

PROJECT NARRATIVE
FOR THE ADDITION OF STORAGE UNITS AT 591 25 ROAD
GRAND JUNCTION, COLORADO

OWNER-BILL WELLS

General

The site is located at 591 25 Road in the City of Grand Junction, Mesa County, Colorado. The site currently is occupied by office buildings and storage units. The developer, Bill Wells, is planning to add additional storage units as shown on the attached plans.

Access

Access to the site will be from 25 Road and from Commerce Boulevard. Half street improvements or escrow funds are planned for 25 Road.

Grading and Drainage

An on-site storm detention basin was constructed for storage units that were built prior to Mr. Wells ownership of the property. The existing storm drainage is drained to the sanitary sewer line in Commerce Boulevard. The proposed drainage plan is to combine with the existing storm water detention area with an additional planned detention area and pump this stormwater to a storm drain in 25 Road.

Construction Schedule

The construction of this facility is expected to be completed in the summer of 1993.

Respectfully submitted,



Wayne H. Lizer P.E., P.L.S.

**DRAINAGE REPORT
FOR THE ADDITION OF STORAGE UNITS AT 591 25 ROAD
GRAND JUNCTION, COLORADO**

General

The site is located at 591 25 Road at the Southwest corner of 25 Road and Commerce Boulevard, City of Grand Junction, Colorado. At the present time the site is occupied by office buildings and storage units.

Historical Conditions.

The Site historically drains from Northeast to Southwest at an approximate slope of 0.33%

Post Development Conditions.

The site is planned to drain to a driveway between the proposed storage units on the Southerly side of the site. A detention area is planned in addition to one existing on the Westerly side of the parcel as shown on the attached plans where stormwater from the combination of the two will drain into a manhole and be pumped to a storm drain in 25 Road.

Runoff from a 100 year event will drain to the South as shown on the attached plans.

Drainage calculations are attached.

Respectfully submitted,

Wayne H. Lizer
Wayne H. Lizer P.E., P.L.S.



Historical

2 year Storm

$$S = 0.33\%$$

$$L = 270'$$

$$A = 1.71$$

$$C = 0.20$$

100 yr Storm

$$S = 0.33\%$$

$$L = 270$$

$$A = 1.71$$

$$C = 0.35$$

$$T_{C_2} = \frac{1.87(1.1-L)(L)^{1/2}}{S^{1/3}} = 40 \text{ min}$$

From Appendix A

$$I_2 = 0.76$$

$$Q_2 = CIA = (0.2)(0.76)(1.71) = 0.26 \text{ CFS}$$

$$T_{C_{100}} = \frac{1.87(1.1-0.35)(L)^{1/2}}{S^{1/3}} = 33 \text{ min}$$

$$I_{100} = 0.83$$

$$Q = CIA = (0.35)(0.83)(1.71) = 0.50 \text{ CFS}$$

After Development

Area Summary

1.53 Ac in Roofs and Asphalt

0.18 Ac Landscaped

Runoff Coefficient - Determined by composite method

2 year storm

$$\Sigma = \frac{(0.25)(0.18) + (0.90)(1.53)}{1.71} = 0.83$$

100 year storm

$$\Sigma = \frac{(0.40)(0.18) + (0.95)(1.53)}{1.71} = 0.89$$

Average S = 0.4070

Average L = 180

$$T_{C2} = \frac{1.87(1.1 - 0.83)(180)^{1/2}}{(0.4)^{1/3}} = 9 \text{ min}$$

$$T_{C100} = \frac{1.87(1.1 - 0.89)(180)^{1/2}}{0.4^{1/3}} = 7 \text{ min}$$

$$Q_2 = CIA = (0.83)(1.59)(1.71) = 2.26 \text{ CFS}$$

$$Q_{100} = CIA = (0.89)(1.74)(1.71) = 2.65 \text{ CFS}$$

Summary

HISTORICAL

AFTER DEVELOPMENT

Q_2 0.26

2.26

Q_{100} 0.50

2.65

$$T_{d2} = \left[\frac{633.4 C_d A}{\Phi_0 - \frac{\Phi_0^2 T_{cd}}{81.2 C_d A}} \right]^{1/2} - 15.6$$

$$= \left[\frac{(633.4)(0.83)(1.71)}{0.26 - \frac{(0.26)^2(9)}{(81.2)(0.83)(1.71)}} \right]^{1/2} - 15.6 = 60 - 15.6 = 44$$

0.01

$$T_{d100} = \left[\frac{2925 C_d A}{\Phi_0 - \frac{\Phi_0^2 T_{cd}}{234 C_d A}} \right]^{1/2} - 25$$

$$= \left[\frac{(2925)(0.89)(1.71)}{0.26 - \frac{(0.26)^2(7)}{(234)(0.89)(1.71)}} \right]^{1/2} - 25 = 130 - 25 = 105$$

0

$$T_{d2} = \frac{40.6}{44 + 15.6} = 0.68 = \frac{40.6}{T_{d2} + 15.6}$$

$$T_{d100} = \frac{117}{T_{d100} + 25} = \frac{117}{105 + 25} = 0.90$$

$$Q_{d2} = (C_d)(A)(I)(D) = (0.83)(1.71)(0.68) = 0.97 \text{ CFS}$$

$$V = 66 Q_d T_d - Q_0 T_d - Q_0 T_{c,d} + \frac{K Q_0 T_{c,d}}{2} + \frac{Q_0^2 T_{c,d}}{2 Q_d}$$

$$K = \frac{T_{c,h}}{T_{c,d}} = \frac{40}{9} = 4.4$$

$$= 66 \left[(0.68)(44) - (0.26)(44) - (0.26)(9) + \frac{(4.4)(0.26)(9)}{2} + \frac{(0.26)^2(9)}{(2)(0.68)} \right]$$

$$= 66(21.7) = 1432 \text{ ft}^3$$

REVIEW COMMENTS

Page 1 of 4

FILE NO. #76-93

TITLE HEADING: Site Plan Review - Storage Units

LOCATION: 591 25 Road

PETITIONER: Bill Wells

PETITIONER'S ADDRESS/TELEPHONE: 2156 Buffalo Drive
Grand Junction, CO 81503
243-2337

PETITIONER'S REPRESENTATIVE: Wayne H. Lizer

STAFF REPRESENTATIVE: Kathy Portner

NOTE: WRITTEN RESPONSE BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED. A PLANNING CLEARANCE WILL NOT BE ISSUED UNTIL ALL ISSUES HAVE BEEN RESOLVED.

CITY UTILITIES ENGINEER

6/22/93

Bill Cheney

244-1590

Catch basin line to sanitary sewer shall be disconnected and plugged with non-shrink grout or flowable fill.

No other comment.

COMMUNITY DEVELOPMENT

6/30/93

Kathy Portner

244-1446

See attached comments.

GRAND JUNCTION FIRE DEPARTMENT
George Bennett

7/01/93
244-1400

Fire protection is to be provided. Provide a utilities composite showing the location of fire hydrants and water line sizes. The minimum water line size is to be an 8 inch line. Fire hydrant spacing is to be a maximum of 300 feet apart with a maximum of 150 feet from any exterior portion of any structure.

STAFF REVIEW

FILE: #76-93
DATE: June 30, 1993
STAFF: Kathy Portner
REQUEST: Site Plan Review--Storage Units
LOCATION: 591 25 Road
APPLICANT: Bill Wells

EXISTING LAND USE: Office and Storage Units

PROPOSED LAND USE: Additional Storage Units

SURROUNDING LAND USE:

NORTH: Commercial
SOUTH: Commercial
EAST: Commercial
WEST: Commercial

EXISTING ZONING: C-2

PROPOSED ZONING: No change

SURROUNDING ZONING:

NORTH: C-2
SOUTH: C-2
EAST: C-2
WEST: C-2

RELATIONSHIP TO COMPREHENSIVE PLAN:

There is no comprehensive plan for this area.

STAFF ANALYSIS:

Comments and Issues

1. Property line around the entire property must be shown on the site plan.

2. An additional 10' of ROW must be dedicated along 25 Road and payment made to the City for future half street improvements. The required payment is \$50 per linear foot of frontage ($\$50 \times 270' = \$13,500$).

3. The required landscaping is 75% of the front yard setback. Based on that calculation, the total required is 1,012.5 square feet along 25 Road and 1,038.3 along Commerce Blvd. for a total of 2,050.8 square feet. Of the total required square footage, 4 trees are required and 40% of the area must be in shrubs. The required landscape area must be on the property, not in the public ROW since landscaping in the ROW may be removed when 25 Road is improved. Any of the existing landscaping contained within the property lines does count toward the requirement. The site plan must show property line with the additional 10' of ROW being dedicated and calculated areas of all existing and proposed landscaping.

4. A fence permit and sign permit will be required for any new fencing or signage.

5. The City's Development Engineer has found the engineering reports to be inadequate. He has left a message with Wayne Lizer to come in an talk to him about the deficiencies. The engineering review will not be completed until revised drawings and/or reports are submitted based on that meeting.

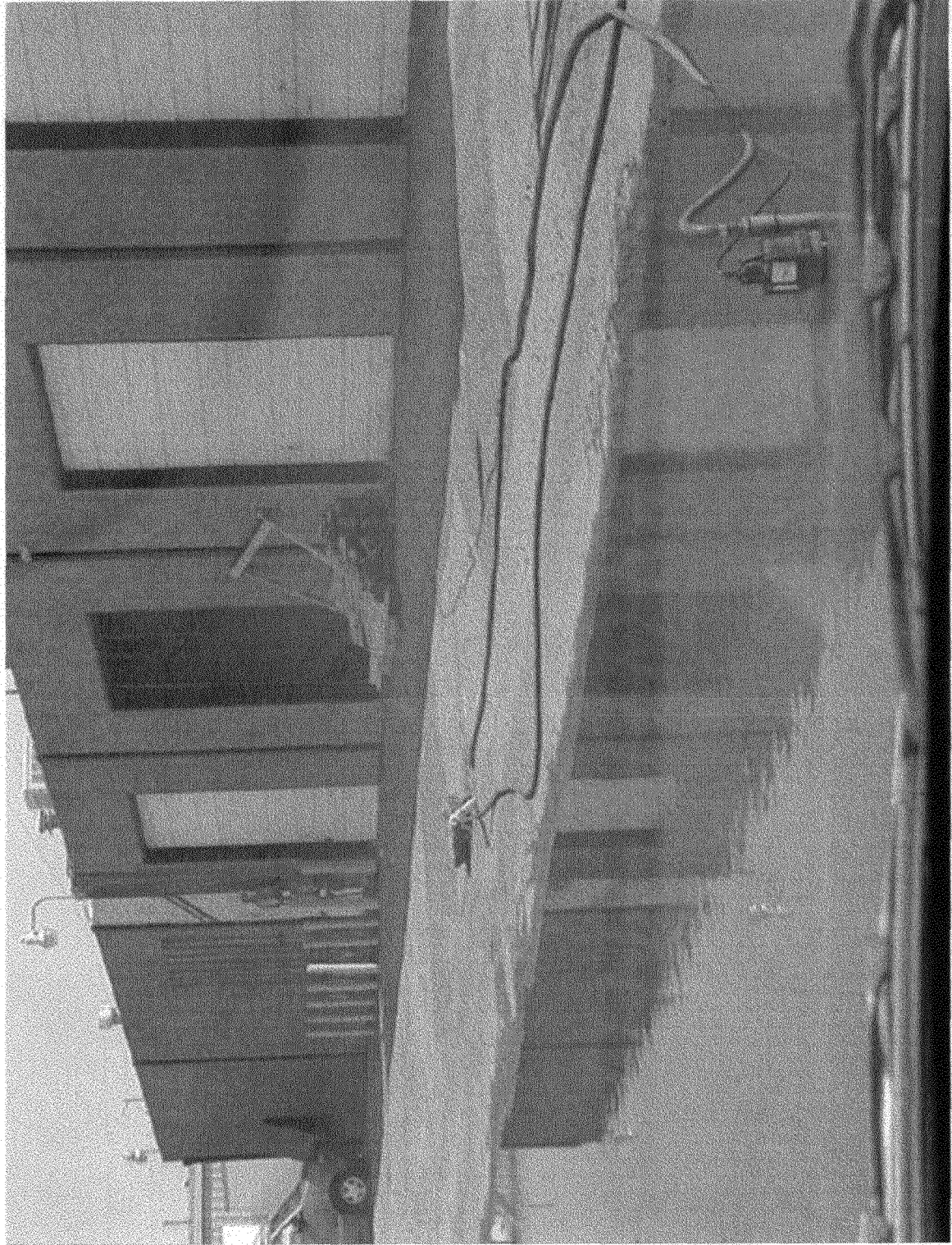
Review Comments
on
591 25 Road Storage Units
July 8, 1993

Itemized comments correspond to numbers redlined on the attached prints.

1. The proposed pump capacity, which matches the drainage calculations for outflow and storage volume, is 120 gpm. With a 2 inch force main, 57 feet of frictional head is generated. Adding elevation head, the total head at which the pump will operate is 60 +/- feet of head. Most sump pumps do not operate at that head range. Please provide pump curves, data, and other pertinent information to show that the system will work.
2. Stormwater contains a lot of sediment. Either provide at least 1.0 foot depth below the sump for sedimentation, or taper the bottom of the chamber floor to the pump and use a grit pump.
3. Note the minimum seating head for the valve, which will be the difference in elevation between the high point in the force main to the valve elevation.
4. Provide the grate, manhole bottom, and inflow and outflow pipeline invert elevations.
5. Add slope information on the typical cross-section.
6. $Q_{100h} = 0.5$ cfs, but the pumping rate is Q_{2h} , or 0.26 cfs (or at least is designed for such - see note 1). This means that an additional 0.24 cfs may be discharged from the site under 100-year runoff conditions. However, unless the proposed roof rain gutters, downspouts, and under building discharge lines are adequate, gutter overflow will exceed the 0.24 cfs. Calculate requirements for these facilities, and provide calculations and show/call out proposed facilities (such as several downspouts in lieu of the one per building shown).
7. Tie in shall be per Drainage District requirements, and proof of their approval must be provided.
8. Show existing utilities, if any, in the area of the proposed force main.
9. Call for asphalt replacement.
10. What is the roadway and approximate pipe elevation at tie-in?

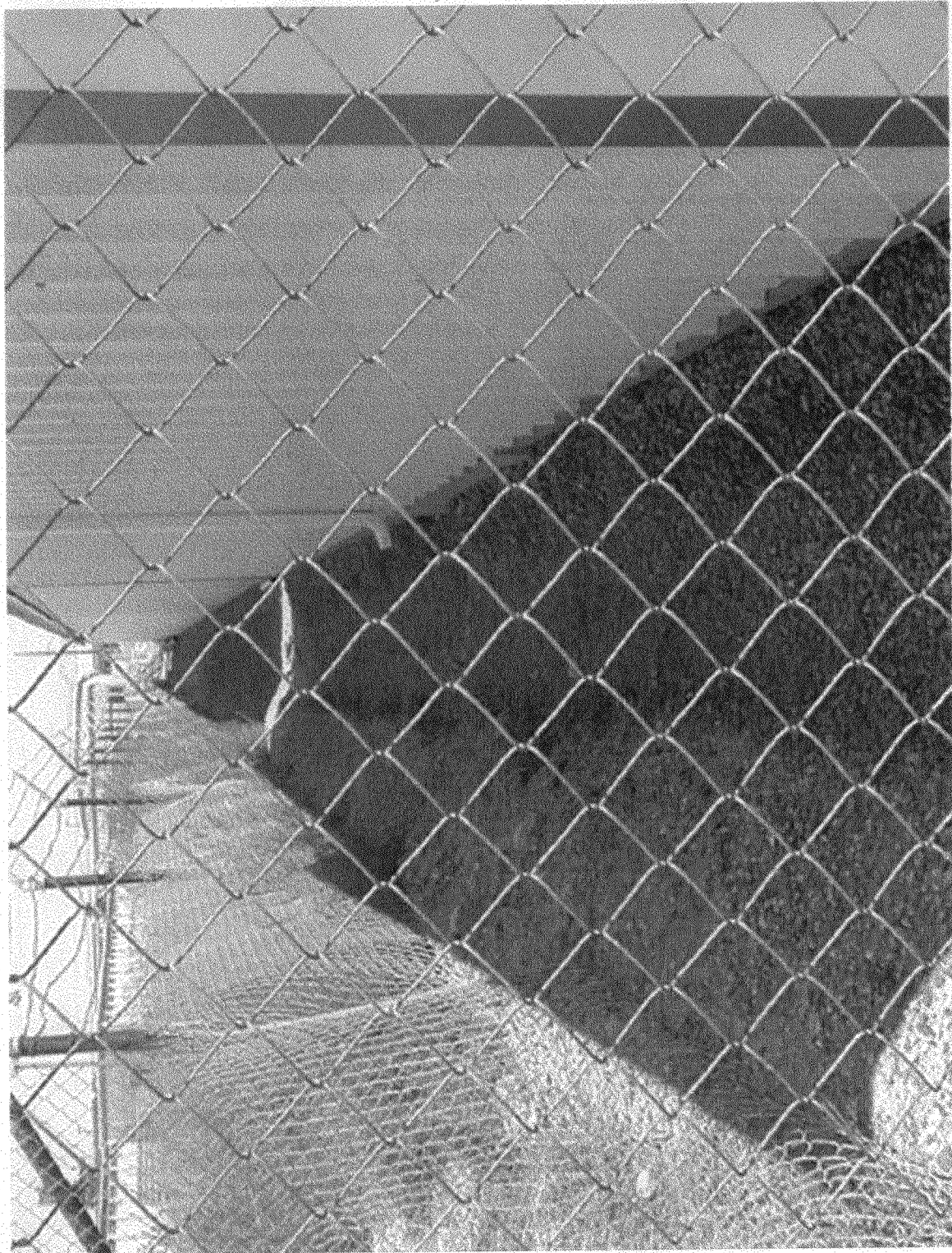
11. Provide more grades for asphalt, and the two concrete corners that are without grades.
12. Call out asphalt, concrete, and base course thickness.
13. Call out swale width.
14. Provide drain pipe inverts and slopes. Also, is 4" adequate for runoff? What about PVC under the building? Will the pipe interfere with foundations? Please address.
15. Plug the line from the manhole to the sanitary sewer.
16. The slope of the invert is 0.2% which is very flat. Can this be improved?
7. Provide as-built information.
18. Provide north arrow; scale; total acreage; roof, asphalt, and landscaping acreage; and spaces for Engineering and Community Development signature, date, and title per SSID checklists.

Reviewed by Gerald Williams

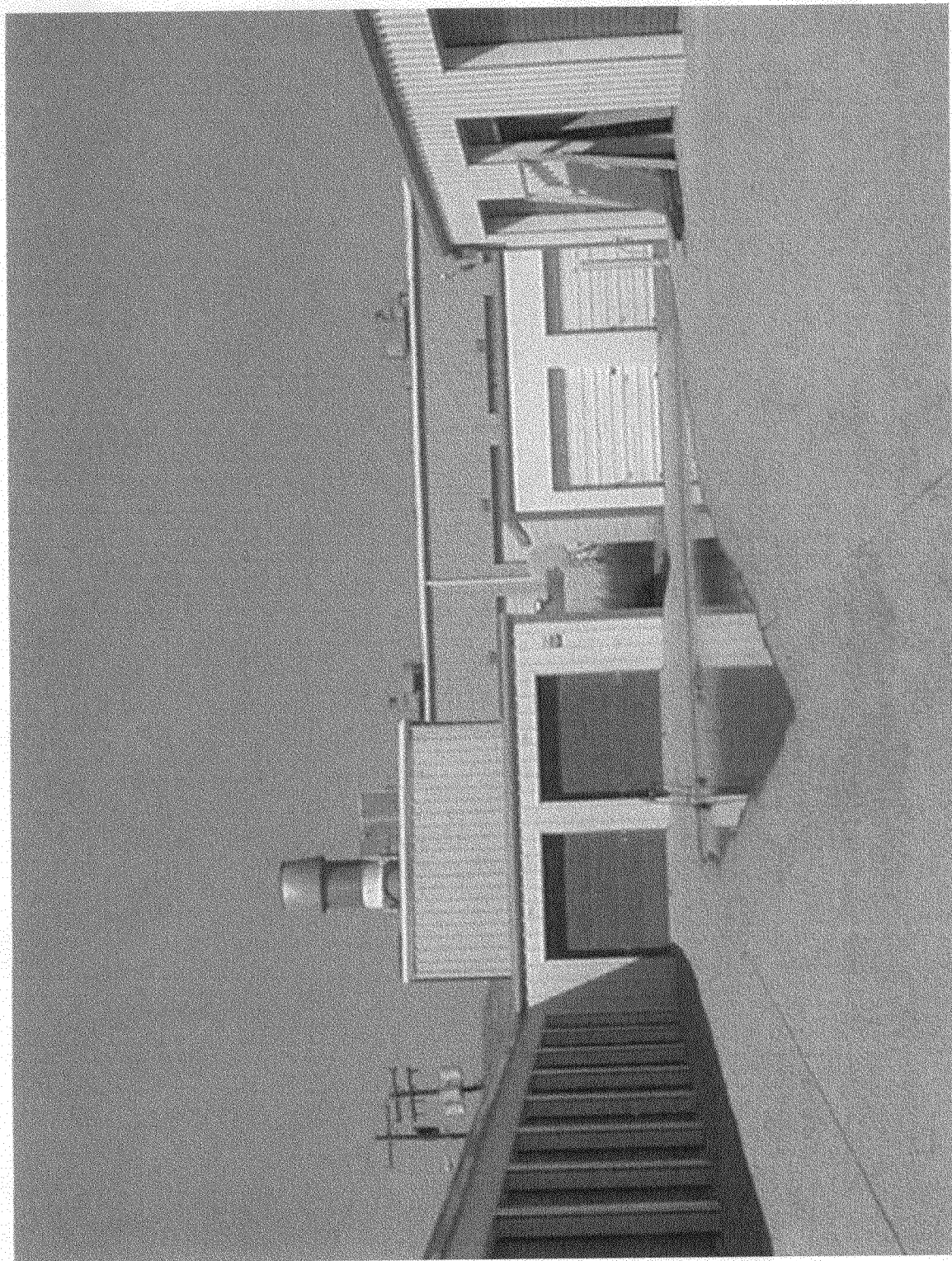


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PSS 2 165

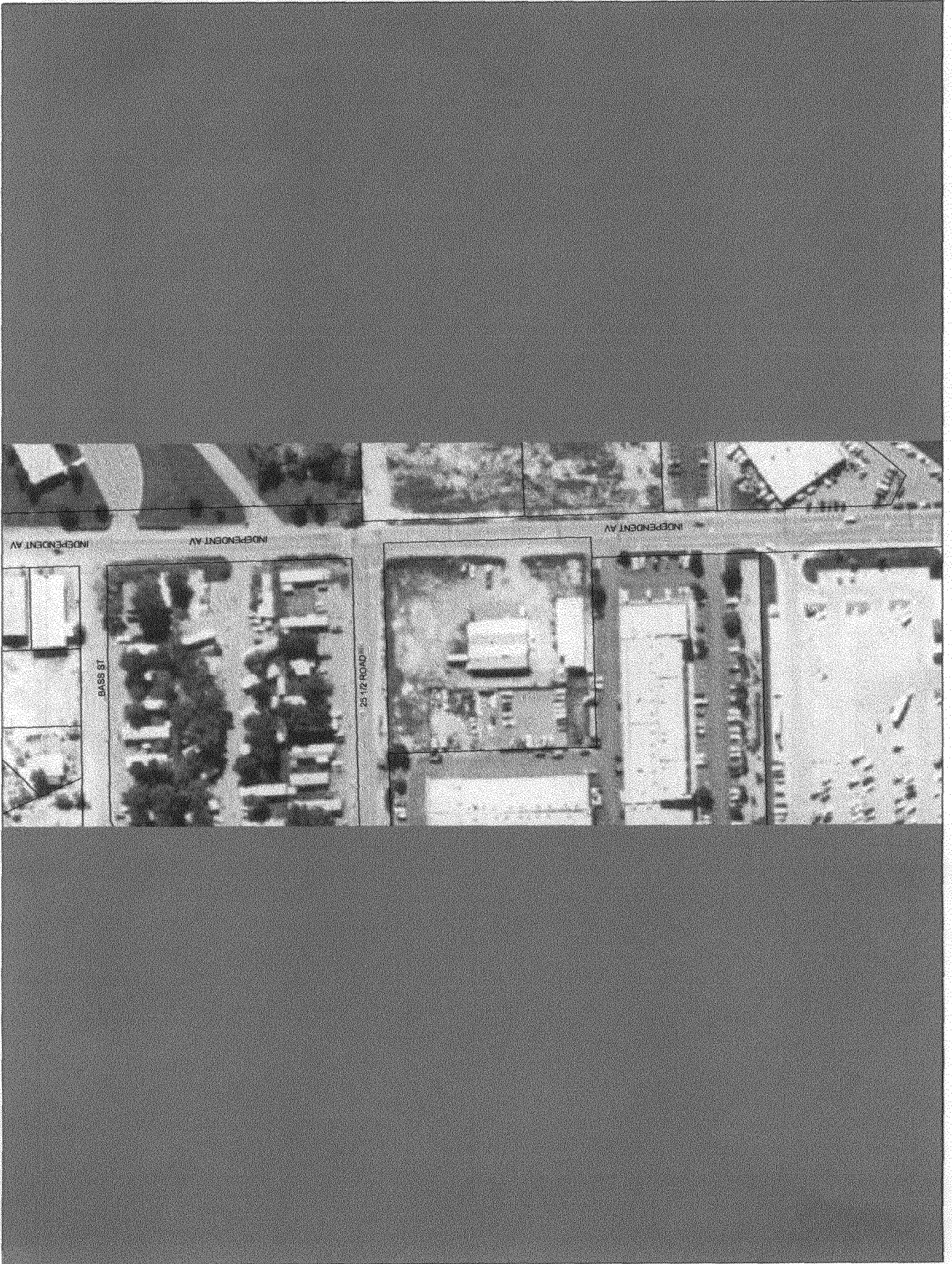
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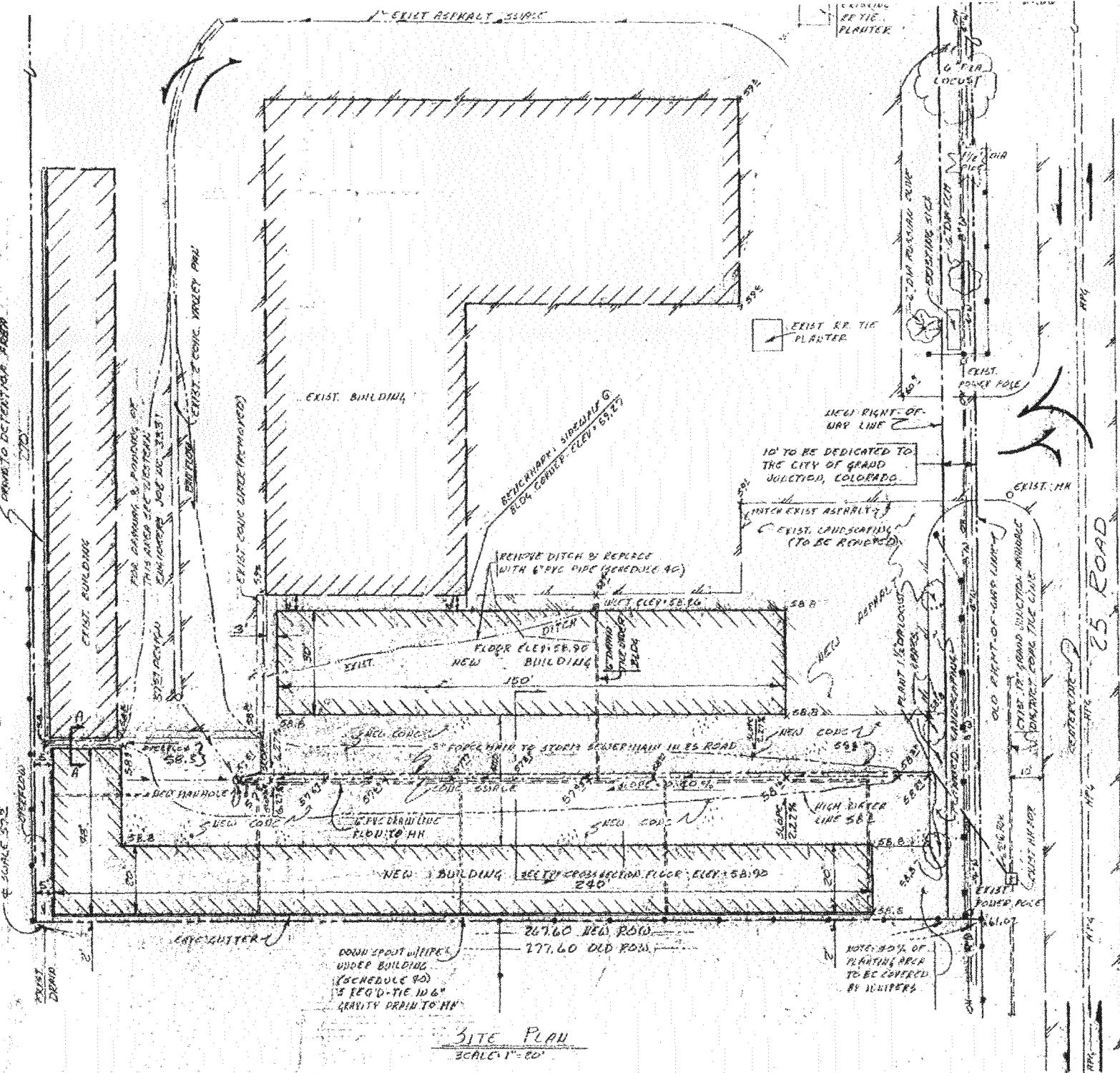


591 25 RD
8-15-01



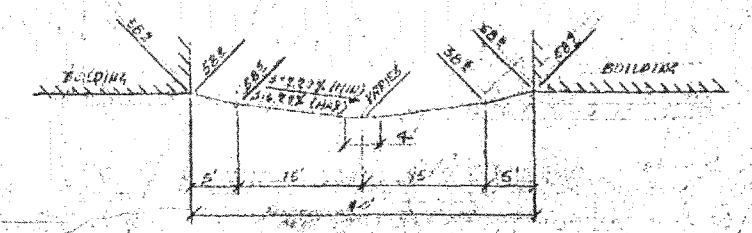
591 25 Rd
8-15-01



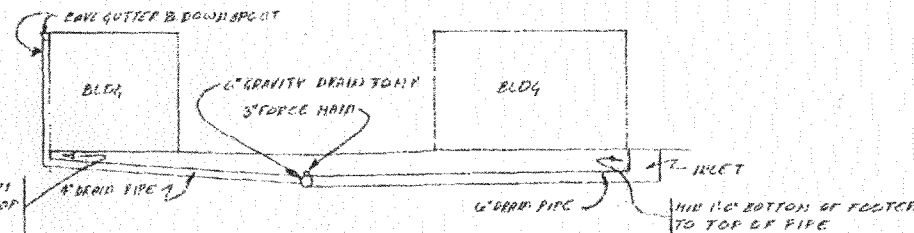


SITE PLAN
SCALE: 1" = 20'

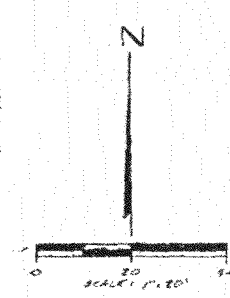
- LEGEND**
- EDGE OF EXISTING ASPHALT
 - PROPERTY LINE
 - EXISTING CHAIN LINK FENCE
 - EXISTING WOOD FENCE
 - NEAR COUNTY SURVEY MONUMENT (ORANGE CAP)
 - SWALE WITH FLOW DIRECTION
 - EDGE OF NEW ASPHALT
 - FINISHED GRADE ELEVATION
 - LIMITS OF POONDING
 - TRAFFIC FLOW
 - EXISTING OVERHEAD POWER LINES
 - EXISTING 4" WATER MAIN
 - EXISTING 8" WATER MAIN
 - EXISTING 2" GAS MAIN
 - EXISTING HIGH PRESSURE GAS MAIN
 - EXISTING UNDERGROUND TELEPHONE



TYPICAL CROSS SECTION
NO SCALE

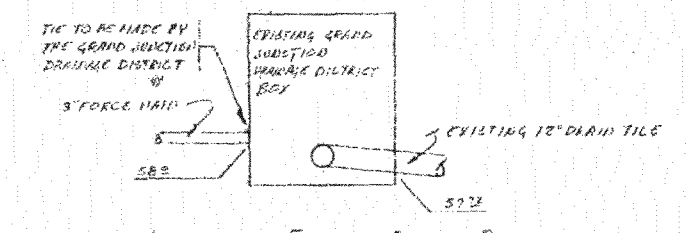


TYPICAL DRAIN SECTION FROM BUILDINGS & FROM NORTH PARKING LOT
NO SCALE

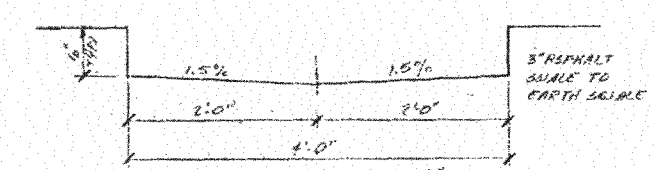


LAND USE

LANDSCAPING	0.05 AC	2%
ASPHALT DRIVEWAYS	1.65 AC	95%
TOTAL	1.71 AC	100%



SECTION OF EXISTING DRAIN BOX
NO SCALE



SECTION "A-A" OF OVERFLOW SWALE
NO SCALE

- NOTES:**
- 2270 SQUARE FEET OF LANDSCAPING TO BE PLACED ALONG 25 ROAD. 40% OF THE LANDSCAPED AREA SHALL BE SPREADING JUMPERS SUCH AS JUNIPERUS HORIZONTALIS "YOUNGSTOWN" AND BLUE CHIP VARIETIES.
 - TREES AS SHOWN - 3 EXISTING RUSSIAN OLIVE (ELAEAGNUS ARGUSTIFOLIA) AND 2 (1) "CALIFORNIA SUNBURST" HONEYLOCUST (OLETISIA TRIACANTHUS "NORMAN'S SUNBURST").
 - TILE IN FROM 8" FORCE MAIN TO 12" GRAND JUNCTION DRAINAGE DISTRICT TILE LINE TO BE MADE BY GRAND JUNCTION DRAINAGE DISTRICT.

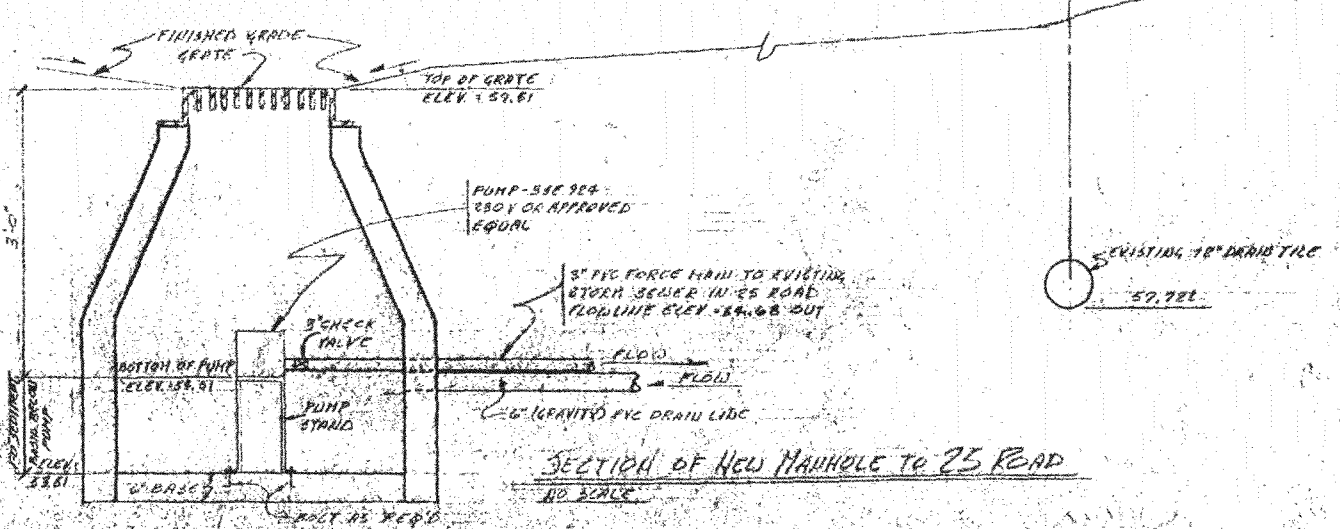
APPROVALS

DRAINAGE PLANS: CITY ENGINEERING
BY _____ DATE _____

AS-BUILTS: BY _____ DATE _____

COMMUNITY DEVELOPMENT:
BY _____ DATE _____

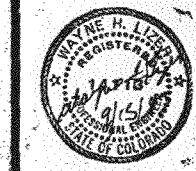
- NOTES**
- THE LINE FROM THE EXISTING MANHOLE TO THE SANITARY SEWER LINE SHALL BE PLUGGED WITH CONCRETE AT THE MANHOLE LOCATION.
 - ASPHALT THICKNESS SHALL BE 3 INCHES.
 - CONCRETE THICKNESS SHALL BE 5 INCHES.
 - CLASS 4 BASE SHALL BE 4 INCHES.
 - ALL UNDERGROUND STORM DRAIN PIPING SHALL BE SCHEDULE 40 PVC PIPE.
 - THE CONNECTION OF THE 3 INCH FORCE MAIN TO THE GRAND JUNCTION DRAINAGE DISTRICT TILE LINE SHALL BE MADE BY SAID DRAINAGE DISTRICT.



SECTION OF NEW MANHOLE TO 25 ROAD
NO SCALE

Drawn by	W.H.L.
Checked by	W.H.L.
Date	MAY 1993
Scale	AS SHOWN
Job No.	58843514
Sheet	1

GRADING AND DRAINAGE PLAN FOR PROPOSED STORAGE UNITS FOR 25 ROAD FOR BILL WELLS GRAND JUNCTION, MESA COUNTY, COLORADO.
 W.H. LITZ AND ASSOCIATES
 576 25 ROAD UNIT 5
 GRAND JUNCTION, COLORADO 81505



Drawn by	W.H.L.
Checked by	W.H.L.
Date	MAY 1993
Scale	AS SHOWN
Job No.	58843514
Sheet	1