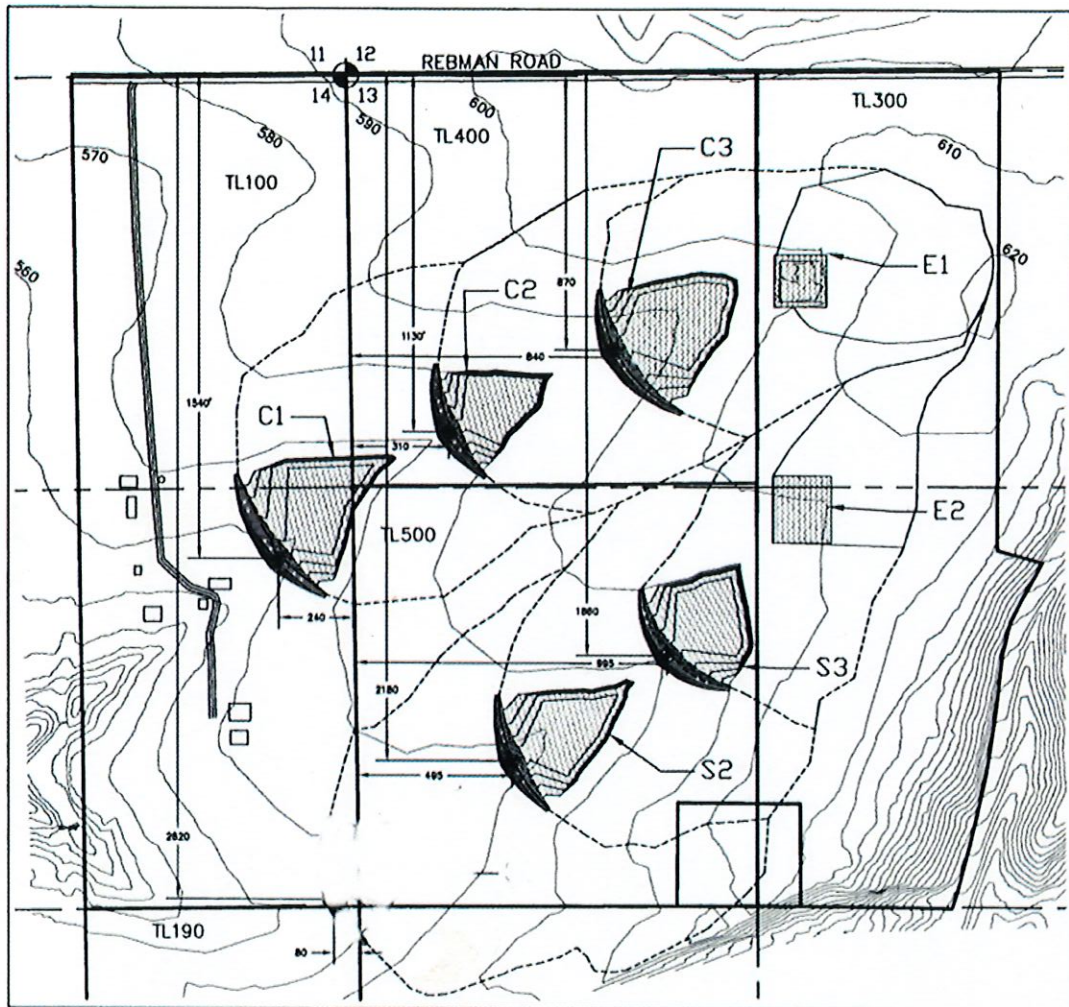


12-88642

TOWNSEND FARMS SMALL POND APPLICATION MAP

APPLICANT:
TOWNSEND FARMS, INC.



LOCATION: T2S, R3E,
SEC. 13 TAXLOTS 300, 400, 500, 700
SEC. 14 TAXLOT 100, 190,
WILLAMETTE MERIDIAN, CLACKAMAS COUNTY.

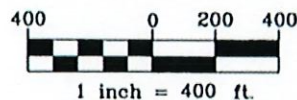
Pond ID	FILE #	PERMIT #	AREA (ac)	VOL (ac-ft)
E1	R-88018	R-15088	0.63	6.00
E2	R-88017	R-15101	0.63	7.00
C1	R-	R-	3.05	18.20
C2	R-	R-	1.92	11.45
C3	R-	R-	3.14	19.18
S2	R-	R-	1.79	14.27
S3	R-	R-	2.38	14.13
Totals =			15.01	100.76

Pond ID	COORDINATES from N sec. corner 14+13	
C1	1840 S	240 W
C2	1130 S	310 E
C3	870 S	840 E
S2	2180 S	495 E
S3	1860 S	995 E

C₁ - S14 T2S R3E, NE/NE
C₂ & C₃ - S13 T2S R3E, NW/NW
S₃ & S₂ - S13 T2S R3E, SW/NW

MAP BASED ON:
TAX MAPS: T2S-R3E-13+14
TOPOGRAPHY SURVEY

NOTE: THIS MAP IS PRODUCED TO APPLY FOR THE
BENEFICIAL USE OF A WATER RIGHT. IT IS NOT
INTENDED TO PROVIDE INFORMATION RELATIVE TO THE
LOCATION OF PROPERTY LINES.



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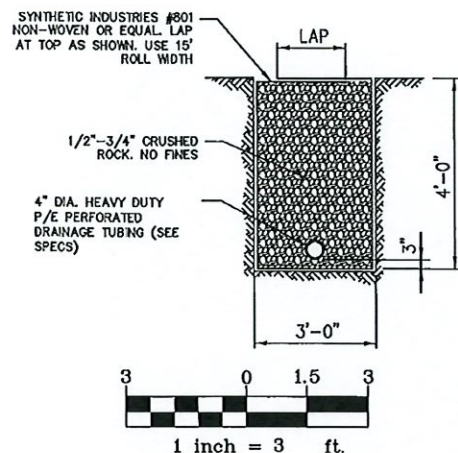
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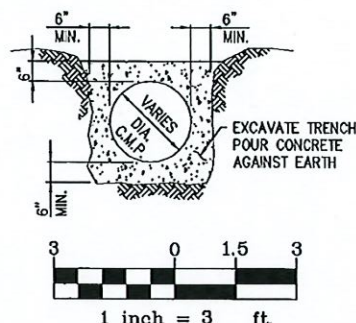
TOWNSEND FARMS TYPICAL SMALL DAM CONSTRUCTION

TOE DRAIN TYPICAL



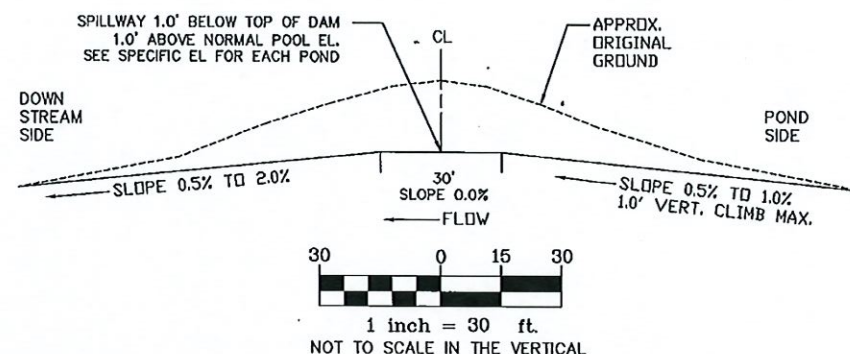
PIPE ENCASEMENT TYPICAL

- NOTES:
- 1.) CONCRETE SHALL BE MINIMUM 3,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
 - 2.) CONCRETE SHALL BE ALLOWED 7 DAYS OF CURE TIME BEFORE ANY EQUIPMENT MAY PASS OVER IT.
 - 3.) AT LEAST 2' OF HAND COMPACTED FILL SHALL BE PLACED OVER ANY CONDUIT BEFORE ANY HEAVY EQUIPMENT IS PERMITTED TO CROSS.

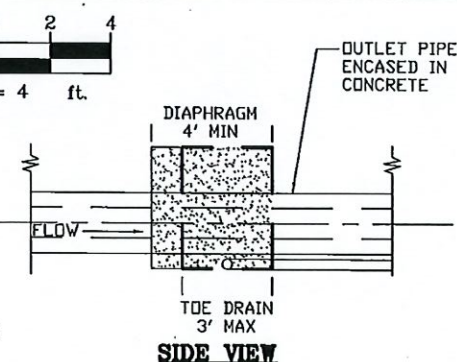
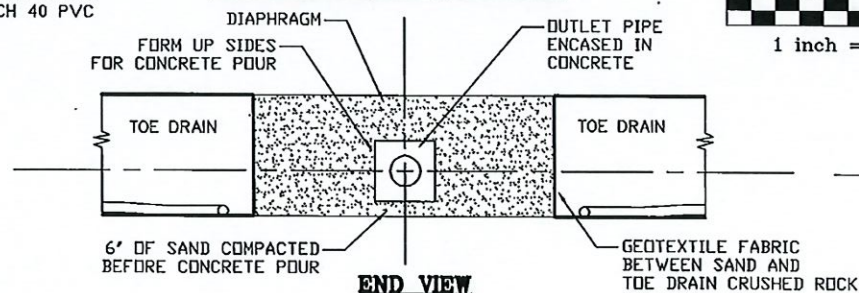
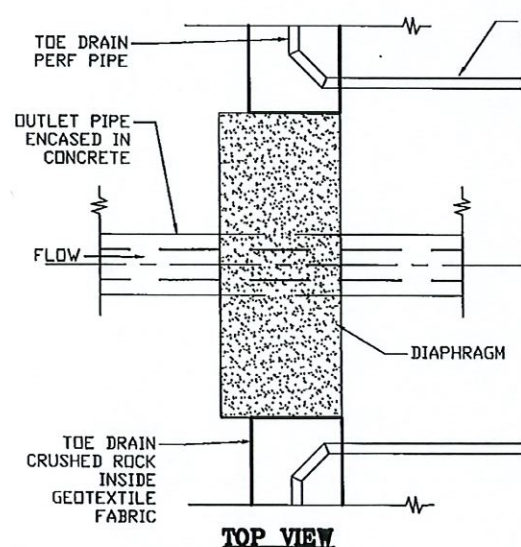


SPILLWAY TYPICAL

- NOTES:
- 1.) WIDTH OF SPILLWAY TO BE NO LESS THAN 6'.
 - 2.) SIDE SLOPES SHALL BE NO STEEPER THAN 2.5 :1.
 - 3.) SPILLWAY TO BE SEEDED WITH A GRASS MIX AND FERTILIZER TO PROMOTE GROWTH.



DIAPHRAGM TYPICAL



- NOTES:
- 1.) THE DIAPHRAGM SHALL BE COMPRISED OF ASTM C-33 CONCRETE SAND. THE SAND SHALL BE PLACED IN MAX. 8" LIFTS AND COMPACTED USING A VIBRATORY COMPACTOR.
 - 2.) PLACE AND COMPACT BOTTOM 6" OF DIAPHRAGM UNDER CONCRETE PRIOR TO POURING CONCRETE.
 - 3.) FORM UP SIDES OF CONCRETE ACROSS DIAPHRAGM BEFORE POURING CONCRETE.
 - 4.) TOE DRAIN PERF PIPE SHOULD DROP TO BOTTOM OF TRENCH AT THE END BEFORE CONNECTING TO PVC OUTLET PIPE.



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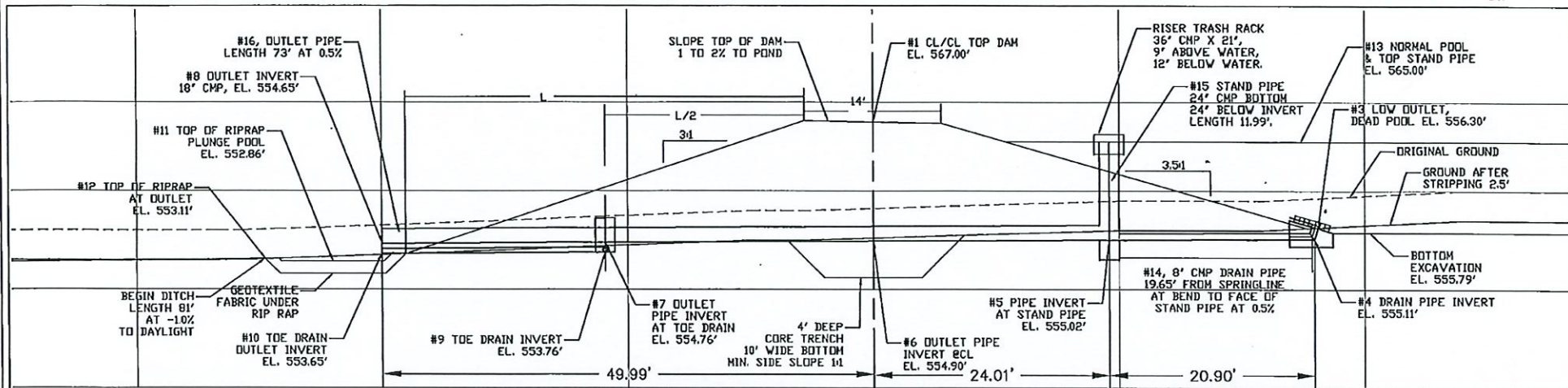
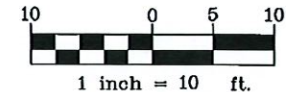
JOB No.: 315-038
REVISED: 9-11-16
DRAWING NAME:
TOWNSEND FARMS TYPICAL DAM

Stuntzner
Engineering & Forestry, LLC

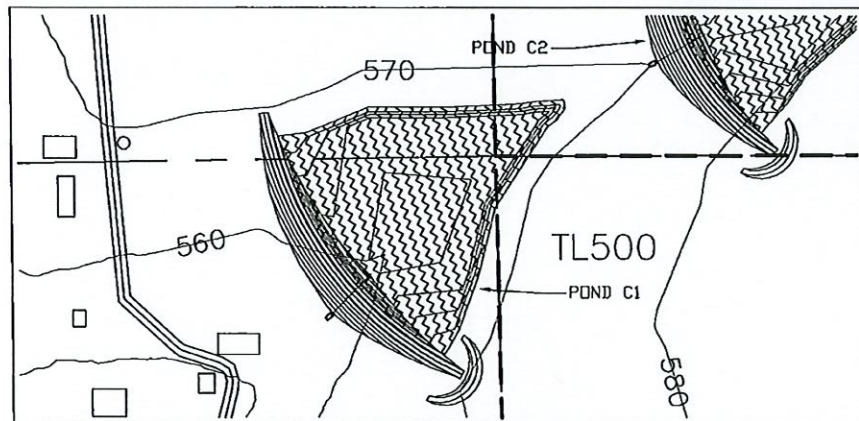
TOWNSEND FARMS, INC.
LOCATION: T2S, R3E, SEC. 13 TAXLOT 400,
WILLAMETTE MERIDIAN, CLACKAMAS COUNTY.

TYPICAL SMALL DAM CONSTRUCTION, POND C1

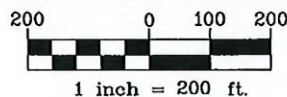
TYPICAL DAM SECTION, DAM C1



NOTE: THIS DRAWING IS BASED ON REPORTS FROM THE FIELD THAT 2.5' OF TOP SOIL IS BEING STRIPPED. THE THEORETICAL ELEVATIONS AND LENGTHS OF PIPE SHOULD BE CHECKED IN THE FIELD. SOME MINOR FIELD ADJUSTMENTS MAY BE REQUIRED.



PLAN VIEW, POND C1



TYPICAL DAM SECTION, POND C1		
1	CL/CL TOP OF DAM	567
2	CL/CL ORIG. GRND	568.2
3	DAM HEIGHT	8.8
4	LOWEST OUTLET	566.3
5	DRAIN PIPE INLET INVERT	555.11
6	INVERT AT STAND PIPE	555.02
7	INVERT AT CL	554.9
8	INVERT AT TOE DRAIN	554.73
9	OUTLET INVERT	554.65
10	TOE DRAIN INVERT	553.76
11	TOE DRAIN OUTLET INVERT	553.65
12	TOP OF RIPRAP	552.86
13	RIPRAP AT OUTLET	553.11
14	TOP OF STAND PIPE	565
15	SPILLWAY ELEVATION	566
16	drain pipe diameter, inches	8
17	stand pipe diameter, inches	24
18	outlet pipe diameter, inches	18

POND C1 HYDROLOGY AND VOLUME NOTES		
Watershed		
Effective pond watershed area =	18.17	ac
USDA annual ave. direct rain and runoff =	43.37	ac-ft
Stripping		
Assume stripping depth =	2.5	ft
Est. volume of stripping =	12,170	cyd
Dam construction		
Calculated volume of dam =	5,679	cyd
Excav. For dam assume 12% comp. & loss =	6,360	cyd
Calculated depth of excavation for dam =	1.71	ft
Pond		
Calc. Pond Vol. with NO dig out =	10.66	ac-ft
Calc. Pond Vol. with dig out =	16.28	ac-ft
Volume of excavation for dig out =	9,065	cyd
Est. ave. depth of digout =	2.43	ft



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JOB No.: 315-038
REVISED: 9-23-15
DRAWING NAME:
TOWNSEND FARMS TYPICAL DAM

Stuntzner
Engineering & Forestry, LLC

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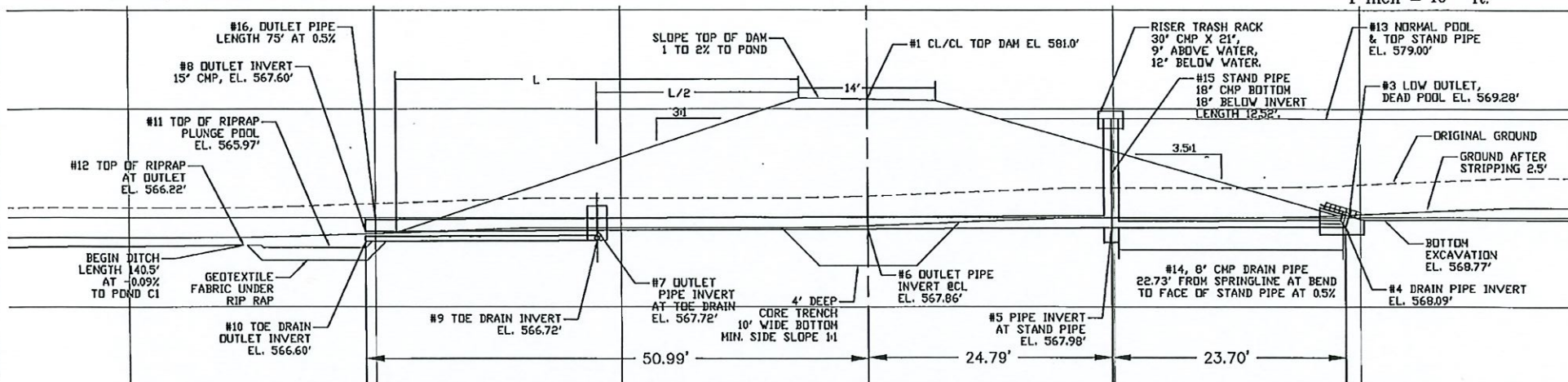
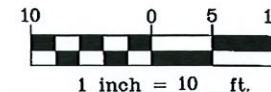
JUL 28 2018

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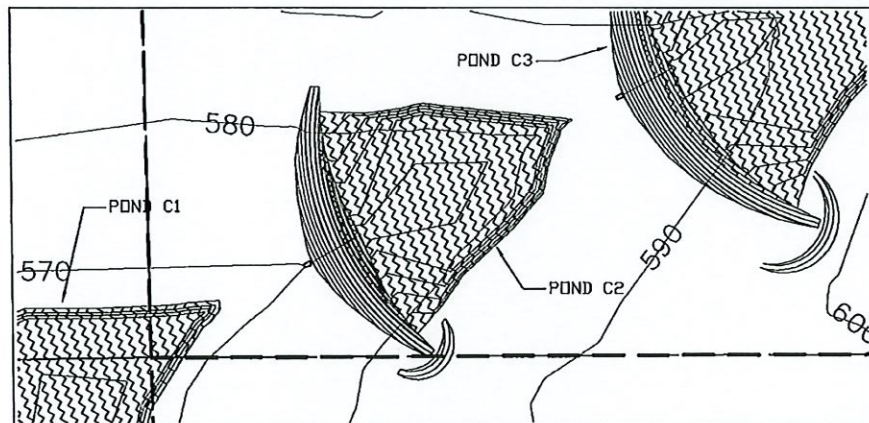
TYPICAL SMALL DAM CONSTRUCTION, POND C2

TOWNSEND FARMS, INC.
LOCATION: T2S, R3E, SEC. 13 TAXLOT 400,
WILLAMETTE MERIDIAN, CLACKAMAS COUNTY.

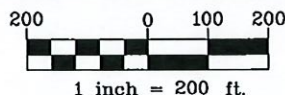
TYPICAL DAM SECTION, DAM C2



NOTE: THIS DRAWING IS BASED ON REPORTS FROM THE FIELD THAT 2.5' OF TOP SOIL IS BEING STRIPPED. THE THEORETICAL ELEVATIONS AND LENGTHS OF PIPE SHOULD BE CHECKED IN THE FIELD. SOME MINOR FIELD ADJUSTMENTS MAY BE REQUIRED.



PLAN VIEW, POND C2



TYPICAL DAM SECTION, POND C2		
1	CL/CL TOP OF DAM	581
2	CL/CL ORIG. GRND	571.1
3	DAM HEIGHT	9.9
4	LOWEST OUTLET	569.28
5	DRAIN PIPE INLET INVERT	568.09
6	INVERT AT STAND PIPE	567.98
7	INVERT AT CL	567.86
8	INVERT AT TOE DRAIN	567.72
9	OUTLET INVERT	567.6
10	TOE DRAIN INVERT	566.72
11	TOE DRAIN OUTLET INVERT	566.6
12	TOP OF RIPRAP	565.97
13	RIPRAP AT OUTLET	566.22
14	TOP OF STAND PIPE	579
15	SPILLWAY ELEVATION	580
16	drain pipe diameter, inches	8
17	stand pipe diameter, inches	18
18	outlet pipe diameter, inches	15

POND C2 HYDROLOGY AND VOLUME NOTES		
Watershed		
Effective pond watershed area =	12.37	ac
USDA annual ave. direct rain and runoff =	35.76	ac-ft
Stripping		
Assume stripping depth =	2.5	ft
Est volume of stripping =	4,918	cyd
Dam construction		
Calculated volume of dam =	4,646	cyd
Excav. For dam assume 12% comp. & loss =	5,204	cyd
Calculated depth of excavation for dam =	1.64	ft
Pond		
Calc. Pond Vol. with NO dig out =	9.83	ac-ft
Calc. Pond Vol. with dig out =	16.92	ac-ft
Volume of excavation for dig out =	11,439	cyd



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2137 19TH AVENUE
FOREST GROVE, OR 97116
503-357-6717

EXPIRES 12/31/15

JOB No.: 315-038
REVISED: 9-23-15
DRAWING NAME:
TOWNSEND FARMS TYPICAL DAM

Stuntzner
Engineering & Forestry, LLC



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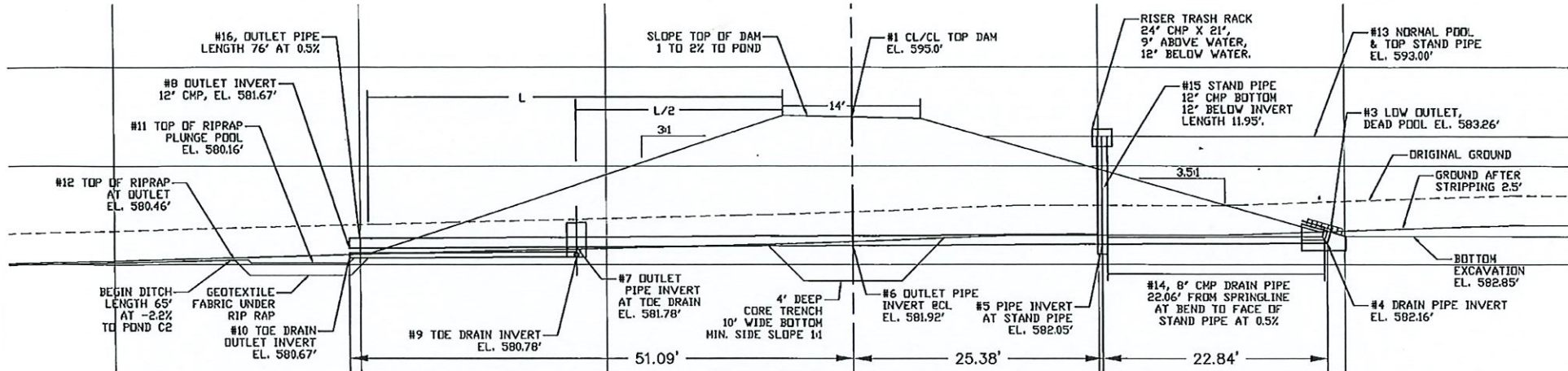
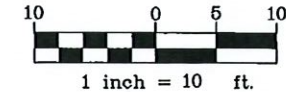
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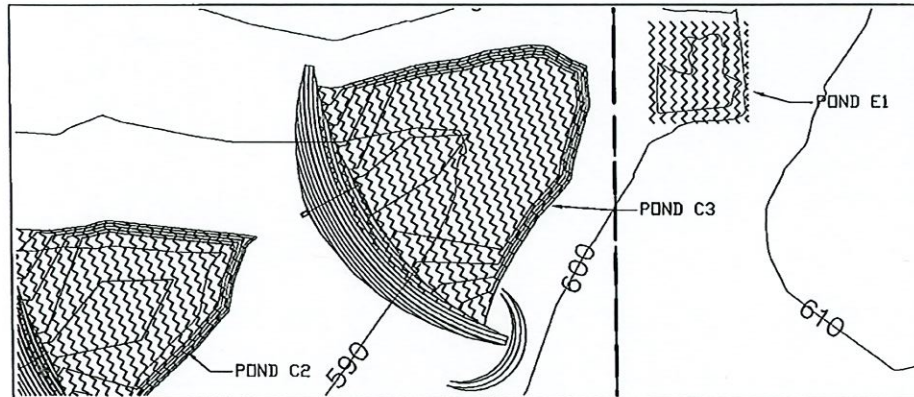
TYPICAL SMALL DAM CONSTRUCTION, POND C3

TOWNSEND FARMS, INC.
LOCATION: T2S, R3E, SEC. 13 TAXLOT 400,
WILLAMETTE MERIDIAN, CLACKAMAS COUNTY.

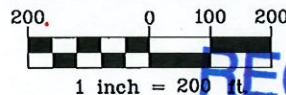
TYPICAL DAM SECTION, DAM C3



NOTE: THIS DRAWING IS BASED ON REPORTS FROM THE FIELD THAT 2.5' OF TOP SOIL IS BEING STRIPPED. THE THEORETICAL ELEVATIONS AND LENGTHS OF PIPE SHOULD BE CHECKED IN THE FIELD. SOME MINOR FIELD ADJUSTMENTS MAY BE REQUIRED.



PLAN VIEW, POND C3



TYPICAL DAM SECTION, POND C3	
1	CL/CL TOP OF DAM 595
2	CL/CL ORIG. GRND 585.1
3	DAM HEIGHT 9.9
4	LOWEST OUTLET 583.3
5	DRAIN PIPE INLET INVERT 582.16
6	INVERT AT STAND PIPE 582.05
7	INVERT AT CL 581.92
8	INVERT AT TOE DRAIN 581.78
9	OUTLET INVERT 581.67
10	TOE DRAIN INVERT 580.78
11	TOE DRAIN OUTLET INVERT 580.67
12	TOP OF RIPRAP 580.16
13	RIPRAP AT OUTLET 580.46
14	TOP OF STAND PIPE 593
15	SPILLWAY ELEVATION 594
16	drain pipe diameter, inches 8
17	stand pipe diameter, inches 12
18	outlet pipe diameter, inches 12

POND C3 HYDROLOGY AND VOLUME NOTES		
Watershed		
Effective pond watershed area =	11.40	ac
USDA annual ave. direct rain and runoff =	33.22	ac-ft
Stripping		
Assume stripping depth =	2.5	ft
Est volume of stripping =	14,796	cyd
Dam construction		
Calculated volume of dam =	6,531	cyd
Excav. For dam assume 12% comp. & loss =	7,314	cyd
Calculated depth of excavation for dam =	1.58	ft
Pond		
Calc. Pond Vol. with NO dig out =	15.51	ac-ft
Calc. Pond Vol. with dig out =	26.27	ac-ft
Volume of excavation for dig out =	17,368	cyd



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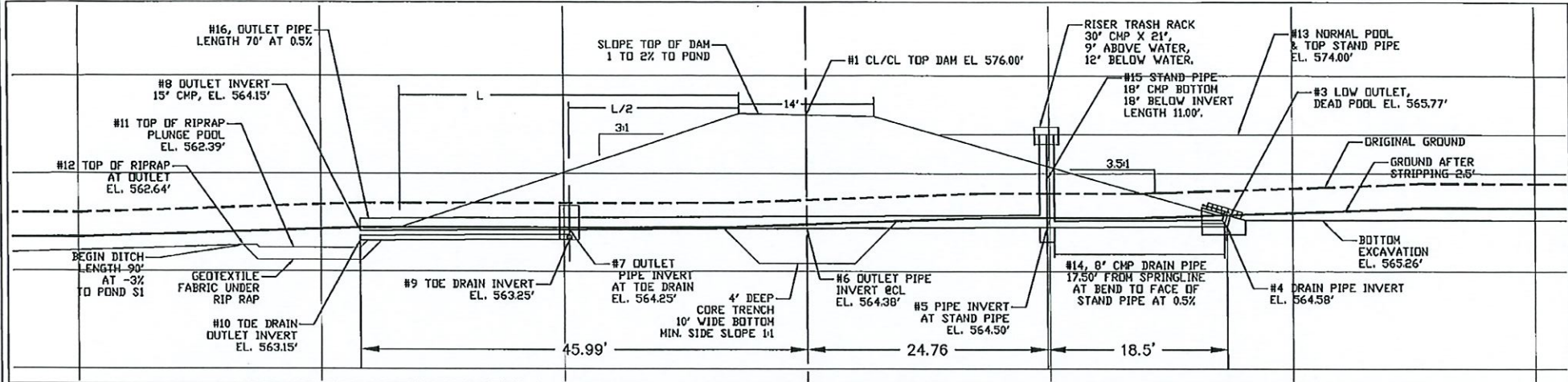
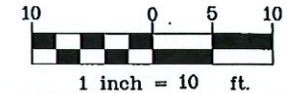
JOB No.: 315-038
REVISED: 9-23-15
DRAWING NAME:
TOWNSEND FARMS TYPICAL DAM
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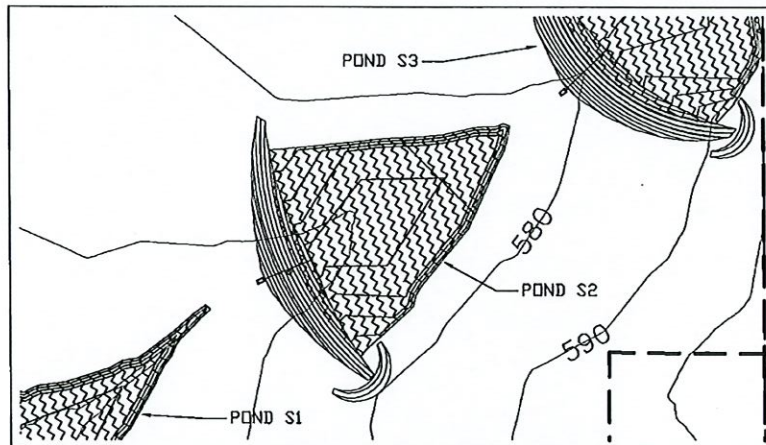
TOWNSEND FARMS, INC.
LOCATION: T2S, R3E, SEC. 13 TAXLOT 400,
WILLAMETTE MERIDIAN, CLACKAMAS COUNTY.

TYPICAL SMALL DAM CONSTRUCTION, POND S2

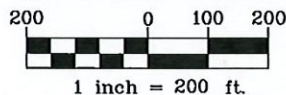
TYPICAL DAM SECTION, DAM S2



NOTE: THIS DRAWING IS BASED ON REPORTS FROM THE FIELD THAT 2.5' OF TOP SOIL IS BEING STRIPPED. THE THEORETICAL ELEVATIONS AND LENGTHS OF PIPE SHOULD BE CHECKED IN THE FIELD. SOME MINOR FIELD ADJUSTMENTS MAY BE REQUIRED.



PLAN VIEW, POND S2



TYPICAL DAM SECTION, POND S2		
1	CL/CL TOP OF DAM	576
2	CL/CL ORIG. GRND	567.1
	DAM HEIGHT	8.9
3	LOWEST OUTLET	565.77
4	DRAIN PIPE INLET INVERT	564.58
5	INVERT AT STAND PIPE	564.50
6	INVERT AT CL	564.38
7	INVERT AT TOE DRAIN	564.25
8	OUTLET INVERT	564.15
9	TOE DRAIN INVERT	563.25
10	TOE DRAIN OUTLET INVERT	563.15
11	TOP OF RIPRAP	562.39
12	RIPRAP AT OUTLET	562.64
13	TOP OF STAND PIPE	574.00
	SPILLWAY ELEVATION	575.00
14	drain pipe diameter, inches	8
15	stand pipe diameter, inches	18
16	outlet pipe diameter, inches	15

POND S2 HYDROLOGY AND VOLUME NOTES		
Watershed		
Effective pond watershed area =	14.75	ac
USDA annual ave. direct rain and runoff =	39.88	ac-ft
Stripping		
Assume stripping depth =	2.5	ft
Est. volume of stripping =	9,966	cyd
Dam construction		
Calculated volume of dam =	3,826	cyd
Excav. For dam assume 12% comp. & loss =	4,285	cyd
Calculated depth of excavation for dam =	1.39	ft
Pond		
Calc. Pond Vol. with NO dig out =	8.49	ac-ft
Calc. Pond Vol. with dig out =	13.65	ac-ft
Volume of excavation for dig out =	8,333	cyd

JOB No.: 315-038
REVISED: 9-22-15
DRAWING NAME:
TOWNSEND FARMS TYPICAL DAM S2



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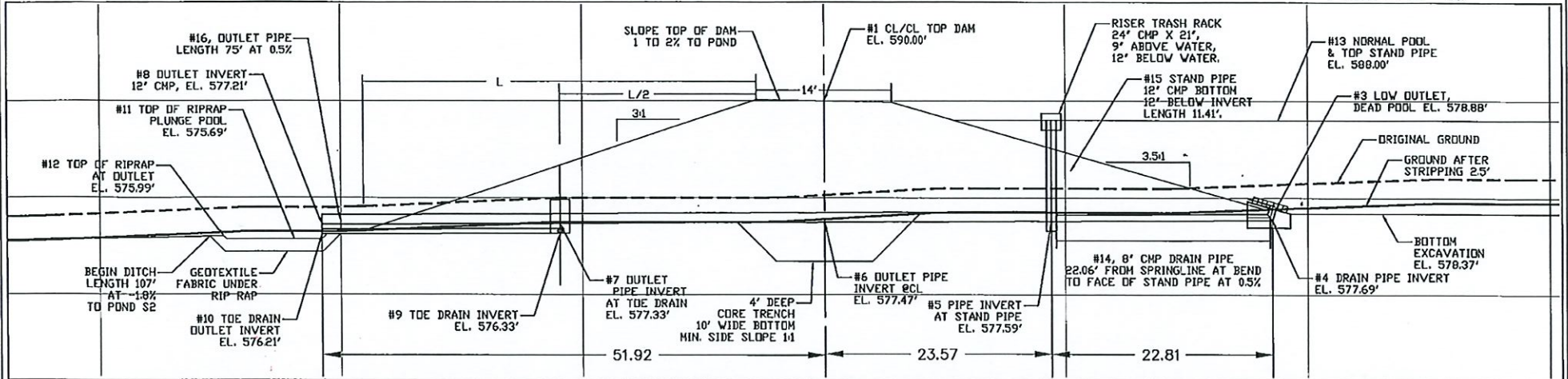
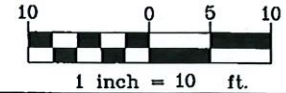
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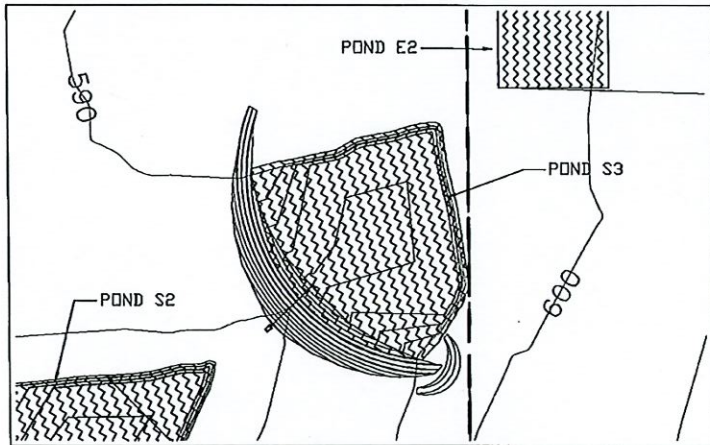
TYPICAL SMALL DAM CONSTRUCTION, POND S3

TOWNSEND FARMS, INC.
LOCATION: T2S, R3E, SEC. 13 TAXLOT 400,
WILLAMETTE MERIDIAN, CLACKAMAS COUNTY.

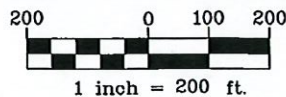
TYPICAL DAM SECTION, DAM S3



NOTE: THIS DRAWING IS BASED ON REPORTS FROM THE FIELD THAT 2.5' OF TOP SOIL IS BEING STRIPPED. THE THEORETICAL ELEVATIONS AND LENGTHS OF PIPE SHOULD BE CHECKED IN THE FIELD. SOME MINOR FIELD ADJUSTMENTS MAY BE REQUIRED.



PLAN VIEW, POND S3



TYPICAL DAM SECTION, POND S3		
1	CL/CL TOP OF DAM	590
2	CL/CL ORIG. GRND	580.1
	DAM HEIGHT	9.9
3	LOWEST OUTLET	578.88
4	DRAIN PIPE INLET INVERT	577.69
5	INVERT AT STAND PIPE	577.59
6	INVERT AT CL	577.47
7	INVERT AT TOE DRAIN	577.33
8	OUTLET INVERT	577.21
9	TOE DRAIN INVERT	576.33
10	TOE DRAIN OUTLET INVERT	576.21
11	TOP OF RIPRAP	575.69
12	RIPRAP AT OUTLET	575.99
13	TOP OF STAND PIPE	588
	SPILLWAY ELEVATION	589
14	drain pipe diameter, inches	8
15	stand pipe diameter, inches	12
16	outlet pipe diameter, inches	12

POND S3 HYDROLOGY AND VOLUME NOTES		
Watershed		
Effective pond watershed area =	9.49	ac
USDA annual ave. direct rain and runoff =	34.55	ac-ft
Stripping		
Assume stripping depth =	0	ft
Est. volume of stripping =	0	cyd
Dam construction		
Calculated volume of dam =	5,855	cyd
Excav. For dam assume 12% comp. & loss =	6,222	cyd
Calculated depth of excavation for dam =	1.85	ft
Pond		
Calc. Pond Vol. with NO dig out =	11.09	ac-ft
Calc. Pond Vol. with dig out =	17.83	ac-ft
Volume of excavation for dig out =	10,880	cyd



JOB No.: 315-038
REVISED: 9-23-15
DRAWING NAME:
TOWNSEND FARMS TYPICAL DAM S3

Stuntzner
Engineering & Forestry, LLC

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