Lincoln-Lancaster County Health Department

ENVIRONMENTAL HEALTH DIVISION

3140 N STREET · LINCOLN, NE 68510-1514 (402) 441-8000

Permit

SEWAGE INSTALLATION
SEPTIC SYSTEM
VARIANCE REQUEST

Establishment

STEVE &SHERRI REXROTH
T9N R7E SEC 22
DUNROVIN ACRES-1ST BLK 1 LOT 1
8221 DUNROVIN

Permittee

STEVE &SHERRI REXROTH
4621 S 50 ST
LINCOLN NE 68516

Permit # 02380252101

Issued 08/13/02
Expires 02/13/03
Revenue Code 3157

FEES: $200.00
$100.00

TOTAL: $300.00

Bruce D. Dart

Bruce D. Dart, Health Director

• POST IN A PROMINENT PLACE • NOT TRANSFERABLE

002851

Lincoln-Lancaster County Health Department
Environmental Health Division
3140 "N" Street • Lincoln, NE 68510-1514
Phone: 402-441-8022

A

Permit Number:

Sewage Disposal System

Request for Site Clearance and Permit

Include Form B, Form C and Applicable Fees with this Application.

☑ Septic System ☐ Lagoon ☐ Other (Refer to Form C)

The undersigned hereby requests site clearance and permit to construct a Sewage Disposal System in conformance with appropriate resolution or ordinance, as described herein:

PLEASE PRINT OR TYPE

A. System Location (Indicate correct number and street)

Address 8221 Dunrovin (no rural route) City Lincoln NE, Zip 68516

Legal Description 1/4 1/4 Section 22 Township T9N Range 7E Subdivision Dunrovin Acres Addition 1st Block 1 Lot 1

Geographical Location (if known): Longitude _____ Latitude _____

☐ Check if system mail address is not the same as the owner's address

B. Owner

Name Steve & Sherri Rexroth Signature [signature]

Address 4621 So 50th City/State/Zip Lincoln NE 68516

☐ Check if owner designed system Home Phone 483-0027 Work Phone 474-7355

C. Contractor

Name Harold CASEMENT Company Name Capital City Trenching

Address 2141 W Plum City/State/Zip Lin. NE

☑ Check if contractor designed system Work Phone 476-6313

D. Engineer/Installer ☐ Check and complete if engineer designed system

Designer Name ~~Charles~~ ~~Orr~~ Melvin R. Cerny Firm GSI Work Phone ~~483~~ 466-8154

E. This System Will Serve a

☑ Residential Dwelling Number of Bedrooms 3 Is there a Whirlpool Bathtub (YES) NO

☐ Commercial Establishment/Other Facility Specify _____

Design flow in gallons per day _____ Type of Wastewater: ☑ Domestic ☐ Non-Domestic.

DO NOT WRITE BELOW THIS LINE

Approval Process

☒ Municipal Code 24.38 ☑ County Resolution No. 2832

1. **Health Department** Date rec'd 8/15/02 Date frwd 8/15/02 ACTION ☒ Approved ☐ Disapproved Signature Jerrold C. Hood
2. **Supt. Bldg. Insp. or Village Clerk** Date rec'd 8/15/02 Date frwd _____ ACTION ☑ Approved ☐ Disapproved Signature [signature]
3. **City or County Engineer** Date rec'd 8/15/02 Date frwd 8/15/02 ACTION ☑ Approved ☐ Disapproved Signature Chase Baker

8/20/02 J.C.H. 8/21/02 J.C.H.

Installation Final Written Approval

By Jerrold C. Hood R.E.H.S.

Date SEPTEMBER 5, 2002

Business Office Use Only

Date Rec'd 08/13/02

Amt Paid 300.00

Rec'd By [signature] ~~Cash~~/Check No. 2617

FORM 23-100 10-96 White - Health Dept. Yellow - Engineer Pink - Bldg. Inspector

6/13/02 Admin Steve - admin permit 30 out

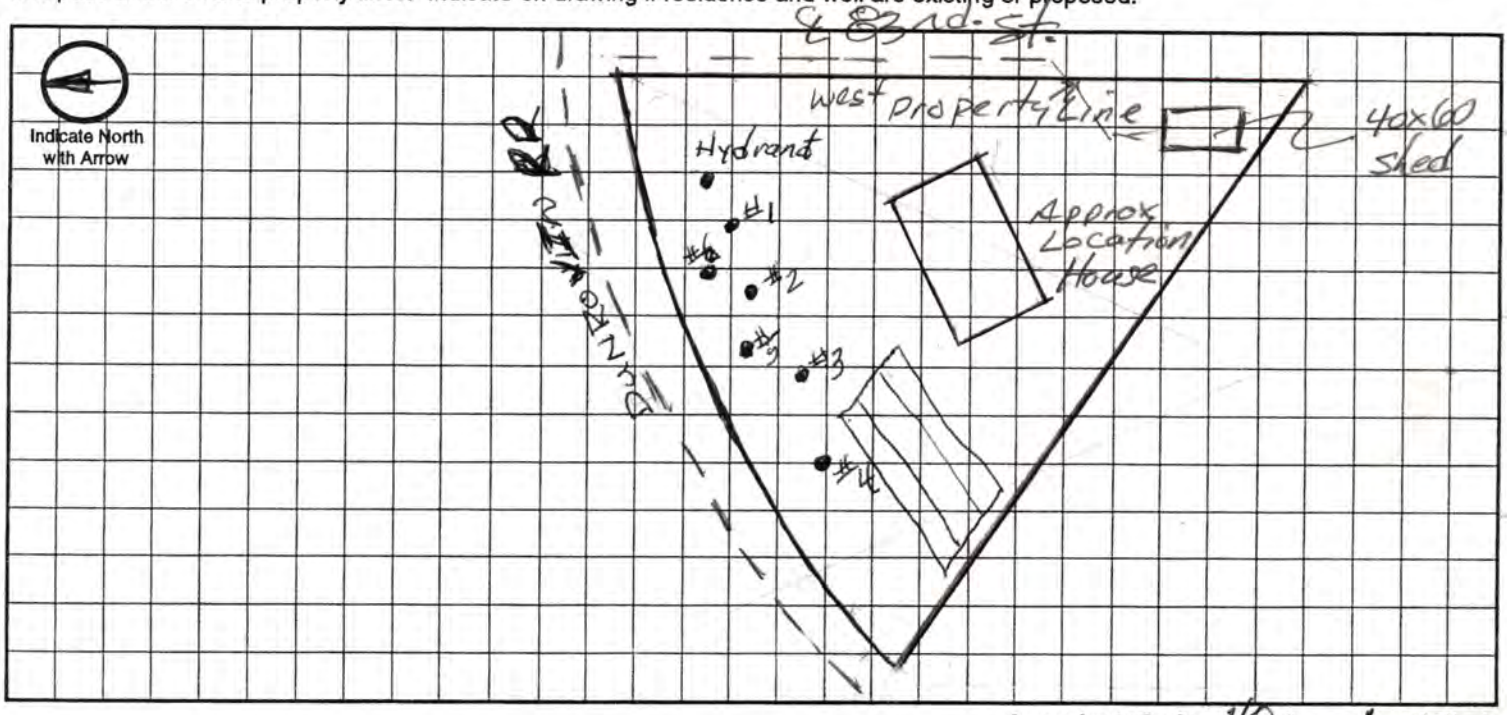
C

Lincoln-Lancaster County Health Department
Environmental Health Division
3140 "N" Street • Lincoln, NE 68510-1514
Phone: 402-441-8022

Permit Number:

Sewage Disposal System
Preliminary Plan Specifications

Draw a plot plan showing system location, lines, distribution box, tank and laterals, percolation test hole locations, well, residence, compass direction and property lines. Indicate on drawing if residence and well are existing or proposed.



Approximate Scale: 40 ft. = 1 grid line/s

A. System Location (Indicate correct number and street)

Address (no rural route) 8221 Dunrovin City Lincoln NE, Zip 68516

B. Proposed Septic Tank/s

Tank Material: ☐ Concrete ☐ Plastic ☐ Other _____

C. Proposed Absorption System (See Form B for Percolation Information)

Percolation Rate _____ (min. per inch) Soil Type: WYMORE SILTY CLAY LOAM Land Slope: _____ %

Type of Absorption System: ☐ Trench ☐ Bed ☐ Other _____

Total Square Feet of Field Required: _____ sq. ft.

Type of Lateral: ☐ Half-Moon ☐ Perforated Pipe ☐ Other Lateral Material: _____

Capacity of Septic Tank _____ gals Number of Absorption Beds: _____ Number of Distribution Laterals per Bed _____

Total Length of Laterals _____ ft. Number of Trenches _____ Trench Width _____

D. Setbacks Check the Boxes Below if the Required Setback has been Satisfied

Distance From	Private Well	Public Well	Surface Water	Gound Water	Pressure Water Lines	Property Lines	Foundations Yours	Foundations Neighbors	All Other Setbacks
Tank (ft)	50 ☐	500 ☐	50 ☐	NA ☐	25 ☐	20 ☐	15 ☐	25 ☐	☐
Field (ft)	100 ☐ RR	500 ☐	50 ☐	4 ☐	30 ☑	20 ☑	30 ☐	40 ☐	☐
Lagoon (ft)	100 ☐	500 ☐	50 ☐	N/A ☐	30 ☐	50 ☐	100 ☐	200 ☐	☐

E. Required Signatures

Home Building Contractor _____ Date _____

Installer X CAPITAL CITY TRENCHING by Ronald Casement Date 6-22-02

FORM 23-102 10-96

Lincoln-Lancaster County Health Department
Environmental Health Division
3140 "N" Street • Lincoln, NE 68510-1514
Phone: 402-441-8022

D

Permit Number:

Sewage Disposal System

As Built Plans & Specifications

Date _____

System Location (Indicate correct number and street)

Address 8221 Dunrovin (no rural route) City Lincoln NE, Zip _____

A. Building Sewer

1. Material: 4" PVC
   Diameter: 4" in.
2. Distance above basement floor: _____ in.
   or distance below basement floor: 18 in.
3. Distance between dwelling and septic tank: _____ ft.
4. Number of clean-outs: 1
5. Distances to: well or suction line _____ ft.
   stream _____ ft.
   pressure line _____ ft.
   property line _____ ft.

B. Septic Tank

1. Material: CONCRETE (PRECAST)
   Number of compartments: 1
2. Capacity: 1250 gal.
3. Factory built: ☑ Yes ☐ No
4. Manholes: Over inlet, diameter _____ in.
   Over outlet, diameter _____ in.
   Risers: ☐ above ☐ below grade ON in.
5. Inlet: ☑ baffle ☐ tee
6. Outlet: ☑ baffle ☐ tee
7. Depth to top of tank, below unfinished grade: 12 in.
8. Distances to: Well or suction line _____ ft.
   Stream _____ ft.
   Pressure line _____ ft.
   Property line _____ ft.

C. Distribution Box

1. Material: 2 CONCRETE (PRECAST)
   Number available outlets: _____
2. Factory built: ☑ Yes ☐ No
3. Distance from septic tank: 18" C/TO C/ ft.

D. Absorption Field

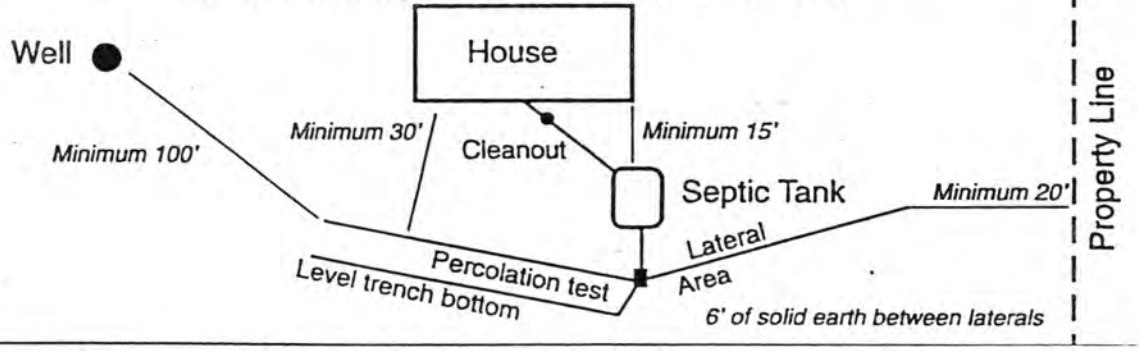
(Provide as-built drawings on back of this form)

1. Type: ☑ Half rounds ☐ Perforated pipe
   Diameter of half round: 18
   or perforated pipe: _____
   Material: ☐ fiberglass ☑ plastic ☐ concrete
   ☐ other _____
2. Lateral lines: Number 3
   Length of each line: 100' ft. 100 ft.
   100 ft. _____ ft., _____ ft.
3. Trench dimensions: Width 10' ft.
   Slope _____ in/100 ft.
   Average depth 42 in
4. Filter material: GRAVEL
   Depth of material 36 in.
5. Distances to: Well or suction line _____ ft.
   Stream _____ ft.
   Pressure line _____ ft.
   Property line _____ ft.

Complete "As Built" drawing on back of this form.

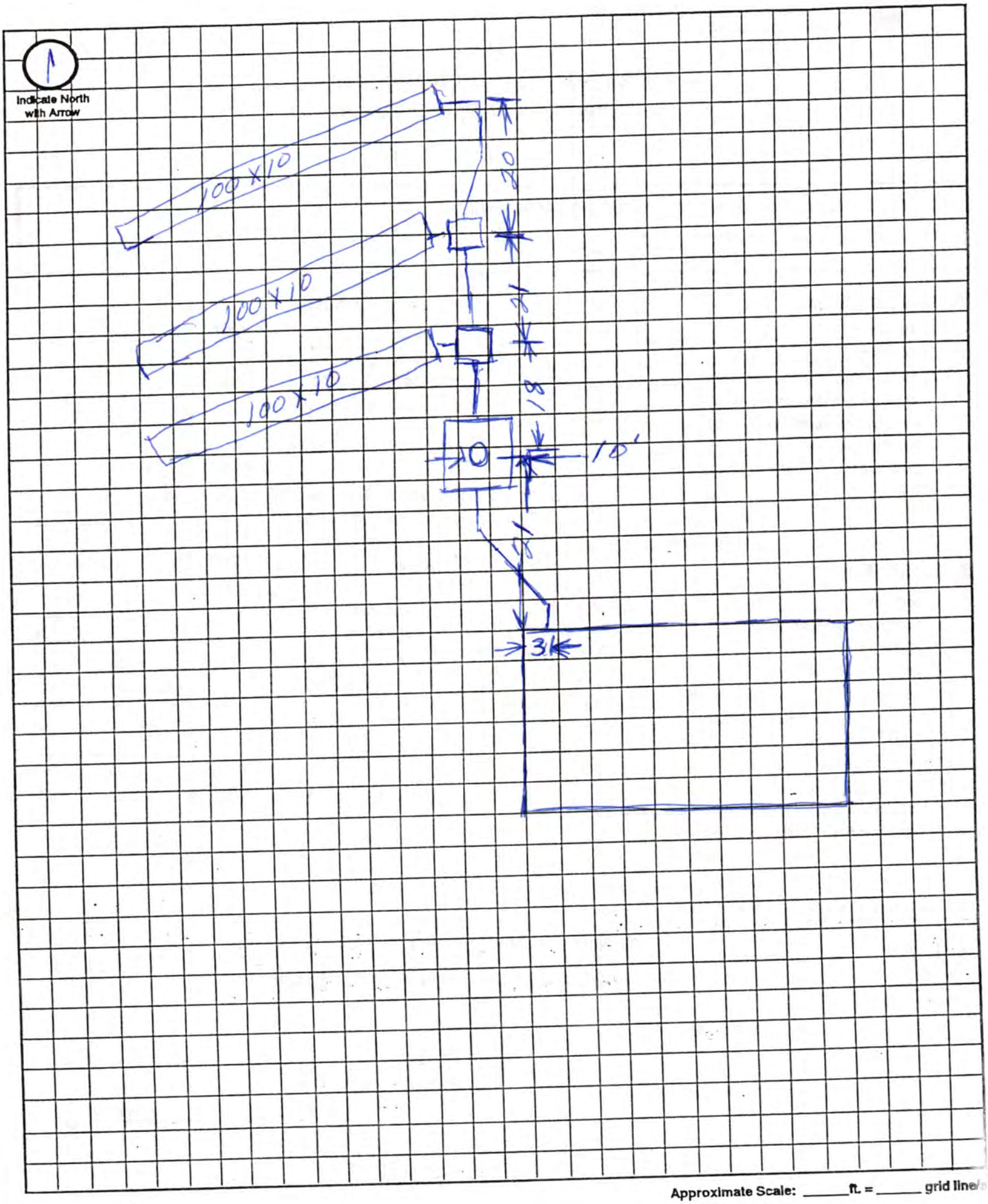
Indicate North with Arrow

Individual Sewage System Design (Example)



FORM 23-103 10-96

As Built Drawing



Approximate Scale: _____ ft. = _____ grid lines

Report of the
Geotechnical Investigation
For The
Rexroth Sewage Disposal System
8221 Dunrovin Road
Lincoln, Nebraska

Prepared By:
Geotechnical Services, Inc.
5701 North 58th Street
Lincoln, Nebraska 68507
(402) 466-8154

August 9, 2002
GSI Job No. 022135

Prepared For:
Mr. Steve Rexroth
4621 South 50th Street
Lincoln, Nebraska 68516

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CONCLUSIONS AND RECOMMENDATIONS 4

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APPENDIX B

BORING LOGS

APPENDIX C

LABORATORY TESTS

REPORT OF THE GEOTECHNICAL INVESTIGATION FOR THE REXROTH SEWAGE DISPOSAL SYSTEM 8221 DUNROVIN ROAD LINCOLN, NEBRASKA AUGUST 12, 2002 GSI JOB NO. 022135

INTRODUCTION

This report presents results of the geotechnical investigation performed for the Rexroth Sewage Disposal System. The site is located at 8221 Dunrovin Road in Lincoln, Lancaster County, Nebraska. This investigation was authorized on June 28th, 2002 with the acceptance of our proposal dated June 27th, 2002.

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

- Evaluating the engineering properties of the soils encountered.
- Recommending the requirements for a Sewage Disposal System.
- Presenting recommendations for earthwork and soils related construction with respect to the soils encountered.

The scope of this investigation did not include any environmental assessment for the presence of hazardous or toxic materials in the soil or ground water on or near this site. If contamination is suspected or is a concern, it is recommended that the scope of this study be expanded to include an environmental assessment. Any statements in this report regarding odors, discoloration, or suspicious conditions are strictly for the information of our client.

This report was prepared by the firm of Geotechnical Services, Inc. (GSI) under the supervision of a professional engineer registered in the State of Nebraska. 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 the Mr. Steve Rexroth for specific application to the proposed project, in accordance with generally accepted soil and foundation engineering practices.

FIELD WORK

The field investigation was conducted on July 15th, 2002. The exploratory program consisted of one test boring. Boring locations were determined by GSI according to a preliminary site plan provided by Mr. Rexroth.

The test boring were located in the field by the drilling crew by taping distances from landmarks shown on this preliminary plan. The location of the test boring should be considered accurate only to the degree implied by these methods.

The test boring was advanced to a depth of 15.0 feet below existing grade with a truck mounted drill rig using continuous flight augers. Borings remained open during drilling operations.

Soil samples were obtained at the sampling intervals shown on the Boring Logs (Appendix B). Recovered samples were extruded in the field, sealed in plastic containers, labeled, and protected for transportation to the laboratory for testing. Undisturbed samples, designated "U" samples, were obtained with thin-walled tube samplers, 3.0 inches outside diameter, hydraulically pushed in general accordance with ASTM D1587-83, "Thin Walled Tube Sampling of Soils."

An engineering technician prepared the field boring logs in general accordance with ASTM D2488-84, "Description of Soils (Visual-Manual Procedure)." Stratification lines represent the approximate boundary between soil types, and the transition may be gradual. Water level readings were made in the drill holes at times and under conditions stated on the Boring Logs.

LABORATORY TESTING

The field boring logs were reviewed to outline the depths, thickness, 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 content and density determinations, and Atterberg limits. All tests were conducted in general accordance with current ASTM or state-of-the-art test procedures. Laboratory test results are presented in Appendix C.

Moisture content and density determinations were used to determine the existing moisture-density state of the soils. Atterberg limits were used to determine plasticity characteristics and to classify the soils under the Unified Soils Classification System.

Based on the results of this testing program, the field logs were reviewed and supplemented as presented in Appendix B. This final log represent our interpretation of the field log, and reflect the additional information gained in the laboratory-testing program.

SITE CONDITIONS

This site lies in the loess-mantled region of Nebraska. A generalized subsurface profile for this region consists of wind deposited soils (Peorian and Loveland age Loess deposits) overlying Pleistocene deposits.

Erosion of the loess mantle has created the surface topography common to this area of Nebraska. To the depths investigated, the soils encountered on this site consist of Peorian Loess deposits and Glacial Till deposits.

SOIL CONDITIONS

Peorian Age Loess deposits was encountered in the test boring to a depth of 6.5 feet below existing grade. The Peorian Loess deposits were generally described as brown, slightly moist, and hard.

Laboratory tests on the recovered samples indicated the following properties; a moisture content of 14.1 percent of dry weight. Based on a liquid limit of 45 and a plasticity index of 22, the Peorian Loess deposits classified as Lean Clay (CL).

Glacial Till deposits were encountered in the test boring at a depth of 6.5 feet below existing grade to the depths investigated. The Glacial Till deposits were generally described as light brown, moist, and hard.

Laboratory tests on the recovered samples indicated the following properties; moisture contents of 20.2 and 23.2 percent of dry weight and dry densities of 98.2 and 107.2 pounds per cubic foot. Based on a liquid limit of 48 and a plasticity index of 25 the Glacial Till Deposits classified as Lean Clay (CL).

No groundwater was encountered in the Test Boring during or at the end of drilling. However, it must be noted that fluctuations in the level of the ground water may occur due to variations in rainfall, temperature, and other factors at the time measurements were made.

CONCLUSIONS AND RECOMMENDATIONS

Recommendations presented in the following sections of this report could be affected by the subsurface topography actually encountered at the site.

EVAPOTRANSPIRATION-SEEPAGE SYSTEM

An evapotranspiration-seepage system is used in areas where the existing site soils will not allow seepage to occur at a rate that is acceptable. At this site we estimate that more fluid will have to be removed by evapotranspiration than seepage. In determining the size of the system there are several factors that need to be evaluated:

1. The environment and climate. The ability of the ambient air to allow evaporation to occur is a factor in determining the size of the system.
2. The soil and vegetation cover is another factor in determining the size of the system. A loose organic cover good for establishing a good cover is essential. A grass with a deep root structure and thick growth is another important essential.
3. The size and gradation of the granular medium in the trenches. This material must be uniform enough to allow enough voids for the liquid, but tight enough to have good capillary action.

Our recommendations for the evapotranspiration-seepage system at this site are:

1. There should be three trenches a minimum of 100 feet in length, 10 feet in width and 3.5 feet in depth. An additional 6 inches of organic topsoil should be mounded over each trench to assure positive drainage of water away from the trenches.
2. If heavy equipment is used to excavate the trenches, that the bottom of the trenches be roughened to eliminate any compaction or sealing of the trench bottom caused by the equipment.
3. That the bottom six inches of the trench be filled with a very uniform sand or gravel. That the remaining portion of the trench be filled with a 47B type of sand-gravel or approved alternative. Gradations of material to be used should be submitted prior to construction.
4. Two distribution lines should be installed in each trench. The centerline of each distribution line should be 2.5 feet from the edge of the trench or a distance of 5.0 feet between the distribution lines. That one to two distribution boxes be used to make sure that there is equal flow into the three trenches.
5. No compactive effort should be used in the evapotranspiration-seepage bed during construction. No heavy equipment should be allowed to compact he soils in anyway.

6. Vegetation with a deep root structure and a requirement for a lot of moisture should be planted over the trenches. A landscape specialist may provide the best answer for your particular landscaping needs. As a minimum a grass such as brome, crown vetch, rye or fescue should be planted.
7. No watering of the site should occur except to establish the vegetation and then with moderation.

In Appendix A we have attached drawings to show a graphical presentation of our recommendations. It is also recommended that low-volume toilet stools be installed. Dishwashers and washers that recycle water should also be used.

GENERAL

In the event that any changes in the nature, design, or location of the system 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 based in part upon the data obtained from the one test boring. The nature and extent of variation between the borings may not become evident until construction. If variations then appear, it will be necessary to reevaluate the recommendations of this report.

It is recommended that the geotechnical engineer be provided the opportunity for a general review of the final design plans and specifications. This is to assure that earthwork and foundation recommendations have been properly interpreted and implemented in the design and specifications.

It is recommended that the geotechnical engineer be retained to provide continuous engineering services during construction of the foundation, excavation, and earthwork phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to modify recommendations in the event that subsurface conditions differ from those anticipated.

Respectfully submitted,
GEOTECHNICAL SERVICES, INC.

Prepared by,

REGISTERED PROFESSIONAL ENGINEER
MELVIN R. CERNY
E-4244
STATE OF NEBRASKA

Melvin R. Cerny, P.E.
Nebraska Reg. No. E-4244

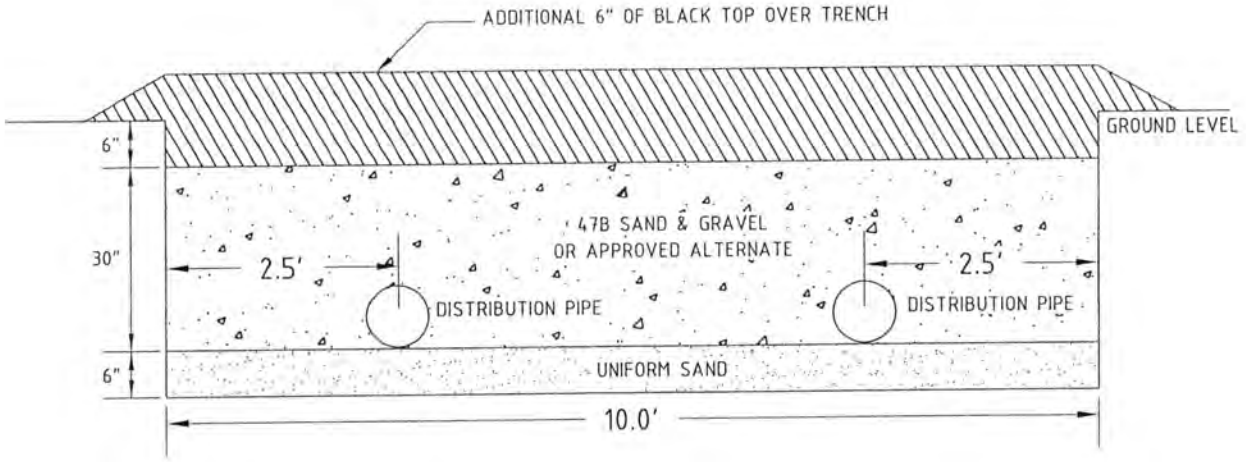
Reviewed by,

REGISTERED PROFESSIONAL ENGINEER
WILLIAM ARNESON
E-5883
STATE OF NEBRASKA

Wm. C. Arneson, P.E.
Nebraska Reg. No. E-5883

APPENDIX A

EVAPOTRANSPIRATION-SEEPAGE DRAWINGS



0 2

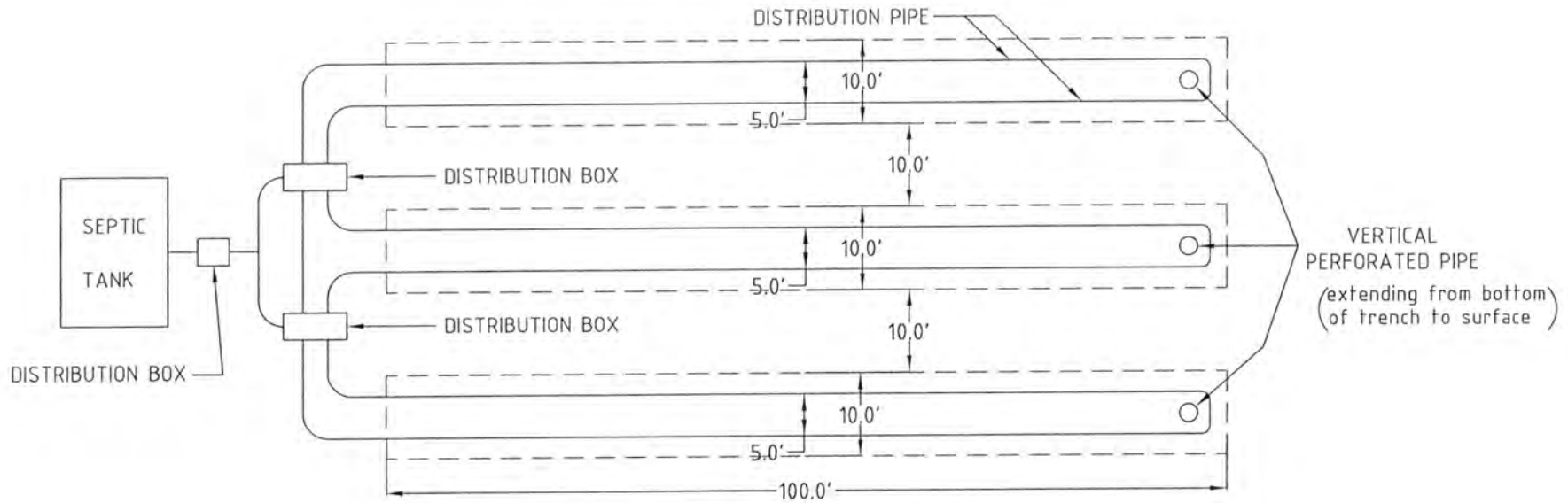
SCALE IN FEET

GSI
7050 S. 110th Street
Omaha, NE 68128-5716
Phone: (402) 339-6104
Fax: (402) 339-6297
gsinetwork.com

REXROTH SEWAGE DISPOSAL SYSTEM
8221 DUNROVIN ROAD
LINCOLN, NEBRASKA

TITLE

FIG #	1
PROJECT #:	022135
DATE:	8/9/02
DRAWN BY:	SCB
PROJ MANAGER:	MC



0 20

SCALE IN FEET

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gsinetwork.com

REXROTH SEWAGE DISPOSAL SYSTEM
8221 DUNROVIN ROAD
LINCOLN, NEBRASKA

TITLE

FIG #	2
PROJECT #:	022135
DATE:	8/9/02
DRAWN BY:	SCB
PROJ MANAGER:	MC

APPENDIX B

BORING LOG

DH-1

BORING LOG

DRILL HOLE NO.	LOCATION OF DRILL HOLE	ELEV.	DATUM	DRILLER	LOGGER
DH-1	SW Corner of Property. 20' NE of electric transformer & parallel to Dunrovin Road.			Able Monnarez	Christina Fritsche

WATER LEVEL OBSERVATIONS				TYPE OF SURFACE	DRILL RIG
WHILE DRILLING	END OF DRILLING	24 HOURS AFTER DRILLING	HOURS	Thick Grass	Mobile B-61
				DRILLING METHOD	TOTAL DEPTH
N.E.	N.E.			6" Continuous Flight Augers	15.0 ft.

DEP. FT	SAMPLE DATA: SAMPLE NO. & TYPE	"N" BLOWS /FT	% REC.	SOIL DESCRIPTION: COLOR	MOIST.	CONS.	GROUP NAME	GEOLOGIC DESCRIPTION AND OTHER REMARKS	LABORATORY DATA: % MC	DRY DENS pcf	q_u tsf	CLASS	DEP. FT
				Dk Br	Dry	Hard	L CL	Topsoil Zone					
				Brown	Slightly Moist	Hard	Lean Clay	Peorian Loess Deposit					
5	U-1		100					Root Structure & Rust Stains	14.1				5
				Light Brown	Moist	Hard	Lean Clay	Glacial Till					
10	U-2		85					Calcium deposits, Rust Stains & gravel	23.2	98.2			10
15	U-3		100						20.2	107.2			15
20								Bottom of Hole @ 15.0 ft.					20
25													25
30													30

Geotechnical Services Inc.

Project
Rexroth Sewage Disposal System

Location
8221 Dunrovin Road, Lincoln, Nebraska

Job No.	Date	Drill Hole No.
022135	July 15, 2002	DH-1

APPENDIX C

LABORATORY TESTS

Summary of Soil Test Report

SUMMARY OF SOIL TESTS

BORING NO.	SAMPLE NO.	SAMPLE DEPTH (ft.)	SAMPLE DIA. (in.)	MOISTURE CONTENT (%)	DENSITY WET (pcf)	DENSITY DRY (pcf)	VOID RATIO (e)	SAT. (%)	UNCONFINED COMPRESSION q_u (tsf)	UNCONFINED COMPRESSION STRAIN (%)	SOIL CLASSIFICATION ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	PASS #200 (%)		REMARKS
DH-1	U-1	3.5-5.0		14.1												
	U-2	8.5-10.0	2.87	23.2	120.9	98.2	0.716	87								
	U-3	13.5-15.0	2.87	20.2	128.8	107.2	0.572	95								

Geotechnical Services Inc.

PROJECT: Rexroth Sewage Disposal System

LOCATION: 8221 Dunrovin Road, Lincoln, Nebraska

JOB NO.: 022135

DATE: 8-6-02