

E. ACCEPTANCE TESTS FOR SEWERS.

1. Scope of Work. The work shall consist of the furnishing of all labor, equipment, tools and materials, and the performance of any or all acceptance tests as required by the Plans, Special Provisions and these Specifications.
2. General Requirements.
 - a. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether or not the work performed was in accordance with the requirements and intent of the plans and specifications. Any work done (except excavation) or material used without suitable supervision or inspection by the Engineer may be ordered removed and replaced at the Contractor's expense.
 - b. Upon completion of the work, or as work progresses, the Contractor shall, under the direction of the

Engineer, make such tests of the entire work or any part thereof as may be required to demonstrate the efficiency of the sewer and appurtenances. If required, the Contractor shall make such openings as the Engineer may direct and shall restore the part of the work so disturbed to the satisfaction of the Engineer. Should any part of the work be found faulty in any respect, the Contractor shall repair such defects or replace them with new work as may be directed by the Engineer.

- c. The Contractor shall provide facilities to the Engineer to make a visual observation test of the straightness of each section of sewer between two adjacent manholes.

3. Acceptance Tests for Gravity Sewers.

a. Visual Inspection.

- (1) Contractor shall clean pipe of excess mortar, joint sealant and other dirt and debris prior to acceptance.
- (2) The Contractor will be required during construction to install a line throughout the entire length of the sewer system. This line will be used for running a mandrel through the sewer lines. The ends of the line will be secured in a manner satisfactory to the Engineer to insure that the line will not be removed from the sewer before inspection. The line to be installed shall be one quarter (1/4) inch nylon or polypropylene yellow or white rope.
- (3) A mandrel will be furnished by the Contractor, if one is not made available by the City, to use to mandrel all sewer lines in checking for the presence of any misaligned, displaced, or broken pipe and the presence of visible infiltration, debris, or other defects. All mandrelling must be done in the presence of the Engineer.
- (4) The Contractor shall provide equipment necessary to either lamp or laser test each section of sewer main to confirm the straightness of each run. All lamping or laser testing must be done in the presence of the Engineer.
- (5) The Contractor shall correct all defects found during lamping, laser testing, and/or mandrelling operations prior to conducting leakage tests.

b. Air Leakage Testing.

An air leakage test shall be performed on the full length of all sewer lines and lateral lines prior to acceptance. The sewer lines shall be tested in accordance with ASTM Standard "Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air" designation F 1417-92.

- c. MANHOLE TESTING: The manholes will be tested to assure that they are watertight. The inlet and outlet of the manhole will be plugged, and the manhole will be filled with water above the highest seam in the precast sections. The water level in the manhole may not drop more than the distance indicated in the table below in a period of one hour.

<u>Depth of Manhole (ft.)</u>	<u>Maximum Fall for One Hour (inches)</u>
4	0.039
5	0.048
6	0.058
7	0.068
8	0.077
9	0.087
10	0.097
12	0.116
14	0.135
16	0.155
18	0.174
20	0.193

These figures apply to a standard 48" diameter manhole. Rates for manholes with a different diameter or a depth in excess of 20' should be requested from the Engineer.

Any manhole that does not prove to be watertight will be resealed and retested until satisfactory results are obtained.

- d. DEFLECTION TESTING: Deflection tests shall be performed on all flexible pipe. The test shall be run not less than 30 days after the final backfill has been placed. No pipe shall exceed a deflection of 5 percent. If the deflection test is to be run using a rigid ball or mandrels, they shall have diameters equal to 95 percent of the inside diameter of the pipe and the tests shall be performed without mechanical pulling devices.

e. VACUUM TESTING OF CONCRETE MANHOLES:

1. The vacuum testing of all concrete manholes shall be performed in accordance with ASTM C 1244-93. Each manhole shall pass two tests; the first test shall be after assembly but prior to backfilling and the second test shall be after backfilling.
2. Place the vacuum "test head" assembly inside the manhole cover cast iron frame. The vacuum test shall include testing of the seal between the cast iron frame and the concrete cone, slab or grade rings.
3. Plug all pipes entering the manhole at least eight inches into the sewer pipe. The plug must be inflated at a location past the manhole/pipe gasket.
4. Brace all plugs to prevent the plug or pipe from being dislodged and drawn into the manhole.
5. A vacuum of at least ten and one-half inches of mercury shall be drawn on the manhole. Shut valve on vacuum line to manhole and disconnect vacuum line. Open the vacuum line valve and adjust vacuum to ten inches of mercury.
6. The pressure gage shall be liquid filled and have a 3-1/2 inch diameter face with a reading from zero to thirty inches of mercury. The test equipment shall be capable of having two gages connected. The gage supplied with the test equipment shall match the reading of a second gage furnished by the Engineer or the City if so desired by the Engineer. The gage reading is to be verified on each project.
7. The time for the vacuum reading to drop from ten inches of mercury to nine inches of mercury must be equal to or greater than the following values for the manhole to be considered as passing the vacuum test:

<u>Manhole Depth</u>	<u>Time (minutes)</u>
10 feet or less	2
10.1 to 15 feet	2.5
15.1 to 25 feet	3

8. The contractor shall notify the Engineer at least 48 hours in advance of any manhole testing.

SECTION 2: DETAILED SPECIFICATIONS FOR PORTLAND CEMENT CONCRETE

A. DESCRIPTION

The concrete described herein shall consist of a mixture of Portland cement, fine aggregate, coarse aggregate, an air-entraining agent and water combined in the proportions specified for the various classes of concrete used in construction work and as set forth in these specifications.

B. MATERIALS

1. Cement. Cement shall be a standard brand Portland cement which shall conform to ASTM Designation C-150. Type 1 cement shall be used unless otherwise provided in the special provisions.

- a. Different brands or different types of cement from the same mill or the same brand or type from different mills shall not be mixed or used alternately in the same item of construction unless authorized by the Engineer.
- b. The Contractor shall not store cement at the site of the work without prior approval of the Engineer.
- c. The right is reserved by the Engineer to sample the cement either at the origin of the shipment or after delivery at the site of the work or the ready-mix concrete plant. Provisional acceptance by the Engineer prior to the completion of tests shall in no way act as a waiver of the right to reject cement which has been shipped and not used if, upon completion of the tests, it fails to meet the requirements of the specifications.

2. Water. Water used with cement in concrete or mortar shall be clean, clear, free from sugar and shall be free from injurious quantities of oil, acid, alkali, salt, organic matter, vegetable matter or other deleterious substances.

3. Fine Aggregate. Fine aggregate shall consist of natural sand, manufactured sand, or a combination thereof. The gradation requirements of fine aggregate shall be as follows:

Passing 3/8 inch Sieve	100 percent
Passing No. 4 Sieve	95-100 percent
Passing No. 16 Sieve	40-80 percent
Passing No. 50 Sieve	5-30 percent
Passing No. 100 Sieve	0-10 percent

Fine aggregate shall conform to the requirements of ASTM Designation C-33 with respect to deleterious substances, soundness and abrasion.

4. Coarse Aggregate. The coarse aggregate shall consist of crushed stone or, crushed gravel of uniform quality. The gradation requirements of the coarse aggregate for Class "A" concrete shall be as follows:

Passing 1 inch Sieve	100 percent
Passing 3/4 inch Sieve	90-100 percent
Passing 1/2 inch Sieve	40-60 percent
Passing 3/8 inch Sieve	10-30 percent
Passing No. 4 Sieve	0-5 percent

The gradation requirements of the Coarse aggregate for Class "X" concrete shall be as follows:

Passing 1 inch Sieve	100 percent
Passing 1/2 inch Sieve	25-60 percent
Passing No. 4 Sieve	0-10 percent
Passing No. 8 Sieve	0-5 percent

Coarse aggregates shall conform to the requirements of ASTM Designation C-33 with respect to deleterious substances, soundness and abrasion.

5. Air Entrainment. The air-entrainment shall be obtained by the use of an approved air-entraining admixture conforming to ASTM Designation C260, which shall be added during the process of mixing the concrete. Air-entraining Portland cement shall not be used. The admixture shall be dispensed by means of a mechanically activated dispenser approved by the Engineer, except that in the case of ready-mix concrete the flow may be started manually and the flow shall shut off automatically when the required amount is delivered. The air-entraining admixture shall be introduced into the stream of mixing water and the required amount shall be fully discharged before all the mixing water has entered the drum. The Tank feeding the dispenser shall at all time contain an amount of air-entraining admixture sufficient for the next batch and shall be provided with a device approved by the Engineer for indicating visually when the supply runs low. The amount of admixture to be used shall be less than three (3) percent nor more than six (6) percent of the volume of concrete.

6. Fly Ash. Fly ash shall conform to ASTM Designation C-618.

C. PROPORTIONS OF MATERIALS

1. Cement Content. Class "A" concrete and Class "X" concrete shall contain not less than 470 pounds of cement per cubic yard.

2. Water Content. The mixing water, including free surface moisture on the aggregate, shall not exceed six (6) gallons per sack of cement. The slump, when tested in accordance with ASTM Designation C-143 shall be from one (1) inch to three (3) inches.

3. Air Content. Portland cement concrete shall have an air-entraining of not less than three (3) percent nor more than six (6) percent of the volume of the concrete when tested in accordance with ASMT Designation C-173.

4. Fly Ash Content. The Portland Cement concrete shall contain not more than 100 pounds of fly ash per cubic yard.

5. Mix Proportions. In addition to the above requirements, the concrete materials shall be proportioned so as to provide a uniform workable mix.

Prior to the beginning of construction, the Engineer may require the Contractor to furnish a written statement giving the properties of the materials and the proportions by weight (dry) of cement and of the fine and coarse aggregates that are proposed to be used in each class of concrete.

D. GENERAL REQUIREMENTS

1. Cold Weather Protection. Paving operations shall be discontinued when a descending ambient temperature away from artificial heat reaches 40°F and not resumed until an ascending ambient temperature away from artificial heat reaches 35°F. If it is necessary for the Contractor to take precautionary measures to prevent damage by freezing, such as heating mixing water, heating aggregates or applying heat directly to the contents of the mixer; aggregates shall not be heated higher than 150°F, and the temperature of the aggregates and mixing water combined shall not be higher than 100°F, when the cement is added. The temperature of the mixed concrete when heating is employed shall not be less than 50°F and not more than 90°F at the time of placement. Cement or fine aggregate containing lumps or crusts of hardened material or frost shall not be used. Concrete shall not be placed upon a frozen subgrade.

2. Delivery. Ordinarily the concrete shall be delivered to the job site in trucks so designed and operated that the concrete will be thoroughly mixed during the time it is in transit and shall be discharged at the site within a period of one and one-half (1½) hours after the introduction of the mixing water. When concrete is placed at the job site, it shall have the proper consistency and slump for satisfactory workability.

3. Testing. Unless otherwise set out in the Special Provisions, testing shall be at the expense of the Contractor.

EXHIBIT E

DESCRIPTION OF CERTIFICATED AREA

All that part of the South Half (S1/2) lot 2 of the Southwest Quarter (SW1/4) of Section 30, Township 22 North, Range 21 West, Taney County, Missouri, which lies southerly of the southerly right-of-way line of Route 465 (as shown on the plan sheet for Missouri Department of Transportation Job No. J8P0623), containing 6.028 acres, more or less, lying in the southwesterly corner of said S1/2 Lot 2 SW1/4 of said Section 30.

Together with, all of the South Half (S1/2) of the Southeast Quarter (SE1/4) lying East of Highway No. 265 and West of westerly right-of-way line of Route 465 (as shown on the plan sheet for Missouri Department of Transportation Job No. J8P0623), all in Section 25, Township 22 North, Range 22 West, Taney County, Missouri.

And Together with, all of the East Half (E1/2) of the Northeast Quarter (NE1/4) and the Northwest Quarter (NW1/4) of the Northeast Quarter (NE1/4) of Section 36, Township 22 North, Range 22 West, Taney County, Missouri, lying North and East of Highway No. 265; Except that parcel described in Warranty Deed recorded in Book 415, at Pages 9660 through 9662 of the Recorder's Office of Taney County, Missouri.

Also:

A twenty foot (20.0') wide strip of ground lying over and across a portion of the Northeast Quarter (NE1/4) of the Northeast Quarter (NE1/4) and the South Half (S1/2) of the Northeast Quarter (NE1/4) of Section 36, Township 22 North, Range 22 West of the fifth principal meridian, Taney County, Missouri. The limits of the easement shall extended to, or truncate at the right-of-way limits of M.S.H.D. Route 265, All that part of the Grantor's land lying 10.00 feet on each side of the centerline described as follows:

Commencing at an existing 11/2" iron pipe marking the Southwest corner of Section 30, T22 North, Range 21 West; Thence North 00°08'56" East a distance of 55.17 feet to an aluminum monument marking the Northeast corner of the NE1/4 of the NE1/4 of Section 36; Thence South 47°35'25" West, along the North line of a parcel of land described in Book 310, at Page 2976, of the Recorder's Office of Taney County, a distance of 1784.55

feet to a point on the Northerly right-of-way line of M.S.H.D. Route 265; Thence South 49°00'32" East, along the Northerly right-of-way line of M.S.H.D. Route 265, a distance of 42.93 feet to the Point of Beginning; Thence South 45°06'23" West a distance of 141.83 feet to the South right-of-way line of M.S.H.D. Route 265 for a Point of Terminus, Containing 2837 square feet of land, more or less.

And Also:

A twenty foot (20.0') wide strip of ground lying over and across a portion of the South Half (S1/2) of Lot 2 of the fractional Southwest Quarter (SW1/4) of Section 30, Township 22 North, Range 21 West of the fifth principal meridian, Taney County, Missouri. The limits of the easement shall extended to, or truncate at the right-of-way line of M.S.H.D. Route 465, All that part of the Grantor's land lying 10.00 feet on each side of the centerline described as follows:

Commencing at an existing 1 1/2" iron pipe marking the Southwest corner of Section 30, Township 22 North, Range 21 West; Thence North 00°08'56" East a distance of 55.17 feet to an aluminum monument marking the Northeast corner of the NE1/4 of the NE1/4 of Section 36, Township 22 North, Range 22 West; Thence North 01°52'42" East, along the West line of said Section 30, a distance of 646.64 feet to a point on the Southerly right-of-way line of M.S.H.D. Route 465; Thence South 70°46'07" East, along the Southerly right-of-way line of M.S.H.D. Route 465, a distance of 273.80 feet to the Point of Beginning; Thence North 17°47'48" East a distance of 423.60 feet to a point on the Northerly right-of-way line of M.S.H.D. Route 465 for the Point of Terminus. Containing 8,473 square feet of land, more or less.

PROPOSED FINANCING TERMS
AND
FORECASTED STATEMENTS OF OPERATIONS
FOR
EMERALD POINTE UTILITY COMPANY, INC.
TANEY COUNTY, MISSOURI

EXHIBIT F

OWNER
EMERALD POINTE UTILITY COMPANY, INC.
118 STATE DRIVE
HOLLISTER, MISSOURI 65672

NOVEMBER 21, 2011

EMERALD POINTE UTILITY COMPANY, INC. (EPUC)

HOLLISTER MISSOURI SEWER PIPE PROJECT

MODEL ASSUMPTIONS

Forecasts and projections for this project and loan request are made under the following assumptions:

- The loan proceeds will be utilized for financing the construction of a sewer line from (and replacing) the existing EPUC wastewater treatment to Poverty Point Lift Station #6 (PP6), a distance of approximately 2 miles;
- The loan request is for \$1,000,000.00 at an annual interest rate of 6% with monthly principal and interest payments based on a 20-year amortization;
- New connections to EPUC services will be at the rate of 15 per year beginning in the year 2010;
- End user connection fees will be a direct pass through to the City of Hollister and therefore not a factor in this model;
- EPUC submits a rate case to the Missouri Public Services Commission and is granted an increase of \$216.00 per user, annually, allocated equally between the water and sewer departments beginning in the year 2011;
- Developer Capacity Fees are based on sales projections of Emerald Pointe, LLC as follows:

2010	30
2011	60
2012	60

Emerald Pointe Utility Co., Inc.
Forecasted Statement of Operations
Period Ending December 31, 2012
With Existing Rates

	Revenue:	Water Services	Sewer Services	Combined
	Sales	\$ 130,268.58	\$ 103,343.18	\$ 233,611.75
	Developer Capacity Fees	30,000.00	30,000.00	60,000.00
	Gross Income	<u>160,268.58</u>	<u>133,343.18</u>	<u>293,611.75</u>
	Operating expenses:			
	Outside Services	44,076.78	51,318.23	95,395.00
	Sewer Treatment Cost	-	-	-
	Fuel or Power Purchased	17,225.00	18,800.00	36,025.00
	Supplies	2,941.79	1,250.00	4,191.79
	Repair & Maintenance	6,072.26	12,786.99	18,859.25
	Chemicals	-	5,624.00	5,624.00
	Bad Debt Expense	303.69	303.69	607.38
	Transportation Expenses	62.50	-	62.50
	Regulatory Commission Expenses	7,117.00	7,117.00	14,234.00
	Rent	-	-	-
	Bank Charges	2,000.00	2,000.00	4,000.00
	Taxes & Licenses	1,280.20	1,280.19	2,560.39
	Miscellaneous	732.19	1,387.45	2,119.64
	Supervision & Engineering	-	-	-
	Insurance	1,540.00	1,540.00	3,080.00
	Total operating Expenses	<u>83,351.40</u>	<u>103,407.54</u>	<u>186,758.94</u>
	Income (loss) from Operations	<u>76,917.18</u>	<u>29,935.64</u>	<u>106,852.81</u>
	Other Income and (Expense):			
	Other Income	0.00	0.00	-
	Other Expense	0.00	0.00	-
	Total Other Income (Expense)	<u>0.00</u>	<u>0.00</u>	<u>-</u>
	Positive (Negative) Cash Flow before Debt Service	<u>76,917.18</u>	<u>29,935.64</u>	<u>106,852.81</u>
	Debt Service (Principal and Interest)	<u>\$0.00</u>	<u>\$0.00</u>	<u>\$0.00</u>
	Net Positive (Negative) Cash Flow	<u>\$ 76,917.18</u>	<u>\$ 29,935.64</u>	<u>\$ 106,852.81</u>

387 Estimated Water and Sewer Users

Emerald Pointe Utility Co., Inc.
Forecasted Statement of Operations
Period Ending December 31, 2013
With Revised Rates

Revenue:	Water Services	Sewer Services	Combined
Sales	\$ 186,445.35	\$ 174,012.85	\$ 360,458.20
Developer Capacity Fees	60,000.00	60,000.00	120,000.00
Gross Income	<u>246,445.35</u>	<u>234,012.85</u>	<u>480,458.20</u>
Operating expenses:			
Outside Services	36,000.00	10,000.00	46,000.00
Sewer Treatment Cost	0.00	72,031.68	72,031.68
Fuel or Power Purchased	17,449.74	14,000.00	31,449.74
Supplies	1,750.00	1,000.00	2,750.00
Repair & Maintenance	18,000.00	5,000.00	23,000.00
Chemicals	0.00	0.00	-
Bad Debt Expense	900.00	900.00	1,800.00
Transportation Expenses	50.00	0.00	50.00
Regulatory Commission Expenses	6,967.07	3,567.06	10,534.13
Rent	0.00	0.00	-
Bank Charges	838.59	838.59	1,677.18
Taxes & Licenses	1,881.82	349.36	2,231.18
Miscellaneous	2,018.25	300.00	2,318.25
Supervision & Engineering	0.00	0.00	-
Insurance	2,202.04	1,000.00	3,202.04
Total operating Expenses	<u>88,057.51</u>	<u>108,986.69</u>	<u>197,044.20</u>
Income (loss) from Operations	<u>158,387.84</u>	<u>125,026.16</u>	<u>283,414.00</u>
Other Income and (Expense):			
Other Income	0.00	0.00	-
Other Expense	0.00	0.00	-
Total Other Income (Expense)	<u>0.00</u>	<u>0.00</u>	<u>-</u>
Positive (Negative) Cash Flow before Debt Service	<u>158,387.84</u>	<u>125,026.16</u>	<u>283,414.00</u>
Debt Service (Principal and Interest)	<u>\$0.00</u>	<u>\$85,971.73</u>	<u>\$85,971.73</u>
Net Positive (Negative) Cash Flow	<u>158,387.84</u>	<u>39,054.43</u>	<u>\$ 197,442.27</u>

402 Estimated Water and Sewer Users

Emerald Pointe Utility Co., Inc.
Forecasted Statement of Operations
Period Ending December 31, 2014
With Revised Rates

Revenue:	Water Services	Sewer Services	Combined
Sales	\$ 193,402.26	\$ 180,505.87	\$ 373,908.13
Developer Capacity Fees	60,000.00	60,000.00	120,000.00
Gross Income	<u>253,402.26</u>	<u>240,505.87</u>	<u>493,908.13</u>
Operating expenses:			
Outside Services	36,000.00	10,000.00	46,000.00
Sewer Treatment Cost	0.00	72,031.68	72,031.68
Fuel or Power Purchased	17,449.74	16,500.00	33,949.74
Supplies	1,750.00	1,000.00	2,750.00
Repair & Maintenance	18,000.00	5,000.00	23,000.00
Chemicals	0.00	0.00	-
Bad Debt Expense	900.00	900.00	1,800.00
Transportation Expenses	50.00	0.00	50.00
Regulatory Commission Expenses	6,967.07	3,567.06	10,534.13
Rent	0.00	0.00	-
Bank Charges	838.59	838.59	1,677.18
Taxes & Licenses	1,881.82	349.36	2,231.18
Miscellaneous	2,018.25	300.00	2,318.25
Supervision & Engineering	0.00	0.00	-
Insurance	2,202.04	1,000.00	3,202.04
Total operating Expenses	<u>88,057.51</u>	<u>111,486.69</u>	<u>199,544.20</u>
Income (loss) from Operations	<u>165,344.75</u>	<u>129,019.18</u>	<u>294,363.93</u>
Other Income and (Expense):			
Other Income	0.00	0.00	-
Other Expense	0.00	0.00	-
Total Other Income (Expense)	<u>0.00</u>	<u>0.00</u>	<u>-</u>
Positive (Negative) Cash Flow before Debt Service	<u>165,344.75</u>	<u>129,019.18</u>	<u>294,363.93</u>
Debt Service (Principal and Interest)	<u>\$0.00</u>	<u>\$85,971.73</u>	<u>\$85,971.73</u>
Net Positive (Negative) Cash Flow	<u>165,344.75</u>	<u>43,047.45</u>	<u>\$ 208,392.20</u>

417 Estimated Water and Sewer Users