1999.
3. RBD, Inc. Engineering Consultants, "Final Drainage and Erosion Control Study for the Hamlet at Miramont P.U.D.", dated March 29, 1996.
2. Urban Drainage and Flood Control District, "Urban Storm Drainage Criteria Manual", Volumes 1 and 2, dated June 2001, and Volume 3 dated September 2001.

APPENDIX A

VICINITY MAP



SHEET 1 OF 1

| | |
|--------------|------------|
| DATE: | 11/20/12 |
| SCALE: | 1" = 1000' |
| DESIGNED BY: | PPK |
| JOB NO.: | 223-04 |

LANDMARK APARTMENTS

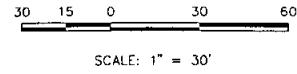
VICINITY MAP



700 Automation Drive, Unit I
 Windsor, Colorado 80550
 Phone: 970-686-6939
 Fax: 970-686-1188

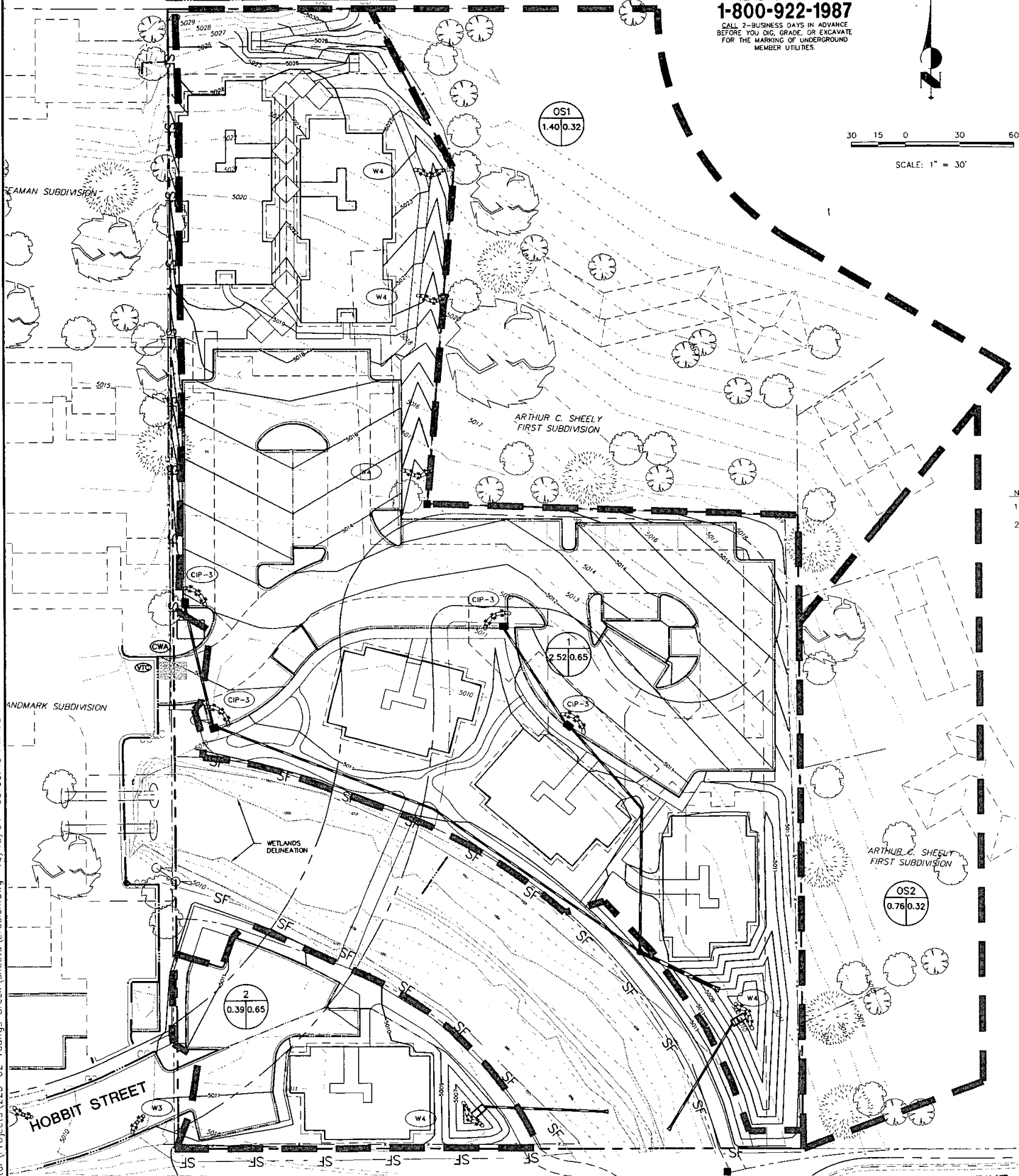
PROSPECT ROAD

CALL UTILITY NOTIFICATION
CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE
BEFORE YOU DIG, GRADE, OR EXCAVATE
FOR THE MARKING OF UNDERGROUND
MEMBER UTILITIES.

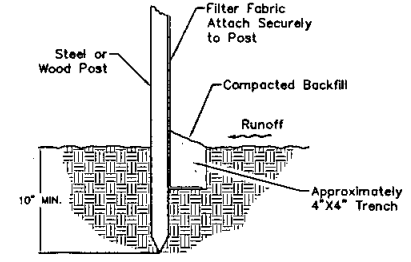
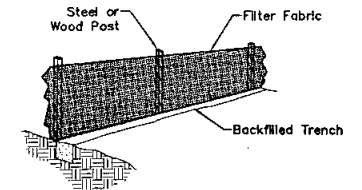


DRAINAGE & EROSION CONTROL LEGEND

- DESIGN POINT
- BASIN ID
- 5-YR RUNOFF COEFFICIENT
- AREA IN ACRES
- FLOW DIRECTION
- BASIN BOUNDARY
- EXISTING PIPES
- PROPOSED STORM PIPE
- EXISTING 5' CONTOUR
- EXISTING 1' CONTOUR
- PROPOSED 5' CONTOUR
- PROPOSED 1' CONTOUR
- SILT FENCE
- VEHICLE TRACKING CONTROL PAD
- CONCRETE WASHOUT AREA
- WATTLE
- WATTLE B
- INLET PROTECTION
- GUTTER PROTECTION
- WATTLE FILTER



(SF)



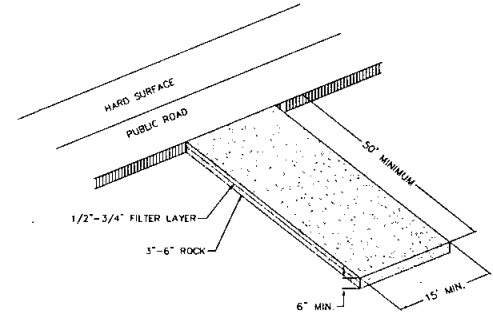
SECTION VIEW

General Notes:
1. The maximum tributary area is limited to 0.25 acres per 100 feet of fence.
2. Inspect and repair fence after each storm event. Remove sediment when one half of the height of the fence has been filled. Removed sediment shall be deposited in an area tributary to a sediment basin or other filtering measure.

| SILT FENCE | |
|--|-------|
| CITY OF FORT COLLINS, COLORADO STORMWATER UTILITY | |
| APPROVED BY: | DATE: |
| REVISIONS: | D-28 |

- NOTES:
- REFER TO SHEET 2 FOR EROSION CONTROL NOTES
 - REFER TO THE GRADING PLAN FOR STORM SEWER CONSTRUCTION INFORMATION.

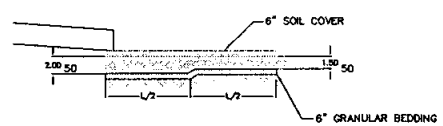
(VTC)



EROSION CONTROL GENERAL NOTES:

- INSPECT AND REPAIR GRAVEL FILTERS AFTER EACH STORM EVENT. REMOVE SEDIMENT WHEN ONE HALF OF THE FILTER DEPTH HAS BEEN FILLED. REMOVED SEDIMENT SHALL BE DEPOSITED IN AN AREA TRIBUTARY TO A SEDIMENT BASIN OR OTHER FILTERING MEASURE.
- EROSION CONTROL MAINTENANCE IS THE RESPONSIBILITY OF THE DEVELOPER.

VEHICLE TRACKING CONTROL



D = d50 = STATE CLASSIFICATION FOR NOMINAL STONE SIZE.
IF RIP-RAP TO BE GROUTED:
GROUT SHALL BE IN ACCORDANCE TO ASTM C1017-LATEST REVISION.
GROUT SHALL BE VIBRATED IN PLACE.
TOPS OF EXPOSED RIP-RAP WILL BE WET BRUSHED AND CLEANED OF GROUT TO EXPOSE RIP-RAP COLOR.

| RIPRAP DESIGNATION | % SMALLER THAN GIVEN SIZE BY WEIGHT | INTERMEDIATE ROCK DIMENSION (INCHES) | D ₅₀ (INCHES) |
|--------------------|-------------------------------------|--------------------------------------|--------------------------|
| TYPE M | 70-100 | 12 | 6** |
| | 50-70 | 9 | |
| | 35-50 | 6 | |
| TYPE L | 70-100 | 15 | 9** |
| | 50-70 | 12 | |
| | 35-50 | 9 | |
| TYPE H | 70-100 | 21 | 12 |
| | 50-70 | 18 | |
| | 35-50 | 12 | |
| TYPE V | 100 | 30 | 18 |
| | 50-70 | 24 | |
| | 35-50 | 18 | |
| TYPE W | 100 | 42 | 24 |
| | 50-70 | 33 | |
| | 35-50 | 24 | |

**BURY TYPES M, L AND V WITH NATIVE TOP SOIL AND REVEGETATE TO PROTECT FROM VANDALISM

STORMWATER

North Star design, inc.
700 Automation Drive, Unit 1
Windsor, Colorado 80550
Phone: 970-686-6939
Fax: 970-686-1188

| NO. | DATE | REVISION |
|-----|------|----------|
| | | |
| | | |

Date: 11/20/12
Scale: 1" = 30'
Designed by: PPK
Drawn by: BK

REVIEW COPY
NOT FOR CONSTRUCTION
NOVEMBER 20, 2012

LANDMARK APARTMENTS
PRELIMINARY DRAINAGE &
EROSION CONTROL PLAN

| City of Fort Collins, Colorado UTILITY PLAN APPROVAL | |
|---|----------------------------|
| APPROVED BY: | City Engineer |
| CHECKED BY: | Water & Wastewater Utility |
| CHECKED BY: | Stormwater Utility |
| CHECKED BY: | Parks & Recreation |
| CHECKED BY: | Traffic Engineer |

SHEET
7
7 OF 9
Job No. 223-04

Nstar\Projects\223-02 Youngs Creek\sheets\Erosion.dwg 10/13/04 05:00:45 PM MDT