FEASIBILITY STUDY

FOR

EMERALD POINTE UTILITY COMPANY, INC.

TANEY COUNTY, MISSOURI

OWNER

EMERALD POINTE UTILITY COMPANY, INC.

118 STATE DRIVE

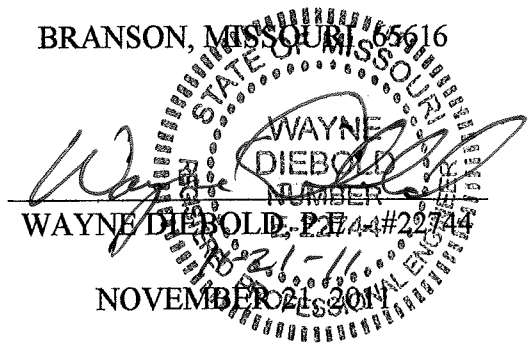
HOLLISTER, MISSOURI 65672

ROZELL ENGINEERING COMPANY

ENGINEERING SECTION, INC., PC

2404 STATE HWY 248, SUITE 4

BRANSON, MISSOURI 65616



WAYNE DIEBOLD, P.E. #2744

NOVEMBER 21, 2016

WO# 12280FS

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Appendices

I. INTRODUCTION:

The purpose of this report is to present to the Public Service Commission the results of a study conducted to determine the feasibility of adding the subject area to Emerald Pointe Utility Company's certificated area.

The proposed certificated area, shown on Exhibit A, consists of land owned by Andrew Howard Williams, Trustee; Vern and Sami Lewis; Gene H. and Jeanine V. Doerr; Missouri Highway and Transportation Commission; and Missouri RSA #15 LP C/O Telesite Services. All of the land in the proposed service area is undeveloped with the exception of one house located on the Lewis property and a cellular telephone tower located on the Telesite Services property. As can be seen from the map, this area lies to the northeast of Emerald Point Phase 12, which is in Emerald Pointe Utility Company's existing certificated area, just across Route 265.

II. EXISTING UTILITY SERVICES:

Emerald Pointe Utility Co., Inc. (EPUC) is a Public Service Commission regulated utility that provides water and sewer service to all of Emerald Point Development as well as the Branson Canyon Development as shown on Exhibit B. Currently, the system serves 365 customers in these two developments. The existing water supply and distribution system consists of a deep well and a 176,000 gallon standpipe along with several thousand feet of water mains. The water system operates under PWS ID No. 5031148. The existing sewage treatment facility and collection system consists of a 77,900 gallon extended aeration sewage treatment plant along with multiple lift stations and several thousand feet of low pressure and gravity sewer mains. The sewer system operates under NPDES Permit No. MO-0116394.

III. BASIS OF DESIGN:

Water service will not be extended to the proposed certificated area at this time as there are no immediate plans for development of the parcels in this area.

Sewer service will be provided to the proposed certificated area by the construction of 3,547 lineal feet of twelve inch diameter gravity sewer main. Please refer to Exhibit C in the appendices for a copy of the plans and Exhibit C-1 for a copy of the specifications. This sewer main is part of an overall plan to connect the existing EPUC sewer system into a regional trunk line that will allow the existing sewage treatment facility to be taken off line. EPUC has agreed with the owners of the Table Rock Canyon (TRC) property to extend a regional trunk line from Taney County Regional Sewer District's (TCRSD) Poverty Point #5 pumping station, located north of Route 165, to the south approximately 10,000 feet to the southern border of the TRC property. Please refer to Exhibit D in the appendices for a copy of the plans. EPUC has agreed to pay 40% of the construction costs of this trunk line based on the amount of capacity that it is estimated that EPUC will use in the line. The twelve inch sewer main, referenced above, will then be constructed by EPUC from the terminus of the TRC trunk line, across Route 465 right-of-way, through the proposed certificated area, across Route 265 and then terminating at the northeast corner of Emerald Point Phase 12. Future plans call for the construction of a main lift station at the existing EPUC sewage treatment plant site as well as approximately 8,200 lineal feet of ten inch diameter force main. Once completed, this would allow the sewage, currently being treated at the plant, to be pumped up to the new sewer line serving the proposed certificated area and on

into the TRC trunk line. Eventually, all of the sewage generated by EPUC will be treated in the City of Hollister Municipal Wastewater Treatment Facility. At that time, the EPUC sewage treatment facility could be taken out of service.

Please refer to Exhibit B in the appendices to see the route of the TRC regional trunk line, the route of the sewer main through the proposed certificated area, and the location of the proposed main lift station and force main. All easements have been obtained for the construction of the TRC trunk line as well as the EPUC sewer main that will cross the proposed certificated area. A legal description for the proposed certificated area has been included in the appendices as Exhibit E.

IV. PROJECTED COST OF CONSTRUCTION:

The following is the projected cost of construction for the TRC regional trunk line, the sewer line across the proposed certificated area, and the main lift station and force main to replace the existing EPUC sewage treatment facility.

TRC regional trunk line (40% of total construction cost)	$ 327,500.00
EPUC sewer line across proposed certificated area	$ 152,500.00
EPUC main lift station and force main	$ 520,000.00
Total Projected Cost of Construction	$ 1,000,000.00

V. FINANCING AND INCOME:

The financing for construction of this project will be provided through a conventional bank loan. Proposed financing terms are identified as Exhibit F in the appendices of this report. Also included are Forecasted Statements of Operations for the years 2012, 2013, and 2014 with estimated user numbers and projected rates.

APPENDICES

SEWER SYSTEM SPECIFICATIONS

FOR

OFF-SITE GRAVITY SEWER MAIN EXTENSION

FOR

EMERALD POINT SUBDIVISION

TANEY COUNTY, MISSOURI

EXHIBIT C–1

OWNER

EMERALD POINT UTILITY CO., INC.

118 STATE DRIVE

HOLLISTER, MISSOURI 65672

ROZELL ENGINEERING COMPANY

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2404 STATE HWY 248, SUITE 4

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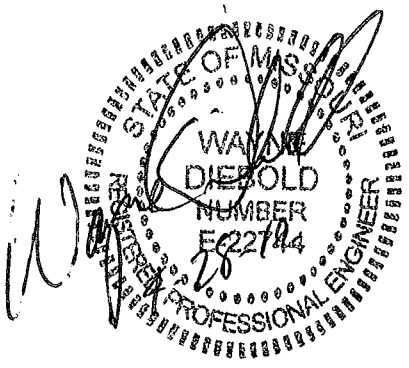

APRIL 28, 2010

WO# 12280OSW

APPENDIX 4

SECTION 1: DETAILED SPECIFICATIONS FOR SANITARY SEWERS

A. SEWER PIPE

1. Scope of Work. The work shall consist of furnishing all materials, equipment and labor necessary for the construction of sanitary sewer lines and appurtenances in conformance with lines and grades shown on the plans or as established by the Engineer, and as specified herein. Items of work or materials not specifically mentioned, but necessary for the completion of the sanitary sewer line construction shall be considered as incidental to other items in the contract.

2. Materials.

   a. Pipe. The type, size and class of pipe may be shown on the plans. If pipe is not designated on the plans, the type, size and class to be used shall be one of the following, at the Contractor's option. Type, size or class of pipe may not be changed during the progress of work, without approval of the Engineer.

      (1) Extra Strength Clay Pipe and fittings shall conform to the ASTM Designation C700.

      (2) Tee Connections shall be "Perma Tees" as manufactured by Dickey Clay Pipe Company or an approved equal.

      (3) Reinforced Concrete Culvert pipe shall conform to ASTM designation C76.

      (4) Concrete Sewer Pipe shall conform to ASTM designation C14.

      (5) Cast or Ductile Iron Pipe and fittings shall conform to United States of America Standards Institute, Specifications A-21, Class 150 with mechanical or push-on joints.

      (6) Polyvinyl Chloride (PVC) Sewer Pipe and fittings shall conform to ASTM designation D3034 (SDR35).

   b. Pipe Joints.

      (1) Joints for vitrified clay pipe shall conform to ASTM designation C-425. When Type III joint is used, the compression ring shall be attached within the bell of the pipe as a part of the manufacturing process.

      (2) Joints for reinforced concrete culvert pipe shall be flexible watertight, neoprene gaskets of the proper size conforming to the requirements of ASTM designation C-443.

      (3) Joints for cast or ductile iron pipe shall conform to USASI specification A21.11 for mechanical or push-on joints.

      (4) Joints for Polyvinyl Chloride pipe (PVC) Flexible gasketed joints shall be compression type with a gasket confined in a machined groove in the spigot end of the pipe. Oil resistant rubber gasket rings shall conform to the requirements of ASTM D1869. Gaskets shall be neoprene or other synthetic material.

c. Bedding Material. Material for bedding shall be crushed stone or crushed gravel conforming to the requirements of ASTM Standard C33, and having a gradation of ASTM Standard C33 size 67, as follows:

	Sieve Size	% Passing
Passing	3/4"	90 - 100%
Passing	1/2"	-----
Passing	3/8"	20 - 55%
Passing	No. 4	0 - 10%
Passing	No. 8	0 - 10%

d. Miscellaneous Materials. Any materials requested by the Contractor for use during construction but not described in this specification will be subject to the approval or rejection of the Engineer.

3. Construction Methods.

a. Classification of Excavated Materials. Classification of excavated materials will be made as follows:

(1) Rock. Rock is defined as being sandstone, limestone, chert, granite, silstone quarzite, slate, shale occurring in its natural undisturbed state, hard and unweathered, in ledges 6 inches or more in thickness, or similar material in masses or boulders, each being more than 1 1/2 cubic yards in volume.

Should rock be encountered in two or more ledges, each ledge being more than 6 inches thick and with interlying strata of earth, clay, shale, or gravel not more than 12 inches thick in each stratum, the entire volume between the top of the upper ledge and bottom of the lower ledge will be classified as rock.

(2) Earth. All materials not classified as rock shall be classified as earth. Chert (joint flint rock) broken by intermittent clay partings or clay seams (hardpans) shall be considered as earth.

(3) Unclassified. Unclassified excavation will consist of the excavation of all materials of whatever character encountered in the work. All material required to be excavated will be considered as "Unclassified Excavation" unless the contract specifically states otherwise.

b. Excavation. Excavation shall consist of the removal of any and all material below ground level necessary in order to carry out the installation and construction required by the plans and specifications and shall include: (1) Additional excavation required for bedding; (2) All sheeting, shoring, bracing, protection of adjacent property and underground conduits or structures and preparation of the subgrade; (3) The cost of diversion of surface water, pumping, draining, draining or otherwise dewatering of excavation; and (4)

The subsequent handling and disposal of such material not used in the backfill.

Trench excavation shall not be performed any farther ahead of the bedding and pipe laying operations than is necessary to permit a continuous operation. The elevation of the bottom of the trench shall be continually checked for conformance to the lines and grades shown on the plans. Excavation made below proper subgrade elevation shall be refilled with bedding material and thoroughly compacted at the Contractor's expense. Sheeting, timbering or bracing shall be placed by the Contractor wherever necessary for the safety of workmen or the public and for the preservation of any excavation, embankment, or structure. Where the excavation is of such an unstable character or other conditions are such as to render it necessary, the sheeting shall be closely driven and to such depth below the lowest point of the final trench elevation as required for stability. The Contractor shall be held responsible for the determination of the need for sheeting or other types of protection and for the sufficiency of all sheeting and bracing used and for all persons injured or property damaged as the result of improper quality, strength, placing, maintaining, or removing the same. No additional compensation will be made for any sheeting, bracing, or other protective measures whether left in place or not.

The Contractor, shall at his own expense, shore up, protect and insure from damage all buildings, retaining walls, viaduct piers and footings, storm sewers, sanitary sewers, gas lines, water lines, fences, curbs, trees or other property liable to be injured during the progress of the work, and he will be held responsible for all damage which may occur by reason of prosecution of the work.

The Contractor shall furnish and operate sufficient pumps and equipment, and shall provide all materials, labor, etc., required to prevent interference with the work by water, ice or snow. Damage of any kind resulting from insufficient pumping facilities or similar lack of proper protection of the work shall be repaired or replaced by the Contractor at his own expense. No water shall be allowed to run into or over any concrete work or pipe, or into or through any pipe, unless by special permission in writing by the Engineer.

Where leaks or springs are encountered which, in the opinion of the Engineer, affect the safety, usefulness or satisfactory operation of any of the permanent work, he may direct special precautions to be taken.

The width of the trench at the top of the pipe shall provide at least six inches of clear space on each side of the pipe to permit compaction of the bedding material.

The location of sewers and structures as shown on the plans have been selected to provide the least possible interference with or the crossing of existing utilities and aboveground obstructions. The City reserves the right to make minor variations in the location of the sewers and structures during the construction to adjust for any changed conditions discovered and no additional payment will be allowed the Contractor for shifts in alignment.

Arrangements shall be made by the Contractor with all persons, firms, corporations owning or using any poles, pipes, tracks, or conduits, etc., affected by the construction on this project to maintain and protect such facilities during construction with the cost of any such protection paid by the Contractor and is considered as incidental to other items in the contract.

Tunneling shall be done only where shown on the plans or by written direction or approval of the Engineer. Tunnels shall be of sufficient size, height, and width to permit proper installation of the pipe, proper bracing of the tunnel section and to permit ample room for the prosecution of the work and safety of the workmen.

c. Bedding and Laying Pipe. The subgrade of the trench shall be excavated to a depth as to provide space for at least four inches of bedding material between the subgrade and the pipe if the subgrade material is earth and six inches of bedding material between the subgrade and the pipe if the subgrade material is rock. Bedding material shall be placed in the trench and carefully graded and compacted to the proper elevation so that the pipe, when placed, shall conform to the specified line and grade. The Engineer will initially provide the Contractor with line and grade stakes set on the natural ground surface. It shall be the Contractor's responsibility to transfer the line and grade to the bottom of the trench. Three batter boards, a top line and grade pole or laser beam shall be used for this purpose or some other method of checking the pipe grade and line approved by the Engineer in writing. The Contractor must verify the trench grade or the grade of the top line and sewer pipe, and will be held responsible for the correct flow of sewers. Any apparent inaccuracy in the grade stakes shall be called to the Engineer's attention immediately upon discovery.

If, in the opinion of the Engineer, subgrade conditions are such that the bedding described above will not adequately support the pipe, he may order the Contractor to install one of the two types

of concrete cradle shown on the Standard Drawings.

At locations where it is necessary to construct the sewer line across an existing water line and there is less than an 18 inch vertical distance between the top of the lower line and the bottom of the upper line, the sewer line shall be constructed of cast iron pipe with mechanical joints or be completely encased in concrete six (6") inches thick around the pipe, for a distance of 10 feet on each side of the water line. If a water line is parallel to the sewer line and located within 10 feet horizontally and is less than 18" vertically, the sewer line shall be constructed of cast iron pipe with mechanical joints or shall be completely encased in concrete six (6") inches thick around the pipe.

d. Batter Boards and Laser.
The Contractor shall provide and maintain in good working order, on the site, at all times, a laser beam or a gauge rod of sufficient length to reach from the invert of the sewer pipe being laid to the top line strung on the three batter boards. The gauge rod shall be graduated and numbered each foot of its entire length. The gauge rod shall be equipped with either a plumb line or two spirit levels and the utmost care used to insure a truly vertical gauge rod at the time the reading is taken and pipe is being set. Each length of pipe shall be laid on an even, firm bed, so that no uneven strain will exist to prevent the pipe from bearing on the sockets. Bell holes for bell and spigot pipe shall be dug at each joint as hereinbefore specified. Each pipe shall be laid in conformity with the line and grade stakes given by the Engineer. Pipe laying shall commence at the manhole connection at the low point of the project and progress up-grade, unless otherwise expressly permitted by the Engineer. The bell-end of the pipe shall be laid up-grade. The alignment of all pipe lines between adjacent manholes shall be true to line and grade; the pipe line from manhole to manhole shall reflect the full bore of the pipe. The end of each joint pipe shall be truly centered and fully positioned into the abutting pipe. Pipe laid in the trench shall not be covered until approved by the Engineer.

In the event a laser beam is used to control line and grade for the pipe laying operation, the laser must be checked at the beginning of each day and at least once between manholes and at any other time the Engineer deems necessary to insure the proper line and grade of the pipe.

e. Tees and Wyes.
On Tax Bill Sewers one (1) tee or wye branch for lateral sewer, or

house connection shall be furnished and laid to every lot, except that additional tees may be required for unplatted areas and large lots, as the Engineer directs; they shall be four inches in diameter unless otherwise shown on the plans or specified by the Engineer and shall be capped with approved covers equipped and installed in accordance with manufacturer's recommendations.

On private sewer projects, one (1) tee or wye branch and lateral located under existing or proposed pavements shall be furnished and installed to the property line for each lot. Other lots to be served that do not require laterals under pavements will be furnished with tees at the developer's request or as shown on the plans.

The exact location of all tee or wye branches and other special pieces shall be carefully ascertained by the Engineer, before concealment by backfilling, by accurate measurement from the center of the manhole next below in the same line of pipe so that a true and exact record may be preserved for future use.

No tee or wye branch or special piece shall be covered before its exact location has been noted and recorded by the Engineer.

f. Laterals.

Construction of laterals shall closely follow construction of the main sewer line. No more than 700 feet of sewer line shall be constructed prior to commencing construction of laterals. At the option of the Contractor, construction of sewer lines and laterals may be performed concurrently. If, in the opinion of the Engineer, the lateral construction is not proceeding in a timely manner, the Engineer may order the Contractor to cease work on the sewer line construction until such time as lateral construction has proceeded to a point satisfactory to the Engineer.

If the sewer is being constructed within the street right-of-way all laterals shall extend to the right-of-way line, unless otherwise shown on the plans or specified in the contract. When the main sewer trench depth is eight (8) feet or more, the laterals shall be constructed and laid in such a manner that the connection end is not more than seven (7) feet below finished ground level, unless, the house to be served has a basement. In that case, then the lateral shall be constructed to serve the basement if at all possible. If a tee is to be placed but no lateral is required on a main sewer line eight (8) feet or more in depth, a four (4) inch riser shall be placed, bringing the connection up to a maximum depth of seven (7) feet below finished ground level. This riser will be measured and paid for as lateral line.

A wood stake two (2) inches by two (2) inches, or equivalent, shall be required at the end of each lateral or tee extending from the lateral or tee to within two (2) to six (6) inches below the ground surface.

No lateral or special piece shall be covered before its exact location has been noted and recorded by the Engineer.

g. Cleaning.
The interior of the sewer line shall, as the work progresses, be cleaned of all dirt, excess jointing material and superfluous materials of every description. On small pipe sewers where cleaning after laying may be difficult, a swab or drag shall be kept inside the pipe line and pulled foward past each joint immedidately after its completion.

h. Joints.
Joints for reinforced concrete pipe with flexible rubber gaskets shall be made in accordance with manufacturer's recommendations. Bell and spigot, or tongue and groove ends of the pipe shall first be wiped clean before actual jointing operations are started.

Immediately prior to jointing, all surfaces of the joint shall be thoroughly cleaned and lubricated with soapy water or in accordance with manufacturer's recommendations. The tongue end shall be centered on grade into the groove end of the last downstream length of pipe and shoved completely home and properly seated with the application of steady pressure by a lever, winch or other suitable device. Care shall be used to prevent displacement of the gasket during jointing.

Mechanical joints for cast iron pipe shall be carefully made to assure that the spigot be centrally located in the bell. The surfaces coming in contact with the rubber gasket shall be thoroughly cleaned with a wire brush just prior to assembly to remove all loose rust or foreign materials and the gasket brought toward the flange evenly by partially tightening the bottom and top bolts, then the side bolts, and last, the remaining bolts. The cycle should be repeated until all bolts are properly tightened. If effective sealing is not attained, the joint shall be disassembled, thoroughly cleaned and reassembled. Overstressing of bolts to compensate for improper installation will not be permitted.

i. Backfilling.
The backfilling of the trench shall follow closely behind the pipe laying operation, but not until inspected by the Engineer and the location of all connections recorded. In all cases the pipe shall be backfilled the same day as laying.

The backfill material for all pipe sewers laid in tunnels shall be sand or finely crushed limestone of which at one hundred (100%) percent shall pass a 3/16 inch sieve. It shall be thoroughly compacted.

The backfill material around the pipe and to a height of 12 inches above the top of the pipe shall be bedding material, as specified hereinbefore, carefully placed and compacted so as not to disturb the pipe location.

The backfill material for sewers and laterals constructed in open cuts crossing roadways, driveways, sidewalks, other existing pavements, or at other locations shown on the plans, or specified, shall consist of granular material meeting the requirements for bedding material, specified hereinbefore. This material shall be placed and thoroughly compacted.

Except as specified above, the backfill material may be suitable earth material from the excavation. No frozen material shall be used in the backfill. Care shall be taken to avoid injury to the pipe or structures or producing unequal pressures thereon. Earth backfill shall be compacted by thoroughly jetting the material. Jetting shall be performed with a steel or rigid plastic pipe nozzle having a minimum of one and one-half (1-1/2) inch inside diameter. This nozzle will be a minimum of four (4) feet below the finished ground surface of the trench when performing the jetting operation. The top four (4) inches of the backfill shall be made with topsoil and graded as required under Chapter XIII of these specifications. All surplus excavation material not used in backfilling shall be disposed of by the Contractor. Upon receipt of written notice from the Engineer, any settlement of the backfill below the original ground surface shall be remedied by the Contractor for a period of six (6) months after final completion and acceptance.

j. Pavement Replacement:
All pavement and curbs which have been removed during the course of construction of which, in the opinion of the Engineer, have been damaged during the progress of the work, shall be replaced with the same type of material as the original paving or as otherwise specified. Pavement and curb replacement shall closely follow backfilling operations. Replacements of pavement and/or curbs shall not occur any later than thirty (30) calendar days after backfilling, unless otherwise approved by the Engineer. Only those materials listed in these specifications shall be used (bituminous pavement or portland cement concrete pavement). Backfill shall be removed to the level of the original subgrade prior to placement of pavement.

The existing pavement necessary to be removed for construction shall be sawed in a neat line and removed prior to excavation. The width of this removal will be as specified in the special provisions and payment for pavement repair shall not exceed the width specified.

The paving shall be sawed prior to replacement as to insure a straight edge and a uniform patch. The subgrade for the new paving shall be further compacted by rolling or tamping. The pavement shall then be relaid carefully in accordance with the requirements of the section of the materials specified. If not specified, then the pavement shall be to the section and of the materials originally placed, or as specified by the Engineer and to the satisfaction of the Engineer.

4. Method of Measurement.

a. Pipe. Final measurement of all pipe will be to the nearest foot.

b. Encasement. Final measurement of all encasements will be to the nearest foot.

c. Rock Excavation. Final measurement of rock excavation, if specified, will be to the nearest 1/10 cubic yard.

5. Basis of Payment.

Contractor will be paid for quantities actually constructed or performed as determined by field measurement at the unit price bid for the items listed in the schedule of the proposal or for such extra work as may be authorized and approved by the Engineer. The cost of incidental work not listed in the schedule of the proposal but necessary for the completion of the project shall be considered as completely covered by bid prices for other items in the contract.

Quantities of work acceptably completed under the terms of the contract shall be determined by the Engineer based on his actual measurements.

a. Sewer Pipe in place will be paid for on length of sewer laid from inside edge of manhole or structure to inside edge of manhole or structure and shall include the cost of all labor, materials, including joints, tee branches, wyes, and other necessary fittings, excavation, backfill, and equipment.

b. Lateral Pipe in place will be paid for on length of lateral laid from tee or wye to end of lateral. Unit price for laterals shall include the costs of all labor, materials, joints, and necessary fittings, excavation, backfill, and equipment.

c. Concrete encasement will be paid for at the bid price per lineal foot, or as extra work if not listed in the schedule of the proposal.

d. Rock Excavation. Rock excavation, if specified, will be calculated at a width of three (3) feet for pipe up to and including 24 inches in diameter. For pipe having a diameter greater than 24 inches, the trench width to be paid for will be calculated as the pipe width plus six (6) inches on each side of pipe.

B. MANHOLES

1. Scope of Work. The work shall consist of furnishing all materials, equipment and labor necessary for the construction of manholes and appurtenances at the location and in accordance with details on the plans and as specified herein. Items not specifically mentioned, but necessary for completion of the work shall be considered as incidental to other items in the contract.

2. Materials.

a. Concrete for manhole bases, pipe encasement or cradle shall conform to the requirements of Section 2 of these specifications except that the slump shall be four (4) inches plus or minus one inch.

b. Cast iron fittings and piping with mechanical joints shall be in accordance with USASI Specification A21, Class 150 and the plan details.

c. Cast iron frames and covers shall conform to the requirements of the standard drawings included at the end of these specifications.

3. Construction Methods.

a. If manholes are constucted of precast sections, each precast section shall be set in "Ram-Nek" preformed plastic gasket meeting Federal Specification SS-S-00210.

b. Manholes shall be waterproofed on the exterior with a bituminous coating or equal. Inlet and outlet pipes shall be joined to the manhole with a gasketed flexible watertight connection or any watertight connection arrangement that allows differential settlement of the pipe and manhole wall to take place.

c. The elevation of manhole cover shall be adjusted to the required grade by shimming with concrete ring laid in "Ram,-Nek" plastic gasket. Cast iron frame and cover shall be set in full mortar beds on top of masonry in accordance with plan details. Type "A" frame and covers shall be used in traffic areas and Type "B" frame and covers shall be used in non-traffic areas.

d. If manholes are found to not be water-tight after they are completed, leaks shall be plugged on the outside with non-shrinking, waterproof grout or other approved material.

e. Cold Weather Requirements. Whenever the temperature of the surrounding air is below 40°F. or when the possibility exists that the temperature will fall below 40°F., within the 24 hour period after concrete operations, concrete placed in the forms shall have a temperature between 80°F. and 100°F. All concrete shall be maintained at a temperature of not less than 50°F. for at least 72 hours and shall be protected from freezing for at least an additional 72 hours or for as much time as is necessary to insure proper curing of the concrete. The housing, covering or other protection used in connection with curing shall remain in place and in tact at least 24 hours after the artificial heating is discounted. No dependence shall be placed on salt or other chemicals for the prevention of freezing. Contractor will be held responsible for any damage to concrete as a result of cold weather operations.

f. Finishing. The top surfaces of structures shall be struck off with a straight edge and finished with a wood float. Forms will be removed between 12 and 24 hours and all exterior form ties shall be removed to a depth of 1 inch below the surface. All fins caused by forms, joints and other projections shall be removed and all pockets cleaned and filled with mortar. All exposed surfaces shall then be wetted and hand rubbed with a rubber float using a sand and cement mixture to obtain a smooth and uniform texture as directed by the Engineer.

g. Curing. As soon after the completion of the specified finishing operations as the condition of the concrete will permit without danger of consequent damage thereto, all exposed surfaces shall either be covered with plastic sheet, or covered with earth and/or burlap, or when not required to be painted, sprayed with Type 2 white-pigmented membrane-forming liquid conforming with ASTM designation C309.

h. Inverts. Inverts for manholes shall be constructed with cement mortar after other concrete work has been done. Inverts shall be

smoothly finished in accordance with the plans and to insure a smooth flow of water through the structure.

i. Backfilling. Manholes which lie within an area to be paved shall be backfilled with granular material meeting the requirements for bedding materials specified hereinbefore. This material shall be placed and thoroughly compacted. All other manholes shall be backfilled with earth materials and shall be placed and jetted in the same manner as for sewer lines, specified hereinbefore.

j. Removal of Forms. Forms shall remain in place until, in the opinion of the Engineer, it is safe to remove them. In determining the time of removal of forms, consideration shall be given to the location and character of the structure, the weather and other conditions influencing the setting of the concrete and the requirements for curing and finishing.

4. Method of Measurement. Manholes exceeding six (6) feet in depth will be measured to the nearest 1/10 foot.

5. Basis of Payment. Manholes up to six feet in depth include all labor, equipment, materials, backfill, excavation, concrete base, cone, steps, ring and cover as well as the sidewalls and will be paid for at the base price for each manhole complete in place. Additional payment will be made for any depth over six feet at the unit bid price per lineal foot. All excavation for manholes shall be included in the unit price per manhole. No direct payment will be made for furnishing and placing asphaltic paint, premolded asphaltic filler, or other types of joint separators. The cost therefor shall be included in the price bid for the item of work of which they are a part.

C. SEWAGE PUMPING STATIONS:

THIS SECTION NOT USED. PAGES 1-12 THRU 1-15

D. FORCE MAINS:

THIS SECTION NOT USED. PAGES 1-15 THRU 1-16