TRI-COUNTY HEALTH DEPARTMENT

RECORD OF COMMUNICATION

Permit Number and/or Address of System:

9368 Lavendar Court

Permit No. 20008798

Notes[(indicate date, EHS, person contacted (indicate whether property owner, builder, installer, soils engineer, design engineer, etc.), and what was discussed and agreed upon]:

12/23 called & George Bain Bldr.; He will send a stamped copy & NEW DESIGN. J.K.

5/12/04 - talked to Logan Lamberty - told him we need engineer design before we can issue Cert. letter (sd)

5/27/04 - Logan brought in new design (sd) Logan took copy to Bldg. Dept. & homeowners copy (sd)

OWS INSPECTION REQUEST

PARTIAL (FINAL)

DATE OF CALL: 12-4-03 TIME: 12:20

DATE READY: 12-5-03 (AM)/PM

PERMIT # 2003-07-026944

DATE PERMIT EXPIRES: _____

PROPERTY ADDRESS: 9368 LAVENDAR CT

CALLERS NAME: MICHELLE

INSTALLING COMPANY: CLINE

PHONE # 720-635-1756

WERE CHAMBERS INSTALLED? TRENCHES/BED

OF CHAMBER UNITS INSTALLED: 80 W/SPLIT BEDS

ENGINEERED SYSTEM? (YES)/NO SQ FT _____

INSPECTION WAIVED? YES/NO

BY _____ DATE ____

AS-BUILT DRAWING OF SYSTEM INSTALLATION MUST BE (ON-SITE) OR RECEIVED BY TCHD BEFORE INSPECT WILL BE CONDUCTED. 1500 + 1250 GALS.

TRI-COUNTY HEALTH DEPARTMENT

RECORD OF COMMUNICATION

Permit Number and/or Address of System:

9368 Lavender Court

Notes[(indicate date, EHS, person contacted (indicate whether property owner, builder, installer, soils engineer, design engineer, etc.), and what was discussed and agreed upon]:

12-03-03-DR: Clive utilities called. Said two systems ~~had~~ / 10 trenches will not fit. Warren said he would except 2 beds of 80 panels versus 80 panels in trenches. Told me to call Clive Ut. Utilities they can do this and for them to contact Tim at the Eng co. to call Warren or both that this is okay. Tim needs to provide a letter to us. Warren will provide a memo to file. Warren said no new permit is needed.

12/12/03 The Eng. letter of approval that we received did not state the original design was changed from chamber trenches to 2 chamber fields and was approved by them (the Engineer). Called Eng. Talked to Jennifer. She will send another letter. T.K.

12-22-03 D. Hartzell and T. Williams, after consultation, requested a revised design be submitted by design engineer. 12/23/03 Talked to Eng. left message on Jim Thompsons voice mail to call TCHD about a new design being sent. 2-chambered beds 10 rows (5 rows per bd.) instead of 10 trenches of chambers. J.E. called

Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

Richard L. Vogt, M.D.
Executive Director

Date: 12/05/03

George Bain
6018 Saddlecreek Trail
Parker CO 80134

RE: Individual Sewage Disposal System located at:
9368 Lavender Court, Permit # 2003-07-026944

Upon reviewing our files of the above referenced septic system, it has come to our attention that we have not received:

- ✓ As-Built Drawing from System Installer approved by Engineer
- ✓ Final Approval Letter from System Engineer
- ___ Engineer's pump station design
- ___ Other: _____

Also need a letter from design Engineer approving the change from chamber trenches to 2 chamber beds.

The item(s) listed above must be completed and/or submitted prior to this Department giving final approval of your individual sewage disposal system installation.

If the ISDS is not approved for use by this Department, the file will reflect this and it may prevent the issuance of a Certificate of Occupancy or have an adverse effect on any future sale of this property.

If you have any questions concerning this letter, please call 303/663-7650

Sincerely,

John Klecker

Environmental Health Specialist
Tri-County Health Department

Test Pit Required
Applicant Notified
Yes _____ No _____

TEST PIT "WAIVER" WORKSHEET

Address of Proposed ISDS: _____

Engineer who submitted soils and percolation test: _____

If the system is engineered for the following conditions, a test pit may be waived:

1. When the average percolation rate is slower than one (1) inch in sixty (60) minutes or faster than one (1) inch in five (5) minutes.
2. Where the maximum seasonal level of the groundwater table is less than four (4) feet below the bottom of the proposed absorption system.
3. Where bedrock or Dawson sand exists less than four (4) feet below the bottom of the proposed absorption system
4. Where the ground slope is in excess of (20%) percent.

If the system is **not** engineered for reasons 1-4 above, the EHS **must** consider the following criteria to determine if a "test pit" is necessary. A "yes" answer to any question will require a test pit, except as noted on question #1.

1. Is one or more of the **individual** test hole percolation rates greater than 60 minutes per inch, but the **average** percolation rate (for all test holes) is less than 60 minutes per inch?

Yes _____ No _____

For example: Hole #1: 24 mpi; Hole #2: 16 mpi; Hole #3 90 mpi; Average: 43

If the owner agrees to have the system engineered for the highest percolation rate, the test pit can be waived.

2. Did the engineer answer "yes" to the question; "Did water remain in the hole after the overnight soaking period", and the average percolation rate is less than 60 mpi?

Yes _____ No _____

3. This question only applies to soils classified as SW (sand, well graded), SP (sand, poorly graded). Did the engineer report a blow count of 20/12 (twenty blows to drive the sampler 12 inches) or more, but does not indicate that bedrock is present?

Yes _____ No _____

4. Did the engineer indicate that bedrock or groundwater are present within 8 feet of the surface?

Yes _____ No _____

5. Did the engineer indicate that the soils are "wet" and not indicate that groundwater is present?

Yes _____ No _____

TEST PIT REQUIRED? YES _____ NO _____

EHS: _____ EHS Number: _____ Date: _____

Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

CERTIFICATION OF AN ONSITE WASTEWATER SYSTEM

This certifies that the Onsite Wastewater System installed at

Property Location: 9368 LAVENDER COURT
PARKER, CO

Legal Description: Lot/Block: Lot 38 Block

Subdivision SPIRIT GULCH AT PARKER County: Douglas

SUMMARY OF INFORMATION

The permit number for the system is: 20008798

The soils and percolation test was performed by: COLORADO ENGINEERING GEOTECHNICAL GR

The design engineer for the system was: COLORADO ENGINEERING GEOTECHNICAL GROUP

The system was installed by: CLINE UTILITY CONTRACTORS INC

The system consists of:

1440 square foot absorption area
80 Chambers
1500 gallon Treatment tank
1250 gallon Dosing tank

The system is sized for 5 bedrooms
If additional bedrooms are added, an expansion may be necessary.

Maintenance Requirements:

The septic tank must be pumped and inspected every 4 years.

If the septic or dosing tank is equipped with an effluent filter, the filter must be cleaned annually.

If the system has alternating beds or is a drip irrigation system, beds or zones must be rotated annually.

Additional maintenance requirements may apply. Refer to the operations manual or the engineer's report for specific requirements.

Signature Donald K. Russell Date: 5-27-04
DONALD K. RUSSELL

Colorado Engineering
& Geotechnical Group, Inc.

CASTLE ROCK
2931 North U S Hwy 85
Castle Rock, CO 80104
Phone. (303) 688-9475
Fax. (303) 814-2454

MONUMENT
19375 Beacon Lite Road
PO Box 1298
Monument, CO 80132
Phone (719) 488-2145
Fax: (719) 488-2895

WOODLAND PARK
321 West Henrietta
PO Box 5816
Woodland Park, CO 80866
Phone (719) 687-6077
Fax: (719) 687-6151

Serving Southern Colorado Since 1995

December 9, 2003
Job Number: 02-5682
Revised Date: December 16, 2003

PAUL R. BRYANT, P.E.
CIVIL ENGINEER

ERIK D. MITCHELL, P.E.
CIVIL ENGINEER

JAMES E. THOMPSON, II.
VICE PRESIDENT

Tri-County Health Department
101 3rd St
Castle Rock, CO 80104

Re: Final Septic Inspection
9368 Lavender Court
Douglas County Colorado

Dear Tri-County Health Department,

We inspected the installation of the engineered septic system at the above address at one point during its construction as well as the finished product. It has been installed in accordance with the engineered plans and specifications. This includes having the proper size septic tank, the proper grade on all pipes and sections of the absorption field, the correct depth, and the backfill around and over the field. Due to lot size restraints the size and configuration of the absorption field was changed to a bed system from a trench system which was on the original design.

At the time of inspection the backfill was extremely soft; future settlement may require regrading. Erosion of the backfill may occur until a normal vegetative cover is established; corrective action is the responsibility of the owner/builder.

The attached as-built drawings appear to be an adequate depiction of onsite conditions.

The system is ready for final certification from the Tri County Department of Health & Environment. Please call me if you have any questions.

Sincerely,

COLORADO REGISTERED P. R. BRYANT 29932 16DEC03 PROFESSIONAL ENGINEER

Paul R. Bryant, P.E.

PRB:jdl

- SOIL TESTING & ANALYSIS
- PERCOLATION REPORTS
- FOUNDATION DESIGN
- SEPTIC DESIGN
- STRUCTURAL DESIGN
- STRUCTURAL CODE PLAN CHECK
- RESIDENTIAL DESIGN
- HOME INSPECTIONS
- PROFESSIONAL CONSULTATION
- EXPERT TESTIMONY
- GEO-HAZARD SURVEYS
- DRAINAGE REPORTS

SERVING:

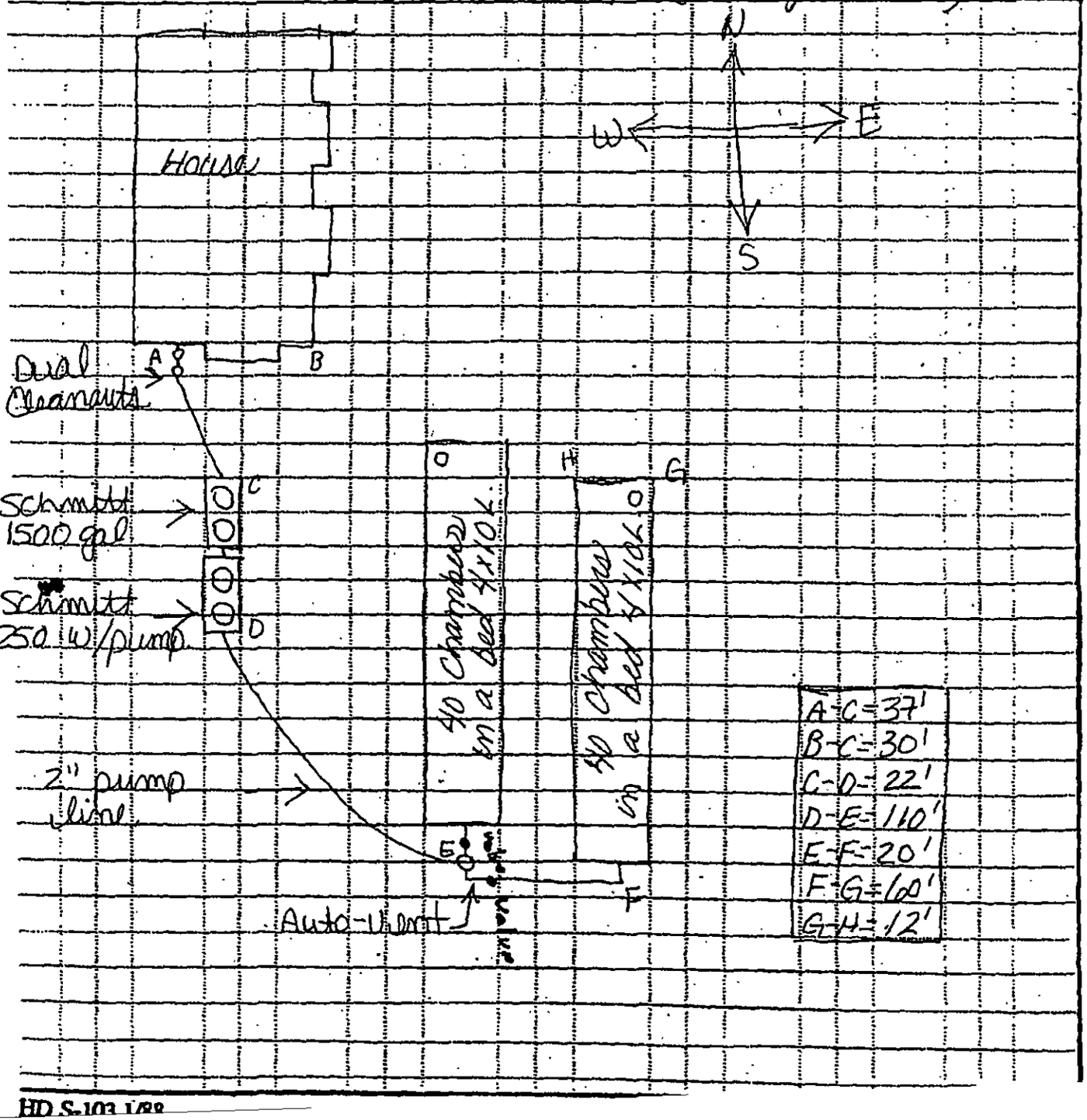
- DOUGLAS COUNTY
- EL PASO COUNTY
- FREMONT COUNTY
- PARK COUNTY
- TELLER COUNTY
- SUMMIT COUNTY

Colorado Eng #02-5682
Letter Dated 12/4/03

Onsite System
As-Built
Drawing

Property Address 9368 Lavender Ct.
Permit # 2003-07-026944
Date System Completed 12/4/03
Installer's Name Cline Utility Contractors Inc
Installer's License # 2003-6000-2876
Installer's Address and Phone P.O. Box 792
Franktown, CO 80116 303 663-6565

REL Construction - (George Bain)



HD S-103 1/88

FINAL VISIT WORKSHEET

Permit Number: 2003-07-026944 Date Printed: March 24, 2003

Property Location: *9368 Lavender Court Lot 38*
County: Douglas
Owner: *George Bain*
System Installer#: Clint Whittier (This will appear on the Certification Letter)
System sized for 5 Bedrooms

SITE INFORMATION:

Keys for completing information on installed tanks:
Usage (D)osing (T)reatment (V)ault

Tank Type: (C)oncrete (PT)Polyethelene (FG)Fiber Glass

TANK INFORMATION

Number of Tanks Installed: 2
Tank Size in gallons and Usage:

Tank 1:
Size 1500 Use (D) (T) (V)
Type (C) (PT) (FG) T's or Baffles (T) (B) Effluent Screen Y N

Tank 2:
Size 1250 Use (D) (T) (V)
Type (C) (PT) (FG) T's or Baffles (T) (B) Effluent Screen Y N

Tank 3:
Size _____ Use (D) (T) (V)
Type (C) (PT) (FG) T's or Baffles (T) (B) Effluent Screen Y N

Secondary Treatment System Y N If yes, type: (circle one)
Sand Filter (SF) Constructed Wetlands (CW) Trickling Filter (TF)
Aerobic System (AS) Recirculating Sand Filter (RSF) Other (OT)

Final Treatment Type:
Bed (BD) Mound (MD) Trench (T)
ET (ET) Pond (PD) Sand Filter (SF)
Bed (Chambers) (BD-CH) Trench SB-2 (TR-SB) Drip Irrigation (DR)
Trench (Chambers) (TR-CH) Other (OT)
Area Size (s.f.) 1440 If Chambers Used, # 80 ET Lined Y N

Method of Waste Water Application:
Dosed w/Pump (DP) Dosed w/Siphon (DS) Gravity (GR)
Uniformly Dosed w/ Pump (UDP) Uniformly Dosed w/ Siphon (UDS)

Continued on Next Page

FINAL VISIT WORKSHEET

Permit Number: 2003-07-026944 Date Printed: March 24, 2003

RECORD OF FINAL VISITS:

(It is important to record any extra visits for billing purposes)

Visit 1 Date 12/5/03 By (EHS #) 1555

Visit 2 Date _____ By (EHS #) _____

Visit 3 Date _____ By (EHS #) _____

Visit 4 Date _____ By (EHS #) _____

System Engineer Inspection (Y) N Date _____

Design Engineer # Colo Eng. & Geotechnical Group Inc (This will appear on Certification Letter)

FINAL SITE VISIT COMMENTS:

12-03-03 - PR = See Record of Communications.

Need Approved AS-Built

Need Eng. letter of Approval

12/5/03 inspected J.K. Could not see in pump chamber. Will let up to Engineer to inspect.

Final Approval Given (Y) N By (EHS #) 813

Also Need letter from Jim of Colo Eng. changing from trenches to 2 beds. (approving this change)

Permit Number: 20008798

Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

Permit to Construct
An Onsite Wastewater System
Tri-County Health Department
7000 East Belleview Avenue #301
Greenwood Village, CO 80111

Owner: GEORGE BAIN

Property Location: 9368 LAVENDER COURT

Legal Description: Lot/Block: Lot 38 Block

County: Douglas **Old Reference:** 1026944

System Requirements:

Design Requirements:	Trench System:	Bed System:
Minimum Disposal Area (in s.f.)	**Engineered System**	
Number of Chambers (except EQ36)		
Number of Chambers EQ36 Only		
Number of Chambers "Quick 4" Only		

Max Depth of Disposal Area (Bed or Trench) Inches

Min Depth of Disposal Area (Bed or Trench) Inches

Special Conditions

INSTALL A SYSTEM PER COL. ENG. DESIGN 02-5682R-1 DATED 2-27-03 . IF THE INSTALLER ENCOUNTERS SOILS NEED INDICATED ON THE SOILS TESTS STOP WORK & CONTACT TCHD

A Permit to ***Construct*** shall expire ***One Year***
from the date of issuance unless extended to a fixed date upon request by the Applicant and approved by the Tri-County Health Department.

This Permit Expires: 03/24/2004

Issued By: Don Russell _____, EHS

Reviewed by: _____

Tri-County Health Department on: 5/27/04 (Date)

OWNER MUST MAKE SURE THAT HIS/HER ENTIRE WASTE DISPOSAL SYSTEM REMAINS OPEN FOR INSPECTION UNTIL IT HAS RECEIVED APPROVAL BY TRI-COUNTY HEALTH DEPARTMENT. TRI-COUNTY HEALTH DEPARTMENT CANNOT ASSUME RESPONSIBLITY IN CASE OF FAILURE OR INADEQUACY OF A WASTE DISPOSAL SYSTEM BEYOND CONSULTING IN GOOD FAITH WITH THE PROPERTY OWNER.

Fee Paid: $300.00 **Check Number:** 2946

Received By: Becky Dutton 03/05/2003

☐ Owner ☐ Building Department ☐ Installer

Tri-County Health Department

Serving Adams, Arapahoe and Douglas Counties

Richard L. Vogt, M.D.
Executive Director

Permit # 2003-07-026944

PERMIT TO CONSTRUCT
AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

Tri-County Health Department
7000 East Belleview Avenue Suite 301
Englewood, Colorado 80111

Owner *GEORGE BAIN*
Location: *9368 Lavender Court Parker CO 80134*
Subdivision: ***Spirit Gulch At Parker Ridge*** *County:* ***Douglas***

==========

Design Requirements:

Install system per specifications of the Design Engineer

Special Conditions
INSTALL A SYSTEM PER COL. ENG. DESIGN 02-3682 DATED 2-27-03 IF THE INSTALLER ENCOUNTERS SOILS NEED INDICATED ON THE SOILS TESTS STOP WORK & CONTACT TCHD

==========

A Permit to *CONSTRUCT* **shall expire** *ONE YEAR* **from the date of issuance unless extended to a fixed date upon request by the Applicant and approved by the Tri-County Health Department.**

This Permit Expires: *03/24/2004*
Issued by: Russell, Donald K., Donald K. Russell **EHS**

Reviewed by: Donna Metz-Bynum
Tri-County Health Department on *March 24, 2003*

OWNER MUST MAKE SURE THAT HIS/HER ENTIRE WASTE DISPOSAL SYSTEM REMAINS OPEN FOR INSPECTION UNTIL IT HAS RECEIVED APPROVAL BY TRI-COUNTY HEALTH DEPARTMENT. TRI-COUNTY HEALTH DEPARTMENT CANNOT ASSUME RESPONSIBILITY IN CASE OF FAILURE OR INADEQUACY OF A WASTE DISPOSAL SYSTEM BEYOND CONSULTING IN GOOD FAITH WITH THE PROPERTY OWNER.

Permit Fee: 300.00 Payment Method **Check #2946**
Received By: Dutton, Elizabeth on 03/05/2003
( )Owner Copy ( ) Bldg. Dept. Copy ( ) Installer Copy ( ) H.D.

101 Third Street◆Castle Rock, Colorado 80104-2428
303-663-7650◆FAX 303-688-8870

SITE VISIT WORKSHEET

Permit Number: 2003-07-026944 Date Printed: March 5, 2003

Property Location: *9368 Lavender Court Lot 38*
County: Douglas
Owner: *George Bain*

SITE INFORMATION AS REPORTED BY ENGINEER:

PERC RATE:
Holes:

One 9.6 Two 11.7 Three 11.4 Four____ Five____ Six____ Avg Rate 10.6 Sizing Rate 20

CIRCLE ONE:

Bedrock Encountered? Yes (No) If Yes, Type____ Depth to Bedrock (ft) _____

Ground Water Encountered? Yes (No) If Yes, Depth to Groundwater (ft)_____

Ground Slope at Absorption Area (%) 4-6% SE

Max depth of disposal area (in) 35" (not to exceed depth of percolation test holes)

Min depth of disposal area (in) 22"

SOIL CLASSIFICATION: Most prohibitive soil below bottom of bed (circle one)

CL Clay (low-med plasticity)	**CH** Clay (high plasticity)	**MH** Silt
ML Silt	**ML-CL** Silt & Clay	**SC** Clayey Sand
SM-SC Silty Clayey Sand	**SM** Silty Sand	**SW** Sand, Well Graded
SP Sand, Poorly Graded	**GC** Clayey Gravel	**GM-GC** Silty Clayey Gravel
GM Silty Gravel	**BR** Bedrock	**GW** Gravel, Well Graded

FIELD OBSERVATIONS: Test Pit Waived (Yes) No See Comments
Field Observations Consistent with Engineer's Data: Yes (No)
IF NO, complete below (circle one)

Bedrock Encountered? Yes (No) If Yes, Type____ Depth to Bedrock (ft) _____

Ground Water Encountered? Yes (No) If Yes, Depth to Groundwater (ft)_____

Ground Slope at Absorption Area (%)_____

Max depth of disposal area (in) 35" (not to exceed depth of percolation test holes)

Min depth of disposal area (in) 22"

SOIL CLASSIFICATION:

CL Clay (low-med plasticity)	**CH** Clay (high plasticity)	**MH** Silt
ML Silt	**ML-CL** Silt & Clay	**SC** Clayey Sand
SM-SC Silty Clayey Sand	**SM** Silty Sand	**SW** Sand, Well Graded
SP Sand, Poorly Graded	**GC** Clayey Gravel	**GM-GC** Silty Clayey Gravel
GM Silty Gravel	**BR** Bedrock	**GW** Gravel, Well Graded

CONTINUED ON THE NEXT PAGE

SITE VISIT WORKSHEET

Permit Number: 2003-07-026944 Date Printed: March 5, 2003

RECORD OF SITE VISITS:

(It is important to record any extra visits for billing purposes)

Visit 1 Date 3-14-03 By (EHS #) 813

Visit 2 Date _____ By (EHS #) _____

Visit 3 Date _____ By (EHS #) _____

Visit 4 Date _____ By (EHS #) _____

SPECIAL CONDITIONS

Install a ~~Standard~~ System per Col. Eng design 02-5682 dated 2-21-03. ~~System over area of perc~~

If the installer encounters soils not indicated on the soils tests stop work and contact TCHD

COMMENTS (Note - Cherry Creek basin drainage area)

The perc was 10.6 in MH Soils with 65% passing the 200 sieve. See Atterberg limits. Sent Lab to Warren Brown. He questioned these results. Warren had us pre soak holes on 03-13-03 and Warren Brown and Don Russell went out on 03-14-03 and did perc. Perc holes were in the shallow range possibly from shelling. Prof. Lab hole was approx 5' deep at the time. These perc are addressed in the Lab as 25 perc rate. Warren recommends sizing for a

Signature TCHD Inspector: _____ Date _____

60 perc rate, however if they can do a 20 sizing rate. - design for system from Col Eng is for 80 panels pumped. (already designed. - This would be a 60 perc rate.

PERMIT # 2003-07-1026944

TRI-COUNTY HEALTH DEPARTMENT

Serving Adams, Arapahoe and Douglas Counties

APPLICATION TO

☑ INSTALL(255) ☐ REPAIR(256) ☐ EXPAND(256)

$300 $250 $250

AN INDIVIDUAL SEWAGE DISPOSAL SYSTEM

ADDRESS OF PROPERTY SERVED BY PROPOSED SYSTEM:

9368 Lavender Court (Street Address) Parker (City)

80134 (Zip Code) Douglas (County)

Parcel ____ 1/4 Sec____1/4 Sec____ Section____ Township____ Range _____ Lot 38 Block _____

Legal Description (if no street address)

Parker Ridge (Subdivision Name) _____ (Filing (if applicable))

If GPS Information Available/Obtained: Longitude ___ ___ ___ Latitude ___ ___ ___ Elevation_____

Property Owner:
Name George Bain
Address 6018 Saddle Creek Trail
City, State Parker, Co
Zip 80134 Phone 303-840-0500

Applicant: cell 303-818-9977
Name George Bain
Address 6018 Saddle Creek Trail
City, State Parker, Co
Zip 80134 Phone 303-840-0500

Systems Contractor: _____ TCHD Use Only: License # _____

Soils/Percolation Test Engineer Colorado Engineering Job # _____

TCHD Use Only: FSE # _____

Design Engineer (if applicable Colorado Engineering Job # _____

TCHD Use Only: FSE # _____

Is this to be an Engineered System? ☑Yes ☐No

Lot Size: 1.5 A Is lot marked and are perc holes staked? ☑Yes ☐No

PROPOSED FACILITY:

☑ Single Family (SF) ☐ Multi-Family (MF) ☐ Commercial (CM) ☐ Other (OT)_____

WATER SUPPLY:

On Site: ☐Yes ☐No Community Water ☑Yes ☐No If Yes, Supplier Parker

Continued on back

PERMIT #_____

SINGLE FAMILY RESIDENTIAL GENERAL INFORMATION:

Number of Bedrooms 5 Basement: ☑Full (F) ☑Walkout(W) ☐Partial(P) ☐None(N)

Basement Plumbed: ☑Yes ☐No

Are Additional Bedrooms Planned? ☐Yes ☑No Are the premises within 400 ft. of a sewer line? ☐Yes ☑No

Is property within boundaries of a sewer district? ☐Yes ☐No

If Yes, name of sewer district_____

COMMERCIAL GENERAL INFORMATION:

Type of Business:_____

TCHD Use Only: SIC Code_____

Number of Employees_____

Design Flow > 3,000 Gallons/Day ☐Yes ☐No

If Yes, has Site Approval been given from CDPHE? ☐Yes ☐No

(Note: Permit cannot be issued until site approval is given from CDPHE)

Floor Drains ☐Yes ☐No

EPA Shallow Injection Well Inventory Request Form Completed ☐Yes ☐No

---

Date Paid: 3-5-03 Received By: bA

Payment Type: ☐ Cash

☑ Check (# 2946)

☐ Charge

☐ Other _____

Amount Paid $ 300.00

Applicant's Name George BAIN
Please Print

Applicant's Signature _____ Date 02/10/03

☐ Aurora 400 E. 14th Place, Ste. 309 Aurora, CO 80011 303-341-9370	☐ Castle Rock 101 3rd Street Castle Rock, CO 80104 303-663-7650	☐ Commerce City 4201 E. 72nd Avenue, Ste. D Commerce City, CO 80022 303-288-6816	☐ Englewood 4857 S. Broadway Englewood, CO 80110 303-761-1340

TEST PIT CONFIRMATION OF ENGINEERED DATA

Permit Number: **2003-07-026944** Date Printed: March 17, 2003

Property Location: ***9368 Lavender Court***
Owner: ***George Bain***

Conditions Noted:
(Circle Y or N)

1.	Encountered bedrock not identified in soils report	Y	N
2.	Encountered bedrock shallower than indicated in soils report	Y	N
3.	Encountered groundwater not identified in soils report	Y	N
4.	Encountered groundwater shallower than indicated in soils report	Y	N
5.	Percolation rate too fast for soils	(Y)	N
6.	Percolation rate too slow for soils	Y	N
7.	Percolation test made at improper depth	Y	N
8.	Soils misclassified	Y	N
9.	Engineer notified to re-evaluate	Y	N
10.	Other_______________		

===

Resolution:

(Circle the Number Preceding the Response)

1. Property owner told engineer design is required, per Regulation-engineer design submitted.
2. Property owner advised to get engineer design-owner accepts-design submitted
3. Property owner advised to get engineer design-owner rejects. Owner advised to install lager system-owner agrees. Notification and "hold harmless" letter sent and signed copy received by Department.
4. Property owner advised to get engineer design-owner rejects. Owner advised to install larger system-owner rejects. Notification and "hold harmless" letter sent and signed copy received by Department.
5. Property owner told engineer design is not required
6. Property owner advised to install larger system-owner accepts
7. Property owner advised to install larger system-owner rejects - notification and "hold harmless" letter sent and copy received by Department
8. System sized based on original soils report information
9. (circled) Other System being installed as designed by ~~Geo-technical~~ Geol. Eng.

9368 Covered Ct. 3/14/03

Perc Test by Warren Brown & Don Russell - Haddle 4 bd

	Time	Depth to Water	Drop	Rate PH
#1	10:04	5 1/2	—	
	10:34	~~8 3/4 OK~~	4 1/4	
	11:04	12	2 1/4	
	11:34	14	2	
	12:04	15	1	30
				Uphill
#2	10:03	4 1/2"	—	
	10:04	~~8 1/2~~ 7 1/4	2 3/4	
	11:04	9	1 3/4	
	11:34	10	1	
	12:04	11	1	30
				Downhill
#3	10:04	4 7/8"	—	
	10:34	10	5 1/8"	
	11:04	13	3"	
	11:34	15	2"	
	12:04	17	2"	15

Colorado Engineering
& Geotechnical Group, Inc.

CASTLE ROCK
2931 North U.S. Hwy 85
Castle Rock, CO 80109
Phone: (303) 688-9475
Fax: (303) 814-2454

MONUMENT
19375 Beacon Lite Road
PO Box 1298
Monument, CO 80132
Phone: (719) 488-2145
Fax: (719) 488-2895

WOODLAND PARK
321 West Henrietta
PO Box 5816
Woodland Park, CO 80866
Phone: (719) 687-6077
Fax: (719) 687-6151

Serving Colorado Since 1995

PAUL R. BRYANT, P.E.
CIVIL ENGINEER

ERIK D. MITCHELL, P.E.
CIVIL ENGINEER

JAMES E. THOMPSON, II.
VICE PRESIDENT

March 4, 2003
Job Number: 02-5682-T1

George Bain
6018 Saddlecreek Trail
Parker, Colorado 80134

Re: Atterberg Limits, Lot 38, Spirit Gulch, Douglas County Colorado

To Whom It May Concern:

The Atterberg Limits for the above referenced site are as follows:

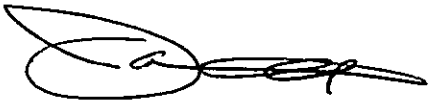
Liquid Limit: 65.5

Plastic Limit: 38.5

Plasticity Index Ip: 27

If you have any questions regarding this matter, please feel free to contact our office.

Sincerely,

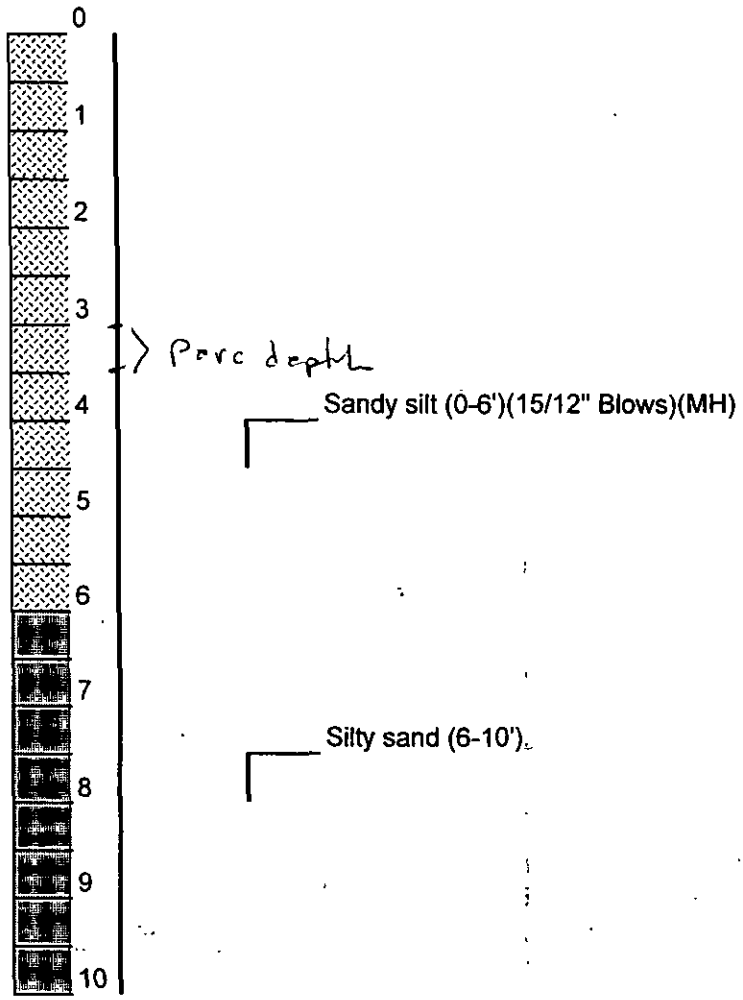


James E. Thompson

Profile Hole Information (Cont.)

(Soils must be classified using Unified System ASTM D2487)

Profile Hole Log



Certification

I certify that the above information is correct and complete to the best of my knowledge and that all tests were performed in accordance with the provisions of Tri-County Health Department Regulation I-96 by myself or under my supervision.

Original Signature

25 Feb 03
Date

Colorado Engineering & Geotechnical Group, Inc.
Company Name

2931 N. US Highway 85, Castle Rock, CO
Address

(303) 688-9475
Phone

COLORADO REGISTERED
JIL R. BRYANT
29932
PROFESSIONAL ENGINEER
Original Seal

#02-5682 T1

TRI-COUNTY HEALTH DEPARTMENT

Percolation Test and Soils Data Form

Property Address _____

Legal Description Lot 38 Spirit Gulch

Property Owner:

Name George Bain

Address 6018 Saddlecreek Trail, Parker, CO 80134

Phone 303-841-1744

Note:

* Percolation Test Form, Site Plan and Grain Size Distribution Curve of the sample must be submitted with this form.

* For all lots <5 acres the site plan must included the entire lot. Test locations must be accurately tied to lot corners or other permanent markers.

Saturation and Swelling

* Smeared surfaces removed: Yes X No

* Sand and gravel added: Yes No X

* Date and time presoak water added: 02/12/03 9:00

* Amount of presoak water added: 5 gallons

* Date and time perc test is started: 02/13/03 10:30

* Did water remain in holes after overnight swelling period:

Hole 1	Yes	No X
Hole 2	Yes	No X
Hole 3	Yes	No X

Percolation Rate Measurement

Percolation Rate (min./in.)	Hole 1	8.6
	Hole 2	11.7
	Hole 3	11.4
	Average	10.6

Groundwater:

* Encountered @ NONE

* Estimated depth to maximum seasonal water table if not encountered in profile: 10+

* Is area believed to be subject to seasonal fluctuations which could result in a seasonal water table within 8' of surface?
Yes No X

Slope determination in absorption area:

4-6 % to the SE (Direction)

Bedrock:

* Encountered @ NONE

* Estimated depth if not encountered in profile: 10+

* Type of Bedrock: _____ Sandstone
_____ Claystone
_____ Siltstone

* Is bedrock fractured or weathered?
Yes No

TRI-COUNTY HEALTH DEPARTMENT

Percolation Test Result Form

Hole No.	Hole Depth (in.)	Length of Interval (min.)	Water Depth at Start of Interval (in.)	Water Depth at End of Interval (in.)	Drop in Water Level (in.)	Percolation Rate at Final Interval (min./in.)
1	36	30	12 1/4	7 5/16	4 15/16	
		30	12	7 13/16	4 3/16	
		30	11 1/2	7 1/2	4	
		30	11 7/8	8	3 7/8	
		30	11 15/16	8 3/16	3 3/4	
		30	12 1/8	8 9/16	3 9/16	
		30	12	8 1/2	3 1/2	
		30	11 13/16	8 5/16	3 1/2	8.6

* Field Notes shall be recorded on this form or in this format; typed copies of field records may be submitted on this form.

* A four hour test must be conducted unless (a) water remains in the hole after the presoak in which case one 30 min. interval is sufficient, (b) the first 6" of water seeps away in <30 minutes in which case a one hour test of 6 - 10minute intervals may be used, (c) the test is being conducted in sand in which case a one hour test of 6 - 10 minute intervals may be used, (d) three successive water level drops do not vary by more than 1/16 inch in which case a two hour test may be conducted.

TRI-COUNTY HEALTH DEPARTMENT

Percolation Test Result Form

Hole No.	Hole Depth (in.)	Length of Interval (min.)	Water Depth at Start of Interval (in.)	Water Depth at End of Interval (in.)	Drop in Water Level (in.)	Percolation Rate at Final Interval (min./in.)
2	38	30	12	8	4	
		30	12	8 3/8	3 5/8	
		30	12 1/8	9	3 1/8	
		30	11 15/16	9 1/4	2 11/16	
		30	11 15/16	9 5/16	2 5/8	
		30	11 7/8	9 1/8	2 3/4	
		30	12	9 3/8	2 5/8	
		30	12 1/8	9 9/16	2 9/16	11.7

* Field Notes shall be recorded on this form or in this format; typed copies of field records may be submitted on this form.

* A four hour test must be conducted unless (a) water remains in the hole after the presoak in which case one 30 min. interval is sufficient, (b) the first 6" of water seeps away in <30 minutes in which case a one hour test of 6 - 10minute intervals may be used, (c) the test is being conducted in sand in which case a one hour test of 6 - 10 minute intervals may be used, (d) three successive water level drops do not vary by more than 1/16 inch in which case a two hour test may be conducted.

TRI-COUNTY HEALTH DEPARTMENT

Percolation Test Result Form

Hole No.	Hole Depth (in.)	Length of Interval (min.)	Water Depth at Start of Interval (in.)	Water Depth at End of Interval (in.)	Drop in Water Level (in.)	Percolation Rate at Final Interval (min./in.)
3	41	30	12 1/8	7 3/4	4 3/8	
		30	12 1/2	9	3 1/2	
		30	12 3/8	9 3/8	3	
		30	12 3/16	9 3/8	2 13/16	
		30	12	9 5/16	2 11/16	
		30	12 3/16	9 7/16	2 3/4	
		30	11 7/8	9 1/4	2 5/8	
		30	12	9 3/8	2 5/8	11.4

* Field Notes shall be recorded on this form or in this format; typed copies of field records may be submitted on this form.

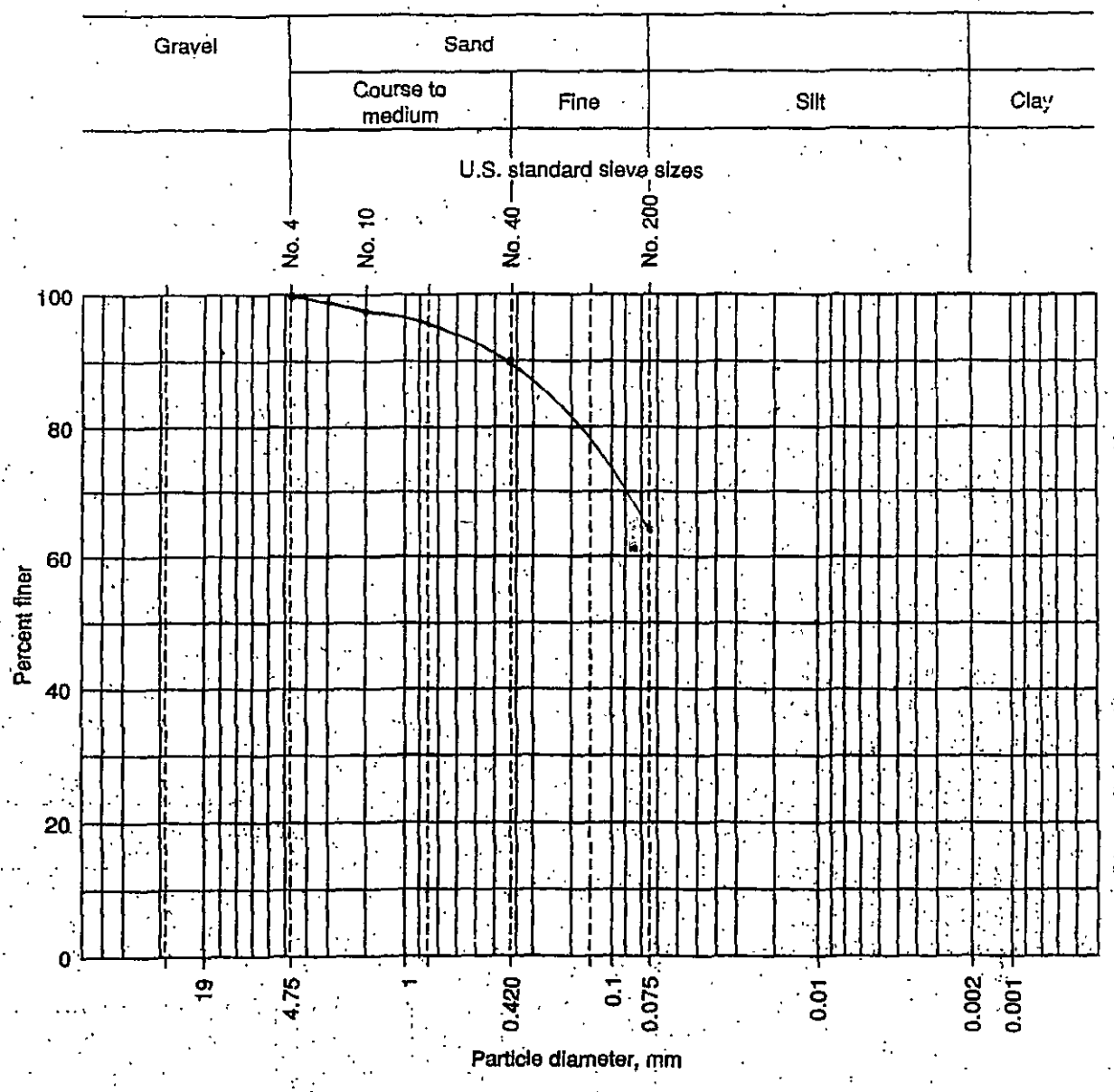
* A four hour test must be conducted unless (a) water remains in the hole after the presoak in which case one 30 min. interval is sufficient, (b) the first 6" of water seeps away in <30 minutes in which case a one hour test of 6 - 10minute intervals may be used, (c) the test is being conducted in sand in which case a one hour test of 6 - 10 minute intervals may be used, (d) three successive water level drops do not vary by more than 1/16 inch in which case a two hour test may be conducted.

Colorado Engineering
& Geotechnical Group, Inc.

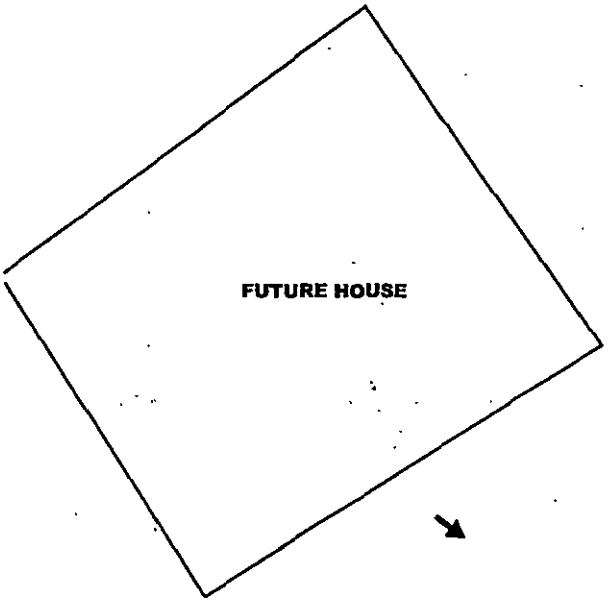
2931 N. US HIGHWAY 85
CASTLE ROCK, COLORADO 80104
(303) 688-9475 OFFICE
(303) 814-2454 FAX

PROPERTY OWNER/CLIENT: George Bain

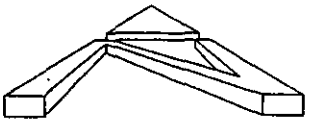
JOB #: 02-5682 T1



LAVENDER COURT



FROM	TO	DISTANCE	BEARING
S.E.P.C.	PROFILE	92'	N86W
PROFILE	P-1	4'	N32E
PROFILE	P-2	45'	S52W
PROFILE	P-3	32'	N54E



0 10 20 30 40 50

GRAPHIC SCALE IN FEET

SCALE: 1" = 50'

SITE PLAN

OWNER/BUILDER: **GEORGE BAIN** JOB #: **02-5682**

JOB ADDRESS: **LOT 38, SPIRIT GULCH**

Colorado Engineering & Geotechnical Group, Inc.

CASTLE ROCK OFFICE

2931 N. HWY 85
CASTLE ROCK, CO 80109
(303) 688-9475

FIGURE 1

NOTES, COMMENTS AND GENERAL SPECIFICATIONS FOR THE INSTALLATION, OPERATION AND MAINTENANCE OF SEPTIC SYSTEMS

GE RGE BAIN
LAVENDER COURT
LOT 38, SPIRIT GULCH
DOUGLAS COUNTY, COLORADO

INTR DUCTION: The individual septic system is not at all like a municipal sewer connection. A connection to a public sewer virtually guarantees you will be able to send an almost unlimited quantity of water, sewage and anything else down the drain with no particular problem. However, with a septic system (more properly known as an Individual Sewage Disposal System, or ISDS, the amount of liquid we can send down the drain is distinctly limited. The limiting factors are mostly the size of the system and the percolation rate of the soil in which the absorption (or leach) field is installed. Seemingly minor or even obscure factors such as how we wash our clothes and the way we perform our daily routines can have significant effects on the functioning of a septic system. In this paper, we will attempt to explain some of the more important aspects of your septic system so you may have the best chance of attaining and maintaining a long-lived, trouble-free system.

IN TALLATION: Perhaps the most important element of a successful septic system is proper installation. No amount of careful design and operation can overcome a poorly built system. Generally, a licensed installer will be familiar with the various regulations relating to installation. If you perform your own installation, you absolutely must become familiar with certain specific county regulations. Check with your County Health Department well in advance of beginning your installation to get the information and permits you will need to proceed. If you install an engineered septic system, be aware the design is not a detailed, step-by-step guide. Many details of construction are omitted for simplicity of design, but are nevertheless required by county regulations. Ask the engineer or Health Department for clarification if you are uncertain. A good installer will additionally be a careful, conscientious craftsman who will go beyond the minimums required by the county to provide a quality piece of work. Some of the big items you should watch for in the installation of your system are: The soil under the septic tank should be very well compacted to prevent settling of the tank. The pipes should never go uphill unless a pump is installed. The various lines of the distribution (leach) field should be dead level. If different levels of the absorption field are used, there should be a device which will effectively distribute the effluent between the various levels. The soil at the bottom of the field should never be compacted; it should, after leveling, be roughened slightly to enhance the passage of water into it. If a mound system is installed, the mound sand should be lightly compacted, usually by sprinkling with water, to reduce settlement after the system is placed into operation.

GENERAL PERATION: Practice water conservation as much as is practical. Repair leaking faucets and toilets immediately; they can add hundreds of gallons per day of water usage. Avoid long showers, run dishwashers only when full, and run washing machines when full or at reduced water settings.

Don't use the toilet as a trash can. Flushing a Kleenex or cigarette butt is wasteful of water and serves to shorten the system life by adding unnecessary water to it. Do not, under any circumstances, dump non-biodegradable materials, such as greases, plastics, etc., down your toilet or drain. Absolutely, never place harmful chemicals, such as pesticides, paint thinner, oil, antifreeze, etc. down the drains. These will kill the beneficial bacteria that treat the wastewater. Limit the use of bleaches, disinfectants and toilet bowl cleaners, as they will kill bacteria as well.

Divert surface water from driveways, hillsides, and roof drains well away from the septic system. Make sure outlets from sump pumps and foundation drains don't drain toward the system.

CAUSES OF FAILURE: Most septic systems work well for many years; others, both engineered and non-engineered, fail relatively soon after installation. Many times, the source of the failure is difficult to identify and it is generally recognized that certain number of systems will fail despite our best intentions. This is because septic system design is not an exact science - there are too many variables and outside influences, which cannot be controlled or sometimes even predicted for us to do much more than make educated guesses. System failure may result from too much water being used, leach field clogging may have occurred, or the system may be operating at lower efficiency for a variety of complex reasons. The following discussion should acquaint you with some of the more common sources of system failure. Knowledge of these sources should help you avoid them.

– EXCESS WATER USE: The occupants of the house may be using too much water. The septic system sizing formula was developed decades ago when water use habits resulted in generally much less water use than is common today. Most county health regulations require the field be upsized to reflect usage of clothes washers and garbage disposals, but enforcement of the requirement is generally based on whether the builder says these items will be installed or not. Installation of a clothes washer after the fact can severely overload a system, if it was not sized initially for that water use. Additionally, the presence of teenagers in a house, with their often two or more showers per day, is not reflected anywhere in any regulation. In an effort to keep septic system prices down, installers often install the minimum system required by the county. Builders and homeowners, under budgetary pressure, are generally very reluctant to install any more than what is needed to meet code. Even engineered systems are usually not a great deal larger than required by code, as the price for larger systems escalates rapidly. Generally, smaller systems have a shorter life span than larger systems.

– CLOGGING: Another source of failure is clogging of the field by solid or greasy material washed out of the septic tank. Solids (which are not always large, dense objects like sand, eggshells, coffee grounds and the like but which are often more of a soupy, only-slightly-heavier-than-water consistency) are meant to accumulate in the bottom of the tank, with greases floating to the top. Septic tank performance is based on water slowly moving through the tank, allowing solids to sink and greases to surface. If peak periods of water use occur where virtually the entire water budget for the day is expended, such as washing two or three loads of clothes combined with all members of the household bathing and flushing within a two hour period (a typical weekend morning in many households), then turbulent conditions can exist which will wash solids and greases out of the tank. If these materials enter the leach field, clogging will occur which will render the entire system either less effective or completely worthless. The damage is generally irreversible. There is no way to reliably determine whether this type of washout and subsequent clogging has occurred, but it is safe to say it happens to some degree with almost all septic systems at some point in their lifetimes. Regular tank pumping, at intervals not exceeding one to two years, depending on the individual system, can help decrease the likelihood of this type of trouble. Limiting periods of peak water use, by spacing out water use, will also help.

– PERCOLATION TEST LIMITATIONS: Another potential failure point evolves from the fact that percolation tests (or perc tests) are, at best, very rudimentary estimates of future performance of the septic system. For the test, clean water is poured down three shallow holes for a specified period of time; the rate at which the water seeps in the ground is thought to be reflective of long-term septic performance. However, the test doesn't measure several things: It doesn't measure the rate at any points other than those specifically tested; soil just outside the test points may be markedly different than where tested. There is no mechanism for reliably verifying the perc rate at other locations except by performing more tests, which would drive the test price way up and anyway is not required by the county. Another thing not quantifiable is the fact that the septic system is essentially a biologic machine. There are huge numbers of complex interactions between the various biodegradable and non-biodegradable constituents of the sewer water, the physical, and chemical, organic and mineral makeup's of the various soil components within the leach field, and the incredible number of aerobic and anaerobic bacteria, which inhabit the entire septic system. Certain laundry soaps or household chemicals may have no effect on one septic system, but may cause poor performance in another, due to changes in the chemical and biological makeup of the leach field. The rate at which water moves between soil particles can change over months or years as soil reacts to the continuous influence of water and bacterial action. There is no reliable way to predict these effects; the standard perc test totally ignores the issue.

– COMPACTION: Another cause of failure is compaction of the field after installation. Sometimes, people will view the green grass over the top of the septic field as a choice piece of pasture. Hoofed animals exert great pressure with their feet, and grazing over the top of a septic field will generally result in compaction of the soil sufficient to render the system useless. Vehicle traffic over the surface will cause similar problems with compaction; system crushing can also occur. Vehicles (other than hand operated units) and hoofed animals are absolutely not compatible with septic systems. Most counties' health regulations specifically advise against vehicular and animal traffic over the field.

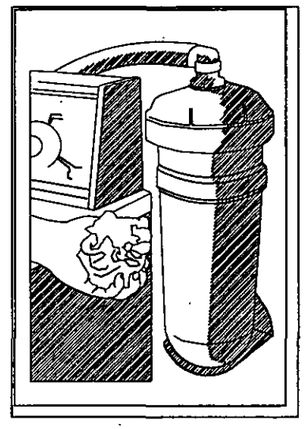
SUMMARY: In conclusion, a septic system is not at all like a public sewer. Unlimited amounts of sewage may not be placed into them with impunity. Careful installation, with strict attention to detail is essential to long-term success of the system. Even the best installation of a well-designed system does not guarantee success. Surface drainage must be carefully maintained to avoid inadvertent flooding of the septic system. Water conservation is essential, as is the avoidance of placing poisons into the system. Individual septic systems are subject to a wide variety of system failures that simply do not occur in normal, city sewers. The probable cause of most system failures is a combination of factors. Most people use a lot of water; minimum systems are often just not up to the task but upsized systems are generally not installed due to budgetary constraints. Most families tend to peak load their septic systems. Septic tanks are not designed to handle large quantities of water all at once; infrequent tank pumping increases the problems associated with large peak flows. Certain soaps, cleansers, and other materials, which make their way down the drain, may have adverse reactions with bacteria in the septic system. Many fields at one time or another are used as parking lots, pastures or worse. There often is really no way to say for sure that any one particular thing caused failure. It is generally recognized there are a certain number of systems that will fail for no good, identifiable reason. The best way to avoid failure is to treat your septic system as a valuable investment worthy of protection. Minimize the liquid load, minimize the solid load, and be careful about what goes down the drain.

THE SEPTIC PROTECTOR™

Septic Protector\U+2122 1-866-875-6504
© 1998 by Septic Protector
www.septicprotector.com

The Septic Protector\U+2122 is a patented, re-useable filter that attaches to your washing machine discharge hose and removes the non-biodegradable fibers like polyester and nylon, sand, hair and pet fur before they go down the drain and plug your septic system and drainpipes. Even Laundromats and government facilities are using the Septic Protector\U+2122.
This product is now being used by and/or recommended by: Universities; State Water Quality Agencies; Professional Contractors; Homeowners; Laundromats; Engineering and Consulting Firms; Entire Communities and Neighborhoods; Environmental Agencies; and Mobile Home Parks.

Some Government Agencies have stated "This product is long overdue" and would like to make the Septic Protector\U+2122 a code requirement! Why? Because it works!
-- The Septic Protector\U+2122 comes with extra hose, clamps, fittings, and a mounting bracket for easy installation (you supply the 2 screws that hold the bracket on the wall). Most homeowners can install the unit in 10-15 minutes.
-- The Septic Protector\U+2122 comes with a bracket for mounting on the wall near the washing machine. All necessary hose, clamps and fittings are included. (You supply the 2 screws that hold the bracket to the wall).
-- These are examples of typical installations, however, because not all laundry rooms are the same you may have to modify your set-up.
-- The Septic Protector\U+2122 comes with a 160 micron filter that you empty out over a garbage container every 1-3 weeks and will last 1-3 years. Replacement bags are $12.95. Most will order a second bag to save on shipping charges.*
-- Or, you can use the optional 30 micron cartridge filter which you clean with a garden hose every 2-3 weeks and replace every 6-12 months at $24.95. We recommend the 160 micron filter for most people because it is easier to use, lasts longer, costs less, and in most cases is more than adequate to protect your system.

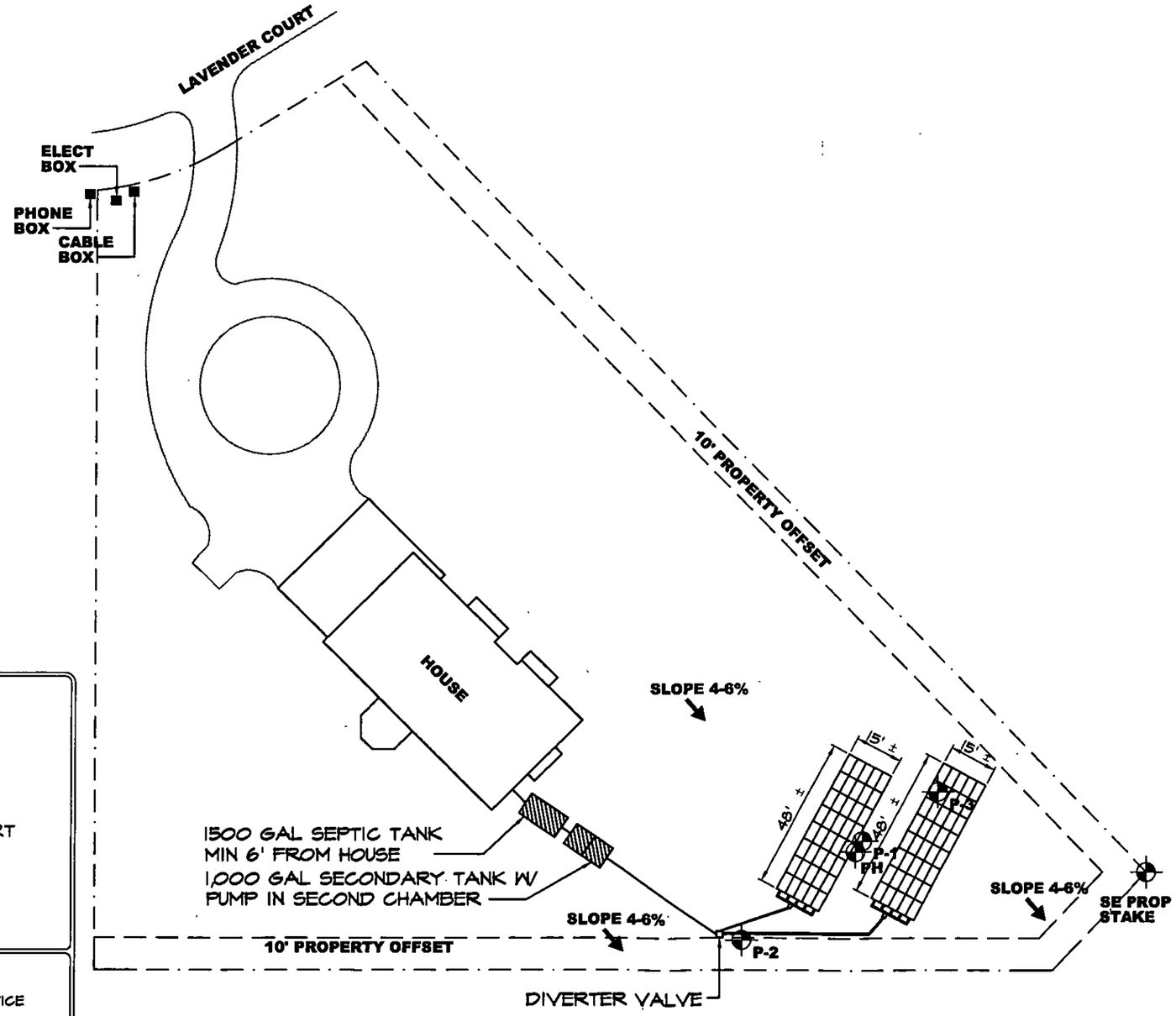


Colorado Engineering
& Geotechnical Group, Inc.
2931 N. U.S. HIGHWAY 85
CASTLE ROCK, CO 80109
(303) 688-9475

JOB NO:	02-5682R-1
SCALE:	NOT TO SCALE
SHEET:	1 OF: 5
DRAWN BY:	CEGG
DATE:	27 FEB 2003
CHECKED BY:	
DATE:	

COLORADO REGISTERED
J. R. BRYANT
25932
PROFESSIONAL ENGINEER

SEPTIC DESIGN
INFILTRAT R SYSTEM



North

OWNER: GEORGE BAIN
PHONE: 303-507-1502

LEGAL DESCRIPTION: LOT 38, SPIRIT GULCH, DOUGLAS COUNTY

STREET ADDRESS: LAVENDER COURT

ZONING: N/A

EASEMENTS: N/A

COLORADO ENGINEERING AND GEOTECHNICAL GROUP, INC. HAS PROVIDED THIS DESIGN IN ACCORDANCE WITH THE STANDARDS OF PRACTICE COMMON TO THE AREA HOWEVER, AS WITH ALL UNDERGROUND ABSORPTION FIELDS, GUARANTEE FROM FAILURE IS IMPOSSIBLE. EVEN WITH PROPER INSTALLATION, AS OUTLINED FOR THIS PROPOSED CONSTRUCTION, THERE REMAIN MANY UNCERTAINTIES, AND DIFFICULTIES CAN STILL ARISE IN THE OPERATION OF THE SYSTEM IN THE FUTURE. PROPER DESIGN, CONSTRUCTION AND MAINTENANCE CAN ASSIST IN MINIMIZING UNCERTAINTIES, BUT CANNOT ENTIRELY ELIMINATE THEM. COLORADO ENGINEERING AND GEOTECHNICAL GROUP, INC. PROVIDES NO WARRANTY OF THIS DESIGN OR INSTALLATION.

SEPTIC SYSTEM COMPONENTS:

TANK:	1-1,500 GAL TANK
	1- 1,000 GAL SECONDARY TANK
LEACH FIELD:	(2) 30' x 50' FIELDS

REVISION
01-06-04 - REVISIONS PER COUNTY REQUEST. (MJ)
1 - CHANGE FROM TRENCH TO BED LAYOUT

GEORGE BAIN

LAVENDER COURT
LOT 38, SPIRIT GULCH
DOUGLAS COUNTY, COLORADO

NOTES:

1. MANY DETAILS OF CONSTRUCTION ARE OMITTED FROM THESE DRAWINGS FOR CLARITY. THE INSTALLER MUST REFER TO LOCAL REGULATIONS CONCERNING OTHER INSTALLATION REQUIREMENTS GRADE SURROUNDING AREA TO DRAIN AWAY FROM FIELD.

2. MAINTAIN 2.0% MIN AND 3.0% MAX GRADE ON PIPE FEEDING SEPTIC TANK & SUMP. MAINTAIN 1% MIN GRADE ON PIPE FROM FIELD BACK TO SUMP.
A SUMP & PUMP MAY BE REQUIRED IF GRAVITY FEED TO THE FIELD CAN NOT BE OBTAINED. PIPE GRADE TO BE VERIFIED.

3. HOMEOWNER IS RESPONSIBLE FOR PERMIT. CONTRACTOR MUST OBTAIN APPROVAL OF ENGINEERED SYSTEM FROM THE COUNTY HEALTH DEPARTMENT. OWNER/CONTRACTOR MUST VERIFY SETBACKS AND OBTAIN UTILITY CLEARANCES PRIOR TO CONSTRUCTION.

4. VEHICULAR OR HOOFED ANIMAL TRAFFIC OF ANY KIND OVER ANY PART OF SYSTEM MAY CAUSE PREMATURE FAILURE AND IS PROHIBITED. THE USE OF SO-CALLED "SEPTIC REMEDIES" CAN RESULT IN SEVERE DAMAGE TO THE SYSTEM. WE SPECIFICALLY RECOMMEND AGAINST THEIR USE.

SPECIAL NOTES SECTION

NOTE: IT IS STRONGLY RECOMMENDED THAT THE OWNER INSTALL "THE SEPTIC PROTECTOR" WHICH IS ATTACHED TO THIS DESIGN.

REQUIRED INSPECTIONS (ENGINEER)

1: ENGINEER TO VERIFY FIELD LOCATION AND REMOVAL OF TOPSOIL AT TIME OF CONSTRUCTION.

2: ENGINEER WILL INSPECT THE INSTALLATION OF PIPE/GRAVEL BED, SEPTIC TANK, ETC. PRIOR TO BACKFILL.

3: ENGINEER TO INSPECT THE FIELD AFTER BACKFILL TO INSURE MIN COVER, CROWNED TOP & PROPER DRAINAGE AWAY FROM FIELD.

NOTE: THESE INSPECTIONS ARE SEPARATE FROM THAT WHICH IS REQUIRED BY THE COUNTY HEALTH DEPARTMENT. THE HOMEOWNER/CONTRACTOR MUST ENSURE ALL COUNTY INSPECTIONS ARE COMPLETED.

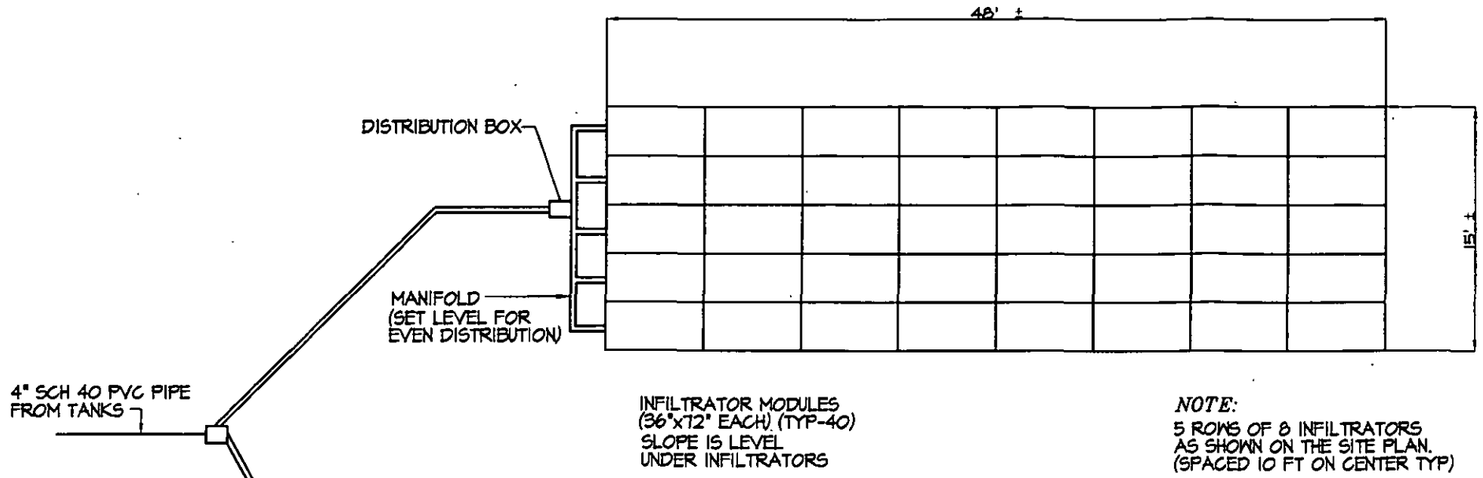
Colorado Engineering & Geotechnical Group, Inc.
2931 N. U.S. HIGHWAY 85
CASTLE ROCK, CO 80109
(303) 688-9475

JOB NO:	02-5682R-1
SCALE:	1" = 40'-0"
SHEET:	2 OF: 5
DRAWN BY:	EV
DATE:	27 FEB 2003
CHECKED BY:	
DATE:	

COLORADO REGISTERED
PAUL R. BRY
29932
12 May 04
PROFESSIONAL ENGINEER

SEPTIC DESIGN SCHEMATIC VIEW

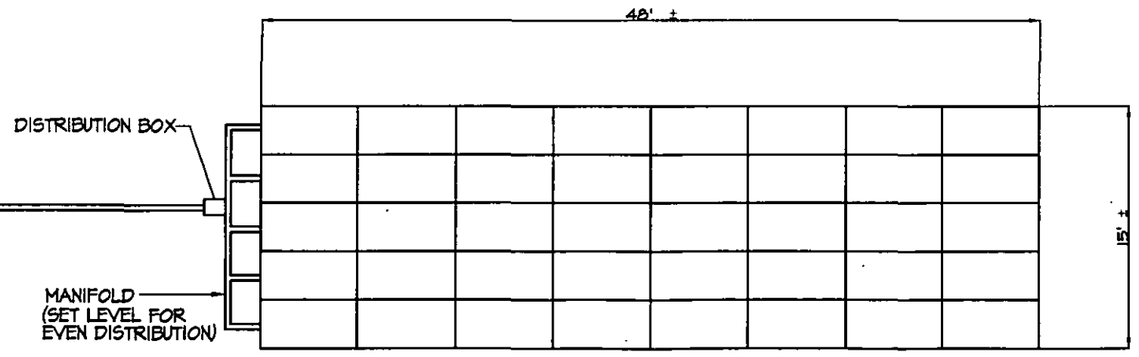
SCHEMATIC VIEW IS SH WN T PR VIDE A C NCEPTUAL UNDERSTANDIN OF THE SYSTEM LAY UT. REFER T SHEET 4 F R SPECIFIC DETAILS



INFILTRATOR MODULES
(36"x72" EACH) (TYP-40)
SLOPE IS LEVEL
UNDER INFILTRATORS

NOTE:
5 ROWS OF 8 INFILTRATORS
AS SHOWN ON THE SITE PLAN.
(SPACED 10 FT ON CENTER TYP)

FIELD LAYOUT
N.T.S.



INFILTRATOR MODULES
(36"x72" EACH) (TYP-40)
SLOPE IS LEVEL
UNDER INFILTRATORS

NOTE:
5 ROWS OF 8 INFILTRATORS
AS SHOWN ON THE SITE PLAN.
(SPACED 10 FT ON CENTER TYP)

FIELD LAYOUT
N.T.S.

GEORGE BAIN
LAVENDER COURT
LOT 38, SPIRIT GULCH
DOUGLAS COUNTY, COLORADO

INFILTRATOR
CALCULATIONS

5 BEDROOM RESIDENCE
PERC 10.56 MIN/INCH

REQUIRED AREA

$$A = \frac{(\#BDRMS \times Q \times 1.5 \times 1.6)\sqrt{PERC}}{5}$$

Q = 250 GPD L6 = (20% GARBAGE DISPOSAL, 40% DISHWASHER)
LB = CO FACTOR

$$A = \frac{(5 \times 250 \times 1.25)\sqrt{20.0}}{5}$$

$A = 1260$ SF $\frac{1260}{2} = 630$

FOR BED SYSTEM (INFILTRATOR-STND)

$A = 630$ SF

$\frac{(630)}{(15.5)} = 40.64$ INFILTRATORS

REDUCTIONS:

USE 40 INFILTRATORS

CONTACT AREA

FIELD SIZE:
39'-0" WIDE BY 60'-0" LONG
BED --5 ROWS OF 8
(40 INFL.)*(15.5 SF/EA.)
A = 620 SQ FT

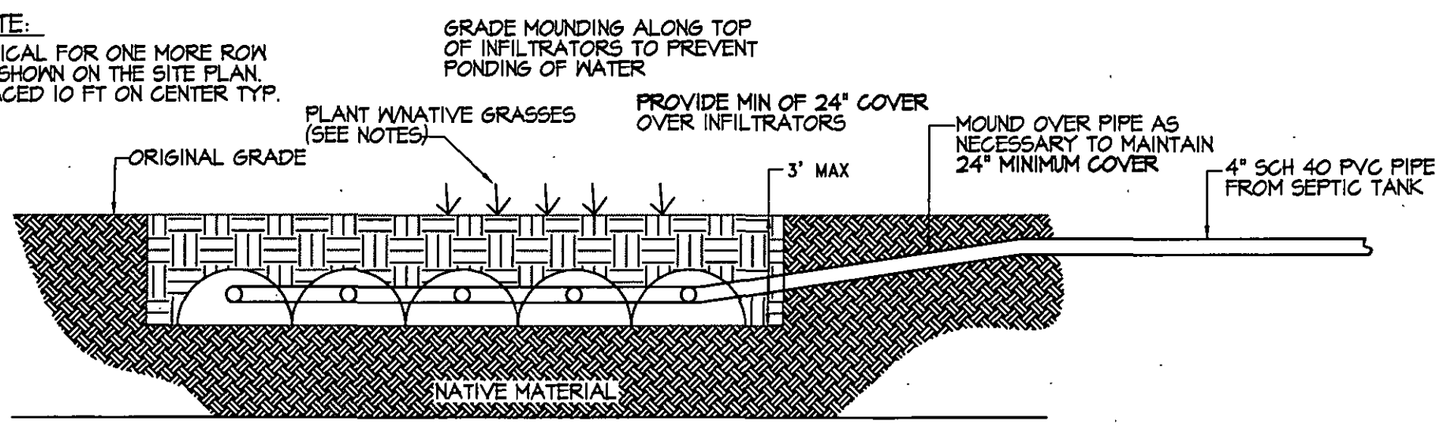
Colorado Engineering & Geotechnical Group, Inc.
2931 N. U.S. HIGHWAY 85
CASTLE ROCK, CO 80109
(303) 688-4475

JOB NO: 02-5682R-1
SCALE: NOT TO SCALE
SHEET: 3 OF: 5
DRAWN BY: EV
DATE: 27 FEB 2003
CHECKED BY:
DATE:

COLORADO REGISTERED
PAUL R. BRYANT
29932
PROFESSIONAL ENGINEER
12 May 03

SEPTIC DESIGN DETAIL SHEET

NOTE:
TYPICAL FOR ONE MORE ROW AS SHOWN ON THE SITE PLAN. SPACED 10 FT ON CENTER TYP.



FIELD SECTION

N.T.S

GEORGE BAIN

LAVENDER COURT
LOT 38, SPIRIT GULCH
DOUGLAS COUNTY, COLORADO

NOTES:

1. ALL WORK PER COUNTY HEALTH DEPARTMENT CRITERIA.
2. MANY DETAILS OF CONSTRUCTION ARE OMITTED FROM THESE DRAWINGS FOR CLARITY. THE INSTALLER MUST REFER TO LOCAL REGULATIONS CONCERNING OTHER INSTALLATION REQUIREMENTS.
3. ABSORPTION BED SHALL BE CROWNED AND COVERED WITH A MINIMUM OF 4 INCHES OF SELECT TOPSOIL TO PROVIDE A BASE FOR GOOD VEGETATIVE COVER.
4. CONTACT SOIL CONSERVATION SERVICE OR COUNTY EXTENSION AGENT FOR VEGETATION BEST SUITED FOR THE AREA.
5. PROVIDE DRAINAGE SWALE AROUND UPHILL SIDE OF FIELD.

SPECIAL NOTES SECTION

SPECIAL NOTE FOR SYSTEMS WITH SAND:
SAND FOR ABSORPTION BED TO BE IMPORTED FROM OFF SITE AS NECESSARY TO PLACE UNDER BED; ENGINEER TO APPROVE.

COMPACTION REQUIREMENTS:
FOR CUT/FILL AREAS BELOW LEACHING SYSTEMS & SYSTEMS WITH SAND REQUIREMENTS; MATERIAL SHALL BE COMPACTED TO 85% ASTM D1557 OR 90% ASTM D698. CONTACT THIS OFFICE FOR THE REQUIRED TESTING

SAFETY REQUIREMENTS:
ADEQUATE SAFETY MEASURES SUCH AS CONSTRUCTION FENCING AND CAVE-IN PROTECTION SHALL BE PROVIDED TO PROTECT AGAINST INJURY DURING CONSTRUCTION AND USE.

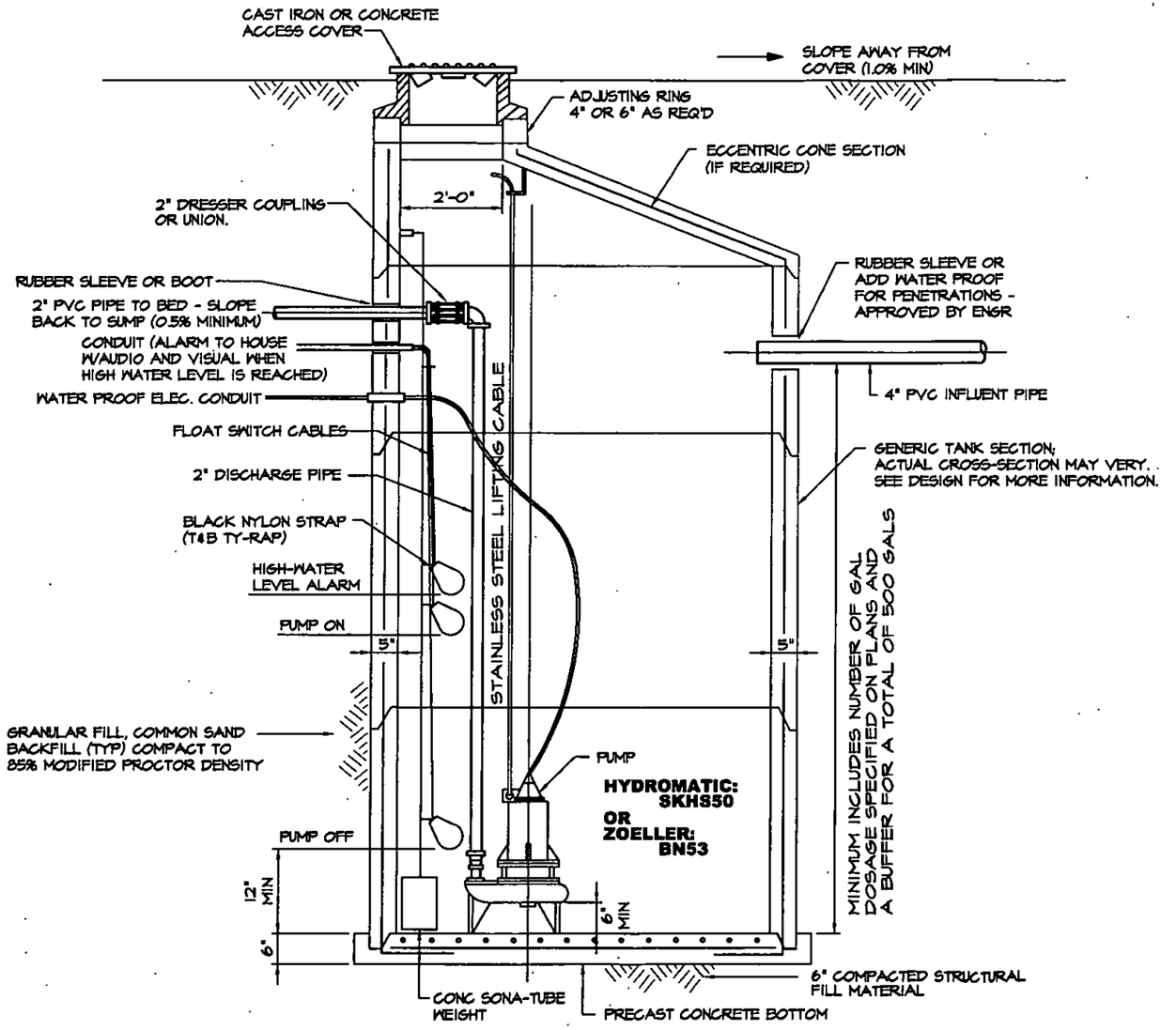
Colorado Engineering
a Geotechnical Group, Inc.
2931 N. U.S. HIGHWAY 85
CASTLE ROCK, CO 80109
(303) 688-9473

JOB NO:	02-5682R-1
SCALE:	3/32" = 1'-0"
SHEET:	4 OF: 5
DRAWN BY:	EV
DATE:	27 FEB 2003
CHECKED BY:	
DATE:	

COLORADO REGISTERED R. BRANT 25932 12 May 04 PROFESSIONAL ENGINEER

SEPTIC DESIGN DETAIL SHEET

N TE: SUMP AND ALARM T BE N SEPARATE CIRCUITS



SUMP SECTION

NOT TO SCALE

GEORGE BAIN

LAVENDER COURT
LOT 38, SPIRIT GULCH
DOUGLAS COUNTY, COLORADO

NOTES:

1. ALL WORK PER COUNTY HEALTH DEPARTMENT CRITERIA.
2. MANY DETAILS OF CONSTRUCTION ARE OMITTED FROM THESE DRAWINGS FOR CLARITY. THE INSTALLER MUST REFER TO LOCAL REGULATIONS CONCERNING OTHER INSTALLATION REQUIREMENTS.
3. ABSORPTION BED SHALL BE CROWNED AND COVERED WITH A MINIMUM OF 4 INCHES OF SELECT TOPSOIL TO PROVIDE A BASE FOR GOOD VEGETATIVE COVER.
4. CONTACT SOIL CONSERVATION SERVICE OR COUNTY EXTENSION AGENT FOR VEGETATION BEST SUITED FOR THE AREA.
5. PROVIDE DRAINAGE SWALE AROUND UPHILL SIDE OF FIELD.

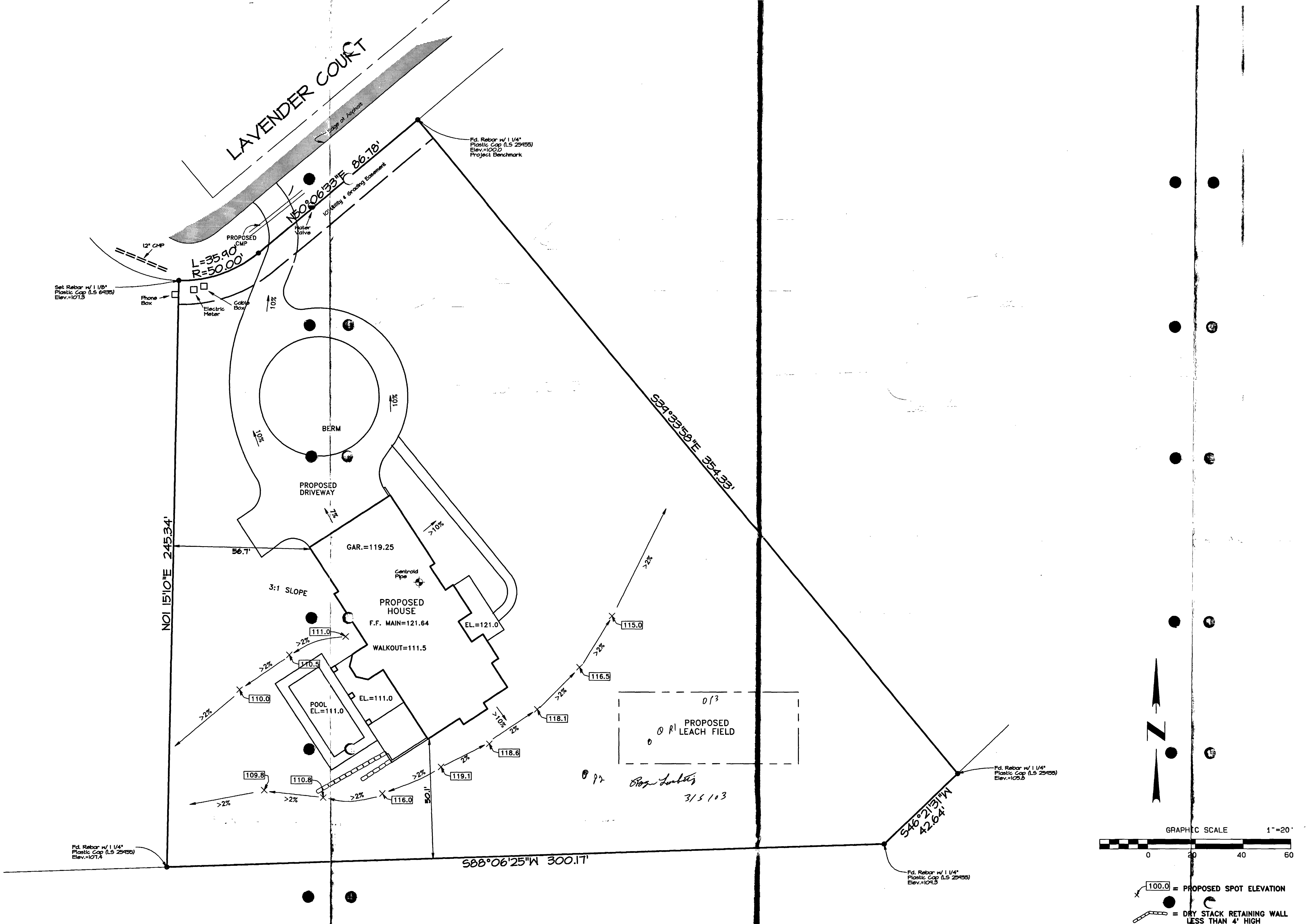
SPECIAL NOTES SECTION

SAFETY REQUIREMENTS:
ADEQUATE SAFETY MEASURES SUCH AS CONSTRUCTION FENCING AND CAVE-IN PROTECTION SHALL BE PROVIDED TO PROTECT AGAINST INJURY DURING CONSTRUCTION AND USE.

Colorado Engineering
& Geotechnical Group, Inc.
2931 N. U.S. HIGHWAY 85
CASTLE ROCK, CO 80109
(303) 688-9475

JOB NO: 02-5682R-1	
SCALE: NOT TO SCALE	
SHEET: 5 OF: 5	
DRAWN BY: CEGG	
DATE: 27 FEB 2003	
CHECKED BY:	
DATE:	

COLORADO REGISTERED
JILL R. BRYANT
25652
12 May 03
PROFESSIONAL ENGINEER



NOTE: SLOPE EXCEEDS 2% MINIMUM DRAINAGE REQUIREMENT. (> 2%)

NOTE:
PLOT PLAN SHOWS ONLY PROPOSED IMPROVEMENTS – FINAL CONSTRUCTION MAY VARY.

Warning!!

1. LOCATE UNDERGROUND UTILITIES PRIOR TO EXCAVATION.
2. THIS PLOT PLAN SHOWS IMPROVEMENTS AT GRADE AND GRADING ONLY, SEE FOUNDATION PLANS FOR STRUCTURAL IMFORMATION.

NOTE:
BUILDER TO FOLLOW DOUGLAS COUNTY ZONING RESOLUTION SECTION 31A "SINGLE FAMILY RESIDENTIAL DRAINAGE EROSION, AND SEDIMENT CONTROL REQUIREMENTS", INCLUDING THE FOLLOWING BEST MANAGEMENT PRACTICES:
* SUB-CONTRACTORS WILL BE EDUCATED TO FOLLOW SAID REQUIREMENTS.
PERIODIC INSPECTION AND MAINTAINANCE OF BMPS.
PERIODIC SWEEPING OF STREETS.
EARTH MATERIALS ARE NOT TO BE STOCKPILED ON STREETS, SIDEWALKS, OR STORMWATER FLOWLINES.
CONSTRUCTION MATERIALS ARE NOT TO BE STORED ON STREETS OR SIDEWALKS, BUT ON THE SITE OR STAGING AREA.

REVISIONS

DAVID E. ARCHER & ASSOCIATES, INC.
LAND DEVELOPMENT CONSULTING
SURVEYING & ENGINEERING
PHONE (303) 688-4642
105 WILCOX ST. CASTLE ROCK, COLORADO 80104

SCALE	1"=20'
DATE	12-23-02
DR'N.	DMH
CKD.	
AP'VD.	

TITLE: D.E.S.C. PLOT PLAN
LOT 38, PARKER RIGE SUBDIVISION FILING NO. 1, DOUGLAS CO.
CLIENT: GEORGE BAIN
DWG. NO.
PROJECT NUMBER: 02-1009