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File SPR-1995-048

Date 7/12/99

Present	Scanned	
		A few items are denoted with a (*) are to be scanned for permanent record on the ISYS retrieval system. In some instances, not all entries designated to be scanned, are present in the file. There are also documents specific to certain files, not found on the standard list. For this reason, a checklist has been included. Remaining items, (not selected for scanning), will be marked present on the checklist. This index can serve as a quick guide for the contents of each file. Files denoted with (**) are to be located using the ISYS Query System. Planning Clearance will need to be typed in full, as well as other entries such as Ordinances, Resolutions, Board of Appeals, and etc.
X	X	***Summary Sheet – Table of Contents**
		Application form
X		Receipts for fees paid for anything
X	X	***Submittal checklist – Change of Use Review**
X	X	***General project report**
		Reduced copy of final plans or drawings
		Reduction of assessor's map
		Evidence of title, deeds
		***Mailing list to adjacent property owners**
		Public notice cards
		Record of certified mail
		Legal description
		Appraisal of raw land
		Reduction of any maps – final copy
X	X	***Final reports for drainage and soils (geotechnical reports)**
		Other bound or nonbound reports
		Traffic studies
X		Individual review comments from agencies
X	X	***Consolidated review comments list**
X	X	***Petitioner's response to comments**
X	X	***Staff Reports**
		***Planning Commission staff report and exhibits**
		***City Council staff report and exhibits**
X	X	***Summary sheet of final conditions**
X		***Letters and correspondence dated after the date of final approval (pertaining to change in conditions or expiration date)**
		DOCUMENTS SPECIFIC TO THIS DEVELOPMENT FILE:
X	X	Planning Clearance - **
X	X	Letter from Michael Drollinger to William Flockhart – 6/14/95
X		Final Grading and Drainage Plan - approved
X		Landscape Plan - signed
X		General Warranty Deed
X		Letter from William Flockhart to Community Dev. – 3/7/95
X		Assessor's map
X		Letter from William Flockhart to Michael Drollinger – 4/14/95
X		Letter to Bob – Commercial Design Engineering, Ltd. from Alan Davis
X		West bed planting - accepted
X		Site Plan

SUBMITTAL CHECKLIST

SITE PLAN REVIEW

Location: 1003 Winters Avenue Project Name: Commercial Design Engineering

DESCRIPTION

SPE-95-48
receipt #2103

ITEMS: DESCRIPTION	SSID REFERENCE	● City Community Development	● [redacted]	● City Utility Eng.	● ~~City Property Agent~~	● ~~City Parks/Recreation~~	● City Fire Department	● City Attorney	O City Downtown Dev. Auth.	O County Planning	● [redacted]	O Irrigation District	O Drainage District	O Water District	O Sewer District	O U.S. West	O Public Service	O GVRP	O CDOT	O Corps of Engineers	O Walker Field	TOTAL REQ'D.
● Application Fee $115	VII-1	1																				
● Submittal Checklist* ✓	VII-3	1																				
● Review Agency Cover Sheet* ✓	VII-3	1	[redacted]	1	1	1	1	[redacted]	1	1	[redacted]	1	1	1	1	1	1	1	1	1	1	
● Planning Clearance*	VII-3	1																				
● 11"x17" Reduction of Assessor's Map ✓	VII-1	1	[redacted]	1	1	1	1	[redacted]	1	1	[redacted]	1	1	1	1	1	1	1	1	1	1	
● Evidence of Title ✓	VII-2	1			1			[redacted]														
O Appraisal of Raw Land	VII-1	1			1	1																
O Deeds	VII-1	1			1			1														
O Easements	VII-2	1	1	1	1			1														
O Avigation Easement	VII-1	1			1			1														
O ROW	VII-3	1	1	1	1			1														
O Improvements Agreement/Guarantee	VII-2	1	1	1				1														
O CDOT Access Permit	VII-3	1	1																			
O Industrial Pretreatment Sign-off	VII-4	1		1																		
● General Project Report ✓	X-7	1	[redacted]	1	1	1	1	[redacted]	1	1	[redacted]	1	1	1	1	1	1	1	1	1	1	
O Elevation Drawing	IX-13	1	1																			
● Site Plan ✓	IX-29	2	[redacted]	1	1																	
O 11"x17" Reduction of Site Plan	IX-29					1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
O Grading and Drainage Plan	IX-16	1	2										1							1		
O Storm Drainage Plan and Profile	IX-30	1	2										1			1	1	1				
O Water and Sewer Plan and Profile	IX-34	1	2	1			1							1	1	1	1	1				
O Roadway Plan and Profile	IX-28	1	2										1									
O Road Cross-Sections	IX-27	1	2																			
O Detail Sheet	IX-12	1	2																			
● Landscape Plan ✓	IX-20	2	[redacted]	1																		
O Geotechnical Report	X-8	1	1								1											
● Final Drainage Report ✓	X-5,6	1	[redacted]										1									
O Stormwater Management Plan	X-14	1	2										1							1		
O Phase I and II Environmental Report	X-10,11	1	1																			
O Traffic Impact Study	X-15	1	2																1			

NOTES:
1) An asterisk in the item description column indicates that a form is supplied by the City.
2) Required submittal items and distribution are indicated by filled in circles, some of which may be filled in during the pre-application conference. Additional items or copies may be subsequently requested in the review process.
3) Each submitted item must be labeled, named, or otherwise identified as described above in the description column.

Commercial Design Engineering, Ltd.

Mechanical Contractors

March 7, 1995

Grand Junction Community Development Dept.
250 N. 5th St.
Grand Junction, CO. 81501

Attn: Director of Community Development

Re: Use of Lots 1&2 of SJ Subdivision
At 1003 Winters Ave.

Dear Director

This letter is to inform you of the intended use Lots 1 & 2, owned by JGM Partnership and leased to Commercial Design Engineering, Ltd., who is a Mechanical Contractor owned by the same owners, John and Mary Garvelink.

Commercial Design Engineering, Ltd. is in the mechanical contracting business and intends to use this site to manufacture sheet metal products. We anticipate a traffic flow of no more than 10 deliveries a day, most likely to be under 10 a day. Maximum employees in the fabrication shop will be 5 or less.

A. The 2,000 sf building existing on property is presently being remodeled and is to be used as an office. A separate review and building permit was issued for this work.

B. On our proposed site plan we show (2) 15,200 sf buildings to be used for sheet metal fabrication and pipe shop.

C. Lot 1 is to be used for site storage and in the future a storage building of undetermined size at this time.

D. The (2) lots have been fenced in by a 6' chainlink fence with motorized gate at the corner of 10th and Winters. See site plan for location. A separate review and building permit was issued for this work.

E. All Buildings to be metal.

2710 DELTA PLACE, COLORADO SPRINGS, CO 80910
P.O. BOX 2440, COLORADO SPRINGS, CO 80901
OFFICE PHONE: 719 / 390-0555 FAX: 719 / 390-9448

1003 WINTERS AVENUE, GRAND JUNCTION, CO 81501
P.O. BOX 2418, GRAND JUNCTION, CO 81502
OFFICE PHONE: 970 / 245-0595 FAX: 970 / 245-1015

F. New landscaping on the Winters Avenue side to meet your requirements. Please refer to landscape drawings provided.

G.
1. Phase one is remodel existing building and fence in all property. Phase one is nearly complete.
2. Phase two is to construct (1) 15,200 sf bldg. We are engaging in a contract with Francis Constructors to complete this phase which is a local construction company.
3. Phase three is to construct approximately 5,000 sf addition to phase two building.
4. Phase four is to construct storage bldg. on lot 1 at some time in future.

Please call if you have any questions at 245-0595.

We are pleased to bring Commercial Design to your fine community.

Sincerely,

William Flockhart

c:\wpwin60\wpwin\gjcitylt.wpd

Final Drainage Report

Lot 2 of
S.J. Subdivision

February 15, 1995

Prepared for:

William Flockhart
Commercial Design Engineering, Ltd.
1003 Winters Avenue
Grand Junction, CO 81501

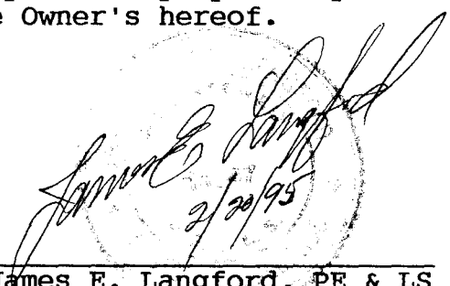
Prepared by:

THOMPSON-LANGFORD CORPORATION
529 251/2 RD., SUITE B-210
Grand Junction, CO 81505
PH. 243-6067

Job No. 0255-001

Engineer's Certification

I hereby certify that this report was prepared by me or under my direct supervision for the Owner's hereof.



James E. Langford, PE & LS
Reg. No. 14847

Introduction

I. GENERAL LOCATION AND DESCRIPTION:

A. Site and Major Basin Location:

Lot 2 of S.J. Subdivision is located in south central Grand Junction, generally between the Colorado River and the Denver and Rio Grand Railroad tracks. More specifically, the site is between Kimball Avenue on the south, and Winters Avenue on the north, and 9th Street and 12th Street.

B. Site and Major Basin Description:

Little development has occured in the area due primarily to the Mill Tailings Removal Project. The staging area for the Mill Tailing Project was located immediately south of this project along the south side of Kimball Avenue. From reviewing aerial photography taken approximately 13 years ago, it is apparent that the site was not in active use at that time and has remained essentially baren since. Recent times have not seen buildings, paving or any other ground cover of hydrologic significance on this site. According to the Soil Conservation Service, "Soil Survey - Grand Junction Area", as published in 1955, the surface soils prior to mill tailings removal and replacement were moderately fine-textured soils with low permeability. At that time the area carried the soil grouping "Ba" for Billings silty clay having slopes between 0 and 2 percent. The local term for this type of soil is adobe. Recently mill tailings were removed from the site varying in depth from a few feet to seven feet. The site was refilled with pitrun and leveled.

II. EXISTING DRAINAGE CONDITIONS:

A. Major Basin:

The south central area of Grand Junction drains southwesterly towards the confluence of the Colorado and Gunnison Rivers. From a drainage standpoint, the area has been marginally served by a combination of systems. Small amounts of the local storm drainage has been allowed to enter the sanitary system and treated as such. Most of the storm dainage has been carried to the Colorado River by a system of surface features such as curb & gutter, drainage pans and swales, or collected in site depressions to evaporate or leach into the native soils. There are a few small storm drains in the area serving 9th and 12th

streets. The nearest catch basin to this project being a single inlet at the southeast corner of the intersection of 9th and Kimball.

B. Site:

Given the recent mill tailings activity on the site it is not possible to state for certian what the historical site drainage patterns were, but they can be assumed. It would seem from the condition in which the site has remained over the past 13 years that of the precipitation that impacted the site, what could exit the site did so by overland flow to Kimball Avenue on the south, with the remainder either gathering in depressions and infiltrating into the native soils, or evaporating. Areas to the north of the site gathered on Winters Avenue and were directed west and north in the curb and gutter to two catch basins in front of Whitewater Building Materials.

III PROPOSED DRAINAGE CONDITIONS:

A. Changes in Drainage Patterns:

We are proposing a combination of methods to address site drainage. We are proposing to drain the parking and landscape areas along the north edge of the lot directly to Winters Avenue without detention. Since the larger portion of this drainage area is to be landscape, with a runoff coefficient much better than the native adobe, the net effect is a reduction of runoff. Given this reduction in runoff, which will be demonstrated in the calculations below, we do not expect to be assessed a drainage impact fee.

The remainder of the site including the existing office building will drain into the site and be collected in a "Total Retention" basin in the southwest corner of Lot 1. Since Lot 1 is not being developed at this time, no provisions for it's drainage are being proposed.

B. Maintenance Issues:

The on-site collection facilities will be the responsibility site owner.

IV DESIGN CRITERIA AND APPROACH:

A. GENERAL CONSIDERATIONS:

In the replatting of Winters Industrial Park to S.J. Subdivision, a drainage study entitled "Preliminary Drainage Report, WINTERS INDUSTRIAL PARK" dated July 6,

1993 was submitted and assumed to have been approved. According to the owners, they opted for a condition whereby each lots was to address its' drainage separately. Constraints to drainage design and implementation for this area result largely from natural conditions found in the area and the fact that the area has developed without a collective drainage plan. Natural conditions such as the tight adobe soils, high water table and the extremely flat slope of this river bottom land have historically made it difficult to drain. Though there is still no local underground stormwater collection facility of adequate size to serve the area, and the ground water table is still high, the mill tailings removal project did result in a change of site soils. Following removal of the tailings, the site was brought back to the approximate original grade with pit run material.

B. Hydrology:

Drainage on the site was quantified using the Rational Method as detailed in Section VI "Hydrology" of the City of Grand Junction's Stormwater Management Manual dated June 1994.

The total retention volume was calculated using the formula found on page VIII-13 of the SWMM.

Landuse Areas draining to Winters:

Paving (Conc.)	1,574.19 sf	0.95
Landscape	2,415.43 sf	0.19
Total:	3,989.62 sf or 0.0916 Ac.	

Landuse Areas draining to Retention Basin:

Buildings/Parking	31,009.63 sf	0.95
Undisturbed perimeter	5,251.34 sf	0.65
Total:	36,290.97 sf or 0.8331 Ac.	

Rational "C" Values:

Values were taken from Appendix "B" of the SWMM. The historic "C" value was discussed with City, Engineering, and it was agreed that we could use 0.65.

Composite Developed Condition "C" Value:
(for area draining to Winters)

2,415.43 @ 0.19 = 458.93
1,574.19 @ 0.95 = 1,495.48
Total 1,954.41
Composite = 1,954.41/3,989.62 = 0.49

Composite Developed Condition "C" Value:
(for Retention Area only)

31,009.63 @ 0.95 = 29,459.15
5,251.34 @ 0.65 = 3,413.37
Total 32,872.52
Composite = 32,872.52/36,290.97 = 0.91

Historic Runoff to Winters:

$Q_h = C_{100d} * I_{100d} * A$
$= 0.65 * 4.95 * 0.0916 =$ 0.29 cfs

Developed Runoff to Winters:

$Q_h = C_{100d} * I_{100d} * A$
$= 0.49 * 4.95 * 0.0916 =$ 0.22 cfs

Payment in Lieu:

$$\text{Payment} = \$10{,}000(C_{100d} - C_{100h})A^{0.7}$$

Since the developed condition runoff to Winters Avenue is less than the historic runoff, we assume the developer will not be assessed any drainage fee.

Total Retention Volume:

$V = P100_{24HR}$ (ft) * A (ft^2) * C_{100d}
$P100_{24HR} = 2.01$ in. or 0.1675 ft.
A = area = 36,291 ft^2
$C_{100d} = 0.91$
V = 0.1675 ft * 36291 ft^2 * 0.91
= 5,531.66 ft^2

A **50 ft. x 64 ft.** pond, 2 ft. deep with 2:1 sideslopes will yield a storage volume of **5,552 ft^3.**

A letter from Western Colorado Testing is attached which states the percolation rate for the soils in the vicinity of the Total Retention Basin is 69 mpi. At this percolation rate and having a pond depth of 2-foot, the required storage volume can be dissipated in 27.6 hours. This meets the requirements as given in Section VIII, Para. E.1(ii) of the SWMM.

References

"STORMWATER MANAGEMENT MANUAL (SWMM)", City of Grand Junction, June 1994

"MESA COUNTY STORM DRAINAGE CRITERIA MANUAL", Mesa County, Colorado, Final Draft March 1992.

WESTERN
COLORADO
TESTING,
INC.

529 25 1/2 Road, Suite B-101
Grand Junction, Colorado 81505
(303) 241-7700

February 20, 1995
WCT #200595

Commercial Design Engineering, Ltd.
1003 Winters Avenue
Grand Junction, CO 81501

Attn: Mr. William Flockhart

Subject: Percolation Test Results for a Retention Pond
at 1003 Winters Avenue, Grand Junction, Colorado

As requested, we have performed a percolation test in the area of the proposed retention pond at 1003 Winters Avenue, Grand Junction, Colorado. At 3 to 4 hours following excavation of the profile hole, free groundwater was measured at 5'-4" from the surface and at 5'-6" following 24 hours.

The clay material below the pit run had a percolation rate of 69 min/inch which was expected for the material. However, the pit run material was surprisingly slow with a value of 240 min/inch. The pit run at the test location had a relatively high clay content and was very dense. The test location may have been in an old haul road area, as the other end of the profile pit appeared to be more sandy and less dense. We would recommend 4 to 5 locations within the retention pond area have percolation tests performed at one to two feet below the surface. The percolation results should then be averaged for a more reasonable value.

Based on the 24 inches of retention water and the 69 min/inch percolation rate, the retained water should dissipate within the required 48 hour period. The retention area would need to excavated to the clay material at a depth of approximately 3½ feet.

The pit run material should percolate at a much faster rate than the 240 min/inch; and thus, we recommend additional percolation holes. With the existing rate of 240 min/inch only 6 inches of water would dissipate in a 24 hour period. Thus, the pit would need to be doubled to dissipate 24 inches in 48 hours.

The area around the retention pond is vacant on all sides except the adjacent property to the west. West of the pit, approximately 18 feet, is Mesa County's yard. The area along this side is parking and storage of equipment.

We do not foresee problems with the retention pond with proper design and construction. If there are any questions, please feel free to contact us.

Respectfully,

WESTERN COLORADO TESTING, INC.

Gary L. Hamacher, P.E.
Senior Geotechnical Engineer

GLH/ss

Attachment: Percolation Test Report

WESTERN COLORADO TESTING, INC.

PERCOLATION TEST REPORT

Name: Commercial Design Engineering, Ltd. Address.: 1003 Winters Avenue
City Grand Junction State: Colorado Zip: 81501 Phone: (303) 245-0595
Location of Test: 1003 Winters Avenue (Southwest Corner) County: Mesa
Diameter of Holes: 6 (inches) Date of Test: 2/17/95 Job No.: 200595
Project: For Retention Pond

Time	Hole #1 Depth: 2'-10"		Hole #2 Depth: Surface		Hole #3 Depth:	
	Initial	Drop	Initial	Drop	Initial	Drop
3:37	9 1/4	--	5 5/8	--		
3:52		1/4		1/16		
4:07		3/16		1/16		
4:22		1/4		1/16		
4:37		3/16		1/16		
Minutes/Inch		69		240		

AVERAGE: 155 Min./In.

PROFILE HOLE

DEPTH	SOIL DESCRIPTION
0 - 3 1/2'	FILL MATERIAL (Pit Run) Sand, Gravel and cobbles,
	clayey, dense, slightly moist, brown
3 1/2' - 4 1/2'	CLAY, stiff, moist to very moist, olive to grey,
	some black.
4 1/2' - 8'	CLAY, sandy to SAND, clayey, soft to medium stiff,
	very moist, brown, wet @ 5'-4"

Groundwater 5'-4"

Bedrock None

GARY L. HAMACHER REGISTERED 16710 PROFESSIONAL ENGINEER STATE OF COLORADO

Gary L. Hamacher, P.E.

WESTERN COLORADO TESTING, INC.

PRELIMINARY REPORT OF GEOTECHNICAL INVESTIGATION FOR A PROPOSED PRE-ENGINEERED METAL BUILDING 1003 WINTERS AVENUE GRAND JUNCTION, COLORADO

Prepared For:

Commercial Design Engineering, Ltd.
Post Office Box 2418
Grand Junction, Colorado 81502

Prepared by:

Western Colorado Testing, Inc.
529 25 1/2 Road, Suite B101
Grand Junction, Colorado 81505
(303) 241-7700

March 6, 1995
Job No. 200595

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INTRODUCTION

This preliminary report presents the results of the geotechnical investigation performed at the site of a proposed 80′ x 190′ pre-engineered metal building to be located at 1003 Winters Avenue, Grand Junction, Colorado. This investigation was authorized by Mr. Jim Langford of Thompson-Langford Corporation and verified by Mr. William Flockhart of Commercial Design Engineering, Ltd., on February 15, 1995.

Included in this preliminary investigation was a test boring and a report of our conclusions and recommendations. The scope of our report was limited to the following:

- Evaluating the engineering properties of the subsoils encountered.
- Recommending types and depths of foundation elements.
- Evaluating soil bearing capacity and estimated settlement.
- Presenting recommendations for earthwork and soils related construction with respect to the subsoils encountered.

This report was prepared by the firm of Western Colorado Testing, Inc. (**WCT**) under the supervision of a professional engineer registered in the state of Colorado. Recommendations are based on the applicable standards of the profession at the time of this report within this geographic area. This report has been prepared for the exclusive use of **Commercial Design Engineering, Ltd., the owner,** for the specific application to the proposed project in accordance with generally accepted geotechnical engineering practices.

The scope of this investigation did not include any environmental assessment for the presence of hazardous or toxic materials in the soil or groundwater on or near this site. If contamination is a concern, it is recommended an environmental assessment be performed.

SITE CONDITIONS

At the time of the field investigation the site was vacant with a sparse coverage of native grasses and weeds. North or the building is an approximate 40′ x 50′ metal building. A pre-engineered metal building also exists to the east for the north approximate one-third of the building. The south approximate two-thirds of the east side and the west side are vacant with sparse native grasses. A new building was being constructed to the south. It is understood the new structure will be a block structure used for beer distribution.

The proposed building site is located in an area that has undergone remediation. Mill tailings were removed from the site and replaced with pit run material.

The general topography of the site is relatively level with a slight slope to the southwest. Approximately one foot of elevation differential exists across the building site. The building site should be elevated slightly to provide good surface drainage away from the structure. Drainage swales will need to be constructed to direct surface runoff around the proposed structure and to the lower topographic portions of the site.

PROPOSED CONSTRUCTION

The proposed building is planned to be a 80′ x 190′, pre-engineered metal building constructed over a reinforced concrete foundation with a slab-on-grade floor. The structure will have rigid frames with isolated bearing columns. Between the columns will be frost walls (grade beams) or turned down monolithic slabs. Column loads on the order of 30 Kips are anticipated.

FIELD EXPLORATION

The field investigation was conducted on February 24, 1995. The exploratory program consisted of drilling only one (1) soil boring as directed by the engineer and as shown on the Boring Location Plan (Appendix, Figure 1). The boring was located in the field by the drilling crew by stepping distances from land marks shown on the Boring Location Plan. The test boring was advanced to a depth of 20 feet below the existing grade with a truck-mounted Detrich D-50 soil sampling rig using 3¼ inch, inside diameter, hollow stem augers.

Soil samples were obtained at the sampling intervals shown on the Boring Log (Appendix, Figure 2). Recovered samples were extracted in the field, sealed in plastic containers or brass containers, labeled and protected for transportation to the laboratory for testing. Dames and Moore ring barrel and split barrel samples were obtained while performing Standard Penetration Tests (SPT) driven in general accordance with ASTM D-1586, "Penetration Test and Split Barrel Sampling of Soils". The N-Value, reported in blows per foot, equals the number of blows required to drive the sampler over the last 12 inches of the sample interval.

Stratification lines represent the approximate boundary between soil types, and the transition may be gradual.

LABORATORY TESTING

The field boring log was reviewed to outline the depths, thicknesses, and extent of the soil strata, and a testing program was established to evaluate the engineering properties of the recovered samples. Specific tests that were performed include moisture contents, particle size analysis, Atterberg limits, swell-consolidation test and a soluble sulfate test. All tests were conducted in general accordance with current ASTM or state-of-the-art test procedures.

Based on the results of this testing program the field log was reviewed and supplemented as presented in the Appendix, Figure 2. The final log represents our interpretation of the field log, and reflects the additional information gained in the laboratory testing program.

SUBSURFACE CONDITIONS

As shown on the boring log (Appendix, Figure 2), the subsurface conditions encountered in the boring consisted of fill material over silty clay, followed by silty, sand, gravel and cobble material. Water was encountered in the boring at the time of drilling at a depth of 6½ feet; and six days later at a depth of 7 feet.

The upper 1½ feet consisted of pit run fill materials which was medium dense to dense, slightly moist, and brown in color. Below the fill was a silty clay which was slightly moist at the upper face, becoming more moist with depth, to very moist and grey to brown to rust in color. Penetration tests indicate the silty clay is very stiff to medium stiff. The stiffness decreases as the moisture increases with depth. Underlying the upper soils was a silty, sand, gravel and cobble material which was wet and brown in color. Penetration tests indicate the sand, gravel and cobble material is dense to very dense. The

sand, gravel and cobble material extended to the maximum depth explored, 20 feet.

CONCLUSIONS AND RECOMMENDATIONS

In general, this site is considered suitable, per the single boring, for the proposed construction. The subsoils encountered at the anticipated depth of foundations are generally capable of supporting the anticipated loads, with some modification and within the design parameters discussed as follows. It is anticipated the building site will be elevated 1½ feet.

FOUNDATION ANALYSIS

The soils encountered at the anticipated bearing depth are old fill, pit run materials, which should be proof rolled prior to placement of footings. Following compaction of the pit run fill material, the structure can be supported on a conventional spread footing foundation system.

The following design and construction details should be observed for a spread footing foundation system.

- Footings placed on the compacted pit run should be designed for an allowable soil bering pressure of 2000 pounds per square foot. Footings should be proportioned as much as practicable to minimize differential settlement.

- Any structural fill placed for support of footings should consist of a granular, non-expansive material compacted to a minimum 95% of the maximum Standard Proctor Density (ASTM D-698) at a moisture content of (-)2% tc (+)3% of optimum. Structural fill should

extend down from the bottom of the footings at a one horizontal to one vertical projection.

- We estimate total settlement for footings designed and constructed as discussed in this section will be approximately one inch, which is generally considered acceptable and was used in our analysis.

- Exterior footings, grade beams, and footings in unheated areas should extend to below the frost depth. The local building codes should be consulted; however, we would recommend a minimum depth of 18 inches.

- Continuous foundation walls or grade beams should be reinforced top and bottom to span an unsupported length of at least ten (10) feet.

- All loose or disturbed material encountered at the foundation bearing level should be removed or compacted to a minimum 95% of ASTM D-698.

- A representative of the geotechnical engineer should observe all foundation excavations prior to the placement of concrete.

FLOOR SLABS

It is anticipated the floor slab will be elevated 1½ feet above the existing grade at the test boring. With the existing 1½ feet of pit run fill, this would provide 3 feet of structural fill below the slab. The clay below the fill has some swell potential, however, the clay would be at a depth that under normal circumstances should not effect the slab significantly.

The following construction details will help mitigate slab movement and should be observed for slab-on-grade construction.

- The existing pit run fill should be proof rolled prior to adding additional fill. All new fill placed below the slabs should consist of non-expansive material compacted to at least 95% of the maximum standard Proctor density at a moisture content near optimum.

- Floor slabs should be verified that they are above the 100 year flood elevation.

- Floor slabs should be provided with control joints to reduce damage due to shrinkage cracking. It is recommended control joints be spaced at 20 feet or less on centers. The requirements for slab reinforcement should be established by the designer based on experience and intended slab use.

- It is recommended the floor slabs be separated from all utility lines with an expansive joint.

- All fill placed below the slabs should consist of non-expansive, granular material compacted to at least 95 percent of the maximum standard Proctor density at a moisture content (±)3% of optimum. The existing subgrade should be compacted prior to placing structural fill, as discussed above.

Water Soluble Sulfates

A sample of the on site soils from the test boring at a depth of 1½ to 3 feet was tested to determine the concentration of water soluble sulfates. The test results indicate a sulfate content of approximately 1000 ppm. This concentration of water soluble sulfates represents a moderate degree of sulfate attack on

concrete exposed to these materials. Based on the test results, sulfate resistant cement (type II or type II modified) should be used in all concrete exposed to the on-site soils.

PERIMETER DRAIN SYSTEM

Water was encountered at a depth that should not effect the proposed construction. Provided good surface drainage is constructed and maintained, a perimeter drain would not be required.

SURFACE DRAINAGE AND LANDSCAPING

The success of shallow foundation and slab-on-grade systems is contingent upon keeping the subgrade soils at a more or less constant moisture content, and by not allowing surface drainage a path to the subsurface. Positive surface drainage away from structures must be maintained at all times. Landscaped areas should be designed and built such that irrigation and other surface water will be collected and carried away from foundation elements.

The final grade of the foundation backfill and any overlying concrete slabs or sidewalks should have a positive slope away from foundation walls on all sides. We recommend a minimum slope of 8 inches in the first 10 feet; however, the slope can be decreased if the ground surface adjacent to foundations is covered with concrete slabs, sidewalks or asphalt paving.

Backfill material should be placed near optimum moisture content and compacted to at least 90% of maximum standard Proctor density in landscaped areas and to at least 95% maximum standard Proctor density beneath structural areas (sidewalks, entrance slabs, pavements, etc.). All roof downspouts and faucets should discharge well beyond the limits of all backfill. Irrigation within ten (10) feet of the foundation should be carefully controlled and minimized.

GENERAL

In the event that any changes in the nature, design, or location of the structure are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analysis and recommendations submitted in this report are preliminary and are based in part upon the data obtained from the single test boring. The nature and extent of variation at the building site may not become evident until construction. If variations then appear, it will be necessary to reevaluate the recommendations in this report.

It is recommended that the geotechnical engineer be provided the opportunity for general review of the final designs and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the designs and specifications. It is also recommended that the geotechnical engineer be retained to provide continuous engineering services during construction of the foundations, excavations, and earthwork phases of the work. This is to observe compliance with the design concepts, specifications, or recommendations and to modify these recommendations in the event that subsurface conditions differ from those anticipated.

Respectfully Submitted,
WESTERN COLORADO TESTING, INC.

Gary L. Hamacher, P.E.
Senior Geotechnical Engineer

GLH/ss

APPENDIX

WESTERN COLORADO TESTING, INC.

Job No. 200595
Date 3/ 95
Project Pre-Engineered Metal Building
Location 1003 Winters Avenue
Grand Junction, Colorado

BORING LOCATION PLAN

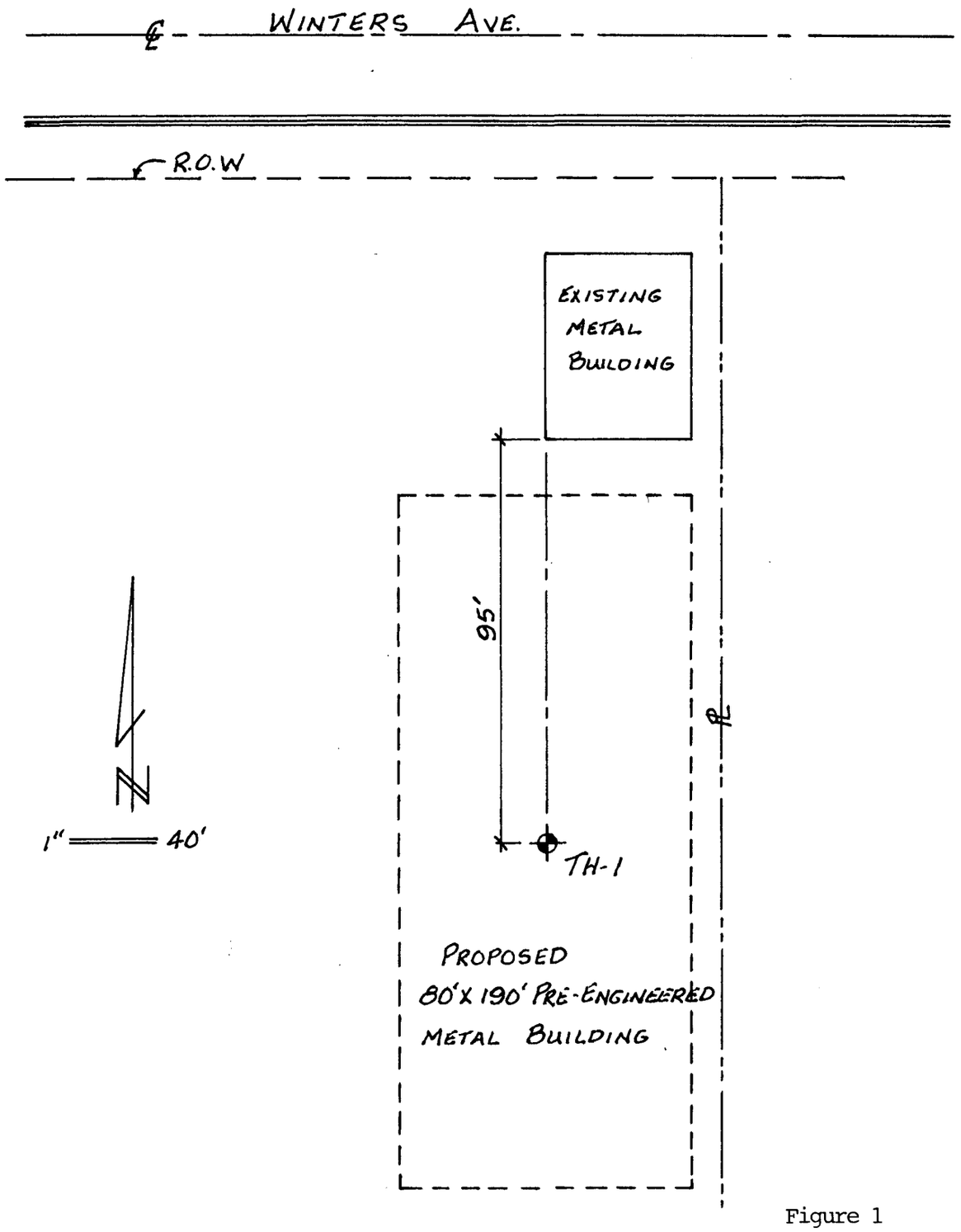


Figure 1

WESTERN COLORADO TESTING, INC.

Project Pre-Engineered Metal Building
Location 1003 Winters Avenue
Job No 200595 Date 2/24/95

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEVATION	DATUM	DRILLER	LOGGER
TH-1	See Boring Location Plan			P. Morrick	G. Hamacher

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
				Sparse Native Grasses	Dietrich D-50
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	6 DAYS	DRILLING METHOD	TOTAL DEPTH
6½'			7'	3¼" I.D. Hollow stem	20'

DEPTH FT	SAMPLE DATA			SOIL DESCRIPTION				LABORATORY DATA				DEPTH FT
	SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	COLOR	MOIST	CONS.	GEOLOGIC DESCRIPTION & OTHER REMARKS	% MC	DRY DENS pcf	qu tsf	CLASS	
				brown	slightly moist	medium dense to dense	FILL, pit run material, sand, gravel & cobbles					
	D-1 SP-1	18	60	grey - brown - rust	slightly moist to moist	stiff to very stiff	CLAY, silty	22.1	99.1		CL	
5	D-2	8	30		moist to very moist	stiff to medium stiff		17.9	99.0			5
				brown	wet	dense	SAND, GRAVEL & COBBLES, silty					
10	SP-2	41	50				some layers with less cobbles					10
15	SP-3	51	100									15
20	SP-4	50/6"	N.R.				Bottom of Hole @ 20'					20
							N.R. = No Recovery					
25												25

Figure 2

LABORATORY REPORT

PHYSICAL PROPERTIES OF SOILS

Client Commercial Design Engineering, Ltd.

Job No. 200595

Lab/Invoice No. _____

Date 3/6/95

Reviewed By [signature]

Project Pre-Engineered Metal Building

Location 1003 Winters Avenue, Grand Junction Sampled By G. Hamacher Date 2/24/95

Type of Material Clay Submitted By G. Hamacher Date 2/24/95

Source of Material TH-1 @ 1½' - 3' Authorized By Client Date 2/15/95

Sieve Analysis, ASTM D422-

Sieve Size	% Passing Accumulative	Specification
3"		
2½"		
2"		
1½"		
1"		
¾"		
½"		
⅜"		
¼"		
No. 4		
8		
10		
16		
30	100	
40	99	
50	99	
100	99	
Finer than 200 ASTM D1140-	97.7	

Soil Classification Unified CL AASHTO A-7-6 (17)

Liquid Limit and Plasticity of Soils ASTM D424- LL = 48, PI = 28

Moisture - Density Relations ☐ ASTM D698- ; ☐ ASTM D1557- ; Method _____ Maximum Dry Density, pcf _____ Optimum Moisture, % _____

Specific Gravity of Soils (minus No. 4 material) ASTM D854- Specific Gravity _____

Resistance 'R' Value of Compacted Soils ASTM D2844- 'R' Value _____

Other:

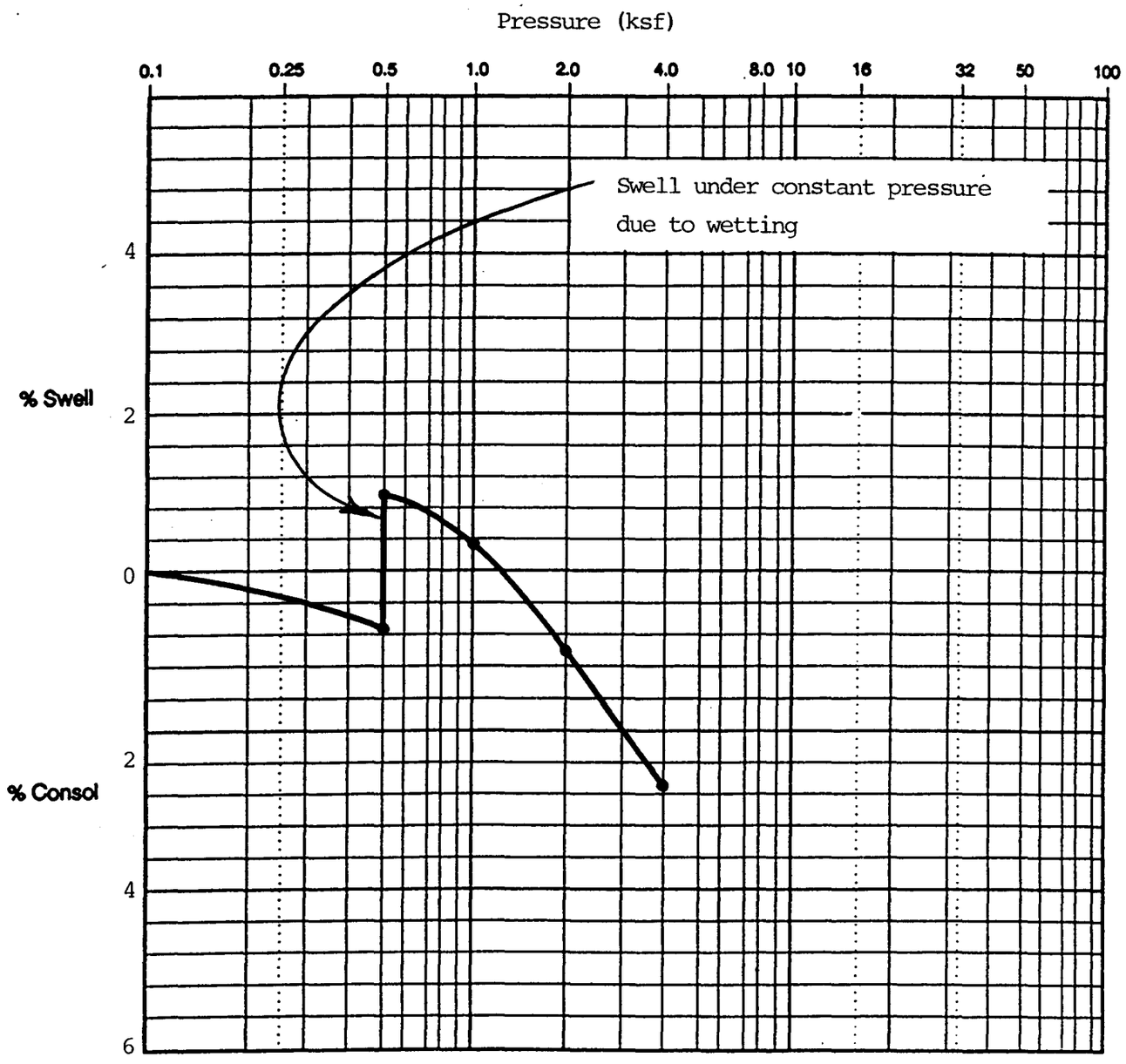
Natural Moisture Content 19.2%

Copies to:

Figure 3

SWELL CONSOLIDATION TEST

Drill Hole No.	TH-1	**Sample No.**	D-1	**Sample Depth Interval**	1.5' - 2.5'
Sample Description	Clay				
Initial Water Content	22.1	**Dry Unit Weight**	99.1	**Initial Saturation**	
Final Water Content	26.3	**Specific Gravity**		☐ **Assumed**	
Liquid Limit	48	**Plastic Limit**	20	**Plasticity Index**	28
Classification	CL				



WESTERN COLORADO TESTING, INC.
529 25½ Road, Suite B-101
Grand Junction, CO 81505
(303) 241-7700

Project	Pre-Engineered Metal Building
Location	1003 Winters Avenue Grand Junction, Colorado
Job No.	200595
Date	3/6/95

Figure 4

WESTERN COLORADO TESTING, INC.

Project Commercial Design Engineering, Ltd.
Location 1003 Winters Avenue
Job No 200595 Date 3/6/95

SUMMARY OF SOIL TESTS

Test Hole No.	Sample No.	Sample Depth (ft)	Sample Dia. (in)	Sample Hgt. (in)	Water Content (%)	Density		Void Ratio (e)	Unconfined Compression		Atterberg Limits			Cons Test	% Pass #200 Sieve	Classification
						Wet (pcf)	Dry (pcf)		QU (tsf)	Strain (%)	LL	PL	PI			
TH-1	D-1	1.5 - 2.5	2.42		22.1	121.0	99.1							*		
TH-1	SP-1	1.5 - 3.0	1.5								48	20	28		97.8	Unified CL
TH-1	D-2	4.0 - 5.0	2.42		17.9	116.7	99.0									

Figure 5

REVIEW COMMENTS

FILE #SPR-95-48 **TITLE HEADING:** Site Plan Review - 15,200 s.f. Building

LOCATION: 1003 Winters Avenue

PETITIONER: Commercial Design Engineering, Ltd.

PETITIONER'S ADDRESS/TELEPHONE: Attn: Chris
P.O. Box 2418
Grand Junction, CO 81502
245-0595

PETITIONER'S REPRESENTATIVE: Thompson-Langford

STAFF REPRESENTATIVE: Michael Drollinger

NOTE: WRITTEN RESPONSE (4 COPIES) BY THE PETITIONER TO THE REVIEW COMMENTS IS REQUIRED. A PLANNING CLEARANCE WILL NOT BE ISSUED UNTIL ALL ISSUES HAVE BEEN RESOLVED.

CITY UTILITY ENGINEER **3/10/95**
Bill Cheney **244-1590**

Show detail for lowering existing manhole since this is a 60" diameter manhole.

No other comments.

GRAND JUNCTION FIRE DEPARTMENT **3/14/95**
Hank Masterson **244-1414**

Phase One is acceptable to the Fire Department

For Phase Two:

1. A fire flow survey will be required - submit complete building plans to the Fire Department and include a description of the sheet metal fabrication process in order that the correct occupancy classification may be assigned.
2. A flow test of area hydrants will be required - have your engineer/representative contact the Fire Department to schedule a time for this testing.
3. Submit a site plan showing existing hydrant locations, water line sizes, building locations and access roads.

Requirements for additional hydrants, if any, will be based upon the results of the fire flow survey and flow tests.

MESA COUNTY BUILDING DEPARTMENT **3/14/95**
Bob Lee **244-1656**

No comments - we will be reviewing the plans at a later date.

CITY DEVELOPMENT ENGINEER **3/22/95**
Jody Kliska **244-1591**

1. Transportation Capacity Payment = $3,708.80 (4.88 trips/100 s/f/ x 15/2 = 74.17/10 x $500 = $3,708.80)
2. Drainage report and plan is acceptable.

COMMUNITY DEVELOPMENT DEPARTMENT **3/22/95**
Michael Drollinger **244-1439**

See attached comments.

Commercial Design Engineering, Ltd.

Mechanical Contractors

LTD.

March 29, 1995

OK

COMMUNITY DEVELOPMENT DEPARTMENT
CITY OF GRAND JUNCTION
250 North 5th Street
Grand Junction, CO 81501

Re: RESPONSE TO REVIEW COMMENTS

Subject: CDE SHEET METAL SHOP

Dear Mr. Drollinger

In response to the review comments the following clarifications are submitted for your information:

1. Detail for existing manhole is attached with cut sheet showing inverted cover.

2. Landscaping will be done on lot 2 in the future. Drawings will be submitted for your review and approval. Landscaping to be of similar type as lot 1.

3. We propose to move the retention pond 10' East of present location on drawings due to the water main 2' beneath pond to prevent possible freezing.

Thanks for your assistance.

Sincerely;

William Flockhart

cc: File

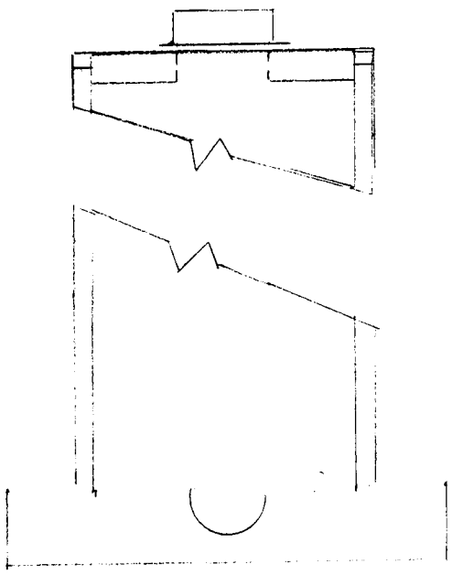
c:\chris\cityltr.wpd

PHCC

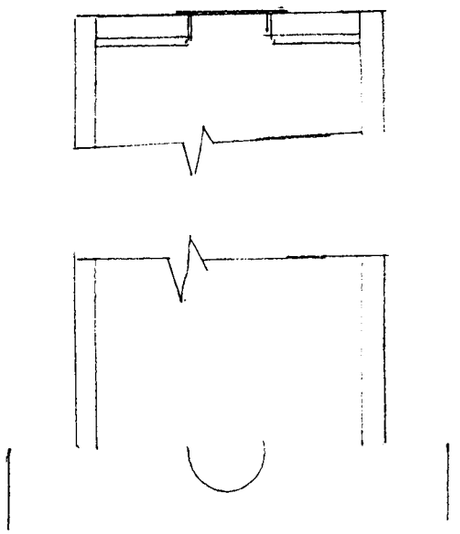
2710 DELTA PLACE, COLORADO SPRINGS, CO 80910
P.O. BOX 2440, COLORADO SPRINGS, CO 80901
OFFICE PHONE: 719 / 390-0555 FAX: 719 / 390-9448

1003 WINTERS AVENUE, GRAND JUNCTION, CO 81501
P.O. BOX 2418, GRAND JUNCTION, CO 81502
OFFICE PHONE: 970 / 245-0595 FAX: 970 / 245-1015

Grade



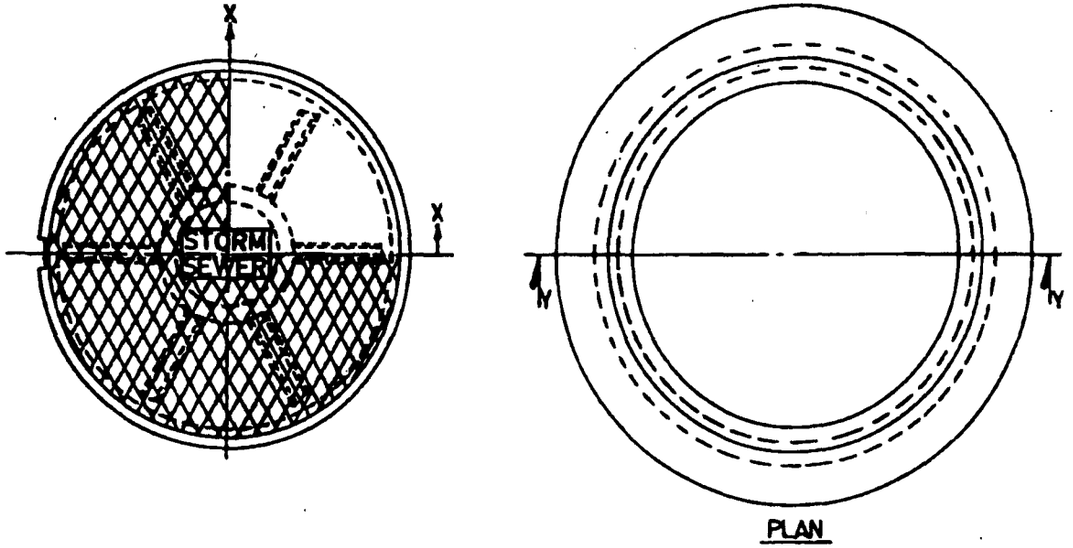
EXISTING Manhole



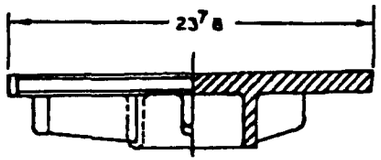
New Manhole

Detail To Lower Manhole

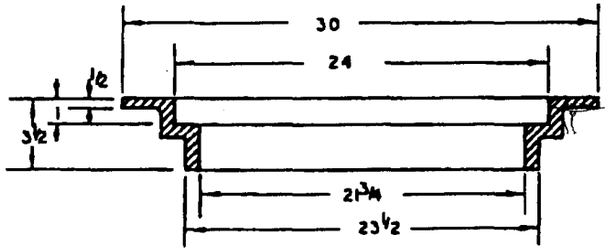
Commercial Design Engineering Building
1003 Winters Ave.



PLAN



SECTION-XX.



SECTION-YY.

NOTES :-

1. DIMENSION - All are in inches.
2. FINISH - Coating will be black bituminious paint.
3. MARKING - It will be cast as per required.
4. MACHINING - All sitting surfaces will be machine finished.

CAST IRON WTS.

RING	82 #
LID-L	110 #
LID-D	118 #
LID-B	143 #

CASTINGS INC.
860 FOURTH AVE. • P.O. BOX 669 • GRAND JCT., CO 81502

STAFF REVIEW

FILE: #SPR 95-48
DATE: March 22, 1995
STAFF: Michael Drollinger
REQUEST: Site Plan Review
LOCATION: 1003 Winters Avenue
ZONING: I-2

STAFF COMMENTS:

1. This approval is for a 15,200 square foot building, landscaping and parking; phase 3&4 work as identified on the plans and described in the applicant's 3/7/95 letter will require separate review and permitting.

2. "Open Area" on northwest corner of Lot 2- will this be landscaped now or in the future? If the area is to be landscaped in conjunction with the proposed development then additional detail is required.

PLEASE TAKE NOTE OF THE FOLLOWING:

1. ALL SIGNS TO BE ERECTED ON THE SITE WILL REQUIRE A SIGN PERMIT PRIOR TO INSTALLATION OF THE SIGN.

2. SITE IMPROVEMENTS (INCLUDING LANDSCAPING) MUST BE CONSTRUCTED IN ACCORDANCE WITH THE APPROVED PLANS. ANY MODIFICATIONS MUST BE APPROVED, IN WRITING, BY THE COMMUNITY DEVELOPMENT DEPARTMENT. FAILURE TO INSTALL SITE IMPROVEMENTS AS PER THE APPROVED PLANS MAY DELAY THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

3. SITE IMPROVEMENTS (E.G. LANDSCAPING, SIDEWALK, ETC.) NOT COMPLETED PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY MUST BE GUARANTEED.

You are urged to contact the Community Development Department if you require clarification or further explanation of any items.