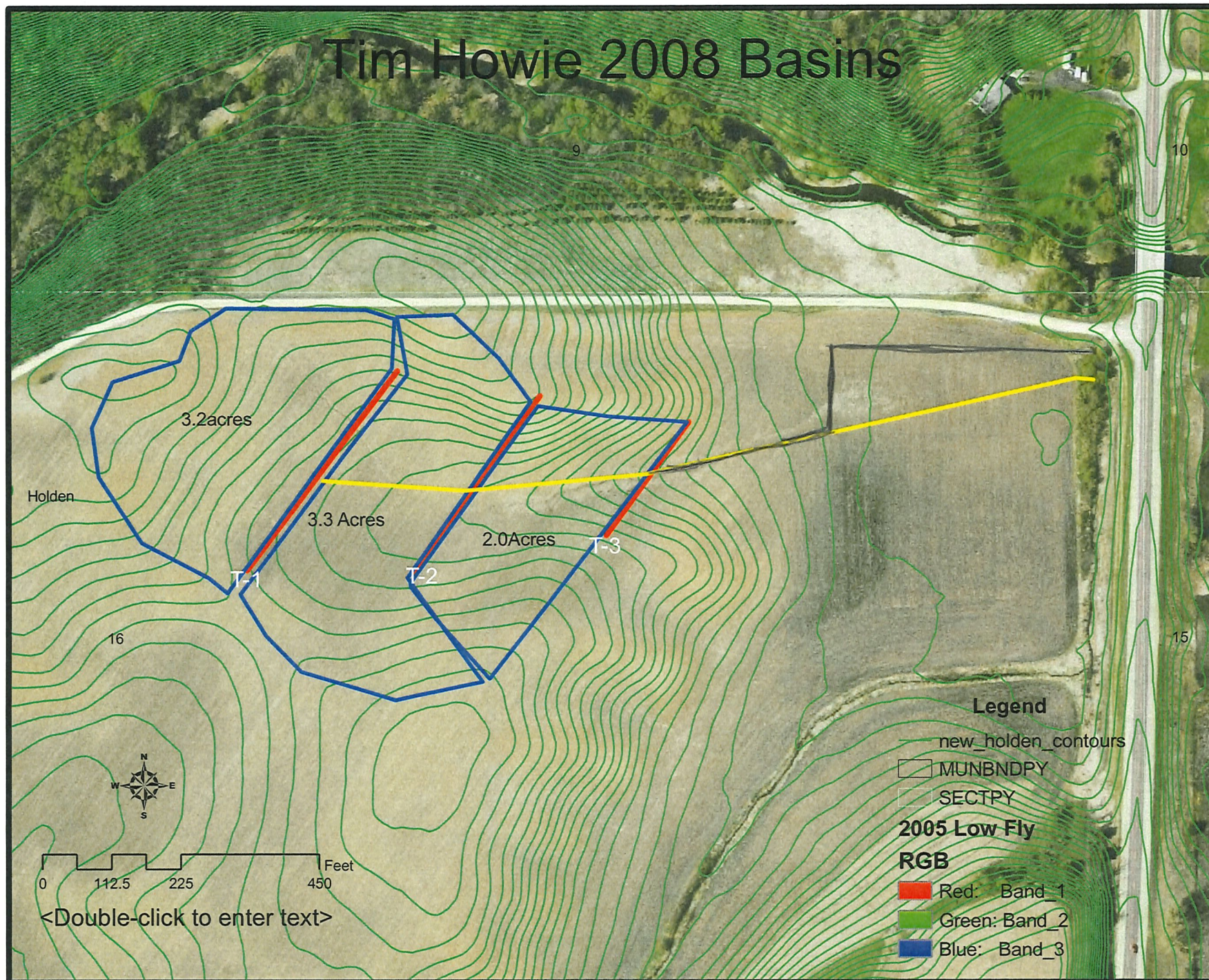


Tim Howie 2008 Basins



Microsoft Excel97

Approved By : _____ Title : _____ Date : _____

Microsoft Excel97

Designed By : CLH

Landowner : Tim Howie

Landowner : Tim Howie

Location : Holden 16

Terrace : T-2

Save as :

Date : 11/18/08 Update : 3/14/02

Grade Rod HI Reference = 4.40 feet

End Block Side Slope = 10 : 1

Cut Slope = 8 : 1

Steepest Allowable Frontslope = $\frac{1}{2} : 1$

$$\text{Backslope Ratio} = \frac{\text{Horizontal Distance}}{\text{Vertical Distance}} = 2 : 1$$

Channel Bottom Width = 2 feet ✓

Ridge Top Width = 3 feet ✓

Minimum Terrace Depth = 0 feet

$$\text{Settlement Factor} = \frac{\quad}{5 \%}$$
$$\text{Compaction Factor} = \frac{\text{Weight of concrete in test cylinder}}{1.4 \times \text{fill volume}}$$

Use Average Slope = _____ %

Terrace End Block Design

End BlockTop Width = feet

Station 0+00 End Block Rod = _____ feet

Station 2+00 End Block Rod = _____ feet

SOLUTION

Average Slope = 3.00 %

10yr 24hr Runoff = 1.86 inches ✓

Design Storage Depth = 3.56 feet

Design Storage Ridge Rod = 6.34 feet

Intake Rod = 9.9 feet

Minimum Storage Volume 1ac" = 15333 cubic feet

Required Storage Volume = 17387 cubic feet

Calculated Storage Volume = 17480 cubic feet

Excess Storage Volume = 93 cubic feet

EARTHWORK VOLUMES

Ridge Fill Volume = 126 cubic yards

Channel Fill Volume = 0 cubic yards

No End Block at Sta. 0+00

No End Block at Sta. 2+00

Total Compacted Fill Volume = 126 cubic yards

$$\text{Compacted Fill Volume} \times 1.4 = \frac{\quad}{176} \text{ cubic yards}$$

Channel Cut Volume = 34 cubic yards

Additional Fill Needed = 142 cubic yards

Benchmark Description :

Engineering Job Class : I Checked By : piot Date : 11/08

Approved By : _____ Title : _____ Date : _____

Microsoft Excel97

Designed By : CLH

Landowner : Tim Howie

Landowner : Tim Howie

Location : Holden 16

Terrace : T-3

Save as :

Date : 11/18/08 Update : 3/14/02

Grade Rod HI Reference = 5.30 feet

End Block Side Slope = 10 : 1

Cut Slope = 8 : 1

Steepest Allowable Frontslope = $\frac{1}{2} : 1$

$$\text{Backslope Ratio} = \frac{\text{Horizontal Distance}}{\text{Vertical Distance}} = 2 : 1$$

Channel Bottom Width = 2 feet ✓

Ridge Top Width = 6 feet ✓

Minimum Terrace Depth = 0 feet

Settlement Factor = 5 % ✓

$$\text{Compaction Factor} = \frac{\text{Weight of concrete specimen}}{1.4 \times \text{fill volume}}$$

Use Average Slope = _____ %

NEED END BLOCK AT STATION 0+00

End BlockTop Width = feet

Station 0+00 End Block Rod = _____ feet

Station 1+50 End Block Rod = _____ feet

SOLUTION

Average Slope = 10.95 %

10yr 24hr Runoff = 1.86 inches ✓

Design Storage Depth = 4.92 feet

Design Storage Ridge Rod = 9.18 feet

$$\text{Intake Rod} = \frac{9}{14.1} \text{ feet}$$

Minimum Storage Volume 1ac" = 9293 cubic feet

Required Storage Volume = 10537 cubic feet

Calculated Storage Volume = 10571 cubic feet

Excess Storage Volume = 34 cubic feet

EARTHWORK VOLUMES

Ridge Fill Volume = 475 cubic yards

Channel Fill Volume = 0 cubic yards

No End Block at Sta. 0+00 NEED END BLOCK AT STA. 0+00

No End Block at Sta. 1+50

Total Compacted Fill Volume = 475 cubic yards

$$\text{Compacted Fill Volume} \times 1.4 = \underline{\underline{665 \text{ cubic yards}}}$$

Channel Cut Volume = 411 cubic yards

Additional Fill Needed = 254 cubic yards

Benchmark Description : _____

Engineering Job Class : 1 Checked By : Ch. S. S. S. Date : 11/08

Approved By : _____ Title : _____ Date : _____

TILE Contractors As Built Notes

Name: County: ? Township: ? Section: ? Quarter: ?

Main # 1

	Min Grade	Actual Tile Grade	Incremental Footage	Total Footage	Elev. #	Land Grade			Depth		
			0	0	67.52			0	0		
	0.39	0.39	33	33	72.19	4.67	0.129	4.54	4.54		
	0.39	0.39	67	100	71.98	-0.21	0.261	-0.47	4.07		
	0.39	0.39	60	160	72.29	0.31	0.234	0.08	4.15		
	0.39	0.39	40	200	72.50	0.21	0.156	0.05	4.20		
10"	0.39	0.39	100	300	73.34	0.84	0.390	0.45	4.65		
	0.39	0.39	80	380	74.35	1.01	0.312	0.70	5.35		
	0.39	0.39	20	400	74.15	-0.20	0.078	-0.28	5.07		
	0.39	0.39	100	500	74.06	-0.09	0.390	-0.48	4.59		
	0.39	0.39	100	600	73.62	-0.44	0.390	-0.83	3.76		
	3.05	2.82	100	700	76.82	3.20	2.820	0.38	4.14	4.46	-0.32
8"	3.05	3.2	100	800	79.55	2.73	3.200	-0.47	3.67	3.99	-0.32
	3.05	1.5	100	900	81.30	1.75	1.500	0.25	3.92	4.25	-0.33
	3.05	4.5	100	1000	85.32	4.02	4.500	-0.48	3.44	3.75	-0.31
	3.05	3	100	1100	90.14	4.82	3.000	1.82	5.26	5.51	-0.25
	3.05	4.5	100	1200	94.53	4.39	4.500	-0.11	5.15	5.47	-0.32
6"	3.05	3.75	100	1300	97.30	2.77	3.750	-0.98	4.17	4.48	-0.31
	3.05	1.1	100	1400	98.80	1.50	1.100	0.40	4.57	4.87	-0.30
	3.05	1.65	100	1500	100.15	1.35	1.650	-0.30	4.27	4.56	-0.29
5"	3.05	2.5	60	1560	101.45	1.30	1.500	-0.20	4.07	4.35	-0.28

To: Goodhue County

From: Don Avery

Fax # 651-923-5304

507-259-1980

TILE CUT SHEET

Landowner : Obert Musjgerd
Location : Holden 16
Tile Line : Main Line

Designed By : clh
Checked By :

Date : 11/18/08
Date :

[illegible]

UTILITY NOTIFICATION

BEFORE START OF CONSTRUCTION, THE OWNERS OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE EXCAVATOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "GOPHER STATE ONE-CALL" AT (651) 454-0022 (TWIN CITIES METRO AREA) OR (800) 252-1166 (ALL OTHER LOCATIONS) AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.

Materials List: Tim Howie

Three 5 or 6 inch by 30" tall Intakes 24 1" holes per intake

One 10" piece of cmp pile. 10' in Length for outlet

Tile:

360' of 10"

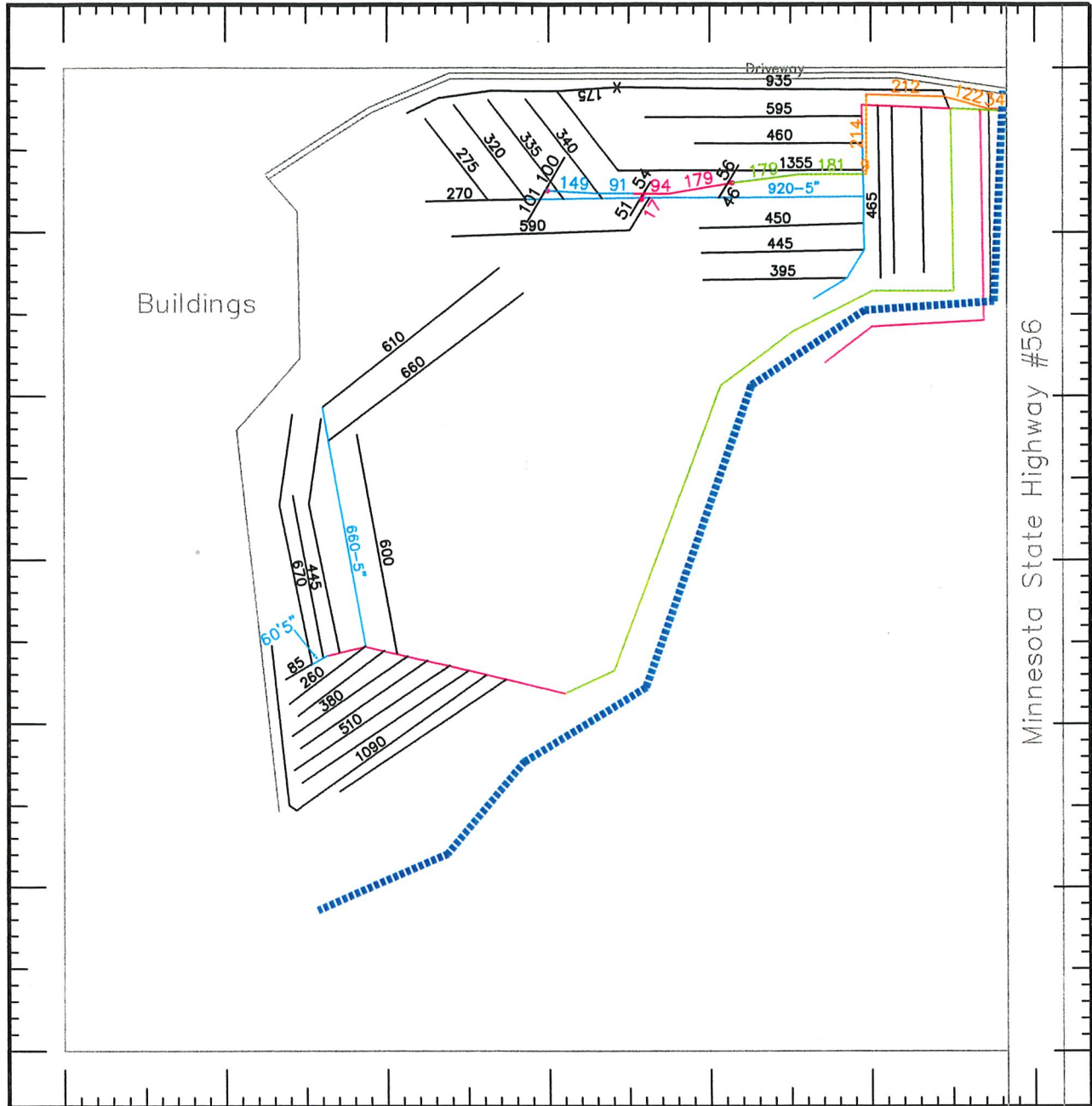
340' of 8"

230' of 6"

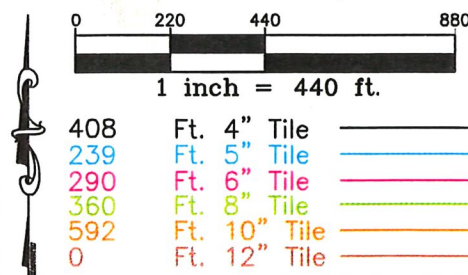
235' of 5"

400' of 4" channel tile. 100' for T-2 and T-3(50' each side of intake), 200' for T-1 (100' each side of intake)

LOCATION PLAN OF TILE SYSTEM



Obert Musjerd Nov 2008
 Section: 16 Township: Holden
 County: Goodhue State: MN
 Spacings: Terr. Tile Drawn by: AJT



L&E Farm Drainage
 West Concord, MN
 "QUALITY MAKES THE DIFFERENCE"
 507-527-2444

Existing Tile ---
 Waterways and Ditches ---
 Property and field Borders ---
 Elec. or Tele. Cable ---
 Gas Line ---
 Wetland ---
 Trees ---
 Surface Intake O