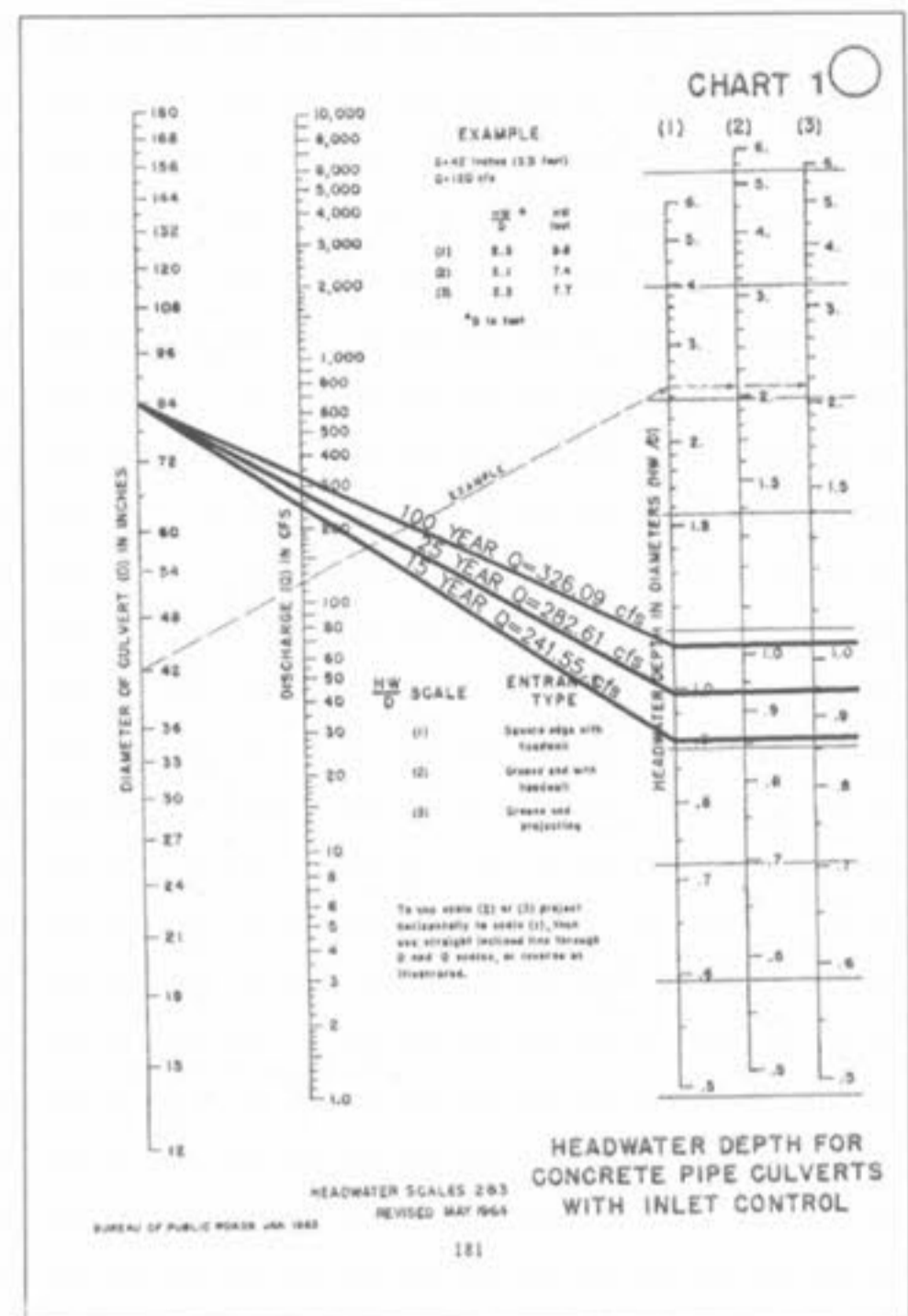


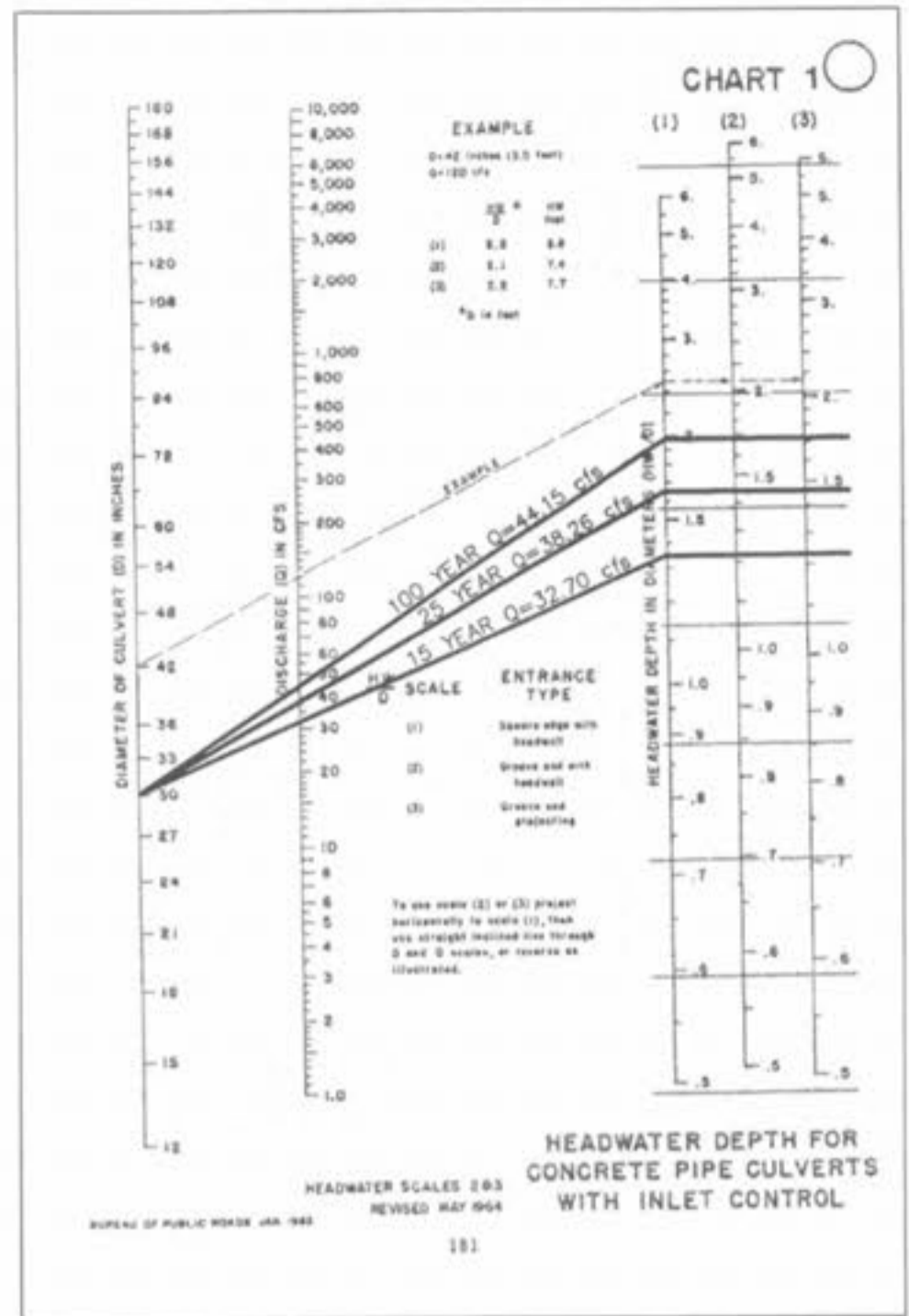
Drawing name: K:\D\0312269\_Springhurst\Improvements\2650MP.DWG Plotted on: Aug 06, 2003 - 9:41am Plotted by: jsternhaus



15 YEAR HEADWATER @ FE 20  
 $HW \cdot D = 0.90 (7.00) = 6.30 + 575.32 = 581.62$

25 YEAR HEADWATER @ FE 20  
 $HW \cdot D = 1.00 (7.00) = 7.00 + 575.32 = 582.32$

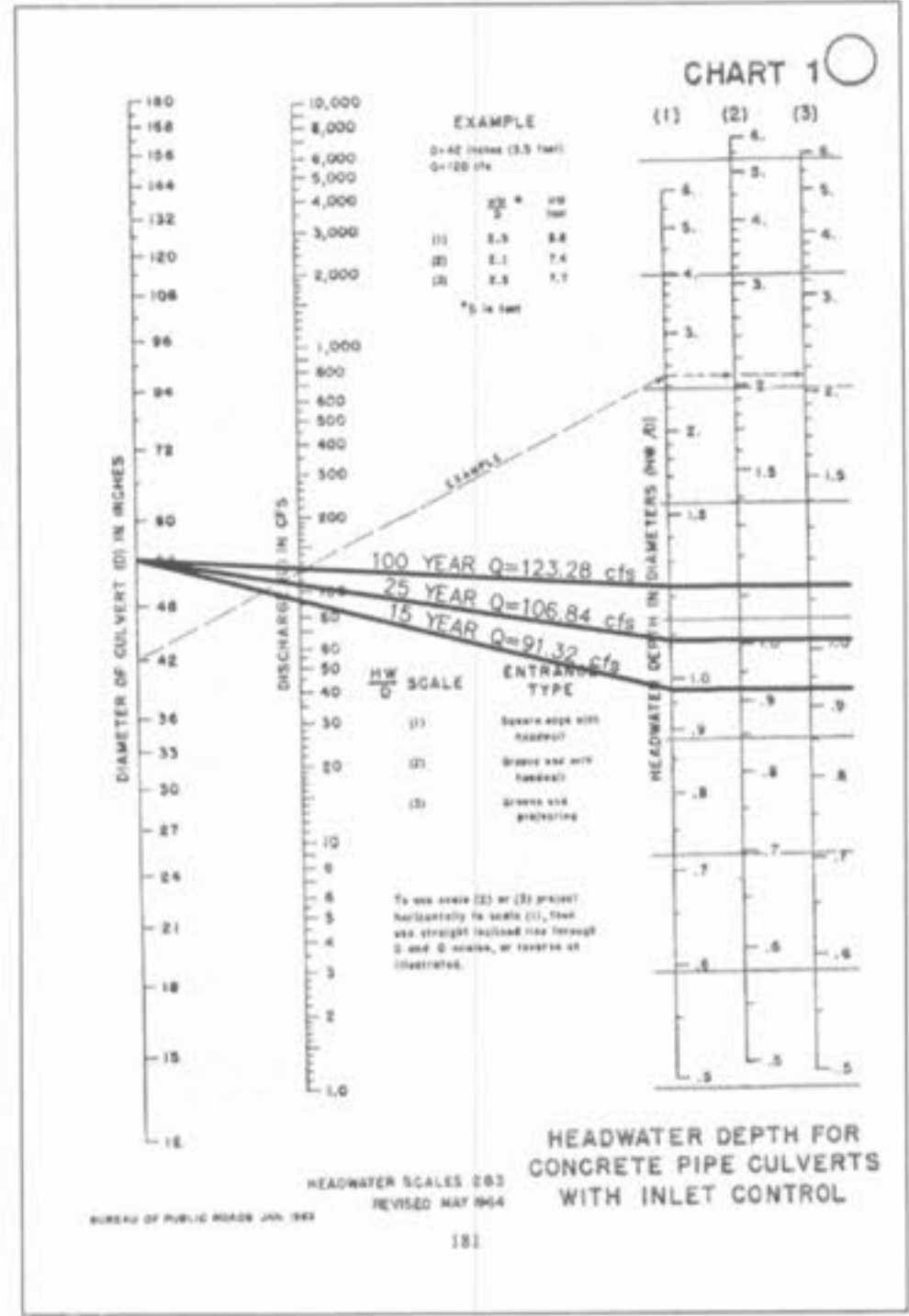
100 YEAR HEADWATER @ FE 20  
 $HW \cdot D = 1.10 (7.00) = 7.70 + 575.32 = 583.02$



15 YEAR HEADWATER @ FE 159  
 $HW \cdot D = 1.35 (2.50) = 3.38 + 590.29 = 593.67$

25 YEAR HEADWATER @ FE 159  
 $HW \cdot D = 1.65 (2.50) = 4.13 + 590.29 = 594.42$

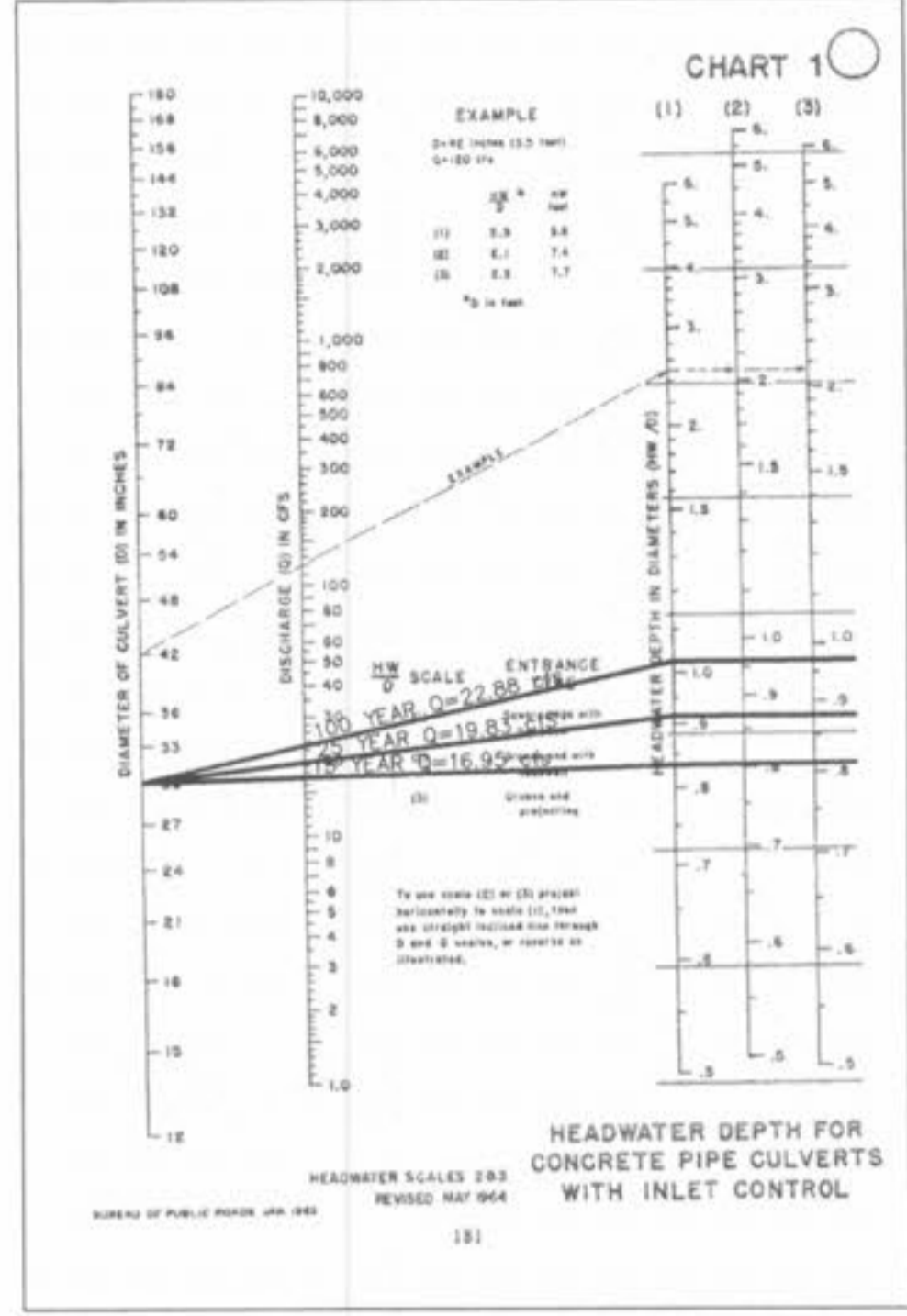
100 YEAR HEADWATER @ FE 159  
 $HW \cdot D = 2.00 (2.50) = 5.00 + 590.29 = 595.29$



15 YEAR HEADWATER @ FE 195  
 $HW \cdot D = 0.95 (4.50) = 4.28 + 576.37 = 580.65$

25 YEAR HEADWATER @ FE 195  
 $HW \cdot D = 1.10 (4.50) = 4.95 + 576.37 = 581.32$

100 YEAR HEADWATER @ FE 195  
 $HW \cdot D = 1.25 (4.50) = 5.63 + 576.37 = 582.00$



15 YEAR HEADWATER @ FE 206  
 $HW \cdot D = 0.85 (2.50) = 2.13 + 574.00 = 576.13$

25 YEAR HEADWATER @ FE 206  
 $HW \cdot D = 0.925 (2.50) = 2.31 + 574.00 = 576.31$

100 YEAR HEADWATER @ FE 206  
 $HW \cdot D = 1.05 (2.50) = 2.63 + 574.00 = 576.63$

**CONCRETE SWALE BASIN #2 - 1.3%**  
Worksheet for Irregular Channel

<b>Project Description</b>				
Project File	J:\wast\dmw\0312269_Im2			
Worksheet	CONCRETE SWALE BASIN 2			
Flow Element	Irregular Channel			
Method	Manning's Formula			
Solve For	Discharge			
<b>Input Data</b>				
Channel Slope	0.010000 ft/ft			
Water Surface Elevation	0.71 ft			
Elevation range: 0.00 ft to 0.71 ft				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
-0.17	0.71		5.50	0.013
0.50	0.04			
3.00	0.00			
5.00	0.04			
5.50	0.71			
<b>Results</b>				
Wtd. Manning Coefficient	0.013			
Discharge	27.04 cfs			
Flow Area	3.50 ft <sup>2</sup>			
Wetted Perimeter	6.28 ft			
Top Width	5.67 ft			
Height	0.71 ft			
Critical Depth	0.88 ft			
Critical Slope	0.00282 ft/ft			
Velocity	7.73 ft/s			
Velocity Head	0.83 ft			
Specific Energy	1.84 ft			
Froude Number	1.74			
Flow is supercritical.				

042506 02/26/07 PM Sterling Company Heated Methods, Inc. 37 Brookside Road Waterbury, CT 06708 (203) 755-1888 FileMaster v5.08 Page 1 of 1

**CONCRETE SWALE BASIN #3 - 1.5%**  
Worksheet for Irregular Channel

<b>Project Description</b>				
Project File	J:\wast\dmw\0312269_Im2			
Worksheet	CONCRETE SWALE BASIN 3			
Flow Element	Irregular Channel			
Method	Manning's Formula			
Solve For	Discharge			
<b>Input Data</b>				
Channel Slope	0.015000 ft/ft			
Water Surface Elevation	0.54 ft			
Elevation range: 0.00 ft to 0.54 ft				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.54	0.00	5.00	0.013
0.50	0.04			
2.50	0.00			
4.50	0.04			
5.00	0.54			
<b>Results</b>				
Wtd. Manning Coefficient	0.013			
Discharge	16.59 cfs			
Flow Area	2.33 ft <sup>2</sup>			
Wetted Perimeter	5.42 ft			
Top Width	5.00 ft			
Height	0.54 ft			
Critical Depth	0.83 ft			
Critical Slope	0.003443 ft/ft			
Velocity	7.88 ft/s			
Velocity Head	0.99 ft			
Specific Energy	1.53 ft			
Froude Number	2.05			
Flow is supercritical.				

042506 02/27/07 PM Sterling Company Heated Methods, Inc. 37 Brookside Road Waterbury, CT 06708 (203) 755-1888 FileMaster v5.08 Page 1 of 1

**CONCRETE SWALE BASIN 4 - 1.5%**  
Worksheet for Irregular Channel

<b>Project Description</b>				
Project File	J:\wast\dmw\0312269_Im2			
Worksheet	CONCRETE SWALE BASIN 4			
Flow Element	Irregular Channel			
Method	Manning's Formula			
Solve For	Discharge			
<b>Input Data</b>				
Channel Slope	0.015000 ft/ft			
Water Surface Elevation	0.71 ft			
Elevation range: 0.00 ft to 0.71 ft				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.71	0.00	5.00	0.013
0.50	0.04			
3.00	0.00			
5.50	0.04			
6.00	0.71			
<b>Results</b>				
Wtd. Manning Coefficient	0.013			
Discharge	36.31 cfs			
Flow Area	3.78 ft <sup>2</sup>			
Wetted Perimeter	6.67 ft			
Top Width	6.00 ft			
Height	0.71 ft			
Critical Depth	1.12 ft			
Critical Slope	0.003268 ft/ft			
Velocity	9.59 ft/s			
Velocity Head	1.43 ft			
Specific Energy	2.14 ft			
Froude Number	2.13			
Flow is supercritical.				

042506 02/26/07 PM Sterling Company Heated Methods, Inc. 37 Brookside Road Waterbury, CT 06708 (203) 755-1888 FileMaster v5.08 Page 1 of 1

**CONCRETE SWALE BASIN 5 - 1.0%**  
Worksheet for Irregular Channel

<b>Project Description</b>				
Project File	J:\wast\dmw\0312269_Im2			
Worksheet	CONCRETE SWALE BASIN 5			
Flow Element	Irregular Channel			
Method	Manning's Formula			
Solve For	Discharge			
<b>Input Data</b>				
Channel Slope	0.010000 ft/ft			
Water Surface Elevation	0.54 ft			
Elevation range: 0.00 ft to 0.54 ft				
Station (ft)	Elevation (ft)	Start Station	End Station	Roughness
0.00	0.54	0.00	5.00	0.013
0.50	0.04			
2.50	0.00			
4.50	0.04			
5.00	0.54			
<b>Results</b>				
Wtd. Manning Coefficient	0.013			
Discharge	15.18 cfs			
Flow Area	2.33 ft <sup>2</sup>			
Wetted Perimeter	5.42 ft			
Top Width	5.00 ft			
Height	0.54 ft			
Critical Depth	0.73 ft			
Critical Slope	0.003450 ft/ft			
Velocity	6.51 ft/s			
Velocity Head	0.86 ft			
Specific Energy	1.20 ft			
Froude Number	1.68			
Flow is supercritical.				

042506 02/26/07 PM Sterling Company Heated Methods, Inc. 37 Brookside Road Waterbury, CT 06708 (203) 755-1888 FileMaster v5.08 Page 1 of 1

ISSUE REMARKS/DATE

1	03-02-05	FIRST SUBMITTAL
2	04-04-05	REVISED PER DCSO COMMENTS
3	05-23-05	REVISED PER CITY OF FALLON COMMENTS
4	05-27-05	REVISED PER DCSO COMMENTS
5	06-09-05	REVISED PER PMSD #2 COMMENTS
6	06-09-05	REVISED PER CITY OF FALLON COMMENTS
7	06-27-05	REVISED PER PMSD #2 COMMENTS
8	07-14-05	REVISED PER PMSD #2 COMMENTS
9	08-08-05	REVISED PER CITY OF FALLON COMMENTS

PREPARED FOR:

**STERLING CO.**  
ENGINEERS & SURVEYORS  
505 N. LOUISIANA BOULEVARD  
ST. LOUIS, MISSOURI 63120  
(314) 487-0440 FAX 487-8944  
E-Mail: Sterling@sterling-eng-sur.com

**SPRINGHURST, L.L.C.**  
5091 NEW BAUMGARTNER ROAD  
ST. LOUIS, MISSOURI 63129  
(314) 487-6717

DRAWN: \_\_\_\_\_ DESIGNED: \_\_\_\_\_ CHECKED: \_\_\_\_\_

**THE VILLAGES AT SPRINGHURST**

SHEET TITLE: HEADWATER CALCULATIONS

NO	03	12	269
M.S.D.	SHEET		
P#	12.1		
DIGITAL FILE LOCATION	SERVER=STERLING-2		
FILE	CONSTR.DWG		
OF	-		

BASE MAP

PC#2804