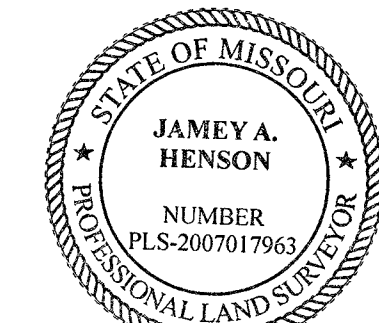


REV.	REVISIONS/DATE
1	1-9-13 REVISED PER CITY COMMENTS
2	2-7-13 REVISED PER CITY COMMENTS
3	3-20-13 REVISED PER CITY COMMENTS
4	4-9-13 REVISED PER CITY COMMENTS

**STORM SEWER MEASUREMENTS**

The existing sewer length, sizes, flowlines, depths of structures and sewers, and locations with respect to existing or proposed easements have been measured. The results of those measurements are shown on this set of Final Measurement Plans. Any information shown that was provided by the sewer contractor or other sources, I disclaim any responsibility for that specific information.

All public sewers are located within the designated existing or proposed easements except as follows:



**THE STERLING COMPANY**  
 By *JAH* 5/11/17  
 James A. Henson  
 Mo. Reg. P.L.S. - #2007017963

**AS BUILT**

**PROJECT TITLE**  
**WEATHERBY LANDING**  
 OFFALON, MISSOURI

**THE STERLING COMPANY**  
 ENGINEERS & SURVEYORS  
 5055 New Baumgartner Road  
 St. Louis, Missouri 63129  
 Ph. 314-487-0440 Fax 314-487-8944  
 www.sterling-eng-survey.com  
 Corporate Certificate of Authority #001348

Date: 4/9/2013  
 RODNEY ARNOLD  
 License No. PE-2002016612  
 Civil Engineer

**MCBRIDE & SON HOMES LAND DEVELOPMENT, INC.**  
 16091 SWINGLEY RIDGE ROAD, STE. 300  
 CHESTERFIELD, MISSOURI 63017  
 Ph. 636-537-2000  
 www.mcbriدهomes.com

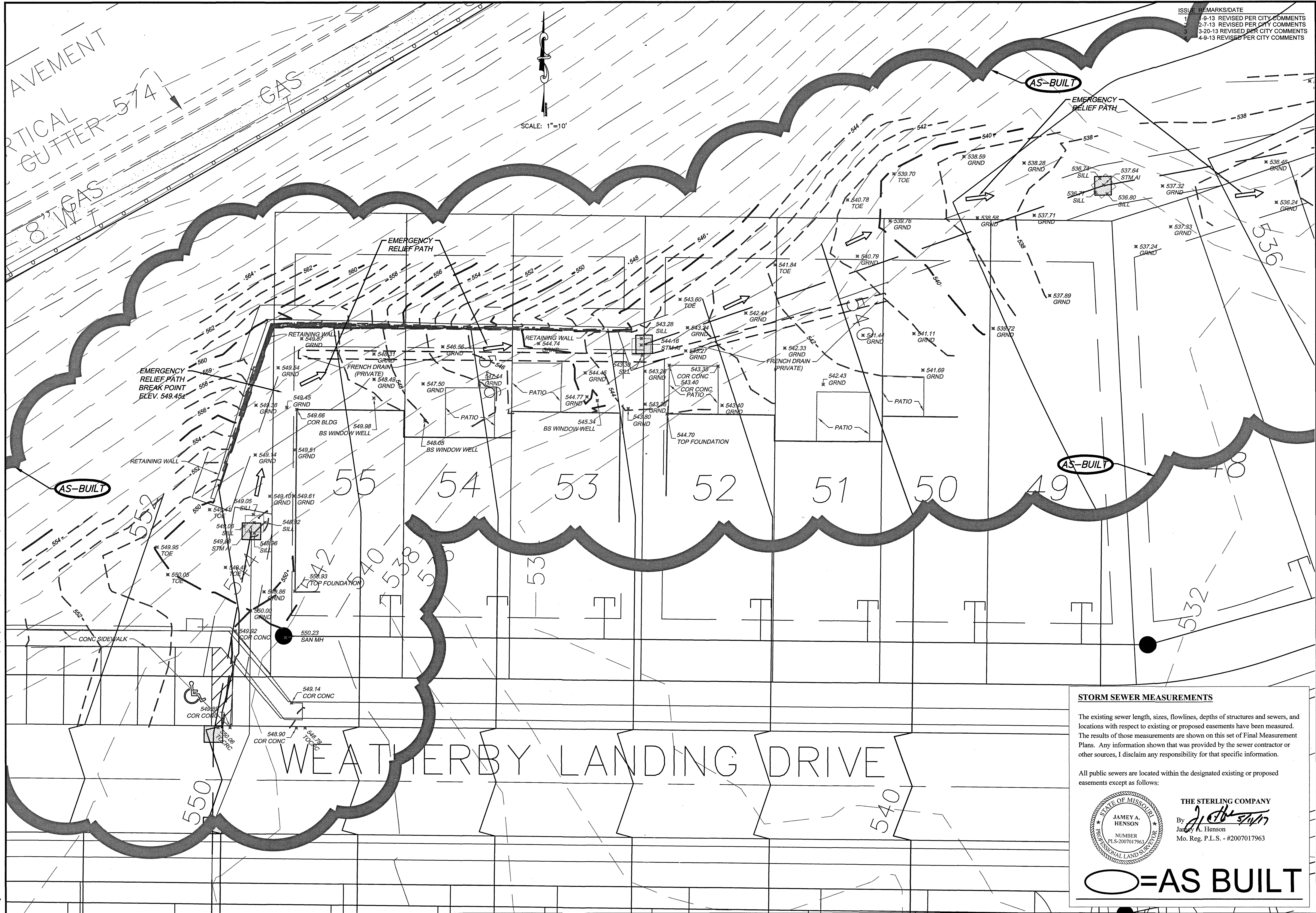
**GRADING PLAN**

P+Z No. 1305.05  
 City No.  
 Date: 11/12/2012  
 Job No. 12-05-127  
 Page No.

**3.1**  
 As-Builts

Drawing name: G:\SSA\PROJ\1205127 WEATHERBY LANDING\SSA\FILTER TO CSD\1024\AS-BUILT\SAND FILTER (CSD).dwg Plotted on: Apr 12, 2017 - 11:43am Plotted by: mshampson





ISSUE	REMARKS/DATE
1	9-13 REVISED PER CITY COMMENTS
2	2-7-13 REVISED PER CITY COMMENTS
3	3-20-13 REVISED PER CITY COMMENTS
4	4-9-13 REVISED PER CITY COMMENTS

PROJECT TITLE

**WEATHERBY LANDING**  
OF FALLON, MISSOURI

**THE STERLING CO.**  
ENGINEERS & SURVEYORS

5055 New Baumgartner Road  
St. Louis, Missouri 63129  
Ph 314-487-0440 Fax 314-487-8944  
www.sterling-eng-survey.com  
Corporate Certificate of Authority #001348

The Professional Engineer's seal and signature are required on this sheet. All drawings, instruments or other documents not exhibiting this seal and signature shall be considered void. The Professional Engineer shall be responsible for the accuracy of the information shown on this sheet, and for the accuracy of the information shown on this sheet, and for the accuracy of the information shown on this sheet.

Date: 4/9/2013  
RODNEY ARNOLD  
License No. PE-2002016612  
Civil Engineer

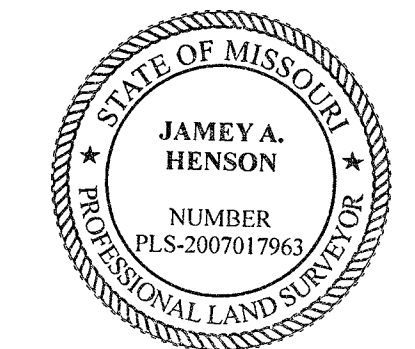
MCBRIDE & SON HOMES LAND DEVELOPMENT, INC.  
16091 SWINGLEY RIDGE ROAD, STE. 300  
CHESTERFIELD, MISSOURI 63017  
Ph. 636-537-2000  
www.micbridehomes.com

GRADING PLAN

**STORM SEWER MEASUREMENTS**

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All public sewers are located within the designated existing or proposed easements except as follows:



**THE STERLING COMPANY**  
By *Jamey A. Henson*  
Jamey A. Henson  
Mo. Reg. P.L.S. - #2007017963

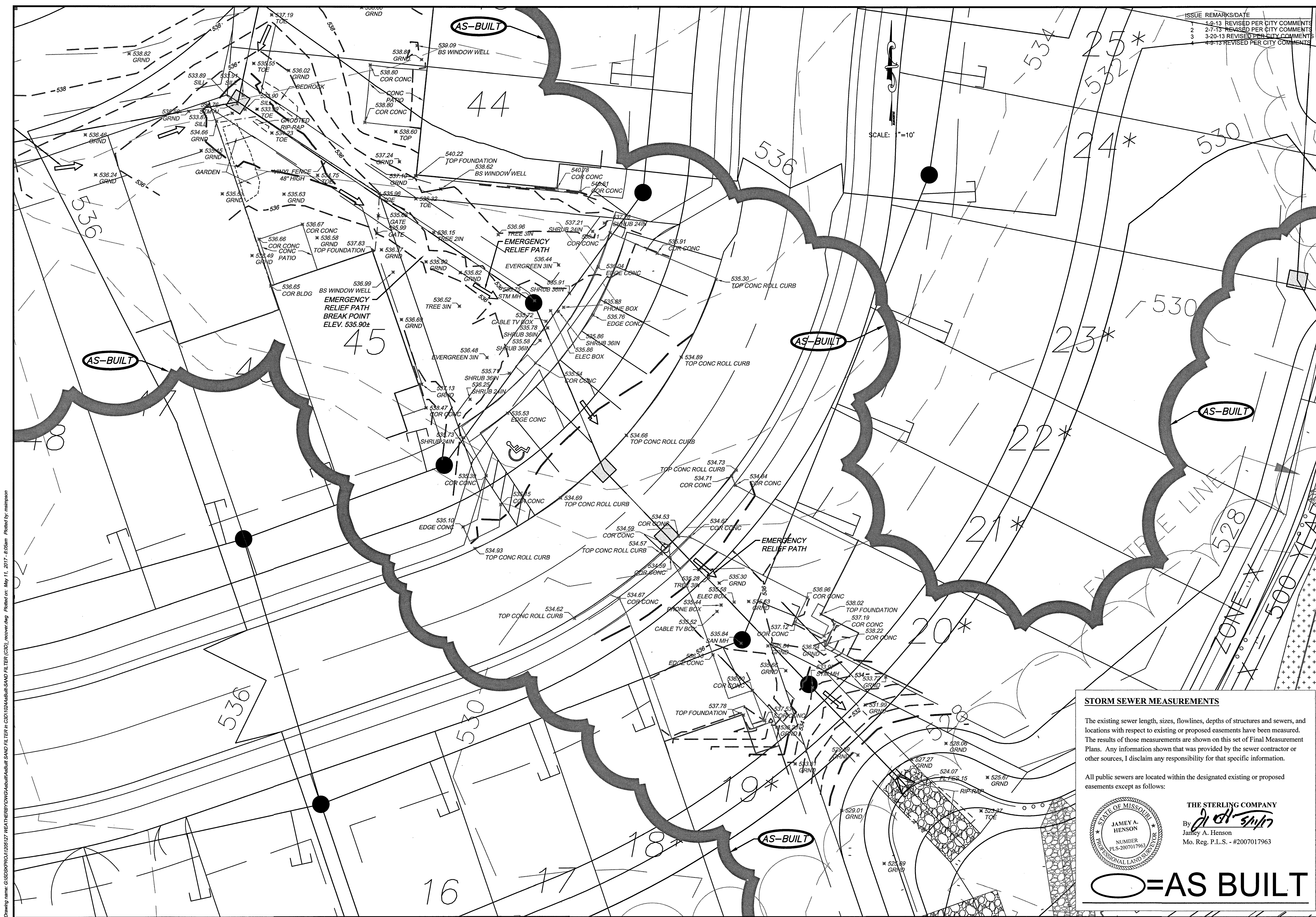
**AS BUILT**

P+Z No. 1305.05  
City No.  
Date: 11/12/2012  
Job No. 12-05-127

Page No.  
**3.1-a**  
As-Builts

Drawing name: G:\SSK\PC\1203127 WEATHERBY\DWG\AS-BUILT\SAND FILTER (CSD).DWG Plotted on: May 11, 2017 - 9:11am Plotted by: mshannon





ISSUE	REMARKS	DATE
1	1-9-13	REVISED PER CITY COMMENTS
2	2-7-13	REVISED PER CITY COMMENTS
3	3-20-13	REVISED PER CITY COMMENTS
4	4-9-13	REVISED PER CITY COMMENTS

SCALE: " = 10'

PROJECT TITLE

**WEATHERBY LANDING**  
OF FALLON, MISSOURI

**THE STERLING CO.**  
ENGINEERS & SURVEYORS  
5055 New Baumgartner Road  
St. Louis, Missouri 63129  
Ph. 314-487-0440 Fax 314-487-8944  
www.sterling-eng-sur.com  
Corporate Certificate of Authority #001348

The Professional Engineer's seal and signature affixed to this sheet are valid only in the state and for the work shown on this sheet. All drawings, instruments or other documents not exhibiting this seal and signature shall not be considered. The Engineer or seal of responsibility for each plan, drawing or document not exhibiting this seal and signature.

Date: 4/9/2013  
RODNEY ARNOLD  
License No. PE-2002016612  
Civil Engineer

**MCBRIDE & SON HOMES LAND DEVELOPMENT, INC.**  
16091 SWINGLEY RIDGE ROAD, STE. 300  
CHESTERFIELD, MISSOURI 63017  
Ph. 636-537-2000  
www.mcbriدهomes.com

GRADING PLAN

**STORM SEWER MEASUREMENTS**

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All public sewers are located within the designated existing or proposed easements except as follows:

○ = AS BUILT

**THE STERLING COMPANY**

By *J. A. Henson*

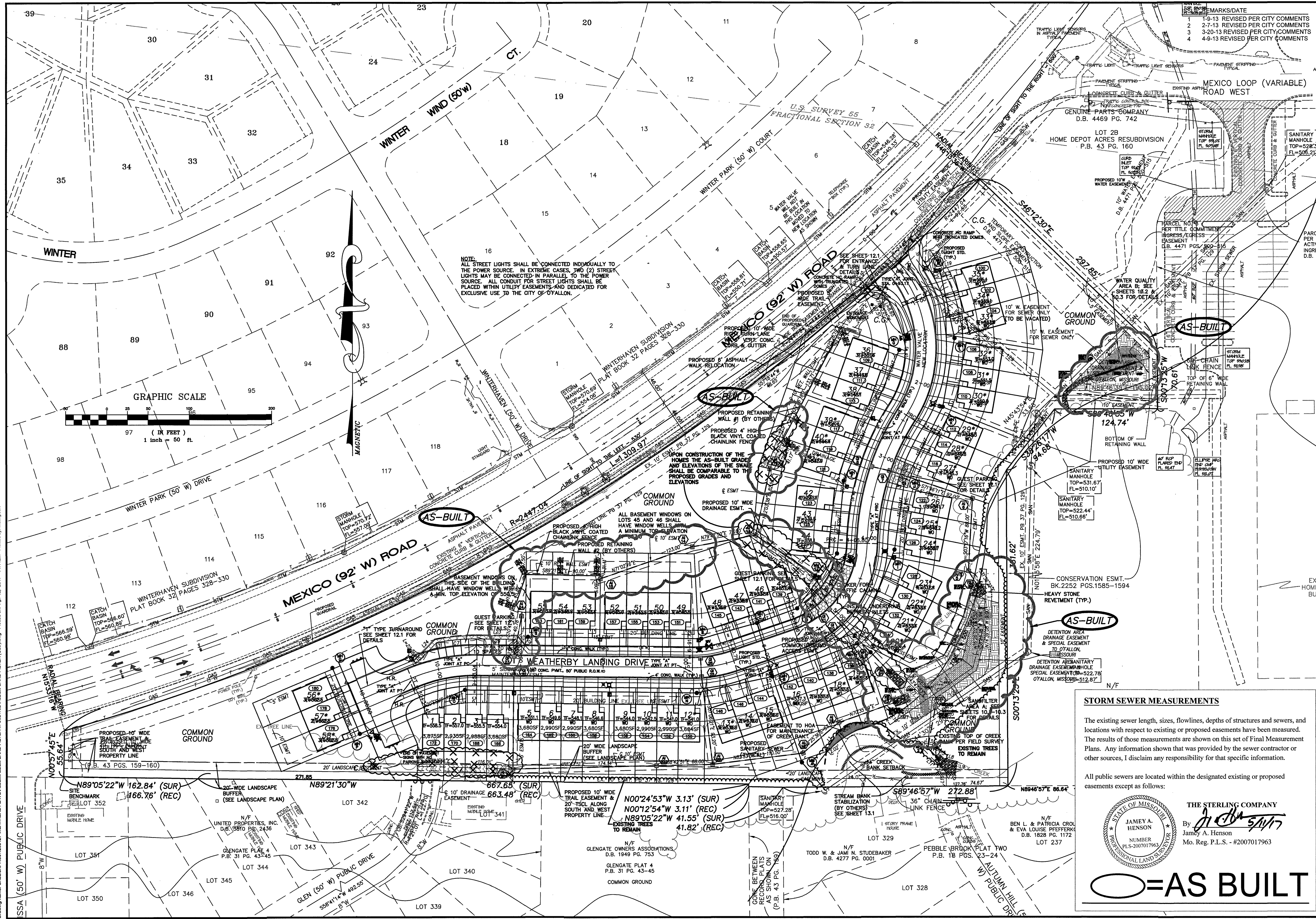
Jamey A. Henson  
NUMBER  
PLS-2007017963  
Mo. Reg. P.L.S. - #2007017963

Drawing name: GISDSDRPO120212Z WEATHERBY LANDING SAND FILTER in CSD110214ASBUILT SAND FILTER (CSD)\_revised.dwg Plotted on: May 11, 2017, 8:05am Plotted by: mstinson



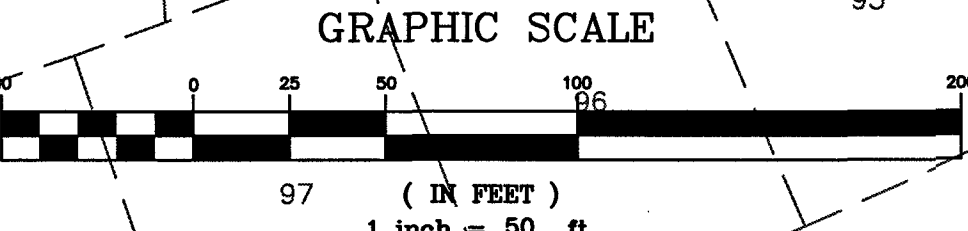






NO.	REVISION	DATE
1	1-9-13 REVISED PER CITY COMMENTS	
2	2-7-13 REVISED PER CITY COMMENTS	
3	3-20-13 REVISED PER CITY COMMENTS	
4	4-9-13 REVISED PER CITY COMMENTS	

NOTE:  
 ALL STREET LIGHTS SHALL BE CONNECTED INDIVIDUALLY TO THE POWER SOURCE. IN EXTREME CASES, TWO (2) STREET LIGHTS MAY BE CONNECTED IN PARALLEL TO THE POWER SOURCE. ALL CONDUIT FOR STREET LIGHTS SHALL BE PLACED WITHIN UTILITY EASEMENTS AND DEDICATED FOR EXCLUSIVE USE TO THE CITY OF O'FALLON.



**STORM SEWER MEASUREMENTS**  
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THE STERLING COMPANY  
 By *[Signature]*  
 James A. Henson  
 Mo. Reg. P.L.S. - #2007017963

**AS-BUILT**

**PROJECT TITLE**  
**WEATHERBY LANDING**  
 O'FALLON, MISSOURI

**THE STERLING CO.**  
**ENGINEERS & SURVEYORS**  
 5055 New Baumgartner Road  
 St. Louis, Missouri 63129  
 Ph 314-487-0440 Fax 314-487-8944  
 www.sterling-eng-survey.com  
 Corporate Certificate of Authority #0010348

The Professional Engineer's seal and signature are required on this drawing only if the engineer and firm are not the preparer of the drawing. All drawings, instruments or other documents not exhibiting this seal and signature shall not be considered prepared by this engineer and the engineer expressly disclaims any responsibility for such drawings, instruments or documents not exhibiting this seal and signature.

Date: 4/9/2013  
 RODNEY ARNOLD  
 License No. PE-2002016612  
 Civil Engineer

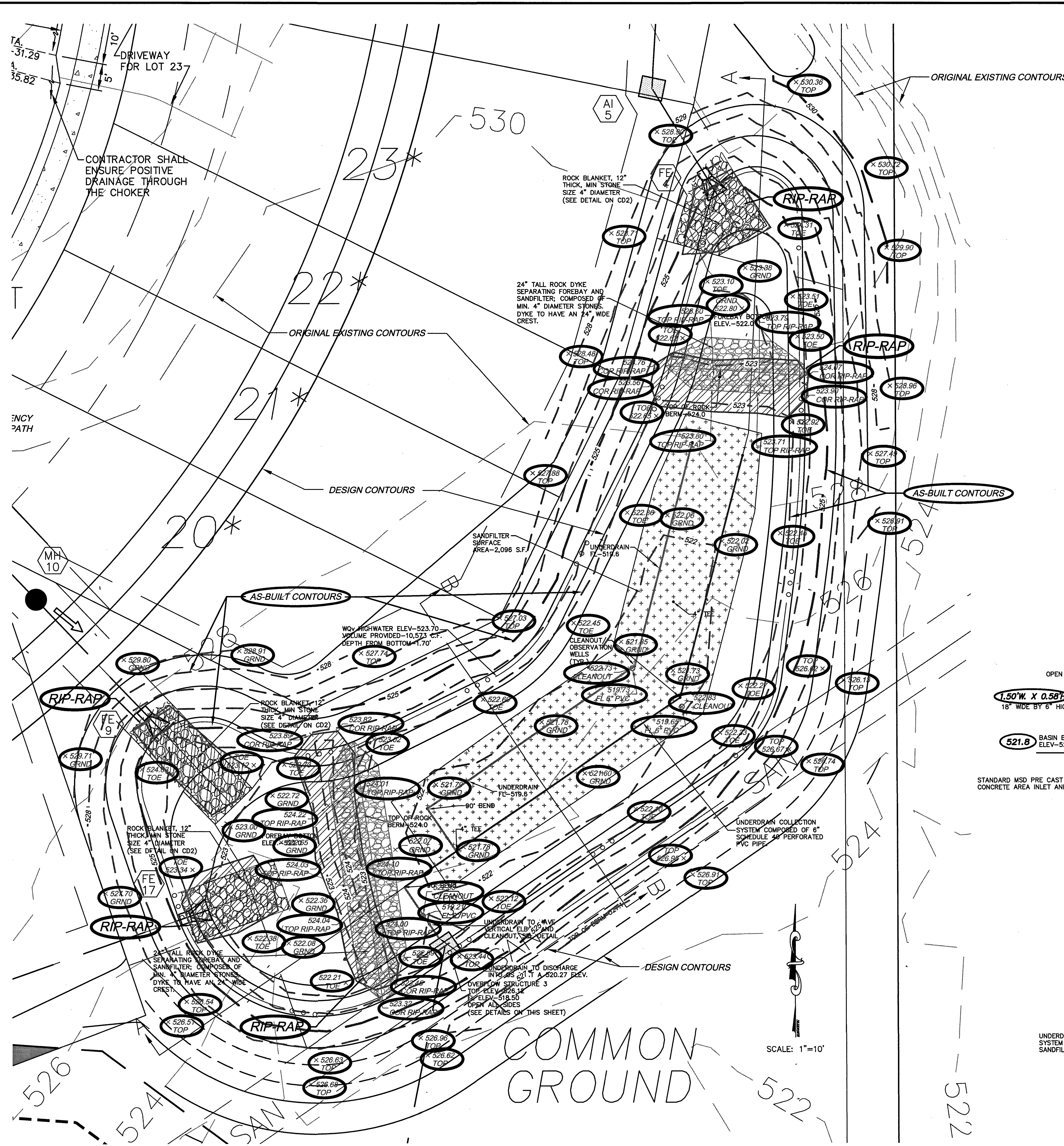
**MCBRIDE & SON HOMES LAND DEVELOPMENT, INC.**  
 16091 SWINGLEY RIDGE ROAD, STE. 300  
 CHESTERFIELD, MISSOURI 63017  
 Ph. 636-637-2000  
 www.mcbriدهomes.com

**P+Z No.** 1305.05  
**City No.**  
**Date:** 11/12/2012  
**Job No.** 12-05-127  
**Page No.**

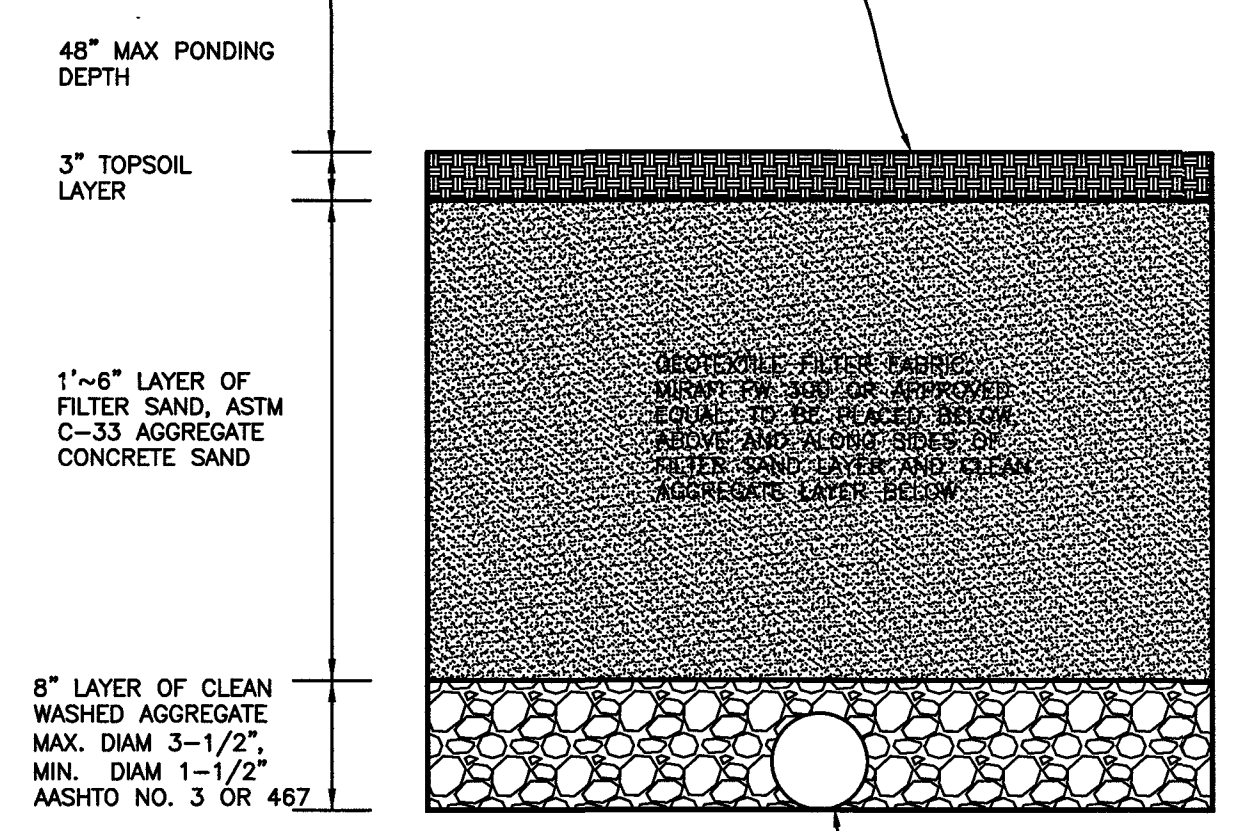
**4.1**  
 As-Builts

Drawing name: G:\SSR\PROJECTS\1205127 WEATHERBY\DWG\AS-BUILT\SAND FILTER (CSD).dwg. Plotted on: Apr 12, 2017 - 11:44am. Plotted by: mcmason

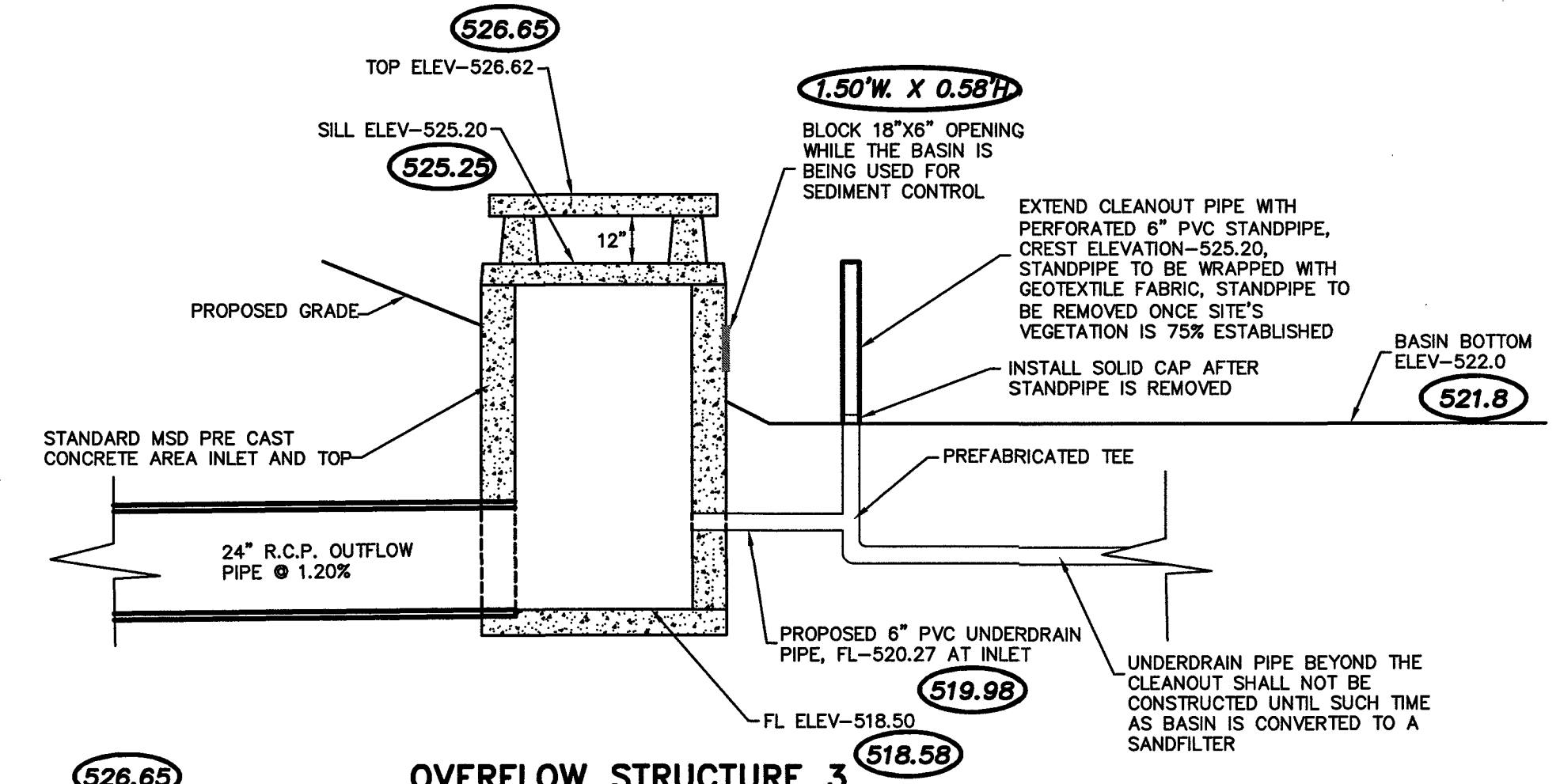




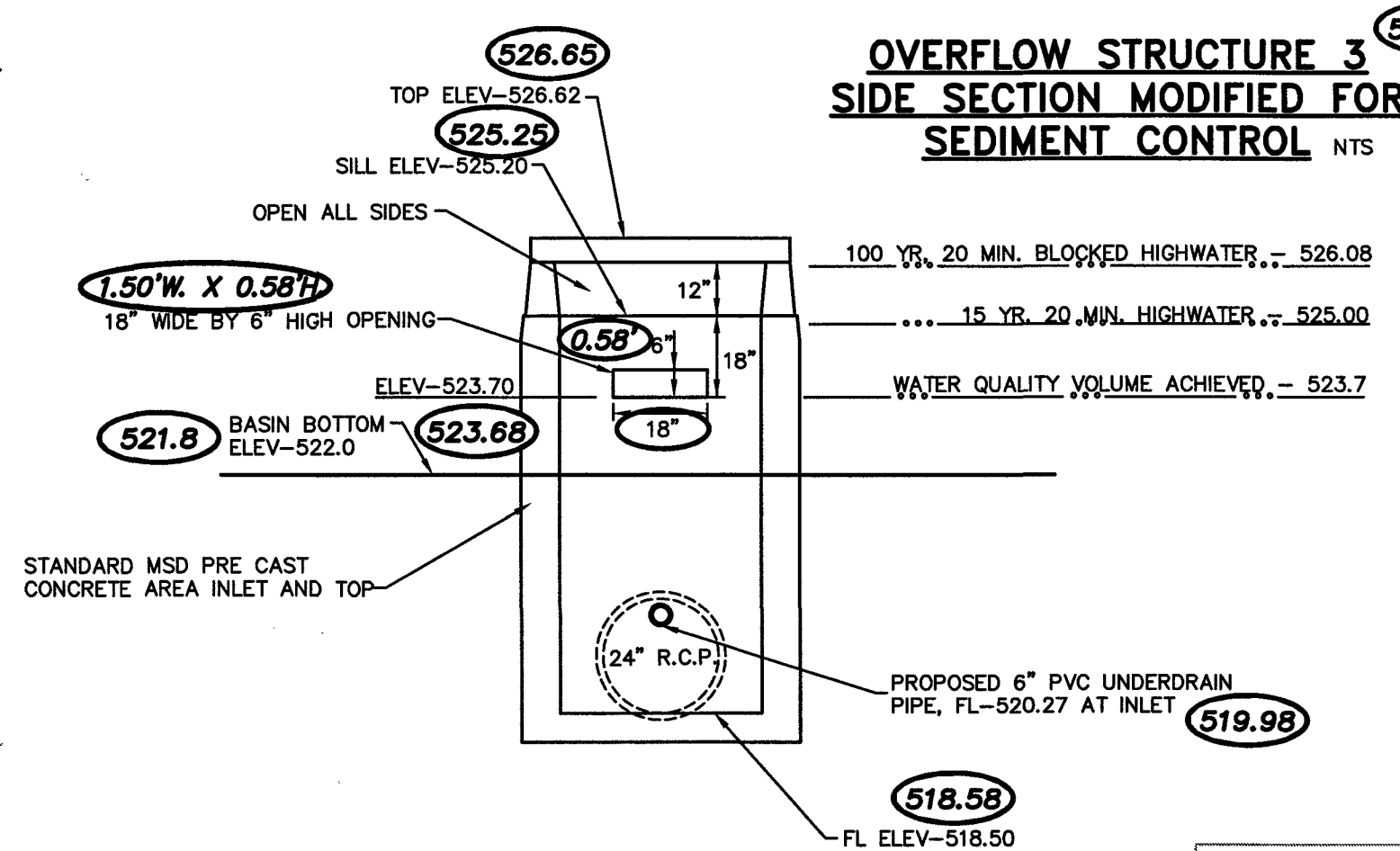
ISSUE	REMARKS/DATE
1	1-9-13 REVISED PER CITY COMMENTS
2	2-7-13 REVISED PER CITY COMMENTS
3	3-20-13 REVISED PER CITY COMMENTS
4	4-9-13 REVISED PER CITY COMMENTS



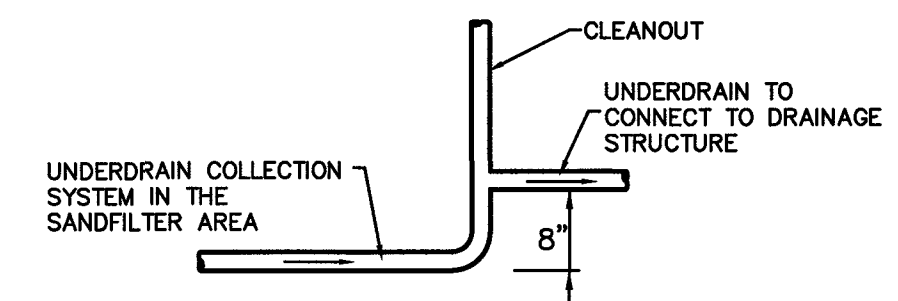
**TYPICAL SECTION SAND FILTER**  
N.T.S.



**OVERFLOW STRUCTURE 3  
SIDE SECTION MODIFIED FOR  
SEDIMENT CONTROL**  
N.T.S.



**OVERFLOW STRUCTURE 3  
FRONT ELEVATION**  
N.T.S.

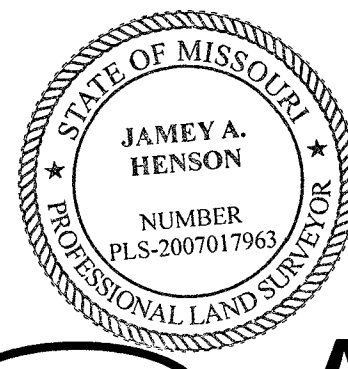


**VERTICAL ELBOW  
UNDERDRAIN DETAIL**  
N.T.S.

**STORM AND SANITARY SEWER MEASUREMENTS**

The existing sewer length, sizes, flowlines, depths of structures and sewers, and locations with respect to existing or proposed easements have been measured. The results of those measurements are shown on this set of Final Measurement Plans. Since the wye locations have been plotted from information provided by the sewer contractor or other sources, I disclaim any responsibility for that specific information.

All public sewers are located within the designated existing or proposed easements except as follows:



**THE STERLING COMPANY**

By *J. Henson* 5/11/17

James A. Henson  
Mo. Reg. P.L.S. - #2007017963

**○ = AS BUILT**

**PROJECT TITLE**  
**WEATHERBY LANDING**  
OF FALLON, MISSOURI

**THE STERLING COMPANY**  
ENGINEERS & SURVEYORS  
5055 New Baumgartner Road  
St. Louis, Missouri 63129  
Ph 314-467-0440 Fax 314-467-8944  
www.sterling-eng-survey.com  
Corporate Certificate of Authority #001348

**DATE:** 4/9/2013  
**RODNEY ARNOLD**  
License No. PE-2002016612  
Civil Engineer

**MCBRIDE & SON HOMES LAND DEVELOPMENT, INC.**  
16091 SWINGLEY RIDGE ROAD, STE. 300  
CHESTERFIELD, MISSOURI 63017  
Ph. 636-537-2000  
www.mcbriدهomes.com

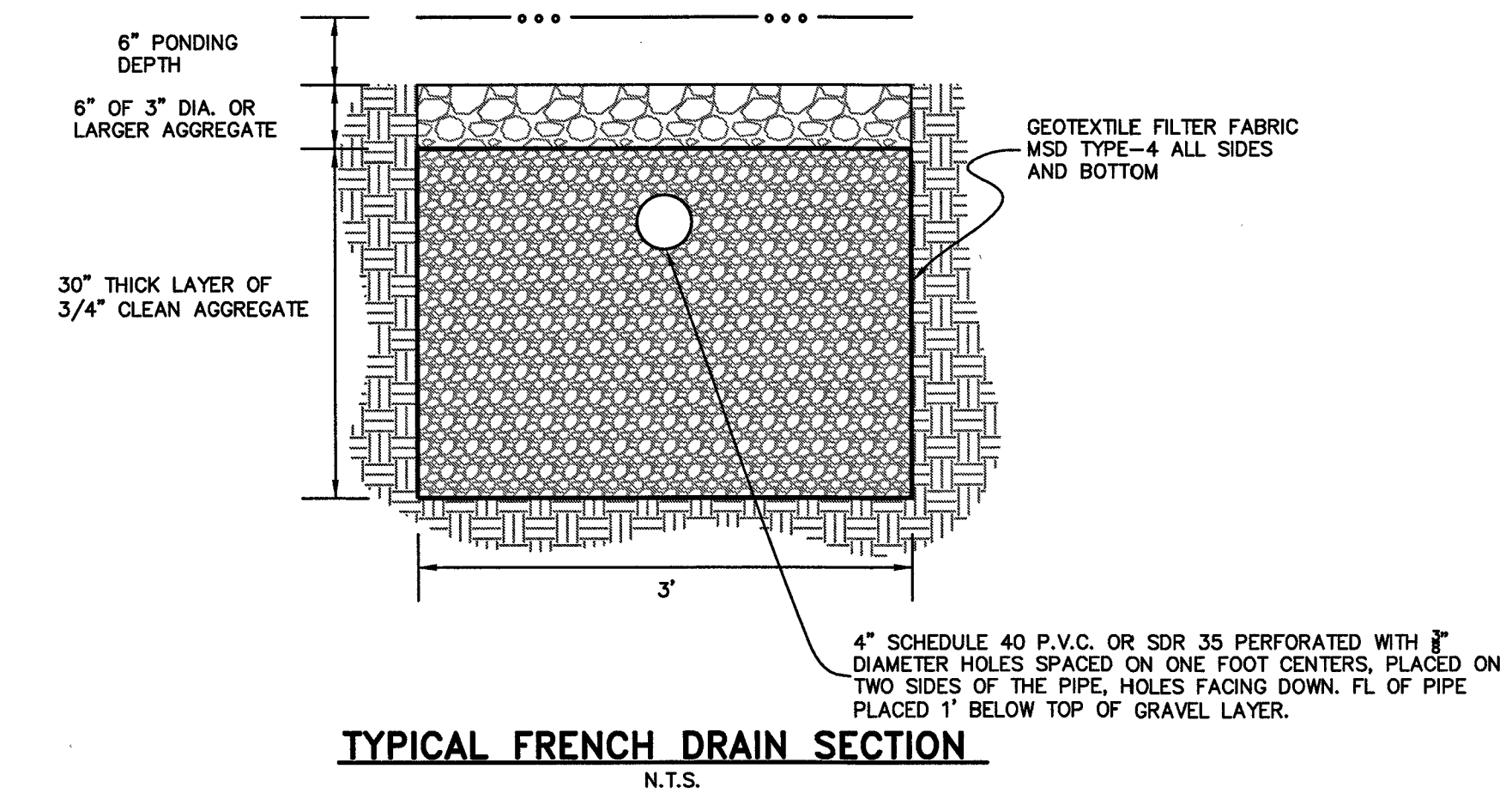
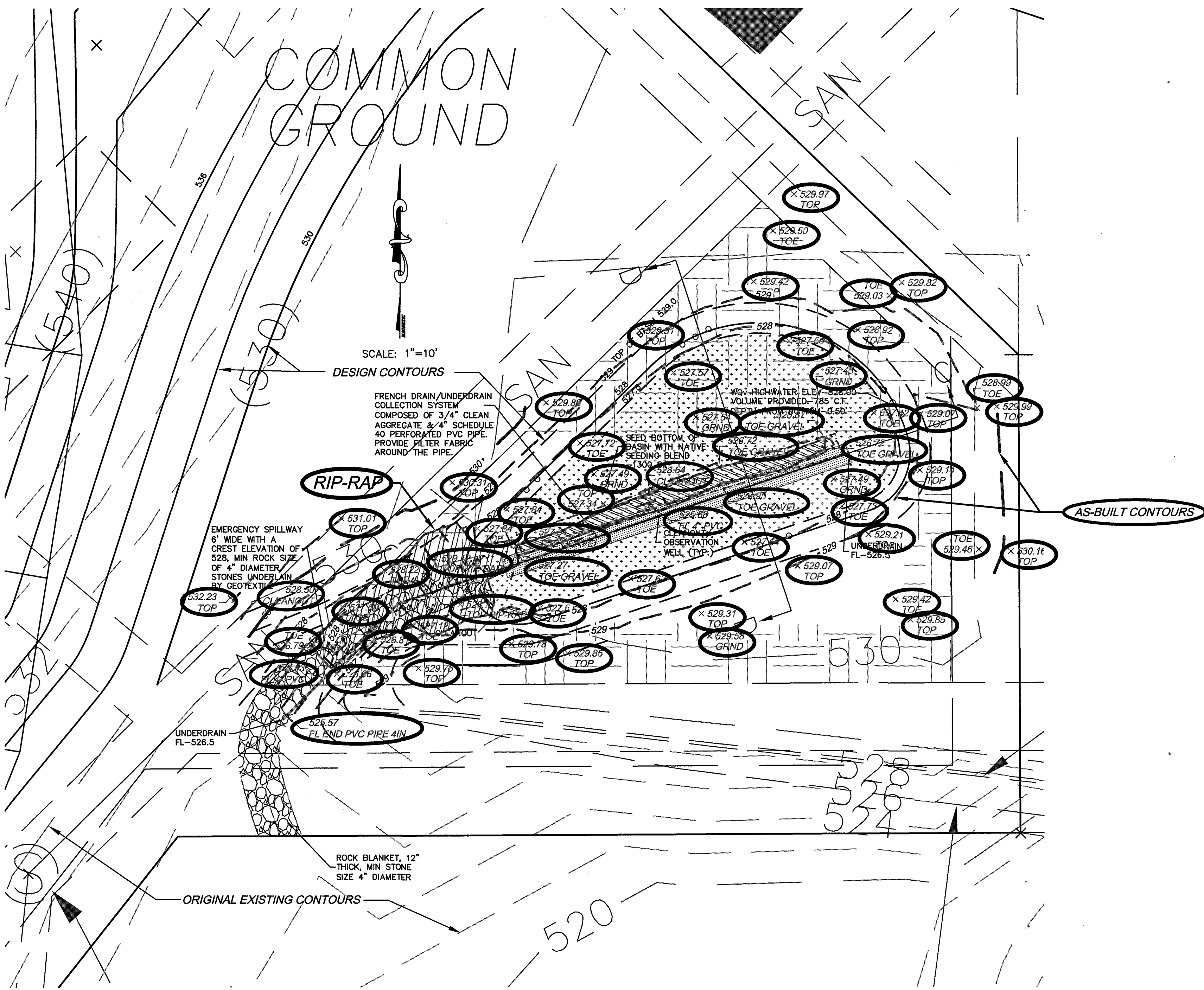
**WATER QUALITY PLANS & DETAILS BASIN A**

P+Z No. 1305.05  
City No.  
Date: 11/12/2012  
Job No. 12-05-127  
Page No. 10.1  
As-Builts

Drawing name: G:\SSS\PROJ\1205127 WEATHERBY LANDING\AS-BUILT\SAND FILTER (CSD).dwg. Plotted on: May 11, 2017 - 8:58am. Plotted by: mshanson



ISSUE	REMARKS/DATE
1	1-9-13 REVISED PER CITY COMMENTS
2	2-7-13 REVISED PER CITY COMMENTS
3	3-20-13 REVISED PER CITY COMMENTS
4	4-9-13 REVISED PER CITY COMMENTS



**PROJECT TITLE**  
**WEATHERBY LANDING**  
 OFFALON, MISSOURI

**THE STERLING CO.**  
**ENGINEERS & SURVEYORS**  
 5055 New Baumgartner Road  
 St. Louis, Missouri 63129  
 Ph 314-467-0440 Fax 314-467-8944  
 www.sterling-eng-sur.com  
 Corporate Certificate of Authority #001348

The Professional Engineer's seal and signature affixed to this sheet signify only that the engineer and firm shown on this sheet. All drawings, instruments or other documents not exhibiting this seal and signature shall not be considered documents of this firm. Any use of these drawings, instruments or other documents not exhibiting this seal and signature, without the written consent of the Professional Engineer and the firm shown on this sheet, is strictly prohibited.

Date: 4/9/2013  
 RODNEY ARNOLD  
 License No. PE-2002016612  
 Civil Engineer

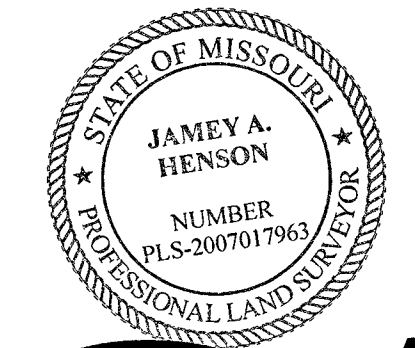
**MCBRIDE & SON HOMES LAND DEVELOPMENT, INC.**  
 16091 SWINGLEY RIDGE ROAD, STE. 300  
 CHESTERFIELD, MISSOURI 63017  
 Ph. 636-537-2000  
 www.mcbriدهomes.com

**WATER QUALITY PLANS & DETAILS BASIN B**

**STORM SEWER MEASUREMENTS**

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THE STERLING COMPANY  
 By *J. Henson* 5/11/17  
 Jamey A. Henson  
 Mo. Reg. P.L.S. - #2007017963

**○ = AS BUILT**

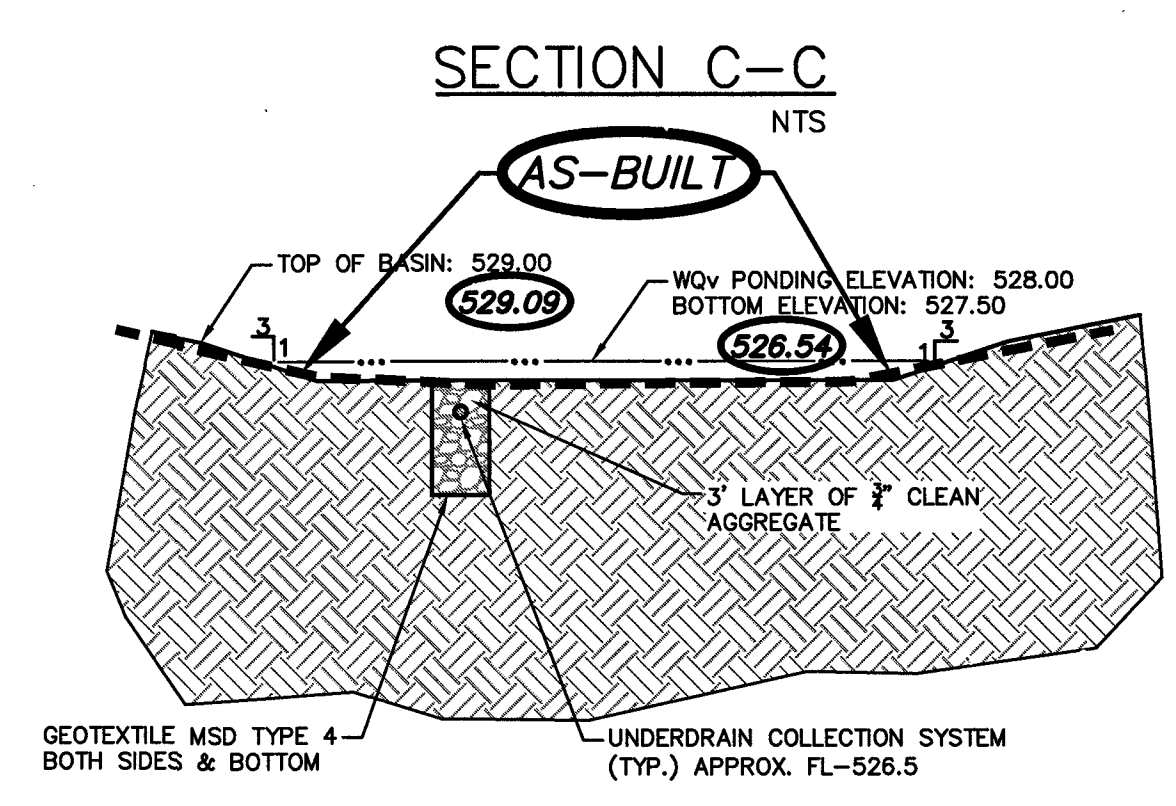
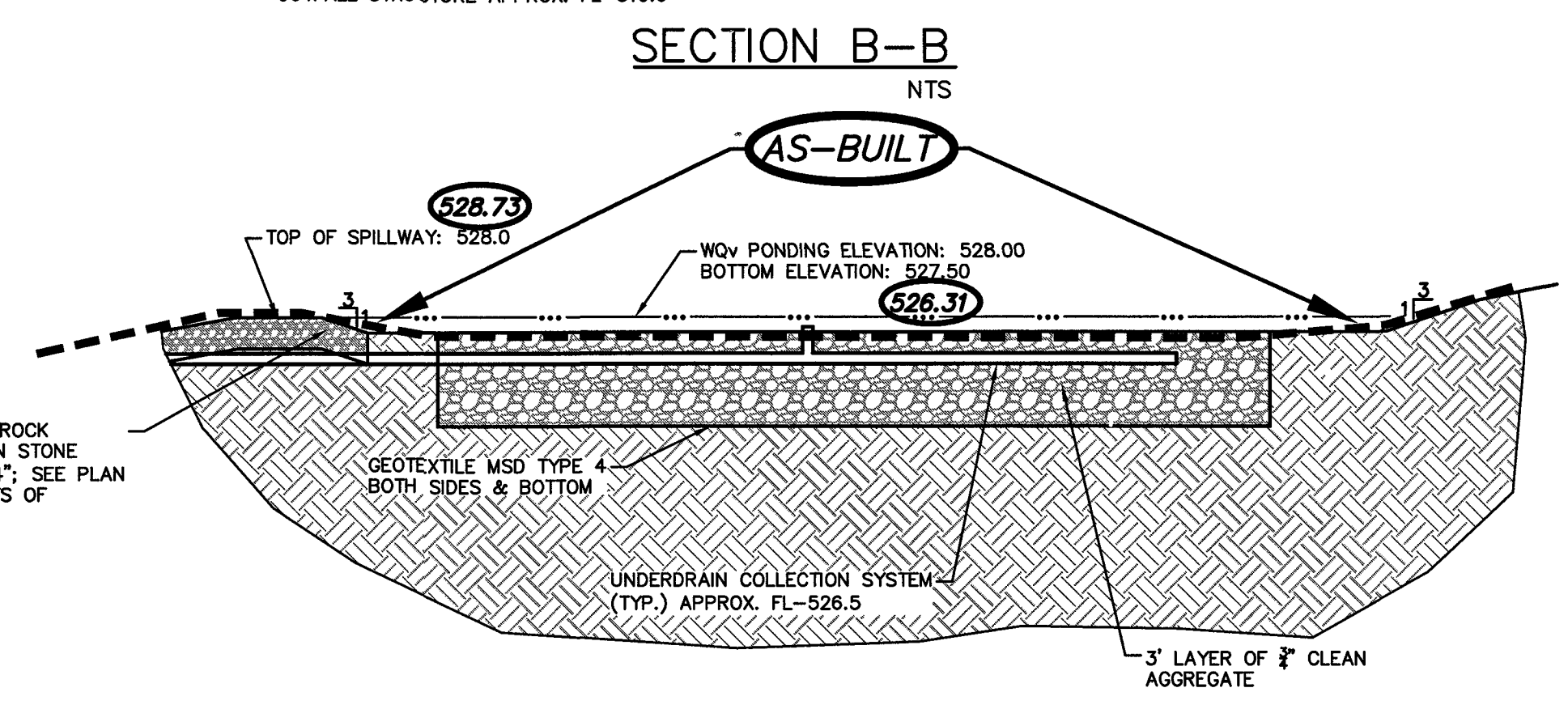
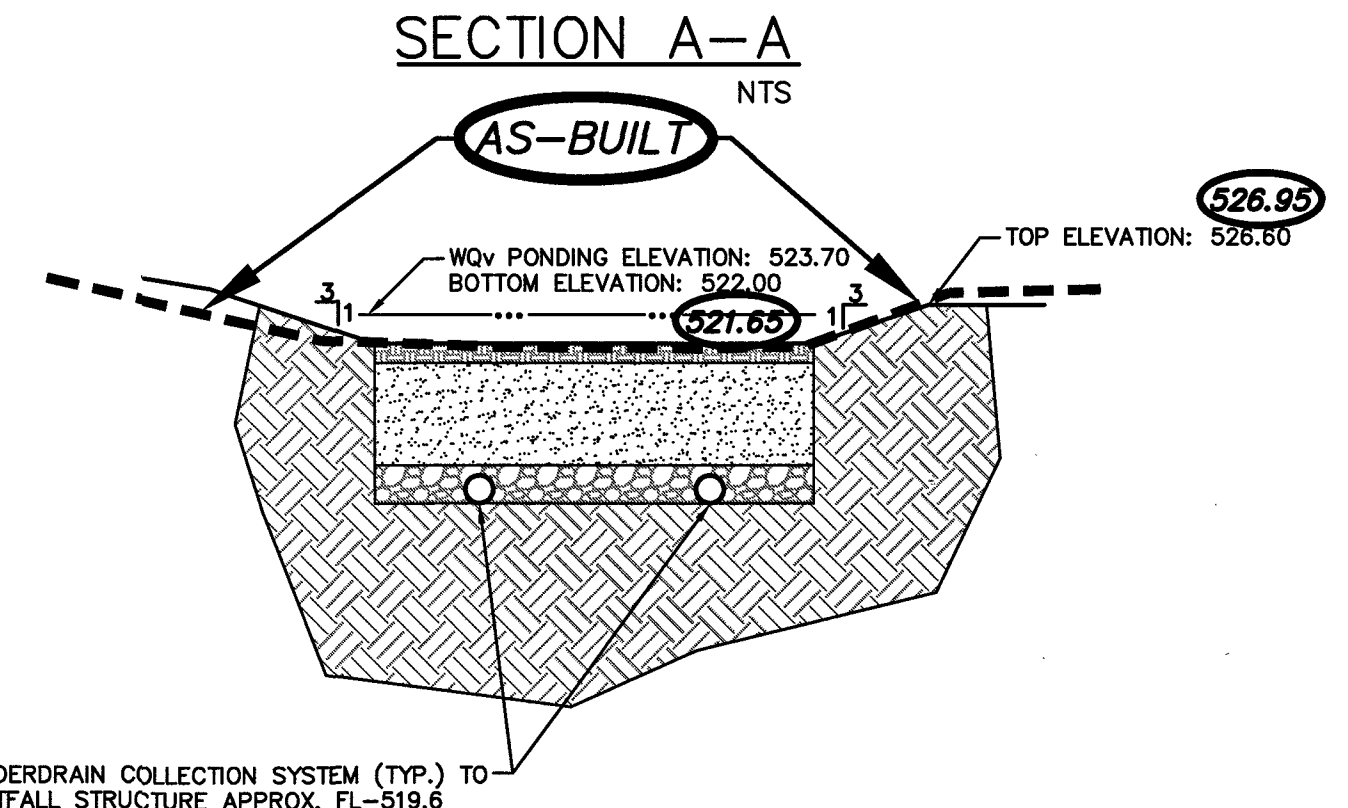
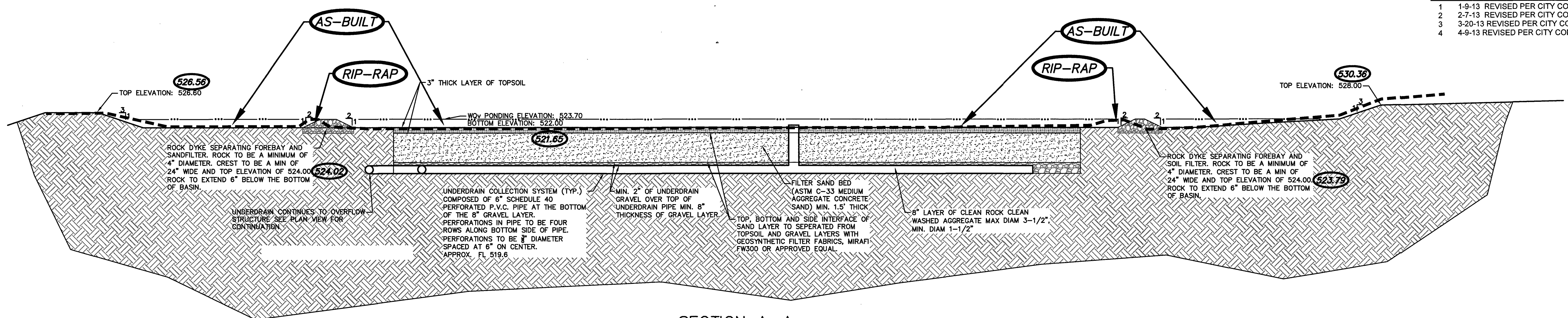
P+Z No. 1305.05  
 City No.  
 Date: 11/12/2012  
 Job No. 12-05-127

Page No.  
**10.2**  
 As-Builts

Drawing name: G:\SDSKP\01\2012\127 WEATHERBY\DWG\AS-BUILT\SAND FILTER (CSD).dwg Plotted on: Apr 12, 2017 - 11:45am Plotted by: mshannon



ISSUE	REMARKS/DATE
1	1-9-13 REVISED PER CITY COMMENTS
2	2-7-13 REVISED PER CITY COMMENTS
3	3-20-13 REVISED PER CITY COMMENTS
4	4-9-13 REVISED PER CITY COMMENTS



NOTE: WATER QUALITY BASIN TO BE FULLY CONSTRUCTED AFTER ALL UNIT BUILDINGS HAVE BEEN COMPLETED. UPON COMPLETION OF THE WATER QUALITY BASIN, REVISED AS-BUILT CROSS SECTIONS SIMILAR TO THE CONSTRUCTION PLANS WILL BE PROVIDED

PROJECT TITLE

**WEATHERBY LANDING**  
OFFFALLON, MISSOURI

**THE STERLING CO.**  
ENGINEERS & SURVEYORS  
5055 New Baumgartner Road  
St. Louis, Missouri 63129  
Ph 314-487-0440 Fax 314-487-8944  
www.sterling-eng-sur.com  
Corporate Certificate of Authority #001348

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Date: 4/9/2013  
RODNEY ARNOLD  
License No. PE-2002016612  
Civil Engineer

MCBRIDE & SON HOMES LAND DEVELOPMENT, INC.  
16091 SWINGLEY RIDGE ROAD, STE. 300  
CHESTERFIELD, MISSOURI 63017  
Ph. 636-637-2000  
www.mcbridehomes.com

WATER QUALITY PLANS & DETAILS BASIN A & B

**STORM SEWER MEASUREMENTS**

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THE STERLING COMPANY  
By *J. A. Henson* 5/11/17  
Jamey A. Henson  
Mo. Reg. P.L.S. - #2007017963

**AS BUILT**

P+Z No. 1305.05  
City No.  
Date: 11/12/2012  
Job No. 12-05-127

Page No.  
**10.3**  
As-Builts

Drawing name: G:\SDS\PROJ\2012\12 WEATHERBY\DWG\AS-BUILT\SAND FILTER (CSD).DWG Plotted on: Apr 12, 2017 - 11:46am Plotted by: main@pc



- ISSUE REMARKS/DATE
- 1 1-9-13 REVISED PER CITY COMMENTS
  - 2 2-7-13 REVISED PER CITY COMMENTS
  - 3 3-20-13 REVISED PER CITY COMMENTS
  - 4 4-9-13 REVISED PER CITY COMMENTS

~~15 YEAR HYDRAULICS~~

15 YEAR, 20 MINUTE HYDRAULICS		Rim-Hw = Freeboard for Upper (Right) Structure from LineID Column																						
LineNo.	LineID	FlowRate (cfs)	InvertDn (ft)	InvertUp (ft)	LineSlope (%)	LineLength (ft)	HGLDn (ft)	HGLUp (ft)	n-valuePipe	Grnd/RimElev Dn (ft)	Grnd/RimElev Up (ft)	Rim-Hw (ft)	EGLDn (ft)	EGLUp (ft)	CriticalDepth (ft)	CapacityFull (cfs)	DnStrmLine No.	EnergyLoss (ft)	KnownQ (cfs)	VelDn (ft/s)	VelUp (ft/s)	Ave (ft/s)	VelHd Dn (ft/s)	Inlet Capacity (cfs)
1	FES-17 to AI-18	7.93	18	522.00	1.5	76	526.08	526.51	0.01	525.50	529.00	2.36	526.39	526.83	1.07	12.86	Outfall	0.43		4.49	0.31	4.49	0.31	4
2	AI-18 to AI-19	7.63	18	523.34	1.5	76	526.67	526.97	0.01	529.00	529.70	2.56	526.96	527.26	1.05	12.89	1.00	0.43	0.4	4.32	0.29	4.32	0.29	4
3	AI-19 to AI-20	7.23	18	524.40	1.72	114	527.17	527.63	0.01	529.70	531.70	3.77	527.43	527.93	1.03	13.77	2.00	0.50	0.23	4.09	0.29	4.22	0.26	4
4	AI-20 to GI-25	2.26	15	526.50	4	107.22	527.47	531.39	0.01	531.70	537.43	6.04	528.22	531.62	0.60	12.92		0.37	1.17	1.84	0.23	2.85	0.05	1.44
5	GI-25 to GI-26	1.09	15	532.79	1	22	533.19	533.43	0.01	537.43	537.43	3.86	533.38	533.57	0.42	12.92		0.16	1.09	3.91	0.14	3.46	0.24	1.44
6	AI-20 to AI-20.1	4.74	15	526.50	3.5	68	527.99	529.79	0.01	531.70	534.00	4.25	528.22	530.17	0.87	12.08	3.00	0.45	0.69	3.86	0.42	4.53	0.23	4
7	AI-20.1 to AI-21	4.05	15	529.08	7	174.16	530	542.08	0.01	534.00	547.70	5.62	530.27	542.44	0.81	17.08	6.00	1.04	1.4	4.18	0.36	4.51	0.27	4
8	AI-21 to GI-22	2.65	15	542.72	1	114	543.28	544.51	0.01	549.91	549.91	5.40	543.99	544.97	0.65	6.46	7.00	0.90	1.06	5	0.26	4.55	0.39	1.42
9	GI-22 to GI-23	1.59	15	544.06	1	22	544.75	544.78	0.01	549.91	549.91	5.40	543.99	544.97	0.50	6.46	8.00	0.08	1.12	2.3	0.18	2.86	0.08	1.42
10	GI-23 to AI-24	0.47	12	544.48	1	50	544.96	545.27	0.01	549.91	549.91	5.40	543.99	545.37	0.29	3.56	9.00	0.15	0.47	1.26	0.10	1.87	0.02	4
11	FES-9 to MH-9.1	7.72	18	524.00	1	35	526.08	526.27	0.01	525.50	529.00	2.36	526.39	526.83	1.06	10.50	Outfall	0.19	0	4.37	0.30	4.37	0.30	
12	MH-9.1 to GI-10	7.72	15	526.82	3	50	527.58	529.50	0.01	534.00	534.27	4.67	530.19	530.14	1.10	11.18	11.00	1.06	2.06	9.83	0.64	8.13	1.50	2.5
13	GI-10 to GI-11	5.66	15	528.52	1	22	529.86	529.99	0.01	534.00	534.27	4.15	530.19	530.14	0.95	6.46	12.00	0.17	1.61	4.61	0.33	4.61	0.33	2.5
14	GI-11 to MH-12	4.05	15	528.94	1	44	530.29	530.41	0.01	534.27	534.27	5.16	530.46	530.63	0.65	6.46	13.00	0.17	0	3.3	0.22	3.52	0.17	
15	MH-12 to AI-13	4.05	15	529.58	1	87	530.59	532.72	0.01	535.70	534.70	3.44	530.82	531.62	0.81	10.50	14.00	0.48	1.56	3.82	0.36	4.33	0.23	4
16	AI-13 to AI-14	1.43	12	530.65	2	78	532.12	532.72	0.01	534.70	537.70	4.98	531.62	532.92	0.51	5.04	15.00	0.29	0.92	1.89	0.20	2.73	0.06	4
17	AI-14 to AI-15	0.51	12	532.41	5	2	532.91	538.61	0.01	537.70	544.20	5.59	532.94	538.71	0.30	7.96	15.00	0.35	0.51	1.3	0.10	1.92	0.03	4
18	AI-13 to AI-16	1.06	12	530.65	8.2	1	531.59	534.78	0.01	534.70	539.40	4.62	531.62	534.94	0.44	7.55	15.00	1.06	1.38	0.16	2.30	0.03	4	
19	FES-4 to AI-5	3.37	15	524.00	1	24	526.08	526.15	0.01	525.25	529.00	2.78	526.20	526.26	0.73	6.46	Outfall	0.07	0	2.75	0.12	2.75	0.12	4
20	AI-5 to AI-6	3.06	15	529.72	6	88	526.24	530.42	0.01	529.00	535.70	5.28	526.34	530.71	0.70	15.82	19.00	0.37	0.4	3.8	0.29	3.41	0.10	4
21	AI-6 to GI-7	2.66	15	529.92	6	106	530.64	536.93	0.01	535.70	541.24	4.31	530.84	537.19	0.65	15.82	20.00	0.54	1.52	3.69	0.29	3.87	0.21	1.42
22	GI-7 to GI-8	1.5	15	536.48	1.99	22.06	537.18	537.35	0.01	541.24	541.11	3.76	537.22	537.49	0.43	9.12	21.00	0.06	1.14	1.61	0.15	1.61	0.04	1.42
23	FES-1 to AI-2	20.26	24	517.5	1	20	519.5	519.64	0.01	519.50	523.00	2.91	520.15	520.30	1.59	22.62	Outfall	0.15	0	6.45	0.66	6.45	0.66	
24	AI-2 to AI-3	20.26	24	517.9	1.2	50	520.11	520.50	0.01	523.00	526.62	5.48	520.75	521.14	1.59	24.78	23.00	0.39	20.26	6.45	0.65	6.45	0.65	

EMERGENCY RELIEF SWALE - HYDRAULIC CALCULATIONS

EMERGENCY RELIEF SWALE BETWEEN LOTS 19 & 20  
15 YEAR, 20 MINUTE HYDRAULIC CALCULATION

FLOWLINE OF 4' WIDE FLAT BOTTOM SWALE WITH 5:1 SIDE SLOPES - 535.2 **(535.84)**

Given Input Data:  
Flowrate ..... 7.72 cfs  
Slope ..... 0.0100 ft/ft  
Manning's n ..... 0.03  
Bottom width ..... 48.00 in  
Left slope ..... 5:1  
Right slope ..... 5:1

Computed Results:  
Depth ..... 5.85 in OR 0.49 ft  
Velocity ..... 2.46 fps  
Flow area ..... 3.14 ft<sup>2</sup>  
Wetted perimeter ..... 8.97 ft  
Top width ..... 8.88 ft

15 YR. 20 MIN. HIGHWATER = 535.2 + 0.49 = 535.69  
**(535.84)** **(536.33)**

EMERGENCY RELIEF SWALE BETWEEN LOTS 44 & 45  
15 YEAR, 20 MINUTE HYDRAULIC CALCULATION

FLOWLINE OF 4' WIDE FLAT BOTTOM SWALE WITH 5:1 SIDE SLOPES - 535.6 **(535.90)**

Given Input Data:  
Flowrate ..... 4.05 cfs  
Slope ..... 0.0100 ft/ft  
Manning's n ..... 0.03  
Bottom width ..... 48.00 in  
Left slope ..... 5:1  
Right slope ..... 5:1

Computed Results:  
Depth ..... 4.16 in OR 0.35 ft  
Velocity ..... 2.04 fps  
Flow area ..... 1.99 ft<sup>2</sup>  
Wetted perimeter ..... 7.54 ft  
Top width ..... 7.47 ft

15 YR. 20 MIN. HIGHWATER = 535.6 + 0.35 = 535.95  
**(535.90)** **(536.25)**

EMERGENCY RELIEF SWALE BY LOT 55  
15 YEAR, 20 MINUTE HYDRAULIC CALCULATION

FLOWLINE OF 2' WIDE FLAT BOTTOM SWALE WITH 5:1 SIDE SLOPES - 549.6 **(545.45)**

Given Input Data:  
Flowrate ..... 0.47 cfs  
Slope ..... 0.0100 ft/ft  
Manning's n ..... 0.03  
Bottom width ..... 24.00 in  
Left slope ..... 5:1  
Right slope ..... 5:1

Computed Results:  
Depth ..... 1.76 in OR 0.15 ft  
Velocity ..... 1.17 fps  
Flow area ..... 0.40 ft<sup>2</sup>  
Wetted perimeter ..... 3.50 ft  
Top width ..... 3.47 ft

15 YR. 20 MIN. HIGHWATER = 549.6 + 0.15 = 549.75  
**(549.45)** **(549.60)**

~~RETAINING WALL SWALE - HYDRAULIC CALCULATION~~

~~SWALE BEHIND RETAINING WALLS  
15 YEAR, 20 MINUTE HYDRAULIC CALCULATION~~

~~V-BOTTOM SWALE WITH 3:1 SIDE SLOPES~~

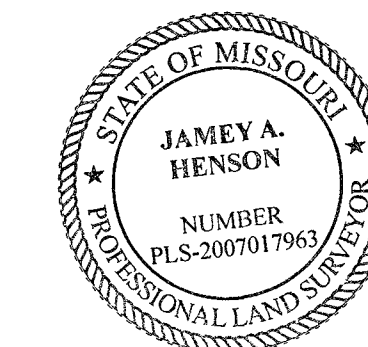
~~Given Input Data:  
Flowrate ..... 0.50 cfs (max. flow rate)  
Slope ..... 0.0200 ft/ft  
Manning's n ..... 0.03  
Bottom width ..... 24.00 in  
Left slope ..... 3:1  
Right slope ..... 3:1~~

~~Computed Results:  
Depth ..... 3.56 in OR 0.30 ft  
Velocity ..... 1.89 fps  
Flow area ..... 0.26 ft<sup>2</sup>  
Wetted perimeter ..... 22.5 in  
Top width ..... 21.4 in~~

STORM SEWER MEASUREMENTS

The existing sewer length, sizes, flowlines, depths of structures and sewers, and locations with respect to existing or proposed easements have been measured. The results of those measurements are shown on this set of Final Measurement Plans. Any information shown that was provided by the sewer contractor or other sources, I disclaim any responsibility for that specific information.

All public sewers are located within the designated existing or proposed easements except as follows:



THE STERLING COMPANY  
By: *J. Henson* 5/11/17  
James A. Henson  
Mo. Reg. P.L.S. - #2007017963

**AS BUILT**

PROJECT TITLE

**WEATHERBY LANDING**  
OF FALLON, MISSOURI

THE STERLING CO.  
ENGINEERS & SURVEYORS  
5055 New Baumgartner Road  
St. Louis, Missouri 63129  
Ph 314-487-0440 Fax 314-487-8944  
www.sterling-eng-survey.com  
Corporate Certificate of Authority #001348

The Professional Engineer's seal and signature affixed to this sheet signify only to the material and items shown on this sheet. All drawings, instruments or other documents not submitted with this seal and signature shall not be considered approved by the engineer and the engineer expressly disclaims any and all responsibility for such items, drawings or documents not exhibiting this seal and signature.

Date: 4/9/2013  
RODNEY ARNOLD  
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HYDRAULIC CALCULATIONS

P+Z No. 1305.05  
City No.  
Date: 11/12/2012  
Job No. 12-05-127

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