BOA Meeting Agenda
Peculiar City Board of Aldermen
Work Session Meeting and Public Hearing
City Hall – 250 S. Main St
Monday July 7, 2014 6:30 p.m.

Notice is hereby given that the Board of Aldermen of the City of Peculiar will hold a regularly scheduled meeting on Monday, July 7, 2014 at 6:30 pm, in the Council Chambers at 250 S. Main St. Representatives of the news media may obtain copies of this notice by contacting the City Clerk at City Hall, 250 S. Main St Peculiar, MO 64078 or by calling 816-779-2221. All proposed Ordinances and Resolutions will be available for viewing prior to the meeting in the Council Chambers.

1. **Call to Order**

2. **Pledge of Allegiance**

3. **Roll Call**

4. **Board of Alderman Statement**

5. **Life Saving Award Presentation to Ryan Jensen**

6. **Proclamation – Katie Kalinka - Civic Involvement**

7. **Mayor's Appointments – Andrew Boston to Tree Board**
   Resolution 2014-36 - A RESOLUTION OF THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI APPROVING THE APPOINTMENT OF ANDREW BOSTON TO THE PECULIAR TREE BOARD

8. **Business**

   A. **Resolution 2014-37 – A RESOLUTION OF THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI APPROVING THE ISSUANCE OF A ROCK QUARRY & MINING OPERATIONS LICENSE TO MARTIN MARIETTA MATERIALS UNDER THE CONDITIONS AND RESTRICTIONS SPECIFIED HEREIN.**

   B. **Bill No. 2014-19 - AN ORDINANCE RESCINDING CHAPTER 125 OF THE PECULIAR MUNICIPAL CODE AND REPLACING WITH A NEW REVISED CHAPTER 125 THAT UPDATES THE ESTABLISHMENT AND ROLE OF THE PARK BOARD**
      1st and potential 2nd reading

   C. **Bill No. 2014-20 - AN ORDINANCE RESCINDING CHAPTER 225 OF THE PECULIAR MUNICIPAL CODE AND REPLACING WITH A NEW REVISED CHAPTER 225 THAT UPDATES THE RULES AND REGULATIONS GOVERNING THE PECULIAR PARKS AND PUBLIC PROPERTIES.**
      1st and potential 2nd reading

   D. **Bill No. 2014-21 - AN ORDINANCE ESTABLISHING CHAPTER 226 OF THE PECULIAR MUNICIPAL CODE TO REQUIRE CRIMINAL BACKGROUND CHECKS FOR PARKS AND RECREATION VOLUNTEERS.**
      1st and potential 2nd reading

9. **Topics for Discussion**

   A. **Institute for Building Technology and Safety (IBTS)**

   B. **Water Supply Engineering Report and Engineering contracts for Water Main Design by Larkin and Associates**

   C. **Engineering contract for Sanitary Sewer in NW Area of City**

   D. **Bid Results for Bridle Trail Curb and Gutter RFP**

10. **Workshop - Derrick Nielsen, Vice President, Allen, Gibbs, & Houlik L.C.**

11. **Aldermen Concerns or Additional Topics for Discussion by Aldermen**

12. **Aldermen Directives Reported by City Administrator**

13. **Adjournment**

PROCLAMATION

WHEREAS, Katie Kalinka is a business owner within the City of Peculiar; and

WHEREAS, Katie Kalinka has gone above and beyond to assist with local charities, and

WHEREAS, Katie Kalinka has shown outstanding civic leadership and involvement in the community; and

WHEREAS, The City of Peculiar is pleased to have individuals such as Katie Kalinka active in the community.

NOW THEREFORE, I Holly Stark, Mayor of the City of Peculiar, Missouri do hereby officially proclaim July 8, 2014 as

"Katie Kalinka Day"

in the City of Peculiar and urge all citizens to recognize and express congratulations to Katie Kalinka for her notable actions.

IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the City of Peculiar, Missouri to be affixed this 7th day of July, 2014.

_____

Mayor Holly Stark

City Administrator
Brad Ratliff

City Clerk
Nick Jacobs

City Engineer
Carl Brooks

Business Office
Trudy Prickett

Chief of Police
Harry Gurin

City Planner
Cliff McDonald

City Attorney
Reid Holbrook

Parks Director
Nathan Musteen

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

To: **Mayor and Board of Alderman**
From: **Nathan Musteen, Parks Director**
Date: **July 7, 2014**
Re: **Resolution #2014-36**
Appointment of Andrew Boston to the Peculiar Tree Board

GENERAL INFORMATION

Applicant: Andrew Boston
Status of Applicant: Tree Board Volunteer Applicant
Requested Actions: Appointment by Mayor to the Park Board.
Date of Application: June 26, 2014
Purpose: Appointment to the Peculiar Tree Board
Property Location (if applicable)**:** 731 B Meadow Ln., Peculiar, MO 64078

PROPOSAL

As per Peculiar Municipal Code, Section 126.050 (C and D)

PREVIOUS ACTIONS

Former Park Board Member, Andrew Boston, notified City Staff and Mayor Stark on June 7, 2014 that he was resigning from the Park Board due to time constraints. Mr. Boston did indicate at the time of his resignation of his desire to continue to be active on the Peculiar Tree Board.

As a member of the Park Board, Mr. Boston had volunteered for one of the three Tree Board Seats required to be filled by the Park Board and has been a participate of the tree planting event in March and attended all meetings since the inception of the Peculiar Tree Board.

KEY ISSUES

The applicant will fill one of two "resident at large" seats to be appointed by the Mayor. His term is to be a three year term with an expiration date of July 1, 2017 as per Peculiar Municipal Code, Section 126.050 (D).

STAFF COMMENTS AND SUGGESTIONS

The City and the Parks Department is fortunate and excited to have residents interested in Peculiar's Urban Forest and be willing to volunteer for service on the Peculiar Tree Board. Upon approval of the Board of

Alderman and appointment by the Mayor, the Tree Board will welcome its newest member and continue moving forward towards achieving Tree City USA in spring of 2015.

STAFF RECOMMENDATION

Approval of Appointment by Mayor

ATTACHMENTS

Resolution 2014-36

STAFF CONTACT: Nathan Musteen, CPRP
Parks & Recreation Director
816-779-2225
nmusteen@cityofpeculiar.org

City of Peculiar

Boards / Commissions Application Form

Thank you for your interest in serving on one of the City's Boards/Commissions. Volunteers are essential to ensure our City government is responsive to the needs of the community. Please help us place you on the most appropriate commission by completing this questionnaire, you may attach your resume or additional information as needed.

Boards / Commissions of Interest:

_____ Planning Commission _____ Parks & Recreation Board _____ Board of Adjustment X Peculiar Tree Board

Name: Andrew Boston **Home Phone:** 816-859-0370

Address: 731B Meador Ln **Alternate Phone:** _____

City, State, Zip: Peculiar, MO 64078 **Email Address:** aboston130@gmail.com

Ward: 1) _____ 2) X 3) _____ *(contact City Hall if you are unsure of your Ward)*

Education: *(Please mark the highest level completed)*

X High School (please list the High School you attended) Harrisonville High School

_____ College (please list College/University and Degree) _____

Current Employment:

Employer: Comfort Systems Heating & Cooling **Position:** Installer / Service Tech

Address: Belton, MO **Work Phone:** 816-322-1013

Have you previously served on a City Board or Commission? X Yes _____ No If Yes, please describe: Park Board - resigned from Park Board due to time constraints

Are you currently registered to vote in the City of Peculiar? X Yes _____ No

Why do you want to serve on this Board/Commission? To be involved with the beautification of Peculiar

Please describe any business or property interest which might place you in a conflict of interest situation should you be appointed to this Board/Commission. None

Are you related to any current member of the Board of Alderman? _____ Yes X No If Yes, please describe:

BOA Member Name: _____ *Relationship:* _____

Signature: A Cat *Date:* 6/26/14

Return Application to: City of Peculiar C/O City Clerk 250 South Main Street Peculiar, MO 64078

RESOLUTION 2014-36

A RESOLUTION OF THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI APPROVING THE APPOINTMENT OF ANDREW BOSTON TO THE PECULIAR TREE BOARD

WHEREAS, Chapter 126:050 (C) of the Peculiar Municipal Code establishes a Tree Board consisting of three (3) or more individuals serving on the Park Board (whose members are appointed by the Mayor), and two (2) at-large members appointed by the Mayor. and

WHEREAS, Chapter 126:050 (C and D) of the Peculiar Municipal Code authorizes the Mayor to make appointments and to fill vacancies to the Tree Board; and

WHEREAS, the Board of Aldermen have determined the need to appoint a member to the Tree Board; and

WHEREAS, Andrew Boston meets the qualifications for appointment to this board as an at-large resident within the Peculiar city limits; and

WHEREAS, said appointment fulfills a vacant seat that expires on July 1, 2017; and

WHEREAS, Mayor Holly Stark recommends the appointment of Andrew Boston as a member to the Tree Board upon approval of the Board of Aldermen

NOW THEREFORE, BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI:

Section 1 – Appointment: The Board of Aldermen approves the appointment of Andrew Boston to the Tree Board.

Section 2 - Effective Date: This resolution shall become effective upon approval and passage by the Board of Aldermen.

THIS RESOLUTION WAS ADOPTED BY THE FOLLOWING ROLL CALL VOTE THIS 7th DAY OF JULY, 2014

Alderman McCrea	____	Alderman Ray	____
Alderman Fines	____	Alderman Roberts	____
Alderman Ford	____	Alderman Turner	____

Approved: _____ Attest: _____

Holly Stark, Mayor Nick Jacobs, City Clerk

City Administrator
Brad Ratliff

Chief of Police
Harry Gurin

City Clerk
Nick Jacobs

City Planner
Cliff McDonald

City Engineer
Carl Brooks

City Attorney
Reid Holbrook

Business Office
Trudy Prickett

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

Parks Director
Nathan Musteen

To: **Board of Alderman**

From: **Clifford L. McDonald**

Date: July 7, 2014

Re: Martin Marietta Materials Application for Rock Quarry & Mining Operations Business License

GENERAL INFORMATION

Applicant: Martin Marietta Materials (MMM)

Status of Applicant: **N/A**

Requested Actions: Board of Aldermen to consider approving the issuance of a Rock Quarry & Mining Operations Business License to Martin Marietta Materials with the conditions and restrictions specified in the corresponding Resolution.

PROPOSAL

See "Requested Actions" above.

PREVIOUS ACTIONS

Martin Marietta Materials applied for a Rock Quarrry & Mining Operations Business License in May, 2014. This application was denied by the City Planner as their Quarry Operations ceased approximately 7 years ago, this inactivity ended the approved Non-conforming Use of the property after 180 days; City Ordinance now requires MMM to secure a Special Use Permit to authorize & conduct Quarry Operations.

KEY ISSUES

I met with Richard Kaler, Vice President/GM, Martin Marietta Materials (MMM) on June 4th, 2014 to discuss their Business License application and proposed operations – attornies for both parties were present.

MMM has approximately 100,000 tons of quarried, crushed and stockpiled limestone material. In Mr. Kaler's letter dated June 11, 2014 (see attach 1) he stated "We (MMM) are only seeking a business license which will allow us to sell limestone that has previously been quarried, crushed and stockpiled on site." The limestone is not construction quality material, so anticipated sales are expected to be periodic based upon customer demand.

MMM will not conduct quarry operations (see Mr. Kaler's letter, attach 1), nor will they blast, excavate, mine or crush limestone with this approved business license. Additionally, MMM is aware of Peculiar's ordinance imposing a 40 cent per ton fee on the sale of limestone rock within the City, this is outlined and provided for in Chapter 625: ROCK QUARRY AND MINING of the City's Municipal Code (see attach 2).

I suggest a Business License (see attach 3) be issued In-accordance-with the provisions of Chapter 625: ROCK QUARRY AND MINING which clearly outlines the LICENSE FEE, TERM, INSPECTION OF BOOKS, and PENALTY associated with issuing this type of license (see attach 2).

STAFF COMMENTS AND SUGGESTIONS

Martin Marietta Materials has approximately 100,000 tons of stockpiled material they desire to sell – this represents roughly Forty Thousand Dollars ($40,000.00) in potential revenue for the City over the next several years. I believe approval of their Business License authorizing the sale of this existing material would be mutually beneficial to both parties.

STAFF RECOMMENDATION

Recommend the Board review the attached letter from Mr. Kaler, Chapter 625 of the City's Municipal Code and consider approving the Business License for Martin Marietta Materials by Resolution under the conditions and stipulations so stated.

ATTACHMENTS

1. Martin Marietta Materials Letter (Mr. Kaler), dated June 11, 2014
2. Chapter 625: ROCK QUARRY AND MINING –City Municipal Code
3. Rock Quarry & Mining Operations Business License

STAFF CONTACT: Clifford L. McDonald,
PH: 816-779-2226
E-mail: cmcdonald@cityofpeculiar.com

CHAPTER 625: ROCK QUARRY AND MINING

SECTION 625.010: LICENSE REQUIRED

No person, firm or corporation shall carry on or operate, maintain or engage in the business of operating a rock quarry or mining or extracting rock or other minerals from the ground within the limits of the City without first obtaining a license which shall be issued by the City to such person, firm or corporation upon proper application being made therefore and payment of the fee prescribed by the Board of Aldermen. No such license shall be transferable or assignable. Any license that is issued to a designated location shall not be used for any other location unless the permission of the Board of Aldermen shall have been obtained for such change. (Ord. No. 110706B §1, 11-7-06; Ord. No. 051909A §1, 5-19-09; Ord. No. 061609 §1, 6-16-09)

SECTION 625.015: LIABILITY INSURANCE REQUIRED

The license application shall be accompanied by proof satisfactory to the Board of Aldermen that such licensee has public liability insurance with some insurance company acceptable to the Board of Aldermen in an amount not less than one million dollars ($1,000,000.00) and carrying the provision that said insurance company shall agree to notify the City at least ten (10) days before any cancellation of such policy. Licensee shall either replace any cancelled liability insurance immediately or the license hereby granted shall terminate. (Ord. No. 110706B §1, 11-7-06)

SECTION 625.020: FEE

The fee for such occupation license shall be the sum of one thousand dollars ($1,000.00) per year, payable in advance, plus a fee equal to forty cents ($.40) per ton for each ton of limestone sold or physically removed from the rock quarry or mine property. The tonnage fee shall be paid by the first (1st) day of August and first (1st) day of February each year. (Ord. No. 110706B §1, 11-7-06; Ord. No. 051909A §2, 5-19-09; Ord. No. 061609 §2, 6-16-09)

SECTION 625.030: TERM

The term of the license shall be from June first (1st) of one year until May thirty-first (31st) of the following year except as prescribed herein. (Ord. No. 110706B §1, 11-7-06)

SECTION 625.040: FEE PRORATED

The one thousand dollar ($1,000.00) lump sum fee shall be prorated for the balance of the year remaining before the next date of the regular issuance of occupational license hereunder on a one-quarter (¼) year basis. The fee to be tendered at the time of the original application by each applicant shall be determined by the one-quarter (¼) of the license year in which the application is made. (Ord. No. 110706B §1, 11-7-06; Ord. No. 051909A §3, 5-19-09; Ord. No. 061609 §3, 6-16-09)

SECTION 625.050: INSPECTION OF BOOKS

In determining the tonnage fee due the City, the licensee shall make its records of tonnage sold available to an appropriate representative of the City for inspection upon request; provided however, if the licensee shall have been required by the terms of any lease or agreement to certify tonnage sold or removed from the mine or rock quarry site to any lessor or licensor, and if licensee shall have provided certified records of tonnages sold as set forth in said lease or agreement which have been accepted in writing by certified public accountant of the lessor or licensor, such certified record shall be deemed to be an acceptable record of tonnage sold for the basis of the fee or charge to be made by the City of Peculiar under the provision of this Chapter. (Ord. No. 110706B §1, 11-7-06; Ord. No. 051909A §4, 5-19-09; Ord. No. 061609 §4, 6-16-09)

SECTION 625.060: FORM OF LICENSE

The City Clerk shall issue any such license in such form as shall have been prescribed by the Board of Aldermen. (Ord. No. 110706B §1, 11-7-06)

SECTION 625.070: ZONING REQUIREMENTS

The City Clerk shall issue such license subject to the licensee's compliance with all zoning requirements and shall have the power to revoke any license for failure to comply with the zoning requirements. (Ord. No. 110706B §1, 11-7-06)

SECTION 625.080: PENALTY

Deliberate violation of the terms of this Chapter shall be punishable by fine not to exceed five hundred dollars ($500.00) or imprisonment for not more than ninety (90) days for each offense. Each day's operation of such business without having obtained the necessary license as provided for herein shall constitute a separate violation. Nothing in this Section shall be construed to prohibit the City from prosecuting a civil action to collect unpaid license fees. (Ord. No. 110706B §1, 11-7-06; Ord. No. 051909A §5, 5-19-09; Ord. No. 061609 §5, 6-16-09)

ROCK QUARRY & MINING OPERATIONS
BUSINESS LICENSE APPLICATION

CITY OF PECULIAR, MISSOURI
250 S. MAIN ST
PECULIAR, MISSOURI 64078
PHONE: 816-779-5212 FAX: 816-779-5213

***NOTE*- Business Licenses expire December 31 each year.**

(PLEASE PRINT)

Business Name: _____

Name of Representative: _____ Title: _____

Business Physical Address: _____ City: _____ State: _____ Zip: _____

Business Phone: _____ Fax: _____ Cell: _____ Email: _____

Mailing Address: _____ City: _____ State: _____ Zip: _____

Description of Type of Business: _____

Fed. Emp. ID No. / Bus. Owner's S. S. # _____ Mo. Retail Sales Tax No. _____

Business Owner's Name: _____

Business Owner's Home Address: _____ City _____ State _____ Zip _____

Business Owner Phone: _____ Fax: _____ Cell: _____ Email: _____

The following documentation and payment must be received and inspections completed before license will be issued.

- **Signed Business License Application**
- **Copy of previous year's Real Estate & Personal Property Taxes receipt from County**
- **Certificate of "No Tax Due", from the Missouri Department of Revenue**
- **Proof of a policy of public liability insurance in an amount not less than $1,000,000 pursuant to Section 625.015 of the Municipal Code.**
- **Completed and satisfactory inspection by the Codes Officer at a cost of $47.00.**

Signature of Applicant: _____ **Date:** _____

Title: _____

New Business Approvals:

Zoning District Classification: _____ **Approval Date:** _____

Fire Department Approval: _____ **Date:** _____

Office Use Only:

Business License ($1,000.00*) **License #**_____ **Fee Paid $** _____

Codes Inspection ($47.00) **Date Completed:** _____ **Fee Paid $** _____

Date Paid: _____ **Total Fees Paid $** _____ **Cash** ___ **Check #** _____

*** The fee for such occupation license shall be the sum of one thousand dollars ($1,000.00) per year, payable in advance, ** plus a fee equal to forty cents ($.40) per ton for each ton of limestone sold or physically removed from the rock quarry or mine property. The tonnage fee shall be paid by the first (1st) day of August and first (1st) day February each year. The one-thousand dollar ($1,000.00) lump sum fee shall be prorated for the balance of the year remaining before the next date of the regular issuance of occupational license hereunder, on a one-quarter (¼) year basis. The fee to be tendered at the time of the original application by each applicant shall be determined by the one-quarter (¼) of the license year in which the application is made.**

RESOLUTION 2014 - 37

A RESOLUTION OF THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI APPROVING THE ISSUANCE OF A ROCK QUARRY & MINING OPERATIONS LICENSE TO MARTIN MARIETTA MATERIALS UNDER THE CONDITIONS AND RESTRICTIONS SPECIFIED HEREIN.

WHEREAS, The City of Peculiar has established procedures and requirements for conducting Rock Quarry and Mining Operations within the City of Peculiar; and

WHEREAS, the City of Peculiar recognizes that Martin Marietta Materials has approximately One Hundred Thousand (100,000) Tons of existing non-spec crushed limestone material stockpiled on their property they wish to sell; and

WHEREAS, the City of Peculiar is willing to authorize Martin Marietta Materials to sell the existing stockpiled non-spec limestone material while ensuring that no further Quarry or Mining Operations are conducted on the property.

NOW, THEREFORE BE IT RESOLVED BY THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI

Section 1. The Rock Quarry & Mining Operations Business License for Martin Marietta Materials shall only authorize the sale or physical removal of the estimated One Hundred Thousand (100,000) Tons of existing quarried, crushed and stockpiled limestone on site.

Section 2. The Rock Quarry & Mining Operations Business License issued to Martin Marietta Materials shall be subject to immediate revocation if any blasting, mining, excavation or crushing operations occur on site.

Section 3. The Rock Quarry & Mining Operations Business License issued to Martin Marietta Materials shall follow the requirements of Chapter 625: Rock Quarry and Mining (City of Peculiar Municipal Code) for: Liability Insurance Required, Fee, Term, Fee Prorated, Inspection of Books, Form of License and Penalty.

Section 4. The City of Peculiar shall approve a Rock Quarry & Mining Operations Business License for Martin Marietta Materials upon receipt of: a signed application, application fee, proof of insurance, Tax certificate and Cass County Tax receipt as required by the application.

Effective Date. The effective date of this Resolution shall be _____ day of _____, 2014.

Upon a roll call, said Resolution was adopted by the following vote:

Alderman Fines	_____	Alderman Ray	_____
Alderman Ford	_____	Alderman Roberts	_____
Alderman McCrea	_____	Alderman Turner	_____

APPROVED: ATTEST:

_____ _____

Holly Stark, Mayor Nick Jacobs, City Clerk

City Administrator
Brad Ratliff

City Clerk
Nick Jacobs

City Engineer
Carl Brooks

Business Office
Trudy Prickett

Chief of Police
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Nathan Musteen

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

To: **Mayor and Board of Alderman**
From: **Nathan Musteen, Parks Director**
Date: **July 7, 2014**
Re: **Chapter 125 - Park Board**

GENERAL INFORMATION

Applicant:	**City Staff and Peculiar Park Board**
Requested Actions:	**First Reading of Bill No 2014-19**
Purpose:	**To adopt Chapter 125: Park Board revisions**
Property Location:	**N/A**

PROPOSAL

For the Board of Aldermen to consider approving the revisions to Chapter 125: Park Board that better defines the establishment of the Park Board and re-organizes the functions and duties there-in.

PREVIOUS ACTIONS

Over the past few months, Park Board and Staff have been taking an in-depth look at Chapter 125: Park Board and Chapter 225: Parks and City Lake. In addition, staff has drafted a Criminal Background Check ordinance that the Park Board recommends for establishment in the municipal code. The intent of this project is to clarify and create better continuity within the two current chapters of the Municipal Code and introduce a much needed addition.

Chapter 125 has been approved by the City Attorney and reviewed by the Board of Alderman on June 17.

KEY ISSUES

Chapter 125 and 225: Many of the ordinances listed within these chapters are outdated or no longer relevant and should be revised or removed. Re-organizing many of the sections between the two chapters will also provide that outcome of a clear and defined municipal code the Park Board desires.

- In April and May, the Park Board reviewed Chapter 125: Park Board of the Peculiar Municipal Code and made some changes that address the establishment and function of the Park Board.
- During the month of June, Staff and the Park Board made some revisions to Chapter 225: Parks and City Lake to provide a more thorough set of rules and regulations regarding the use of the Parks and public property.

STAFF RECOMMENDATION

Staff recommends approval of the first reading for the revision of Chapter 125: Park Board.

ATTACHMENTS

Attachment 1: Chapter 125: Park Board (current document in place)
Attachment 2: Bill 2014-19: Revised Chapter 125: Park Board

STAFF CONTACT: Nathan Musteen, CPRP
Parks & Recreation Director
816-779-2225
nmusteen@cityofpeculiar.org

CHAPTER 125: PARK BOARD

Cross Reference--As to general regulations for public parks, see ch. 225 of this code.

SECTION 125.010: CREATED -- COMPOSITION -- QUORUM

There is hereby created a Park Board consisting of seven (7) members who are residents of the City of Peculiar prior to their appointment. Four (4) members of the Park Board shall constitute a quorum. (Ord. No. 102086 Art. 1 §1, 10-20-86; Ord. No. 070699 §1, 7-6-99; Ord. No. 012004D §1, 1-20-04; Ord. No. 100207A §1, 10-2-07)

SECTION 125.020: APPOINTMENT AND QUALIFICATIONS -- GENERALLY

Each of the three (3) wards of the City shall be represented by one (1) appointee. The Mayor shall, with the approval of the Board of Aldermen, appoint one (1) member from each of the three (3) wards of the City and three (3) members to the Park Board from the residents at large. The seventh member of the Park Board shall be an Alderman appointed by the Mayor. Said seventh (7th) member may be from any ward. All appointees must be a minimum of twenty-one (21) years of age at the time of their appointment. (Ord. No. 102086 Art. 1 §2, 10-20-86; Ord. No. 070699 §2, 7-6-99; Ord. No. 100207A §2, 10-2-07)

SECTION 125.030: TERMS OF OFFICE

The directors of the Park Board shall hold office for three (3) year terms from the first (1st) day of September following their appointment. Initially, each ward will be represented by a director serving a two (2) year term and a director serving a one (1) year term of office, and the three (3) directors chosen from the citizens at large shall serve three (3) year terms. At their first (1st) regular meeting each ward individually shall cast lots for the respective one (1) and two (2) year terms, reporting the results of same to the Board of Aldermen. Annually thereafter, the Mayor shall, with the approval of the Board of Aldermen, before the first (1st) day of September, appoint three (3) directors to replace the directors whose terms of office have expired to ensure continuity on the Park Board. (Ord. No. 102086 Art. 1 §3, 10-20-86; Ord. No. 90688 §1, 9-6-88; Ord. No. 070699 §3, 7-6-99)

SECTION 125.040: VACANCIES -- COMPENSATION OF DIRECTORS

Vacancies on the Park Board of Directors, occasioned by removal, resignation or otherwise, shall be reported to the Board of Aldermen and shall be filled in like manner as original appointments. No Director shall receive compensation as such. (Ord. No. 102086 Art. 1 §4, 10-20-86)

SECTION 125.050: ORGANIZATION -- POWERS AND DUTIES -- PARK FUND

The Directors of the Park Board shall, immediately after appointment, meet and organize, by the election of one (1) of their members President and by the election of such other officers as they may deem necessary. They shall generally be an advisory board to the Board of Aldermen relative to the public parks of the City of Peculiar. They shall make and adopt such by-laws, rules and regulations for their own guidance and further shall recommend the adoption of various rules for the government of the parks as may be expedient, not inconsistent with this Article. The Park Board shall make recommendations to the Board of Aldermen relative to the expenditure of all money collected to the credit of the Park Fund and of the supervision, improvement, care and custody of such parks provided that all monies received from such parks shall be kept separate and apart from the other monies of the City and drawn upon the proper officers of the City upon the properly authenticated vouchers of the Park Board. Such Park Board shall have the power to appoint a suitable person to take care of such parks, and in general carry out the spirit and intent of this Article in establishing and maintaining public parks. (Ord. No. 102086 Art. 1 §5, 10-20-86; Ord. No. 90688 §1, 9-6-88)

SECTION 125.060: ANNUAL REPORT TO BOARD OF ALDERMEN

The Park Board of Directors shall make an annual report to the Board of Aldermen on or before the first (1st) day of September. The annual report to the Board of Aldermen shall state the conditions of their trust as of October first (1st) of the prior year; the various sums of money received from the Park Fund and other sources; and how much money has been expended and for what purposes, with such information and suggestions as they may deem of general interest. All portions of such report that relate to the receipts and expenditures of money shall be verified by affidavit. (Ord. No. 102086 Art. 1 §6, 10-20-86; Ord. No. 041811A §1, 4-18-11)

SECTION 125.070: ANNUAL BUDGET

The Park Board, by their properly authorized committee working with the Finance Committee of the Board of Aldermen, shall prepare a budget showing proposed expenditures of money, and for what purposes, for the ensuing year, which shall be presented to the Board of Aldermen for their general approval or disapproval, on or before the first (1st) day of September. Substitute or amended budgets may be worked out in like manner for their approval or disapproval, and if such substitute or amended budget is approved, it shall take the place of and become the budget for the entire year. (Ord. No. 102086 Art. 1 §7, 10-20-86; Ord. No. 041811A §2, 4-18-11)

SECTION 125.080: PARK FUND

All funds of the Park Board shall be kept in a separate account designated Park Fund. All funds allocated from the general funds of the City together with all funds raised by special taxes shall be deposited in such account. (Ord. No. 102086 Art. 1 §8, 10-20-86; Ord. No. 30689 §1, 3-6-89; Ord. No. 100207A §3, 10-2-07)

SECTION 125.090: RESERVING PARK FACILITIES

Any organization desiring to reserve facilities of the City Park will contact City Hall and provide information as to date, time and facilities desired at least two (2) days (forty-eight (48) hours) in advance of the desired date. Any facility which is under the control of one (1) of the clubs shall only be scheduled by contact with that particular organization. (Ord. No. 102086 Art. 1 §9, 10-20-86)

SECTION 125.100: SCHEDULE OF ORGANIZED EVENTS

All organizations shall file, in duplicate, with the City Park Board a schedule of organized events. One (1) copy of this schedule will be posted at the City Park and one (1) copy will be maintained at City Hall. (Ord. No. 102086 Art. 1 §10, 10-20-86; Ord. No. 30689 §1, 3-6-89)

SECTION 125.110: NOTICE OF POSTED RESTRICTIONS

The Park Board Chairman is authorized, upon the direction of the Park Board to post notices governing certain areas and certain uses of the park and violation of such notices is hereby prohibited. (Ord. No. 102086 Art. 1 §11, 10-20-86)

SECTION 125.120: POLICE AUTHORITY AND SUPERVISOR

The Park Supervisor is a Deputy Marshal and is assisted by special deputies and other authorized persons, and is authorized to preserve order and make arrests and/or eject any person for violation of law or the provisions of this Chapter. (Ord. No. 102086 Art. 1 §12, 10-20-86)

SECTION 125.130: CLOSED AREA

The Park Board may declare any section or part of any park closed to the public at any time and for any interval of time either temporarily or at regular stated intervals, daily or otherwise, and either entirely or merely to certain uses as the Park Board shall find reasonably necessary. (Ord. No. 102086 Art. 1 §13, 10-20-86)

SECTION 125.140: SUSPENSION, ETC. OF PRIVILEGES

The Park Board may suspend, forfeit, cancel or revoke any license or privilege or may refuse to grant the same for a period not to exceed one (1) year after the violation. The action of the Park Board shall be in writing and mailed to the last known address of the violator, and shall state whether it's action is in lieu of, or in addition to, the penalties provided for the violation of this Code. (Ord. No. 102086 Art. 1 §14, 10-20-86)

SECTION 125.150: APPEALS

Whenever in the provisions of this Chapter the decision of the Park Board is provided for in suspending,

forfeiting, canceling or revoking licenses or privileges, or refusing to grant the same, its decision shall be final, unless appealed to the Board of Aldermen on or before the fifth (5th) day following the day notice of such decision is given, except when the fifth (5th) day falls on a Sunday, a legal holiday or a day when the City Hall is closed, then the appeal may be made on the following business day. The appeal shall be filed with the City Clerk, shall substantially set forth the grievance of the party appealing, and shall be heard and determined, unless taken under advisement, at the next regular meeting of the Board of Aldermen. (Ord. No. 102086 Art. 1 §15, 10-20-86)

SECTION 125.160: INSURANCE

No group shall conduct any activities in the City Park unless said group has liability insurance in amounts established by the Park Board which shows both the Park Board and the City of Peculiar as additional named insureds. (Ord. No. 102086 Art. 1 §16, 10-20-86)

SECTION 125.170: VIOLATION AND PENALTY

Any person who violates any of the terms of this Chapter or of any rule or regulation adopted by the Park Board and who shall be found guilty shall be punished by a fine of not more than five hundred dollars ($500.00). (Ord. No. 102086 Art. 1 Art. 3 §1, 10-20-86)

BILL NO. 2014-19
ORDINANCE NO. _____

AN ORDINANCE RESCINDING CHAPTER 125 OF THE PECULIAR MUNICIPAL CODE AND REPLACING WITH A NEW REVISED CHAPTER 125 THAT UPDATES THE ESTABLISHMENT AND ROLE OF THE PARK BOARD

WHEREAS, the City Parks and Recreation Director has recommended rescinding Chapter 125 and replacing with a new Chapter 125: Park Board that clearly defines the establishment and role of the Park Board within the City Government, and

WHEREAS, the Park Board recommended the revisions to Chapter 125 of the City Municipal Code

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI THAT;

SECTION I: That existing Chapter 125 of the Peculiar Municipal Code (Park Board) be removed in its entirety and replaced with the following:

CHAPTER 125: PARK BOARD

Cross Reference--As to general regulations for public parks, see ch. 225 of this code.

SECTION 125.010: CREATED -- COMPOSITION -- QUORUM

There is hereby created a Park Board consisting of seven (7) members. Four (4) members of the Park Board shall constitute a quorum.

SECTION 125.020: APPOINTMENT AND QUALIFICATIONS -- GENERALLY

A. Each of the three (3) wards of the City shall be represented by at least one (1) appointee.

B. With the approval of the Board of Aldermen, the Mayor shall appoint to the Park Board: one (1) member from each of the three (3) wards of the City; three (3) members from the residents at large; and one Alderman from any ward. The Alderman will serve as a liaison between the Park Board and the Board of Aldermen and shall have voting rights.

C. All appointees must be a minimum of eighteen (18) years of age at the time of their appointment.

D. All appointees shall have resided within City limits for a minimum of one (1) year prior

to their appointment.

SECTION 125.030: TERMS OF OFFICE AND VACANCIES

A. Each regularly-appointed member of the Park Board, except for the Alderman appointee, shall hold office for a term of three (3) years. The Alderman appointee shall hold office for a term of one (1) year. These regular appointments by the Mayor shall be made before the first day of September.
B. Except in the cases of fulfillment of vacancies and involving the Alderman appointee, full terms of office shall commence on the first day of September and shall be staggered so that one-third of the member's terms shall commence each year.
C. Vacancies on the Park Board, occasioned by removal, resignation or otherwise, shall be reported to the Mayor and shall be filled for the remainder of the unexpired term.
D. The Director of Parks and Recreation shall be responsible for tracking vacancies and terms for the Park Board.

SECTION 125.040: ATTENDANCE

Park Board Members are bound by the attendance requirements and procedures of Peculiar Municipal Code § 115.045, which is incorporated-herein-by reference.

SECTION 125.050: COMPENSATION OF MEMBERS

No Member shall receive compensation for services on the Park Board.

SECTION 125.060: ORGANIZATION

During the first Park Board Meeting after September 1 of each calendar year, the members of the Park Board shall elect one of their members as Chairperson The members may also elect other officers as they may deem necessary.

SECTION 125.070: POWERS AND DUTIES

A. The Park Board serves as an Advisory Board to the Board of Aldermen in matters involving the administration and financial management of the City's parks for the welfare of Peculiar citizens.

B. The Park Board shall have the power to recommend to the Board of Aldermen or the City Administrator a suitable person to maintain such parks.

C. The Park Board shall make recommendations to the Board of Aldermen relative to the expenditures of all money collected to the credit of the Park Fund; and regarding the supervision, improvement, care and custody of the City's parks. These recommendations may include, but are not necessarily limited to, the following matters:

    1. All matters relating to policy formation, programming, legislation and use of park

and recreation facilities and areas;

2. Changes, additions or uses that will improve the effectiveness of the parks and recreation programs or facilities, including budgetary recommendations;

3. Rules and regulations to govern the City's parks, recreation areas, and facilities as may be expedient and not inconsistent with this Article or directives of the Board of Aldermen;

4. Recreational programming for citizens of Peculiar; and

5. Any other duties as may be assigned by the Mayor or the Board of Aldermen.

D. The Park Board shall make and adopt bylaws, rules, and regulations for their own guidance. These bylaws, rules, and regulations shall be subject to Board of Aldermen approval.

SECTION 125.080: PARK FUND

A. All funds of the Park Board shall be kept in a separate account designated Park Fund. All funds allocated from the general funds of the City, together with all funds raised by special taxes, shall be deposited in such account.

B. All monies disbursed from the Park Fund shall be used be remitted in accordance, and as limited by, the powers and duties set forth in this Chapter.

C. The Director of Parks and Recreation shall monitor all expenditures of the Park Fund in accordance with the Park Board's annual budget and the City's purchasing policies.

SECTION 125.090: ANNUAL BUDGET

The Park Board, in conjunction with City Staff and the Board of Aldermen, shall prepare a budget showing proposed expenditures of money (and the purpose for such expenditures) for the upcoming year. Said budget shall be presented to the Board of Aldermen for their general approval or disapproval, on or before the 1st day of September. Substitute or amended budgets may be worked out in like manner for their approval or disapproval.

SECTION II: The effective date of this ordinance shall be _____, 2014.

First Reading: _____ **Second Reading: _____**

BE IT REMEMBERED THE PRECEDING ORDINANCE WAS ADOPTED ON THE SECOND READING THIS ____ DAY OF _____, 2014, BY THE FOLLOWING VOTE:

Alderman Ford	**_____**	**Alderman McCrea**	**_____**
Alderman Fines	**_____**	**Alderman Turner**	**_____**
Alderman Ray	**_____**	**Alderman Roberts**	**_____**

Approved: **Attest:**

_____ **_____**

Holly Stark, Mayor **Nick Jacobs, City Clerk**

City Administrator
Brad Ratliff

Chief of Police
Harry Gurin

City Clerk
Nick Jacobs

City Planner
Cliff McDonald

City Engineer
Carl Brooks

City Attorney
Reid Holbrook

Business Office
Trudy Prickett

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

Parks Director
Nathan Musteen

To: Mayor and Board of Alderman
From: Nathan Musteen, Parks Director
Date: July 7, 2014
Re: Chapter 225 – Parks and Public Property

GENERAL INFORMATION

Applicant: City Staff and Peculiar Park Board
Requested Actions: First Reading of Bill No 2014-20
Purpose: To adopt Chapter 225: Parks and Public Property revisions
Property Location: N/A

PROPOSAL

For the Board of Aldermen to consider approving the revisions to Chapter 225: Parks and Public Property.

The intent of this revision is to further define the rules and regulations of the parks system. Many of the sections in Chapter 225 are outdated or no longer relevant and should be revised or removed. In addition, sections removed from Chapter 125's revision have been incorporated into Chapter 225 to help re-organize the two chapters.

PREVIOUS ACTIONS

Over the past few months, Park Board and Staff have been taking an in-depth look at Chapter 125: Park Board and Chapter 225: Parks and City Lake. This project is to better clarify and create continuity within the two current chapters of the Municipal Code and introduce a much needed addition.

A previous draft of the Chapter 225 revision was reviewed by the Park Board at the regularly schedule June meeting. Those revisions were submitted to the City Attorney's office. Minor redundancies cross-referencing the Peculiar Muncipal code were corrected and grammatical changes were made. The final revision is attached.

KEY ISSUES

Chapter 125 and 225: Many of the ordinances listed within these chapters are outdated or no longer relevant and should be revised or removed. Re-organizing many of the sections between the two chapters will also provide that outcome of a clear and defined municipal code the Park Board desires.

- In April and May, the Park Board reviewed Chapter 125: Park Board of the Peculiar Municipal Code and made some changes that address the establishment and function of the Park Board.
- During the month of June, Staff and the Park Board made some revisions to Chapter 225: Parks and City Lake to provide a more thorough set of rules and regulations regarding the use of the Parks and public property.

STAFF RECOMMENDATION

Staff recommends approval of the first reading for the revision of Chapter 225: Parks and Public Property

ATTACHMENTS

Attachment 1: Chapter 225: Parks and City Lake (current document in place)
Attachment 2: Bill 2014-20: Revised Chapter 225: Parks and Public Property

STAFF CONTACT:

Nathan Musteen, CPRP
Parks & Recreation Director
816-779-2225
nmusteen@cityofpeculiar.org

CHAPTER 225: PARKS AND CITY LAKE PARK

Cross Reference--As to park board, see ch. 125 of this code.

ARTICLE I. GENERAL PARK PROVISIONS

SECTION 225.010: DESTRUCTION, ETC., OF PARK PROPERTY PROHIBITED

It shall be unlawful for any person to deface, injure or destroy any playground equipment, shrubs, trees or any other park property located in any City Park, with the exception allowed for maintenance crews. (Ord. No. 102086 Art. II §1, 10-20-86; Amendment to Ord. No. 102086)

SECTION 225.020: PRESENCE IN CITY PARK PROHIBITED DURING CERTAIN HOURS

It shall be unlawful for any person to be inside the premises of any City Park between the hours of 12:01 A.M. and sunrise of any day unless special written permission for the same has been previously obtained from an Official of the City. (Ord. No. 102086 Art. II §2, 10-20-86)

SECTION 225.030: FIRE -- PROHIBITED -- EXCEPTIONS

It shall be unlawful for any person, except maintenance crews, to start or maintain any fire inside the premises of any City Park; except, in a grill or fireplace made for that purpose. (Ord. No. 102086 Art. II §3, 10-20-86; Amendment to Ord. No. 102086)

SECTION 225.040: FIRE -- FAILURE TO EXTINGUISH BEFORE LEAVING

It shall be unlawful for any person who has built or maintained any fire to fail to extinguish such fire before leaving the City Park premises. (Ord. No. 102086 Art. II §4, 10-20-86)

SECTION 225.050: SWIMMING OR WADING PROHIBITED

It shall be unlawful for any person to swim or attempt to swim or wade or bathe in any City Park pond. (Ord. No. 102086 Art. II §5, 10-20-86)

SECTION 225.060: MOTOR VEHICLES -- SPEED LIMIT

It shall be unlawful for any person to operate any motor vehicle or motor bicycle at any speed in excess of ten (10) miles per hour in any City Park. (Ord. No. 102086 Art. II §6, 10-20-86)

SECTION 225.070: MOTOR VEHICLES -- TO BE OPERATED ONLY ON ROADWAYS PROVIDED FOR SAME

It shall be unlawful for any person, except maintenance crews, to operate any motor vehicle, motor bicycle in any part of any City Park, except on a roadway so provided therefor. (Ord. No. 102086 Art. II §7, 10-20-86; Amendment to Ord. No. 102086)

SECTION 225.080: LITTERING PROHIBITED

It shall be unlawful for any person to place any litter or debris any place in any City Park, except in trash barrels so provided therefor. (Ord. No. 102086 Art. II §8, 10-20-86)

SECTION 225.090: ALCOHOLIC BEVERAGES PROHIBITED

Cereal malt beverages may be sold in City Parks during City sponsored events by persons or entities given the specific authority to sell said beverages by the City. Further, cereal malt beverages sold in City Parks during City sponsored events by persons or entities given such specific authority by the City may be possessed or consumed in City Parks by patrons legally purchasing said cereal malt beverages. Otherwise, it shall be unlawful for any person to bring into or have in his possession or consume in any City Park any alcoholic beverage as defined by State law. (Ord. No. 102086 Art. II §9, 10-20-86; Ord. No. 060308A §1, 6-3-08)

SECTION 225.100: BUSINESS ACTIVITIES RESTRICTED

No person shall expose or offer for sale any article or thing, nor shall he station or place any stand, cart or vehicle for the transportation or sale or display of any such article or thing. This Section shall not apply to duly licensed concessions acting by authority of the Park Board. (Ord. No. 102086 Art. II §10, 10-20-86)

SECTION 225.110: SPORTING ACTIVITIES RESTRICTED

A. No person shall engage in rough play or comparatively dangerous games in a park area.

B. *Exception.* Supervised or sanctioned events (i.e., rodeo's football). (Ord. No. 102086 Art. II §11, 10-20-86; Amendment to Ord. No. 102086)

SECTION 225.120: HUNTING

It shall be unlawful for any person to hunt, shoot, kill, trap, injure, pursue or molest in any way any bird or animal on or within a City Park. (Ord. No. 102086 Art. II §12, 10-20-86)

SECTION 225.130: CAMPING RESTRICTED

Camping in the park is prohibited except in the areas set aside for organized youth groups to be used only by special permission secured from the Chairman of the Park Board. (Ord. No. 102086 Art. II §13, 10-20-86)

SECTION 225.140: DISORDERLY CONDUCT

Disorderly conduct in the way of drunkenness, vile, loud or boisterous language, fighting, and personal exposure by change of clothing in automobiles, woods, parks or any other place where the persons are not properly sheltered, is prohibited. (Ord. No. 102086 Art. II §14, 10-20-86)

SECTION 225.150: FIREARMS

It shall be unlawful for any person to carry or possess any firearm on any property under the control of the Park Board unless a permit has been obtained from the Board of Aldermen of the City. No such permit shall be issued unless the Board of Aldermen has made a determination that there will not be a threat to the safety and welfare of the citizens of the City and the possession of said weapons would not constitute a nuisance to adjoining residences and property owners. The applicant for the permit must submit a certificate of insurance with the City shown as an additional named insured in a minimum amount of five hundred thousand dollars ($500,000.00) aggregate. (Ord. No. 102086 Art. II §16, 10-20-86)

SECTION 225.160: POLLUTION

It shall be unlawful for any person to pollute any lake or pond water in any way, or dump trash or litter on any property under the control of the Park Board. (Ord. No. 102086 Art. II §17, 10-20-86)

SECTION 225.170: ANIMAL CONTROL

Unauthorized horseback riding on paved or improved roads or in posted areas of property under the control of the Park Board is prohibited. Dogs in the park must be tied with a chain or controlled by a leash. (Ord. No. 102086 Art. II §18, 10-20-86; Ord. No. 30689 §1(c), 3-6-89)

SECTION 225.180: VIOLATION AND PENALTY

Any person who violates any of the terms of this Article or of any rule or regulation adopted by the Park Board and who shall be found guilty shall be punished by a fine of not more than five hundred dollars ($500.00). (Ord.

No. 102086 Art. III §1, 10-20-86)

ARTICLE II. CITY LAKE PARK

SECTION 225.190: REQUIREMENTS CONCERNING USE OF GROUNDS AND FACILITIES

Each person, firm or corporation using the Public Park and grounds shall clean up all debris, extinguish all fires when such fires are permitted, and leave the premises in good order, and the facilities in a neat and sanitary condition. (Ord. No. 10581 Art. I §1, 1-5-81)

SECTION 225.200: GROUP USE

Whenever any group, association, or organization desires to use said park facilities for a particular purpose, which purpose might be deemed to impinge on the rights and privileges of other persons using the City Lake and City Lake Park, a representative of said group, association or organization shall first obtain a permit from the Board of Aldermen. The Board of Aldermen may adopt an application form to be used for such situations. (Ord. No. 10581 Art. I §3, 1-5-81)

SECTION 225.210: OTHER REGULATIONS

A. *Automobiles and Conveyances.* It shall be unlawful to drive or park any automobile, vehicle, or other motorized conveyance, including motorcycles, motor-scooters, snowmobiles, all-terrain vehicles, or any trailer of any kind, on the dam or spill-way.

B. *Prohibited Areas.* It shall be unlawful for any person or persons to trespass upon the settling tank or other structure of the Water Treatment Plant of the Peculiar, Missouri water system located in the City Lake Park or elsewhere.

C. *Firearms and Traps.* It shall be unlawful for any person to be in possession of a firearm, longbow, crossbow or trap of any kind within the City Lake Park.

D. *Speed Limit.* It shall be unlawful for the driver of any vehicle to exceed a speed limit of ten (10) miles per hour anywhere within the City Lake Park in any vehicle of any kind. (Ord. No. 10581 Art. I §4, 1-5-81)

SECTION 225.220: HOURS CITY LAKE PARK IS CLOSED TO PUBLIC

It shall be unlawful for any person to be or remain on the land or waters of the City Lake Park between the hours of 12:00 Midnight and 5:00 A.M. (Ord. No. 10581 Art. I §5, 1-5-81)

SECTION 225.230: CITY LAKE -- BOATING REGULATIONS

A. *Boats Allowed.* It shall be unlawful for any person, firm or corporation to operate any boat on the City Lake powered by any source other than an electric trolling motor. No motors or engines of any boat operated on the City Lake of the City of Peculiar using liquid or solid fuel of any variety are allowed upon the lake.

B. *Boat Permit.* Before placing any boat upon the City Lake, the owner or user of said boat shall obtain a permit from City Hall for the use of said boat on the lake, which permit shall bear a fee of two dollars ($2.00) per year. Such permit must be kept on board the boat when it is on the City Lake, and shall be displayed to any Police Officer of the City of Peculiar upon demand. Such permit shall be issued only upon proper proof that the applicant lives in a location with a Peculiar, Missouri address.

C. *Storage.* It shall be unlawful for any boat or other water craft to be stored or otherwise left unattended on any of the land or waters of the City Lake Park. (Ord. No. 10581 Art. II §1, 1-5-81; Exhibit A to Ord No. 10581)

SECTION 225.240: CITY LAKE -- FISHING REGULATIONS

Fishing Apparatus. It shall be unlawful for any person to use or possess, on property of the City Lake Park and City Lake, any gigs, fishnets, fish traps of any kind, trout lines, bank lines, throw lines, explosives, or any other exotic apparatus for capturing fish in other than the traditional line-and-pole manner. Both artificial and natural baits may be used, except that gold fish minnows are specifically prohibited from use in the City Lake. (Ord. No. 10581 Art. II §2, 1-5-81)

ARTICLE III. CITY LAKE -- PECULIAR WATER SYSTEM

SECTION 225.250: CITY LAKE -- SUPPLY TOWER -- SETTLING TANKS -- OTHER WATER RESERVOIRS -- PROHIBITED ACTS

In order to protect the City Lake and the public water supply of Peculiar, the following are prohibited acts:

1. No unauthorized person or persons shall be allowed to climb, scale or mount the water supply tower and tank of the Peculiar, Missouri water system.

2. No unauthorized person or persons shall be allowed to open any fire hydrant on the entire Peculiar, Missouri water system.

3. No unauthorized person or persons shall be allowed to open or close any valve, stopcock or cutoff on the Peculiar, Missouri water system.

4. No unauthorized person or persons shall remove, cause to be removed, tamper, replace or otherwise damage or destroy any water meter, service line, main line, fire hydrant valve or fitting of the Peculiar, Missouri water system.

5. No swimming will be allowed in the City Lake of the Peculiar, Missouri water system.

6. No unauthorized person or persons will be allowed on the settling tank or other structures of the water treatment plant of the Peculiar, Missouri water system.

7. No gasoline or other liquid fuel-driven motor boats, canoes, rafts, or other craft, shall be allowed on the City Lake of the Peculiar, Missouri water system.

8. No cans, papers, refuse, offal, garbage, trash, etc., shall be placed, dumped, spread or otherwise put into the waters of the City Lake, settling tanks, supply tank or other water reservoirs of the Peculiar, Missouri water system. (Ord. No. 33 §§1-3, 7-3-61)

SECTION 225.260: ICE SKATING PROHIBITED ON CITY LAKE

It is unlawful to engage in ice skating, ice boating, walking or otherwise traveling upon the surface of the City Lake of the City of Peculiar when it is frozen. (Ord. No. 37 §1, 1-2-62)

BILL NO. 2014-20
ORDINANCE NO. _____

AN ORDINANCE RESCINDING CHAPTER 225 OF THE PECULIAR MUNICIPAL CODE AND REPLACING WITH A NEW REVISED CHAPTER 225 THAT UPDATES THE RULES AND REGULATIONS GOVERNING THE PECULIAR PARKS AND PUBLIC PROPERTIES.

WHEREAS, the City Parks and Recreation Director has recommended rescinding Chapter 225 and replacing with a new Chapter 225: Parks and Public Property that clearly defines the rules and regulations the govern the Peculiar Park System and public properties, and

WHEREAS, the Park Board recommended the revisions to Chapter 225 of the City Municipal Code

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI THAT;

SECTION I: That existing Chapter 225 of the Peculiar Municipal Code (Parks and City Lake Park) be removed in its entirety and replaced with the following:

CHAPTER 225: PARKS AND PUBLIC PROPERTY

Cross Reference--As to park board, see ch. 125 of this code.

Definitions

PARKS DIRECTOR:	*"Director", "Parks and Recreation Director"* - The City Staff member charged with the day to day operations, business and functions of the City's parks system and recreational programming.
PARK BOARD:	"*Board*", "*Parks and Recreation Board*"– The Board/Commission within the City of Peculiar appointed by the Board of Alderman to provide advice and/or recommendations regarding the care and custody of the City's parks (and public property therein).
PARKS DEPARTMENT:	"Parks and Recreation Department" – division of the City's organizational structure with staff dedicated to the care and maintenance of the city parks system; and the implementation and advancement of recreational activities.
MOTOR VEHICLE:	Any wheeled conveyance, whether self-propelled, drawn, or towed.
CITY PERSONNEL:	Any full-time, part-time or volunteer personnel charged with the responsibility for overseeing organizing, maintaining, or assisting the agency in the care and custody of the property, whether on duty or off duty.
LIVESTOCK:	Any horse, mule, ass, goat, sheep, swine, cow or cattle of any type, chickens or any farm fowl.
PUBLIC PARK:	Any property or recreational facility owned or used by the City for recreational purposes and designated for such purposes by the Board of Alderman.
PUBLIC PROPERTY/FACILITIES:	Any land and facility(ies) owned by a public agency including, but not limited to, the City, school district, library and fire district.
PUBLIC BODY OF WATER:	Any lake, pond, stream, river, drainage ditch, storm water outlet, fountain and/or all other open bodies of water on publically-owned property.
PARK SHELTER FACIITIES:	Any structure located within a park or publically-owned property under the care of the Peculiar Park Board used for picnics, events, or authorized activities.
PARK AMENITY(IES):	Any building, structure, bridge, park improvement, facility, feature, equipment or other such public property and appurtenances in a park.

Section 225.010: Police Department Authority

POLICE AUTHORITY - It shall be the duty of the Police Department to assist city personnel in the enforcement of this chapter and to enforce all other applicable City ordinance on the property covered by this Chapter.

Section 225.020: Hours of Public Access

A. **PRESENCE IN CITY PARK PROHIBITED DURING CERTAIN HOURS-** The public use hours at 66 Acre Park shall be dawn to dusk and the hours at all other public parks shall be dawn to 11:00pm. The general public is prohibited from using the parks of the City of Peculiar during other hours except with the written permission of the Parks Director.

B. **CLOSED AREA -** The Parks Director may declare any section or part of any park closed to the public at any time and for any interval of time as deemed necessary to fulfill the purposes of this Chapter.

C. **NOTICE OF POSTED RESTRICTIONS -** The Parks Director may post notices governing certain areas and certain uses of the park. Violation of such notices is hereby prohibited.

Section 225.030: Traffic Regulations in Public Parks

A. **MOTOR VEHICLES SPEED LIMIT -** It shall be unlawful for any person to operate any motor vehicle or motor bicycle at any speed in excess of ten (10) miles per hour in any City Park.

B. **MOTORIZED VEHICLE SAFETY -** The Parks Director may place permanent or temporary lower speed limit zones within a City Park as well as stop signs, yield signs, parking signs and other traffic control signs as deemed necessary for the safety and protection of the citizens and park users.

C. **MOTOR VEHICLES TO BE OPERATED ONLY ON ROADWAYS** - It shall be unlawful for any person, except maintenance crews or city personnel, to operate any motor vehicle or motor bicycle in any part of any City Park except on established paved or gravel parking areas, streets, roads, or any other parking areas as may be designated by the Parks Director.

D. **PARKING -** It shall be unlawful for any motor vehicle or motor bicycle to be parked in any area other than established, posted parking zones. No motor vehicle shall park on the grass or public use areas; or remain on park property overnight (or outside of posted, public use hours) without the written permission of the Parks Director. No motor vehicle shall be parked unattended and owners must be readily available at all times (i.e. engaged in use of park amenities or participants in parks and/or recreation activities). Violators will be towed at the owner's expense.

E. **PARKING AT CITY LAKE -** It shall be unlawful to drive or park any automobile, vehicle, or other motorized conveyance (including motorcycles, motor-scooters, snowmobiles, all-terrain vehicles, or any trailer of any kind) on the dam or spill-way.

Section 225.040: Alcoholic Beverages and Non-Intoxicating Beer

A. Unless otherwise permitted under this section, it shall be unlawful for any person to bring into, have in his possession, or consume in any City Park any alcoholic beverage as defined by State law.

B. Cereal malt beverages may be sold in City Parks during City-sponsored events by persons or entities given the specific authority to sell said beverages by the City. Cereal malt beverages sold in City Parks during City sponsored events by persons or entities given such specific authority by the City may be possessed or consumed in City Parks by patrons legally purchasing said cereal malt beverages.

Section 225.050: Firearms

A. Unless otherwise permitted under other provisions of the Peculiar Municipal Code or by Missouri statute, it shall be unlawful for any person to carry or possess any firearm on any property under the care of the Park Board.

B. All other requirements and procedures regarding the use of firearms on public property shall be governed by Peculiar Municipal Code Chapter 210, which is incorporated-herein-by reference.

Section 225.060: Animal Regulations

A. **ANIMAL CONTROL-** It shall be unlawful for any person to:

1. Allow dogs in city parks without being under the control of their owner at all times by a leash except as permitted in areas signed as off-leash permitted.
2. Allow any livestock to be in the parks of the City of Peculiar without the written permission of the Park Board.

Section 225.070: Motorized Recreational Vehicles

MOTORIZED RECREATIONAL VEHICLES - All go-carts, all-terrain vehicles (ATVs), golf carts, mini-bikes, other such electric or gas powered personal conveyance machines, or other vehicles commonly known or described to fit the definition are prohibited to be in the parks without the written permission of the Parks Board.

Section 225.080: Manually Operated Recreational Vehicles

MANUALLY OPERATED RECREATIONAL VEHICLES - It shall be unlawful for any person upon roller skates, bicycles, or skateboards; or riding in (or by means) of any coaster, toy vehicle or similar device to interfere with the intended use of sidewalks, parking lots, playing court areas, public facilities or other such public properties. This provision shall not apply to a show, exhibition, demonstration, or other activity that is part of a special event being sponsored on park premises.

Section 225.090: Model Airplanes and Remote Control Vehicles

MODEL AIRPLANES AND REMOTE CONTROL VEHICLES - Model airplanes or remote control vehicles are only allowed at Sixty-Six (66) Acre Park and Shari Dr. Park. It shall be unlawful to operate any model airplane or remote control vehicle in any other public park, playing area, public facility, or any other public properties under care of the Parks Department.

Section 225.100: Business Activities

BUSINESS ACTIVITIES RESTRICTED - No person or entity shall offer for sale any good or service in any area under the governance of the Parks and Recreation Department unless such person or entity has received a permit for the same related to a special event, program, or activity.

Section 225.110: Hunting

HUNTING - It shall be unlawful for any person to hunt, shoot, kill, trap, injure, pursue, or molest in any way any bird or animal on or within a City Park.

Section 225.120: Overnight Camping

CAMPING RESTRICTED - Camping in the park is prohibited except in the areas set aside for organized youth groups. Areas set aside for organized youth groups may only be used with special permission from the Parks Director.

Section 225.130: Open Burning

A. **FIRE -- PROHIBITED – EXCEPTION -** It shall be unlawful for any person, except maintenance crews, to start or maintain any fire inside the premises of any City Park; except, in a grill or fireplace made for that purpose.

B. **FIRE -- FAILURE TO EXTINGUISH BEFORE LEAVING -** It shall be unlawful for any person who has built or maintained any fire to fail to extinguish such fire before leaving the City Park premises.

Section 225.140: Boating, Fishing and Public Water Use

A. **SWIMMING OR WADING PROHIBITED -** It shall be unlawful for any person to swim, attempt to swim, wade, or bathe in any public body of water.

B. **ICE SKATING PROHIBITED -** It is unlawful to engage in ice skating, ice boating, or walking/otherwise traveling upon the surface of any public body of water of the City of Peculiar when it is frozen.

C. CITY LAKE -- BOATING REGULATIONS

1. Boats Allowed. It shall be unlawful for any person, firm, or corporation to operate any boat on the City Lake powered by any source other than an electric trolling motor. No motors or engines of any boat operated on the City Lake of the City of Peculiar using liquid or solid fuel of any variety are allowed upon the lake.
2. It shall be unlawful to operate any sailboat, sail board, kite surfing boards, and other like devices on any public body of water in the City of Peculiar
3. Boat Permit. Before placing any boat upon the City Lake, the owner or user of said boat shall obtain a permit from City Hall for the use of said boat on the lake, which permit shall bear a fee of seven dollars ($7.00) per year. Such permit must be kept on board the boat when it is on the City Lake, and shall be displayed to any Police Officer or City Personnel of the City of Peculiar upon demand.
4. Storage. It shall be unlawful for any boat or other water craft to be stored or otherwise left unattended on any of the land or waters of the City Lake Park.

D. **FISHING LOCATIONS -** It shall be unlawful to fish at any public body of water under the care of the Parks Department except for City Lake, or where otherwise posted.

E. **CITY LAKE -- FISHING REGULATIONS -** Fishing Apparatus. It shall be unlawful for any person to use or possess on property of the City Lake Park and City Lake, any gigs, fishnets, fish traps of any kind, trout lines, bank lines, throw lines, explosives, or any other exotic apparatus for capturing fish in other than the traditional line-and-pole manner. Both artificial and natural baits may be used, except that gold fish minnows are specifically prohibited from use in the City Lake.

F. **FISHING LICENSE -** Fishing privileges are open to the public. Fishing without a proper license is prohibited. All persons who are required by state law to obtain a fishing license must do so.

G. **PUBLIC WATER LITTERING -** No cans, papers, refuse, offal, garbage, trash, etc., shall be placed, dumped, spread or otherwise put into the waters of the City Lake.

Section 225.150: Facility Reservation

A. PARK SHELTER FACILITIES - Park Shelter houses or pavilions are for open use to the public unless otherwise reserved through the City for exclusive use.

B. PARK SHELTER FACILITIES EXCLUSIVE USE - Any person, group, firm, organization, partnership or corporation may reserve the use of a park shelter by written application filed with the City Parks Department for exclusive use of the same. Park shelters are reserved on a first-requested, first-reserved basis upon approval of, and payment to, the City for use thereof. Reservations will be available per day with time limits of dawn to dusk unless otherwise reserved or posted.

Section 225.160: Park Reservation

A. **EXCLUSIVE USE OF PUBLIC PROPERTY/FACILITIES -** Whenever any group, association, or organization desires to use the entirety of a public property/facility, a representative of said group, association or organization shall first obtain a permit from the Parks Department. The Parks Department maintains an application form to be used for such situations that establishes fees and regulations for exclusive use of any public property/facilities.

B. **INSURANCE -** No group shall conduct any activities in the City Park unless said group has liability or other insurance as required by City insurance guidelines.

C. **REQUIREMENTS CONCERNING USE OF GROUNDS AND FACILITIES -** Each person, firm or corporation using the Public Park and grounds shall clean up all debris, extinguish all fires when such fires are permitted, leave the premises in good order, and leave the facilities in a neat and sanitary condition.

D. **SCHEDULE OF ORGANIZED EVENTS -** All organizations shall file, in duplicate, with the City Park Board a schedule of organized events. One (1) copy of this schedule will be posted at the City Park and one (1) copy will be maintained at City Hall.

Section 225.170: General Public Property Rules and Regulations

A. **DESTRUCTION, ETC., OF PARK PROPERTY PROHIBITED -** It shall be unlawful for any person to deface, injure or destroy any playground equipment, shrubs, trees or any other park property located in any City Park, with the exception allowed for maintenance crews.

B. **LITTERING PROHIBITED -** It shall be unlawful for any person to place any litter or debris in any City Park, except in trash barrels so provided therefor.

C. **POLLUTION -** It shall be unlawful for any person to pollute any public body of water in any way, or dump trash or litter on any property under the care of the Parks and Recreation Department.

D. **SPORTING ACTIVITIES RESTRICTED -** No person shall engage in rough play or comparatively dangerous games in a park area unless participating in a supervised or sanctioned event authorized by the Parks and Recreation Department.

E. **DISORDERLY CONDUCT -** Disorderly conduct in the way of drunkenness, vile, loud or boisterous language, fighting, and personal exposure of any nature is prohibited.

F. **LIABILITY -** The City of Peculiar shall not be held liable for injuries or damage incurred by any individuals or groups using park property.

G. **GOLF -** No golfing or practicing of golf shall be permitted in a public park.

H. **CLIMBING -** No climbing on buildings or structures not intended for that purpose (i.e. concession stands, soccer goals, baseball backstops, restroom facilities, shelters, public facilities, etc.) shall be permitted in a public park.

I. **BOUNDARIES -** Users shall obey all permanent and temporary boundaries erected by the department charged with care and custody of such property (i.e. public safety, property borders, and maintenance/improvement boundaries).

J. **LOST OR STOLEN PROPERTY -** The City of Peculiar shall not be responsible or liable for personal or organizational items left in the concession stand or the parks. The users maintain all responsibility.

K. **PERSONAL INJURY -** The City of Peculiar shall not be responsible or liable for injuries incurred during use of public parks or public properties. The users maintain all responsibility.

L. **INCLEMENT WEATHER -** During a time of inclement weather or marginal playing conditions, park users shall consider the safety of participants and possible damage of park facilities before conducting any game or practice on Peculiar park property.

M. **CANCELLATIONS / CLOSURES -** Park users agree to abide by the decisions of the Parks Director to cancel events or activities or to close the parks due to unsafe conditions or activities that may be destructive to the Peculiar park facilities due to extenuating circumstances.

N. **PLAYGROUNDS -** Equipment and playground features shall be used by the age group and in the manner for which it was designed. Use of playground equipment shall be at the patron's risk. Adult supervision is recommended.

O. **RECREATIONAL PROGRAMMING -** Scheduled recreational programming offered or contracted through the Peculiar Parks Department takes priority over drop-in play at or in all facilities.

SECTION 225.180: Fireworks in the Parks

It shall be unlawful for any person to discharge or shoot any type of fireworks or firecrackers in or on any public park or public grounds in contravention of Title II, Chapter 240 of the Peculiar Municipal Code, which is incorporated-herein-by reference.

Section 225.190: Trails: Public Rules and Regulations

A. **TRAIL USE**: Trail users shall follow standard trail etiquette when using the trails:
   1. Share the trail. Ride, walk or run on the right, pass on the left.
   2. Stay on the trail. Creating your own trail or cutting switchbacks creates erosion, damages habitats, and causes new trails that cannot be maintained.
   3. Bicyclists yield to runners and walkers. Keep your bike under control and at a safe speed.
   4. Downhill traffic should yield to uphill traffic. When in doubt, give the other user the right of way.

5. Use unpaved trails only when they are dry, not muddy or wet, to avoid leaving ruts or prints.
6. Issue a verbal warning when you are planning to pass other trail users.

Section 225.200: Suspension of Privileges to use Public Parks

SUSPENSION, ETC. OF PRIVILEGES - The Board of Aldermen may recommend to suspend, forfeit, cancel or revoke any permit or privilege to enter or use the park for a period not to exceed one (1) year after the violation. The action of the Board of Aldermen shall be in writing and mailed to the last known address of the violator.

SECTION II: The effective date of this ordinance shall be _____, 2014.

First Reading: _____ **Second Reading: _____**

BE IT REMEMBERED THE PRECEDING ORDINANCE WAS ADOPTED ON THE SECOND READING THIS ____ DAY OF _____, 2014, BY THE FOLLOWING VOTE:

Alderman Ford	**_____**	**Alderman McCrea**	**_____**
Alderman Fines	**_____**	**Alderman Turner**	**_____**
Alderman Ray	**_____**	**Alderman Roberts**	**_____**

Approved: **Attest:**

_____ **_____**

Holly Stark, Mayor **Nick Jacobs, City Clerk**

City Administrator
Brad Ratliff

Chief of Police
Harry Gurin

City Clerk
Nick Jacobs

City Planner
Cliff McDonald

City Engineer
Carl Brooks

City Attorney
Reid Holbrook

Business Office
Trudy Prickett

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

Parks Director
Nathan Musteen

To: **Mayor and Board of Alderman**
From: **Nathan Musteen, Parks Director**
Date: **July 7, 2014**
Re: **Chapter 226 - Criminal Background Check**

GENERAL INFORMATION

Applicant: **City Staff and Peculiar Park Board**
Requested Actions: **First Reading of Bill No 2014-21**
Purpose: **To establish a new Chapter 226: Criminal Background Checks**
Property Location: **N/A**

PROPOSAL

For the Board of Aldermen to consider adopting a new Ordinance, Chapter 226: Criminal Background Checks which require criminal records checks of its teams' coaches with the Parks and Recreation department.

PREVIOUS ACTIONS

Over the past few months, Park Board and Staff have been taking an in-depth look at Chapter 125: Park Board and Chapter 225: Parks and City Lake. In addition, staff has drafted a Criminal Background Check ordinance that the Park Board recommends for establishment in the municipal code.

Chapter 226 has been approved by the City Attorney and reviewed by the Board of Alderman on June 17.

KEY ISSUES

As the Department continues to grow and adds more recreational leagues and programs, the need for more volunteers will grow. It is essential to provide a safe and fun atmosphere for the youth of Peculiar. Requiring Criminal Background checks helps ensure that the Park Board and the Parks & Recreation Department are taking the necessary steps to provide that safe environment.

It is important to note that a provision of the state statute added in 2009 promotes parks as safe havens by prohibiting individuals convicted of certain sex crimes from parks and an area of 500 feet surrounding parks that contain a playground or swimming pool. Those individuals volunteering to coach and found to have a criminal history that includes such will be prohibited without appeal.

Staff has also drafted a “Policy” that helps implement how this ordinance is to be enforced. The policy will immediately go into effect upon passage of this ordinance and is on the Parks Department list of future policies and procedures to develop.

Important to note: This ordinance and policy addresses those individuals that are considered volunteers and not paid staff. Part time and full time staff have independent background checks provided by the city in accordance with the City of Peculiar Human Resources manual.

STAFF RECOMMENDATION

Staff recommends approval of the first reading for the revision of Chapter 226: Criminal Background Check.

ATTACHMENTS

Attachment 1: Chapter 226: Criminal Background Check

STAFF CONTACT:

Nathan Musteen, CPRP
Parks & Recreation Director
816-779-2225
nmusteen@cityofpeculiar.org

BILL NO. 2014-21
ORDINANCE NO. _____

AN ORDINANCE ESTABLISHING CHAPTER 226 OF THE PECULIAR MUNICIPAL CODE TO REQUIRE CRIMINAL BACKGROUND CHECKS FOR PARKS AND RECREATION VOLUNTEERS.

WHEREAS, the City Parks and Recreation Director has recommended the establishment of Chapter 226: Criminal Background Checks to ensure the safety of participants and volunteers by mandating that all volunteers undergo and pass a criminal background check, and

WHEREAS, the Park Board recommended the establishment of Chapter 226 to the City Municipal Code

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF ALDERMEN OF THE CITY OF PECULIAR, MISSOURI THAT;

SECTION I: That the proposed Chapter 226: Criminal Background Checks be established in the Peculiar Municipal Code with the following:

CHAPTER 226: CRIMINAL BACKGROUND CHECKS

SECTION 226.010: PURPOSE—REQUIRED

All youth athletic programs using City facilities shall require criminal records checks of its teams' coaches and disqualify from participation any coach whose record checks reveals a history of inappropriate behavior.

SECTION 226.020: DEFINITIONS

For purposes of this Chapter, the following terms shall have the meanings stated hereafter:

A. CITY FACILITIES: Any property belonging to the City of Peculiar, Missouri, including buildings, courts, diamonds, fields or any other play or practice area.
B. COACHES: Those persons eighteen (18) years of age and older having contact with youth participating in athletic activities by teaching, training or supervising, including those with a child participating in the activity with others.
C. CRIMINAL RECORDS CHECK: A process which determines whether a person has a criminal record that should preclude him/her from working or volunteering in any capacity for the City of Peculiar or on City properties and/or facilities.
D. DISQUALIFY: A permanent ban on being a coach for a youth athletic program.
E. INAPPROPRIATE BEHAVIOR: Any arrest or conviction for a misdemeanor or felony offense involving violence, any arrest or conviction for any felony or misdemeanor

offense involving physical or sexual abuse or neglect of a child, and any felony or misdemeanor offense involving the exploitation of children and any dangerous felony.

F. YOUTH ATHLETIC PROGRAM: Any organized group offering of athletic activities to persons under the age of eighteen (18).

SECTION 226.030: RECORDS CHECK PROCEDURE

A. Prior to beginning its use of any City facilities, every youth athletic program shall require all its coaches to submit to a criminal records check.
   1. Each coach will be issued notification that a criminal records check will be conducted for every person(s) volunteering in any capacity for the City of Peculiar or on City properties and/or facilities.
   2. Each youth athletic program is required to perform a criminal records check approved by the Peculiar Parks and Recreation Department or authorized by the sport's governing/sanctioning body.
   3. Any coach who has undergone this procedure for a youth athletic association using City facilities in the past two (2) years need not submit the form unless he or she has an arrest or conviction that would result in new information on the records check.

B. Any youth athletic programs notified that a records check revealed inappropriate behavior shall disqualify that coach.
   1. The youth athletic programs shall notify any coach whose criminal records check revealed inappropriate behavior that he or she will be disqualified from participating as a coach.
   2. The youth athletic programs will further notify a disqualified coach that he or she may obtain a copy of the information resulting in disqualification by personally contacting the City of Peculiar Police Department.
   3. The youth athletic programs will further notify any disqualified coach of his or her right to appeal the disqualification.

C. A coach disqualified due to a criminal records check may appeal that disqualification.
   1. All appeals of decisions made by the Parks & Recreation Department must be made in writing and delivered to the City of Peculiar Parks and Recreation Department within ten calendar days of the official decision.
   2. Appeals will be heard by the Peculiar Park Board or an assigned sub-committee consisting of a minimum of three Park Board members. The person making the appeal will be entitled to meet with this committee and present any evidence relevant to the incident(s) documented by the Department or youth sports organization.
   3. The Park Board or assigned sub-committee will render its decision in writing. All decisions shall be final. If the assigned sub-committee decision is not unanimous, a second appeal may be forwarded to the full Park Board for final decision at the next regularly scheduled meeting. All enforced consequences will remain in effect until the Park Board has convened.

SECTION 226.040: PENALTY

A. Any youth athletic program not requiring criminal records checks of its coaches or allowing disqualified coaches to participate in its activities shall be prohibited from using City of Peculiar facilities.
   1. A written notification will be provided to the youth athletic program requesting volunteer criminal background documentation
   2. A period of 2 weeks upon notice will be provided to the organization allowing the proper criminal background checks to be completed and reported to the City.
   3. If the youth athletic program has not complied within the two week period, the City shall revoke its right to participate in any program or activity on City Facilities or in City sponsored leagues or activities.

SECTION II: The effective date of this ordinance shall be _____, 2014.

First Reading: _____ **Second Reading: _____**

BE IT REMEMBERED THE PRECEDING ORDINANCES WERE ADOPTED ON THE SECOND READING THIS ____ DAY OF _____, 2014, BY THE FOLLOWING VOTE:

Alderman Ford	**_____**	**Alderman McCrea**	**_____**
Alderman Fines	**_____**	**Alderman Turner**	**_____**
Alderman Ray	**_____**	**Alderman Roberts**	**_____**

Approved: **Attest:**

_____ **_____**

Holly Stark, Mayor **Nick Jacobs, City Clerk**

City Administrator
Brad Ratliff

Chief of Police
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Phone: (816)779-5212 Facsimile: (816)779-1004

Parks Director
Nathan Musteen

To: **Board of Alderman**

From: **Clifford L. McDonald**

Date: July 7, 2014

Re: IBTS (Institute for Building Technology and Safety) Proposed Services for Project Design Review, Construction Inspection and City Planning Services

GENERAL INFORMATION

Applicant: City Staff

Status of Applicant: **N/A**

Requested Actions: Board of Aldermen to review the attached IBTS Local Government Solutions & Services Implementation Guide.

PROPOSAL

See "Requested Actions" above.

PREVIOUS ACTIONS

None.

KEY ISSUES

The City needs to position itself and prepare for substantial Commercial and Industrial growth once the new E. 211th Street & I-49 Intersection is completed. The desired growth and construction in this area could easily exceed the resources available from City Staff. To ensure necessary design review and construction inspection services are available for both large scale and rapid development, City Staff has contacted IBTS (Institute for Building Technology and Safety) thru MARC (Mid America Regional Council) to submit an application to provide these resources.

STAFF COMMENTS AND SUGGESTIONS

The IBTS Implementation Guide is attached for your information and review.

STAFF RECOMMENDATION

I recommend the Board review the attached Implementation Guide and strongly consider contracting with IBTS to provide the City with these Design Review, Construction Inspection and Planning Services as needed.

ATTACHMENTS

1. Local Government Solutions & Services Implementation Guide

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STAFF CONTACT: Clifford L. McDonald,
PH: 816-779-2226
E-mail: cmcdonald@cityofpeculiar.com

MARC
MID-AMERICA REGIONAL COUNCIL

LOCAL GOVERNMENT SOLUTIONS & SERVICES

IMPLEMENTATION GUIDE

FOR

CITY OF PECULIAR, MISSOURI

This guide will assist in implementing shared building department services as provided by IBTS.

BUILDING DEPARTMENT IMPLEMENTATION GUIDE

FIRST PRINTING: OCTOBER 2013

REGIONAL SOLUTIONS PROPOSAL

DEVELOPED BY

MID-AMERICA REGIONAL COUNCIL

&

INSTITUTE FOR BUILDING TECHNOLOGY AND SAFETY

executive summary

To deliver quality Local Government Solutions that provides quality, professional services at all levels while enhancing public safety, economic development, and the general welfare of the community.

Governments are facing challenges today like never before. IBTS is delivering transparent solutions and benefits that meet those challenges head on. Projects move at a quicker pace, contractors experience less down time and government offices are more efficient and less stressful once clients implement IBTS' services. Jurisdictions are collaborating with IBTS to deliver stronger, smarter and safer communities.

The Mid America Regional Council (MARC) and the Institute for Building Technology and Safety (IBTS) have partnered together to offer a Regional Building Code Department Solution for jurisdictions that do not currently have building code department services. These services where developed to assist jurisdictions to create and implement building code department services, permitting, flood plain management services, and ancillary support services such as fire reviews and inspections.

These services are designed to help reduce government risk for non-compliance, remain economical, and maintain government autonomy. This proposal offers solutions to these needs. IBTS will deliver these solutions that are easy to follow, substantially reduce the risk of non-compliance as well as implementing self-sustaining services that can free up valuable budgetary resources.

MARC has chosen to partner with a non-profit organization like IBTS, that has over 35 years of experience in delivering proven services, improving customer service levels, reducing expenses and providing citizens with streamlined community development processes. Communities benefit by having professional services delivered by Master Code Professionals and Certified Building Officials that protect their interests and focus on building safety.

By utilizing a regional Building Official, jurisdictions don't have to worry with the extra administrative and human resource efforts and paperwork associated with staff. This allows the delivery of Building Code Department services without all the burden of management of that staff.

The following solutions presented in this proposal will meet the needs of the region and individual jurisdictions now, as well as the future and with positive impacts for years to come.

Sincerely,

MARC
MID-AMERICA REGIONAL COUNCIL

Sincerely,

IBTS

about IBTS

Many times we are asked, "Why a non-profit?" Here is our story.

In 1996 the National Conference of States on Building Codes and Standards (NCSBCS), under cooperative agreements with the Council of State Governments (CSG) and the National Governors Association (NGA), initiated consideration of a new entity for the fields of building regulation and public safety. Specifically, this new organization would facilitate implementation of government policy for building regulations to protect health, welfare, economic development, and life safety of citizens.

Additionally, the need for such an organization recognized the then-emerging trend for Federal, state and local government downsizing. Jurisdictions at all levels were seen facing increased difficulty providing adequate building, regulatory, and administrative services in a timely and cost effective manner.

In 1999, NCSBCS, CSG, and NGA established the Institute for Building Technology and Safety as a separate, non-profit 501(c)(3) organization to undertake these challenges while keeping the best interest of jurisdictions at the forefront. Soon thereafter, the National Association of Counties (NACo), followed by the National League of Cities (NLC) and the International City/County Management Association (ICMA) joined CSG and NGA in having representatives on the IBTS Board of Directors.

We've grown since then. IBTS now has over 150 employees and provides services in all 50 states. Our corporate offices are located in Ashburn, VA., just outside Washington D.C. IBTS also has field offices located in Louisiana, Texas, Georgia, Kansas, D.C., New York & Pennsylvania. IBTS provides services to federal agencies, state, regional and local governments as well as private companies.

IBTS Board of Directors

The IBTS Board of Directors represents local governments and assures that IBTS focuses on the citizens that make up your community. Each representative brings a unique and distinctive insight into issues that are facing jurisdictions, guiding IBTS into developing timely, efficient, and cost effective solutions to those issues.

Steve R. Sarkozy, MPA
Chairman
City Manager, City of Bellevue, Washington / International City/County Management Association

The International City/County Management Association (ICMA) develops and advances professional local government management to create sustainable communities that improve lives worldwide. ICMA provides member support; publications; data and information; peer and results-oriented assistance; and training and professional development to nearly 9,000 city, town, and county experts and other individuals and organizations throughout the world.

Tim Nogler
Vice Chairman
Managing Director, Washington State Building Code Council

The National Governors Association (NGA), founded in 1908, is the collective voice of the nation's governors and one of Washington, D.C.'s most respected public policy organizations. Its members are the governors of the 55 states, territories and commonwealths. NGA services to governors and their senior staff members include developing and implementing innovative solutions to public policy challenges through the NGA Center for Best Practices.

NACo National Association of Counties
The Voice of America's Counties

Charlotte Randolph
Secretary
Jurisdiction President, Lafourche Jurisdiction, Louisiana

The National Association of Counties (NACo) is the only national organization that represents county governments in the United States. Founded in 1935, NACo provides essential services to the nation's 3,069 counties. NACo advances issues with a unified voice before the federal government, improves the public's understanding of county government, assists counties in finding and sharing innovative solutions through education and research, and provides value-added services to save counties and taxpayers money.

NATIONAL LEAGUE of CITIES

Craig Thurmond
Board Member
Mayor, Broken Arrow, Oklahoma / National League of Cities

The National League of Cities (NLC) is dedicated to helping city leaders build better communities. Working in partnership with the 49 state municipal leagues, NLC serves as a resource to and an advocate for the more than 19,000 cities, villages and towns it represents.

CSG
The Council of State Governments
Sharing capitol ideas.

Richard Sliwoski, PE
Board Member
Director of Department of General Services, Commonwealth of Virginia

The Council of State Governments (CSG) is our nation's only organization serving all three branches of state government. Founded in 1933, CSG is a region-based forum that fosters the exchange of insights and ideas to help state officials shape public policy. This offers unparalleled regional, national and international opportunities to network, develop leaders, collaborate and create problem-solving partnerships.

IBTS Capabilities

IBTS ensures delivery of quality, cost effective services that do not sacrifice safety, performance, transparency, or ethics. IBTS staff use accepted best practices in project management, engineering, and administration of services. Jurisdictions have come to rely on the efficiencies generated by IBTS-streamlined approaches

With core capabilities in providing technical and administration building code department services, as well as many other activities associated with the building code department operations, services that IBTS delivers include:

- Building Code Department Services
- Flood Plain Management Services
- Storm Water Services
- Energy Efficiency Services
- Green & LEED for Homes Certifications
- Contractor Licensing Services
- Public Works Management
- Construction Management
- CDBG & EECBG Grant Services
- Military Housing Services
- HUD Manufactured Housing Services
- Code Training Programs
- Compliance Risk
- Fire Review & Inspection Services
- ADA / ADAAG Services
- Complete City Services

IBTS is a nationwide company that is big enough to handle the services required for a MARC-wide approach, yet nimble enough to respond quickly to any individual jurisdiction needs that may arise. IBTS manages projects of all sizes and scopes. Current clients for IBTS services include:

- Scores of jurisdictions in Texas, Louisiana, Georgia, Kansas, Pennsylvania, Virginia & Washington D.C. covering over 10,000 permits a year
- Dozens of military bases for thousands of homes and ancillary buildings
- Complete city services in the City of Central, Louisiana
- HUD's preemptive manufactured housing construction program
- Energy Star Rating evaluations of more than 1,000 homes in Georgia.
- Quality Assurance and Inspections on the D.C. Metrorail's $15 million expansion
- CDBG Construction Management Services in Galveston/Houston, Texas
- Implementation of FEMA's NFIP/CRS program for numerous cities

"I am writing this email to give my wholehearted endorsement to IBTS to handle any program associated with construction and building codes…

Their leadership always delivered timely on promises, and they were a huge part of the success of implementing enforced building codes as quickly as the state accomplished. I would not hesitate to call on IBTS to assist in any programs in the recovery of our state…

They are organized and more importantly, they genuinely care about our citizens…"

Randy Noel, Chairman
Louisiana State Uniform Construction Code Council

project key staff

The Operational Team will be responsible for the oversight and actual day to day operations of the regional building code department. IBTS' Building Department Services group currently on the ground in the Kansas City area will be involved in the implementation and will meet with all jurisdictions to deliver services and the occasional meetings as needed for status reports.

Your operations team for Building Department Services

Greg Seldon , Director of Development & Growth

Greg Seldon will provide corporate direction and oversight for all MARC service operations. Greg reports directly to the CEO and COO to ensure that MARC, its jurisdictions, and its citizens are more than satisfied with IBTS services by closely monitoring workflow, staffing, and budgets. Greg, as a past City Manager, brings vast depth of knowledge and a great understanding of local government services and expertise as a guide for the operations team.

Greg Blount, Local Government Solutions Manager

Greg Blount will provide the Project Startup services to ensure that the jurisdictions needs and requirements are built into the project from the beginning. Greg will bring over 20 years of experience in Residential & Commercial Construction Quality Assurance programs and 8 plus years of establishing Regional Building Code Departments to make sure the project is on budget, on time and customer satisfaction remains high.

regional solutions

IBTS understands the need for regional solutions from long experience. After Hurricanes Katrina and Rita, Louisiana's Building Code Departments were inundated with plan reviews and inspections. Some areas, such as New Orleans were experiencing a six to eight week backlog for plan reviews and three to four week backlog for inspections. IBTS was able to help Louisiana jurisdictions manage the enormous requests generated from mandated building code requirements. IBTS implemented solutions that encompassed 3 regional building code departments that are self-sustaining and still operational to this day.

Below are regional solutions that IBTS has developed specifically for your jurisdiction. Each type of service proposed below will have a common basic flow while specific JURISDICTION requirements, such as permit fees, impact fees etc., will be tailored to each locale. Each solution is designed to be effective on a regional basis, yet is flexible enough to restrict approval authority and provide financial autonomy for each jurisdiction.

IBTS designs each solution to deliver the highest level of customer service at the best possible price. IBTS solutions provide exceptional delivery, reporting, and transparency within each service type.

It's one thing to offer professional, on-time services; however IBTS will prove effectiveness through measurements and reports that demonstrate exemplary service delivery. Our matrix measurements are monitored on each and every permit, inspection and plan review. IBTS does not use sampling programs to measure; we measure each service characteristic, on each permit.

All services listed are designed to be delivered in a "a'-la carte" fashion with IBTS providing augmentation of existing services, development of services and or operation of services. Understanding that each jurisdiction's needs are different, IBTS can augment your existing staff, or operate the services. If you jurisdiction needs a department to be developed, IBTS can also accommodate those needs under this proposal.

Building Department Solutions

IBTS has developed the following approach to services that can begin within 30 days after service agreement award. The approach was developed based on past experiences, IBTS's review of administrative and revised codes, as well as other federal and local requirements.

Permit Applications

Citizens/contractors may go to each jurisdictions government offices to apply for a permit and submit the requirement documentation for the permit. They may also choose to register online with IBTS' software and apply from the comfort of their home or office. In either case, a local JURISDICTION staff person will enter and or review the submitted information, receive the payment and submit to IBTS for review. Notifications are sent immediately to IBTS staff that Plan Reviews are pending.

Plan Reviews

IBTS staff will conduct all of the necessary plan reviews to check for compliance with federal, state and local requirements. Because we deploy multi-certified and cross-trained staff, plan review services selected by each jurisdiction are conducted concurrently. This improves review times and decreases permitting delays. The following presents the types of reviews (commercial & residential) that can be conducted, if so selected by each jurisdiction:

- Building codes
- Electrical codes
- Plumbing codes
- Mechanical codes
- Energy Codes
- Accessibility
- Flood Determinations
- Landscape/Land Use/Lighting
- Fire Codes
- Other local requirements

IBTS guarantees that residential plan reviews will be completed in less than 5 business days and non-complex commercial plan reviews will be completed in less than 10 business days. Complex commercial projects, such as hospitals, prisons and schools, are custom-quoted once plans are received and evaluated. In most instances, complex jobs are reviewed within 20 business days.

Permit Approvals & Issuance

Once plans are approved, IBTS will indicate approval in the software system. The system in return immediately notifies the jurisdiction that a permit is ready for issuance. Therefore, authority to issue permits remains with each jurisdiction and can be held for issues or concerns. This provides the opportunity to hold final issuance for any reason the jurisdiction may deem necessary.

Inspections

Once the project is under construction, IBTS will provide inspections on the project, based upon the structure type and occupancy. More inspections will be required on a hospital than a residence. Therefore, IBTS will provide each contractor with a direct phone number to the inspector in order to schedule the inspections or inspections can be requested via fax request or on the web-based permitting solution.

Inspections will be conducted on a next business day basis, with the expectation of concrete pours and emergency inspections such as damaged meter bases and storm damages. These are handled immediately on a case-by-case basis.

Below is a listing of the types of inspections that may be conducted on structures, depending upon the type, design, and use of the structure. This list is not exhaustive, additional inspections are added as projects require and services dictate. Inspections that may be conducted include:

- Foundation/footings
- Pier & beam
- In ground electrical
- In ground plumbing
- Slab pours
- Temporary elec. pole
- Building Rough-In
- Mechanical Rough – In
- Electrical Rough – In
- Plumbing Rough – In
- Energy
- Fire Resistant Inspections
- Insulation
- Building Final
- Mechanical Final
- Electrical Final
- Plumbing Final
- Temp to Perm Power
- Testing
- Special Inspections
- Occupancy Inspections
- Zoning Setback
- Landscape / Lighting
- Storm Water controls
- Elevation Certificates
- Site postings

Certificates of Occupancy

After the final inspection, or the Certificate of Occupancy (CO) inspection, is completed, IBTS will upload and document all the results and reports from the inspections. IBTS will then approve the CO for issuance and the software will notify the jurisdiction that a CO is ready to be issued. The jurisdiction at that time, just like the permit, has the authority to withhold that CO for any reason they deem necessary. This provides each jurisdiction with ultimate control of allowing the occupancy of that structure.

Reporting

IBTS will provide to MARC and each jurisdiction, monthly reporting of all activities. This will provide each client with a sense of project status and activities in their area. Reports can be custom tailored to the client's needs and even exported to excel worksheets for import into city financial software.

Ordinances & Public Bulletins

Citizens will have questions about these new services. IBTS will prepare and make available all the necessary ordinances and bulletins to provide information to developers, contractors and citizens that are working on projects. Sample, draft bulletins have been provided in a separate document for MARC's consideration and review. The original documents generated for each jurisdiction will be specific for their needs and reflect their localized culture.

IBTS will also prepare, as needed, Public Bulletins and Permitting Guide for handing out to citizens for information.

FIT ® Permitting Software

To keep track of all the permit applications, permits, plan review notices, inspection reports, certificates of occupancy, certificates of completion and other supporting forms and pictures, IBTS intends to use its FIT® permit tracking software. FIT® is a web-based permitting system that has the following features and benefits:

- Online applications
- Online permit payments
- Online permit tracking

The FIT® system provides automatic email and test message notification / alerts when:

- the permit application is submitted
- payments are received
- plan reviews are completed
- permits are issued (along with the permit being provided)
- inspection results and reports are complete
- Certificates of Occupancy are issued

The citizen/contractor can use the FIT® portal to:

- use credit cards/debit cards to pay for permits
- upload drawings, specifications and attach to the application
- request inspections
- print receipts, applications, permits, inspection reports and certificates of occupancy
- review Planning &Zoning approvals
- review Elevation Certificates,
- review Engineering Approvals
- upload Elevation Certificates and other flood plain documents

Some of FIT's® beneficial features are:

- Accessible anywhere in the world with access to the internet.
- User role based functionality
- Provides transparent checks and balances to prevent abuse
- Tracks users and their activities in the system
- Live, real-time reporting
- City staff will be given access for transparency and accountability.
- Access to all documents attached to the permit

Scan the above QR code with your smartphone camera for more info about FIT®

IBTS Technology Services Department will work closely with each jurisdiction to develop the necessary links from their respective websites to FIT® so that citizens & contractors alike can easily access the permitting system.

For additional information, please scan the above QR code with your smartphone or visit our FIT® site at www. http://fieldinspectiontech.com/ .

Building Department, and Accessibility Services Solution Customization

Each jurisdiction will utilize unique usernames and password logins to the FIT® system. This in return creates specific "user roles" inside FIT®. Once activities are entered into the permitting system, and the next action is needed to the permit can advance to the next step, the system automatically notifies the person in that "role" that action is needed.

An example would be that once the local JURISDICTION permit tech has accepted all the proper paperwork and documentation, they will click on the "submitted" button. The system then automatically notifies the plan reviewers that a permit application is pending and awaiting their reviews.

Also, each time a critical milestone is completed in the process, automatic email and text message notifications are sent. The automatic notification feature is completely voluntary and not a requirement.

Financial autonomy controls are in place to ensure that each jurisdiction maintains complete control and insight into the accounting. Credit card processing can be established so that it is handled by the jurisdiction's methods, or, it can be handled within IBTS' credit card processing system.

Accessibility Services

Jurisdictions across the country must deal with handicap accessibility non-compliance issues. . IBTS is here to assist jurisdictions with reducing that risk.

IBTS staff will provide the Americans with Disabilities Act (ADA) standards technical reviews and inspections on commercial use group properties. IBTS provides Code Officials to enforce these code requirements to ensure that citizens with disabilities have access to structures as required and identified in federal regulations. IBTS staff also conduct Plan Reviews and Inspections, utilizing checklists to verify and document compliance. These records are then attached to each permit and be archived for easy retrieval for future purposes.

Checklists provide a valuable tool to ensure that components of the regulations are not missed. IBTS Accessibility checklists include, but are not limited to, the following example items:

- Adequate accessible parking spots
- Parking Signage
- Exterior Path of Egress
- Interior Path of Egress
- Sidewalk Detectable Warnings
- Exterior Ramps
- Travel Path Obstacles
- Entrance/Exit Hardware
- Interior Door Clearances
- Toilet Installations
- Sink Installations
- Support / Grab Bars
- Restroom Floor Space
- Restroom Stall Clearances
- Counter Installations
- Fountain Installations
- Braille / Raised Letter Signage
- Turning / Reaching Space
- Level Floor Surface

All accessibility reviews and inspections will be documented and record in the FIT® Permitting System. Each review and inspection report will be available from any web enabled access device such as internet tablets and pads.

All plan reviews will be conducted within 5 business days for residential and within 10 business days for non-complex commercial structures. All complex commercial structures, such as hospitals, will be assessed and a time-frame for completion will be provided to the applicant.

Planning & Zoning Solutions

IBTS understands the need for planning and zoning solutions. Many small town or rural communities lack zoning technical expertise. IBTS solutions focus on the utilization of contemporary ideas and technology within a small town and rural context. IBTS implemented solutions for numerous jurisdictions and regions that has proved to be successful and self-sustaining over the past 5 years.

IBTS is proposing the following services to the [jurisdiction name here] to meet the current and future needs based upon meeting with the Mayor and a review of currently adopted ordinances and codes. The following offering is a streamlined, efficient zoning process that is economical, flexible and expandable. IBTS will utilize a professional staff to oversee the following solutions:

- Zoning Code Interpretation
- Zoning Review and Enforcement
- Planning and Zoning Commission Support
- Zoning Code Recommendation
- Zoning Code Implementation
- Parcel Map Digitization
- Zoning Map Creation and Maintenance

IBTS designs each solution to deliver the highest level of customer service at the best possible price. IBTS' solutions provide exceptional delivery, reporting and transparency within each service type.

IBTS has developed the following approach to services and can begin implementation after agreement award. The approach was developed based on past experiences, IBTS's review of administrative and revised codes, as well as other federal and local requirements.

IBTS will conduct enforcement of the local zoning ordinances as adopted. The Zoning Administrator will review all the required Development Permits, Development Permit Approvals, Zoning Reviews and full administration of the Zoning Ordinance. IBTS will attend each Development Review Committee meeting to be informed and aware of upcoming projects. Zoning administration will be provide the following

- Site Inspections
- Setbacks
- Accessory Use
- Traffic Corner Visibility
- Public Notification

Since the city possibly has an outdated zoning ordinance, IBTS would recommend adopted International Zoning code as published by the International Code Council. IBTS will assess the current character and desires of the [jurisdiction name here] to revise the code appropriately. IBTS will develop, implement,

manage and conduct planning and zoning activities for the [jurisdiction name here]. IBTS will provide information concerning zoning to the general public, builders, developers, Mayor, City Council and Planning and Zoning Commission. In addition, IBTS will develop and recommend policies and procedures for all Planning and Zoning activities.

Property Maintenance Solutions

Implementation, administration and management of a complaint-based response system will provide a best practice project approach that ensures [jurisdiction name here]'s citizens are driving the property maintenance ordinance. With this approach, citizens take ownership, and therefore naturally develop pride in their community, businesses and homes through an avenue of investigations and inspections initiated by their actions.

Once a [jurisdiction name here] representative has authorized IBTS to respond to a citizen complaint, IBTS will provide follow-up, weekly or bi-weekly, on all authorized complaints with fully documented Case reports and pictures as deemed necessary and appropriate. As required, IBTS will also make a monthly appearance to report on all activities/cases for the preceding month and to respond to properties in question.

For each authorized complaint, IBTS will create a "Case File" to manage the tracking and documentation involved with each response through to resolution. This Case File will be accessible by [jurisdiction name here] Clerk(s), the [jurisdiction name here] Program Manager and IBTS staff. Since the information with each Case is subject to review by attorneys, courts, judges and other legal professionals, access to, and any activities by any personnel within the case file will be tracked and documented as to the changes, revisions and or additions made to the Case File.

With all Cases, IBTS will only provide inspections, citations, notices, placards and other documentation necessary for the [jurisdiction name here] to take enforcement action as required by the [jurisdiction name here] Property Maintenance Code. IBTS will not be responsible for authorizing demolitions, property removal, property clearing, mowing, towing and any other action necessary to correct the violation.

IBTS will provide the inspections to enforce [jurisdiction name here]'s PMC ordinance. IBTS Property Maintenance Inspectors and Certified Building Officials will conduct the inspections, as authorized by [jurisdiction name here], and provide the inspection results, along with any required documented evidence and or pictures as necessary to identify the violation clearly and effectively.

IBTS will coordinate with [jurisdiction name here] officials including but not limited to [jurisdiction name here]'s Attorney, the [jurisdiction name here] Fire Chief and the [jurisdiction name here] Chief of Police on the development, approval and implementation of all the necessary forms, documentation and notices required by this effort. These forms are included in the one-time start up fees shown in the fee schedule.

Citation forms will be compiled onto one common form where applicable. IBTS will coordinate with the [jurisdiction name here] upon developing these forms, documents and notices in order to keep the number of required forms to a minimum for printing efficiency.

The [jurisdiction name here] will incur all costs associated with printing, supplying and distributing of all of the necessary forms, documentation and notices required for enforcement by this effort. IBTS will provide to [jurisdiction name here] the necessary forms, documents and notices in electronic format suitable for printing.

Ordinances will be passed and fee schedules adopted by the [jurisdiction name here] in order to pay for services rendered by IBTS.

IBTS will invoice the [jurisdiction name here] on a monthly basis for services provided. All fees will be in accordance with the approved fee schedule. The [jurisdiction name here] will pay invoices within 45 days of approval. IBTS will supply a copy of each notice of violation issued, along with the invoice to document all services rendered during each month.

MARC
MID-AMERICA REGIONAL COUNCIL

THANK YOU for considering Regional Building Department Solutions as provided by IBTS. We are here to serve you and provide professional, timely and efficient services to your community.

The following are draft documents that will assist you with implementation of the Regional Building Department at the JURISDICTION level. These documents have been developed and reviewed with the consideration of regional building code departments. Each document provides for autonomy and individual JURISDICTION authority over activities within their JURISDICTION limits, yet works as a harmonious set of common requirements for the region.

Draft Cooperative Service Agreement: This is the draft document that the local government needs to review and vote on in order to utilize the Master Agreement for services that MARC has secured with IBTS.

Draft Building Code Ordinance: This is the draft ordinance that is being proposed to all jurisdictions that elect to utilize the Regional Building Department Solutions. It provides the necessary administrative, policy and procedure guidance for services. This document can be modified, but it is highly recommended to keep the document as common as possible so that contractors working in numerous jurisdictions have a common set of policies to follow.

Fee Schedule: This is a schedule of fees negotiated by MARC with IBTS. These fees are common amongst all users, with the exception of the permit fees. The permit fees can be set at the amount decided upon by each jurisdiction. IBTS offers other services, and those services and fees can be included in the service agreement.

PLEASE NOTE: The permit fees that are suggested, are set by your jurisdiction and all fees belong to the jurisdiction. Current agreements, due to online payments, require that IBTS collect all fees and rebate the adopted permit fees to each jurisdiction.

City Administrator
Brad Ratliff

City Clerk
Nick Jacobs

City Engineer
Carl Brooks

Business Office
Trudy Prickett

Chief of Police
Harry Gurin

City Planner
Cliff McDonald

City Attorney
Reid Holbrook

Parks Director
Nathan Musteen

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

To: Mayor & Board of Aldermen
From: Carl Brooks, City Engineer (cbrooks@cityofpeculiar.com)
Date: July 3, 2014
Re: Engineering Report on the Water Supply, Pumping, Storage and Distribution Facilities.

GENERAL INFORMATION

Applicant: City Staff
Requested Actions: Review for discussion and approval at the next scheduled meeting.
Property Location: City Wide
Purpose: Identify areas to update the Citys water system

PROPOSAL

Staff has been made aware the Board of Alderman would like to review all new or revised Public Works Guidelines or Specifications. Over the past year staff has discovered changes that need to be made to keep abreast of new construction along with making the department operate more efficiently.

With that in mind we would like for the Alderman to review the enclosed information.

Staff submitted and received a $28,000 engineering grant from the Department of Natural Recourses (DNR), Division of Environmental Quality, Public Drinking Branch, Financial Assistance Center. Larkin Lamp Rynearson is the engineering firm completing the report.

The Engineering Report covers:

- Hydraulic Analysis of the City's distribution system
- Identifies a Capital Improvement Plan (CIP)
- Summarizes improvements in order of priority with costs estimates
- Compares the City's current water supply to other suppliers: Kansas City Water, Tri-County Water Authority and Water One
- Submit a DNR 5-year Owner Supervised Program for future improvements
- Provide a Manual of Practice for Water Main Extensions

Staff asks that you review these documents and at next month's Board of Alderman meeting discuss and approve.

PREVIOUS ACTIONS

None

KEY ISSUES

Upgrading of the Citys water supply, system improvements and manual of practices.

STAFF COMMENTS AND SUGGESTIONS

Approval

STAFF RECOMMENDATION

Approval

ATTACHMENTS

Copy of Engineering Report: Water Supply, Pumping, Storag and Distribution Facilities
Manual of Practice for Water Main Extensions
Portiong of Engineering CIP

2014 Preliminary Engineering Report

on the

Water Supply, Pumping, Storage & Distribution Facilities

for the

City of Peculiar, Missouri

May 2014

Project No. 0313045

2014 Preliminary Engineering Report
Water Supply, Pumping, Storage & Distribution Facilities
for the
City of Peculiar, MO

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Appendices

I. General Information

The name and mailing address of the water system's Continuing Operating Authority is as follows:

City of Peculiar, MO
250 S. Main Street
Peculiar, MO 64078
Public Water Supply Identification Number: M01010633

II. Introduction and Purpose

The City of Peculiar (City) received an engineering report grant from the Missouri Department of Natural Resources (DNR), Division of Environmental Quality, Public Drinking Branch, Financial Assistance Center. This Preliminary Engineering Report on the potable water system and its supporting information consists of a hydraulic analysis, a Capital Improvement Plan (CIP), and a submittal to obtain a DNR 5-year Owner Supervised Program for future improvements studied within. The existing system was examined by review of existing system data, information from City personnel and use of computer hydraulic modeling technology. This report includes a summary of historical water use for the last 3 years, an estimate of future water needs and recommended water system improvements. The goal of this report is to solve present problems, increase reliability and prevent future problems before they occur. Recommendations for improvements are based not only on the computer results, but also on the engineer's experience with similar systems. The report is intended to serve as a planning tool for the City as it maintains the present facilities and prepares for future demands of the system.

The DNR *Minimum Design Standards for Missouri Community Water Systems* effective December 10, 2013 will be referenced in evaluating various components of the water system.

A. Goal

The City's goal is to identify improvements, which will correct any present or future deficiencies in the system. Simulation of any future deficiencies is based on the projected growth of the system. A prioritized list of recommended improvements is included as well as a recommendation on a long term source of supply.

B. Scope

The scope of services on this report is as follows:

1. Model existing system with existing demands to determine deficiencies. Model water line, storage, and/or pumping improvements to correct any identified deficiencies.
2. Evaluate current water supply and supply alternatives.

3. Project future demands for the City service area and model improvements necessary to meet these future demands.
4. Prepare a capital improvements plan (CIP) with cost opinion and priority assigned to each improvement.
5. Furnish 6 copies of the report to the City and Staff.
6. Submit report to the Missouri Department of Natural Resources for approval.

Hydraulic Analysis

1. Meet with the City to clarify project goals and expectations.
2. Gather field data and information on current operation of the water system including records of monthly water purchases/sales. Discuss operation with City staff.
3. Use information from the current system provided by City personnel and update the existing computer hydraulic model of the City's distribution system in WaterCAD software. Incorporate the water system CAD information recently prepared by City staff into the System Exhibit. Perform a hydraulic analysis of the system for existing and future flows.
4. Perform an overall system analysis to determine existing problem areas (high and low pressure areas, fire flow deficiencies, water age, dead ends, etc.).
5. Identify sections of the distribution system with frequent broken or leaking lines, which contribute to unaccountable water losses within the system.
6. Analyze the system, and make recommendations for: additional valves and flushing devices; improvements needed to maintain pressures above 35 psi; replacement of lines made of substandard materials; replacement of lines whose capacity has been or will soon be exceeded; looping dead-end lines; finished water storage capacity and condition.
7. Prepare list of proposed distribution system improvements.
8. Examine tank maintenance records and make recommendations of any sanitary or security improvements needed.
9. Discuss control system that operates the master meters, pump station and tank levels.
10. Examine the effect on the water system from potential growth related to:
    - The proposed interchange off of I-49 at 211th Street scheduled for 2015-16.
    - Current Land Use Plan with consideration of water system boundaries.

• Possible growth within already platted subdivisions served by the City.

Water Supply

1. Review the current water supply contract with PWSD No. 2 Cass County and the condition and capacity of the master meter connections.
2. Compare current supply to other available supplies such as from Kansas City Missouri (on Route J, south of Raymore), Tri-County Water Authority, or WaterOne Evaluation will include hydraulics, main sizing, probable connection cost and cost estimate update for a possible connection and transmission main.
3. Discuss availability of flow from any adjacent system via an emergency interconnection.
4. Discuss with City personnel any areas of concern with existing system and make recommendations for improvements, if needed.
5. Estimate the future cost of improving the current supply and compare to connection to an alternate supply. This will include the cost of water (1,000 gal.), cost of improvements, and effect on operation and maintenance. Assumptions will be made for rate changes on each supply source and historical information provided.
6. Estimate effect on water rates of any recommended water supply improvements.

Facility Plan Engineering Report Preparation

1. Meet or exceed the "Responsibilities of the Engineering Firm" as stated in the Three Party Payment Agreement for Engineering Report Services.
2. Summarize the evaluation of the existing supply, storage and distribution system for condition and ability to meet DNR requirements, water system demands, and other codes and regulations.
3. Summarize improvements in order of priority with estimated costs.
4. Based on assumed financing package, determining the water rate impact of the recommended improvements.
5. Discuss the City of Peculiar's current water rates, proposed rates after improvements, and the water rates of other similar area communities. Build on information in Larkin's recent rate study.
6. Estimate the impact of the proposed improvements on the yearly operation and maintenance budget.

7. List probable sources to finance the improvement with an explanation of the requirements of each funding program. Discuss status of City's listing on the DNR SRF Intended Use Plan Priority List.
8. Combine all of the engineering report items, with exhibits and appropriate documentation into a Facility Plan, for the improvements to be constructed, that meets the DNR State Revolving Fund Requirements.
9. Present the Facility Plan Engineering Report to the City Board and staff.
10. After addressing any comments from the City, submit the report to the DNR for review and approval.
11. Submit to DNR to obtain 5-Year Owner Supervised Plan Approval (Facility Plan, Peculiar standard specification and construction details for main improvements, & City inspector resume.
12. Provide copy of WaterCad hydraulic model data files to the City.
13. Be available for design of any recommended supply, transmission, distribution and/or storage improvements.
14. Provide engineering components for funding applications.

Water System Records System Documentation

1. Input City prepared information on water system consisting of waterlines, valves, and fire hydrants from (*jpeg format) into the existing hydraulic model on file (WaterCAD format). After completion of modeling, the WaterCAD file of the existing system will be converted into an ESRI ArcView (ArcGIS for desktop) software file. Attribute (valve and hydrant) reference numbers and additional information from the City prepared maps will be input into attribute tables for each valve and hydrant. This information can then be incorporated into the GIS system the City is beginning to develop.

III. Existing System

The City serves approximately 1,537 water meters. The service area is all within the present City limits, however, the City does not serve all residents within the City limits. Some areas that have been annexed are served by one of the surrounding water districts. Water is purchased from the Cass County P.W.S.D. No. 2, from its supply from Kansas City, MO. The City's existing water system consists of the following components: supply from three meter vaults, the distribution system, a booster pump station,

and two water storage tanks. Each of these components is discussed following. These components are shown on the Existing System Map at the back of this report.

A Water Supply, Master Meters and Distribution System

The City has been purchasing potable water from Cass County P.W.S.D. No. 2 (District) since March 1990. The City entered into a new agreement with the District on March 16th, 2010. The agreement is for a maximum of 0.70 million gallons per day and for a length of 25 years. A copy of the Water Purchase and Sales Contract can be found in Appendix A.

The City purchases water at three master meters located as follows:

- Master meter #1 is west of the intersection of 211th St and Harper St. (hydraulic grade of 1,175 feet)
- Master meter #2 is located at the northeast corner of the intersection of 211th St. and Peculiar Dr. (hydraulic grade provided by Master meter #1)
- Master meter #3 is located along Peculiar Drive, approximately 550 feet north of Siena Drive (hydraulic grade of 1,150 feet)

Each master meter maintains one of the four pressure zones within the City. Master meter #1 serves the City west of Interstate 49 except for Tuscany Estates, Sutter's Creek, and Spencer's Addition and the area south of Highway J, east of Interstate 49. Master meter #2 servers the area of the City north of Highway J, east of Interstate 49. Master meter #3 serves the housing subdivisions in the north area of the City along Peculiar Drive. Master Meters #2 and #3 are always open and provide pressure to Pressure Zone #2 and #3, respectively. Master Meter #1 is always open and provides water and pressure to Pressure Zone #1 and to the City's Ground Storage Tank. Water from the ground storage tank is pumped into the elevated storage tank, which provides pressure to Pressure Zone #4. All of the Pressure Zones can be seen on the enclosed map. The master meters are all in good working order.

The City's water system contains approximately 45 miles of waterline from 2-inch to 12-inch in diameter. The distribution system consists of PVC (polyvinyl-chloride), cast iron, and ductile iron waterlines. Table III.1 summarizes the pipe lengths.

Table III.1: Distribution System Summary

Pipe Diameter(in.)	2	3	4	6	8	10	12	Total
Total length, (ft)	14,590	2,278	57,843	26,649	111,095	7,388	20,132	239,975
% of total system	6.1%	1.0%	24.1%	11.1%	46.3%	3.1%	8.3%	100.0%

Pipes within several areas of the distribution system are reported by operating personnel to experience

frequent main breaks which result in a large source of the City's unaccounted for water. These areas include:

- Peculiar Drive/Main St. between Hurly St. and E. North St.
- Along Harr-Grove Rd.
- Along Elm St.
- E. Broadway St between E. 3rd St. and N. Main St.
- Gregory between Elm St. and Kayla Dr.

B. Pump Station

The City has one pump station located adjacent to the ground storage tank at the south end of W. 3rd Street. The pump station contains two 40 HP pumps which fill the elevated storage tank on-site from the ground storage tank. The SCADA system controls the operation of the pumps based upon levels in the elevated storage tank. The pumps were replaced in a 2006 project and rebuilt with a major overhaul in 2012.

C. Storage Facilities

The City has a 428,000 gallon welded steel ground storage tank which is 24' high and 55' in diameter and was constructed in 1982. The only high level storage is a 400,000 gallon multi-column welded steel elevated storage tank which was constructed in 2006. Both tanks are located at the south end of W. 3rd Street. The City operates both tanks in the upper three feet or so with control points of 1,136.0 and 1,139.0 mean sea level (msl) for the elevated storage tank and 1,010 and 1,013.5 for the ground storage tank.

Missouri Department of Natural Resources recommends minimum storage volume in a distribution system that provides fire protection to be calculated as follows:

Average Day + Equalizing Storage + Fire Flow Reserve

Equalizing Storage to meet diurnal daily peak demands = 0.5 x Average Day

Fire Flow Reserve = 1,000 gpm x 2 hrs = 120,000 gallons

Alternatively, the minimum storage should be equal to the maximum daily flow + Fire Flow Reserve:

Maximum Day + Fire Flow Reserve

The current and future required storage based on these assumptions and the predicted demands calculated in Section IV are shown in Table III.2. The City's maximum day demand based on peak month usage and similar systems is assumed to be approximately equal to 1.5 times average day usage. This results in the two minimum storage requirements Table III.2 to be equal.

Table III.2: Minimum Storage Volume		
Year	**Volume Based On Average Day + Equalizing Storage + Fire Flow Reserve (gallons)**	**Volume Based On Maximum Day + Fire Flow Reserve (gallons)**
2013	505,500	505,000
2018	547,448	547,448
2033	696,864	696,864

With both tanks in service, the City has 828,000 gallons of finished water storage; which is enough to meet the DNR criteria. The only caveat is that the booster pump station is not backed up by an emergency or secondary power source. The DNR's Minimum Design Standards state that system serving a population of 3,300 or more shall make arrangements for back-up power in either the form of a secondary independent utility source or auxiliary generator.

A supplement to system storage volume during an emergency can be contracted for through the elevated storage from a wholesale water provider. P.W.S.D. No. 2 Cass County has a 500,000 gallon elevated tank located on 203rd Street, just west of Peculiar Drive.

The Missouri Department of Natural Resources has guidelines for the inspection of water storage facilities that requires periodic inspection of both a tank's sanitary features, as well as condition of the structure. Annual inspections are required to ascertain that screens are in place covering the vent and overflow pipes to prevent contamination from intrusion by pests. On every third year, the tank is to be washed out and the condition of the coating and accessories assessed. The City has a contract for the ground storage tank to be emptied and rehabilitated with a new coating system and sanitary features beginning in late April 2014 and completion set for June 2014.

D. Population

The City has experienced substantial population increases over the past two decades. The City population has grown at an average of 4.21% each year. If this population growth factor is utilized, the City's population would be greater than 10,000 by the year 2033, as seen in the Table III.3. Table III.3 shows past Census population and predicts future City population at a 4.21% annual increase.

Table III.3: Projected Population

Year	Population	Annual % Change	Population Change
1980	1571		
1990	1777	1.24%	206
2000	2604	3.90%	827
2010	4054	4.53%	1450
2011	4225	4.21%	171
2012	4403	4.21%	178
2013	4588	4.21%	185
2014	4781	4.21%	193
2015	4982	4.21%	201
2016	5192	4.21%	210
2017	5411	4.21%	219
2018	5638	4.21%	228
2019	5876	4.21%	237
2020	6123	4.21%	247
2021	6381	4.21%	258
2022	6650	4.21%	269
2023	6930	4.21%	280
2024	7221	4.21%	292
2025	7525	4.21%	304
2026	7842	4.21%	317
2027	8172	4.21%	330
2028	8516	4.21%	344
2029	8875	4.21%	359
2030	9248	4.21%	374
2031	9638	4.21%	389
2032	10044	4.21%	406
2033	10466	4.21%	423

IV. Hydraulic Model

A. General

A hydraulic model of the City's water distribution system was created using Bentley's, WaterCAD software program. WaterCAD links hydraulic modeling capability with a scaled map of the system, drawn in AutoCAD. Input variables to the program include pipe length, pipe diameter, pipe friction factor (C), pipe connectivity, location of storage tanks, overflow elevations of storage tanks, pump curves, customer locations, and customer demands. Pipe friction factors of 120 to 150 were used throughout the distribution system for existing waterlines. New pipes are analyzed at a C factor of 150.

Customer demands were based on the data presented in Section IV-B. Information regarding current operation of the system, including current water sales records, pump flows, storage operating range and recent piping improvements has been gathered and incorporated into the hydraulic model.

The DNR's *Minimum Design Standards for Missouri Community Water Systems* states that systems shall be designed to maintain at least 35 pounds per square inch (psi) normal working pressure at ground level at all points in the distribution system under all conditions of design flow, not including fire flow. The DNR will consider approving design of a lower working pressure on a case by case basis:

- Transmission mains that have no current or anticipated retail or commercial services;
- Dedicated pump supply lines from storage in a treatment plant yard piping;
- Supply from a ground storage tank or reservoir provided no services are on the supply until it reaches 35 psi or greater;
- On unplanned and emergency connections or consolidation projects where providing 35 psi to the new area would require major revisions to present infrastructure. No more than 5% of service connections representing the entire service area (current plus proposed) may be designed under 35 psi and none under 25 psi; and
- The DNR suggests that distribution systems should be designed to provide approximately 60 to 80 psi.

Water pressures in distribution systems below 20 psi are a violation of Missouri Safe Drinking Water Regulation and are considered by the DNR to be an imminent hazard to public health. For this report, a minimum of 35 psi was utilized to size improvements.

B. Demand

The City has experience a minor amount of growth in water usage over the past four years. Historical water demands for these last four fiscal years are shown in Table IV.1. Finished water purchased from the District between October 2012 and September 2013 was approximately 94.89 million gallons (MG) and water sales were approximately 80.1 MG (with 80,000 gallons of the water not sold accounted for). This calculates to 15% Total Water Not Sold in that year. A portion of the Total Water Not Sold is internal water used by the City for flushing and filling new lines. Maintaining monthly records of estimated water lost to flushing, filling, etc. is recommended. The City has implemented a record keeping program. Since October 2013, the City's average monthly water loss has decreased every month and averages 5.45 a month water loss.

The primary objective of a water system is to furnish an adequate supply of safe, treated water to meet the demands of its customers. To properly meet this need, water demands must be accurately projected so that adequate facilities can be planned, designed, financed, and constructed prior to their actual need.

Water usage varies with the time of the day and the seasons of the year. Three terms are used to define usage demands: average day, maximum day, and peak hour:

Average daily flow (ADF) use is the yearly total quantity of water distributed, divided by the number of days in the year. The ADF, calculated from existing City water use data, is 0.11 gallons per minute per meter (gpm/meter). When flow records are not available, the ADF is used with assumed peaking factors to estimate maximum daily flow and peak hour projections.

Maximum daily flow (MDF) use is the maximum quantity of water distributed in any 24-hour period during the year. Typically this occurs during hot summer months when water use is the greatest due to high temperatures, operation of swimming pools, and watering of livestock and lawn/gardens. In the absence of daily master meter readings, the MDF to ADF ratio is assumed to be 1.5 for a municipal system like Peculiar. The calculated MDF from ADF records is then 0.17 gallons per minute per meter (gpm/meter). This ratio was utilized in this model to estimate future maximum daily flows.

Peak Hourly Flow (PHF) use is the maximum quantity of water distributed during any 60-minute period of the year. This condition generally occurs in the morning when many customers are simultaneously consuming water for showering, or in the evening when many customers are returning home from work and simultaneously consuming water for meal preparation and other activities. A typical peak hour to maximum day factor of 2.0 was used in the hydraulic calculations resulting in a peak hourly demand rate of 0.34 gpm/meter.

Table IV.1. – Historical Water Demands

Year	2010	2011	2012	2013	Average
Customers	1,509	1,525	1,540	1,537	1,528
Annual Percent Change - (%)		1.06%	0.98%	-0.19%	0.62%
Annual Water Purchased (gal)	87,230,287	94,070,020	99,276,682	94,465,030	93,760,505
Annual Percent Change – (%)		7.84%	5.53%	-4.85%	2.84%
Annual Water Sales (gal.)	74,145,744	79,959,517	84,385,180	80,295,276	79,696,429
Annual Percent Change – (%)		7.84%	5.53%	-4.85%	2.84%
Total Water Not Sold – (gal)	13,084,543	14,110,503	14,891,502	14,169,755	14,064,076
Total Water Not Sold – (%)*	15%	15%	15%	15%	0.15
Avg. Consumption (gpm/meter)	0.11	0.12	0.12	0.11	0.11
Avg. Day Purchases (gal./day)	238,987	257,726	271,991	258,808	256,878

**Estimated water loss for 2010 through 2012*

The average growth rate has been 2.84% over the past 2 years. For this report a conservative growth factor of 2.0% was utilized to predict future demands. This allows for a 1% growth in residential water demands and a 1% growth for anticipated industrial and commercial growth. Industrial and commercial growth is most likely to occur near the proposed interchange at 211th and I-49. This area has

significant electrical service capacity available and the Missouri Department of Transportation and the City are investing in the construction of an interchange.

Water purchases and sales within the City service area will increase with population growth. Table IV.2: Projected Water Demands uses a 4.21% growth rate and a Max day/Average day ratio of 1.5.

Table IV.2 –Projected Water Demands			
Year	2018	2028	2033
Annual Finished Water Purchased (gal.)	116,096,211	175,352,517	215,505,811
Annual Water Sales (gal.)	98,681,779	149,049,640	183,179,939
Average Day Water Purchased (gal.)	317,203	479,105	590,427
Maximum Day Water Purchased (gal).	475,804	718,658	885,640

The City's current demands, plus reasonable growth, are reflected in the 2033 Maximum Day Water Purchase projection of 885,640 gallons. At this growth rate the City would have a maximum day water purchased of over one million gallons by the year 2036.

C. Existing System

Several cases were developed using the existing system to determine the location of, and priority for, needed improvements. The existing system was analyzed at average day, max day, and peak hour. The outlet pressures at all three master meters were set to the gradients discussed in III.A. These conditions were analyzed for the years 2013, 2018, and 2033. Locations of additional demands were based upon existing platted areas and the growth predicted to occur at the proposed 211th and I-49 interchange. The following table shows the average, high and low pressures of these scenarios when ran at steady state with the elevated storage tank 10' below overflow (note this is lower than the City currently operates the tank but was utilized to find any deficiencies). Table IV.3 does not include low pressure readings that occur between the ground storage tank and the suction side of the pump station. (See Appendix B for full results).

Table IV.3 – Hydraulic Results Existing System without Improvements			
Scenario	Low Pressure (psi)	Average Pressure (psi)	High Pressure (psi)
Year 2013			
• ADF	28.9	61.1	118.6
• MDF	27.8	60.7	118.1
• PHF	24.5	59.3	115.8
Year 2018			
• ADF	28.4	60.9	118.6
• MDF	27.0	60.4	118.1
• PHF	22.9	58.8	115.8
Year 2033			
• ADF	27.8	60.7	118.2
• MDF	26.1	60.0	117.4
• PHF	21.2	57.9	113.4

Results of the hydraulic analysis of the existing system show a minimum pressure in the system of approximately 29 psi under 2013 ADF demands at Junction 708 near the intersection of 222nd St. and Setter's Pointe Blvd (this is lower than the desired 35 psi). The highest pressure in the system under the same scenario is approximately 119 psi on Highway J at a stream crossing north of Cemetery Road at Junction 898. Under 2013 ADF, approximately 60 junctions had pressure less than 35 psi. Most of these were located in Pressure Zone 1, east of S. Peculiar Dr. between Tuscany Pkwy and Lions Dr. This area is fed directly from PWSD No. 2 Cass and does not receive pressure from the City's elevated storage tank. As demands increase within the system, the hydraulic analysis indicated additional junction pressures will drop below the DNR's Minimum Design Standards recommendations. Most of these junctions continued to fall within Pressure Zone 1, but with additional other junctions spread throughout Pressure Zone 2.

D. Existing System with Improvements

Section IX lists the recommended improvements utilized to enhance the City's distribution system. These improvements first focused on replacing mains that have deficient pipe as evidenced by many main breaks. Also larger diameter waterlines are recommended to improve deficient pressures in Pressure Zone 1 and other improvements will eliminate dead-end lines with looping. Table IV.4 contains the results of the hydraulic analysis with all improvements constructed (this table has the same limitations as Table IV.3).

Table IV.4 – Hydraulic Results with Recommended Improvements

Scenario	Low Pressure (psi)	Average Pressure (psi)	High Pressure (psi)
Year 2013			
• ADF	42.1	66.0	118.7
• MDF	41.5	65.8	118.3
• PHF	39.6	64.8	116.6
Year 2018			
• ADF	41.8	65.9	118.6
• MDF	41.1	65.6	118.3
• PHF	38.8	64.5	116.6
Year 2033			
• ADF	41.5	65.8	118.4
• MDF	40.6	65.3	117.8
• PHF	37.7	63.9	114.9

With the improvements in place, junctions in all 9 scenarios now meet the 35 psi goal of the Study. (See Appendix B for full results). Distribution improvements are prioritized in Section IX based on the findings of these analyses and discussions with City personnel.

A steady state fire flow analysis was also performed on the distribution system. Within the existing system, approximately 46% of the junctions were able to meet a fire flow demand of 1,000 gpm while maintaining a system minimum pressure of 20 psi at 2033 demands. With the recommended system improvements, this number climbed to 74%. The areas not meeting the fire flow requirements are on waterlines less than 8-inches in diameter. As expansion occurs in these areas, the City should evaluate the opportunity to work with development to have larger diameter waterlines installed.

V. Applicable Design Standards

The DNR is authorized to monitor and enforce regulations pertaining to the production and distribution of potable water. The DNR establishes standards and guidelines to be followed in the design, construction, and operation of public water supply (PWS) facilities. Facilities must meet the requirements of the Missouri Safe Drinking Law and the Missouri Safe Drinking Water Regulations. Pertinent excerpts of the following documents are presented in this section:

Missouri Safe Drinking Water Law

(Sections 640.100 through 640.140, Revised Statutes of Missouri)

Missouri Safe Drinking Water Regulations

(10 CSR 60-1.010 through 10 CSR 60-16.030)

Excerpts from *Minimum Design Standards for Missouri Community Water Systems* effective December 10, 2013.

Disinfectants and Disinfection By-Products Rule (D/DBPR) Stage 1 and 2

Safe Drinking Water Act Reauthorization (SDWA)

Surface Water Treatment Rule (SWTR)

Interim Enhanced Surface Water Treatment Rule (IESWTR)

Long-Term Enhanced Surface Water Treatment Rule (LT2 Rule))

Lead and Copper Rule

Total Coliform Rule

Occupational Safety and Health Administration Rules

The City currently purchases water indirectly from the city of Kansas City, which utilizes a combination of groundwater and surface water as a source. Surface water treatment regulations apply to this source. Kansas City uses chloramines as the residual disinfectant. The City is considered a "consecutive system" since the City purchases water from PWSD No. 2 Cass County, which purchases water from Kansas City. Regulations that apply to Kansas City, as a large system (serving greater than 100,000 population) also apply to Peculiar due to the consecutive system classification.

A. Missouri Safe Drinking Water Law

Key points of the law are presented as follows:

Statute 640.115.1--Every water system authorized to supply drinking water to the public shall file with the DNR a certified copy of the plans and surveys of the waterworks with a description of the methods of purification and of the source from which the supply of water is derived, and no source of supply shall be used without a written permit of approval from the DNR, or water dispensed to the public without first obtaining such written permit or approval.

Statute 640.115.2--Construction, extension, or alteration of a public water system shall be in accordance with the rules and regulations of the DNR.

Statute 640.120.4--The DNR may authorize variances and exemptions from state primary water regulations.

B. Missouri Safe Drinking Water Regulations

A review of state safe drinking water regulations applicable to surface water is presented as follows.

10 CSR 60-4.055 (1)(E) Disinfection Requirements:

Primary systems which use water obtained from groundwater not under the direct influence of surface water and which the department requires to disinfect and secondary public water systems do not have to meet the requirements of section (2) (CT requirements) of this rule but may be required to provide disinfection detention as deemed necessary by the department. These systems also do not have to submit reports to the department as required by 10 CSR 60-7.010(5) but must maintain the information on file at the system treatment plant or office.

10 CSR 60-7.010(5) Disinfection information must be reported within ten (10) days after the end of each month the system serves water to the public.

C. Minimum Design Standards for Missouri Community Water Systems

The DNR has prepared a set of minimum standards and guidelines for use by professional engineers in the preparation, submission, review and approval of engineering reports, plans and specifications for the design and construction of public water supply facilities. These minimum standards must be followed in order to ensure that facilities are in compliance with the Missouri Safe Drinking Water Law and Missouri Safe Drinking Water Regulations.

DNR standards and guidelines are not totally inflexible. From time to time new processes and equipment appear. The DNR states that new processes and equipment may be acceptable if they meet at least one of the following conditions: 1) they have been thoroughly tested in full scale comparable installations under competent supervision, 2) they have been thoroughly tested as pilot plant operated for a sufficient time to indicate satisfactory performance, or 3) a performance bond or other acceptable

arrangements have been made so the owners or official custodians are adequately protected financially in case of failure of the process or equipment.

An excerpt of pertinent guidelines follow:

(1) SUBMISSION OF PLANS

(1.1) Engineering Report

1.1.2. Extent of the water system(s), including--

(I) Usage rates and population per service connection based on historical data from the public water system if this data is available. If historical data is not available, the following information may be used for design purposes. Other usage criteria may also be used if adequate justification is provided by the engineer.

(a) Population per service connection for permanent residential dwelling units including houses, mobile homes, condominiums, apartments, and multiplexes should use approximately three (3.0) persons/dwelling unit;

(b) Domestic water usage for residential dwelling units excluding lawn/garden irrigation usage should be an average of eighty (80) gallons per person per calendar day.

(II) In addition to peak demand, a reasonable coordination of lawn water among homeowners may be assumed. If no other information is available the estimates in the following table may be used:

Housing Type	Sprinkler Type	Flow per House
Moderate/Middle Class	End of Hose	5 gpm
Estate	Automatic	16 gpm

(III) Peak flow (one to four hour instantaneous rates) shall be based on historical data as documented by the public water supply. If historical data is not available, the following information may be used for design purposes. Other peak flow criteria may also be used if adequate justification is provided by the engineer.

(a) Instantaneous Peak Flow = Domestic Peak Flow + Lawn/garden Irrigation Peak Flow + Commercial, Larger Users, Confined Feeding Operation;

(b) Domestic peak flow should be calculated as the greater of one (1) gallon per minute per connection or Peak = 12 (number of connections) to the 0.515 power.

(IV) Maximum day flow shall be based on historical data if this data is available from the public water system. If historical data is not available, the following information may be used for design purposes. Other maximum day flow criteria may be used if adequate justification is given by the engineer.

Maximum Day Flow = 150% of Average Daily Flow

(1.2) Supervised Program

C. Detailed Plans

(I) Owner-Supervised Program

(a) A supplier of water may apply for an owner-supervised program in lieu of submitting plans and specifications for expansion and/or modification of an existing water distribution system.

(b) A written request to the Department of Natural Resources for approval of a supervised program must include the following information:

1. An engineer-prepared report or a master plan showing the proposed waterlines over at least the next five (5) years, along with engineering rationale, including hydraulic analyses, for sizing and locating the lines. The engineering report must discuss adequacy of present water system with regard to the source, storage and existing distribution piping, discuss problems that need to be resolved (leaks, low pressures, etc), discuss fire protection need (if applicable). A priority listing of proposed improvements along with cost estimates should also be included in the engineering report;
2. A current layout map of the distribution system (standard size 24" x 36"). The map must show waterline sizes (existing and proposed), location of valves, fire hydrants and flushing devices, along with street names;
3. Adoption of a minimum pipe size for waterline replacements not otherwise shown on the master plan which will maintain a minimum pressure of twenty pounds per square inch (20 psi) under all normal operating conditions;
4. Examples of permanent records and drawings of the distribution system including lines, valve, hydrants and cleanouts;

5. Technical specifications prepared by an engineer covering construction materials, installation, and disinfection procedures in accordance with American Water Works Association standards;
6. Typical detail drawings by an engineer of special crossings, meter settings, valve settings, hydrant settings, cleanouts, thrust blockings, etc.; and
7. A brief statement about qualifications of the person responsible for construction inspection.

(8.1.1) Pressure

All water mains shall be sized in accordance with a hydraulic analysis based on flow demands and pressure requirements. The system shall be designed to maintain a minimum pressure of 35 psi at ground level at all points in the distribution system under all conditions of design flow not including fire flow. The normal working pressure in the distribution system should be approximately 60 psi.

D. More Recent Developments in Regulatory Requirements

Many changes have been introduced into the regulations governing water treatment in the last ten years and some of these are in various stages of effect at this time. The most notable items of regulation that will affect the City are as follows:

Stage 2 - Disinfection Byproducts Rule (DBPR2)

Stage 2 of the DBPR, published in January 2006 and effective March 6, 2006, further expands the scope of Stage 1 by using a locational running annual average (LRAA) to ensure total trihalomethane (TTHM) and the sum of five haloacetic acids (HAA5) compliance and requiring Initial Distribution System Evaluations (IDSE) to be performed. All community water systems adding a disinfectant other than ultraviolet light are covered by the DBPR2. Suppliers will have to perform an additional year of TTHM and HAA5 monitoring, in addition to Stage 1 requirements, as the first step in meeting the IDSE requirement of the Rule. This information, along with data from Stage 1 DBPR monitoring, was used to select new locations for Stage 2 monitoring.

To be in compliance with Stage 2 monitoring requirements, the City had to take two samples for TTHMs and HAA5s every 90 days at four locations within the distribution system. Since the City serves less than 10,000 people, the IDSE Schedule 4 applies. This means that a standard monitoring plan had to be submitted by April 1, 2008. This plan included standard monitoring which was to be finished by March 31, 2010. The City had until July 1, 2010 to submit an Initial Distribution System Evaluation

(IDSE) report for the water system. By the final deadline of October 1, 2013, the City needed to demonstrate compliance on a LRAA for TTHM and HAA5 MCLs at each location for compliance with Stage 2 DBPR monitoring.

Surface Water Treatment Rule (SWTR) - Effective on June 29, 1993. The major purpose of the rule is to control waterborne pathogens, particularly Giardia lamblia cysts and viruses that could enter public water distribution systems. Three categories of source waters were defined: surface water, ground water, and ground water under the direct influence of surface water. The rule requires additional monitoring and minimum treatment plant performance on surface supplies and supplies classified as ground water under the direct influence of surface water. Prescribed treatment techniques are used in place of testing due to the uncertain methods currently available for Giardia and Cryptosporidium identification. Summary of new requirements include:

- 0.5 NTU turbidity maximum in 95% of the required samples to be taken every 4 hours of plant run time minimum.
- Requires 99.9% (3-log) removal of Giardia and 99.99% (4-log) removal of viruses.
- Requires continuous and recording chlorine residual monitoring.

Long-Term Enhanced Surface Water Treatment Rule (LT2 Rule)) –

The LT2 Rule was published January 5, 2006 and requires public water systems that use surface water or GWUDI of surface water to monitor their water treatment influent water (source water) for *Cryptosporidum*, and/or *E. Coli*, and turbidity for the length of time based on the population served by the plant. With the current population served by the water treatment plant, the City will have to comply with Schedule 4 of the LT2 Rule Monitoring Requirements. This means the City must begin monthly monitoring for a year on October 1, 2008. This monitoring can be avoided if the water treatment plant provides 5.5 log treatment of *Cryptosporidum*.

The EPA recommends contacting labs to perform sample analysis of *Cryptosporidum*, and *E. Coli*, as well as verifying that the party in charge of turbidity measurement is approved by the State by June 2006. A sampling schedule (or intent to provide full treatment), description of sampling location, and monitoring description is required to be submitted to the EPA by January 1, 2008 (July 1, 2006). The sampling schedule and initial monitoring data can only be sent to the EPA through the LT2/Stage 2 Data Collection and Tracking System.

Lead and Copper Rule—The 1986 Safe Drinking Water Act amendments directed EPA to set regulations for both lead and copper in drinking water. The final regulations were adopted by EPA in

1991, and later adopted by reference in the CSR. This regulation applies to all community water systems, and non-community water systems that are non-transient. These water systems are required to monitor for lead and copper on a scheduled basis in the distribution system at the customer's tap. If monitoring results indicate unacceptable levels, the water system is required to initiate corrosion control treatment techniques to minimize lead and copper contamination. Action levels set by this regulation are 0.015 mg/L for lead and 1.3 mg/L for copper. The City has historically tested below the action level for both lead and copper.

Total Coliform Rule—All public water supply systems are required by state regulation 10 CSR 60-4 to disinfect all drinking water provided to the public. To evaluate the effectiveness of the disinfection method employed, all systems are required by state regulations to submit monthly water samples for total coliform testing. Total coliform testing is used as an indicator of the presence of other bacteriological contaminants. Systems can choose to have this bacteriological testing performed by DNR's microbiology laboratory or by a private certified laboratory.

Systems that fail to collect any water samples within the monthly compliance period are assessed a routine monitoring violation. Systems that have a water sample test positive are required to do three repeat samples (also called check samples). If the system fails to collect these repeat (check) samples, the system then is assessed a repeat monitoring violation. Both of these monitoring violations require the system to issue public notice by publishing the violation notice in a local newspaper of general circulation.

Systems can incur a maximum contaminant level (MCL) violation if water samples test positive for total coliform, or the system can incur an acute maximum contaminant level (acute MCL) violation if fecal coliform or *E. coli* is found. In either case, the system is required to issue public notice by notifying the public of the violation through the electronic news media (radio and television) and publishing the violation notice in a local newspaper of general circulation.

Occupational Safety and Health Administration Rules (OSHA) – Of particular interest to utility systems are the January 14, 1993 rules that pertain to Confined Spaces. 29 CFR Parts 1910 Permit Required Confined Spaces for General Industry contains requirements for practices and procedures to protect employees from the hazards of entry into permit-required confined spaces.

VI. ALTERNATE WATER SUPPLIES

The City presently purchases water from Cass County P.W.S.D. No. 2, which purchases water from Kansas City. The City has emergency interconnections with PWSD No's 10 and 7 of Cass County.

This report will examine the feasibility of purchasing water directly from a water producer in order to reduce the City's cost of water. This would avoid the wheeling fees (additional charges for utilizing an intermediate's facilities to transport water on top of the cost of water) required by purchasing water through a secondary source. The City has narrowed a list of potential water sources to Kansas City, Water District No. 1 of Johnson County, Kansas, and the Tri-County Water Authority. If the City decides to pursue a new water provider, the contract with District No. 2 requires a 1-year notice that water purchase will cease.

A. Kansas City, MO

Kansas City is the producer of the City's current source. Kansas City Water Services maintains and operates water supply, treatment, and distribution systems for 170,000 residential and business customers in Kansas City and 33 wholesale customers in the Kansas City region. Kansas City has 2,800 miles of water main in its system. Each year the City has a cost of service rate study completed that establishes the new wholesale rate to become effective on May 1st. The costs of administration, larger water mains, pumping facilities, storage facilities, supply and treatment works are shared with wholesale customers.

In April 2014 voters in Kansas City voted to approve $500 million dollars of revenue bond authority in order to pay for water capital improvement projects for the next 7-10 years. Kansas City has a goal to replace approximate 1% of its water mains, or 28 miles, every year under this plan. At this time most of the planned replacement mains are 12" in size or smaller in neighborhoods.

This is the initial source for the City's current potable water supply. Kansas City has a supply capacity of 240 million gallons per day (MGD) and produces an average of 112 MGD. Eighty percent of its raw water comes from the Missouri River with the other 20% produced from alluvial wells near the river intake. Kansas City utilizes the following treatment processes:

- Iron removal through permanganate addition and sequestration
- Rapid Mixing
- Softening via lime and soda ash addition
- Disinfection utilizing gaseous chlorine
- Chloramines for disinfection by-product control
- Filtration
- Odor and taste control via powdered activated carbon
- Fluoridation
- Particulate removal through coagulation, sedimentation, and flocculation

Kansas City has two wholesale water rates: unrestricted and restricted. The restricted rate is

approximately 5 cents per 1,000 gallons lower than the unrestricted rate. Qualification for the two rates depends upon the wholesale customers' current storage facilities volume and whether or not the supply is a sole supply or a partial supply. The City of Peculiar, if purchasing a sole supply, has enough storage capacity to qualify for the restricted rate. The restricted rate is $2.73 per 1,000 gallons effective May1, 2014. Kansas City also charges repumping fees depending on where the delivery point is within the KC system. The repump charges effective May 1, 2014 are $0.25 and $0.35 per 1,000 gallons for the first and second repump, respectively. Kansas City has a 24-inch diameter transmission main that extends south of the intersection of Highway J and Hubach Hill Road to the Raymore elevated storage tank. According to information from Kelly Finn with Kansas City Water Services, the Raymore tank operates at a minimum hydraulic grade of 1226 feet. When Raymore constructed the elevated tank, Kansas City also reserved capacity in the Raymore elevated tank for future wholesale customers.

To reach a connection point adjacent to the Raymore elevated tank would require approximately 5 miles of main be installed north of the City along Route J. On the south end of the new service transmission main the City system can be connected at two locations, at a point on Highway J, just east of I-49 to an existing waterline at Branic Road. The second connection point would connect to a proposed main that will be relocated in preparation for the new 211th Street interchange.

Table VI.1 has a cost opinion for this water supply option. This opinion also includes a capacity charge of approximately $820,000 for 1.0 MGD of capacity from Kansas City. This is based on the original construction cost of the transmission main and Kansas City's share of the Raymore elevated tank.

Table VI.1: Cost Opinion on Kansas City Supply

Item No.	Description	Quantity	Units	Unit Price	Cost
1	12" PVC	26,200	LF	$55	$1,441,000
2	Connections	4	EA	$5,000	$20,000
3	Valves	14	EA	$3,000	$42,000
4	Road Crossings	14	EA	$10,000	$140,000
5	Master Meter	1	EA	$75,000	$75,000
6	Air Release Valves	3	EA	$2,000	$6,000
7	Highway J Crossing	1	EA	$20,000	$20,000
8	Driveway Crossing	26	EA	$2,000	$52,000
9	Parking Lot Crossing	1	LS	$10,000	$10,000
10	Stream Crossing	190	FT	$500	$95,000
	(Directional Bore and Case)				
11	Flushing Hydrant	5	EA	$3,750	$18,750
12	SCADA Modifications	1	LS	$5,000	$5,000
13	Bond/Insurance/Mobilization	1	LS	$60,000	$60,000
14	Connection Fee	1	LS	$820,000	$820,000
			Construction Cost		$2,804,750
			Contingency	15%	$420,713
			Engineering, Legal, & Admin.	10%	$280,475.
			Construction Observation	4.5%	$126,214
			Survey	5.0%	$140,238
			Total		$3,772,389

If the City chooses to pursue a direct water supply from Kansas City, we recommend having an alternate bid for a 16-inch transmission main.

B. Water District No. 1 of Johnson County, KS

Water District No 1 of Johnson County Kansas (WaterOne) is located in eastern Johnson County. WaterOne has a supply capacity of 200 million gallons per day (MGD) and produces an average of 68 MGD. WaterOne utilizes water from the Kansas and Missouri rivers as well as alluvial wells adjacent to these rivers. WaterOne utilizes the following treatment processes:

- Aeration
- Rapid Mixing
- Softening via lime and soda ash addition
- Disinfection utilizing chlorine dioxide
- Chloramines for disinfection by-product control

- Filtration
- Fluoridation
- Alum and polymer addition
- Carbon Dioxide for pH balance
- Particulate removal through coagulation, sedimentation, and flocculation

In preliminary discussions between WaterOne and the City, a monthly service charge of $139.30 and a rate of $3.07 rate per 1,000 gallons were discussed. The City would need to get a guarantee from WaterOne of service arability equal to WaterOne's existing customers. The City would need to install a waterline (approximately 11 miles) from the northwest portion of the City, north and west to near the intersection of 175th St. and Kenneth Rd. in Johnson County. Table VI.2 has a cost opinion for this option.

Table VI.2: Cost Opinion on WaterOne Supply

Item No.	Description	Quantity	Units	Unit Price	Cost
1	12" PVC	58,000	LF	$55	$3,190,000
2	Connections	2	EA	$5,000	$10,000
3	Valves	24	EA	$3,000	$72,000
4	Road Crossings	15	EA	$10,000	$150,000
5	Pump Station	2	EA	$200,000	$400,000
6	Master Meter	1	EA	$75,000	$75,000
7	Air Release Valves	6	EA	$2,000	$12,000
8	Highway Y Crossing	1	EA	$25,000	$25,000
9	Highway D Crossing	1	EA	$25,000	$25,000
10	Stream Crossing	100	FT	$500	$50,000
11	Stream Crossing	100	FT	$500	$50,000
12	Stream Crossing	90	FT	$500	$45,000
13	Ditch Crossing	2	EA	$5,000	$10,000
14	Railroad Crossing	1	LS	$50,000	$50,000
15	Driveway Crossing	62	EA	$2,000	$124,000
16	Flushing Hydrant	15	EA	$3,750	$56,250
17	SCADA Modifications	1	LS	$25,000	$25,000
18	Bond/Insurance/Mobilization	1	LS	$130,000	$130,000
			Construction Cost		$4,499,250
			Contingency	15%	$674,888
			Engineering, Legal, & Admin.	10%	$449,925
			Construction Observation	4.5%	$202,466
			Survey	5.0%	$224,963
			Total		$6,051,491

C. Tri-County Water Authority

Tri-County Water Authority (TCWA) has a supply capacity of 10.5 MGD and produces an average of 4.4 MGD. TCWA uses ground water from alluvial wells located south of the Missouri River, outside of Atherton, Missouri. Originally all the wells were vertical wells, but now a significant portion of the supply comes from a horizontal collector well. This well is closer to the Missouri River bank and is likely classified as groundwater under the direct influence of surface water (GWUDI). TCWA utilizes the following treatment processes:

- Iron removal through aeration
- Rapid Mixing
- Softening via lime and soda ash addition
- Disinfection utilizing gaseous chlorine
- Chloramines for disinfection by-product control
- Filtration
- Particulate removal through coagulation and sedimentation

All existing capacity south of Colbern Road is under contract with current members. In 2010, TCWA began investigating serving entities west of their current service area. Interested potential customers at that time included PWSD No. 1 Jackson County (Grandview) and the City of Belton. This project has not moved forward at this time. The City could come to an agreement with an existing entity to purchase a portion of their water. TCWA has two water rate structues. The first is for all of the TCWA's capacity prior to 2005 and it charges $1.87 per 1,000 gallons for water costs and $2.43 per 1,000 gallons for fixed costs. For capacity created after 2005, the water costs are the same; however, the fixed costs fluctuate. An entity is required to pay a percentage of any debt service needed to fund the capacity construction equal to the percentage of that capacity purchased. This fixed cost will be divided equally over 12 months and is not dependent on water purchased. With no current capacity availaibe, the City would have to fund required construction costs within TCWA or find themselves partners to team with for the construction. Based upon previous discussions with TCWA personnel, a connection fee of approximately $3.5 million per 1 MGD of capacity is a reasonable assumption of what would be assessed to new customers. Currently, TCWA has facilitates near the intersection of E. 215th St. and Ore Road, approximately 7 miles east of the City. Table VI.3 has a cost opinion for this option. This opinion also assumes a connection charge of $3,500,000.

Table VI.3: Cost Opinion on TCWA Supply

Item No.	Description	Quantity	Units	Unit Price	Cost
1	12" PVC	35,800	LF	$55	$1,969,000
2	Connections	3	EA	$5,000	$15,000
3	Valves	17	EA	$3,000	$51,000
4	Road Crossings	11	EA	$10,000	$110,000
5	Pump Station	1	EA	$200,000	$200,000
6	Master Meter	1	EA	$75,000	$75,000
7	Driveway Crossings	36	EA	$2,000	$72,000
8	Highway 291 Crossing	1	LS	$50,000	$50,000
9	Railroad Crossing	1	LS	$50,000	$50,000
10	Air Release Valves	4	EA	$2,000	$8,000
11	Flushing Hydrant	10	EA	$3,750	$37,500
12	Stream Crossing	190	FT	$500	$95,000
	(Directional Bore and Case)				
13	SCADA Modifications	1	LS	$5,000	$5,000
14	Bond/Insurance/Mobilization	1	LS	$85,000	$85,000
15	Connection Fee	1	LS	$3,500,000	$3,500,000
			Construction Cost		$6,322,500
			Contingency	15%	$948,375
			Engineering, Legal, & Admin.	10%	$632,250
			Construction Observation	4.5%	$284,513
			Survey	5.0%	$316,125
			Total		$8,503,763

VII. WATER SUPPLY COMPARISON AND RECOMMENDATIONS

Four different suppliers were evaluated to provide potable water to the City. The evaluation consisted of construction costs involved in each alternate, water rates, future costs, and ease of construction. The four Suppliers are listed below:

Cass No. 2—Existing facilities on 211th and along Peculiar Drive. Supplier purchases water from KCMO (Section III.A)

KCMO—Connection at Raymore elevated tank on Highway J, south of Hubach Hill Rd., produces City's existing supply (Section VI.A)

WaterOne—Connection near the intersection of 175th St. and Kenneth Rd in Johnson County, Kansas (Section VI.B)

TCWA— Connection near the intersection of E. 215th St. and Ore Rd (Section VI.C)

The advantage and disadvantage of each alternate is analyzed in Section VII.B. In order to help

distinguish between the alternates, a decision matrix was made to prioritize the advantages and disadvantages of each supplier.

A. Decision Matrix:

The following decision matrix was created in order to aid in selecting the appropriate supplier for recommendation. Points are then awarded to each supplier and the supplier with the most points is the recommended solution. Table VII.1 shows a breakdown of the matrix.

Table VII.1: Supplier Decision Matrix

Item	Consideration	Percent
1	20-Year Life Cycle Analysis	20
2	Water Rates	25
3	Capital Cost	20
4	Maintenance (Time) Requirements	10
5	Environmental	10
6	Accessibility	5
7	ROW Acquisition	5
8	Utility Consideration	5
		100

B. Benefits and Deficiencies of Each Alternate:

1. *Cass No. 2*

Benefits:

- Lowest capital costs
- Least amount of new waterline required
- No new right of way or easements required
- Most waterlines under the City's responsibility are within City Limits.
- Land Disturbance permit not required for supply improvement

Deficiencies:

- Operation and Maintenance Fee in addition to water costs
- Cost for 15% water loss is required by contract
- If Cass 2 replaces/upgrades internal supply mains they may assess the City a portion of the cost as shared facilities, especially if additional flow is made available.

2. Kansas City, MO

Benefits:

- Lowest water rate

- Significant replacement or repairs on the new supply main are unlikely within 30 years or more after construction
- Lower capital costs than the WaterOne and TCWA construction
- Less right-of-way acquisition and easement requirements than WaterOne and TCWA options

Deficiencies:

- Capital costs higher than maintaining Cass No. 2 supply
- Greater chance of right-of-way, easement, and utility conflicts than Cass No. 2
- Larger area of disturbed land for construction than Cass No. 2
- City staff will have to monitor approximately 2.7 miles of waterline outside of City limits

3. WaterOne

Benefits:

- No connection fee
- Lower water rates than Cass No. 2 and TCWA

Deficiencies:

- This supply requires the most supply main construction.
- Largest chance of right-of-way, easement, and utility conflicts
- Inter-state design regulation differences
- City staff will have to monitor approximately 11 miles of waterline outside of City limits
- Larger capital costs that Cass No. 2 or Kansas City
- Largest area of disturbed land for construction

4. Tri-County Water Authority

Benefits:

- City may become a voting member of the Authority

Deficiencies:

- This supply is the most expensive.
- Largest connection fee
- Higher water rates than Kansas City and WaterOne.
- City staff will have to monitor approximately 7 miles of waterline outside of City limits
- Greater chance of right-of-way, easement, and utility conflicts than Cass No. 2 or Kansas City
- Larger area of disturbed land for construction than Cass No. 2 or Kansas City
- Second highest water rate

C. Weighted Decision Matrix for Each Option:

Below is a ranking of each supply based on the categories selected for this study. Each alternate with the "best" consideration for each category is awarded full points. Every other alternate is a percentage based on a comparison against the top ranked.

Table VII.2 Weighted Decision Matrix

Item	Consideration	Percent	Cass No. 2	KCMO	WaterOne	TCWA
1	20-Year Life Cycle Analysis	20	15	20	17	18
2	Water Rates	25	10	25	24	14
3	Capital Cost	20	20	7	5	3
4	Minimizing maintenance time	10	8	10	5	7
5	Environmental	10	10	8	4	6
6	Accessibility	5	5	4	2	3
7	ROW Acquisition	5	5	4	2	3
8	Utility Consideration	5	5	4	2	3
		100	78	82	61	57

The Kansas City, Missouri source is the high ranked supply based upon the results of the weighted decision matrix. This supply has the lowest water rates and the lowest capital costs of any of the three new suppliers. As water demands grow within the City and Cass No. 2, waterline improvements within Cass No. 2 necessary to feed water to the City are likely to be required. Associated costs for these improvements are likely to be shared with the City. A direct supply from Kansas City requires a one-time connection fee for construction of the existing transmission main. Future KCMO system improvements, however, will be paid for within the Kansas City rates, which also would be added to the Cass No. 2 rate, along with a 15% increase for water losses, if the City maintained its current water supply.

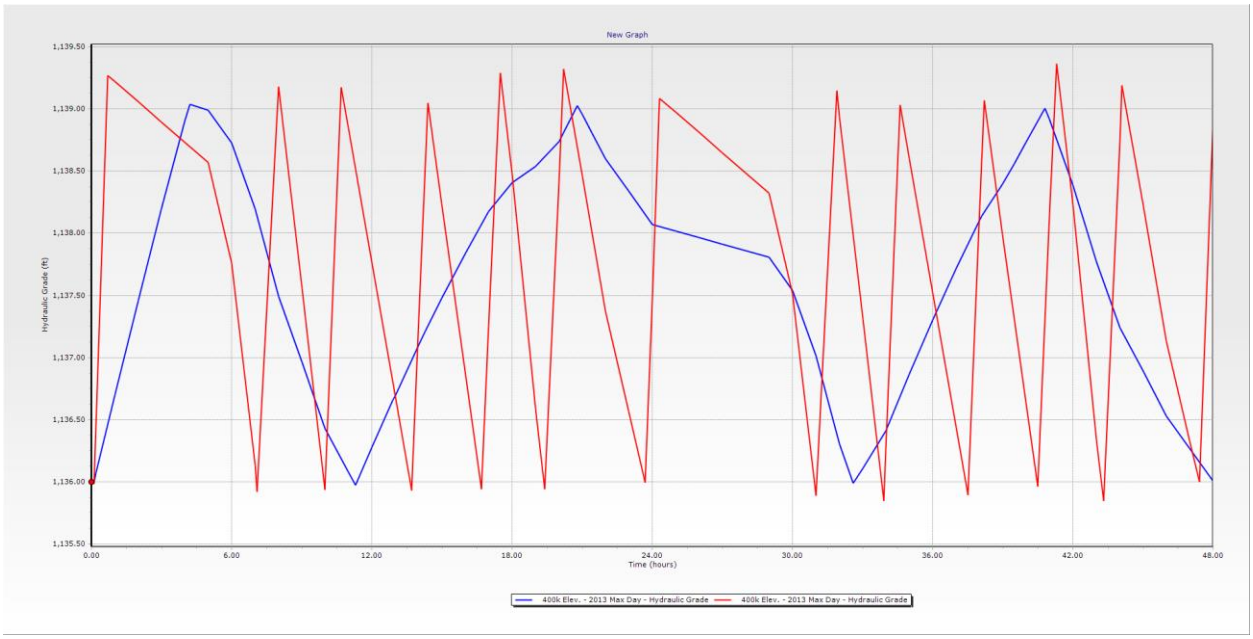
D. Kansas City, MO Hydraulics

Hydraulic analyses were performed for the same 18 scenarios identified in Section IV. To facilitate the water supply entering from a different location within the City's distribution system, check valves and gate valves forming the four pressure zones were considered open or removed. Additionally, as there was no dedicated line to the ground storage tank, it was valved off for these trials. This allowed the City to operate as one large pressure zone. Table VII.3 contains the hydraulic results for utilizing the KCMO supply and none of the improvements from Section IX.

Table VII.3 – Hydraulic Results without Improvements and KCMO Supply			
Scenario	Low Pressure (psi)	Average Pressure (psi)	High Pressure (psi)
Year 2013			
• ADF	28.1	62.9	99.5
• MDF	28.0	62.8	99.4
• PHF	27.8	62.2	99.2
Year 2018			
• ADF	28.1	62.9	99.5
• MDF	28.0	62.7	99.4
• PHF	27.7	62.1	99.1
Year 2033			
• ADF	28.0	62.8	99.4
• MDF	27.9	62.6	99.3
• PHF	27.4	61.7	98.8

The only areas that did not meet the 35 psi goal were along the 12-inch transmission main from the KCMO supply. Without these two locations, the lowest pressure in the system would increase approximately 14 to 21 psi utilizing KCMO and one pressure zone. The average pressure would increase approximately 2 to 4 with this scenario; however, the highest pressure would drop approximately 15 to 19 psi. Figure VII.1 shows the hydraulic grade within the elevated storage while utilizing the existing (blue) and KCMO (red) supplies at 2013 demands.

Figure VII.1: Elevated Storage Tank Hydraulic Grades



With the entire system receiving flow and pressure from one source, the tank drains more rapidly, however, due to the pressure gradient from the Kansas City source, the City's tank also is replenished in much less time. Table VII.4 contains the modeling results for the KCMO supply with the improvements from Section IX.

Table VII.4 – Hydraulic Results with Improvements and KCMO Supply			
Scenario	Low Pressure (psi)	Average Pressure (psi)	High Pressure (psi)
Year 2013			
• ADF	28.1	62.9	99.5
• MDF	28.0	62.8	99.4
• PHF	27.8	62.5	99.2
Year 2018			
• ADF	28.1	62.8	99.5
• MDF	28.0	62.8	99.4
• PHF	27.8	62.4	99.1
Year 2033			
• ADF	28.0	62.8	99.4
• MDF	27.9	62.7	99.3
• PHF	27.5	62.1	98.9

The improvements did not make a large change on the low, average, and high pressures within the distribution system. With this water supply, the improvement to install a larger diameter waterline from Master Meter 1 can be eliminated. The rest of the improvements in Section IX should still be pursued to eliminate reduce water loss from deficient pipes and increase water quality by system looping.

Table VII.5 estimates rates and future water costs from the District and KCMO based upon the following assumptions:

- $3,772,389 SRF Loan as described in Section XI below
- Water rate increases of 5% per year
- District O & M rate increases of 3% per year
- 1 repump charge from KCMO

Table VII.5 – Rate and Water Purchase Cost Opinions for future Water Suppliers

Source	Parameters	Year 2018	Year 2033
Cass PWSD#2			
	Rate per 1,000 gallons* (Effective 5/1 ea. yr)	$5.57	$ 10.63
	Assumed Increase	5%/3%	5%/3%
	Cost of Water Purchased	$ 581,248	$ 1,491,786
Kansas City			
	Rate per 1,000 gallons** (Effective 5/1 ea. yr)	$ 3.31	$6.89
	Repumping fee per 1,000 gallons	$ 0.30	$0.63
	Assumed Increase	5.0%	5.0%
	Cost of Water Purchased	$ 377,416	$ 1,055,996
	Loan Repayment	$ 241,988	$ 241,988
	Total	$ 619,404	$ 1,297,984

*Water rate from Cass 2 consists of three components: Water cost from Kansas City, Cass 2 O&M cost, and Cass 2 debt service on shared facilities per Water Purchase Agreement (Annual rate increase is assumed at 5% for KC rate and 3% for O&M)
**Includes Kansas City as a direct water wholesaler at their wholesale restricted rate plus 1 repump charge (Annual rate increase is assumed at 5%)

VIII. Historical Operating & Maintenance Costs

The City prepares an annual budget and maintains records of revenues and expenses. A summary of the City's water department finances for the last two years is included in Table VIII.I.

Table VIII.1: Summary of Revenues and Expenses

	2011	2012	2013
Beginning Balance	$1,266,286.79	$1,161,548.79	$1,236,239.00
Revenues			
Revenue from water sales			
Water Operating Revenues	$744,362.00	$798,257.36	$922,402.00
Water Connection Fees	$1,900.00	$0.00	$1,600.00
Non-Operating Revenue			
Interest Income	$69,500.00	$58,500.00	$62,769.00
Penalties	$31,000.00	$25,000.00	$0.00
Gain on sale of asset			$846.00
Tower Rental	$20,462.00	$21,037.34	$21,668.00
G.O. Principal	$111,000.00	$94,000.00	$51,384.00
Total Revenue	$978,224.00	$996,794.70	$1,060,669.00
Expenses			
Cost of Sales			

Cost of Water Purchased	$304,171.30	$423,765.83	$419,630.00
Pump/Line Maintenance	$5,571.00	$10,179.74	$22,718.00
Subtotal	$309,742.30	$433,945.57	$442,348.00
Operating Expenses			
Salaries/Wages	$170,371.00	$162,440.06	$166,429.00
Benefits/Payroll Taxes	$66,343.00	$62,725.77	$84,781.00
Workers Compensation	$4,000.00	$0.00	$4,250.00
Uniforms	$1,192.00	$865.85	$1,238.00
Travel and Training	$1,648.00	$2,153.32	$934.00
Employee Testing	$0.00	$0.00	$353.00
Office Supplies	$14,861.00	$16,181.97	$4,200.00
Dues and Subscriptions	$1,137.00	$2,006.94	$2,136.00
Postage	$4,985.00	$4,755.80	$3,363.00
Bankcard Fee	$0.00	$0.00	$8,568.00
Office machines	$2,147.00	$3,835.73	$4,150.00
Public hearing	$0.00	$0.00	$344.00
Audit	$3,000.00	$0.00	$3,075.00
Accounting	$13,616.00	$19,614.09	$10,446.00
Legal	$14,179.00	$15,827.59	$24,684.00
Litigation	$0.00	$3,052.56	$4,505.00
Insurance	$0.00	$7,949.41	$6,147.00
Engineering	$5,500.00	$9,351.42	$6,086.00
Contractual Payroll	$0.00	$0.00	$1,147.00
Contractual Economic Development	$0.00	$0.00	$0.00
Contractual - Water	$1,465.00	$2,397.00	$12,530.00
IT Maintenance	$9,661.00	$16,285.98	$7,512.00
Hardware Costs	$0.00	$0.00	$1,915.00
Software Costs	$0.00	$0.00	$4,904.00
Communications	$0.00	$4,832.14	$0.00
Telephone	$3,000.00	$0.00	$1,398.00
Cell Phones	$1,394.00	$0.00	$0.00
Shop Supplies	$0.00	$0.00	$0.00
Administration Building	$6,640.00	$1,093.58	$13,238.00
Public Works Building	$5,860.00	$0.00	$4,240.00
Vehicle Insurance	$1,000.00	$0.00	$2,100.00
Vehicle Maintenance	$1,171.00	$4,963.03	$1,752.00
Fuel and Oil	$6,428.00	$5,630.82	$5,170.00
Equipment Maintenance	$0.00	$2,936.09	$0.00
Tower Maintenance	$4,113.00	$0.00	$37.00
Meter Maintenance	$1,944.00	$1,773.18	$6,578.00
Utilities	$5,936.00	$11,250.21	$6,023.00

Equipment purchased	$0.00	$0.00	$0.00
Capital Purchases	$19,513.00	$4,059.55	$3,680.00
CIP Water	$23,938.00	$0.00	$0.00
Existing Bond Principal Payment	$172,500.00	$175,000.00	$229,313.00
Interest	$122,000.00	$120,500.00	$128,199.00
Bond Fees	$6,500.00	$2,500.00	$10,859.00
Transfers Out	$0.00	$13,500.00	$193,105.00
Amortization			$1,563.00
Subtotal	**$696,042.00**	**$677,482.09**	**$970,952.00**
Total Expenses	**$1,082,962.00**	**$1,111,427.66**	**$1,413,300.00**
Net Revenue	**($104,738.00)**	**($114,632.96)**	**($352,631.00)**
Ending Fund Balance	**$1,161,548.79**	**$1,046,915.83**	**$883,608.00**

Table VIII.2 shows the breakdown of current City water rates. According to the "Water Rate Survey Results 2012" published by the Missouri Rural Water Association, the average Missouri city customer was charged $32.14 for 5,000 gallons. The range of survey results was from $9.50 to $93.78 for 5,000 gallons. The average minimum charge for cities was $13.56 per month, with a range from $2.75 to $46.12 per month.

Table VIII.2. Current Water Rates

Unit	City of Peculiar
Surcharge (Monthly Minimum Charge) 0 to 1,000 gallons	$17.21
Each additional 1,000 gallons	$12.77
Primacy fee ($3 annual fee/meter to DNR)	$0.25
Monthly bill for 5,000 gallons	$68.54

The City's average monthly bill is greater than the average for respondents to the Missouri Rural Water Association survey. Government funding agencies consider a monthly average water bills that exceed 2% of the median household income as an eligibility factor in determining qualifications for grant funding. The US Census Bureau lists a median household income of $62,654 for the City (listed for the year 2010). Based on the City's income level, 2% of the median household income would equal $104.42 per month. This indicates that the City's water rates are not excessive.

IX. Recommended Improvements:

After reviewing the system with the updated hydraulic model and based upon consultation with operating and management staff, several key improvements were selected. Each item is ranked in priority order. See enclosed System Map for all the improvements listed. Opinions of probable construction cost

are included in Section X.

A. Storage Requirements:

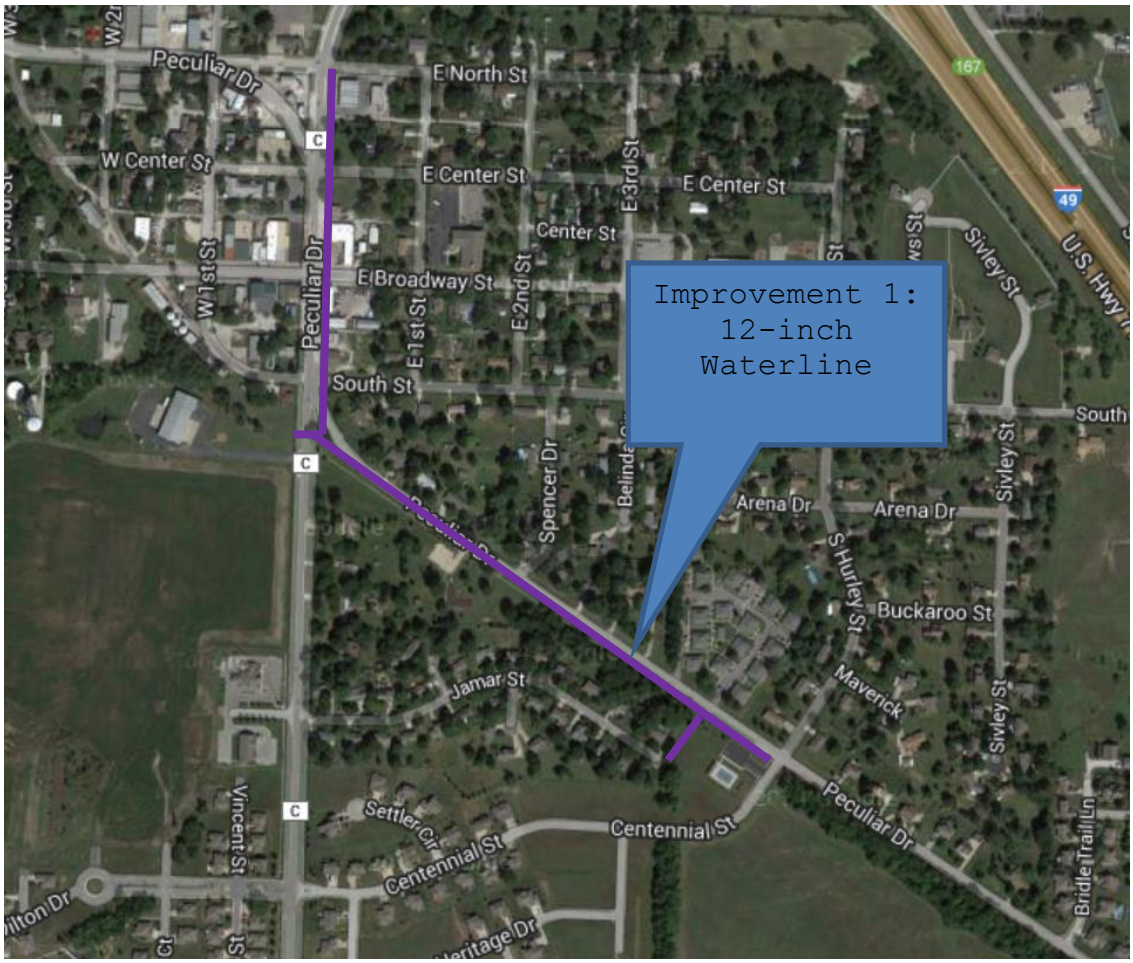
The current storage capacity of the City meets the DNR requirements; however, we recommend the City install passive mixing systems into both storage tanks. Mixing systems include separate inlets and outlets while often utilizing a single manifold pipe within a storage tank. Typically, a passive mixing system will utilize the pressure required to fill the tank to deliver water further away from where the inlet pipe penetrates the tank shell. The separate outlet will then be located apart from the inlet to avoid short-circuiting in the tank (to ensure the last water into the tank is not the first water out of the tank). Mixing systems reduce spikes is disinfection byproducts, disinfectant residual loss, and water age.

Currently, water is fed into the ground storage tank and then repumped into the elevated storage tank. The pumping facilities do not have emergency back-up power and thus the installation of a generator at this location is recommended. The generator should be connected into the City's SCADA system and include an automatic transfer switch. These options will allow the generator to turn on automatically and switch the pumps power source from its existing electrical service to generator.

B. Distribution Improvements:

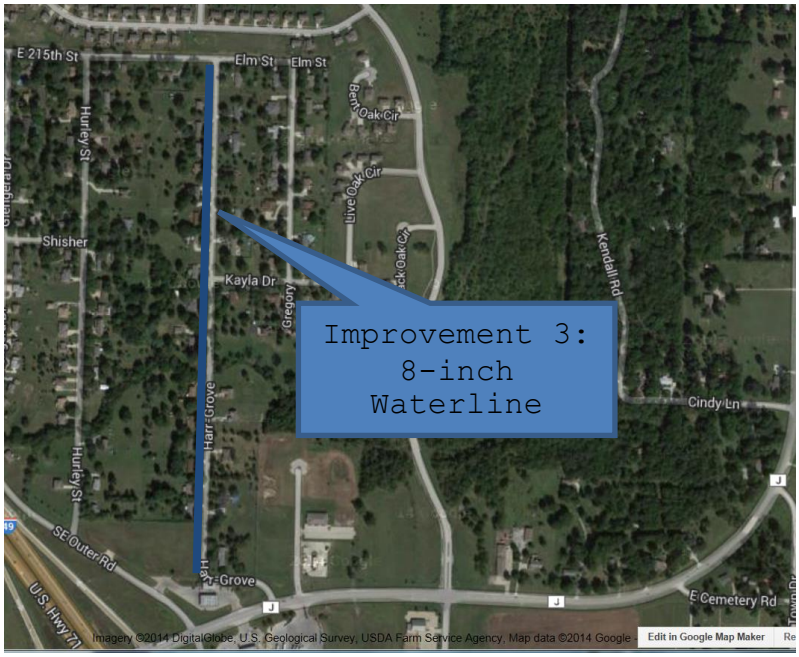
A list of recommended distribution improvements (listed in order of priority) is shown below:

1. Install an 12-inch waterline along Peculiar Drive between the existing 12-inch at the intersection of Peculiar Drive and S. Hurley St. and the waterlines at the intersection of Main St. and E. North Rd., replacing the existing waterlines. This will loop part of the distribution system and replace smaller diameter waterlines.



2. Install 8-inch waterlines within the Spencer Addition along Clairmont St, Soryl Ave, and Hillcrest Drive. These will replace smaller diameter lines and relocate potable water lines greater than 10' from existing sewer lines as required by the DNR.

3. Install an 8-inch waterline along Harr-Grove Rd between Elm St. and Highway J, replacing the existing smaller diameter waterlines that are prone to breaks.

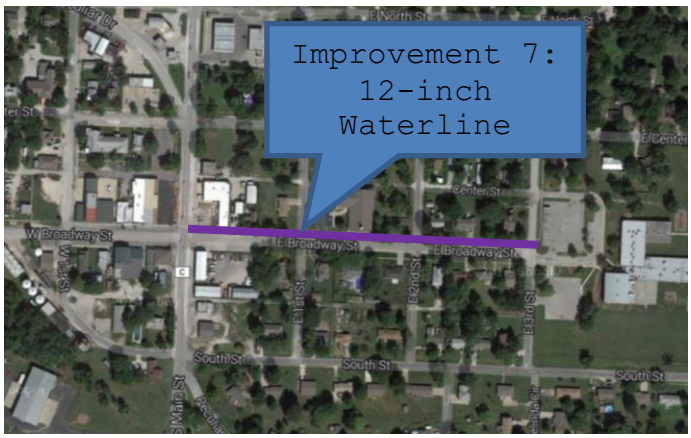


4. Install an 8-inch waterline along Elm St. between Gregory and School Rd, replacing the existing smaller diameter waterlines that are prone to breaks.

5. Install an 8-inch waterline along Gregory between Elm St. and Harr Grove Rd, replacing the existing smaller diameter waterlines that are prone to breaks.

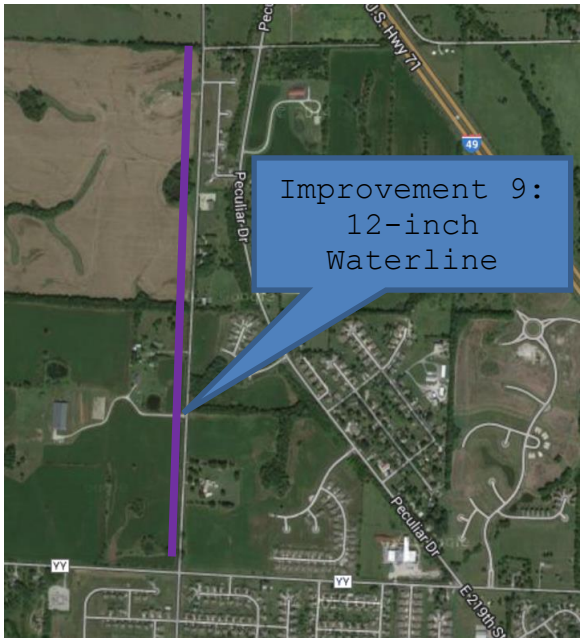
6. Install a 12-inch waterline along Peculiar Dr. between Maple Ave. and Willow St., replacing the existing smaller diameter waterlines and increasing flow to the subdivisions in the north area of Pressure Zone 3.

7. Install a 12-inch waterline on along E. Broadway St between E. 3rd St. and N. Main St., replacing the existing smaller diameter waterline.



8. Install a 12-inch waterline along E. 3rd St. between E. South St. and Legend Ln., replacing the existing smaller diameter waterline.

9. Install a 12-inch waterline along Harper Rd. between Master Meter No. 1 and the existing 12-inch waterline north of State Route YY. This waterline will increase the pressures in Pressure Zone 1 so that the minimum available is above 35 psi. The pressure loss in the supply line will decrease to 19 psi from 38 psi. This improvement is not necessary if the City opts for the direct KCMO water supply source.



All improvements are also shown on the enclosed distribution system map.

Per the DNR *Minimum Design Standards for Missouri Community Water Systems* effective December 10, 2013, Section 8.1.4c states "In order to provide increased reliability of service and reduce head loss, dead ends shall be minimized by making appropriate tie-ins whenever practical."

The following improvements will increase system looping and should be made as City funds allow or when other projects occur in the area.

10. Looping Improvements to remove dead-end lines from distribution system and improve water loss:

a. 1st St. south of Elm St. – 8" Loop

b. Cindy Lane, west of Highway J –8" Loop

c. Centennial Farms as subdivision grows (Centennial Circle, Pioneer Dr. and Legacy Drive) – 8" Loop

d. Alley south of W. Broadway St. and west of N. Main St. – 8" Loop

e. Alley north of W. Broadway St. and west of N. Main St. – 8" Loop

f. W. 2nd St. , north of W. Center St. – 6” Loop

g. E. 2nd St., north of E. Broadway St. – 6” Loop

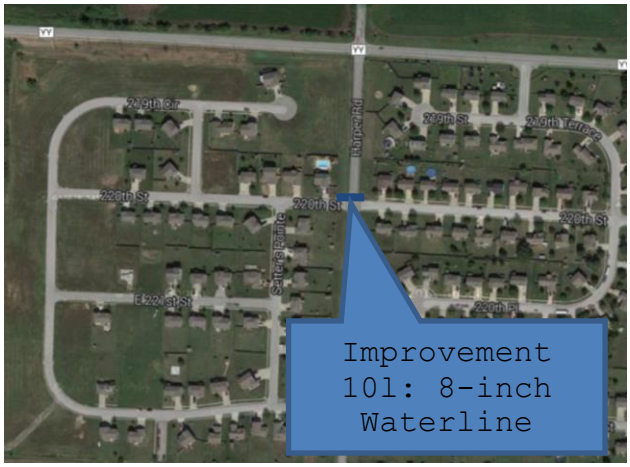
h. W. 2nd St. , north of W. Broadway St. – 6” Loop

i. Cross W. North St. at W. 1st St. – 6” Loop

j. Cross Schug Ave. to 6” waterline, south of Summerskill Rd – 8” Loop

k. Cross State Route YY at Quail Ridge Rd – 8” Loop

l. 220th St, across S. Harper Rd – 8" Loop



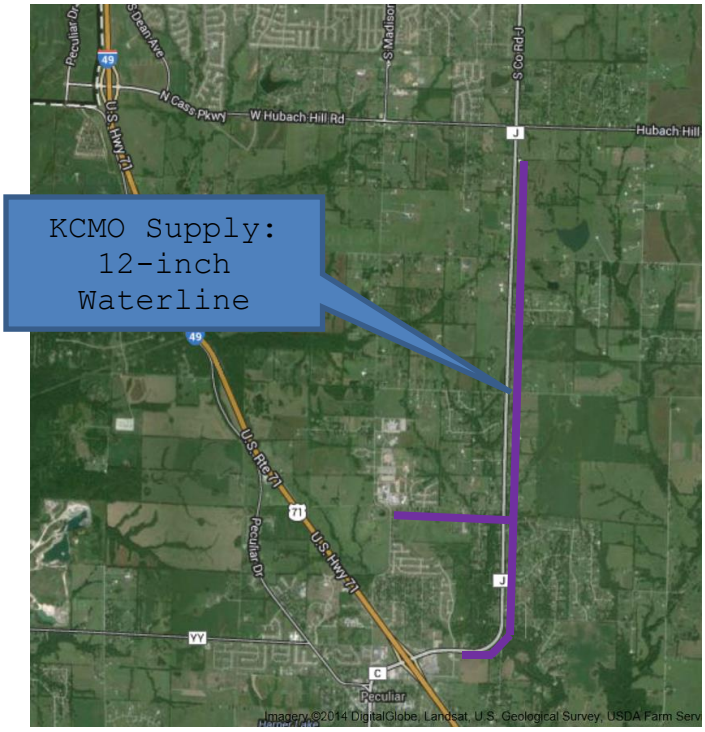
m. Cross S. Harper Rd north of State Route YY at existing 2" waterline – 6" Loop

Cost opinions for these improvements are located in Appendix C.

None of the waterline improvements will increase the operating and maintenance costs for the City. Many of them will reduce the line breaks and water loss experienced within the City and may thus lower water purchase costs and repair costs. Distribution system water quality will be enhanced by looping dead end mains.

C. Supply Improvement:

Based upon discussions the City had with potential water suppliers, the direct KCMO source is the best long term option for the City. This will provide the City with a reliable source of water for the foreseeable future and remove the potential for being charged to replace and upgrade shared facilities within the Cass PWSD No. 2 system. If Kansas City makes internal improvements to facilities that serve the wholesale customers, the cost is shared by all customers of the system. Changing water supply supplier from Cass 2 to KCMO (direct) should not increase the City's operating and maintenance budget.



D. Emergency Interconnect:

Currently, the City has two emergency connections to water suppliers (Cass County PWSD No. 10 and No. 7). If the City connects directly to KCMO, the City should maintain its connections with Cass County PWSD No. 2 and begin negotiations on an emergency supply contract. This would be to the mutual benefit of both utilities.

E. Valves and Flushing Hydrants:

Currently the City has many water mains that cannot be isolated during main breaks or other emergencies. The enclosed Improvement Map details where additional valves should be installed as the City can. The map also indicates a few places where additional fire hydrants should be installed to allow areas to be flushed. These are also improvements that should be made as City funds allow, or when other projects occur in the area.

F. Security

Currently the altitude valve located at the ground storage tank and elevated storage tank site is located outside of the fencing, near the access road. To increase security, the valve can be relocated to a site that is fenced-in or where a fence can be added.

Unauthorized entry alarms at the master meter vaults currently only alert Cass PWSD No. 2. With SCADA modifications, these alarms could be added to the City's SCADA system, as well as an

unauthorized entry alarm at the City's pump station.

X. Opinions of Probable Cost

A summary of the opinions of cost for the system improvements outlined in Section IX (except looping improvements) is shown below in Table X.1. These recommended improvements have been prioritized according to the hydraulic analyses in Section IV. As development occurs, the timing of all or part of these improvements may be altered according to system requirements. A detailed opinion of probable cost for each improvement is included in Appendix C of this report.

Table X.1 - Cost Opinion of Recommended Improvements

Improvement	**Probably Cost**
Supply Improvement	$3,772,389
Improvement 1	$640,393
Improvement 2	$369,941
Improvement 3	$292,059
Improvement 4	$261,482
Improvement 5	$184,248
Improvement 6	$452,156
Improvement 7	$184,046
Improvement 8	$278,154
Tank Mixing Systems (2)	$100,000
Emergency Generator	$35,000
Total	$6,569,868

XI Funding Options

USDA – Rural Development

Rural Development Water and Wastewater loan and grant funds may be used to construct, enlarge, extend, or improve water and waste water systems in communities with a population of 10,000 or less. Funds are available to public entities such as municipalities, counties, special-purpose districts and Indian tribes. In addition, funds may be made available to corporations operated on a not-for-profit basis. Priority is given to public entities in areas with less than 5,500 population to restore a deteriorating water supply, or to improve, enlarge, or modify a water facility or inadequate waste facility. Also, preference is given for projects that merge small utilities and projects serving low-income communities. Eligibility for grant and loan funding is based on median household income (MHI), project costs and current rates.

Rural Development offers up to 75 percent grant funds in combination with loan funds for entities that qualify. Interest rates depend upon the MHI of the project area. These are market rate, intermediate rate, or poverty rate. The 2000 median household income (MHI) for Peculiar was $44,768 according to U.S. Census Bureau information. RD is still using 2000 MHI figures in funding determinations. Since the State MHI exceeded the State Amended 2000 census figure of $39,043, the City would only be eligible for 100% loan, at the current market interest rate of 4.375%. When RD adopts the 2010 data, the City's eligibility will not improve (City 2010 MHI $62,654 to State's 2010 MHI of $47,333). The 33-year loan amortization, with first two years interest only, results in lower annual payments when compared to other bond financing options. Security for a RD loan is normally provided by a revenue bond passed by a simple majority of votes cast.

State Revolving Fund and Rural Water Grant Program

This program is available through the DNR for both water and wastewater projects. The market interest rate is subsidized and the loan term is limited to a maximum of 20 years. Applicants are scored based on need. The annual application deadline is generally November 15th. Treatment and distribution projects are eligible, but reservoir projects are not. The current SRF drinking water loan fund interest rate is approximately 2.5% with fees included. Security for an SRF loan is also provided by voter approved revenue bonds. The City is currently on the list for this funding source for the direct KCMO source project (See Appendix D). City will need to advertise, conduct, and document an environmental assessment public hearing for this funding source.

Private Financing/Bond Issue

This is a common method of obtaining long term financing for projects. These bonds are retired from water revenues generated by the rate structure. Current bond rates for 20-year bonds are in the range 3.75-4.50%. The interest rates are low enough to be competitive with funding agencies such as Rural Development; however, the shorter term will result in higher annual payments. Again, a revenue bond issue must be approved by a majority of the votes cast in an election. The private market also requires higher reserve requirements to be generated by the rate structure. Using private financing may streamline project development by minimizing the number of review agencies before the project is approved for construction.

Table XI.1 details the effects these loans would have on the City's current water rates if all improvements were constructed and all 1,537 current customers purchased 5,000 gallons for the course of the loan. The last two columns represent a $1.71 reduction in price per 1,000 gallon ($8.85 decrease for 5,000 gallons) if the City were not paying the Cass No. 2 rate and only the Kansas City rate per 1,000 gallons.

Table XI.1 - Current Rates and Required Rate Adjustments

Current Avg. Water Usage per month per meter (gallons)	Average Residential Bill	Current Number of Residential Meters				Average Residential Bill minus current Cass 2 charges	
5,000	**$ 68.54**	**1,537**					
USDA RD Loan/No Grants - Amount Funded	Interest Rate	Loan Period (Years)	Yearly Payment	Adjusted Average Residential Bill	% Increase 5,000 gallon bill	Adjusted Average Residential Bill with $1.71 per 1,000 gallon reduction	% Increase 5,000 gallon bill
$6,569,868	4.375%	33	**$379,898**	**$ 89.14**	30%	**$ 80.59**	18%
SRF Loan/No Grants - Amount Funded	Interest Rate	Loan Period (Years)	Yearly Payment	Adjusted Average Residential Bill	% Increase 5,000 gallon bill	Adjusted Average Residential Bill with $1.71 per 1,000 gallon reduction	% Increase 5,000 gallon bill
$6,569,868	2.50%	20	**$421,438**	**$ 91.39**	33%	**$ 82.84**	21%
SRF Loan/ with $500,000 Grant - Amount Funded	Interest Rate	Loan Period (Years)	Yearly Payment	Adjusted Average Residential Bill	% Increase 5,000 gallon bill	Adjusted Average Residential Bill with $1.71 per 1,000 gallon reduction	% Increase 5,000 gallon bill
$6,069,868	2.50%	20	**$389,365**	**$ 89.65**	31%	**$ 81.10**	18%
Private Financing	Interest Rate	Loan Period (Years)	Yearly Payment	Adjusted Average Residential Bill	% Increase 5,000 gallon bill	Adjusted Average Residential Bill with $1.71 per 1,000 gallon reduction	% Increase 5,000 gallon bill
$6,569,868	4.25%	20	**$494,184**	**$ 95.33**	39%	**$ 86.78**	27%

XII. Conclusion

Sections VI and VII discussed the City's future water supply options which included continuing with their current source (Cass #2) or purchasing water from a new source directly (Kansas City, Tri-County Water Authority, or WaterOne of Johnson County, KS). A weighted decision matrix was developed to help determine the best option for the City's water needs going forward. The matrix showed that purchasing water directly from Kansas City would be the best option for the City's water needs moving forward. Kansas City was the highest rank supplier based in the following criteria of the matrix:

- Lowest costs for 20-year life cycle analysis
- Lowest water rates

Hydraulic modeling showed that converting to a KCMO direct supply and utilizing one pressure zone (instead of the current four) would increase the low and average pressures within the distribution system but would reduce the highest pressures (down to approximately 99 psi from approximately 115 psi). All pressures would be within MDNR recommendations.

A yearly water cost opinion was then developed to compare KCMO to Cass 2 for the years 2018 and 2033. The Cass 2 water costs included yearly increases of 5% for the water rate and 3% for operating and maintenance costs. KCMO costs included an annual rate increase of 5% and a loan repayment of $241,988 per year. Initially KCMO annual water costs were higher than Cass 2; however, during the year 2033 the KCMO water cost was approximately $200,000 less than those from Cass 2.

With the City already on the SRF funding list, we recommend the City continuing talks with KCMO to get an acceptable water purchase agreement agreed upon.

Distribution system improvements were discussed in Section IX. These distribution system improvements initially focused on replacing deficient waterlines, followed by replacing small diameter waterlines, and finally looping and removing dead-ends. The City should prioritize the following five projects and strive to complete them as available funds and governmental assistance allows:

- Install a 12-inch waterline along Peculiar Drive from Hurley St. to Main St. and then north to E. North St.
- Installing 8-inch waterlines within the Spencer Addition Subdivision

- Replace the existing waterline on Harr Grove Rd.
- Replace the existing waterline on Elm St.
- Replace the waterlines on Gregory St. and Kayla Dr.

We recommend the City begin the application process for both SRF and RD funding for these projects.

Future waterlines that are not a part of the recommended improvements, but that are constructed inside the City, should be a minimum of 8-inches diameter in size. Also, as improvements and upgrades are constructed on the system, any lines 2 or 3-inches in diameter should be evaluated for replacement. Also, dead end mains should be looped to reduce water consumed by excessive flushing.

While this report evaluated the potential for system growth in the next twenty years, individual impacts of new subdivisions, industrial customers, and other large scale demands or system improvements should be reviewed on a case-by-case basis and compared with this report and previous studies to determine what improvements are necessary.

APPENDIX A

Water Purchase and Sales Contracts

APPENDIX B

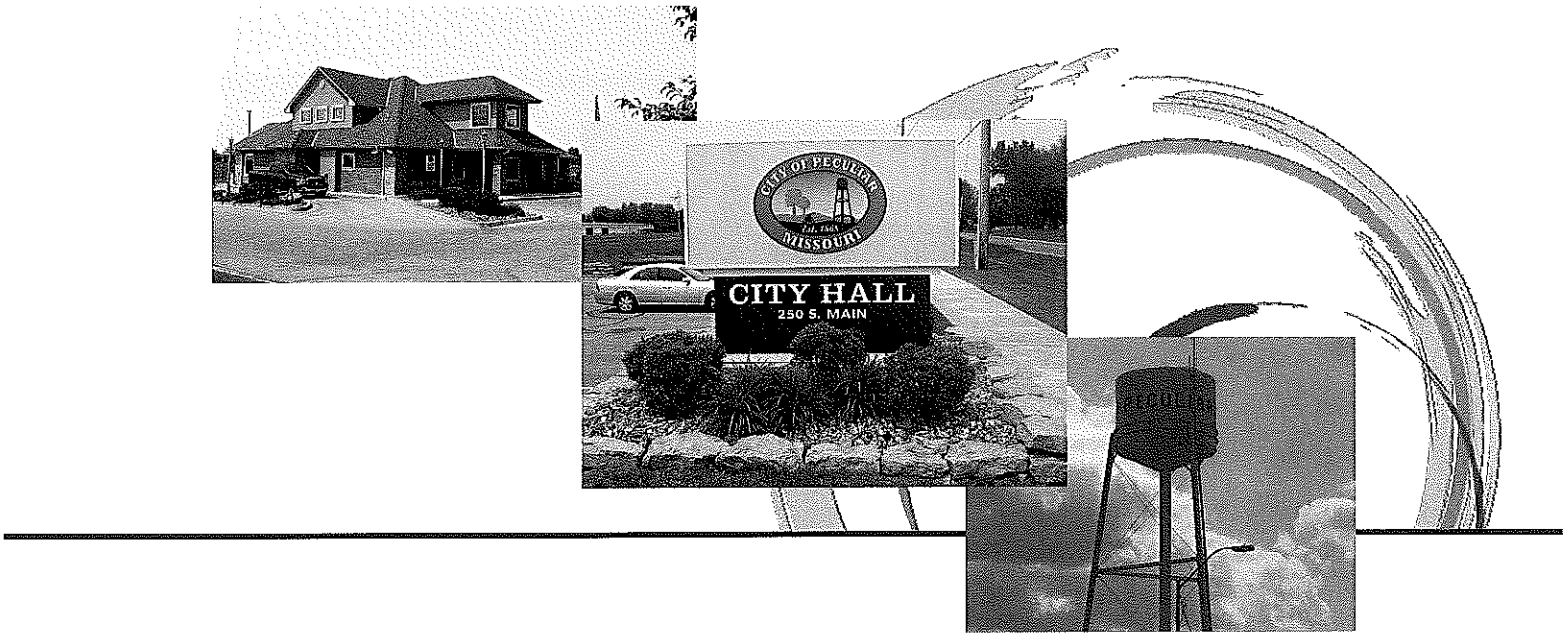
Hydraulic Analysis Reports

APPENDIX C

Opinions of Probable Cost

APPENDIX D

SRF Intended Use Planning List Letter



Project Manual

Manual of Practice for Water Main Extensions

For

The City of Peculiar, MO

2014

Project No. 0313045.01

LARKIN
LAMP RYNEARSON

9200 Ward Parkway, Suite 200
Kansas City, Missouri 64114
[P] 816.361.0440
[F] 816.361.0045
www.LRA-Inc.com

Leaving A Legacy Of Enduring Improvements To Our Communities
Purpose Statement

MANUAL OF PRACTICE FOR WATER MAIN EXTENSIONS For PECULIAR, MISSOURI

CONSTRUCTION STANDARDS

DETAILED SPECIFICATIONS

PART 1 - GENERAL

1.00 FOREWORD

A. The provisions of this Section take precedence over the other provisions in these Specifications.

1.01 INSURANCE

A. Insurance for this Contract shall be types and amounts as outlined below:

1. Contractor's Liability:
   a. Workers' Compensation:
      (1) State: Statutory
      (2) Applicable Federal: Statutory
      (3) Employer's Liability:
      $2,250,000.00 Each Accident
      $2,250,000.00 Disease, Policy Limit
      $350,000.00 Disease, Each Employee
      (4) Broad Form All States Endorsement:
      (5) Benefits required by union labor contracts: As applicable.
   b. Commercial General Liability:
      $2,250,000.00 General Aggregate
      $2,250,000.00 Products-Completed Operations Aggregate
      $2,250,000.00 Personal and Advertising Injury
      $2,250,000.00 Each Occurrence
   c. Products and Completed Operations Insurance shall be maintained for a minimum period of 2 years.
   d. The general aggregate shall apply to this project only.
   e. Automobile Liability (owned, non-owned, hired):
      $2,250,000.00 Bodily Injury & Property Damage
      (Combined Single Limit)
   f. Umbrella Excess Liability:
      (1) Total insurance on all risks to be a minimum of $2,250,000.00
   g. Owner's protective liability in the name of the Owner and Engineer in the amount of $2,250,000.00. A copy of the policy shall be furnished to owner and engineer before notice to proceed will be issued.
2. Property Insurance:
   a. The Contractor will purchase property insurance including coverage for all materials and equipment to be incorporated or used in the Project when stored off the site or when in transit.
   b. The Contractor shall purchase the following:
      (1) All-Risk type in the amount equal to completed value.
3. Bonds:
   a. Performance Bond and Payment Bond:
      (1) Required.

b. Required bonds shall be in the amount of:
(1) Performance:
(a) 100% of Contract Sum.
(2) Payment:
(a) 100% of Contract Sum and as required to comply with Section 107.170 RsMo.
(3) Form of bonds shall be:
(a) EJCDC or AIA and as required by Section 107.170 RsMo.

4. Other instructions related to bonds or insurance:

B. The insuring company shall deliver to the Owner together with all certificates of required insurance a letter signed by an authorized representative and certifying that all provisions of the insurance requirements are complied with. Form of the letter is bound in these Specifications following the proposal form, except copy of Owner's protective liability policy shall be required in addition thereto.

C. The Contractor may not begin work of any nature until all insurance requirements are met and approved by the Owner's attorney.

1.02 SPECIFICATIONS

A. The specifications which sball govern the materials and equipment to be furnished and the work to be performed in the construction of the work under this Contract are identified and indexed in the Table of Contents at the beginning of this volume.

B. No attempt has been made in the designated specifications to segregate work to be performed by any trade or subcontract under any one specification or part thereof. Any segregation between the trade or craft jurisdictional limits will be solely a matter of agreement between the Contractor and his employees and his subcontractors.

1.03 CHANGES, APPROVAL OF MATERIALS, AND AUTHORITY OF CONSTRUCTION REPRESENTATIVE

A. Wherever the words "or equal" appear in the Plans and Specifications the Engineer shall be the sole judge as to whether an alternate product is equal to the product or trade name mentioned.

B. The Contractor shall subruit to the Engineer at least six copies of shop drawings, catalog data, supporting data, specifications, etc., on all items of equipment and materials before ordering saine. No equipment or material of any kind may be placed in the work until the Contractor and the Construction Representative have received written approval either by letter or by drawings, etc., stamped "Approved-Final." It shall also be the Contractor's responsibility to point out any variations from the Engineer's specifications in any items submitted for approval.

C. The project shall be constructed in accordance with the Contract Plans and Specifications unless a change order is received in writing from the Kansas City office of Larkin Group,

Inc. The Construction Representative will make general inspection of the construction, but will have no authority to make or to allow changes in design or construction. Request for changes desired by the Contractor shall be submitted by him in writing to the Engineer sufficiently in advance to allow proper investigation and consideration. Otherwise, the Engineer will not be responsible for delays.

1.04 MAINTENANCE OF TRAFFIC

A. The Contractor shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian; whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private. The Contractor shall at his own expense provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them; provided however, that such maintenance of traffic will not be required at any point where the Contractor has obtained permission from the owner and tenant of private property, or from the authority having jurisdiction over the public property involved, to obstruct traffic at any designated point thereon and for the duration of whatever period of time as may be agreed upon.

1.05 EXISTING UNDERGROUND INSTALLATIONS AND STRUCTURES

A. Pipe lines and other existing underground installations and structures in the vicinity of the work to be done hereunder are not indicated on the plans. The Contractor shall make every effort to locate all underground pipe lines, conduits and structures by contacting owners of underground utilities and by prospecting in advance of trench excavation.

B. Any delays or extra cost to the Contractor caused by pipe lines or other underground structures or obstructions not shown by the plans, or found in locations different than those indicated, shall not constitute a claim for extra work, additional payment, or damages.

1.06 SUBSURFACE CONDITIONS

A. Contractor is to satisfy himself as to the nature of the material to be encountered, including rock excavation and possible ground water and take all conditions into account in his bid.

1.07 EROSION CONTROL

A. The Contractor will be required to exercise reasonable erosion control of disturbed areas during the construction period through the use of check dams, siltation pools, mulching, etc.

1.08 HISTORICAL/ARCHAEOLOGICAL

A. If, during the course of construction, evidence of deposits of historical or archaeological interest is found, the Contractor shall cease operations affecting the find and shall notify the Owner, who shall notify the Missouri Department of Natural Resources and the Director, Division of Parks & Historical Preservation, P. O. Box 176, 205 Jefferson Street, Jefferson City, MO 65102, phone (573) 751-7858.

B. No further disturbance of the deposits shall ensue until the Contractor has been notified by the Owner that he may proceed. The Owner will issue a notice to proceed only after the state official has surveyed the find and made a determination to the Environmental Protection Agency and the Owner. Compensation to the Contractor, if any, for lost time or changes in construction to avoid the find, shall be determined in accordance with changed conditions or change order provisions of these Specifications.

1.09 COMPLIANCE WITH LAWS

A. The Contractor shall comply with all applicable Federal, State, and local laws and ordinances.

1.10 "OR EQUAL" STATEMENT

A. When a manufacturer's name is used in these Specifications it is used to establish a standard and the words "or equal," if not stated, are implied.

1.11 PAYMENT TO CONTRACTOR

A. The field representative and Contractor shall prepare and submit a monthly pay estimate to the Engineer for approval on or before the twentieth day of each month. Request for payment received after the first day of the month will not be considered. This will ensure that no unnecessary delays in payment to contractors will result.

B. The Engineer will recommend or reject pay estimates within a period of 5 days after receipt of these estimates. The Owner shall pay the contractor the approved amount due within a period of thirty (30) days from the Engineer's approval.

C. If the Owner fails to make payment thirty (30) days after approval by the Engineer, in addition to other remedies available to the contractor, then shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the Contractor. The legal rate of interest shall be as specified in 34.057 RSMo, latest revision.

1.12 CONSTRUCTION SCHEDULE

A. The Contractor shall provide a schedule of construction activities within 30 days after

initiation of construction. This schedule must show anticipated progress and the estimated dollar amount that will be requested each month. This schedule must be periodically updated to ensure accuracy. The schedule shall be revised if a variation of more than 10 percent occurs.

1.13 ONE HUNDRED PERCENT PERFORMANCE AND PAYMENT BOND

A. The Contractor shall provide separate Performance and Payment Bonds, each in the amount of 100 percent of the contract amount.

1.14 GENERAL TRAFFIC CONTROL REQUIREMENTS (ATTACHED SIGNING SHEETS)

A. All signing and traffic control devices shall conform to the "Manual on Traffic Control Devices".

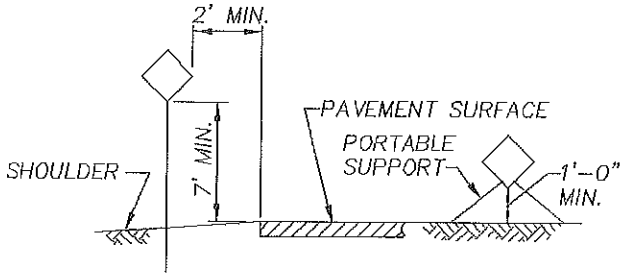
B. The attached detail signing sheet(s) apply to a restricted roadway width caused by the Contractor's construction activities. If construction activity of the Contractor is located off the roadway, then the minimum signing will be required. W 20-1 ROAD WORK AHEAD and G 20-2 END OF ROAD WORK.

C. Extended work areas may require additional signing.

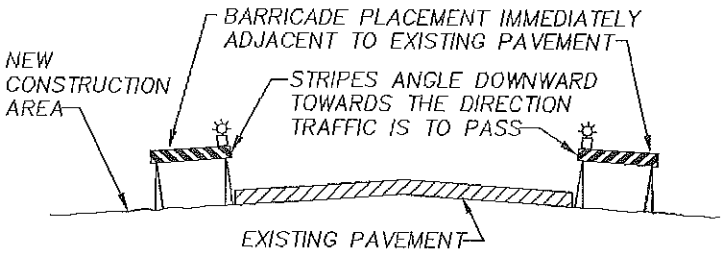
D. A minimum of one lane in each direction must be provided at the end of each work day.

E. All roadways which are closed due to the Contractor's construction activities shall be provided with Detour signing and appropriate barricades.

END OF SECTION

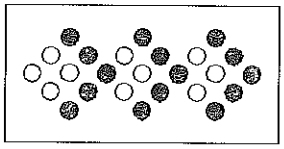


TYPICAL SIGN PLACEMENT



LATERAL PLACEMENT OF CHANNELIZING DEVICES

TYPE	MIN. SIZE	MIN. # LAMPS	USAGE
A	24"x48"	12	LOW SPEED STREETS 25–30 MPH
B	30"x60"	13	INTERMEDIATE SPEED STREETS 35–45 MPH
C	48"x96"	15	HIGH SPEED STREETS 50–55 MPH



ARROW DISPLAY SHALL BE SET IN THE (LEFT OR RIGHT) SEQUENTIAL CHEVRON MODE FOR LANE CLOSURES.

USE OF A TYPE "C" DISPLAY AT AN "A" OR "B" LOCATION OR USE OF A TYPE "B" DISPLAY AT AN "A" LOCATION IS ALLOWABLE. TYPE "B" DISPLAY MAY BE USED FOR MOVING MAINTENANCE OPERATIONS.

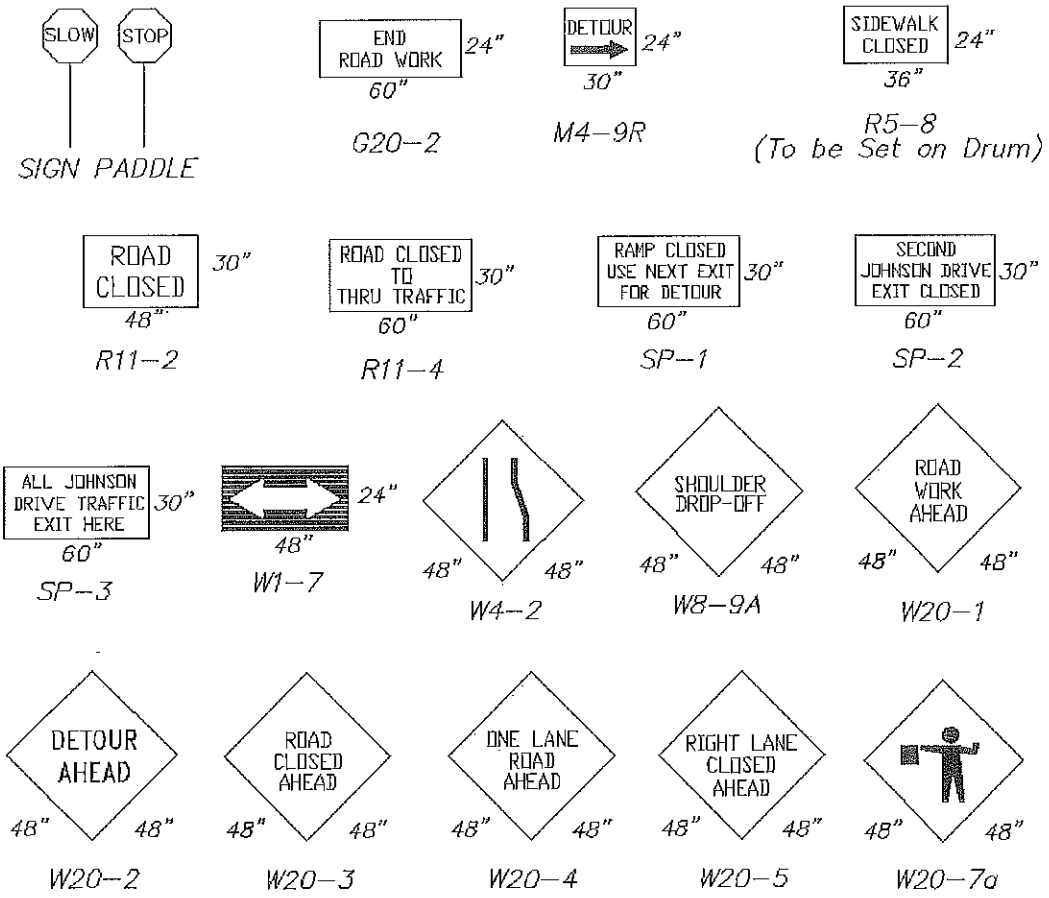
ADVANCE WARNING ARROW DISPLAY

LARKIN GROUP INC.
9200 WARD PARKWAY, SUITE 400
KANSAS CITY, MISSOURI 64114
(816) 361-0440

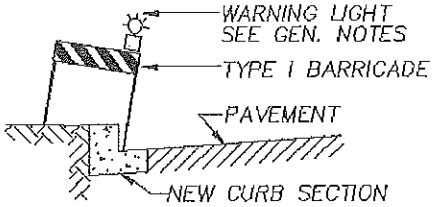
TITLE LINE #1
TITLE LINE #2
TITLE LINE #3

SHEET_NAME

Date:
Drawn By:
Checked by:
Approved by:
File:
Job#

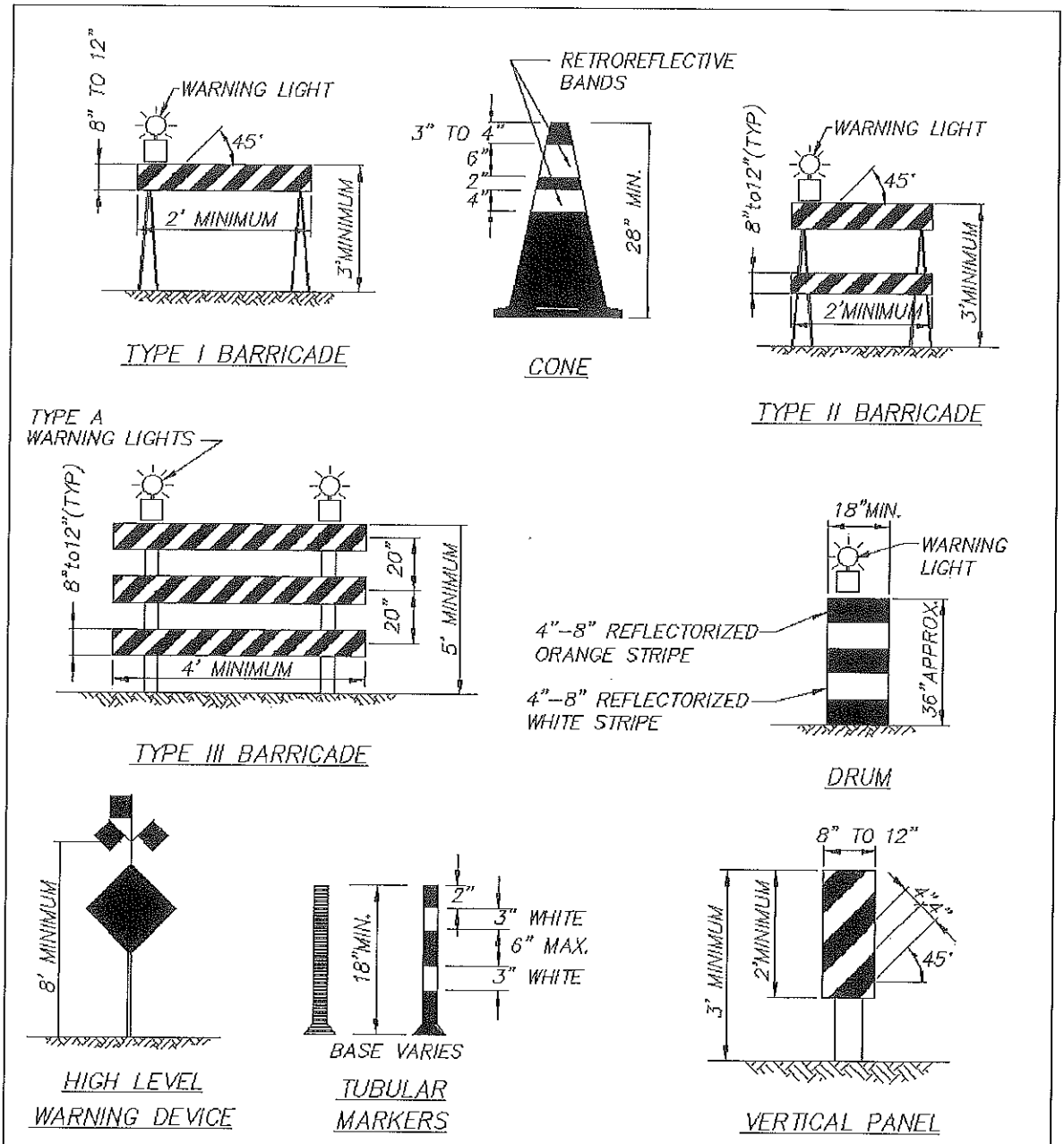


CONSTRUCTION SIGN LEGEND



TYPICAL BARRICADE PLACEMENT DETAIL
NEW CURB SECTION

LARKIN GROUP, P.C. 9200 WARD PARKWAY, SUITE 400 KANSAS CITY, MISSOURI 64114 (816) 361-0440	TITLE LINE #1 TITLE LINE #2 TITLE LINE #3 SHEET_NAME	Date: Drawn By: Checked by: Approved by: File: Job#



CHANNELIZING DEVICES AND HIGH LEVEL WARNING DEVICES

LARKIN GROUP 9200 WARD PARKWAY, SUITE 200 KANSAS CITY, MISSOURI 64114 (816) 361-0444	TITLE LINE #1 TITLE LINE #2 TITLE LINE #3 SHEET_NAME	Date: Drawn By: Checked by: Approved by: File: Job#

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Work covers construction located within the city limits of Peculiar, Missouri or for any work done for the City of Peculiar..

B. Contractor's duties:

1. Except as specifically noted, provide and pay for:
   a. Labor, materials, and equipment.
   b. Tools, construction equipment, and machinery.
   c. Water, heat, and utilities required for construction.
   d. Other facilities and services necessary for proper execution and completion of work.
2. Pay legally required consumer, and use taxes. If Contractor contracts with the City a Missouri Project Exemption Certificate for sales tax will be furnished for the project.
3. Secure and pay for, as necessary for proper execution and completion of work, and as applicable at time of receipt of bids:
   a. Permits.
   b. Government fees.
   c. Licenses.
4. Give required notices.
5. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities which bear on performance of work.
6. Promptly submit written notice to Engineer of observed variance of Contract Documents from legal requirements.
   It is Contractor's responsibility to make certain that drawings and specifications comply with codes and regulations.
   a. Appropriate modifications to Contract Documents will adjust necessary changes.
   b. Assume responsibility for work known to be contrary to such requirements, without notice.
7. Enforce strict discipline and good order among employees. Do not employ on work:
   a. Unfit persons.
   b. Persons not skilled in assigned task.
8. Comply with prevailing wage law requirements.
9. Comply with nondiscrimination requirements.
10. Perform all supervision and work necessary to provide safe working conditions for completion of all required excavation and construction work.
11. Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials. Do not scale drawings.
12. Notify Owner of existing conditions differing from those indicated on the Drawings. Do not remove or alter structural components without prior written approval.

PART 1 - GENERAL

1.01 SECTION INCLUDES

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   b. Tools, construction equipment, and machinery.
   c. Water, heat, and utilities required for construction.
   d. Other facilities and services necessary for proper execution and completion of work.
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   It is Contractor's responsibility to make certain that drawings and specifications comply with codes and regulations.
   a. Appropriate modifications to Contract Documents will adjust necessary changes.
   b. Assume responsibility for work known to be contrary to such requirements, without notice.
7. Enforce strict discipline and good order among employees. Do not employ on work:
   a. Unfit persons.
   b. Persons not skilled in assigned task.
8. Comply with prevailing wage law requirements.
9. Comply with nondiscrimination requirements.
10. Perform all supervision and work necessary to provide safe working conditions for completion of all required excavation and construction work.
11. Verify dimensions indicated on drawings with field dimensions before fabrication or ordering of materials. Do not scale drawings.
12. Notify Owner of existing conditions differing from those indicated on the Drawings. Do not remove or alter structural components without prior written approval.

13. All licenses, permits, certificates, bonds, etc., required in connection with the work to be performed under the provisions of these Contract Documents on highway railroad right-of-way, or special road district right-of-way shall be secured by the Contractor entirely at his own expense.

1.02 CONTRACTOR USE OF PREMISES

A. Confine Operations at site to areas permitted by:
   1. Law.
   2. Ordinances.
   3. Permits.
   4. Contract Documents.
   5. Owner.

B. Do not unreasonably encumber site with materials or equipment.

C. Assume full responsibility for protection and safekeeping of products stored on premises.

D. Move any stored products which interfere with operations of Owner.

E. Obtain and pay for use of additional storage or work areas needed for operations.

F. Use of site.
   Exclusive and complete for execution of work, except:
   1. Contractor shall maintain access to existing facilities.
   2. Owner shall have access to existing facilities.

G. Operation of the existing facilities:
   1. It is essential that the existing facilities be kept in operation during the construction period. Short periods of shutdown will be possible to permit modifications or connections to or tie in with existing facilities. The time period will vary with Owner usage at different times of the day.
   2. In some instances it will be necessary to complete and put new facilities into operation prior to commencing work on existing facilities which would require their removal from service.
   3. Where interruption of existing facilities are necessary, the Contractor is to plan his work in cooperation with facility operating personnel for the least possible disruption of service. Night or weekend work may be necessary. When facility operation must be suspended because of the Contractor's work, he shall have all necessary materials and equipment on hand, and have ample work force available prior to beginning the work.

1.03 POSITION, GRADIENT, AND ALIGNMENT

A. All construction work shall be done to the lines and grades shown on the Plans. The Engineer will establish on the site the required benchmarks and base lines. Detailed survey and staking for location and grade of individual structures or other construction, as well as measurements and elevations within structures, shall be performed by the Contractor.

B. Any work done without being properly located and established by base lines, offset stakes, benchmarks, or other basic reference points, may be ordered removed and replaced at the Contractor's expense.

1.04 PROTECTION AND MAINTENANCE OF PUBLIC AND PRIVATE PROPERTY

A. Protect, shore, brace, support, and maintain all underground pipes, conduits, drains, and other underground construction uncovered or otherwise affected by the construction work performed. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, and other surface structures affected by construction operations in connection with the performance of the Contract shall be restored to the original condition thereof as determined and approved by the Engineer. All replacements of such underground construction and surface structures or parts thereof shall be made with new materials conforming to the requirements of these Specifications or, if not specified, as approved by the Engineer.

B. The Contractor shall be responsible for all damage to streets, roads, highways, railroads, shoulders, ditches, embankments, culverts, bridges, power transmission lines, oil lines, gas lines, or other public or private property or facility, regardless of location or character, which may be caused by moving, hauling, or otherwise transporting equipment, materials, or men to or from the work or any part or site thereof, whether by him or his subcontractor or subcontractors. The Contractor shall make satisfactory and acceptable arrangements with the owner of, or the agency or authority having jurisdiction over, the damaged property or facility concerning its repair or replacement or payment of costs incurred in connection with said damage.

C. The Contractor shall conduct his work so at to interfere as little as possible with public travel, whether vehicular or pedestrian; whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private. The Contractor shall, at his own expense, provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them; provided however, that such maintenance of traffic will not be required at any point where the Contractor has obtained permission from the owner and tenant of private property, or from the authority having jurisdiction over the public property involved, to obstruct traffic at any designated point thereon and for the duration of whatever period of time as may be agreed upon.

1.05 INSPECTION BY PUBLIC AGENCIES

A. Authorized representatives of the Engineers and Owner shall have access to the work wherever it is in preparation or progress. The Contractor shall provide proper facilities for such access and inspection.

1.06 CONTRACTOR'S RESPONSIBILITY FOR MATERIALS

A. The Contractor shall be responsible for the condition of all materials furnished by him, and he shall replace at his own cost and expense any and all such material found to be defective in design or manufacture, or which has been damaged after delivery. This includes the furnishing of all materials and labor required for replacement of any installed material which are found to be defective at any time prior to the expiration of 1 year from the date of final payment.

10.7 SITE

A. Necessary easements for construction of water lines under this contract will be provided by the Owner. Information on water construction easement width may be obtained from the Owner. The Contractor shall confine his operations to the site or easement provided, or make other arrangements with the property owner. Any and all cost agreed to between the Contractor and property owners for special arrangements shall be paid by the Contractor and shall not constitute a claim for extra payment.

1.08 PROTECTION OF WATER SUPPLIES

A. Water supply interconnections:
There shall be no physical connection between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any sewage or polluted water into the potable supply.

1.09 EXPLANATION OF PROPOSAL

A. The Owner reserves the right to select any or all alternates. The best and lowest bid will be determined by bidder's qualifications and the low total price for the base bid and the alternate bid items selected by the Owner.

B. Bid:
1. The bid includes complete construction of the project, ready for use.
2. Construct work under the unit price or lump sum prices as called for in the Proposal.

C. Contractor guarantees his/her work for a one (1) year period after completion of the project.

1.10 "OR EQUAL" STATEMENT

A. When a manufacturer's name is used in these Specifications it is used to establish a standard and the words "or equal", if not stated, are implied.

PART 2 - PRODUCTS

Not applicable to this section.

PART 3 - EXECUTION

Not applicable to this section.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Shop Drawings, Product Data, and Samples required by specification sections.

1.02 RELATED SECTIONS

A. Section 01700: Project Closeout

B. Section 01720: Project Record Documents

1.03 SHOP DRAWINGS

A. Original drawings, prepared by Contractor, subcontractor, supplier or distributor, which illustrate some portion of the Work; showing fabrication, layout, setting or erection details.

B. Prepared by a qualified detailer.

C. Identify details by reference to sheet and detail numbers shown on Contract Drawings.

D. Reproductions for submittals:
Opaque diazo prints or blueprints, or blacklines on bond.

1.04 PRODUCT DATA

A. Manufacturer's standard schematic drawings:
1. Modify drawings to delete information which is not applicable to project.
2. Supplement standard information to provide additional information applicable to project.

B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data.
1. Clearly mark each copy to identify pertinent materials, products or models.
2. Show dimensions and clearances required.
3. Show performance characteristics and capacities.
4. Show wiring diagrams and controls.

1.05 CONTRACTOR RESPONSIBILITIES

A. Review Shop Drawings, Product Data, and Samples prior to submission.

B. Verify:
   1. Field measurements.
   2. Field construction criteria.
   3. Catalog numbers and sinilar data.

C. Coordinate each submittal with requirements of Work and of Contract Documents.

D. Contractor's responsibility for errors and omissions in submittals is not relieved by Engineer's review of submittals.

E. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Engineer's review of submittals, unless the Engineer gives written acceptance of specific deviations.

F. Notify Engineer, in writing at time of submission, of deviations in submittals from requirements of Contract Documents.

G. Begin no work which requires submittals until submittal approval.

H. After Engineer's review, distribute copies.

1.06 SUBMISSION REQUIREMENTS

A. Schedule submissions at least l0 days before dates approved submittals will be needed.

B. Submit number of copies of Shop Drawings, Product Data, and Samples which Contractor requires for distribution plus three copies which will be retained by the Engineer.

C. Submit number of Samples specified in each of Specification sections.

D. Accompany submittals with transmittal letter, in duplicate, containing:
   1. Date.
   2. Project title and number.
   3. Contractor's name and address.
   4. The number of each Shop Drawing, Product Data, and Sample submitted.
   5. Notification of deviations from Contract Documents.
   6. Other pertinent data.

E. Submittals shall include:
   1. Date and revision dates.
   2. Project title and number.
   3. The names of:
      a. Engineer.
      b. Contractor.
      c. Subcontractor.
      d. Supplier.

e. Manufacturer.
f. Separate detailer when pertinent.

4. Identification of product or material.
5. Relation to adjacent structure or materials.
6. Field dimensions, clearly identified.
7. Specification section number.
8. Applicable standards, such as ASTM number or Federal Specification.
9. A blank space, 3 inches by 5 inches, for the Engineer's stamp.
10. Identification of deviations from Contract Documents.
11. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of field measurements and compliance with Contract Documents.

1.07 RESUBMISSION REQUIREMENTS

A. Shop Drawings:
1. Revise initial drawings as required and resubmit as specified for initial submittal.
2. Indicate on drawings any changes which have been made other than those requested by Engineer.
3. Product Data and Samples:
Submit new data and samples as required for initial submittal.

1.08 DISTRIBUTION OF SUBMITTALS AFTER REVIEW

A. Distribute copies of Shop Drawings and Product Data which carry Engineer's stamp, to:
1. Contractor's file.
2. Job-site file.
3. Record Documents file.
4. Subcontractors.
5. Supplier.
6. Fabricator.

B. Distribute samples as directed.

1.09 ENGINEER'S DUTIES

A. Review submittals with reasonable promptness.

B. Review for:
1. Design concept of project.
2. Information given in Contract Documents.

C. Review of separate item does not constitute review of an assembly in which item functions.

D. Affix stamp and initials or signature indicating review of submittal.

E. Return submittals to Contractor for distribution.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Substitutions and product options.

1.02 RELATED SECTIONS

A. Section 01340: Shop Drawings, Product Data, and Samples.

1.03 PRODUCTS LIST

A. Within 30 days after date of Contract, submit to Engineer 5 copies of complete list of all products which are proposed for installation.

B. Tabulate list by each Specification section.

C. For products specified under reference standards, include with listing of each product:
   1. Name and address of manufacturer.
   2. Trade name.
   3. Model or catalog designation.
   4. Manufacturer's data:
      a. Performance and test data.
      b. Reference standards.

1.04 CONTRACTOR'S OPTIONS

A. For products specified only by reference standards, manufacturer shall submit data for approval 10 days prior to bid date.

B. For products specified by naming several products or manufacturers, select any product and manufacturer named.

C. For products specified by naming one product, Contractor must submit a request, as required for substitution, for any product not specifically named.

1.05 SUBSTITUTIONS

A. During bidding, Engineer will consider written requests from prime Bidders for substitutions, received at least 10 days prior to bid date; requests received after that time will not be considered.

B. Submit five copies of request for substitution. Include in request:
   1. Complete data substantiating compliance of proposed substitution with Contract Documents.
   2. For products:
      a. Product identification, including manufacturer's name and address.
      b. Manufacturer's literature.
         (1) Product description.
         (2) Performance and test data.
         (3) Reference standards.
      c. Samples.
      d. Name and address of similar projects on which product was used, and date of installation.
   3. For construction methods:
      a. Detailed description of proposed method.
      b. Drawings illustrating methods.
   4. Itemized comparison of proposed substitution with product or method specified.
   5. Data relating to changes in construction schedule.
   6. Relation to separate contracts.

C. In making request for substitution, Bidder represents:
   1. He has personally investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.
   2. He shall provide the same guarantee for substitution as for product or method specified.
   3. He shall coordinate installation of accepted substitution into work, making such changes as may be required for work to be complete in all respects.
   4. He waives all claims for additional costs related to substitution which consequently becomes apparent.
   5. Cost data is complete and includes all related costs under his contract, but excludes:
      a. Costs under separate contracts.
      b. Engineer's redesign.

D. Substitutions will not be considered if:
   1. They are indicated or implied on Shop Drawings or Project Data submittals without formal requests submitted in accord with Paragraph 1.04.
   2. Acceptance will require substantial revision of Contract Documents.

E. Engineer will notify Bidders of all approved substitutions by Addendum listing manufacturers of each item.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Administrative procedures, closeout submittals, and forms to be used at substantial completion and at final completion of the Work.

1.02 RELATED SECTIONS

A. Section 01710: Cleanup

B. Section 01720: Project Record Documents

1.03 SUBSTANTIAL COMPLETION

A. Contractor:
   1. Submit written certification to the Engineer, that project, or designated portion of project, is substantially complete.
   2. Submit list of major items to be completed or corrected.

B. Engineer will make an inspection within 7 days after receipt of certification, together with Owner's representative.

C. Should the Engineer consider that work is substantially complete:
   1. Contractor shall prepare and submit a list of items to be completed or corrected, as determined by the inspection.
   2. Engineer will prepare and issue a Letter of Substantial Completion, containing:
      a. Date of substantial completion.
      b. Contractor's list of items to be completed or corrected, verified, and amended.
      c. The time within which Contractor shall complete or correct work of listed items.
      d. Time and date Owner will assume possession of Work or designated portion thereof.
      e. Responsibilities of Owner and Contractor for:
         (1) Utilities.
         (2) Operation of mechanical, electrical, and other systems.
         (3) Maintenance and cleaning.
         (4) Security.
      f. Signatures of:
         (1) Contractor.
         (2) Owner.
         (3) Engineer.

3. Owner occupancy of Project or designated portion of Project.
   a. Contractor shall:
      (1) Obtain certificate of occupancy.
      (2) Perform final cleaning in accordance with Section 01710.
   b. Owner will occupy Project, under provisions stated in Certificate of Substantial Completion.
4. Contractor:
   Complete work listed for completion or correction within designated time.

D. Should the Engineer consider that work is not substantially complete:
   1. They shall immediately notify Contractor, in writing, stating reasons.
   2. Contractor:
      Complete work and send second written notice to the Engineer, certifying that Project or designated portion of Project, is substantially complete.
   3. Engineer will review work.

1.04 FINAL PROJECT REVIEW

A. Contractor shall submit written certification that:
   1. Contract Documents have been reviewed.
   2. Project has been reviewed for compliance with Contract Documents.
   3. Work has been completed in accordance with Contract Documents.
   4. Equipment and systems have been tested in presence of Owner's representative and are operational.
   5. Project is completed, and ready for final review.

B. Engineer will make final project review within seven days after receipt of certification.

C. Should the Engineer consider that work is finally complete in accordance with requirements of Contract Documents, the Project will be closed out.

D. Should the Engineer consider that work is not finally complete:
   1. They will notify Contractor, in writing, stating reasons.
   2. Contractor shall take immediate steps to remedy the stated deficiencies, and send second written notice to the Engineer certifying that work is complete.
   3. Engineer will review work.

1.05 CLOSEOUT SUBMITTALS

A. Project record documents:
   To requirements of Section 01720.

B Deliver evidence of compliance with requirements of governing authorities.

C. Deliver Certificate of Insurance for products and completed operations.

1.06 EVIDENCE OF PAYMENTS AND RELEASE OF LIENS

A. Contractor's affidavit of payment of debts and claims.

B. Contractor's affidavit of release of liens, with:
   1. Consent of surety of final payment.
   2. Contractor's release of waiver of liens.
   3. Separate releases of waivers of liens for subcontractors, suppliers, and others with lien rights against property of Owner, together with list of those parties.

C. All submittals shall be duly executed before delivery.

1.07 INSTRUCTION

A. Instruct Owner's personnel in operation of all systems, mechanical, electrical, and other equipment.

1.08 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit final statement of accounting to Engineer.

B. Statement shall reflect all adjustments.
   1. Original Contract Sum.
   2. Additions and deductions resulting from:
      a. Previous Change Orders.
      b. Cash Allowances.
      c. Other Adjustments.
      d. Deductions for uncorrected Work.
      e. Deductions for liquidated damages.
      f. Deductions for Reinspection Payments.
   3. Total Contract Sum, as adjusted.
   4. Previous payments.
   5. Sum remaining due.

C. Engineer will prepare final Change Order, reflecting approved adjustments to Contract Sum not previously made by Change Orders.

1.09 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit final application in accordance with requirements of Regulations of the Contract.

1.10 FINAL CERTIFICATE FOR PAYMENT

A. Engineer will issue final certificate in accordance with provisions of Regulations of the Contract.

B. Should final completion be materially delayed through no fault of Contractor, Engineer may issue, for Owner's approval, a Semi-Final Certificate for Payment, in accordance with provisions of Regulations of the Contract.

1.11 POST-CONSTRUCTION PROJECT REVIEW

A. Prior to expiration of 1 year from Date of Substantial Completion, the Owner may request a visual review of Project in company with Engineer and Contractor to determine whether correction of Work is required, in accordance with provisions of Regulations of the Contract. The Contractor shall be present for the review and be ready to promptly correct any noted deficiencies. The Contractor will also provide equipment as necessary to facilitate this review.

B. The Engineer will promptly notify Contractor, in writing, of any observed deficiencies.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project cleanup.

1.02 RELATED SECTIONS

A. Section 01700: Project Closeout

B. Cleaning for Specific Products or Work: Specification Section for that work.

1.03 SAFETY REQUIREMENTS

A. Hazards Control:
   1. Store volatile wastes in covered metal containers, and remove from premises daily.
   2. Prevent accumulation of wastes which create hazardous conditions.
   3. Provide adequate ventilation during use of volatile or noxious substances.

B. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
   1. Do not burn or bury rubbish and waste materials on project site.
   2. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
   3. Do not dispose of wastes into streams or waterways.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

B. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 GENERAL

A. Maintain premises and public properties free from accumulations of waste, debris, and rubbish caused by operations.

B. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all sight-exposed surfaces; leave project clean and ready for occupancy.

3.02 DURING CONSTRUCTION

A. Execute cleaning to ensure that building, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.

B. Wet down dry materials and rubbish to lay dust and prevent blowing dust.

C. At reasonable intervals during progress of Work, clean site and public properties, and dispose of waste materials, debris, and rubbish.

D. Provide on-site dump containers for collection of waste materials, debris, and rubbish.

E. Remove waste materials, debris and rubbish from site and legally dispose of at public or private dumping areas off Owner's property.

F. Handle materials in a controlled manner with as few handlings as possible; do not drop or throw materials from heights.

G. Remove from the Owner's property and from all public and private property, at Contractor's expense, all temporary structures, rubbish, excess excavation, and waste material resulting from his operations.

H. Clean all dirt from paved surfaces, not allowing same to pack on the roadway or to create a traffic nuisance. Insofar as practicable, clean all dirt from gravel and oil aggregate surfaces.

I. All existing sod areas shall be hand raked to remove earth deposited on or in them during construction.

J. All ditches shall be graded and properly sloped.

K. Shoulders where sodding, seeding, or surfacing is not required shall be bladed and shaped.

3.03 FINAL CLEANING

A. Employ experienced workmen, or professional cleaners, for final cleaning.

B. Broom clean paved surfaces; rake clean other surfaces of grounds.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Record documents.

1.02 RELATED SECTIONS

A. Section 01340: Shop Drawings, Project Data, and Samples

1.03 MAINTENANCE OF DOCUMENTS

A. Maintain at job site, one copy of:
   1. Contract Drawings.
   2. Specifications.
   3. Addenda.
   4. Reviewed Shop Drawings.
   5. Change Orders.
   6. Other Modifications to Contract.
   7. Field Test Records.

B. Maintain documents in clean, dry, legible condition.

C. Do not use record documents for construction purposes.

D. Make documents available at all times for inspection by Engineer, appropriate State and Federal Regulatory Agencies, and Owner.

E. Store documents iu temporary field office apart from documents used for construction.

F. Provide files and racks for storage of documents.

G. File documents in accordance with Project Filing Format of Uniform Construction Index.

1.04 RECORDING

A. Label each documeut "PROJECT RECORD" in 2 inch high printed letters.

B. Keep record documents current.

C. Do not permanently conceal any work until required information has been recorded.

D. Contract Drawings: Legibly mark to record actual construction:

1. Depths of various elements of sewer pipe and manholes in relation to survey datum.
2. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.
3. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.
4. Field changes of dimension and detail.
5. Changes made by Change Order or Field Order.
6. Details not on original contract drawings.

E. Specifications and Addenda: Legibly mark up each section to record:
1. Manufacturer, trade name, catalog number, and Snpplier of each product and item of equipment actually installed.
2. Changes made by Change Order or Field Order.
3. Other matters not originally specified.

F. Shop Drawings: Maintain as record documents; legibly annotate following drawings to record changes made after review.
1. Electrical controls.
2. Equipment.
3. Structural.
4. Mechanical.

1.05 SUBMITTAL

A. At completion of project, deliver record documents to the Engineer.

B. Accompany submittal with transmittal letter, in duplicate, containing:
1. Date.
2. Project title and number.
3. Contractor's name and address.
4. Title and number of each record document.
5. Certification that each document as submitted is complete and accurate.
6. Signature of Contractor, or his authorized representative.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

A. An investigation of subsoil has not been made for this project. Ground water and rock may be encountered in excavations. Depth of ground water may vary seasonally.

1.02 ADDITIONAL INFORMATION

A. The Contractor should visit the site and acquaint himself with all existing conditions. Prior to bidding, bidders may make their own subsurface investigations to satisfy themselves as to site and subsurface conditions but such subsurface investigations shall be performed only under time schedules and arrangements approved in advance by the Owner. Such exploratory excavation shall be made in a manner and location that will not disturb piping or other buried utilities or facilities.

B. The Contractor shall satisfy himself as to the nature of the material to be excavated and the amount of rock or water to be handled. The Contractor shall include in his unit prices bid all costs in connection with excavation, dewatering and difficulties encountered and shall assume full risk in the matter.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Trenching and Trench Backfilling.

B. Pipe embedment.

1.02 RELATED SECTIONS

A. Section 02010: Subsurface Conditions

B. Section 02226: Bored Excavation

PART 2 - PRODUCTS

2.01 FILL AND PIPE EMBEDMENT MATERIAL

A. Embedment material:

1. Material shall be clean river gravel or sound crushed limestone, free of cementitious, shaly or flat and flaky particles in an amount which would cause the material to cake or pack or otherwise form an unyielding support for the pipe. Gradation shall be:

3/4"	square mesh sieve -	100% passing
1/2"	square mesh sieve -	90-100% passing
No. 4	square mesh sieve -	0-15% passing
No. 8	square mesh sieve -	0-5% passing

2. Where bedding rock is not required, bedding material shall be same as fill material.

B. Fill material:

Backfill material shall be selected earth or granular fill material, free from sod, sticks and roots over 1/2 inch in diameter, and free from hard lumps, clods or rock in such quantity or concentration as to interfere with the specified compaction. Material shall be of proper moisture content for specified compaction.

PART 3 - EXECUTION

3.01 GENERAL

A. Trenching work shall be performed in a safe and proper manner, with suitable precautions being taken against hazards of every kind. Trenching shall provide adequate working space and clearances for the work to be performed therein.

B. Trenching and backfilling during freezing weather shall not be done except by permission of the Engineer. No backfill materials shall be installed on frozen surfaces nor shall frozen materials, snow or ice be placed in any backfill.

C. When operating on pavements or walks all equipment shall be rubber tired, except for excavation equipment. Excavating equipment, in such cases, shall not have grousers, cleats or lugs on the tracks. The Contractor shall take all precautions necessary to protect the existing pavements and walks.

D. No classification of excavated materials will be made. Trenching and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the contract work, regardless of the type, character, composition or condition thereof.

E. Pipe lines and other existing underground installations and structures in the vicinity of the work to be done hereunder are not indicated on the Plans. The Contractor shall make every effort to locate all underground pipe lines, conduits and structures by contacting Owners of underground utilities and by prospecting in advance of trench excavation. Damage to any existing underground installation caused by the Contractor's operation shall be repaired at the Contractor's expense.

F. Any delays or extra cost to the Contractor caused by pipe lines or other underground structures or obstructions not shown by the Plans, or found in locations different than those indicated, shall not constitute a claim for extra work, additional payment or damages.

G. Erosion control of disturbed areas will be required during the construction period through the use of check dams, siltation pools, mulching, etc.

H. Operation:
   1. Use all means necessary to control dust or mud that may interfere with operation.
   2. Maintain all streets and driveways free of dirt and materials from Contractor's operation.

I. Protection:
   1. Use all means necessary to protect material and preserve Specification requirements.
   2. Replace all damaged material or material that has lost Specification requirements.

3.02 TRENCH EXCAVATION

A. General:

1. The Contractor shall not open more trench in advance of pipe laying than is necessary to expedite the work. One block or 400 feet (whichever is the shorter) shall be the maximum length of open trench permitted on any line under construction.
2. Except where tunneling is permitted by the Engineer or called for on the Plans, all trench excavation shall be open cut from the surface.
3. Trench walls shall be vertical, and braced where necessary, in streets or improved area unless otherwise authorized by Engineer.

B. Alignment and grade:

1. Water lines:
   Trenches shall be carefully excavated so that the minimum cover over top of pipe will be 42 inches to existing street or ground surface, or to future surface when indicated. Greater cover at some locations along the line may be required due to street or ground profile and clearance of culverts, structures, utility lines, etc.

C. Minimum trench widths and pipe clearances:

1. Trenches shall be excavated to a width which will provide adequate working space and pipe clearances for proper pipe installation, jointing and embedment.
2. Below an elevation of 12 inches from ground level to the top of the installed pipe, the trench width shall be maintained as narrow as possible.
3. Where necessary to reduce the earth load on trench banks to prevent sliding and caving, the banks may be cut back on slopes which shall not extend lower than 1 foot above the top of the pipe.

D. Mechanical excavation:

1. The use of mechanical equipment will not be permitted in locations where its operation would cause damage to buildings, culverts, or other existing property, utilities, or structures above or below ground; in all such locations, hand excavating tools and methods shall be used.
2. Mechanical equipment used for trench excavation shall be of a type, design and construction and shall be so operated, that the rough trench excavation bottom elevation can be controlled, that uniform trench widths and vertical side walls are obtained at least from an elevation 1 foot above the top of the installed pipe to the bottom of the trench, and that the trench alignment is such that the pipe when accurately laid to specified alignment will be centered in the trench with adequate clearance between the pipe and side walls of the trench. Undercutting of the trench side wall to obtain clearance will not be permitted.

E. Bell holes:
Bell holes shall provide adequate clearance for the tools and methods used in installing the pipe. No part of any bell or coupling shall be in contact with the trench bottom, trench walls, or the granular fill when the pipe is jointed.

F. Cutting concrete pavement and walks:

1. Cuts in concrete and asphalt pavements shall be no larger than necessary to provide adequate working space for proper installation of pipe and pipe line appurtenances. Cutting shall be started with a concrete saw (or by other cutting method approved by the Engineer) and in a manner which will provide a clean groove at least 1-1/2 inches deep along each side of the trench and along the perimeter of cuts for structures.
2. Pavement and base pavement over trenches excavated for pipe lines shall be removed so that a shoulder not less than 6 inches in width at any point is left between the cut edge of the pavement and the top edge of the trench. The trench width at the bottom shall not be greater than at the top and no undercutting will be permitted. Pavement cuts shall be made to and between straight or accurately marked curved lines which, unless otherwise required, shall be parallel to the center line of the trench.

3.03 SHEETING AND SHORING

A. Except where banks may be cut back on a stable slope, excavation for trenches shall be properly and substantially sheeted, braced and shored, as necessary, to prevent caving or sliding, to provide protection for the workmen and the work, and to provide protection for existing structures and facilities. Sheeting, bracing and shoring shall be designed and built to withstand all loads that might be caused by earth movement or pressure, and shall be rigid, maintaining its shape and position under all circumstances.

3.04 STABILIZATION

A. General:

1. Trench bottoms shall be firm, dense and thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact under the feet of the workmen.
2. Trench bottoms which are otherwise solid, but which become mucky on top due to construction operations, shall be reinforced with one or more layers of granular fill material or other crushed stone or gravel embedded therein. Not more than 1/2 inch depth of mud or muck shall be allowed to remain on stabilized trench bottoms when the pipe bedding material is placed thereon. The finished elevation of stabilized subgrades for concrete structures shall not be above the subgrade elevations.
3. All stabilization work hereunder shall be performed by and at the expense of the Contractor.
4. If the subgrade for pipe can be stabilized with a thickness of granular fill of 12 inches or less below bottom of pipe, or subgrade of structure, such stabilization will be at the Contractor's expense.

3.05 BLASTING

A. Blasting will not be allowed.

3.06 REMOVAL OF WATER

A. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water entering excavations, trenches, or other part of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built, or the pipe line to be installed, therein is completed to the extent that no damage from hydrostatic pressure, flotation, or other causes will result.

3.07 PIPE EMBEDMENT

A. General:
   1. Place pipe embedment material on a suitably prepared subgrade in lifts not exceeding 6 inches and bring up evenly on both sides of pipe. Do not dump over side of trench in any manner that will bring earth into the embedment material or displace the pipe. Compact, vibrate, or slice with a shovel, in such manner that material fill will take its final compaction and provide uniform and solid bearing under the pipe and its haunches.

B. Water line pipe bedding
   1. Where rock has been excavated, selected earth or granular material shall be placed under the sides and around the pipe to a point 6 inches above the top of the pipe. Embedment material shall be deposited simultaneously on each side of the pipe to prevent lateral displacement of the pipe.
   2. When not in rock excavation, all buried pipe shall be installed under Laying Condition Type 2 as described in AWWA C150/A21.50, latest edition. This condition calls for flat-bottom trench with backfill lightly consolidated to the centerline of the pipe.

3.08 TRENCH BACKFILL COMPACTION

A. General:
   All trench backfill above pipe embedment shall conform to one of the following Specifications:
   1. All County and City gravel surface roads shall be backfilled entirely with approved crushed rock or river gravel. The disposal of unsuitable material excavated will be the responsibility of the Contractor.
   2. Ninety percent compacted backfill. Under streets, drives or state or county highways surfaced with gravel, crushed stone, "blacktop" or other low or intermediate type surfacing. In street, road, highway, railway or alley rights-of-way. In traveled ways. In established lawns. Any line within 5 feet of back of

curb or 5 feet of street surfacing if no curb, either perpendicular to or parallel to the street shall be considered as under the street surfacing, and 90 percent compaction shall apply.

3. Ninety-five percent compacted backfill. Under concrete, asphaltic concrete, brick, concrete structures or other high type pavements. Under concrete walks, curbs, gutters and culverts. Under all types of street surfacing where trench cut is approximately at right angle to roadway.
4. In areas not listed above, backfill shall be compacted to equal to the surrounding ground.
5. Six inches of topsoil shall be placed in the top of trenches that are to be covered with sod or to be seeded.
6. If specified density cannot be obtained with available earth, the Contractor shall furnish and haul granular fill material or suitable earth at his expense. Unsuitable earth shall be disposed of at the Contractor's expense.
7. The Engineer will call for density tests to be made whenever deemed necessary. The specified density will be the minimum allowed and the obtainment thereof will be entirely the Contractor's responsibility.
8. Thickness of backfill layers will be determined by the coordination of test results with field performance and equipment used. The Contractor will be expected to maintain established procedures except where unusual conditions arise. If greater than 12 inch thick compacted layers are used, the Contractor shall hand excavate to the test level as directed by the Engineer and then refill the test excavation with compacted backfill to the specified density.
9. All completed lines shall be returned, in the opinion of the Engineer, as nearly as possible to original condition, including reseeding, resodding or repaving.

3.09 DRAINAGE MAINTENANCE

A. Trenches across roadways, driveways, walks, or other trafficways adjacent to drainage ditches or water courses shall not be backfilled prior to completion of backfilling the trench on the upstream side of the trafficway, to prevent impounding water after the pipe has been laid. Bridges and other temporary structures required to maintain traffic across such unfilled trenches shall be constructed and maintained by the Contractor. Backfilling shall be done so that water will not accumulate in unfilled or partially filled trenches. All material deposited in roadway ditches or other water courses crossed by the line of trench shall be removed immediately after backfilling is completed and the section, grades, and contours of ditches or water courses shall be restored to their original condition. Surface drainage shall not be obstructed longer than necessary.

3.10 FINAL GRADING AND DISPOSAL OF EXCESS EXCAVATED MATERIALS

A. General:
   1. Except as otherwise indicated, all excess excavated materials shall be disposed of by the Contractor away from the site of the work.

2. Pavement and pavement base material, excavated rock in excess of the amount permitted to be and actually installed in trench backfill, junk and debris encountered in excavation work, and other similar waste materials shall be disposed of away from the site of the work.
3. The disposal of waste and excess excavated materials, including hauling, handling, leveling and surfacing, shall be at the Contractor's expense.

B. Excess backfill:
The Contractor shall dispose of excess excavated material above the surface of the ground or subgrade of pavement walks, etc., unless otherwise directed. If directed, he shall grade excess earth into adjacent low areas, fine grading and sloping to drain.

C. Final grading:
1. Just prior to completion and acceptance of the project, the Contractor shall final grade over all pipe trenches and around structures, filling in any places that may have settled during the period between construction of each line and the completion of the entire Contract. Finished surface shall be bladed and aligned to a neat and uniform appearance.
2. Improved yards and lawns:
Fine grade, suitable for seeding or sodding. Hand rake earth off grass in established lawn areas, unless directed to leave excess earth as outlined above.

D. Deficiency of backfill:
Wherever there is a deficiency of material required to backfill to the specified surface or subgrade, the Contractor shall furnish the necessary amount of suitable earth at his expense.

E. Restoration of disturbed earth:
The Contractor shall restore all earth areas disturbed from the original condition by his operations. Restoration will be by seeding, fertilizing and mulching or by appropriate pavement and street repair.

3.11 RESPONSIBILITY OF CONTRACTOR FOR BACKFILL SETTLEMENT

A. The Contractor shall be responsible financially and otherwise, for:
1. All settlement of trench and other backfill which may occur from time of original backfilling until the expiration of 1 year after the date of final payment for the entire contract under which the backfilling work was performed.
2. The refilling and repair of all backfill settlement and the repair or replacement to the original or a better condition of all pavement, top surfacings, driveways, walks, surface structures, utilities, drainage facilities and sod which may have been damaged as a result of backfill settlement or which have been removed or destroyed in connection with backfill replacement operations.
3. All damage claims or court actions against the Owner for any damage directly or indirectly caused by backfill settlement.

B. The Contractor shall make all necessary backfill replacements and repairs, or replacements appurtenant thereto, within 30 days after notification by the Owner or Engineer. Upon the

Contractor's failure to do so, the Owner may do, or have done, the necessary work and charge the cost to the Contractor.

3.12 BARRICADES AND LIGHTS

A. All streets, roads, highways and other public thoroughfares which are closed to traffic shall be protected by means of effective barricades on which shall be placed acceptable warning signs. Barricades shall be located at the nearest intersecting public highway or street on each side of the blocked section.

B. All open trenches and other excavations shall be provided with suitable barriers, signs, and lights to the extent that adequate protection is provided to the public. Obstructions such as material piles and equipment, shall be provided with similar warning signs and lights.

C. All barricades and obstructions shall be illuminated by means of warning lights at night. All lights used for this purpose shall be kept on from sunset to sunrise. Materials stored shall be so placed, and the work at all times shall be so conducted, as to cause the minimum obstruction and inconvenience to the public.

D. All barricades, signs, lights and other protective devices shall be installed and maintained in conformity with applicable statutory requirements, and where within highway rights-of-way, as required by the authority having jurisdiction hereover.

3.13 MAINTENANCE OF TRAFFIC

A. The Contractor shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian; whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private, the Contractor shall at his own expense provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to Owners of private drives before interfering with them; provided however, that such maintenance of traffic will not be required at any point where the Contractor has obtained permission from the Owner and tenant of private property, or from the authority having jurisdiction over the public property involved, to obstruct traffic at any designated point thereon and for the duration of whatever period of time as may be agreed upon.

3.14 CROSSING

A. Highway crossings - main:
Crossings of pavements controlled by the State shall include all labor, tools, machines, and materials required for a complete installation to the satisfaction of the District Highway Engineer. This shall include all excavation, boring, steel casing, and compaction of backfill as required. Installation and safety policies required by the State shall be strictly adhered to.

B. Street crossing - bored:
Crossings designated as Street Crossings on the Plans shall include all labor, tools, and materials necessary for a complete installation. This includes all excavation, boring, steel casing, compaction of the backfill and repair of pavement. Where street pavements are on State Highway right-of-way, requirements of the State shall be strictly adhered to.

C. Street crossings - open cut:
Crossing shall include all materials, labor, and tools necessary for a complete crossing and repair of the street. This will include pavement removal, trenching, disposal of excess material, crushed rock backfill, replacement of pavement, casing pipe and all other necessary items.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Directional Boring under highways, roads, railroads and other obstruction.

1.02 RELATED SECTIONS

A. Section 02010: Subsurface Conditions

B. Section 02221: Trenching, Backfilling and Compaction

1.03 SUPERVISION AND QUALITY

A. This work shall comply with all codes governing and all insurance requirements. Work shall be undertaken only when the construction superintendent is present and supervising the work.

1.04 REQUIREMENTS OF REGULATORY AGENCIES

A. Crossings shall be completed in accordance with applicable federal, state and local regulations.

1.05 SUBMITTALS

A. Work Plan:
Prior to beginning work, the Contractor must submit to the Engineer a general work plan outlining the procedure and schedule to be used to execute the project. Plan should document the thoughtful planning required to successfully complete the project.

B. Equipment:
Contractor will submit specifications on directional boring equipment to be used to ensure that the equipment will be adequate to complete the project. Spares inventory shall be included.

C. Material:
Specifications on material to be used shall be submitted to Engineer. Material shall include the pipe, fittings and any other item which is to be an installed component of the project.

D. Personnel:
Documentation of training and relevant experience of personnel shall be submitted.

PART 2 - PRODUCTS

2.01 CARRIER PIPE

A. Carrier pipe shall be as shown on the plans and called for on the Bid Form.

2.02 BORING SYSTEM

A. Boring Rig:
The directional boring machine shall consist of a hydraulically powered system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the crossing. The hydraulic power system shall be self-contained with sufficient pressure and volume to power boring operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pull-back pressure during pull-back operations. The rig shall be grounded during boring and pull-back operations. Sufficient spares shall be kept on hand for any break-downs which can be reasonably anticipated.

B. Bore Head:
The bore head shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and boring fluid jets.

2.03 GUIDANCE SYSTEM

A. The Guidance System shall be of a proven type and shall be setup and operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies and shall consider such influences in the operation of the guidance system if using a magnetic system.

2.04 BORING FLUID (MUD) SYSTEM

A. Mixing System:
A self-contained, closed, boring fluid mixing system shall be of sufficient size to mix and deliver boring fluid composed of bentonite clay, potable water and appropriate additives. Mixing system shall be able to molecularly shear individual bentonite particles from the dry powder to avoid clumping and ensure thorough mixing. Mixing system shall continually agitate the boring fluid during boring operations.

B. Boring Fluids:
Drilling fluid shall be composed of clean water and an appropriate additive.
Water shall be from a clean source with a pH of 8.5 - 10. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No hazardous additives may be used. Boring fluid shall be maintained at a viscosity sufficient to suspend cuttings and maintain the integrity of bore wall.

2.05 OTHER EQUIPMENT

A. Pipe Rollers:
Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull-back operations. Sufficient number of rollers shall used to prevent excess sagging of pipe.

B. Pipe Rammers/Pullers:
Hydraulic or pneumatic pipe rammers or pullers may only be used if necessary and with the authorization of Engineer.

PART 3 - EXECUTION

3.01 GENERAL

A. The depths and locations of bore and receiving pits (working pits) shall be established by the Contractor in accordance with the horizontal alignment and grade as shown on the project construction plans.

B. The working pits shall adhere to OSHA requirements. Barricades shall be furnished around working pits to safeguard traffics and pedestrians.

C. All discharge from dewatering of the working pits shall be directed into approved receiving basins in accordance with all applicable regulatory requirements.

D. The working pits shall be in locations that in no way interfere with the operation of highways, streets, driveways, railroads or other facilities. Working pits shall not weaken or damage any embankment, utility or structure.

3.02 CONSTRUCTION

A. The directional bore machine shall be located at the low or downstream end, if possible.

B. The directional bore machine shall be equipped with a spoil transportation equipment using drilling fluid. The drilling fluid shall be compatible for soil condition. The drilling fluid, such as bentonite, shall be used lubricating the casing during pull back operation.

C. The drill bit head shall not be greater than the diameter of the pipe.

D. The directional bore machine shall be equipped with an output signal that is located within the drill bit head. The output signal from the drill bit head shall allow the operator of the directional bore machine to track the location of the frill bit head.

E. Spoil material and drilling fluid shall be removed from the working pits and disposed of properly.

F. After completion of the pilot bore pipe installation and the backfill operation, the Contractor shall restore the profile of the right-of-way and/or surface to its original condition.

3.03 PERSONNEL REQUIREMENTS

A. All personnel shall be fully trained in their respective duties as part of the directional boring crew and in safety. Training shall be provided specific to the project if any potential hazards may be encountered which has not already been included in personnel's training.

3.04 BORING PROCEDURE

A. Site Preparation:
Prior to any alterations to work-site, contractor shall photograph or video tape entire work area, including entry and exit points. One copy of which shall be given to Engineer and one copy to remain with contractor for a period of one year following the completion of the project.

B. Bore Path Survey:
Entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.

C. Environmental Protection:
Contractor shall place silt fence between all boring operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Additional environmental protection necessary to contain any hydraulic or boring fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations. Fuel or oil may not be stored in bulk containers within 200' of any water-body or wetland.

D. Utility Locates:
Contactor shall notify all companies with underground utilities in the work area via the state or local "one-call" to obtain utility locates.

Once the utilities have been located Contractor shall physically identify the exact location of the utilities by vacuum or hand excavation, when possible, in order to determine the actual location and path of any underground utilities which might be within 20 feet of the bore path. Contractor shall not commence boring operations until the location of all underground utilities within the work area have been verified.

E. Safety:
Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner. Safety meetings shall be conducted at least weekly with a written record of attendance and topic submitted to Engineer.

F. Pipe:
Pipe shall be connected together in one length prior to pull-back operations, if space permits. Pipe will be placed on pipe rollers before pulling into bore hole with rollers spaced close enough to prevent excessive sagging of pipe.

G. Pilot Hole:
Pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100'. In the event that pilot does deviate from bore path more than 5% of depth in 100', contractor will notify Engineer and Engineer may require contractor to pull-back and re-drill from the location along bore path before the deviation.

In the event that an obstruction is encountered during the pilot bore, or the pilot hole pipe is misaligned, the pipe is to be removed from the borehole and the borehole shall be filled with pumpable, flowable fill at a sufficient pressure to and fill all voids. The cost of the pumpable, flowable fill, removal of pipe and re-bore/re-installing the pipe is incidental to the cost of the project.

H. Reaming:
Upon successful completion of pilot hole, contractor will ream bore hole to a minimum of 25% greater than outside diameter of pipe using the appropriate tools. Contractor will not attempt to ream at one time more than the boring equipment and mud system are designed to safely handle.

I. Pull-Back:
After successfully reaming bore hole to the required diameter, contractor will pull the pipe through the bore hole. In front of the pipe will be a swivel. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations contractor will not apply more than the maximum safe pipe pull pressure at any time.

In the event that pipe becomes stuck, contractor will cease pulling operations to allow any potential hydro-lock to subside and will commence pulling operations. If pipe remains stuck, contractor will notify Engineer. Engineer and contractor will discuss options and then work will proceed accordingly.

3.05 SITE RESTORATION

A. Following boring operations, contractor will de-mobilize equipment and restore the work-site to original condition. All excavations will be backfilled and compacted to 95% of original density. Landscaping will be restored to original.

3.06 EXCAVATION

A. The Contractor shall, during the entire period of construction, provide and maintain any necessary equipment as will, whenever practicable, keep his excavations reasonably free

from water pending construction. When necessary to use pumps the Contractor must dispose of the water without detriment to adjacent properties.

3.07 SHEETING AND SHORING

A. General:
Except where banks may be cut back on a stable slope, excavation for trenches shall be properly and substantially sheeted, braced and shored, as necessary, to prevent caving or sliding, to provide protection for the workmen and the work, and to provide protection for existing structures and facilities. Sheeting, bracing and shoring shall be designed and built to withstand all loads that might be caused by earth movement or pressure, and shall be rigid, maintaining its shape and position under all circumstances.

3.08 FINAL GRADING AND DISPOSAL OF EXCESS EXCAVATED MATERIALS

A. General:
1. Except as otherwise indicated, all excess excavated materials shall be disposed of by the Contractor away from the site of the work.
2. Excavated rock, junk and debris encountered in excavation work, and other similar waste materials shall be disposed of away from the site of the work.
3. The disposal of waste and excess excavated materials, including hauling, handling, leveling and surfacing, shall be at the Contractor's expense.

B. Restoration of disturbed earth:
The Contractor shall restore all earth areas disturbed from the original condition by his operations. Restoration will be by seeding, fertilizing and mulching to obtain an established cover or by appropriate pavement and street repair.

3.09 RESPONSIBILITY OF CONTRACTOR FOR BACKFILL SETTLEMENT

A. The Contractor shall be responsible financially and otherwise, for:
1. All settlement of trench and other backfill which may occur from time of original backfilling until the expiration of 1 year after the date of final payment for the entire contract under which the backfilling work was performed.
2. The refilling and repair of all backfill settlement and the repair or replacement to the original or a better condition of all pavement, top surfacings, driveways, walks, surface structures, utilities, drainage facilities and sod which may have been damaged as a result of backfill settlement or which have been removed or destroyed in connection with backfill replacement operations.
3. All damage claims or court actions against the Owner for any damage directly or indirectly caused by backfill settlement.

B. The Contractor shall make all necessary backfill replacements and repairs, or replacements appurtenant thereto, within 30 days after notification by the Owner or Engineer. Upon the Contractor's failure to do so, the Owner may do, or have done the necessary work and charge the cost to the Contractor.

3.10 MAINTENANCE OF TRAFFIC

A. The Contractor shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian; whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private, the Contractor shall at his own expense provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them; provided however, that such maintenance of traffic will not be required at any point where the Contractor has obtained permission from the owner and tenant of private property, or from the authority having jurisdiction over the public property involved, to obstruct traffic at any designated point thereon and for the duration of whatever period of time as may be agreed upon.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Boring under highways, roads and railroads.

B. Casing pipe.

1.02 RELATED SECTIONS

A. Section 02010: Subsurface Conditions

B. Section 02221: Trenching, Backfilling and Compaction

1.03 SUPERVISION AND QUALITY

A. This work shall comply with all codes governing and all insurance requirements. Work shall be undertaken only when the construction superintendent is present and supervising the work.

1.04 REQUIREMENTS OF REGULATORY AGENCIES

A. Crossings shall be completed in accordance with applicable federal, state and local regulations. In the case of railroad crossings, the project shall comply with regulations established by the railroad company.

PART 2 - PRODUCTS

2.01 CASING PIPE

A. Smooth wall casing pipe shall be of welded steel construction and shall be new material with a minimum yield point of 35,000 psi. The pipe shall have a wall thickness as noted on the plans.

B. Casing wall thickness shall be 1/4 inch thick for casing pipe 10 inch thru 16 inches, 3/8 inch thick for casing pipe 18 inch thru 24 inches, 1/2 inch thick for 30 inches.

2.02 CARRIER PIPE

A. Carrier pipe shall be as noted on the Plans and specified within.

2.03 CASING SPACERS

A. Spacers shall be RACI Type F from Public Works Marketiug or approved equal. HDPE spacers shall be Type F or Type G for carrier pipe sizes 4-inch through 16-inch. Three spacers shall be used for each joint of pipe with a maximum spacing of 6 ft.

2.04 END SEALS

A. End seals shall be synthetic rubber "wrap around" style with stainless steel bond as manufactured by Advance Products & Systems, Inc. or approved equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Crossings under highways, roads and railroads shall be continuously encased under the through roadways, median, ramps and shoulder area to the limits called for or required by the federal, state and local regulations. Railroad crossings shall conform to the requirements of the regulations established by the railroad company.

B. Work shall be performed in a safe and proper manner, with suitable precautions being taken against hazards of every kind. All crossings shall be bored, unless rock formations or other obstructions are encountered that prevents boring or pushing operations. If such conditions are encountered, excavation shall be performed by standard tunneling methods.

C. Excavations shall provide adequate clearance for installation of and removal of equipment.

D. Backfilling and construction of fills and embankments during freezing weather shall not be done except by permission of the Engineer. No backfill, fill or embankment materials shall be installed on frozen surfaces nor shall frozen materials, snow or ice be placed in any backfill, fill or embankments.

E. When operating on pavements or walks all equipment shall be rubber tired, except for excavation equipment. Excavating equipment, in such cases, shall not have grousers, cleats or lugs on the tracks. The Contractor shall take all reasonable precautions to protect the existing pavements and walks.

F. No classification of excavated materials shall be made. Boring excavation and trenching work shall include the removal and subsequent handling of all materials excavated or otherwise removed in performance of the contract work, regardless of the type, character, composition or condition thereof.

G. Pipe lines and other existing underground installations and structures in the vicinity of the work to be done hereunder are not indicated on the plans. The Contractor shall make every effort to locate all underground pipe lines, conduits and structures by contacting owners of underground utilities and by prospecting in advance of excavation and boring. Damage to any existing underground installation caused by the Contractor's operation shall be repaired at the Contractor's expense.

H. Any delays or extra cost to the Contractor caused by pipe lines or other underground structures or obstructions not shown by the plans, or found in locations different than those indicated, shall not constitute a claim for extra work, additional payment or damages.

I. Erosion control of disturbed areas shall be required during the construction period through the use of check dams, siltation pools, mulching, etc.

J. The Contractor shall meet the specific requirements of the Highway Department or Railroad. The Contractor shall obtain all necessary permits and insurance.

K. Operation:
Use all means necessary to control dust or mud that may interfere with operation.

L. Protection:
1. Use all means necessary to protect material and preserve specification requirements.
2. Replace all damaged material or material that has lost specification requirements.

3.02 EXCAVATION

A. The Contractor shall, during the entire period of construction, provide and maintain any necessary equipment as will, whenever practicable, keep his excavations reasonably free from water pending construction. When necessary to use pumps the Contractor must dispose of the water without detriment to adjacent properties.

3.03 SHEETING AND SHORING

A. General:
Except where banks may be cut back on a stable slope, excavation for trenches shall be properly and substantially sheeted, braced and shored, as necessary, to prevent caving or sliding, to provide protection for the workmen and the work, and to provide protection for existing structures and facilities. Sheeting, bracing and shoring shall be designed and built to withstand all loads that might be caused by earth movement or pressure, and shall be

rigid, maintaining its shape and position under all circumstances.

3.04 CASING AND CARRIER PIPE INSTALLATION

A. Casing pipe:

1. Before starting work on borings, complete details of the method of operation and casing to be used shall be submitted to the Engineer for review. All permits shall be obtained by the Contractor.
2. Casing pipes shall have a clear inside diameter not smaller than the size indicated on the schedule.
3. The casing pipe shall be installed by jacking into place. Earth displaced by the casing pipe shall be removed through the interior of the casing by hand, by auger, or by other acceptable means. Sections of the casing pipe shall be welded together to form a continuous casing capable of resisting all stresses, including jacking stresses. The casing pipe in its final position shall be straight and true in alignment and grade. There shall be no space between the earth and the outside of the casing.

B. Carrier pipe:

Polyethylene casing insulators shall be strapped to each end of each piece of pipe. The pipe shall then be pushed into the casing pipe with care being taken to ensure the joints are not displaced. The joints in the installed pipe within the casing shall be tested for leakage before the backfill is installed.

C. Casing closure:

Following the installation of the carrier pipe in the casing pipe, the ends of the casing pipe shall then be closed with wrap around or pull-on end seals as manufactured by Advance Products & Systems, Inc.

3.05 FINAL GRADING AND DISPOSAL OF EXCESS EXCAVATED MATERIALS

A. General:

1. Except as otherwise indicated, all excess excavated materials shall be disposed of by the Contractor away from the site of the work.
2. Excavated rock, junk and debris encountered in excavation work, and other similar waste materials shall be disposed of away from the site of the work.
3. The disposal of waste and excess excavated materials, including hauling, handling, leveling and surfacing, shall be at the Contractor's expense.

B. Restoration of disturbed earth:

The Contractor shall restore all earth areas disturbed from the original condition by his operations. Restoration will be by seeding, fertilizing and mulching to obtain an established cover or by appropriate pavement and street repair.

3.06 RESPONSIBILITY OF CONTRACTOR FOR BACKFILL SETTLEMENT

A. The Contractor shall be responsible financially and otherwise, for:
   1. All settlement of trench and other backfill which may occur from time of original backfilling until the expiration of 1 year after the date of final payment for the entire contract under which the backfilling work was performed.
   2. The refilling and repair of all backfill settlement and the repair or replacement to the original or a better condition of all pavement, top surfacings, driveways, walks, surface structures, utilities, drainage facilities and sod which may have been damaged as a result of backfill settlement or which have been removed or destroyed in connection with backfill replacement operations.
   3. All damage claims or court actions against the Owner for any damage directly or indirectly caused by backfill settlement.

B. The Contractor shall make all necessary backfill replacements and repairs, or replacements appurtenant thereto, within 30 days after notification by the Owner or Engineer. Upon the Contractor's failure to do so, the Owner may do, or have done, the necessary work and charge the cost to the Contractor.

3.07 MAINTENANCE OF TRAFFIC

A. The Contractor shall conduct his work so as to interfere as little as possible with public travel, whether vehicular or pedestrian; whenever it is necessary to cross, obstruct, or close roads, driveways, and walks, whether public or private, the Contractor shall at his own expense provide and maintain suitable and safe bridges, detours, or other temporary expedients for the accommodation of public and private travel, and shall give reasonable notice to owners of private drives before interfering with them; provided however, that such maintenance of traffic will not be required at any point where the Contractor has obtained permission from the owner and tenant of private property, or from the authority having jurisdiction over the public property involved, to obstruct traffic at any designated point thereon and for the duration of whatever period of time as may be agreed upon.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary sediment barrier.

B. Temporary ditch checks

1.02 QUALITY ASSURANCE

A. Regulatory Requirements
Erosion controls shall meet all requirements of the EPA.

1.03 SYSTEM DESCRIPTION

A. Definitions
1. Silt Fence
A temporary sediment barrier consisting of filter fabric buried at the bottom, stretched, and supported by posts.
2. Ditch Checks
A barrier installed across, or at the toe of, a slope to intercept and detain sediment.

B. Purpose
1. Silt Fence
To retain sediment from small disturbed areas by reducing the velocity of sheet flows to allow sediment deposition.
2. Ditch Checks
To intercept and detain small amounts of sediment from unprotected areas of less than 1/2 acre.

C. Location
1. Silt Fence
a. Below small disturbed areas.
b. Where runoff can be stored behind the sediment fence without damaging the fence or the submerged area behind the fence.
c. Do not install sediment fences across streams, ditches, or waterways.
2. Ditch Checks
a. Where contributing area is approximately 1/2 acre, or less.
b. Where there is no concentration of water in a channel above the barrier.
c. Where erosion would normally occur in form of sheet erosion.
d. Where length of slope above the barrier is less than 100 feet.
e. Straw bales shall not be used on high sediment producing areas, above "high risk" areas, where water concentrates, or where there would be a possibility of a washout.

D. Planning

1. A sediment fence is a permeable barrier that shall be planned as a system to retain sediment on the construction site. The fence retains sediment primarily by retarding flow and promoting deposition. In operation, generally the fence becomes clogged with fine particles, which reduce flow rate. this causes a pond to develop more quickly behind the fence. Anticipate ponding and provide sufficient storage areas and overflow outlets to prevent flows from overtopping the fence. Since sediment fences are not designed to withstand high heads, locate them so that only shallow pools can form. Tie the ends of a sediment fence into the landscape to prevent flow around the end of the fence before the pool reaches design level. Provide stabilized outlets to protect the fence system and release storm flows that exceed the design storm.
2. Deposition occurs as the storage pool forms behind the fence. Plan deposition areas at accessible points to promote routine cleanout.

E. Design Criteria

1. Silt Fence
   a. Ensure that the drainage area is no greater than 1/4 acre per 100 ft. of fence.
   b. Make the fence stable for the 10-yr. peak storm runoff.
   c. Ensure that the depth of impounded water does not exceed 1.5 ft. at any point along the fence.
   d. Provide a riprap splash pad or other outlet protection device for any point where flow may overtop the sediment fence, such as natural depressions or swales. Ensure that the maximum height of the fence at a protected, reinforced outlet does not exceed 1 ft. and that support post spacing does not exceed 4 ft.
   e. The design life of a synthetic sediment fence should be 6 months.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Silt Fence

1. Use a synthetic filter fabric or a pervious sheet of polypropylene, nylon, polyester, or polyethylene yard, which is certified by the manufacturer or supplier as conforming to the requirements shown in Table below.
2. Synthetic filter fabric should contain ultraviolet ray inhibitors and stabilizers to provide a minimum of 6 months of expected usable construction life at a temperature range of 0 to 120° F.
3. Posts for sediment fences shall be either 4-inch diameter pine, 2-inch diameter oak, or 1.33 lb/linear ft. steel with a minimum length of 4 ft. Make sure that steel posts have projections to facilitate fastening the fabric.
4. For reinforcement of standard strength filter fabric, use wire fence with a minimum 14 gauge and a maximum mesh spacing of 6 inches.

5. SEDIMENT FENCE FABRIC SPECIFICATIONS

Physical Property	Minimum Requirements
Filtering Efficiency	85%
Tensile Strength at 20% (max.) Elongation	Standard Strength @ 30 psi Extra Strength @ 50 psi
Slurry Flow Rate	0.3 gal/sq ft/min

B. Straw Bales
1. Straw shall be locally baled material.
2. Anchors shall be #5 reinforcing bars or 2"x2" oak stakes.

PART 3 - EXECUTION

3.01 CONSTRUCTION

A. Silt Fence
1. Construct the sediment barrier of standard strength or extra strength synthetic filter fabrics.
2. Ensure that the height of the sediment fence does not exceed 18 inches above the ground surface. (Higher fences may impound volumes of water sufficient to cause failure of the structure.)
3. Construct the filter fabric from a continuous roll cut to the length of the barrier to avoid joints. When joints are necessary, securely fasten the filter cloth only at a support post with overlap to the next post.
4. Support standard strength filter fabric by wire mesh fastened securely to the upslope side of the posts using heavy duty wire staples at least 1 inch long, or tie wires. Extend the wire mesh support to the bottom of the trench.
5. When a wire mesh support fence is used, space posts a maximum of 8 ft. apart. Support posts should be driven securely into the ground to a minimum of 18 inches.
6. Extra strength filter fabric with 6-ft. post spacing does not require wire mesh support fence. Staple or wire the filter fabric directly to the posts.
7. Excavate a trench approximately 4 inches wide and 8 inches deep along the proposed line of posts and upslope from the barrier.
8. Backfill the trench with compacted soil or gravel placed over the filter fabric.
9. Do not attach filter fabric to existing trees.

B. Ditch Checks
1. Bales will be placed in a single row, lengthwise, on the contour and embedded in the soil to a depth of 3 inches.

2. Bales must be securely anchored in place by stakes or re-bars driven through the bales or by other acceptable means to prevent displacement.
3. Inspection must be frequent and repair or replacement must be made promptly as needed.

3.02 MAINTENANCE

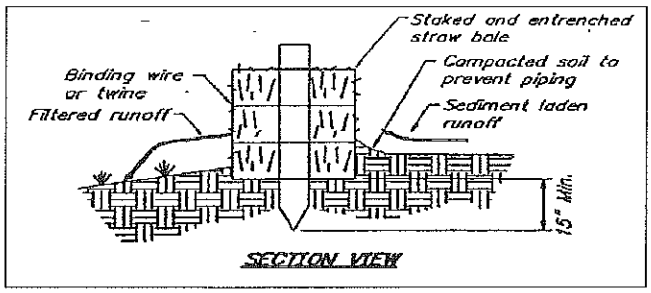
A. Silt Fence
1. Inspect sediment fences at least once a week and after each rainfall. Make any required repairs immediately.
2. Should the fabric of a sediment fence collapse, tear, decompose, or become ineffective, replace it promptly.
3. Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the fence. Take care to avoid undermining the fence during cleanout.
4. Remove all fencing materials and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

B. Ditch Checks
1. Inspect straw bale barriers at least once a week and after each rainfall. Make any required repairs immediately.
2. Should the barrier collapse, decompose or become ineffective, replace it promptly.
3. Remove sediment deposits as necessary to provide adequate storage volume for the next rain and to reduce pressure on the barrier.
4. Remove the barrier and unstable sediment deposits and bring the area to grade and stabilize it after the contributing drainage area has been properly stabilized.

3.03 CLEANUP

A. General
1. Remove all silt and other debris from project site.
2. Remove all silt fence and ditch check materials from project site.
3. Grade area for uniform slope to blend with existing or finish contours.

EROSION CONTROL – DITCH CHECK



Notes:

1. *Straw bales shall not be used longer than a time period of three months. If construction continues beyond this time period, replace bales with new.*

2. *Excavate a trench along the areas that the straw bales will be used as erosion control to a depth of 4 inches and to the width of one straw bale. The straw bales then shall be placed in the trench. Place excavated material on upstream side of the trench.*

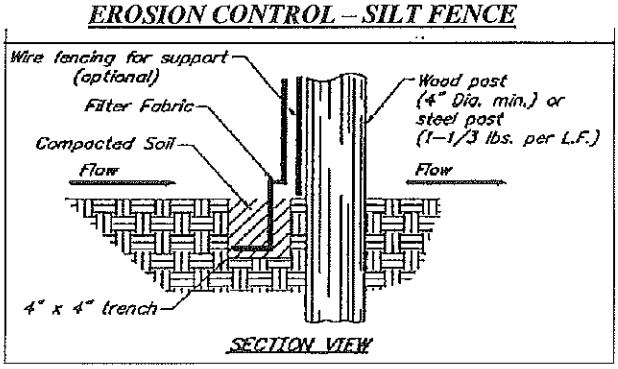
3. *Straw bales shall be anchored with a min. of 2 stakes or rebars driven into the underlying soil, making sure that the binding wire or twine is facing the sides and not touching the soil. The first stake into each bale shall be driven toward the previously laid bale to force them together.*

4. *Spacing between the bales shall be tightly chinked with loose straw.*

5. *After straw bales are in place the excavated soil shall be backfilled against the upslope side of the straw bales to a height of 4 inches after compacting.*

6. *Straw bales shall be inspected after each rainfall to determine if any repairs or replacements to the straw bales are needed. If it is determined that the straw bales need to be repaired or replaced, the work will occur immediately. Sediment accumulations must be removed when they reach 1/2 the barrier height.*

EROSION CONTROL – SILT FENCE



Notes:

1. *The filter fabric shall have a minimum filtering efficiency of 75% a minimum tensile strength of 30 lbs. per linear inch and a flow rate of 0.3 gallons per square foot per minute. The filter fabric shall also have ultraviolet ray inhibitors to assure a life use expectancy of 6 months at 0 to 100 degrees fahrenheit.*

2. *The filter fabric shall be 36 inches or less in height. Joints shall occur only at posts with 6 inch minimum overlap. Posts shall be spaced 10 feet on center when wire mesh support is included or 6 feet on center without wire mesh support. A minimum of 8 inches of fabric will be buried in the 4" x 4" trench.*

3. *The silt fence shall be inspected after every rainfall to determine if any part of the fence needs to be repaired or replaced. If it is determined that the fence needs any repair or replacement, this work will occur immediately.*

4. *Sediment deposits shall be removed after each rainfall or before they accumulate to 1/3 of the fence height.*

PART 1 - GENERAL

1.01 SELECTION INCLUDES

Removing and replacement of various pavement surface required for this project.

1.02 RELATED SECTION:

Section 02221: Trenching, Backfilling, and Compaction

1.03 JOB CONDITION:

A. Operation:
   1. Use all means necessary to control dust or mud that may interfere with the neighborhood.
   2. Traffic access shall be maintained.

B. Protection:
   1. Use all means necessary to protect material and preserve specification requirements.
   2. Replace all damaged material or material that has lost specification requirements.

PART 2 - PRODUCTS

Not Specifically Required

PART 3 - EXECUTION

3.01 STREET REPAIR AND DRIVEWAY REPAIR

A. General:
These specifications provide a minimum standard for the removing of various pavement surfaces, open trenches, excavating, method of backfilling and replacement of various pavement surfaces. These specifications meet the requirements of the Owner as a standard to be followed in all cases where street or drive surfaces are disturbed in the process of any and all excavation work.

B. Class A Street (Portland cement concrete pavement):

1. Prior to replacement of the concrete pavement, the concrete surface shall be scored with a saw on each side of the required excavation to a minimum depth of 2 inches. The size of the area cut shall be 1 foot greater in all directions than the size of the excavation. This is to provide a minimum 6 inch shoulder of undisturbed subgrade surrounding the excavation.
2. All broken concrete shall be removed from the site and not used for backfill material.
3. The walls of the excavation shall be vertical for the full length. Sufficient bracing or shoring shall be provided to hold the excavation walls in vertical plane and to prevent under-cutting of the undisturbed pavement. Sloping of trench walls in deep excavations may be permitted by the Owner or his authorized representative. Bracing or shoring may be omitted where, in the opinion of the Owner's authorized representative, depth of excavation and soil conditions warrant.
4. All excavated materials shall be removed and disposed of after work within the excavated area is complete. The excavation shall be backfilled with clean 1/2 inch aggregate (3/8 inch minimum to 3/4 inch maximum) or type as specified in Section 109 and 109.1 and 109.2 of the Standard Specifications for State Road and Bridge Construction, State Highway Commission of Missouri, current edition, to the bottom of the concrete paving.
5. The pavement removed shall be replaced with high early strength Class A concrete having a compressive strength of 3,750 pounds per square inch at 27 days. The new finish shall be flush with the present street surface.

C. Class B Street (Hot mix asphaltic concrete or brick surface):

1. Conform to paragraphs (1) through (4) inclusive of the specifications for Class A Street (Portland cement concrete pavement).
2. All removed paving shall be removed from the site and not used for backfill material. The minimum 6 inch shoulder shall be excavated to a point no less than 9 inches below the existing street surface. Across the backfilled excavation and resting on the 6 inch shoulders shall be poured a 6 inch slab of high early strength class A concrete having a compressive strength of 3,750 pounds per square inch at 27 days. After 48 hours, this slab shall be covered with 3 inches of hot mix asphalt and rolled. The new finish shall be flush with the present street surface.

D. Class C Street (D.A.S.T., double asphalt surface treatment roads with base):

1. Conform to paragraphs (1) through (4) inclusive of the specifications for Class D Streets below, except final 6 inches of backfill shall be rolled stone base material. The crushed rock base shall be replaced by applying 2 lifts of 3 inch each of crushed rock to state highway specifications. Each lift shall be saturated with water and rolled. When compaction has been attained, and surface moisture evaporated, double asphalt surface treatment shall be applied. Penetration course shall be MC-0 at the rate of 0.20 gallon per square yard. Surface course shall be RC-3 at the rate of 0.35 per gallon per square yard and to be covered with clean 3/8 inch to 1/2 inch crushed aggregate at the rate of 20 pounds per square yard with a lap of 1 foot outside the disturbed area. Surface course shall be applied twice.

E. Class D Street: (Surface asphalt treatment roads and earth base):
1. Initial cutting will be permitted by excavating machinery.
2. Excavation wall shall be vertical and shall be braced and shored to prevent undercutting or crumbling. Sloping of trench walls in deep excavations may be permitted by the Owner's authorized representative, if depth of excavation and soil conditions warrant.
3. Backfill shall consist of clean 1/2 inch aggregate or of rolled stone base material, to the level of the existing paving.
4. Surface treatment shall conform to penetration and surface course for Class C Streets. Surface course shall be applied once.

F. Crushed Stone Streets or Drives:
1. Six inches of compacted stone base meeting Missouri Highway Spec. 1007.1, Type 1 aggregate shall be placed over all disturbed areas.
2. Preparation shall be as required by the applicable sub-articles of Section 203 of the Missouri Standard Specification for Highway Construction, 1977 Edition or latest revision.
3. Crushed stone shall be placed and compacted in two lifts.
4. All County and City gravel surface roads shall be backfilled entirely with approved crushed rock or river gravel. The disposal of unsuitable material excavated will be the responsibility of the Contractor.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

Ductile iron pressure pipe.

1.02 RELATED SECTIONS

A. Section 02221: Trenching, Backfilling, and Compaction

B. Section 02640: Valves, Hydrants, and Accessories

C. Section 02675: Disinfecting Water Mains

1.03 QUALITY ASSURANCE

A. Supervision:
1. Provide full time superintendent on the project who is qualified and experienced in the installation of ductile iron pipe.
2. The superintendent shall direct all work in the execution of this portion of the work to insure proper and adequate installation.

B. Codes and standards:
Installation shall comply with specifications, AWWA C600 and manufacturer's recommendations.

1.04 SUBMITTALS

A. Shop drawings:
Submit shop drawings to the Engineer within 30 days after award of Contract in accordance with Section 01340, showing all the materials to be furnished and installed.

B. As-built drawings:
During progress of the work, maintain an accurate record of all changes made in the plumbing installation from the layout and materials shown on the approved shop drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. where designated on the Plans, piping and fittings shall be ductile iron pipe.

B. Pipe shall have slip joints or mechanical joints. Only one of the two joint types shall be used on this project.

C. All fittings shall be mechanical joints.

D. Four inch diameter pipe shall be Class 51.

E. All 6, 8, 10, and 12 inch diameter pipe shall be Class 50.

F. All pipe and fittings shall have cement lining and bituminous coatings inside and outside.

G. All materials shall comply with the following specifications or the latest revisions thereof.

ANSI (A21.4)	(AWWA C-104)	Cement lining for cast iron pipe.
ANSI (A21.11)	(AWWA C-111)	Mechanical joints for cast iron and ductile iron pressure pipe and fittings.
ANSI (A21.10)	(AWWA C-110)	Short bodied fittings for water.
WW-P-421a	Type II	Roll-on rubber gasket joint cast iron pipe. Pipe size 12 inch and smaller.
ANSI (A21.51) ANSI (A21.50)	(AWWA C-151) (AWWA C-150)	Ductile Iron pipe
(AWWA C-100)		Cast iron pressure fittings.

PART 3 - EXECUTION

3.01 HANDLING

A. Pipe, fittings, and accessories shall be handled in a manner that will ensure their installation in the work in sound, undamaged condition. Equipment, tools and methods used in unloading, reloading, hauling and laying pipe and fittings shall be such that they are not damaged. Hooks inserted in ends of pipe shall have broad, well padded contact surfaces.

B. Pipe and fittings in which the cement lining has been broken or loosened shall be replaced by and at the expense of the Contractor. Where the damaged areas are small and readily accessible, the Contractor may be permitted to repair the lining, subject to the approval of the Engineer.

C. All pipe coating which has been damaged shall be repaired by the Contractor before installing the pipe.

3.02 CUTTING PIPE

A. Cutting of ductile iron pipe shall be in accordance with the recommendations of the manufacturer.

3.03 CLEANING

A. The interior of all pipe and fittings shall be thoroughly cleaned of all foreign matter before being installed and shall be kept clean until the work has been accepted. All lumps, blisters, and excess coating shall be removed from exterior spigot and interior bell surfaces. Such surfaces shall be wire brushed and wiped clean, dry, and free from oil and grease before placing the spigot in the bell. All joint contact surfaces shall be kept clean until the jointing is completed.

B. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. No debris, tools, clothing, or other material shall be placed in the pipe.

C. Whenever pipe laying is stopped, the open end of the line shall be sealed with a watertight plug. All water that may have entered the trench shall be removed prior to removing the plug. It is essential that no mud, trench water, or other foreign matter be permitted to enter the pipe line at any time.

3.04 INSPECTION

During installation, while suspended and hanging free, each pipe and fitting shall be inspected for defects and rung with a light hammer to detect cracks. All defective, damaged, or unsound pipe and fittings shall be rejected and removed from the site of the work.

3.05 ALIGNMENT OF BELL AND SPIGOT PIPE

A. Pipe lines or runs intended to be straight shall be laid straight. Deflections from a straight line taken in joints shall not be greater than that recommended by the pipe manufacturer.

B. Either shorter pipe sections, or special bends, shall be installed where the alignment or grade requires them.

3.06 LAYING PIPE

A. Pipe shall be protected from lateral displacement by means of pipe embedment material installed as provided in the trench backfill specification.

B. Under no circumstances shall pipe be laid in water and no pipe shall be laid under unsuitable weather or trench conditions.

C. Pipe shall be laid with the bell ends facing the direction of laying except when making closures.

3.07 MECHANICAL JOINTS

Mechanical joints shall be carefully assembled in accordance with the manufacturer's recommendations. If effective sealing is not obtained, the joint shall be disassembled, thoroughly cleaned and reassembled. Overtightening bolts to compensate for poor installation practice will not be permitted.

3.08 BOLTLESS GASKETED JOINTS

All instructions and recommendations of the pipe manufacturer, relative to gasket installation and other jointing operations, shall be observed and followed by the Contractor. All joint surfaces shall be lubricated with heavy vegetable soap solution immediately before the joint is completed.

3.09 FLANGED JOINTS

When bolting flanged joints, care shall be taken to ensure that there is no restraint on the opposite end of the pipe or fitting which would prevent uniform gasket compression or which would cause unnecessary stress in the flanges. One flange shall be free to move in any direction while the flange bolts are being tightened. Bell and spigot joints shall not be packed or assembled until all flanged joints affected thereby have been tightened. Bolts shall be tightened gradually and at a uniform rate, in such a manner that gasket compression is uniform over the entire area of the gasket.

3.10 CONNECTIONS WITH EXISTING PIPE LINES

A. Where connections are made between new work and existing piping, such connections shall be made using suitable and proper fittings to suit the conditions encountered. Each connection with an existing water pipe shall be made at a time and under conditions which will least interfere with water service to customers affected thereby, and as authorized by the Owner. Suitable facilities shall be provided for proper dewatering, drainage and disposal of all water removed from the dewatered lines and excavations, without damage to adjacent property.

B. Great care shall be taken to prevent pipe line contamination when dewatering, cutting into, and making connections with, existing pipe lines used for the conveyance or distribution of water for domestic or public use. No trench water, mud, or other contaminating substance shall be permitted to get into the connected line or lines at any time during the progress of the work. The interiors of all pipe, fittings and valves, both new and re-used, installed in such connections, shall be thoroughly cleaned before installation.

3.11 REACTION ANCHORAGE AND BLOCKING

A. All unlugged bell and spigot or all-bell tees, Y-branches and bends deflecting 11-1/4 degrees or more which are installed in piping subjected to internal hydrostatic heads in excess of 15 feet in exposed, or 30 feet in buried, piping shall be provided with suitable reaction blocking, struts, anchors, clamps, joint harness, or other adequate means for preventing any movement of the pipe caused by unbalanced internal liquid pressure.

B. Trench installation:
Where in trench, the foregoing designated fittings shall be provided with concrete thrust blocking between the fitting and solid, undisturbed ground in each case, except where solid ground blocking support is not available. At the tops of slopes vertical angle bends shall be anchored by means of steel strap or rod anchors securely embedded in or attached to a mass of concrete of sufficient weight to resist the hydraulic thrust at the maximum pressures to which the pipe will be subjected. All concrete blocking and anchors shall be installed in such a manner that all joints between pipe and fittings are accessible for repair.

C. The bearing area of concrete reaction blocking against the ground or trench bank shall be as shown by the plans or as directed by the Engineer in each case. In the event that adequate support against undisturbed ground cannot be obtained, metal harness anchorages consisting of steel rods or bolts across the joint and securely anchored to pipe and fitting or other adequate anchorage facilities approved by the Engineer shall be installed to provide the necessary support. Should the lack of a solid vertical excavation face be due to careless or otherwise improper trence excavation, the entire cost of furnishing and installing metal harness anchorages in excess of the contract value of the concrete blocking replaced by such anchorages shall be borne by the Contractor.

D. For other locations:
Reaction blocking, struts, anchorages, or other supports for fittings installed in fills or other unstable ground, above grade, or exposed within structures, shall be provided as required by the plans or as directed by the Engineer.

E. Protection of metal surfaces:
All steel clamps, rods, bolts and other metal accessories used in reaction anchorages or joint harness subject to submergence or contact with earth or other fill material and not encased in concrete shall be adequately protected from corrosion with not less than two coats of Koppers "Bitumastic No. 50", or approved equal, heavy coal tar coating material, applied to clean, dry metal surfaces. The first coat shall be dry and hard before the second coat is applied. Metal surfaces exposed above grade or within structures shall be painted with two coats (in addition to a primer coat) of a paint approved by the Engineer.

3.12 SEPARATION OF WATER MAINS, SANITARY SEWERS AND COMBINED SEWERS - MoDNR

A. Parallel installation:
Water mains shall be laid at least ten feet horizontally from any existing or proposed sewer. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten-foot separation, the department may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer and on either case, at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer. In areas where the recommended separations cannot be obtained, either the waterline or the sewer line shall be constructed of mechanical joint pipe or cased in a continuous casing.

B. Crossings:
Water mains crossing sewers shall be laid to provide a minimum vertical clear distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. At crossings, the full length of water pipe shall be located so both joints will be as far from the sewer as possible but in no case less than ten feet. Special structural support for the water and sewer pipes may be required. In areas where the recommended separations cannot be obtained either the waterline or the sewer line shall be constructed of mechanical joint pipe or cased in a continuous casing that extends no less than ten feet on both sides of the crossing.

C. Exception:
Any variance from the specified separation distances in paragraphs A and B must be submitted to the engineer for approval.

D. Force mains:
There shall be at least a ten-foot horizontal separation between water mains and sanitary sewer force mains and they shall be in separate trenches. In areas where theses separations cannot be obtained, either the waterline or the sewer line shall be cased in a continuous casing.

E. Sewer manholes:
No waterline shall be located closer than ten feet to any part of a sanitary or combined sewer manhole.

F. Disposal facilities:
No waterline shall be located closer than 25 feet to any on-site wastewater disposal facility, agricultural waste disposal facility, or landfill.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Polyethylene encasement.

1.02 RELATED SECTIONS

A. Section 02615: Ductile Iron Pipe

B. Section 02221: Trenching, Backfill, and Compaction

1.03 QUALITY CONTROL

A. Supervision:
Provide full time supervisor trained and familiar with the work to be undertaken.

B. Workmanship:
All workmen shall be skilled and experienced in the specified work.

1.04 SUBMITTALS

A. Shop drawings:
Submit shop drawings to the Engineer within 30 days after award of Contract in accordance with Section 01340.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Polyethylene encasement materials shall be manufactured of virgin polyethylene possessing the following characteristics:

Type, Class, Grade, Other Characteristics — In accordance with ASTM Specification D-1248-68 or latest revision thereof.

Type 1

Class C	Black where exposure to weather (including sunlight) may be more than 48 hours. Exposure to weather shall be kept to a minimum and in no case shall it exceed 10 days.
Grade	E-1
Flow Rate	0.4 maximum
Tensile Strength	1200 psi minimum
Elongation	300 percent minimum
Dielectric Strength	Volume resitivity, ohm-Cm^3 = 1015 800 volts per mil thickness

B. Polyethylene tube material shall have a thickness of 0.008 inches (8 mils). The minus tolerance on thickness shall not exceed 10 percent of the nominal thickness.

C. The minimum tube size for each pipe diameter shall be as listed in Table 1. For pipe sizes greater than 24 inches, tube size may be determined by multiplying the nominal pipe diameter by 2.25 to obtain minimum flat tube width.

TABLE 1

NOMINAL PIPE DIAMETER (INCHES)	POLYETHYLENE FLAT TUBE WIDTH (INCHES)
4	16
6	20
8	24
10	27
12	30
14	34
16	37
18	41
20	45
24	53

D. Adhesive tape shall be a general purpose adhesive tape 1-inch wide and approximately 8 mils thick, such as Scotchtape No. 50, Pol. No. 900, Tapecoat CT or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:
Polyethylene encasement shall be installed on ductile iron pipe and fittings. Although not intended to be a completely air- and water-tight enclosure, the polyethylene shall prevent contact between the pipe and the surrounding backfill.

B. Pipe:
This standard includes two different methods for the installation of polyethylene encasement.

1. Method A:
   a. Cut polyethylene tube to a length approximately 2 feet longer than the length of the pipe section. Slip the tube around the pipe, centering it to provide a 1 foot overlap on each adjacent pipe section, and bunching it accordion-fashion lengthwise until it clears the pipe ends.
   b. Lower the pipe into the trench and make up the pipe joint with the preceding section of pipe. A shallow bell hole must be made at joints to facilitate installation of the polyethylene tube.
   c. After assembling the pipe joint, make the overlap of the polyethylene tube. Pull the bunched polyethylene from the preceding length of pipe, slip it over the end of the new length of pipe, and secure in place with one circumferential turn of adhesive tape plus enough overlap to assure firm adhesion. Then slip the end of the polyethylene from the new pipe section over the end of the polyethylene from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Tape it in place. Take up the slack width to make a snug, but not tight, fit along the barrel of the pipe, securing the fold at quarter points with adhesive tape.
   d. Repair any rips, punctures, or other damage to the polyethylene with adhesive tape or with a short length of polyethylene tube cut open, wrapped around the pipe, and secured with adhesive tape. Proceed with installation of the next section of pipe in the same manner.
2. Method B:
   a. Cut polyethylene tube to a length approximately 1 foot shorter than the length of the pipe section. Slip the tube around the pipe, centering it to provide 6 inches of bare pipe at each end. Make polyethylene snug, but not tight. Tape down and secure ends as described in B,1.
   b. Before making up a joint, slip a 3 foot length of polyethylene tube over the end of the preceding pipe section, bunching it accordion-fashion lengthwise. After completing the joint, pull the 3 foot length of polyethylene over the joint, overlapping the polyethylene previously installed on each adjacent section of pipe by at least 1 foot. Make snug,

tape down, and secure each end as described in B,1.

c. Repair any rips, punctures, or other damage to the polyethylene as described in B,1. Proceed with installation of the next section of pipe in the same manner.

C. Pipe-shaped appurtenances:
Bends, reducers, offsets, and other pipe-shaped appurtenances shall be covered with polyethylene in the same manner as the pipe.

D. Odd-shaped appurtenances:
Valves, tees, crosses, and other odd-shaped pieces which cannot practically be wrapped in a tube shall be wrapped with a flat sheet or split length of polyethylene tube. The sheet shall be passed under the appurtenance and brought up around the body. Seams shall be made by bringing the edges together, folding over twice, and taping down. Slack width and overlaps at joints shall be handled as described in B,1. Tape polyethylene securely in place at valve stem and other penetrations.

E. Openings in encasement:
Openings for branches, service taps, blow-offs, air valves, and similar appurtenances shall be made by making an x-shaped cut in the polyethylene and temporarily folding the fihn back. After the appurtenance is installed, tape the slack securely to the appurtenance and repair the cut as well as any other damaged areas in the polyethylene with tape.

F. Junctions between wrapped and unwrapped pipe:
Where polyethylene wrapped pipe joins a pipe which is not wrapped, extend the polyethylene tube to cover the unwrapped pipe a distance of at least 2 feet. Secure the end with circumferential turns of tape.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Polyvinyl chloride pressure pipe required for project.

1.02 QUALITY ASSURANCE

A. Supervision:
1. Provide full time superintendent on the project who is qualified and experienced in the installation of P.V.C. pipe.
2. The superintendent shall direct all work in the execution of this portion of the work to insure proper and adequate installation.

B. Codes and standards:
Installation shall comply with the applicable specifications of the AWWA and manufacturer.

1.04 SUBMITTALS

A. Shop drawings:
Submit shop drawings to the Engineer within 30 days after award of Contract in accordance with Section 01340, showing all the plumbing system and plumbing materials to be furnished and installed.

B. As-built drawings:
During progress of the work, maintain an accurate record of all changes made in the plumbing installation from the layout and materials shown on the approved shop drawings.

PART 2 - PRODUCTS

2.01 FITTINGS FOR DIP, CIP, OR C900 PVC THAT IS DUCTILE IRON O.D.

A. Ductile Iron Fittings shall be "mechanical joint" conforming to ANSI A21.53 (AWWA C153).

B. Fittings on pipe thru 12 inch size shall be compact type conforming to AWWA C153. All other sizes shall be normal dimension.

2.02 PLASTIC PIPE - DUCTILE IRON O.D.

A. The pipe shall be produced according to AWWA C900 specification for Class 200 psi. The pipe shall be produced by an extrusion process using resin complying with ASTM Specifications D1784. Unless designated otherwise on the plans, the pipe shall conform to all the requirements of Specifications AWWA C900-81 with a standard dimension ratio of DR of 14 for barrel, bell or coupling. All pipe shall bear the AWWA seal of approval and designation. Certificates of compliance with these specs shall be furnished upon request.

B. Only elastomeric ring seals are to be used for joining pipes. Thrust blocks will be necessary at bends, tees, and reducers.

C. The elastomeric gaskets for plastic pressure pipe shall conform with the requirements of ASTM F477. The joint shall have been tested and approved by the National Sanitation Foundation and certification of said approval shall be submitted.

D. Prior to use, Engineer shall be given opportunity for examination and testing. Any pipe found to be injured, damaged or to have defects shall be removed. The pipe shall then be delivered along the line in which the pipe is to be laid. The pipe shall be handled in a manner as recommended by the manufacturer so that minimum damage results.

2.03 RESTRAINED JOINT PVC PIPE

A. Where restrained joint PVC is indicated on plan sheets, pipe shall be North American Specially Products Certa-LOK Tapered Bell Restrained Joint PVC Pressure Piping System, Aquamine, or approved equal. Restrained joint pipe shall meet the ASTM D22-41 Standard Specifications for Poly Vinyl Chloride (PVC), Pressure Rated pipe (SDR Series)."

B. Installation of pipe shall follow manufacturer's recommended procedure and is to be in accordance with Missouri Department of Natural Resources guidelines.

C. Restrained Joint pipe shall have the following:
1. DR 14, Class 305 psi pressure rating
2. Designed for permanent use

PART 3 - EXECUTION

3.01 INSTALLATION

A. Maximum allowable bends in PVC pipe:

The following table gives the maximum distance from the center line of any length of PVC pipe to a chord line from the center of the joints at either end (mid-ordinate distance).

Pipe Size	20 Ft. Length	40 Ft. Length
1 in.	1.0 ft.	4.0 ft.
2 in.	0.5 ft.	2.0 ft.
3 in.	0.33 ft.	1.33 ft.
4 in.	0.25 ft.	1.0 ft.
6 in.	0.16 ft.	.67 ft.
8 in.	0.125 ft.	
10 in.	0.10 ft.	
12 in.	0.082 ft.	

Bends greater than the above require fittings. Use long radius elbow bends where possible.

B. Plastic pipe shall be kept shaded and shall be covered with backfill immediately after installation. Pipe shall be installed in accordance with manufacturer's instructions.

No rock or debris shall be placed in trench within 6 inches of the pipe.

C. The interior of all pipe and fittings shall be thoroughly cleaned of all foreign matter before being installed and shall be kept clean until the work has been accepted. All joint contact surfaces shall be kept clean until the jointing is completed.

D. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being installed. No debris, tools, clothing, or other materials shall be placed in the pipe.

E. Whenever pipe laying is stopped, the open end of the line shall be sealed with a watertight plug. All water that may have entered the trench shall be removed prior to removing the plug. It is essential that no mud, trench water, or other foreign matter be permitted to enter the pipe line at any time.

F. Pipe lines or runs intended to be straight shall be laid straight. Deflections from a straight line taken in joints or in pipe shall not be greater than that recommended by the pipe manufacturer.

G. Either shorter pipe sections, or special bends shall be installed where the alignment or grade requires them.

H. Pipe shall be protected from lateral displacement by means of pipe embedment material installed as provided in the trench backfill specification.

I. Under no circumstances shall pipe be laid in water and no pipe shall be laid under unsuitable weather or trench conditions.

J. Pipe shall be laid with the bell ends facing the direction of laying except when

making closures.

K. Mechanical joints shall be carefully assembled in accordance with the manufacturer's recommendations. If effective sealing is not obtained, the joint shall be disassembled, thoroughly cleaned and reassembled. Overtightening bolts to compensate for poor installation practice will not be permitted.

L. Boltless gasketed joints shall be assembled following all instructions and recommendations of the pipe manufacturer, relative to gasket installation and other jointing operations, and shall be observed and followed by the Contractor. All joint surfaces shall be lubricated with heavy vegetable soap solution immediately before the joint is completed.

3.02 CONNECTIONS WITH EXISTING PIPE LINES

A. Where connections are made between new work and existing piping, such connections shall be made using suitable and proper fittings to suit the conditions encountered. Each connection with an existing water pipe shall be made at a time and under conditions which will least interfere with water service to customers affected thereby, and as authorized by the Owner. Suitable facilities shall be provided for proper dewatering, drainage and disposal of all water removed from the dewatered lines and excavations, without damage to adjacent property.

B. Great care shall be taken to prevent pipe line contamination when dewatering, cutting into, and making connections with, existing pipe lines used for the conveyance or distribution of water for domestic or public use. No trench water, mud, or other contaminating substance shall be permitted to get into the connected line or lines at any time during the progress of the work. The interiors of all pipe, fittings, and valves, both new and re-used, installed in such connections, shall be thoroughly cleaned before installation.

3.03 REACTION ANCHORAGE AND BLOCKING

A. All unlugged bell and spigot or all-bell tees, Y-branches and bends deflecting 11-1/4 degrees or more which are installed in piping subjected to internal hydrostatic heads in excess of 15 feet in exposed, or 30 feet in buried, piping shall be provided with suitable reaction blocking, struts, anchors, clamps, joint harness, or other adequate means for preventing any movement of the pipe caused by unbalanced internal liquid pressure.

3.04 SEPARATION OF WATER MAINS, SANITARY SEWERS AND COMBINED SEWERS MoDNR

A. Parallel installation:

Water mains shall be laid at least ten feet horizontally from any existing or proposed sewer. The distance shall be measured edge to edge. In cases where it is not practical to maintain a ten-foot separation, the department may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the water main closer to a sewer, provided that the water main is laid in a separate trench or on an undisturbed earth shelf located on one side of the sewer and on either case, at such an elevation that the bottom of the water main is at least 18 inches above the top of the sewer. In areas where the recommended separations cannot be obtained, either the waterline or the sewer line shall be constructed of mechanical joint pipe or cased in a continuous casing.

B. Crossings:
Water mains crossing sewers shall be laid to provide a minimum vertical clear distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. At crossings, the full length of water pipe shall be located so both joints will be as far from the sewer as possible but in no case less than ten feet. Special structural support for the water and sewer pipes may be required. In areas where the recommended separations cannot be obtained either the waterline or the sewer line shall be constructed of mechanical joint pipe or cased in a continuous casing that extends no less than ten feet on both sides of the crossing.

C. Exception:
Any variance from the specified separation distances in paragraphs A and B must be submitted to the engineer for approval.

D. Force mains:
There shall be at least a ten-foot horizontal separation between water mains and sanitary sewer force mains and they shall be in separate trenches. In areas where theses separations cannot be obtained, either the waterline or the sewer line shall be cased in a continuous casing.

E. Sewer manholes:
No waterline shall be located closer than ten feet to any part of a sanitary or combined sewer manhole.

F. Disposal facilities:
No waterline shall be located closer than 25 feet to any on-site wastewater disposal facility, agricultural waste disposal facility, or landfill.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Valves

B. Fire Hydrants

C. Valve Boxes

D. Related Items

1.02 RELATED SECTIONS

A. Section 02615: Water Mains - Ductile Iron Pressure Pipe

B. Section 02620: Water Mains - Polyvinyl Chloride Pressure Pipe

1.03 QUALITY CONTROL

A. Supervision:
Provide full time supervisor trained and familiar with the work to be undertaken.

B. Workmanship:
All workmen shall be skilled and experienced in the specified work.

1.04 SUBMITTALS

Shop drawings:
Submit shop drawings to the Engineer within 30 days after award of Contract in accordance with Section 01340.

PART 2 - PRODUCTS

2.01 VALVES

A. Gate valves 12 inches and smaller:
1. All gate valves shall comply with requirements of "Standard Specifications for Resilient Seated Gate Valves for Ordinary Water Works Service" AWWA C509 except as amended herein. All valves shall be resilient seated wedge type.

2. All gate valves unless noted otherwise on the plans shall have ends of standard mechanical joints conforming to ANSI/AWWA C111/A21.11. Flanged end valves shall conform to ANSI B16.1 Class 125.
3. All gate valves shall be mounted in the line in a vertical position unless noted otherwise on the plans.
4. All gate valves shall be provided with "O" rings for sealing of the valve stem.
5. All gate valves shall be equipped with 2 inch square operating nuts. Valves shall close on clockwise rotations.
6. All valves shall be designed for operation at a working pressure of not less than 200 psi.

2.02 FIRE HYDRANTS

A. All fire hydrants shall comply with requirements of "AWWA Standard for Fire Hydrants for Ordinary Water Works Service" C502 except as amended herein.

B. All hydrants shall have replaceable "breakable" sections. Hydrants shall be compression type closing with line pressure. Hydrants shall have inlet connection of 6 inch size with standard flange connection for direct bolting to auxiliary gate valve.

C. All hydrants shall have two hose outlets with National Standard 2-1/2 inch hose threads, and on 4-1/2 inch steamer connection with National Standard threads. Operating nut shall conform to National Standard measurements.

D. Valve opening shall be 5-1/4 inch.

E. Hydrant valve shall open on counter-clockwise rotation of the operating nut.

F. Hydrants shall be painted a finish coat of red above the ground line.

G. Burial depths for hydrants will and may vary, but shall not be less than 4 feet. The steamer connection shall not be less than 12 inches nor greater than 24 inches above finish grade. The contractor shall furnish and install all spool pieces as may be necessary to adjust hydrants to the proper height.

2.03 VALVE BOXES

A. Traffic areas:
Valve boxes shall be Clay & Bailey, or equal, three-piece, slip type 5-1/4 inch shaft for roadway service. Cover shall have the word "Water" cast on its top.

2.04 TAPPING SLEEVES

A. Tapping sleeves shall be as manufactured by the Mueller Co. or M & H Valve & Fitting Co. or approved equal, for 150 psi working pressure. Sizes and number shall be as indicated on the plans. Joints shall be mechanical joint suitable for the pipe to be tapped. Outlet shall be flanged ASA B 16.1.

B. Valves for tapping sleeves shall be as per 2.01 A in this section except that end connection shall be flanged and mechanical joint.

2.05 AIR RELEASE VALVES

A. The air release valve shall operate (open) while pressurized, allowing entrained air to escape from the water pipeline, pump or reservoir tank, thru the air release orifice. After entrained air escapes thru the air release orifice, the valve orifice shall be closed by a needle mounted on the compound lever mechanism, energized by a CONCAVE FLOAT to prevent water from escaping. The air release valve will then stay closed until more air accumulates in it and the opening cycle will repeat automatically.

B. The needle shall be Buna-N for tight shut-off and be resilient to prevent seepage due to pipeline or pump vibrations.

C. The air release valve compound internal level mechanism shall be all Bronze. All other internals must be stainless steel. The stainless steel float must be CONCAVE and sufficiently bouyant to operate water and be SPURT FREE.

D. The valve shall withstand 500 psi test pressure and have a 3/16 inch orifice for operating (opening) pressure up to 150 psi. The venting capacity @ 150 psi shall be 55 CFFAM.

E. Valve to be APCO Model 1 inch - 200A Air Release Valve, as manufactured by Valve & Primer Corporation, Schaumburg, Illinois, U.S.A.

2.06 LOCATOR WIRE/ACCESS TESTING PORTS

Locator wire shall be 12 AWG solid copper insulated wire or 12 AWG copperclap steel wire as manufactured by Copperhead Industries, LLC, or approved equal. Install wire in the trench with the main. All wire connections shall be Copperhead Snake Bite Connectors, dry conn direct bury lug or snake bite wire nuts, or approved equal.

Install access ports at 1,000 feet max. intervals as detailed on plans. All valves, air release vaults, hydrants, flushing assemblies and blow-offs shall have access ports as well as every 1,000 feet. Access port shall be Copperhead, LP Test services or above ground posts shall be "Internal Terminal Style" with standard board with two terminals. Post shall be Rhino TriView Flex Tracing Station Model TVTI 72-BB2 or equal.

Contractor to field verify continuity of wire between access ports after installation. Payment for locator wire will be subject to successful continuity test and report.

When directional drilling or boring is required, only Copperhead" Extra High Strength (EHS), #1245B with 45 mil High Density Polyethylene (HDPE) jacket with minimum 1150# break load, will be used.

2.07 SERVICE CONNECTIONS

A. Service pipe:
The pipe from the main to the meter holding device shall be 1-inch rigid plastic pipe SDR 13.5 for 315 pounds working pressure and shall conform to the preceding specifications for plastic pipe or polyethylene service tubing (ASTM). If polyethylene tubing is used, Ford No. 82 stainless steel insert sleeves shall be used on each pack joint end. All service line installed in highway right-of-way shall be type K copper and subject to approval by the MHTD.

B. Meter holding device:
1. The meter holding device shall provide a complete mounting for the installation of and the holding of the water meter so that the line of flow through the meter shall be 18 inches above the lower edge of the meter box.
2. The copper meter yoke shall be provided with an inverted ground key angle valve or shut-off valve on the inlet side. On the customer side of the setter, a check valve is to be serviceable, spring loaded and one seat of resilient material. Check valve shall be guaranteed and tested to withstand a vacuum or external pressure test of 10.8 psia (22 in Hg) for 1 hour with no leakage. Each end of the yoke shall be provided with a combination tailpiece with inside I.P. thread. The yoke shall provide a copper, brass, or bronze passage entirely through the meter box with the exception of the meter. The construction shall be such that the meter may be removed without removing the meter holding device, and the footing or the discharge leg of the yoke shall extend at least 18 inches from the centerline of the meter box. Setter shall have a pack joint for PVC on each end. The meter holding device shall be an A.Y McDonald Mfg. Co. #22-218WW2233 coppersetter, or approved equal.

C. Service saddle:
Service saddle for main line shall be A.Y McDonald Mfg. Co. #3892. Corporation stop shall be 3/4 inch male IPS by 3/4 inch tube compression

D. Service meter:
1. Meters furnished under these specifications shall be product of a manufacturer with at least 5 years experience in meter manufacturing for the American Water Works market. Meter shall utilize positive displacement measuring chamber for cold water service, of split-case design with provision for frost protection with a nutating disc. The nutating disc shall make no move than 50 oscillations per gallon.
2. Meters shall comply with A.W.W.A. Standard C700-95 for accuracy, capacity,

pressure loss and dimensions.

3. Meters may be either mechanically or magnetically driven with sealed registers. Meters with stuffing box, spindle and packing gland will not be acceptable.
4. Meters shall be readily adaptable to remote readout capability designed and manufactured for Badger meters.
5. Meters shall carry a minimum 5-year/750,000 gallons warranty against defective materials and workmanship and shall be Badger.
6. The body cases shall be of high quality bronze with the manufacturer's serial number imprinted thereon and have raised markings to indicate the direction of flow.
7. A hinged cover bearing the name of the manufacturer in raised letters shall be provided for the register glass. Thread protectors shall be supplied for the connection ends and the cases shall have provisions for wire sealing the meter body. Cases must be capable of withstanding working pressures of 150 psi.
8. Registers shall be straight-reading in U.S. Gallons, sealed to prevent fogging and to prevent fluid contact with water being measured and with provision for test reading the flow to within 0.1 gallon. Register components shall be constructed of corrosion resistant material. The meter shall flow 15 gpm continuously and have a normal flow range of ½-25 gpm.
9. Meter sball he 98.5%-101.5% accurate at ¼ gpm.
10. Meter shall have maximum pressure drop of 5 psi.
11. Meters shall have radio heads installed with them as manufactured by meter manufacturer and be compatible with existing radio read system.
    a. General:
        1) The encoder register will incrementally encode meter reading information and provide a digital signal to collection equipment. The register shall be permanently sealed in a glass and metal housing and constructed without the use of gaskets, available for pit and remote installations.

    b. Registration
        1) The register shall provide an active six-digit number wheel for visual registration.
        2) The register shall incrementally encode the seven most significant digits of the meter reading for digital transmission to the remotely located AMR device.
        3) Position based (absolute) encoders will not be allowed.
        4) The test circle must fill the entire face of the register and employ a full test sweep hand and have division gradients of $1/100^{th}$ of the units of registration.
        5) The units of measure shall be in U.S. Gallons, Cubic Feet, or Cubic Meters an appear in a conspicuous place on the face of the register.
        6) The register face shall prominently display the date code of manufacture, month and year, and indicate the model of water meter it is matched width.
        7) Every register shall utilize a low flow indicator for leak detection

and shall display it in appropriate colors: red for U.S. Gallons, blue for Cubic Feet, and black for Cubic Meters.

c. Electrical Construction

1) The register shall be driven by an accurate, solid-state data collection technology such as the piezoelectric switch. The use of reed switches and/or weigand sensors will not be allowed.
2) The register shall provide digitally formatted data to the AMR device represent accurate meter information.
3) The register shall offer compatibility to other levels of AMR: radio frequency, telephone, close-proximity meter reading, low earth orbit satellite technologies.

d. Mechanical Construction

1) Materials used in the construction of the register shall be environmentally safe with potable water systems. Absolutely no oil is allowed in the registration device.
2) The register shall be constructed of a domed glass top and a copper bottom for maximum durability. No plastic tops or bottoms allowed.
3) The register must be permanently sealed to provide superior moisture resistance flooded pit or remote settings. The permanent seal between the glass and copper bottom shall utilize an adhesive seal without the use of gaskets. This adhesive seal shall have a leak rate not to exceed 1x10(-6) cc/sec when tested on a gas mass spectrometer. Absolutely no gasket seals will be allowed.
4) The register shall have a shroud assembly and lid that is factory installed. Disassembly of the shroud or lid from the register shall require special tools. Lids shall be constructed of plastic or bronze.
5) The register shall be attached to the water meter by bayonet connections. To ensure a high level of tamper resistance, a seal screw should be provided that effectively locks the register to the meter.
6) The register must be removable from the water meter without removing them from service.
7) The register must be factory prewired to pit and remote AMR devices requiring no wiring the field and available in a variety of wire lengths.
8) No connections between the register and AMR device will be allowed.

e. Warranty

1) The manufacturer must warrant the encoder register to be free form defects in materials and workmanship for a period of 10 years from date of shipment.

E. Meter box:
The meter box to be used on this project shall be of PVC Plastic, 18 inch in diameter and not less than 36 inches in length. Boxes shall be A2000 meter well as manufactured by Midwest, Inc.

F. Meter box cover:
1. The meter box covers shall be of cast iron construction of a good quality cast iron at least 50 percent of which shall be new pig. It shall be constructed to fit on the meter box with lugs extended into the box to prevent displacement of the cover. Cover shall be Clay & Bailey, D2210 with lifting lugs or approved equal.

2. The lid shall be held to the body with lugs and shall lock therein with a bronze or bronze-bushed worm lock. The box cover shall be not less than 4 inches high.

G. Cover:
The trench for service lines shall provide not less than 36 inches of cover and shall be not less than 6 inches in width.

H. Meter box location:
Excavation for the meter boxes shall be made at the location indicated by the Engineer.

I. Boring under street roadways for service connections:
Where it is necessary to go under streets and paved roadways with service connections, it will be accomplished by boring unless special permission for trenching is secured.

2.08 SERVICE RECONNECTIONS

A. Service pipe:
The pipe from the main to the reconnection point on the existing service shall be 3/4-inch rigid plastic pipe SDR 13.5 for 315 pounds working pressure and shall conform to the preceding specifications for plastic pipe or polyethylene service tubing (ASTM). If polyethylene tubing is used, Ford No. 82 stainless steel insert sleeves shall be used on each pack joint end. All service line installed in highway right-of-way shall be type K copper and subject to approval by the MHTD. This reconnection shall be made after potable water becomes available from the new main.

B. Service saddle:
Service saddle for main line shall be A.Y McDonald Mfg. Co. #3892. Corporation stop shall be 3/4 inch male IPS by 3/4 inch tube compression.

C. Service tap:
Service tap shall be completed by use of a drilling machine of specified size of ¾" or 1" drilling requirements.

D. Cover:
The trench for service lines shall provide not less than 36 inches of cover and shall be not less than 6 inches in width.

E. Boring under street roadways for service reconnections:
Where it is necessary to go under streets and paved roadways with service reconnections, it will be accomplished by boring unless special permission for trenching is secured.

2.09 CAP EXISTING SERVICE TAP

Materials:
Materials to be used to cap an existing service line connection on a main shall be a Smith-Blair 242 repair clamp with stainless steel bolt.

2.10 BLOW-OFF ASSEMBLIES

Blow-offs shall be non-freezing, self draining type with a 42" bury, blow-offs will be furnished with a 4" JM inlet, a non-turning operating rod and shall open to the left. All of the working parts shall be of bronze-to-bronze design, and be serviceable from above grade with no digging. Units shall operate with a standard 2" gate valve wrench. When open, valve shall be 100% unobstructed and drain hole shall be covered. The outlet shall be 4" FIP with plug and extend a minimum of 12" above the ground, as manufactured by Kupferle Foundry Co., St. Louis, Missouri Model No. 7500, or approved equal.

PART 3 - EXECUTION

3.01 VALVES AND VALVE BOXES

A. Valves and valve boxes shall be set plumb. Each valve box shall be placed directly over the valve it serves, with the top of the box brought flush with the finished grade. After being placed in proper position, earth shall be filled in around each valve box and thoroughly tamped for a distance on each side of the box of 4 feet at the top of the pipe and 2 feet measured at the top of the trench.

B. Each valve shall be inspected before installation to ensure that all foreign substances have been removed from within the valve body, and shall be opened and closed to see that all parts are in first-class working condition.

3.02 FIRE HYDRANTS

A. Hydrants shall be set at such an elevation that the minimum pipe cover is provided throughout the length of the branch supply line and that the nozzles are at least 12 inches and not more than 24 inches above the ground.

B. Each hydrant shall be set on a concrete foundation not less than 18 inches square and 6

inches thick. To prevent the hydrant from blowing off the supply connection, the bowl of each hydrant shall be blocked against the end of the trench with cast-in-place reaction blocking, or it shall be tied to the pipe with suitable rods or clamps.

C. Hydrant drainage shall be provided by installing around the hydrant, and below the top of the hydrant supply pipe, not less than 7 cubic feet of a mixture of two parts gravel or crushed stone retained on a 3/4 inch screen to one part of coarse sand.

D. All hydrants shall stand plumb. Hydrants with pumper nozzles shall have their hose nozzles parallel with, and the pumper nozzle perpendicular to, the curb line. Hydrants having hose nozzles 90 degree apart shall be set so that the line bisecting the angle between the nozzles is perpendicular to the curb line. Hydrants located behind curbs where the sidewalks extend close to, or abut against, the curb shall be set that no portion of the pumper or hose nozzle caps will be less than 6 inches nor more than 12 inches from the gutter face of the curb. Where set in a parking between the curb and sidewalk, or between the sidewalk and property line, no portion of the hydrant or nozzle cap shall be within 6 inches of the sidewalk.

D. Immediately before installation of a hydrant, the following operations shall be performed: (a) the hydrant shall be carefully inspected; (b) the hydrant interior shall be thoroughly cleaned; (c) the hydraut shall be opened and closed as many times as may be necessary to determine if all parts are in proper working order, with valves seating properly and the drain valve operating freely; and (d) the packing gland checked to determine if the packing is in place and the gland nut properly tightened.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Testing of water lines, fire hydrants, and valves.

1.02 RELATED SECTIONS

A. Section 02221: Excavation, Trenching & Backfill

B. Section 02615: Ductile Iron Pressure Pipe

C. Section 02620: Polyvinyl Chloride Pressure Pipe

D. Section 02640: Valves, Hydrants, and Accessories

E. Section 02675: Disinfecting Water Mains

1.03 QUALITY CONTROL

A. Supervision:
Provide full time superintendent on the project who is qualified and experienced in testing procedures. Superintendent shall direct all work in connection with the testing.

B. Codes and standards:
Testing shall comply with AWWA C605-94 Section 7 - Hydrostatic Testing.

1.04 SUBMITTALS

A. Test reports:
Submit certified copies of test reports on each section of pipe tested.

PART 2 - PRODUCTS

None

PART 3 - EXECUTION

3.01 GENERAL

A. The Contractor shall provide all necessary piping connections, pumping equipment, pressure gauges, flow meters, and other equipment as necessary for the required test.

B. Pressure and leakage test may be coordinated with the disinfection of the pipeline, subject to conditions of Section 02675 - "Disinfecting Water Mains."

C. The Owner will furnish at the nearest available source, all water required for filling the lines and making the required test. The pipe shall be filled with water at a velocity not to exceed 1 foot per second. Air shall be expelled from pipe line during filling.

D. Where practical, pipelines shall be tested in lengths of not more than 1500 feet.

E. All pipe, fittings and other materials found to be defective, shall be removed and replaced with new materials by the Contractor.

F. All lines that fail to meet tests shall be repaired and retested as necessary until test requirements are complied with.

G. Testing prior to backfilling in no way relieves the Contractor of the responsibility of repairing leaks which become evident after the main is put into service or during the one-year guarantee period.

3.02 TESTING AFTER BACKFILL

A. If the Contractor chooses to test after backfilling, he shall comply with all requirements shown for testing before backfilling, except that the duration of the test shall be for 4 hours. All surface indications of leaks shall be immediately corrected even though the total leakage is less than allowed.

B. In the event the leakage is more than permissible, the system shall be corrected as found necessary to bring it within the allowed limits. It shall be subject to as many 4 hour tests as necessary to obtain the desired result. If a section of pipe fails the 4 hour test, then a 24 hour test may be required by the Project Engineer.

3.03 TESTING BEFORE BACKFILL

A. All backup blocks and anchors shall have been in place at least 48 hours prior to testing.

B. The test pressure shall be maintained for 2 hours or longer as is necessary for time to inspect the pipe line for visible leaks and as is required to obtain a reasonable time for leakage measurement.

3.04 PRESSURE TEST

A. Test pressure:
1. All newly installed piping shall be hydrostatic pressure tested at 80 percent of rated pressure for all PVC pipe and at 150 psi for all ductile iron pipe.
2. Pressure shall not vary by more than plus or minus 5 psi.
3. Pressurization:
   a. Each valved section of pipe shall be filled with water slowly and the specified test pressure, based on the elevation of the lowest point of the line or section under test and corrected to the elevation of the test gage, shall be applied by means of a pump connected to the pipe. Test shall begin after pipe is filled with water and the air expelled.

B. Air removal:
Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants. If permanent air vents are not located at all high points, the Contractor shall install corporation cocks at such points so that the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied. At the conclusion of the pressure test, the corporation cocks shall be removed and plugged, or left in place at the discretion of the Owner.

C. Examination:
All exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the test. Any damage or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Owner.

3.05 LEAKAGE TEST

A. General:
A leakage test shall be conducted concurrently with the pressure test.

B. Leakage defined:
Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.

C. Allowable leakage:

1. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{ND\,(0.08)P}{7400}$$

in which L is the allowable leakage, in gallons per hour; N is the number of joints in the length of pipeline tested; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gage.

2. The table below shows the allowable leakage in gallons per hour at 150 psi per 1000 feet in 18 foot nominal lengths. For 20 foot nominal lengths, multiply the leakage calculated from table by 0.9.

Pipe Size	Allowable Leakage
2	0.19
3	0.28
4	0.37
6	0.55
8	0.74
10	0.92
12	1.10
14	1.29
16	1.48
18	1.67
20	1.85
24	2.22

3. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons per hour per inch of nominal valve size shall be allowed.
4. When hydrants are in the test section, the test shall be made against the closed hydrant.
5. All visible leaks shall be repaired regardless of the amount of leakage.

D. Acceptance of installation:

Acceptance shall be determined on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than that specified, the Contractor shall, at his own expense, locate and repair the defective material until the leakage is within the specified allowance.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Disinfecting water lines and determining the bacteriologic quality by laboratory test after disinfection.

1.02 RELATED SECTIONS

A. Section 02221: Water Mains - Excavation, Trenching, and Backfill

B. Section 02615: Water Mains - Ductile Iron Pressure Pipe

C. Section 02620: Water Mains - Polyvinyl Chloride Pressure Pipe

D. Section 02640: Water Mains - Valves, Hydrants, and Accessories

1.03 QUALITY CONTROL

A. Supervision:
Provide full time superintendent on the project who is qualified and experienced in disinfection procedures. Superintendent shall direct all work in connection with the disinfection.

B. Codes and standards:
Testing shall comply with AWWA C651-92 or latest revision thereto.

1.04 SUBMITTALS

A. Test reports:
Submit certified copies of test reports on each section of pipe tested.

PART 2 - PRODUCTS

2.01 CHLORINE

A. Calcium hypochlorite (70 percent available chlorine).

PART 3 - EXECUTION

3.01 FLUSHING

A. Water lines shall be flushed prior to disinfection at a velocity of not less than 2.5 feet per second.

B. Discharge point shall have adequate drainage to prevent flooding of surrounding area. Discharge point to be approved by Owner.

3.02 CHLORINE APPLICATION

A. Continuous feed method:

1. This method is suitable for general application.

TABLE 2

Chlorine Required to Produce 50 milligrams per liter Concentration in 100 feet of Pipe - by Diameter

Pipe Size in.	100 percent Chlorine lb.	1 percent Chlorine Solutions gal.
4	0.027	0.33
6	0.061	0.73
8	0.108	1.30
10	0.170	2.04
12	0.240	2.88
14	0.334	4.01
16	0.436	5.24
18	0.552	6.63
24	0.981	11.78
30	1.533	18.40

2. Water from the existing distribution system or other approved sources of supply shall be made to flow at a constant measured rate into the newly-laid pipeline. The water shall receive a dose of chlorine, also fed at a constant measured rate. The two rates shall be proportioned so that the chlorine concentration in the water in the pipe is maintained at a minimum of 50 milligrams per liter available chlorine. To assure that this concentration is maintained, the chlorine residual should be measured at regular intervals in accordance with the procedures described in the current edition of Standard Methods and AWWA M12 - Simplified Procedures for Water Examination.

3. In the absence of a meter, the rate may be determined either by placing a pitot gage at the discharge or by measuring the time to fill a container of known volume.
4. Table 2 gives the amount of chlorine residual required for each 100 feet of pipe of various diameters. Solutions of 1 percent chlorine may be prepared with sodium hypochlorite or calcium hypochlorite. The latter solution requires approximately 1 lb. of calcium hypochlorite in 8.5 gallons of water.
5. During the application of the chlorine, valves shall be manipulated to prevent the treatment dosage from flowing back into the line supplying the water. Chlorine application shall not cease until the entire main is filled with the chlorine solution. The chlorinated water shall be retained in the main for at least 24 hours, during which time all valves and hydrants in the section treated shall be operated in order to disinfect the appurtenances. At the end of this 24 hour period, the treated water shall contain no less than 25 milligrams per liter chlorine throughout the length of the main.

3.03 FINAL FLUSHING

A. After the applicable retention period, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system, or less than 1 milligrams per liter. Chlorine residual determination shall be made to ascertain that the heavily chlorinated water has been removed from the pipe line. Heavily chlorinated water shall be de-chlorinated with sodium thiosulfate prior to discharge to the water course or sanitary/storm sewers.

3.04 BACTERIOLOGIC TEST

A. After final flushing, and before the water main is placed in service, a sample or samples shall be collected from the end of the line and tested for bacteriologic quality and shall show the absence of coliform organisms. If the number and frequency of samples is not prescribed by the public health authority having jurisdiction, at least one sample shall be collected from chlorinated supplies where a chlorine residual is maintained throughout the new main. From unchlorinated supplies at least two samples shall be collected at least 24 hours apart.

B. In the case of extremely long mains, it is desirable that samples be collected the length of the line as well as at its end.

C. Samples for bacteriologic analysis shall be collected in sterile bottles treated with sodium thiosulphate. No hose or fire hydrant shall be used in collection of samples. A suggested sampling tap consists of a standard corporation cock installed in the main with a copper tube gooseneck assembly. After samples have been collected the gooseneck assembly may be removed, and retained for future use.

3.05 REPETITION OF PROCEDURE

A. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. When the samples are satisfactory, the main may be placed in service.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fertilizer.

B. Mulch.

C. Seed.

D. Preparation.

E. Maintenance.

1.02 RELATED SECTIONS

A. Section 02200: Excavation, Backfill, and Site Grading

1.03 ALTERNATE METHODS AND PRODUCTS

A. Alternate methods from those specified will be considered for use, provided that in the Engineer's opinion the end product will be equal to or exceed that which would result from the specified methods and products.

1.04 DEFINITIONS

A. Weeds:
Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wold Garlic, Perennial Sorrel, and Brome Grass.

1.05 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.06 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

1.07 MAINTENANCE DATA

A. Submit maintenance data for continuing Owner maintenance.

B. Include maintenance instruction, cutting method, maximum grass height, types, application frequency, and recommended coverage of fertilizer.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

B. Deliver fertilizer in water proof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 - PRODUCTS

2.01 AGRICULTURAL LIMESTONE

A. Shall be agricultural limestone with not less than 90 percent passing the No. 4 sieve and containing not less than 40 percent calcium carbonate equivalent. Lime shall be applied at the rate recommended by soil test.

2.02 FERTILIZER

A. Shall be a standard commercial product which when applied at the proper rate will supply the equivalent quantity of total nitrogen, available phosphoric acid and soluble potash specified. Fertilizer shall be delivered to the site in bags or other suitable containers, each fully labeled, conforming to applicable state fertilizer laws, and bearing the name, trade name or trademark, and warranty of the producer.

B. Requirements per acre:
   1. Six hundred pounds of 17-17-17 grade fertilizer or equivalent.

2.03 MULCH

A. Shall be vegetive mulch consisting of cereal straw from stalks of oats, rye, wheat or barley. Straw shall be free of prohibited weed seeds as stated in State Seed Law and shall be relatively free of all other noxious and undesirable seeds. Straw shall be clean and bright, relatively free of foreign material and be dry enough to be spread properly.

2.04 SEED

A. Seed shall be a mixture with the specified minimum purity and germiuation requirements, as follows:

Seed Type	% Mix (By Wt.)	Purity %	Germination %
Kentucky K-31 Fescue	52	97	85
Creeping Red Fescue	18	85	80
Rye Grass	8	98	85
Rye Grain	22	-	-

Variation in the above mix to suit local conditions or time of year may be required.

B. Seed shall be labeled in accordance with USDA regulations. Care shall be taken during transportation to avoid segregation of seed mixtures.

C. Seed shall be sown at a rate of 217 pounds of seed mix per acre for drill seeding. Seed mixture shall be thoroughly mixed prior to application.

PART 3 - EXECUTION

3.01 GENERAL

A. The application of fertilizer, seed, and mulch shall follow each other in successive sequence as closely as possible. Seeding shall be accomplished in the first of the following two periods after completion of earthwork.

February 15 to May 1st
September 1st to October 1st

B. Seeding outside the specified seeding periods may be permitted at the Engineer's option, provided the Contractor is willing to make appropriate modifications to his seeding operations, and will guarantee the crop.

3.02 INSPECTION

A. Contractor must request that Engineer inspect site grading, clean-up and surface preparation to determine if site is ready for the seeding, fertilizing and mulching operations.

B. Upon Engineer's approval operations may begin.

3.03 SURFACE PREPARATION

A. Immediately in advance of fertilizing, the surface to be seeded shall be repaired, if necessary, to eliminate all damage from erosion or construction operations. The surface shall then be loosened and thoroughly pulverized by discing, harrowing and raking or other approved methods, to such an extent that it is free from sod, stones, clods, or roots. All growth of vegetation that will seriously interfere with planting operations shall be removed and disposed of as directed. The final surface shall be smooth and uniform, and left in such a condition as to prevent formation of low places and pockets.

3.04 FERTILIZING

A. Fertilizer and lime shall be dressed evenly over the areas to be seeded using approved mechanical type spreading equipment.

B. Fertilizer and lime after spreading shall be immediately incorporated into the soil to a depth of approximately 2 inches, by chisel, spike tooth harrow, or other approved methods.

3.05 SEEDING METHODS

A. General methods:
The Contractor shall employ a satisfactory method of sowing by use of either approved mechanical hand seeders or mechanical power-driven drills. When delays in operation carry the work beyond the specified planting seasons, or when conditions are such that by reason of drought, high winds, excessive moisture, or other factors, satisfactory results are not likely to be obtained, seeding shall stop. It will be resumed only where the desired results are probable or when approved alternate procedures have been adopted.

B. Broadcast seeding:
When broadcast seeding is utilized, the seed shall be uniformly broadcast by mechanical hand seeder, in two directions at right-angles to each other and at 1/2 of the specified rate per acre in each direction. After the seed is broadcast it shall be covered by an approved method to a depth of 1/3 inch to 3/4 inch. Broadcast seeding shall not be done in windy weather.

C. Drill seeding:
When drilling is utilized, it shall be done with approved equipment best suited to perform the work under prevailing conditions. The seed shall be uniformly drilled to a depth of one-third (1/3) inch to three-fourths (3/4) inch at the rate per acre specified. Drill seeding may be required in windy weather.

D. Prior to start of seeding, the Contractor shall demonstrate that the application of seed is being made at the specified rate. A final check of the total quantity of seed used shall be made against the area seeded. If the check shows that the Contractor has not applied seed at the specified rate, he shall uniformly distribute seed at a rate calculated to meet the

shortage.

E. The Contractor shall maintain the seeded areas until all fertilizing, seeding and mulching is complete and the work accepted by the Engineer. Areas damaged from the Contractor's own operations shall be repaired at his expense. After acceptance of the work the Contractor will not be held responsible for erosion due to weather, or conditions not due to the Contractor's own operations or negligence. The Contractor is not required to guarantee a crop, if seeding is done during the specified seeding periods.

3.06 MULCHING

A. Immediately after seeding, the Contractor shall apply vegetative mulch at a rate between 1-1/2 and 2-1/2 tons per acre to all seeded areas. Quantity of mulch shall be adjusted within the above limits, as directed by the Engineer, to the particular area or slope being mulched. Total application of mulch for the project shall average approximately 2 tons per acre. Mulch shall be applied by mechanical mulch spreaders equipped to eject by means of a constant air stream controlled quantities of the vegetative mulch.

B. Mulch shall be embedded by a disc type roller having flat serrated discs spaced not more than 10 inches apart, with cleaning scrapers for each disc.

C. Where indicated, or in areas of the project where soil conditions are not suitable for satisfactory crimping, asphalt emulsion shall be applied with the mulching operation. The normal rate of application shall be 100 gallons per ton of straw; however, this rate may be varied as directed by the Engineer to suit the particular area or slope conditions.

D. All mulch shall be distributed evenly over the areas to be mulched within 24 hours after the seeding operation. Following the mulching operation, suitable precautions shall be taken to prohibit traffic over mulched areas. Displaced mulch shall be replaced immediately, including repair of the underlying seed bed, if damaged as well.

3.07 MAINTENANCE

A. The Contractor shall maintain all seeded areas until the grass is properly established (not less than 90 days) until satisfactory development. Maintenance shall be continued until final acceptance of the work.

B. Maintenance of seeded areas shall include protecting, watering, mowing, fertilizing, and such other work as may be necessary to establish a permanent lawn. The Contractor shall reseed those seeded areas in which a satisfactory growth is not obtained, and shall refill any areas which become eroded prior to final acceptance of the work.

C. Paved areas shall be kept clean while maintenance operations are in progress.

3.08 REPLACEMENT

A. The Contractor shall replace all trees, shrubs, and flowers damaged by construction activities in the areas designated on the construction plans. The replacement trees and shrubs shall be equal in size to the damaged or removed specimen.

END OF SECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Cast in place concrete.

1.02 QUALITY CONTROL

A. Supervision:
   1. Provide full time superintendent on the project who is qualified and experienced in concrete construction. Superintendent shall direct all work in connection with concrete construction.
   2. Finishers shall be journeymen concrete finishers experienced in concrete finish work.

B. Codes and standards:
Work covered by this specification shall be as specified herein and as specified in "Building Code Requirements for Structural Concrete", ACI 318 (latest revision).

1.04 TESTING

A. Laboratory and field testing shall be made on all concrete material including compression yield, air content, and slump test to the following ASTM Test and Specifications.
   1. ASTM C31: Making and Curing Concrete Compressive and Flexural Strength Test Specimens in the Field.
   2. ASTM C33: Specification for Concrete Aggregate.
   3. ASTM C39: Test for Compressive Strength of Cylindrical Concrete Specimens.
   4. ASTM C87: Test for Effect or Organic Impurities in Fine Aggregate on Strength of Mortar.
   5. ASTM C143: Test for Slump of Portland Cement Concrete.
   6. ASTM C15: Specification for Portland Cement.
   7. ASTM C172: Sample Fresh Concrete.
   8. ASTM C231: Test for Air Content of Freshly Mixed Concrete by Pressure Method.
   9. ASTM C260: Specification for Air Entraining Admixtures for Concrete.
   10. ACI 211-1-70: Recommended Practice for Selecting Proportions for Normal Weight Concrete.
   11. ACI 214-65: Recommended Practice for Evaluation of Compression Test Results of Field Practice.

B. Concrete test cylinders shall be made at the job site by the Contractor. Concrete sample shall be taken from concrete being placed. Four cylinders shall be made for each pour over 5 cubic yards. Two cylinders shall be made for each pour for minor structural concrete as manholes, walks, etc.

Identify test cylinders to area concrete was placed. Cure cylinders same as job concrete.

Deliver three cylinders at 4 days. Test one at 7 days, moist cure other and test two at 28 days. Hold fourth cylinder for backup. Job cylinder tests are the basis for acceptance of concrete.

C. Air content shall be measured at the job site by the pressure method ASTM C231. Each test shall be recorded and identified to area concrete was placed. Test results shall be submitted to the Engineer. Air tests shall be made for all pours over 5 cubic yards and as directed by Engineer.

D. Slump test shall be made on all concrete pours. Each test shall be recorded and identified to area concrete was placed. Test results shall be submitted to the Engineer.

1.05 SUBMITTALS AND CERTIFICATES

A. Contractor shall submit name and location of transit mix company for approval.

B. Submit complete laboratory testing data on aggregate gradation, deleterious substances, and durability of mix additives and cement.

C. Delivery tickets shall be required with each load indicating mix design and information listed under ASTM C94-16.

1.06 PRODUCT HANDLING

A. Transit mix:
Concrete shall be handled and preserved in its "batched" proportion during transportation. Mixing time shall not exceed 45 minutes.
Concrete improperly cared for or mixed in the truck longer than 45 minutes shall be disposed of away from the project. Water shall not be added at anytime during transit or at the job site.

B. Defective concrete:
Damaged or defective concrete shall be repaired or removed and replaced immediately as directed by the Engineer.

C. Batch adjustment:
Cement, aggregate, or water, shall not be added to the truck after batching in an attempt to adjust slump or other batch characteristics.

PART 2 - PRODUCTS

2.01 STRUCTURAL CONCRETE

A. General:

1. All concrete used in the project shall be furnished by a reputable permanent concrete plant using transit mix trucks. The plant shall be located within a reasonable distance from the project so travel time is 30 minutes or less. Supplier shall have adequate bins that weigh material by approved scale system. The supplier shall have an adequate number of modern trucks to ensure delivery of concrete as reqnired for placing schedule. Supplier shall be subject to approval of the Engineer.
2. The Contractor shall use whatever means necessary to ensure concrete delivered to the project is properly batched with approved kinds and quantities of materials.
3. All admixtures used in concrete mix shall contain no chlorides.

B. Cement:

All cement shall be Type I Portland cement conforming to ASTM Cl50.

C. Fine aggregate:

1. Fine aggregate shall consist of natural sand conforming to ASTM C33. Sand shall be well graded, washed, and shall conform to the following sieve analysis:

Sieve Size	Percent Passing
1/2 inch	100
3/8 inch	99-100
No. 4	95-100
No. 8	85-95
No. 16	60-85
No. 30	30-60

Sieve Size	Percent Passing
No. 50	10-30
No. 100	0-5

2. The sand shall not have more than 35 percent retained between any two consecutive sieve sizes. Fineness modules shall not be less than 2.5 nor more than 3.1.
3. The amount of deleterious substances in fine aggregate, each determined on independent samples complying with the grading requirements of Division 3, shall not exceed the following limits:

4. Table 1. - Limits for Deleterious Substances in Fine Aggregate for Concrete:

Item	Maximum percent by Weight of Total Sample
Clay Lumps	0.25
Material Finer than No. 200 Sieve	2.00
Coal & Lignite	0.06
Sticks, Leaves & Other Deleterious Material	0.25

5. Fine aggregate shall be free of injurious amounts of organic impurities. Except as herein provided, aggregates subjected to ASTM test No. C40-56T for organic impurities and producing a color darker than the standard shall be rejected.
6. Fine aggregate shall be free of material that could react harmfully with alkalies in the cement. If such materials are present in injurious amounts, the fine aggregate shall be rejected, or shall be used with cement containing less than 0.6 percent alkali calculated as sodium oxide or with the addition of a material that has been shown to inhibit undue expansion due to the alkali-aggregate reaction.
7. Except as provided above, fine aggregate subjected to five cycles of the soundness test (ASTM C88-59T), shall show a loss, weighted in accordance with the grading of a sample complying with the limitations set forth above, not greater than 10 percent when sodium sulfate is used or 15 percent when magnesium sulfate is used.

D. Coarse aggregate:
1. Coarse aggregate shall be crushed limestone having an established history of sound material conforming to ASTM C33 and shall be approved by the Engineer. Furnish soundness test results for approval of source. Coarse aggregate source shall not contain chert deposits.

Gradation

Sieve Size	Percent Passing
1½ inch	100
1 inch	95-100
1/2 inch	25-60
No. 4	0-10
No. 8	0-5

2. Satisfactory experience record shown for durability, otherwise pass soundness test ASTM C88-5 cycles using magnesium sulfate without splitting or losing more than 15 percent weight.
3. Contractor shall arrange and pay for testing if adequate history is not available.

E. Water:

1. Water for mixing and curing concrete shall be clean, and free from injurious amounts of sewage, oil, acid, alkali, salt, or organic matter. Only potable water shall be used.

F. Concrete mix:

1. All concrete for the project shall conform to the design mix listed in the table below. The concrete mix shall include water reducing agent and air entrainment of 6 percent air plus or minus 1.5 percent. Twenty-eight day design strength shall be 4500 psi. The total aggregate volume is based on 60 percent coarse aggregate and 40 percent fine aggregate by volume. In the event the percentage of fine aggregate is increased, the amount of cement shall be increased as directed to provide equivalent strength.

Maximum aggregate size	- 1 inch
Maximum water	- 250 lb/cy
W/C weight ratio (maximum)	- 0.410
Cement	- 6.49 sacks/cy
Fibrous concrete reinforcement	- 1.5 lbs./cy

2. The supplier may submit complete data mix to accomplish the above design with which he has had a history of success for the Engineer's approval. The Contractor shall furnish laboratory design mix for the approved materials if a "history" mix is not available.
3. Water reducing agent shall conform to ASTM C-494, Type A. Acceptable agents include Euclid "Eucon WR 91" or "Eucon MR"; Grace "WRDA with Hycol" or "Daracem 65"; Masterbuilders "Pozzolith" or "Polyheed 997"; or approved equal.
4. Air entraining agent shall conform to ASTM C-260. Acceptable agents include Euclid "Air Mix 250"; W.R. Grace "Daravair 1000"; Masterbuilders "Microair" or "AE90", or approved equal. Proportions shall be a prescribed by the manufacturer and testing laboratory.
5. All admixtures shall be the product of a single manufacturer.

2.02 CURING MEMBRANES AND JOINTS

A. Curing membranes:

Curing membranes shall be 6 mil clear sheet polyethylene, Vis-Queen or equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Inspection:
Inspect all work of other trades to ensure installation is complete and ready for concrete placement. Verify all items are in place.

B. Conflicts:
Consult Engineer in case of conflict between placing and other equipment or material.

3.02 PREPARATION

A. General:
1. Clean all forms and correct all fine grade damage.
2. Wet down all subgrades.
3. Verify all needed equipment for placing concrete is on hand: vibrators, crane or pump, tremies, flumes, finishing equipment.
4. All keyways are to be in place.
5. Dry up excavation if any water is present.
6. Have cold weather equipment on hand if applicable.
7. Notify Engineer at least 48 hours in advance of placing concrete.

3.03 PLACING OF CONCRETE

A. General:
1. Only those methods and arrangements of equipment shall be used which will reduce to a minimum any segregation of coarse aggregate from the concrete.
2. Sufficient capacity of manpower and placing equipment shall be provided so that the work may be kept free from cold joints and other defects in the finished product.
3. Concrete shall be deposited into the forms or on the grade as nearly as practicable in its final position, and in such manner that the concrete will completely fill the forms.
4. Vibration shall not be used to move concrete in a horizontal direction after initial placement.
5. Placement of concrete on a slope shall begin at the lower end of the slope and progress upward.
6. Concrete that has partially hardened or has been contaminated by foreign material shall not be deposited in the work, but shall be discarded.
7. Inclined chutes beyond the mixer chute shall not be permitted. Only concrete pumps or crane with concrete bucket will be approved method of placing concrete beyond chutes on mixers.
8. No water shall be added to the concrete, for any reason, at the job site.

9. Care shall be taken to fill the forms and to finish the concrete so the top surface is true to line and grade.
10. Concrete shall not be placed on muddy or frozen ground.
11. Dry subgrade shall be wetted in advance of concrete placement.
12. Care shall be taken to assure proper concrete coverage of reinforcing steel and mesh, as designed.
13. Care shall be taken to maintain the proper location of all joint material, dowels, embedded items, etc., during concrete placement.
14. No mud or other foreign materials shall be tracked into the concrete during placement operations, and all contaminated concrete shall be removed.
15. Laitance or soft layers of mortar shall be removed from the top or face of previously hardened concrete prior to placing additional concrete in contact with the surfaces.
16. Immediately before placing concrete walls. Concrete fill shall be placed on top of the previously placed concrete.
17. Extreme care shall be taken to avoid damage to surfaces of forms for all exposed concrete work.
18. Keyway shall be clean with no standing water.

B. Footings:
1. Concrete shall not be placed on frozen, muddy or spongy base.
2. All mud, free-standing water, loose dirt and debris shall be removed prior to placement of concrete.
3. Placement operations shall be performed in such manner as to prevent loose earth falling into footing area during placement of concrete.

C. Slabs:
1. Strike-off screeds shall be set to proper grades for all concrete slab construction, and the tolerance for screeds for smooth finish slabs shall not exceed 1/8 inch plus or minus in a distance of 7 feet.
2. Strike-off shall be accomplished by use of a straight edge of adequate weight and length.
3. Vibrating screeds, or other approved strike-off methods, shall be used when concrete slump is less than 3 inches and slab thickness is more than 4 inches.

D. Vibrating:
1. Mechanical internal vibrators shall be used whenever possible in all formed concrete work.
2. Vibrators shall be inserted at uniform spacing of 12 to 20 inches to assure thorough consolidation of all concrete.
3. Vibrators shall be inserted and withdrawn vertically, to a depth which will assure penetration into the previous lift, with vibration periods of from 5 to 15 seconds.
4. Form vibration and hand spading will be required at points inaccessible for thorough internal vibration.
5. During placement of concrete, stand-by vibrators shall be immediately available in the event of mechanical failure in the vibrators being used.

E. Maximum acceptable slump for all structural concrete shall be 3 inches (± 1 inch).

F. Cold weather requirements:
1. Do not place concrete on ice or frozen subgrade.
2. Concrete ingredients shall be heated when the air temperature is below 40 degrees F or forecast to drop below that temperature within 24 hours of the time concrete is to be placed.
3. Heating shall be accomplished by heating either the aggregate or the mixing water, or both. Maximum temperature of the water or aggregates shall be 150 degrees F.
4. Temperature of concrete at time of delivery shall be not less than 60 degrees F nor greater than 80 degrees F.
5. During placing and finishing, concrete shall be maintained at a temperature of 50 degrees F or above, but not more than 80 degrees F.
6. During placing and finishing, the concrete shall be protected from wind to prevent loss of heat and rapid drying.
7. Heating of enclosures for flat slab finishing shall be done by vented heating methods. Open flame heating will not be permitted.
8. Adequate facilities shall be provided prior to beginning concrete placement, for maintaining the ambient air temperature at the surface of the concrete or forms at 70 degrees F for 5 days.
9. Protective measures shall be maintained for at least 4 days beyond the heating period, to prevent sudden cooling of the concrete. During this time, the concrete shall not be allowed to drop in excess of 20 degrees F in any 24 hour period with a minimum temperature of 40 degrees F.
10. Newly finished flatwork shall be covered and protected for at least 14 days against exposure to rain, snow, sleet, and ice.
11. During the entire protection period adequate means shall be provided to prevent loss of moisture from the concrete surface.
12. All methods for protecting and heating concrete shall be subject to approval of the Engineer.
13. See Part 3.05 for curing requirements.

G. Hot weather requirements:
1. Concrete exposed to direct weather shall not be placed at temperatures above 100 degrees F.
2. Temperature of concrete when placed shall not exceed 85 degrees F.
3. In dry, hot or windy weather, sunshades and wind breakers shall be required during finishing operations.
4. As soon as practicable without damage to the surface finish, all exposed concrete shall be covered and kept continuously wet. Maintain concrete below 100 F.
5. See Part 3.05 for curing requirements.

3.04 FINISHING CONCRETE

A. General:
1. All slabs, walks, and decks shall be sloped uniformly to drain to floor drains or to finish grade, and shall drain completely without ponding water.

2. Finish shall be of specified texture and uniform in color and appearance. Approval of each type of finish is required on 4 foot square test panels. Test panels shall be located in protected area away from actual project. Test panels shall be made and approved prior to first concrete placement.
3. All voids in slabs and horizoutal surfaces are to be filled during finishing operation. Voids in formed surfaces are to be repaired immediately at the time forms are removed.
4. Avoid over finishing, late finishing, rewatering, and other techniques that may cause "crazing."
5. Provide adequate manpower and equipment for finishing prior to placing concrete.
6. Initiate curing process as soon as surface strength will permit.

B. Slabs and footing surfaces:
Finish shall be a broom finish. Finish preparation shall be the same as the basin floor slabs. Finish with a steel trowel to produce dense surface then texture with a hair broom to produce non-skid surface. Texturing shall be uniform, single stroke, perpendicular to walls, or parallel to slope direction.

3.05 CURING

A. General:
1. All concrete shall be continuously moist cured a minimum of 5 days after placing and finishing or 5 days after repairing.
2. Protect all concrete surfaces from damage during and after curing period.

B. Horizontal surfaces:
1. Cover with 6 mil polyethylene sheet. Lap edges 6 inches and seal. Hold in place with 2 by 4's at 4 foot centers or similar method. Placement shall not let air circulate under sheets.
2. Place polyethylene sheets as soon as finish can be walked on without damage. Sheets must be in place within 6 hours after finish.
3. Leave polyethylene sheets in place 5 days.

C. Formed surfaces:
1. Forms are adequate if left in place 5 days.
2. Cover top as described in B above.
3. If forms are removed to "stone" finish or repair concrete, moisten surface and completely cover with 6 mil polyethylene sheets. Anchor in place.

3.06 DEFECTIVE WORK

A. General:
1. Defective concrete work shall be removed and replaced immediately.
2. Work built outside tolerances listed in Section 03100 shall be considered defective.

3. Concrete of inadequate strength or having surface conditions indicating poor durability such as crazing, severe "map cracking," crumbling, or other evidence shall be considered defective.
4. Engineer shall be notified immediately when such conditions become apparent.

B. Repairing:
1. Repairing of minor faults such as small "honeycomb" areas and voids may be patched. Repairs shall be made as described in 3.04D above.
2. Cure patched areas 5 days.

3.07 SPECIAL CONSTRUCTION

A. Pipe supports:
1. Provide concrete pipe supports for all piping located 3 feet or less above floor. Form supports for neat appearance.
2. Provide inserts in concrete for pipe hangers.

B. Equipment bases:
Construct concrete bases for all equipment unless otherwise called for on the plan. Grout for solid bearing with non-shrinking grout. Grout shall be thoroughly mixed with the minimum water needed to produce flowable grout. Concrete base shall be saturated with water for at least 24 hours prior to grouting. Fill all void space. Minimum grout thickness shall be 1 inch. Finish edge of base plate grout vertically unless special requirements exist. Keep damp and covered for 5 days.

C. Anchor bolts:
The Contractor shall place anchor bolts, sleeve inserts, etc. required for all items of construction and equipment on the project prior to concrete placement. Care shall be exercised to set all anchors accurately.

END OF SECTION

CONSTRUCTION STANDARDS

GENERAL NOTES:

1. The Contractor shall verify the location and depth of all utilities prior to construction.
2. On Missouri projects, Contractor is to call 1-800-DIG-RITE to request utility locations to be marked at site(s) of proposed excavation.
3. Prior to commencement of work, the Contractor shall notify all those companies which hove facilities in the vicinity 72 hours prior to the construction to be performed.
4. Contractor is to coordinate with Owner prior to connection to existing waterlines. Where interruption of facilities are necessory the Contractor is to plan his work in cooperotion with Owner personnel for the leost possible disruption of service. Night or weekend work may be necessary. If system operation must be suspended because of the Contractor's work, he shall have all necessary materials and equipment on hand, and have ample force available prior to beginning the work.
5. All work on Road/Street right-of-way shall be coordinated and in compliance with the applicable controlling authority. This includes traffic control as required.
6. Contractor is to coordinate w/property owners prior to any temporary closing of drives and/or parking areas.
7. Waterline shall be installed a minimum of 42" (inches) below surface of ground.
8. All Street and Private property monuments shall be protected.
9. All structures, fences, pavement, driveways and other improvements disturbed by construction activities shall be restored by the Contractor to condition equal or better than pre-construction condition.
10. When waterline crosses over or under other utilities, Contractor is to supply and fill 18" void between waterline and other utilities with crushed rock.
11. Waterline is to be installed with a minimum of 10' horizontal clearance from any force main or sewer line.
12. Locations of waterlines, and utilities shown are approximate only, and should be verified by Contractor prior to construction.
13. Backfill all driveway crossings with $\frac{3}{4}$" type I rock. Resurface drives with material to match existing type and thickness. Culvert shall be replaced and ditches graded to drain.
14. Contractor to review and adhere to all provisions on easements, if any, provided to Contractor by Owner.

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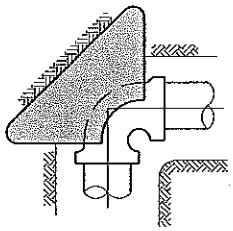
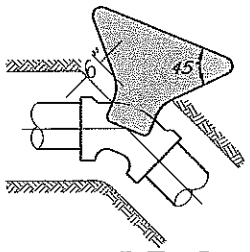
Note:
Construct thrust block at all fittings and hydrants.

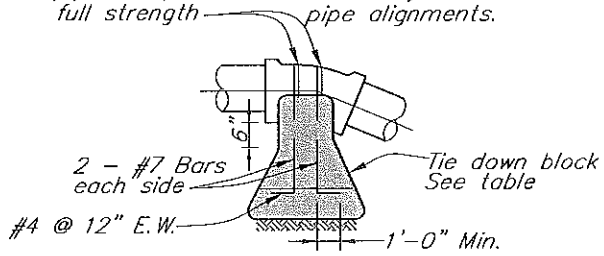


90° BEND

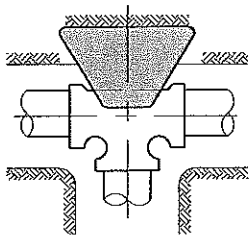


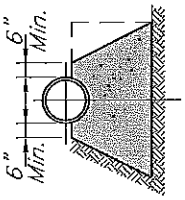
45° BEND OR LESS

Note:
Vertical face of bearing on earth to be symmetrical about plane formed by ℄'s of intersecting pipe alignments.



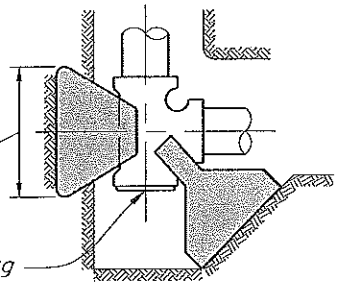
CONCRETE TIE DOWN BLOCK





TEE TYPICAL SECTION

Each block shall have same area of bearing surface as called for in table for tee



PLUGGED TEE

REQUIRED THRUST BLOCK AREA OF BEARING IN SQUARE FEET BETWEEN CONCRETE AND UNDISTURBED TRENCH WALL

PIPE SIZE	24"	20"	18"	16"	14"	12"	10"	8"	6"	2"–4"
90° BEND	64	44	36	28	22	16	11	7	4	2
45° BEND	35	24	19	15	12	9	6	4	2	1
22 1/2° BEND	18	12	10	8	6	4	3	2	1	1
11 1/4° BEND	9	6	5	4	3	2	1½	1	1	1
TEE	45	31	25	20	15	11	8	5	3	1½

Note:
Calculations based on working pressure of 150 psi and soil bearing capacity of 1500 psf.

REQUIRED CUBIC FEET OF CONCRETE FOR TIE DOWN BLOCKS

BEND	PIPE SIZE									
	24"	20"	18"	16"	14"	12"	10"	8"	6"	2"–4"
90°	680	470	380	300	230	170	120	75	42	16
45°	480	330	270	210	160	120	85	53	30	11
22 1/2°	260	180	145	115	90	65	45	29	16	6
11 1/4°	130	90	75	60	45	35	23	15	8	3

Note:
Calculations based on working pressure of 150 psi, unit weight of concrete of 150 psf and a safety factor of 1.5.

THRUST BLOCK DETAILS

Scale: Not to scale

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Notes:

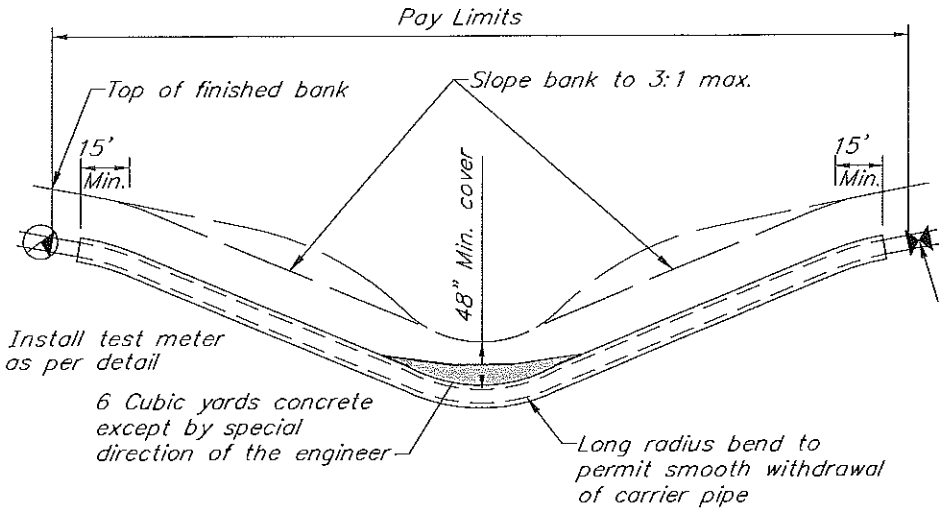
A. Flowing streams.

A minimum cover of four feet shall be provided over the pipe. When crossing water courses are greater than 15 feet in width, the following shall be provided.

1. *The pipe shall be of special construction, having flexible watertight joints. Steel or ductile iron ball-joint river pipe shall be used for open cut crossings. Restrained joint pipe may be used for open cut crossings, provided it is encased in a welded steel cosing. Restrained joint or fusion weld pipe shall be used for bored crossings.*
2. *The stream crossing pipe or casing shall extend at least 15 feet beyond the upper edge of the stream channel on each side of the stream.*

B. Intermittent flowing streams

1. *Restrained joint pipe shall be used for all stream crossings.*
2. *The pipe shall extend at least 15 feet beyond the upper edge of the stream channel on each side of the stream.*



MISSOURI DESIGNATED STREAM CROSSING

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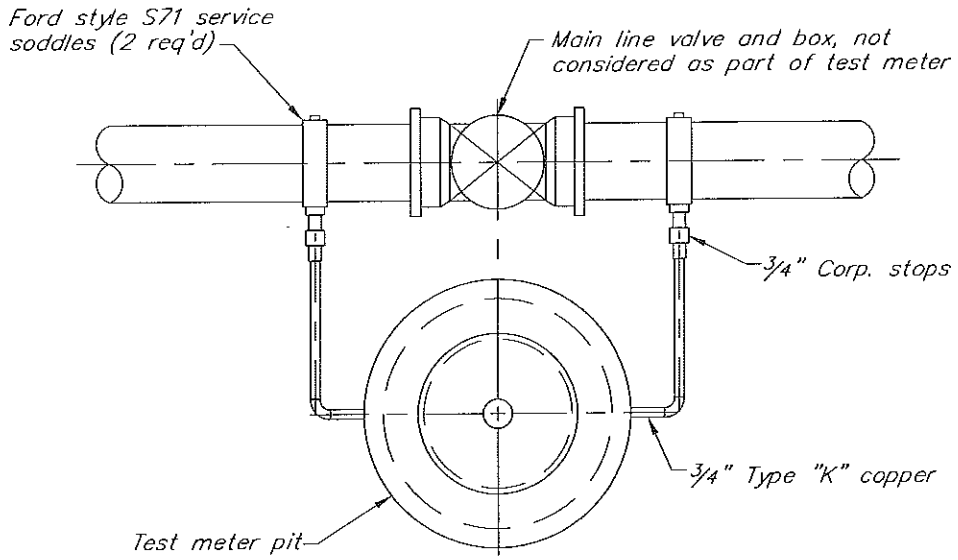
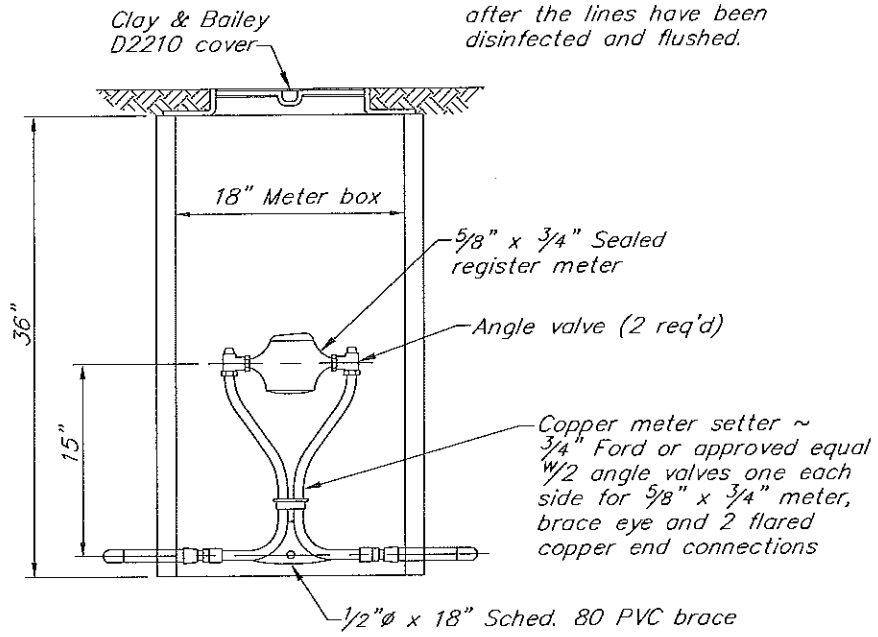


PLAN

NOTE:
Meter shall be installed after the lines have been disinfected and flushed.



SECTION

TEST METER INSTALLATION

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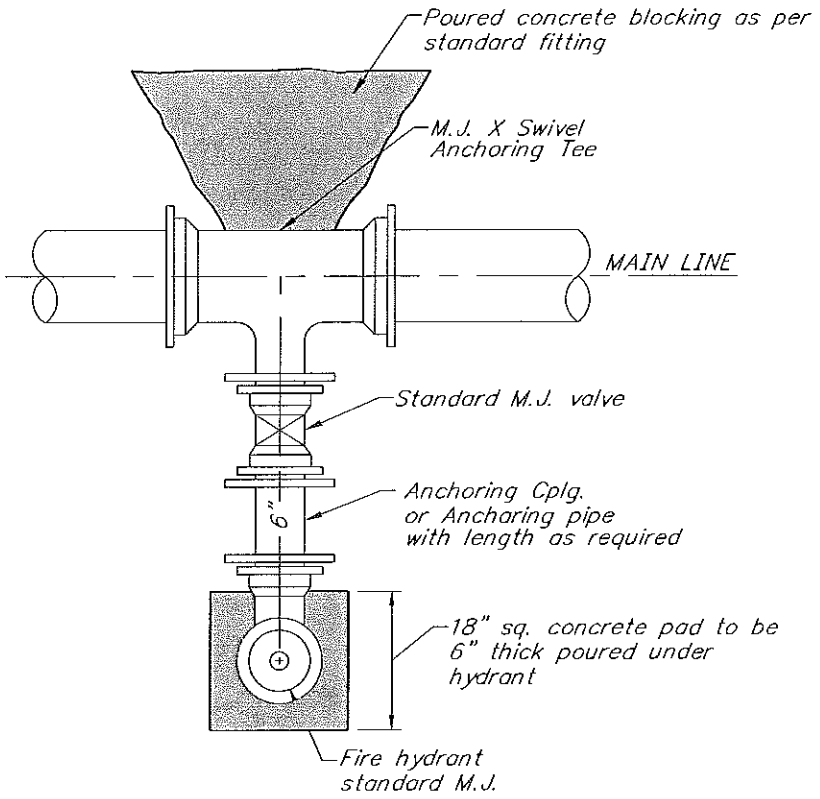

STANDARD FIRE HYDRANT DETAIL

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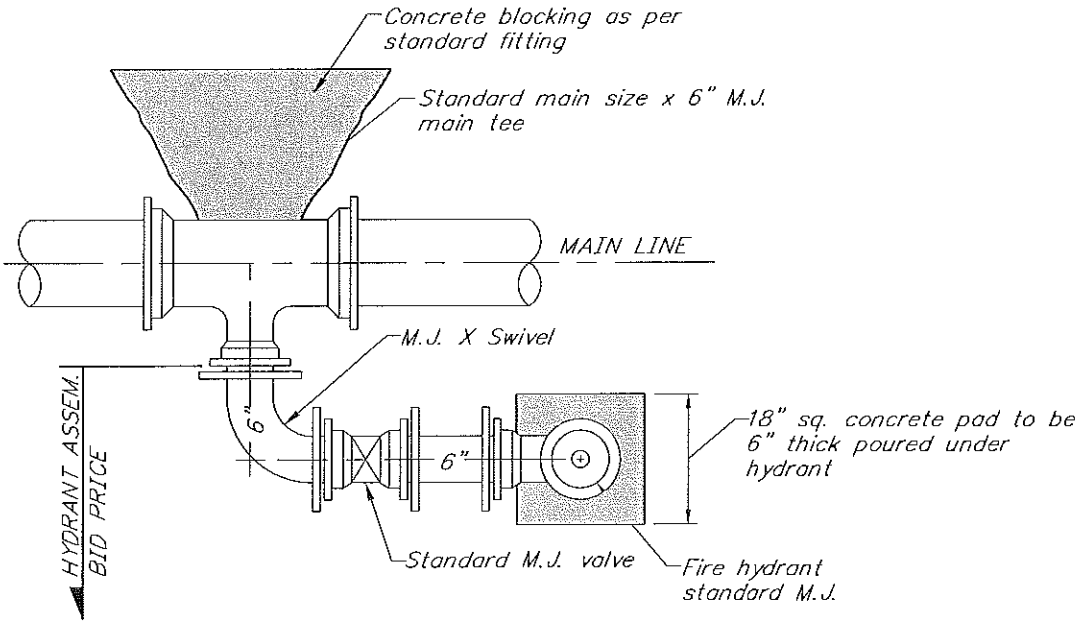

STANDARD HYDRANT INSTALLATION WITH 90° BEND

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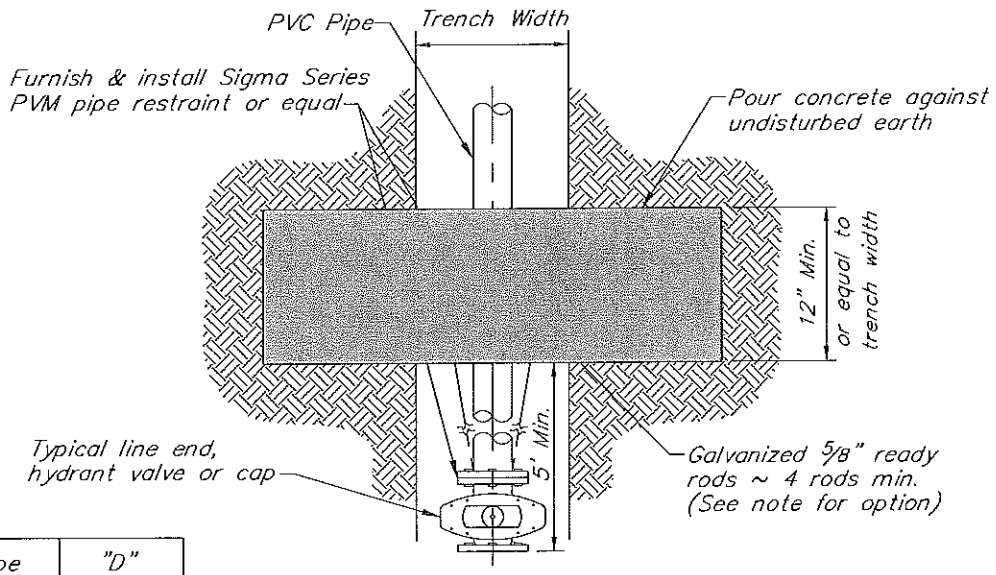
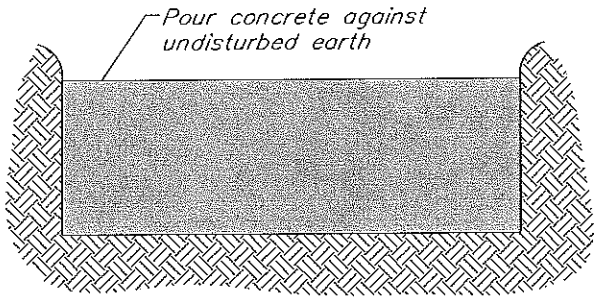


PLAN

Pipe Size	"D" Min.
4–6"	4"
8"	7"
10"	11"
12"	15"
16"	24"

NOTE:
In lieu of ready rods as shown, contractor can use Sigma PV– LOK or equol with PVC – to MJ fitting to tie valve to main.



ELEVATION

STRADDLE BLOCK

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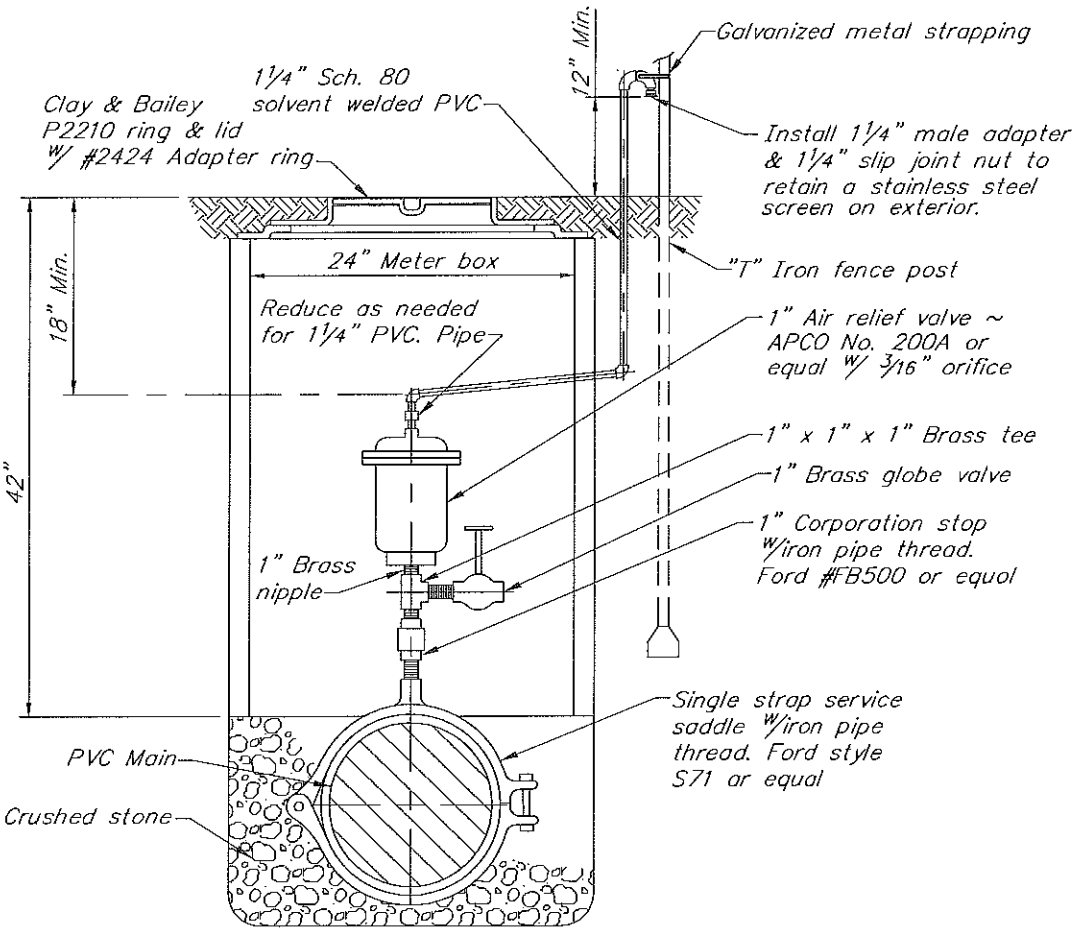

AIR RELEASE VALVE DETAIL

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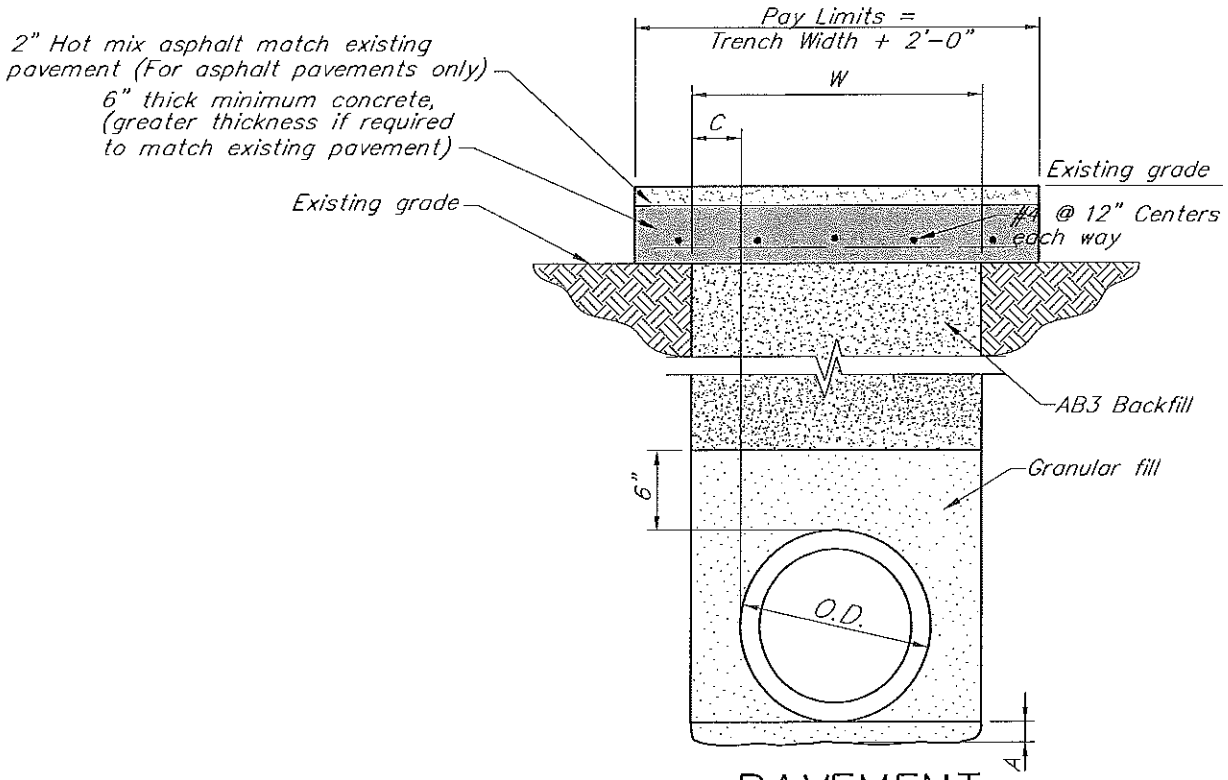

PAVEMENT RESTORATION DETAIL

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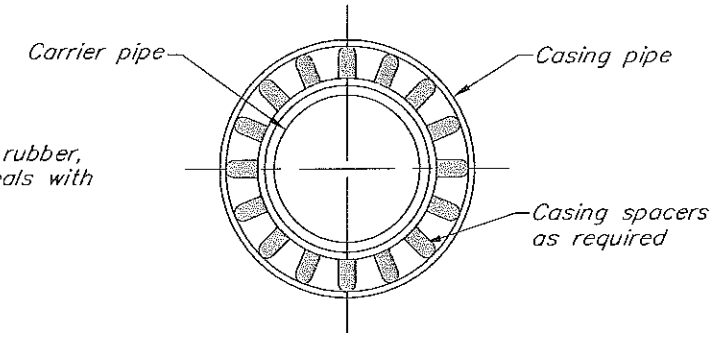
CASING SCHEDULE FOR CROSSINGS

CROSSING TYPE	PVC OR DIP CARRIER PIPE DIAMETER							
	2"	3"	4"	6"	8"	10"	12"	18"
	*MINIMUM CASING DIAMETER							
STATE HIGHWAY (MO. HWY. SPECS.)	6" STEEL	6" STEEL	8" STEEL	10" STEEL	12" STEEL	20" STEEL	20" STEEL	30" STEEL
STREAM	4" PVC	6" PVC	8" PVC	10" PVC	12" PVC	16" STEEL	20" STEEL	30" STEEL
COUNTY AND STREET (BITUMINOUS SURFACE)	4" PVC	6" PVC	8" PVC	10" PVC	12" PVC	16" STEEL	20" STEEL	30" STEEL
RAILROAD (RAILROAD SPECS.)	6" STEEL	8" STEEL	8" STEEL	12" STEEL	16" STEEL	20" STEEL	20" STEEL	30" STEEL

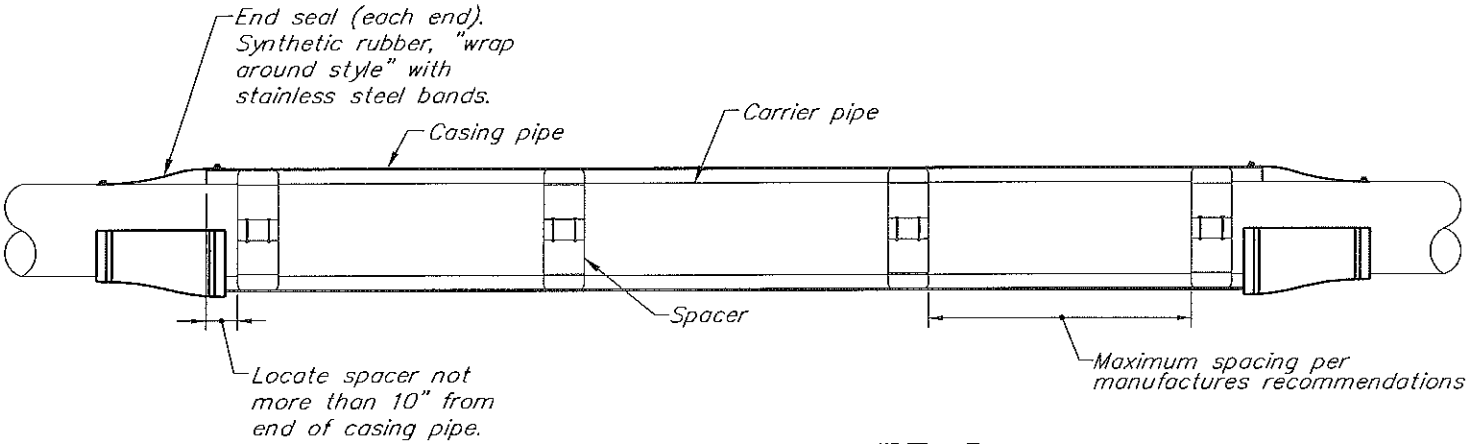
Casing up thru 14" for State Highways shall have a minimum wall thickness of 0.188

Casing 16" & 20" with 0.219" and 0.281" wall thickness respectively for state highways, streams, county roads & streets.

NOTE:
Each end of casing to be sealed with Synthetic rubber, "wrap around style" end seals with stainless steel bands.



CASING DETAIL
(FOR ALL BORED CROSSINGS)



END SEAL DETAIL
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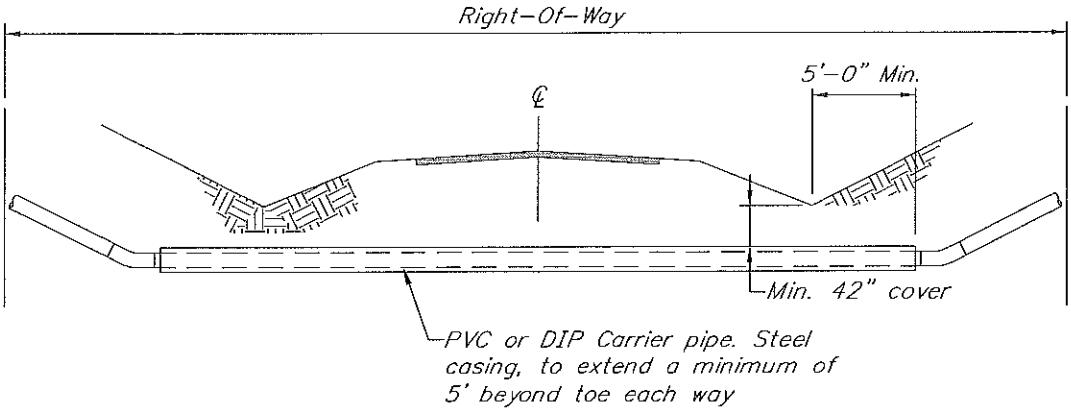

STATE HIGHWAY CROSSING

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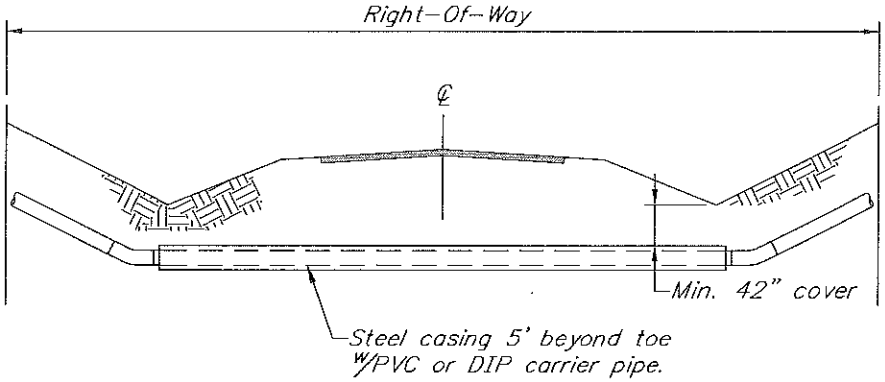
NOTE:

1. Bituminous surfaced roads shall be bored.



DESIGNATED CITY & COUNTY ROAD CROSSING

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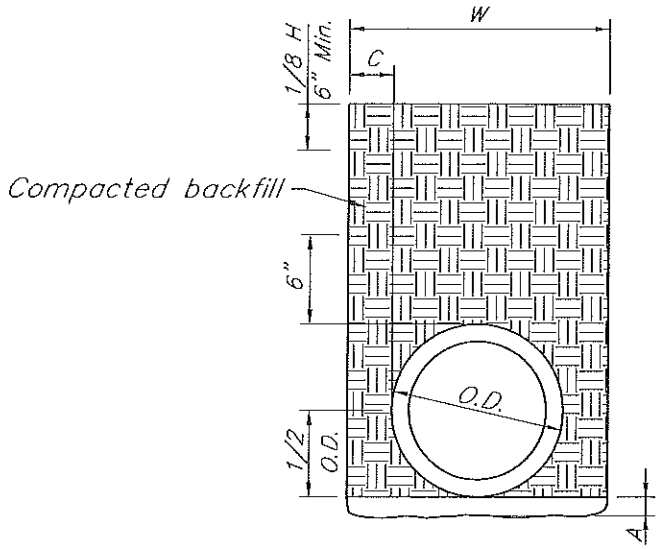

COMPACTED BACKFILL

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NOTES:

1. *A & C = Absolute min. Clearance from pipe wall to any projection of trench bottom or wall.*
   A (earth excav.) 2", class b.
   A (rock excav.) 6", class b.
   C = 6"
2. *W = Trench width at a level 6" above top of pipe.*
   W = Min. Of 12" plus (O.D., O.S. or S).
   W = Max. Of 24" plus (O.D., O.S. or S).
3. *H = Trench height, top of pipe to finished grade.*
4. = *granular fill.*
5. = *precast concrete.*
6. = *cast-in-place concrete.*
7. = *compacted trench backfill.*
8. = *undisturbed earth.*
9. *All bedding class B.*
10. *See specifications for trench bottom stabilization, if required.*

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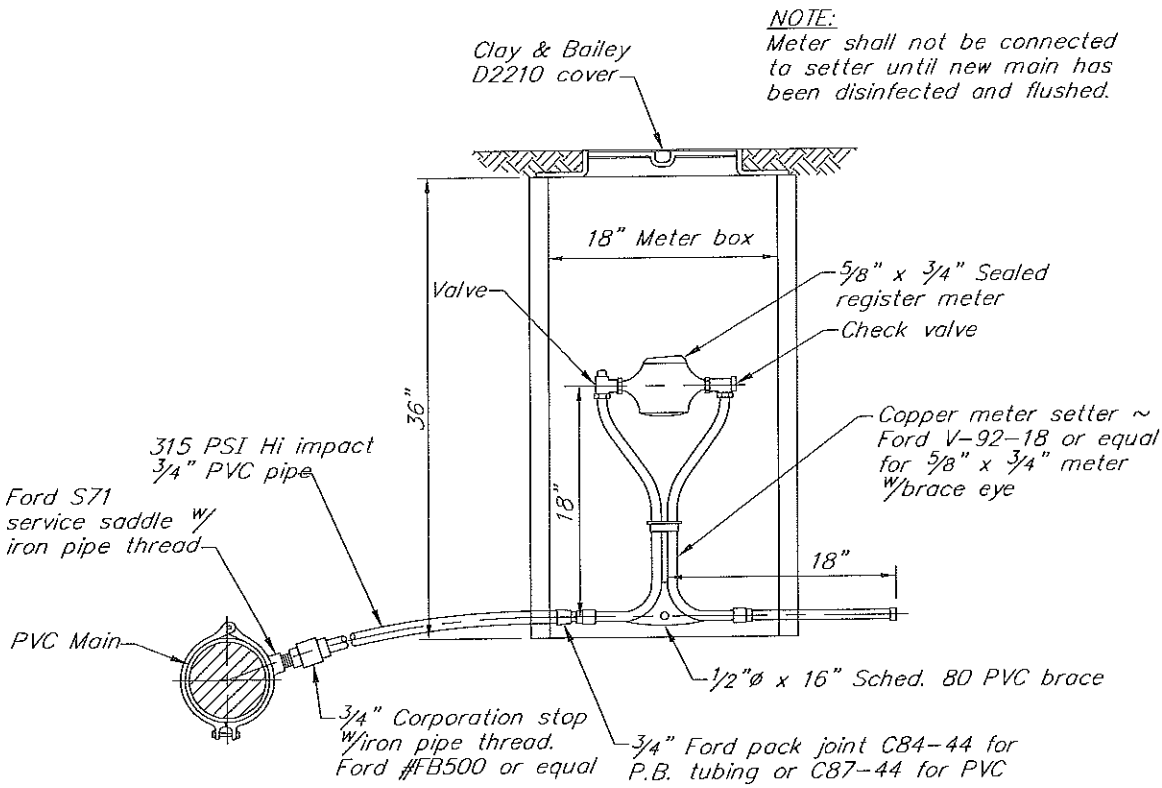

3/4" TYPICAL SERVICE CONNECTION DETAIL

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City Clerk
Nick Jacobs

City Engineer
Carl Brooks

Business Office
Trudy Prickett

Chief of Police
Harry Gurin

City Planner
Cliff McDonald

City Attorney
Reid Holbrook

Parks Director
Nathan Musteen

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

To: Mayor & Board of Aldermen
From: Carl Brooks, City Engineer (cbrooks@cityofpeculiar.com)
Date: July 7, 2014
Re: Resolution No. 2014-xx, Mayor & Board of Alderman (BOA) Acceptance of the following improvements to begin design:

1. 12 inch waterline between Peculiar Dr. North to Hurley. Also at the intersection of Main St. and E. North Rd, replace existing 12-inch waterlines.
2. Install 8-inch waterlines within the Spencer Addition along Clairmont Street, Soryl Avenue, and Hillcrest Drive. These will replace smaller diameter lines and relocate potable water lines further from existing sewer lines as required by DNR.
3. Install an 8-inch waterline along Harr Grove Rd. South of Elm. Also replace the existing smaller diameter waterlines that are prone to breaks

GENERAL INFORMATION

Applicant: City Staff
Requested Actions: Approval of Design
Purpose: Acceptance of the request to start design of three (3) of the eleven (11) hydraulic priority improvement items in the 2014 Engineering Report.
Property Location:
1. Peculiar Drive, Between Peculiar Dr and Hurley/Centennial Street. Also at the intersection of Main St. and E. North Rd.
2. Clairmont Street, Soryl Avenue, and Hillcrest Drive
3. Harr-Grove between Elm Street and Highway J

PROPOSAL

The acceptance for the design and construction phase services for the three Hydraulic improvements in the 2014 Engineering Report including:

1. 12 inch waterline between Peculiar Dr. North to Hurley. Also at the intersection of Main St. and E. North Rd, replace existing 12-inch waterlines.
2. Install 8-inch waterlines within the Spencer Addition along Clairmont Street, Soryl Avenue, and Hillcrest Drive. These will replace smaller diameter lines and relocate potable water lines further from existing sewer lines as required by DNR.
3. Install an 8-inch waterline along Harr Grove Rd. South of Elm. Also replace the existing smaller diameter waterlines that are prone to breaks

Therefore, City staff proposes that the the design and construction phase services for the projects listed.

PREVIOUS ACTIONS

The City has compiled a list of 11 items identified in a Manual of Practice for Water Main Extensions by Larkin. These improvements have been identified and further explained in the manual.

KEY ISSUES

The installation of the 12 inch waterline between Peculiar Dr. North to Hurley as well as the replacement of the existing 12-inch lines at the intersection of Main St. and E. North Road have an estimated cost of $640,392.75 but are deemed of the highest priority to start design.

In addition the installation of the 8-inch waterlines within the Spencer Addition along Clairmont Street, Soryl Avenue, and Hillcrest Drive are expected to cost approximately $369,940.50.

The third most important improvement per recommendation by the 2014 Engineering Report is the install of an 8-inch waterline along Harr Grove Road, south of Elm. This has a cost of approximately $292,059.00.

If the City's updated water hydraulic model, which is part of an engineering grant that the city received, indicates that the City's future growth and development needs are better served by the installation of these three projects, therefore City staff will recommend the design of said improvements.

STAFF COMMENTS AND SUGGESTIONS

City Staff understands the urgency of the included projects and recommends immediate action.

STAFF RECOMMENDATION

City staff recommends the approval of the design of the three (3) most pressing hydraulic projects in the 2014 Engineering Report. Said work is of the upmost importance to safety and obligation to the citizens and city staff feels the money is best spent through the improvements listed.

ATTACHMENTS

- Engineering Report: Water Supply, Pumping, Storage, and Distribution Facilities for The City of Peculiar, MO 2014.

- System Improvements Engineering Report 2014 (Excel)
  Improvements:
    2- Peculiar Dr. North to Hurly
    3- Spencer Addition
    4- Harr Grove Rd, South of Elm
- Larkin Agreement CIP Water 1,2,3

Engineers Joint Documents Committee
Design and Construction Related Documents
Instructions and License Agreement

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The license is effective until terminated. You may terminate it at any time by destroying **EJCDC Design and Construction Related Documents** altogether with all copies, modifications and merged portions in any form. It will also terminate upon conditions set forth elsewhere in

this Agreement or if you fail to comply with any term or condition of this Agreement. You agree upon such termination to destroy **EJCDC Design and Construction Related Documents** along with all copies, modifications and merged portions in any form.

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Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you.

General:
You may not sublicense, assign, or transfer this license except as expressly provided in this Agreement. Any attempt otherwise to sublicense, assign, or transfer any of the rights, duties, or obligations hereunder is void.

This Agreement shall be governed by the laws of the State of Virginia. Should you have any questions concerning this Agreement, you may contact EJCDC by writing to:

Arthur Schwartz, Esq.
General Counsel
National Society of Professional Engineers
1420 King Street
Alexandria, VA 22314

Phone: (703) 684-2845
Fax: (703) 836-4875
e-mail: aschwartz@nspe.org

You acknowledge that you have read this agreement, understand it and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement between us which supersedes any proposal or prior agreement, oral or written, and any other communications between us relating to the subject matter of this agreement.

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Laws and Regulations.

AGREEMENT
BETWEEN OWNER AND ENGINEER
FOR
PROFESSIONAL SERVICES

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

ACEC
American Council of Engineering Companies

AGC of America
The Associated General Contractors of America
Quality People. Quality Projects.

ASCE American Society of Civil Engineers

National Society of Professional Engineers
Professional Engineers in Private Practice

AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

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A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

This Agreement has been prepared for use with the Standard General Conditions of the Construction Contract (EJCDC C-700, 2007 Edition). Their provisions are interrelated, and a change in one may necessitate a change in the other. For guidance on the completion and use of this Agreement, see EJCDC User's Guide to the Owner-Engineer Agreement, EJCDC E-001, 2009 Edition.

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AGREEMENT
BETWEEN OWNER AND ENGINEER
FOR
PROFESSIONAL SERVICES

THIS IS AN AGREEMENT effective as of _____ , **2014** ("Effective Date") between

City of Peculiar, Missouri ("Owner") and

Lamp, Rynearson and Associates, Inc., dba Larkin Lamp Rynearson ("Engineer").

Owner's Project, of which Engineer's services under this Agreement are a part, is generally identified as follows:

CIP Water Mains No. 1, 2, & 3 and Sidewalk along Route C from South St. to North St. ("Project").

Engineer's services under this Agreement are generally identified as follows:

Engineering design, engineering survey, construction administration and part-time construction observation

Owner and Engineer further agree as follows:

ARTICLE 1 – SERVICES OF ENGINEER

1.01 *Scope*

A. Engineer shall provide, or cause to be provided, the services set forth herein and in Exhibit A.

ARTICLE 2 – OWNER'S RESPONSIBILITIES

2.01 *General*

A. Owner shall have the responsibilities set forth herein and in Exhibit B.

B. Owner shall pay Engineer as set forth in Exhibit C.

C. Owner shall be responsible for, and Engineer may rely upon, the accuracy and completeness of all requirements, programs, instructions, reports, data, and other information furnished by Owner to Engineer pursuant to this Agreement. Engineer may use such requirements, programs, instructions, reports, data, and information in performing or furnishing services under this Agreement.

ARTICLE 3 – SCHEDULE FOR RENDERING SERVICES

3.01 *Commencement*

A. Engineer is authorized to begin rendering services as of the Effective Date.

3.02 *Time for Completion*

A. Engineer shall complete its obligations within a reasonable time. Specific periods of time for rendering services are set forth or specific dates by which services are to be completed are provided in Exhibit A, and are hereby agreed to be reasonable.

B. If, through no fault of Engineer, such periods of time or dates are changed, or the orderly and continuous progress of Engineer's services is impaired, or Engineer's services are delayed or suspended, then the time for completion of Engineer's services, and the rates and amounts of Engineer's compensation, shall be adjusted equitably.

C. If Owner authorizes changes in the scope, extent, or character of the Project, then the time for completion of Engineer's services, and the rates and amounts of Engineer's compensation, shall be adjusted equitably.

D. Owner shall make decisions and carry out its other responsibilities in a timely manner so as not to delay the Engineer's performance of its services.

E. If Engineer fails, through its own fault, to complete the performance required in this Agreement within the time set forth, as duly adjusted, then Owner shall be entitled, as its sole remedy, to the recovery of direct damages, if any, resulting from such failure.

ARTICLE 4 – INVOICES AND PAYMENTS

4.01 *Invoices*

A. *Preparation and Submittal of Invoices*: Engineer shall prepare invoices in accordance with its standard invoicing practices and the terms of Exhibit C. Engineer shall submit its invoices to Owner on a monthly basis. Invoices are due and payable ~~within 30 days of~~ **upon** receipt.

4.02 *Payments*

A. Application *to Interest and Principal*: Payment will be credited first to any interest owed to Engineer and then to principal.

B. *Failure to Pay*: If Owner fails to make any payment due Engineer for services and expenses within ~~30~~ **60** days after receipt of Engineer's invoice, then:

1. amounts due Engineer will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) **computed** from ~~said~~ **the** thirtieth day **after the date of Engineer's invoice**; and

2. Engineer may, after giving seven days written notice to Owner, suspend services under this Agreement until Owner has paid in full all amounts due for services, expenses, and other related charges. Owner waives any and all claims against Engineer for any such suspension.

C. *Disputed Invoices:* If Owner contests an invoice, Owner shall promptly advise Engineer of the specific basis for doing so, may withhold only that portion so contested, and must pay the undisputed portion.

D. *Legislative Actions:* If after the Effective Date any governmental entity takes a legislative action that imposes taxes, fees, or charges on Engineer's services or compensation under this Agreement, then the Engineer may invoice such new taxes, fees, or charges as a Reimbursable Expense to which a factor of 1.0 shall be applied. Owner shall reimburse Engineer for the cost of such invoiced new taxes, fees, and charges; such reimbursement shall be in addition to the compensation to which Engineer is entitled under the terms of Exhibit C.

ARTICLE 5 – OPINIONS OF COST

5.01 *Opinions of Probable Construction Cost*

A. Engineer's opinions of probable Construction Cost are to be made on the basis of Engineer's experience and qualifications and represent Engineer's best judgment as an experienced and qualified professional generally familiar with the construction industry. However, because Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over contractors' methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual Construction Cost will not vary from opinions of probable Construction Cost prepared by Engineer. If Owner requires greater assurance as to probable Construction Cost, Owner must employ an independent cost estimator as provided in Exhibit B.

5.02 *Designing to Construction Cost Limit*

A. If a Construction Cost limit is established between Owner and Engineer, such Construction Cost limit and a statement of Engineer's rights and responsibilities with respect thereto will be specifically set forth in Exhibit F, "Construction Cost Limit," to this Agreement.

5.03 *Opinions of Total Project Costs*

A. The services, if any, of Engineer with respect to Total Project Costs shall be limited to assisting the Owner in collating the various cost categories which comprise Total Project Costs. Engineer assumes no responsibility for the accuracy of any opinions of Total Project Costs.

ARTICLE 6 – GENERAL CONSIDERATIONS

6.01 *Standards of Performance*

A. *Standard of Care:* The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Engineer makes no warranties, express or implied, under this Agreement or otherwise, in connection with Engineer's services.

B. *Technical Accuracy:* Owner shall not be responsible for discovering deficiencies in the technical accuracy of Engineer's services. Engineer shall correct deficiencies in technical accuracy without additional compensation, unless such corrective action is directly attributable to deficiencies in Owner-furnished information.

C. *Consultants:* Engineer may employ such Consultants as Engineer deems necessary to assist in the performance or furnishing of the services, subject to reasonable, timely, and substantive objections by Owner.

D. *Reliance on Others:* Subject to the standard of care set forth in Paragraph 6.01.A, Engineer and its Consultants may use or rely upon design elements and information ordinarily or customarily furnished by

others, including, but not limited to, specialty contractors, manufacturers, suppliers, and the publishers of technical standards.

E. Compliance with Laws and Regulations, and Policies and Procedures:

1. Engineer and Owner shall comply with applicable Laws and regulations.

2. Prior to the Effective Date, Owner provided to Engineer in writing any and all policies and procedures of Owner applicable to Engineer's performance of services under this Agreement provided to Engineer in writing. Engineer shall comply with such policies and procedures, subject to the standard of care set forth in Paragraph 6.01.A, and to the extent compliance is not inconsistent with professional practice requirements.

3. This Agreement is based on Laws and Regulations and Owner-provided written policies and procedures as of the Effective Date. Changes after the Effective Date to these Laws and Regulations, or to Owner-provided written policies and procedures, may be the basis for modifications to Owner's responsibilities or to Engineer's scope of services, times of performance, or compensation.

F. Engineer shall not be required to sign any documents, no matter by whom requested, that would result in the Engineer having to certify, guarantee, or warrant the existence of conditions whose existence the Engineer cannot ascertain. Owner agrees not to make resolution of any dispute with the Engineer or payment of any amount due to the Engineer in any way contingent upon the Engineer signing any such documents.

G. The general conditions for any construction contract documents prepared hereunder are to be the "Standard General Conditions of the Construction Contract" as prepared by the Engineers Joint Contract Documents Committee (EJCDC C-700, 2007 Edition)**, with revisions by the Engineer,** unless both parties mutually agree to use other general conditions by specific reference in Exhibit J. **Copies of the Engineer revised document are available for review.**

H. Engineer shall not at any time supervise, direct, control, or have authority over any contractor work, nor shall Engineer have authority over or be responsible for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, or the safety precautions and programs incident thereto, for security or safety at the Site, nor for any failure of a contractor to comply with Laws and Regulations applicable to such contractor's furnishing and performing of its work.

I. Engineer neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform the Work in accordance with the Contract Documents.

J. Engineer shall not provide or have any responsibility for surety bonding or insurance-related advice, recommendations, counseling, or research, or enforcement of construction insurance or surety bonding requirements.

K. Engineer shall not be responsible for the acts or omissions of any Contractor, Subcontractor, or Supplier, or of any of their agents or employees or of any other persons (except Engineer's own agents, employees, and Consultants) at the Site or otherwise furnishing or performing any Work; or for any decision made regarding the Contract Documents, or any application, interpretation, or clarification, of the Contract Documents, other than those made by Engineer.

L. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's and Owner's safety programs of which Engineer has been informed in writing.

6.02 *Design Without Construction Phase Services*

A. Engineer shall be responsible only for those Construction Phase services expressly required of Engineer in Exhibit A~~, Paragraph A1.05~~. With the exception of such expressly required services, Engineer shall have no design, Shop Drawing review, or other obligations during construction and Owner assumes all responsibility for the application and interpretation of the Contract Documents, review and response to Contractor claims, contract administration, processing Change Orders, revisions to the Contract Documents during construction, construction surety bonding and insurance requirements, construction observation and review, review of payment applications, and all other necessary Construction Phase engineering and professional services. Owner waives all claims against the Engineer that may be connected in any way to Construction Phase engineering or professional services except for those services that are expressly required of Engineer in Exhibit A~~, Paragraph A1.05~~.

6.03 *Use of Documents*

A. All Documents are **Engineer's** instruments of service in respect to this Project~~, and Engineer shall retain an ownership and property interest therein (including the copyright and the right of reuse at the discretion of the Engineer) whether or not the Project is completed~~. Owner shall not rely in any way on any Document unless it is in printed form, signed or sealed by the Engineer or one of its Consultants.

B. Either party to this Agreement may rely that data or information set forth on paper (also known as hard copies) that the party receives from the other party by mail, hand delivery, or facsimile, are the items that the other party intended to send. Files in electronic media format of text, data, graphics, or other types that are furnished by one party to the other are furnished only for convenience, not reliance by the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern. If the parties agree to other electronic transmittal procedures, such are set forth in Exhibit J.

C. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any transmittal errors detected within the 60-day acceptance period will be corrected by the party delivering the electronic files.

D. When transferring documents in electronic media format, the transferring party makes no representations as to long-term compatibility, usability, or readability of such documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the documents' creator.

E. Owner~~ may make and retain copies of Documents for information and reference in connection with use on the Project by Owner. Engineer grants Owner a limited license to use the Documents on the Project, extensions of the Project, and for related uses of the Owner,~~ **shall receive ownership of the final construction documents prepared under this Agreement,** subject to receipt by Engineer of full payment for all services relating to preparation of the Documents and subject to the following limitations: (1) Owner acknowledges that such Documents are not intended or represented to be suitable for use on the Project unless completed by Engineer, or for use or reuse by Owner or others on extensions of the Project, on any other project, or for any other use or purpose, without written verification or adaptation by Engineer; (2) any such use or reuse, or any modification of the Documents, without written verification, completion, or adaptation by Engineer, as appropriate for the specific purpose intended, will be at Owner's sole risk and without liability or legal exposure to Engineer or to its officers, directors, members, partners, agents, employees, and Consultants; (3) Owner shall indemnify and hold harmless Engineer and its officers, directors, members, partners, agents, employees, and Consultants from all claims, damages, losses, and expenses, including attorneys' fees, arising out of or resulting from any use, reuse, or

modification of the Documents without written verification, completion, or adaptation by Engineer; and (4) such limited license to Owner shall not create any rights in third parties.

F. If Engineer at Owner's request verifies the suitability of the Documents, completes them, or adapts them for extensions of the Project or for any other purpose, then Owner shall compensate Engineer at rates or in an amount to be agreed upon by Owner and Engineer.

6.04 *Insurance*

A. Engineer shall procure and maintain insurance as set forth in Exhibit G, "Insurance." Engineer shall cause Owner to be listed as an additional insured on any applicable general liability insurance policy carried by Engineer.

B. Owner shall procure and maintain insurance as set forth in Exhibit G, "Insurance." Owner shall cause Engineer and its Consultants to be listed as additional insureds on any general liability policies and as loss payees on any property insurance policies carried by Owner which are applicable to the Project.

C. Owner shall require Contractor to purchase and maintain policies of insurance covering workers' compensation, general liability, property damage (other than to the Work itself), motor vehicle damage and injuries, and other insurance necessary to protect Owner's and Engineer's interests in the Project**, as per the requirements of paragraphs 5.04, 5.05 and 5.06 of the "Standard General Conditions of the Construction Contract" as prepared by the Engineers Joint Contract Documents Committee (EJCDC C-700, 2007 Edition, and the Supplementary Conditions prepared by the Engineer**. Owner shall require Contractor to cause Engineer and its Consultants to be listed as additional insureds with respect to such liability and other insurance purchased and maintained by Contractor for the Project.

D. Owner and Engineer shall each deliver to the other certificates of insurance evidencing the coverages indicated in Exhibit G. Such certificates shall be furnished prior to commencement of Engineer's services and at renewals thereafter during the life of the Agreement.

E. All policies of property insurance relating to the Project shall contain provisions to the effect that Engineer's and its Consultants' interests are covered and that in the event of payment of any loss or damage the insurers will have no rights of recovery against Engineer or its Consultants, or any insureds, additional insureds, or loss payees thereunder.

F. All policies of insurance shall contain a provision or endorsement that the coverage afforded will not be canceled or reduced in limits by endorsement, and **that renewal** ~~thatrenewal~~ will not be refused, until at least 30 days prior written notice has been given to Owner and Engineer and to each other additional insured (if any) to which a certificate of insurance has been issued.

G. At any time, Owner may request that Engineer or its Consultants, at Owner's sole expense, provide additional insurance coverage, increased limits, or revised deductibles that are more protective than those specified in Exhibit G. If so requested by Owner, and if commercially available, Engineer shall obtain and shall require its Consultants to obtain such additional insurance coverage, different limits, or revised deductibles for such periods of time as requested by Owner, and Exhibit G will be supplemented to incorporate these requirements.

6.05 *Suspension and Termination*

A. Suspension:

1. By Owner: Owner may suspend the Project for up to 90 days upon seven days written notice to Engineer.

2. By Engineer: Engineer may, after giving seven days written notice to Owner, suspend services under this Agreement if Engineer's performance has been substantially delayed through no fault of Engineer.

B. *Termination*: The obligation to provide further services under this Agreement may be terminated:

1. For cause,

a. By either party upon ~~30~~ **7 calendar** days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party.

b. By Engineer:

1) upon seven days written notice if Owner demands that Engineer furnish or perform services contrary to Engineer's responsibilities as a licensed professional; or

2) upon seven days written notice if the Engineer's services for the Project are delayed or suspended for more than 90 days for reasons beyond Engineer's control.

3) Engineer shall have no liability to Owner on account of such termination.

c. Notwithstanding the foregoing, this Agreement will not terminate under Paragraph 6.05.B.1.a if the party receiving such notice begins, within seven days of receipt of such notice, to correct its substantial failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt thereof; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 30 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but in no case more than, 60 days after the date of receipt of the notice.

2. For convenience,

a. By Owner effective **7 calendar days** upon Engineer's receipt of notice from Owner.

C. *Effective Date of Termination*: The terminating party under Paragraph 6.05.B may set the effective date of termination at a time up to 30 days later than otherwise provided to allow Engineer to demobilize personnel and equipment from the Site, to complete tasks whose value would otherwise be lost, to prepare notes as to the status of completed and uncompleted tasks, and to assemble Project materials in orderly files.

D. Payments Upon Termination:

1. In the event of any termination under Paragraph 6.05, Engineer will be entitled to invoice Owner and to receive full payment for all services performed or furnished in accordance with this Agreement and all Reimbursable Expenses incurred through the effective date of termination. Upon making such payment, Owner shall have the limited right to the use of Documents, at Owner's sole risk, subject to the provisions of Paragraph 6.03.E.

2. In the event of termination by Owner for convenience or by Engineer for cause, Engineer shall be entitled, in addition to invoicing for those items identified in Paragraph 6.05.D.1, to invoice Owner and to payment of a reasonable amount for services and expenses directly attributable to termination, both before and after the effective date of termination, such as reassignment of

personnel, costs of terminating contracts with Engineer's Consultants, and other related close-out costs, using methods and rates for Additional Services as set forth in Exhibit C.

6.06 *Controlling Law*

A. This Agreement is to be governed by the law of the state or jurisdiction in which the Project is located.

6.07 *Successors, Assigns, and Beneficiaries*

A. Owner and Engineer are hereby bound and the successors, executors, administrators, and legal representatives of Owner and Engineer (and to the extent permitted by Paragraph 6.07.B the assigns of Owner and Engineer) are hereby bound to the other party to this Agreement and to the successors, executors, administrators and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.

B. Neither Owner nor Engineer may assign, sublet, or transfer any rights under or interest (including, but without limitation, moneys that are due or may become due) in this Agreement without the written consent of the other, except to the extent that any assignment, subletting, or transfer is mandated or restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement.

C. Unless expressly provided otherwise in this Agreement:

1. Nothing in this Agreement shall be construed to create, impose, or give rise to any duty owed by Owner or Engineer to any Contractor, Subcontractor, Supplier, other individual or entity, or to any surety for or employee of any of them.

2. All duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of Owner and Engineer and not for the benefit of any other party.

3. Owner agrees that the substance of the provisions of this Paragraph 6.07.C shall appear in the Contract Documents.

6.08 *Dispute Resolution*

A. Owner and Engineer agree to negotiate all disputes between them in good faith for a period of 30 days from the date of notice prior to invoking the procedures of Exhibit H or other provisions of this Agreement, or exercising their rights under law.

B. If the parties fail to resolve a dispute through negotiation under Paragraph 6.08.A, then either or both may invoke the procedures of Exhibit H. If Exhibit H is not included, or if no dispute resolution method is specified in Exhibit H, then the parties may exercise their rights under law.

6.09 *Environmental Condition of Site*

A. Owner has disclosed to Engineer in writing the existence of all known and suspected Asbestos, PCBs, Petroleum, Hazardous Waste, Radioactive Material, hazardous substances, and other Constituents of Concern located at or near the Site, including type, quantity, and location.

B. Owner represents to Engineer that to the best of its knowledge no Constituents of Concern, other than those disclosed in writing to Engineer, exist at the Site.

C. If Engineer encounters or learns of an undisclosed Constituent of Concern at the Site, then Engineer shall notify (1) Owner and (2) appropriate governmental officials if Engineer reasonably concludes that doing so is required by applicable Laws or Regulations.

D. It is acknowledged by both parties that Engineer's scope of services does not include any services related to Constituents of Concern. If Engineer or any other party encounters an undisclosed Constituent of Concern, or if investigative or remedial action, or other professional services, are necessary with respect to disclosed or undisclosed Constituents of Concern, then Engineer may, at its option and without liability for consequential or any other damages, suspend performance of services on the portion of the Project affected thereby until Owner: (1) retains appropriate specialist consultants or contractors to identify and, as appropriate, abate, remediate, or remove the Constituents of Concern; and (2) warrants that the Site is in full compliance with applicable Laws and Regulations.

E. If the presence at the Site of undisclosed Constituents of Concern adversely affects the performance of Engineer's services under this Agreement, then the Engineer shall have the option of (1) accepting an equitable adjustment in its compensation or in the time of completion, or both; or (2) terminating this Agreement for cause on 30 days notice.

F. Owner acknowledges that Engineer is performing professional services for Owner and that Engineer is not and shall not be required to become an "owner" "arranger," "operator," "generator," or "transporter" of hazardous substances, as defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, which are or may be encountered at or near the Site in connection with Engineer's activities under this Agreement.

6.10 *Indemnification and Mutual Waiver*

A. *Indemnification by Engineer*: To the fullest extent permitted by law, Engineer shall indemnify and hold harmless Owner, and Owner's officers, directors, members, partners, agents, consultants, and employees from reasonable claims, costs, losses, and damages arising out of or relating to the Project, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Engineer or Engineer's officers, directors, members, partners, agents, employees, or Consultants. ~~**This indemnification provision is subject to and limited by the provisions, if any, agreed to by Owner and Engineer in Exhibit I, "Limitations of Liability."**~~

B. Indemnification by Owner: Owner shall indemnify and hold harmless Engineer and its officers, directors, members, partners, agents, employees, and Consultants as required by Laws and Regulations**.** ~~and to the extent (if any) required in Exhibit I, Limitations of Liability.~~

C. Environmental Indemnification: To the fullest extent permitted by law, Owner shall indemnify and hold harmless Engineer and its officers, directors, members, partners, agents, employees, and Consultants from and against any and all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals, and all court, arbitration, or other dispute resolution costs) caused by, arising out of, relating to, or resulting from a Constituent of Concern at, on, or under the Site, provided that (1) any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (2) nothing in this paragraph shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence or willful misconduct.

D. Percentage Share of Negligence: To the fullest extent permitted by law, a party's total liability to the other party and anyone claiming by, through, or under the other party for any cost, loss, or damages caused

in part by the negligence of the party and in part by the negligence of the other party or any other negligent entity or individual, shall not exceed the percentage share that the party's negligence bears to the total negligence of Owner, Engineer, and all other negligent entities and individuals.

E. Mutual Waiver: To the fullest extent permitted by law, Owner and Engineer waive against each other, and the other's employees, officers, directors, members, agents, insurers, partners, and consultants, any and all claims for or entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to the Project.

6.11 *Miscellaneous Provisions*

A. *Notices*: Any notice required under this Agreement will be in writing, addressed to the appropriate party at its address on the signature page and given personally, by facsimile, by registered or certified mail postage prepaid, or by a commercial courier service. All notices shall be effective upon the date of receipt.

B. *Survival*: All express representations, waivers, indemnifications, and limitations of liability included in this Agreement will survive its completion or termination for any reason.

C. *Severability*: Any provision or part of the Agreement held to be void or unenforceable under any Laws or Regulations shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Engineer, which agree that the Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

D. *Waiver*: A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

E. *Accrual of Claims*: To the fullest extent permitted by law, all causes of action arising under this Agreement shall be deemed to have accrued, and all statutory periods of limitation shall commence, no later than the date of Substantial Completion.

ARTICLE 7 – DEFINITIONS

7.01 *Defined Terms*

A. Wherever used in this Agreement (including the Exhibits hereto) terms (including the singular and plural forms) printed with initial capital letters have the meanings indicated in the text above, in the exhibits, or in the following provisions:

1. *Additional Services* – The services to be performed for or furnished to Owner by Engineer in accordance with ~~Part 2 of~~ Exhibit A of this Agreement.

2. *Agreement* – This written contract for professional services between Owner and Engineer, including all exhibits identified in Paragraph 8.01 and any duly executed amendments.

3. *Asbestos* – Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

4. *Basic Services* – The services to be performed for or furnished to Owner by Engineer in accordance with ~~Part 1 of~~ Exhibit A of this Agreement.

5. *Construction Contract* – The entire and integrated written agreement between Owner and Contractor concerning the Work.

6. *Construction Cost* – The cost to Owner of those portions of the entire Project designed or specified by Engineer. Construction Cost does not include costs of services of Engineer or other design professionals and consultants; cost of land or rights-of-way, or compensation for damages to properties; Owner's costs for legal, accounting, insurance counseling or auditing services; interest or financing charges incurred in connection with the Project; or the cost of other services to be provided by others to Owner pursuant to Exhibit B of this Agreement. Construction Cost is one of the items comprising Total Project Costs.

7. *Constituent of Concern* – Any substance, product, waste, or other material of any nature whatsoever (including, but not limited to, Asbestos, Petroleum, Radioactive Material, and PCBs) which is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§1801 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; and (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

8. *Consultants* – Individuals or entities having a contract with Engineer to furnish services with respect to this Project as Engineer's independent professional associates and consultants; subcontractors; or vendors.

9. *Contract Documents* – Those items so designated in the Construction Contract, including the Drawings, Specifications, construction agreement, and general and supplementary conditions. Only printed or hard copies of the items listed in the Construction Contract are Contract Documents. ~~Approved~~**Reviewed** Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

10. *Contractor* – The entity or individual with which Owner has entered into a Construction Contract.

11. *Documents* – Data, reports, Drawings, Specifications, Record Drawings, and other deliverables, whether in printed or electronic media format, provided or furnished in appropriate phases by Engineer to Owner pursuant to this Agreement.

12. *Drawings* – That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings are not Drawings as so defined.

13. *Effective Date* – The date indicated in this Agreement on which it becomes effective, but if no such date is indicated, the date on which this Agreement is signed and delivered by the last of the parties to sign and deliver.

14. *Engineer* – The individual or entity named as such in this Agreement.

15. *Hazardous Waste* – The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

16. *Laws and Regulations; Laws or Regulations* – Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

17. *Owner* – The individual or entity with which Engineer has entered into this Agreement and for which the Engineer's services are to be performed. Unless indicated otherwise, this is the same individual or entity that will enter into any Construction Contracts concerning the Project.

18. *PCBs* – Polychlorinated biphenyls.

19. *Petroleum* – Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-hazardous waste and crude oils.

20. *Project* – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

21. *Radioactive Material* – Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

22. *Record Drawings* – Drawings depicting the completed Project, prepared by Engineer as an Additional Service and based solely on Contractor's record copy of all Drawings, Specifications, addenda, change orders, work change directives, field orders, and written interpretations and clarifications, as delivered to Engineer and annotated by Contractor to show changes made during construction.

23. *Reimbursable Expenses* – The expenses incurred directly by Engineer in connection with the performing or furnishing of Basic and Additional Services for the Project.

24. *Resident Project Representative* – The authorized representative of Engineer assigned to assist Engineer at the Site during the Construction Phase. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative agreed to by Owner. The duties and responsibilities of the Resident Project Representative, if any, are as set forth in Exhibit D.

25. *Samples* – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

26. *Shop Drawings* – All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

27. *Site* – Lands or areas to be indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

28. *Specifications* – That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

29. *Subcontractor* – An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

30. *Substantial Completion* – The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

31. *Supplier* – A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

32. *Total Project Costs* – The sum of the Construction Cost, allowances for contingencies, and the total costs of services of Engineer or other design professionals and consultants, together with such other Project-related costs that Owner furnishes for inclusion, including but not limited to cost of land, rights-of-way, compensation for damages to properties, Owner's costs for legal, accounting, insurance counseling and auditing services, interest and financing charges incurred in connection with the Project, and the cost of other services to be provided by others to Owner pursuant to Exhibit B of this Agreement.

33. *Work* – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

ARTICLE 8 – EXHIBITS AND SPECIAL PROVISIONS

8.01 *Exhibits Included:*

A. Exhibit A, Engineer's Services.

B. Exhibit B, Owner's Responsibilities.

C. Exhibit C, Payments to Engineer for Services and Reimbursable Expenses.

D. Exhibit D, Duties, Responsibilities and Limitations of Authority of Resident Project Representative.

E. Exhibit E, Notice of Acceptability of Work. **NOT INCLUDED**

F. Exhibit F, Construction Cost Limit. **NOT INCLUDED**

G. Exhibit G, Insurance.

H. Exhibit H, Dispute Resolution.

I. Exhibit I, Limitations of Liability. **NOT INCLUDED**

J. Exhibit J, Special Provisions. **NOT INCLUDED**

K. Exhibit K, Amendment to Owner-Engineer Agreement.

8.02 *Total Agreement:*

A. This Agreement, (together with the exhibits identified above) constitutes the entire agreement between Owner and Engineer and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified, or canceled by a duly executed written instrument based on the format of Exhibit K to this Agreement.

8.03 *Designated Representatives:*

A. With the execution of this Agreement, Engineer and Owner shall designate specific individuals to act as Engineer's and Owner's representatives with respect to the services to be performed or furnished by Engineer and responsibilities of Owner under this Agreement. Such an individual shall have authority to transmit instructions, receive information, and render decisions relative to the Project on behalf of the respective party whom the individual represents.

8.04 *Engineer's Certifications:*

A. Engineer certifies that it has not engaged in corrupt, fraudulent, or coercive practices in competing for or in executing the Agreement. For the purposes of this Paragraph 8.04:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the selection process or in the Agreement execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the selection process or the execution of the Agreement to the detriment of Owner, or (b) to deprive Owner of the benefits of free and open competition;

3. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the selection process or affect the execution of the Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

Owner:	Engineer:
City of Peculiar, Missouri	Lamp, Rynearson & Associates, Inc.**, dba Larkin Lamp Rynearson**
By:	By: **Loren M. Steenson, P.E.**
Title:	Title: **Senior Vice-President**
Date Signed:	Date Signed:
	Engineer License or Firm's Certificate No. **2013011903 valid to 12/31/15**
	State of: **Missouri**
Address for giving notices:	Address for giving notices:
250 S. Main Street	Lamp, Rynearson & Associates, Inc.
Peculiar, Missouri 64078	14710 West Dodge Road, Ste. 100
	Omaha, NE 68154-2027
Designated Representative (Paragraph 8.03.A):	Designated Representative (Paragraph 8.03.A):
Carl Brooks, P.E.	**Anthony P. O'Malley, P.E.**
Title: **City Engineer**	Title: **Water Group Leader**
Phone Number: **(816) 779-2228**	Phone Number: **(816) 823-7282**
Facsimile Number: **(816) 779-5213**	Facsimile Number: **(816) 361-0045**
E-Mail Address: **cbrooks@ cityofpeculiar.com**	E-Mail Address: **Tony.OMalley@LRA-Inc.com**

EXHIBIT A
Engineer's Services

Engineer shall provide Basic and Additional Services as set forth below and in accordance with the schedule included at the end of this Exhibit A.

BASIC SERVICES

A1.01 *Study Phase* ***(Design Memorandum)***

A. Engineer shall:

1. Consult with Owner to define and clarify Owner's requirements for the Project and available data.

2. Advise Owner of any need for Owner to provide data or services of the types described in Exhibit B which are not part of Engineer's Basic Services.

3. Identify, consult with, and analyze requirements of governmental authorities having jurisdiction to approve the portions of the Project designed or specified by Engineer, including but not limited to mitigating measures identified in the environmental assessment.

4. Identify and evaluate alternate solutions available to Owner and, after consultation with Owner, recommend to Owner those solutions which in Engineer's judgment meet Owner's requirements for the Project.

~~5.~~ Perform or provide the following additional Study Phase tasks or deliverables: **Go over alignment in the field with Owner representatives. Meet with Owner and MoDOT to discuss sidewalk placement and limits.**

A1.02 *Preliminary Design Phase*

A. Engineer shall:

1. Prepare Preliminary Design Phase documents consisting of preliminary drawings of the Project.

2. Provide necessary field surveys and topographic and utility mapping for design purposes. Utility mapping will be based upon information obtained from utility owners.

3. Advise Owner if additional reports, data, information, or services of the types described in Exhibit B are necessary and assist Owner in obtaining such reports, data, information, or services.

4. Based on the information contained in the Preliminary Design Phase documents, prepare an opinion of probable Construction Cost and assist Owner in collating the various cost categories which comprise Total Project Costs.

5. Perform or provide the following additional Preliminary Design Phase tasks or deliverables: **Facilitate a utility coordination meeting. Facilitate a public meeting with Owner and affected property owners.**

6. Furnish review copies of the Preliminary Design Phase documents and any other deliverables to Owner and review them with Owner. Owner shall submit to Engineer any comments regarding the Preliminary Design Phase documents and any other deliverables.

7. Revise the Preliminary Design Phase documents and any other deliverables in response to Owner's comments, as appropriate, and furnish to Owner copies of the revised Preliminary Design Phase documents, opinion of probable Construction Cost, and any other deliverables.

B. Engineer's services under the Preliminary Design Phase will be considered complete on the date when the revised Preliminary Design Phase documents, opinion of probable Construction Cost, and any other deliverables have been delivered to Owner.

A1.03 *Final Design Phase*

A. After acceptance by Owner of the Preliminary Design Phase documents, opinion of probable Construction Cost as determined in the Preliminary Design Phase, and any other deliverables subject to any Owner-directed modifications or changes in the scope, extent, character, or design requirements of or for the Project, and upon written authorization from Owner, Engineer shall:

1. Prepare final Drawings and Specifications indicating the scope, extent, and character of the Work to be performed and furnished by Contractor.

2. Provide technical criteria, written descriptions, and design data for Owner's use in filing applications for permits from or approvals of governmental authorities having jurisdiction to review or approve the final design of the Project; assist Owner in consultations with such authorities; and revise the Drawings and Specifications in response to directives from such authorities.

3. Advise Owner of any adjustments to the opinion of probable Construction Cost known to Engineer.

4. Perform or provide the following additional Final Design Phase tasks or deliverables: **Submit final plans and specifications with hydraulics and a construction permit application to the MoDNR. Prepare a Storm Water Pollution Prevention Plan (SWPPP) per MoDNR requirements. In bid documents, require contractor to video project route prior to initiating construction.**

5. Prepare and furnish bidding documents for review by Owner, its legal counsel, and other advisors, and assist Owner in the preparation of other related documents. Following receipt, Owner shall submit to Engineer any comments or instructions for revisions.

6. Revise the bidding documents in accordance with comments and instructions from the Owner, as appropriate, and submit final copies of the bidding documents, a revised opinion of probable Construction Cost, and any other deliverables to Owner.

B. Engineer's services under the Final Design Phase will be considered complete on the date when the submittals required by Paragraph A1.03.A.6 have been delivered to Owner.

A1.04 *Bidding or Negotiating Phase*

A. After acceptance by Owner of the bidding documents and the most recent opinion of probable Construction Cost as determined in the Final Design Phase, and upon written authorization by Owner to proceed, Engineer shall:

1. Assist Owner in advertising for and obtaining bids or proposals for the Work and, where applicable, maintain a record of prospective bidders to whom Bidding Documents have been issued, attend pre-bid conferences, if any, and receive and process contractor deposits or charges for the bidding documents.

2. Issue addenda as appropriate to clarify, correct, or change the bidding documents.

3. Provide information or assistance needed by Owner in the course of any negotiations with prospective contractors.

4. Consult with Owner as to the acceptability of subcontractors, suppliers, and other individuals and entities proposed by prospective contractors for those portions of the Work as to which such acceptability is required by the bidding documents.

5. If bidding documents require, the Engineer shall evaluate and determine the acceptability of "or equals" and substitute materials and equipment proposed by bidders, but subject to the provisions of paragraph A2.02.A.2 of this Exhibit A.

6. Attend the Bid opening, prepare Bid tabulation sheets, and assist Owner in evaluating Bids or proposals and in assembling and awarding contracts for the Work.

7. Perform or provide the following additional Bidding or Negotiating Phase tasks or deliverables: None.[A1]

B. The Bidding or Negotiating Phase will be considered complete upon commencement of the Construction Phase or upon cessation of negotiations with prospective contractors (except as may be required if Exhibit F is a part of this Agreement).

A1.05 *Construction Phase*

A. Upon successful completion of the Bidding and Negotiating Phase, and upon written authorization from Owner, Engineer shall:

1. *General Administration of Construction Contract:* Consult with Owner and act as Owner's representative as provided in the Construction Contract. The extent and limitations of the duties, responsibilities, and authority of Engineer as assigned in the Construction Contract shall not be modified, except as Engineer may otherwise agree in writing. All of Owner's instructions to Contractor will be issued through Engineer, which shall have authority to act on behalf of Owner in dealings with Contractor to the extent provided in this Agreement and the Construction Contract except as otherwise provided in writing.

2. *Resident Project Representative (RPR):* Provide the services of an RPR at the Site to assist the Engineer and to provide more extensive observation of Contractor's work. Duties, responsibilities, and authority of the RPR are as set forth in Exhibit D. The furnishing of such RPR's services will not limit, extend, or modify Engineer's responsibilities or authority except as expressly set forth in Exhibit D. ~~[If Engineer will not be providing the services of an RPR, then delete this Paragraph 2 by inserting the word "DELETED" after the paragraph title, and do not include Exhibit D.]~~[A2]

3. *Selecting Independent Testing Laboratory:* Assist Owner in the selection of an independent testing laboratory to perform the services identified in Exhibit B, Paragraph B2.01.0.

4. *Pre-Construction Conference:* Participate in a Pre-Construction Conference prior to commencement of Work at the Site.

5. *Schedules:* Receive, review, and determine the acceptability of any and all schedules that Contractor is required to submit to Engineer, including the Progress Schedule, Schedule of Submittals, and Schedule of Values.

6. *Baselines and Benchmarks:* As appropriate, establish baselines and benchmarks for locating the Work which in Engineer's judgment are necessary to enable Contractor to proceed.

7. *Visits to Site and Observation of Construction:* In connection with observations of Contractor's Work while it is in progress:

   a. Make visits to the Site at intervals appropriate to the various stages of construction, as Engineer deems necessary, to observe as an experienced and qualified design professional the progress of Contractor's executed Work. Such visits and observations by Engineer, and the Resident Project Representative, if any, are not intended to be exhaustive or to extend to every aspect of Contractor's Work in progress or to involve detailed inspections of Contractor's Work in progress beyond the responsibilities specifically assigned to Engineer in this Agreement and the Contract Documents, but rather are to be limited to spot checking, selective sampling, and similar methods of general observation of the Work based on Engineer's exercise of professional judgment, as assisted by the Resident Project Representative, if any. Based on information obtained during such visits and observations, Engineer will determine in general if the Work is proceeding in accordance with the Contract Documents, and Engineer shall keep Owner informed of the progress of the Work.

   b. The purpose of Engineer's visits to, and representation by the Resident Project Representative, if any, at the Site, will be to enable Engineer to better carry out the duties and responsibilities assigned to and undertaken by Engineer during the Construction Phase, and, in addition, by the exercise of Engineer's efforts as an experienced and qualified design professional, to provide for Owner a greater degree of confidence that the completed Work will conform in general to the Contract Documents and that Contractor has implemented and maintained the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents. Engineer shall not, during such visits or as a result of such observations of Contractor's Work in progress, supervise, direct, or have control over Contractor's Work, nor shall Engineer have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected or used by Contractor, for security or safety at the Site, for safety precautions and programs incident to Contractor's Work, nor for any failure of Contractor to comply with Laws and Regulations applicable to Contractor's furnishing and performing the Work. Accordingly, Engineer neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish or perform the Work in accordance with the Contract Documents.

8. *Defective Work:* Reject Work if, on the basis of Engineer's observations, Engineer believes that such Work (a) is defective under the standards set forth in the Contract Documents, (b) will not produce a completed Project that conforms to the Contract Documents, or (c) will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

9. *Clarifications and Interpretations; Field Orders:* Issue necessary clarifications and interpretations of the Contract Documents as appropriate to the orderly completion of Contractor's work. Such clarifications and interpretations will be consistent with the intent of and reasonably inferable from the Contract Documents. Subject to any limitations in the Contract Documents, Engineer may issue field orders authorizing minor variations in the Work from the requirements of the Contract Documents.

10. *Requests for Information:* The Engineer shall provide, with reasonable promptness, written responses to "Requests for Information" from the Contractor for clarification and interpretation of the requirements of the Contract Documents. Such services shall be provided as part of the Engineer's basic services. However, if the Contractor's requests for information, clarification or interpretation are, in the Engineer's professional opinion, for information readily apparent from reasonable observation of field conditions or a review of the Contract Documents, or are reasonably inferable therefrom, the Engineer shall be entitled to compensation for Additional Services in accordance with Exhibit C, for the Engineer's time spent responding to such requests.

11. *Change Orders and Work Change Directives:* Recommend change orders and work change directives to Owner, as appropriate, and prepare change orders and work change directives as required.

12. *Shop Drawings and Samples:* Review or take other appropriate action in respect to Shop Drawings and Samples and other data which Contractor is required to submit, but only for conformance with the information given in the Contract Documents and compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such reviews and approvals or other action will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions and programs incident thereto. Engineer shall meet any Contractor's submittal schedule that Engineer has accepted. Unless Engineer specifically requests that Shop Drawings be submitted for review, Engineer will not accept, review or transmit any Shop Drawing submittals not specifically requested.

13. *Substitutes and "or-equal":* Evaluate and determine the acceptability of substitute or "or-equal" materials and equipment proposed by Contractor, but subject to the provisions of Paragraph A2.02.A.2 of this Exhibit A.

14. *Inspections and Tests:* Require such special inspections or tests of Contractor's work as deemed reasonably necessary, and receive and review all certificates of inspections, tests, and approvals required by Laws and Regulations or the Contract Documents. Engineer's review of such certificates will be for the purpose of determining that the results certified indicate compliance with the Contract Documents and will not constitute an independent evaluation that the content or procedures of such inspections, tests, or approvals comply with the requirements of the Contract Documents. Engineer shall be entitled to rely on the results of such tests.

15. *Disagreements between Owner and Contractor*: Render formal written decisions on all duly submitted issues relating to the acceptability of Contractor's work or the interpretation of the requirements of the Contract Documents pertaining to the execution, performance, or progress of Contractor's Work; review each duly submitted Claim by Owner or Contractor, and in writing either deny such Claim in whole or in part, approve such Claim, or decline to resolve such Claim if Engineer in its discretion concludes that to do so would be inappropriate. In rendering such decisions, Engineer shall be fair and not show partiality to Owner or Contractor and shall not be liable in connection with any decision rendered in good faith in such capacity.

16. *Applications for Payment:* Based on Engineer's observations as an experienced and qualified design professional and on review of Applications for Payment and accompanying supporting documentation:

    a. Determine the amounts that Engineer recommends Contractor be paid. Such recommendations of payment will be in writing and will constitute Engineer's representation to Owner, based on such observations and review, that, to the best of Engineer's knowledge, information and belief, Contractor's Work has progressed to the point indicated, the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, and to any other qualifications stated in the recommendation), and the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe Contractor's Work. In the case of unit price work, Engineer's recommendations of payment will include final determinations of quantities and classifications of Contractor's Work (subject to any subsequent adjustments allowed by the Contract Documents).

    b. By recommending any payment, Engineer shall not thereby be deemed to have represented that observations made by Engineer to check the quality or quantity of Contractor's Work as it is performed and furnished have been exhaustive, extended to every aspect of Contractor's Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in this Agreement and the Contract Documents. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment including final payment will impose on Engineer responsibility to supervise, direct, or

control Contractor's Work in progress or for the means, methods, techniques, sequences, or procedures of construction or safety precautions or programs incident thereto, or Contractor's compliance with Laws and Regulations applicable to Contractor's furnishing and performing the Work. It will also not impose responsibility on Engineer to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or to determine that title to any portion of the Work in progress, materials, or equipment has passed to Owner free and clear of any liens, claims, security interests, or encumbrances, or that there may not be other matters at issue between Owner and Contractor that might affect the amount that should be paid.

17. *Contractor's Completion Documents:* Receive, review, and transmit to Owner maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance required by the Contract Documents, certificates of inspection, tests and approvals, Shop Drawings, Samples and other data approved as provided under Paragraph A1.05.A.11, and transmit the annotated record documents which are to be assembled by Contractor in accordance with the Contract Documents to obtain final payment. The extent of such review by Engineer will be limited as provided in Paragraph A1.05.A.11. Unless Engineer specifically requests that Shop Drawings be submitted for review, Engineer will not accept, review or transmit any Shop Drawing submittals not specifically requested.

18. *Substantial Completion:* Promptly after notice from Contractor that Contractor considers the entire Work ready for its intended use, in company with Owner and Contractor, visit the Project to determine if the Work is substantially complete. If after considering any objections of Owner, Engineer considers the Work substantially complete, Engineer shall deliver a Statement of Completion to Owner.

19. *Additional Tasks:* Perform or provide the following additional Construction Phase tasks or deliverables: None.[A3]

20. *Final Payment to Contractor:* Conduct a final visit to the Project to determine if the completed Work of Contractor is acceptable so that Engineer may recommend, in writing, final payment to Contractor.

B. *Duration of Construction Phase:* The Construction Phase will commence with the execution of the first Construction Contract for the Project or any part thereof and will terminate upon written recommendation by Engineer for final payment to Contractors.

C. *Limitation of Responsibilities:* Engineer shall not be responsible for the acts or omissions of any Contractor, Subcontractor or Supplier, or other individuals or entities performing or furnishing any of the Work, for safety or security at the Site, or for safety precautions and programs incident to Contractor's Work, during the Construction Phase or otherwise. Engineer shall not be responsible for the failure of any Contractor to perform or furnish the Work in accordance with the Contract Documents.

ADDITIONAL SERVICES

A2.01 *Additional Services Requiring Owner's Written Authorization*

A. If authorized in writing by Owner, Engineer shall furnish or obtain from others Additional Services of the types listed below.

1. Preparation of applications and supporting documents (in addition to those furnished under Basic Services) for private or governmental grants, loans, or advances in connection with the Project; preparation or review of environmental assessments and impact statements; review and evaluation of the effects on the design requirements for the Project of any such statements and documents prepared by others; and assistance in obtaining approvals of authorities having jurisdiction over the anticipated environmental impact of the Project.

2. Services to make measured drawings of or to investigate existing conditions or facilities, or to verify the accuracy of drawings or other information furnished by Owner or others.

3. Services resulting from significant changes in the scope, extent, or character of the portions of the Project designed or specified by Engineer or its design requirements including, but not limited to, changes in size, complexity, Owner's schedule, character of construction, or method of financing; and revising previously accepted studies, reports, Drawings, Specifications, or Contract Documents when such revisions are required by changes in Laws and Regulations enacted subsequent to the Effective Date or are due to any other causes beyond Engineer's control.

4. Services resulting from Owner's request to evaluate additional Study Phase alternative solutions beyond those identified in Paragraph A1.01.A.4.

5. Services required as a result of Owner's providing incomplete or incorrect Project information to Engineer.

6. Providing renderings or models for Owner's use.

7. Undertaking investigations and studies including, but not limited to, detailed consideration of operations, maintenance, and overhead expenses; the preparation of financial feasibility and cash flow studies, rate schedules, and appraisals; assistance in obtaining financing for the Project; evaluating processes available for licensing, and assisting Owner in obtaining process licensing; detailed quantity surveys of materials, equipment, and labor; and audits or inventories required in connection with construction performed by Owner.

8. Furnishing services of Consultants for other than Basic Services.

9. Services during out-of-town travel required of Engineer other than for visits to the Site or Owner's office.

10. Preparing for, coordinating with, participating in and responding to structured independent review processes, including, but not limited to, construction management, cost estimating, project peer review, value engineering, and constructability review requested by Owner; and performing or furnishing services required to revise studies, reports, Drawings, Specifications, or other Bidding Documents as a result of such review processes.

11. Preparing additional Bidding Documents or Contract Documents for alternate bids or prices requested by Owner for the Work or a portion thereof.

12. Assistance in connection with Bid protests, rebidding, or renegotiating contracts for construction, materials, equipment, or services.

13. Providing construction surveys and staking to enable Contractor to perform its work other than as required under Paragraph A1.05.A.6, and any type of property surveys or related engineering services needed for the transfer of interests in real property; and providing other special field surveys.

14. Providing Construction Phase services beyond the original date for completion and readiness for final payment of Contractor.

15. Providing assistance in responding to the presence of any Constituent of Concern at the Site, in compliance with current Laws and Regulations.

16. ~~Preparing Record Drawings showing appropriate record information based on Project annotated record documents received from Contractor, and furnishing such Record Drawings to Owner.~~

17. Preparation of operation and maintenance manuals.

18. Preparing to serve or serving as a consultant or witness for Owner in any litigation, arbitration, or other dispute resolution process related to the Project.

19. Providing more extensive services required to enable Engineer to issue notices or certifications requested by Owner.

20. Assistance in connection with the adjusting of Project equipment and systems.

21. Assistance to Owner in training Owner's staff to operate and maintain Project equipment and systems.

22. Assistance to Owner in developing procedures for (a) control of the operation and maintenance of Project equipment and systems, and (b) related record-keeping.

23. Overtime work requiring higher than regular rates.

24. . Other services performed or furnished by Engineer not otherwise provided for in this Agreement. **Including, but not limited to: Preparation of easement descriptions and exhibits, assistance in obtaining easements including ligitation if necessary, and Funding Agency administration during design and construction.**

A2.02 Additional Services Not Requiring Owner's Written Authorization

A. Engineer shall advise Owner in advance that Engineer is will immediately commence to perform or furnish the Additional Services of the types listed below. For such Additional Services, Engineer need not request or obtain specific advance written authorization from Owner. Engineer shall cease performing or furnishing such Additional Services upon receipt of written notice from Owner.

1. Services in connection with work change directives and change orders to reflect changes requested by Owner.

2. Services in making revisions to Drawings and Specifications occasioned by the acceptance of substitute materials or equipment other than "or-equal" items; services after the award of the Construction Contract in evaluating and determining the acceptability of a proposed "or equal" or substitution which is found to be inappropriate for the Project; evaluation and determination of an excessive number of proposed "or equals" or substitutions, whether proposed before or after award of the Construction Contract.

3. Services resulting from significant delays, changes, or price increases occurring as a direct or indirect result of materials, equipment, or energy shortages.

4. Additional or extended services during construction made necessary by (1) emergencies or acts of God endangering the Work (advance notice not required), (2) the presence at the Site of any Constituent of Concern or items of historical or cultural significance, (3) Work damaged by fire or other cause during construction, (4) a significant amount of defective, neglected, or delayed work by Contractor, (5) acceleration of the progress schedule involving services beyond normal working hours, or (6) default by Contractor.

5. Services in connection with any partial utilization of any part of the Work by Owner prior to Substantial Completion.

6. Evaluating an unreasonable claim or an excessive number of claims submitted by Contractor or others in connection with the Work.

7. Services during the Construction Phase rendered after the original date for completion of the Work referred to in A1.05.B.

8. Reviewing a Shop Drawing more than three times, as a result of repeated inadequate submissions by Contractor.

9. While at the Site, compliance by Engineer and its staff with those terms of Owner's or Contractor's safety program provided to Engineer subsequent to the Effective Date that exceed those normally required of engineering personnel by federal, state, or local safety authorities for similar construction sites.

SCHEDULE

Study Phase:	**(Alignment Study and Design Memorandum)**	**14 days**
Preliminary Design Phase:	**(Includes survey)**	**60 days**
Final Design Phase:		**30 days**
Bidding or Negotiation Phase:	**(After R.O.W. and permits are obtained)**	**45 days**
Construction Phase:	**(After Owner issues contractor's notice to proceed)**	**150 days**

This is **EXHIBIT B**, consisting of 3 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, 2014.

Owner's Responsibilities

Article 2 of the Agreement is supplemented to include the following agreement of the parties.

B2.01 In addition to other responsibilities of Owner as set forth in this Agreement, Owner shall at its expense:

A. Provide Engineer with all criteria and full information as to Owner's requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility, and expandability, and any budgetary limitations; and furnish copies of all design and construction standards which Owner will require to be included in the Drawings and Specifications; and furnish copies of Owner's standard forms, conditions, and related documents for Engineer to include in the Bidding Documents, when applicable.

B. Furnish to Engineer any other available information pertinent to the Project including reports and data relative to previous designs, or investigation at or adjacent to the Site.

C. Following Engineer's assessment of initially-available Project information and data and upon Engineer's request, furnish or otherwise make available such additional Project related information and data as is reasonably required to enable Engineer to complete its Basic and Additional Services. Such additional information or data would generally include the following:

1. Property descriptions.

2. Zoning, deed, and other land use restrictions.

3. Property, boundary, easement, right-of-way, and other special surveys or data, including establishing relevant reference points.

4. Explorations and tests of subsurface conditions at or contiguous to the Site, drawings of physical conditions relating to existing surface or subsurface structures at the Site, or hydrographic surveys, with appropriate professional interpretation thereof.

5. Environmental assessments, audits, investigations, and impact statements, and other relevant environmental or cultural studies as to the Project, the Site, and adjacent areas.

6. Data or consultations as required for the Project but not otherwise identified in the Agreement or the Exhibits thereto.

D. Give prompt written notice to Engineer whenever Owner observes or otherwise becomes aware of the presence at the Site of any Constituent of Concern, or of any other development that affects the scope or time of performance of Engineer's services, or any defect or nonconformance in Engineer's services, the Work, or in the performance of any Contractor.

E. Authorize Engineer to provide Additional Services as set forth in ~~Part 2 of~~ Exhibit A of the Agreement as required.

F. Arrange for safe access to and make all provisions for Engineer to enter upon public and private property as required for Engineer to perform services under the Agreement.

G. Examine all alternate solutions, studies, reports, sketches, Drawings, Specifications, proposals, and other documents presented by Engineer (including obtaining advice of an attorney, insurance counselor, and other advisors or consultants as Owner deems appropriate with respect to such examination) and render in writing timely decisions pertaining thereto.

H. Provide reviews, approvals, and permits from all governmental authorities having jurisdiction to approve all phases of the Project designed or specified by Engineer and such reviews, approvals, and consents from others as may be necessary for completion of each phase of the Project.

I. Recognizing and acknowledging that Engineer's services and expertise do not include the following services, provide, as required for the Project:

1. Accounting, bond and financial advisory, independent cost estimating, and insurance counseling services.

2. Legal services with regard to issues pertaining to the Project as Owner requires, Contractor raises, or Engineer reasonably requests.

3. Such auditing services as Owner requires to ascertain how or for what purpose Contractor has used the moneys paid.

J. Place and pay for advertisement for Bids in appropriate publications.

K. Advise Engineer of the identity and scope of services of any independent consultants employed by Owner to perform or furnish services in regard to the Project, including, but not limited to, cost estimating, project peer review, value engineering, and constructability review.

L. Furnish to Engineer data as to Owner's anticipated costs for services to be provided by others (including, but not limited to, accounting, bond and financial, independent cost estimating, insurance counseling, and legal advice) for Owner so that Engineer may assist Owner in collating the various cost categories which comprise Total Project Costs.

M. If Owner designates a construction manager or an individual or entity other than, or in addition to, Engineer to represent Owner at the Site, define and set forth as an attachment to this Exhibit B the duties, responsibilities, and limitations of authority of such other party and the relation thereof to the duties, responsibilities, and authority of Engineer.

N. If more than one prime contract is to be awarded for the Work designed or specified by Engineer, designate a person or entity to have authority and responsibility for coordinating the activities among the various prime Contractors, and define and set forth the duties, responsibilities, and limitations of authority of such individual or entity and the relation thereof to the duties, responsibilities, and authority of Engineer as an attachment to this Exhibit B that is to be mutually agreed upon and made a part of this Agreement before such services begin.

O. Attend the pre-bid conference, bid opening, pre-construction conferences, construction progress and other job related meetings, and Substantial Completion and final payment visits to the Project.

P. Provide the services of an independent testing laboratory to perform all inspections, tests, and approvals of samples, materials, and equipment required by the Contract Documents, or to evaluate the performance of materials, equipment, and facilities of Owner, prior to their incorporation into the Work with appropriate professional interpretation thereof.

Q. Provide Engineer with the findings and reports generated by the entities providing services to Owner pursuant to this paragraph.

R. Inform Engineer in writing of any specific requirements of safety or security programs that are applicable to Engineer, as a visitor to the Site.

S. Perform or provide the following additional services: **Including, but not limited to, obtaining easements on private and/or public right-of-way where identified as necessary by the ENGINEER during the design phase.**

EXHIBIT C
Payments to Engineer for Services and Reimbursable Expenses

C1.01 *Compensation for Basic Services (including Resident Project Representative) – Standard Hourly Rate Method of Payment* ***with Maximum Fee Limit.***

A. Owner shall pay Engineer for Basic Services set forth in Exhibit A, including for services of Engineer's Resident Project Representative, if any, as follows:

1. An amount equal to the cumulative hours charged to the Project by each class of Engineer's personnel times Standard Hourly Rates for each applicable billing class for all services performed on the Project, plus Reimbursable Expenses and Engineer's Consultants' charges, if any.

2. Engineer's Reimbursable Expenses Schedule and Standard Hourly Rates are set forth in Paragraph C1.06 and Paragraph C1.07, respectively.

3. The total compensation for services under Paragraph C1.01 is **limited** ~~estimated~~ to **maximum of** ~~be~~ $ **119,100.00** based on the following estimated distribution of compensation:

   a. **Engineering Design, Construction Admin., & Part-time Const. Observation** $ **79,600.00**

   b. **Engineering – Surveying** $ **39,500.00**

4. Engineer may alter the distribution of compensation between individual phases of the work noted herein to be consistent with services actually rendered, but shall not exceed the total estimated compensation amount unless approved in writing by Owner. See also C1.03.C.2 below.

5. The total estimated compensation for Engineer's services included in the breakdown by phases as noted in Paragraph C1.01.A.3 incorporates all labor, overhead, profit, Reimbursable Expenses and Engineer's Consultants' charges.

6. The amounts billed for Engineer's services under Paragraph C1.01 will be based on the cumulative hours charged to the Project during the billing period by each class of Engineer's employees times Standard Hourly Rates for each applicable billing class, plus Reimbursable Expenses and Engineer's Consultants' charges.

7. The Standard Hourly Rates and Reimbursable Expenses Schedule will be adjusted annually (as of April 1) to reflect equitable changes in the compensation payable to Engineer.

C1.02 *Compensation For Reimbursable Expenses*

A. Owner shall pay Engineer for all Reimbursable Expenses at the rates set forth in Paragraph C1.06.

B. Reimbursable Expenses include the following categories: transportation and subsistence incidental thereto; providing and maintaining field office facilities including furnishings and utilities; toll telephone calls and mobile phone charges; reproduction of reports, Drawings, Specifications, Bidding Documents, and similar Project-related items in addition to those required under Exhibit A. In addition, if authorized in advance by Owner, Reimbursable Expenses will also include expenses incurred for the use of highly specialized equipment.

C. The amounts payable to Engineer for Reimbursable Expenses will be the Project-related internal expenses actually incurred or allocated by Engineer, plus all invoiced external Reimbursable Expenses allocable to the Project, the latter multiplied by a factor of 1.15.

C1.03 *Compensation For Standard Hourly Rate Payments:*

A. Owner shall pay Engineer an amount equal to the cumulative hours charged to the Project by each class of Engineer's personnel times Standard Hourly Rates for each applicable billing class for all services performed on the Project at the rates set forth in Paragraph C1.07.

C1.04 *Other Provisions Concerning Payment*

A. Whenever Engineer is entitled to compensation for the charges of Engineer's Consultants, those charges shall be the amounts billed by Engineer's Consultants to Engineer times a factor of 1.0.

B. Factors. The external Reimbursable Expenses and Engineer's Consultants' factors include Engineer's overhead and profit associated with Engineer's responsibility for the administration of such services and costs.

C. Estimated Compensation Amounts:

1. Engineer's estimate of the amounts that will become payable for specified services are only estimates for planning purposes, are not binding on the parties, and are not the minimum or maximum amounts payable to Engineer under the Agreement.

2. When estimated compensation amounts have been stated herein and it subsequently becomes apparent to Engineer that the total compensation amount thus estimated will be exceeded, Engineer shall give Owner written notice thereof, allowing Owner to consider its options, including suspension or termination of Engineer's services for Owner's convenience. Upon notice, Owner and Engineer promptly shall review the matter of services remaining to be performed and compensation for such services. Owner shall either exercise its right to suspend or terminate Engineer's services for Owner's convenience, agree to such compensation exceeding said estimated amount, or agree to a reduction in the remaining services to be rendered by Engineer, so that total compensation for such services will not exceed said estimated amount when such services are completed. If Owner decides not to suspend the Engineer's services during the negotiations and Engineer exceeds the estimated amount before Owner and Engineer have agreed to an increase in the compensation due Engineer or a reduction in the remaining services, then Engineer shall be paid for all services rendered hereunder.

D. To the extent necessary to verify Engineer's charges and upon Owner's timely request, Engineer shall make copies of such records available to Owner at cost.

C1.05 Compensation for Additional Services

A. Owner shall pay Engineer for Additional Services, if any, as follows:

1. General: For services of Engineer's personnel engaged directly on the Project pursuant to Exhibit A, except for services as a consultant or witness under Exhibit A, (which if needed shall be separately negotiated based on the nature of the required consultation or testimony) an amount equal to the cumulative hours charged to the Project by each class of Engineer's personnel times Standard Hourly Rates for each applicable billing class for all Additional Services performed on the Project, plus related Reimbursable Expenses and Engineer's Consultant's charges, if any.

B. Compensation For Reimbursable Expenses:

1. For those Reimbursable Expenses that are not accounted for in the compensation for Basic Services under Paragraph C1.01 and are directly related to the provision of Additional Services, Owner shall pay Engineer at the rates set forth in Paragraph C1.06.

2. Reimbursable Expenses include the following categories: transportation and subsistence incidental thereto; providing and maintaining field office facilities including furnishings and utilities; toll telephone calls and mobile phone charges; reproduction of reports, Drawings, Specifications, Bidding Documents, and similar Project-related items in addition to those required under Exhibit A. In addition, if authorized in advance by Owner, Reimbursable Expenses will also include expenses incurred for the use of highly specialized equipment.

3. The amounts payable to Engineer for Reimbursable Expenses, if any, will be the Additional Services-related internal expenses actually incurred or allocated by Engineer, plus all invoiced external Reimbursable Expenses allocable to such Additional Services, the latter multiplied by a factor of 1.15.

4. The Reimbursable Expenses Schedule will be adjusted annually (as of April 1) to reflect equitable changes in the compensation payable to Engineer.

C. Compensation For Standard Hourly Rate Payments:

1. For Additional Services, Owner shall pay Engineer an amount equal to the cumulative hours charged to the Project by each class of Engineer's personnel times Standard Hourly Rates for each applicable billing class for all services performed on the Project at the rates set forth in Paragraph C1.07.

D. Other Provisions Concerning Payment For Additional Services:

1. Whenever Engineer is entitled to compensation for the charges of Engineer's Consultants, those charges shall be the amounts billed by Engineer's Consultants to Engineer times a factor of 1.0.

2. Factors: The external Reimbursable Expenses and Engineer's Consultant's Factors include Engineer's overhead and profit associated with Engineer's responsibility for the administration of such services and costs.

3. To the extent necessary to verify Engineer's charges and upon Owner's timely request, Engineer shall make copies of such records available to Owner at cost.

C1.06 Reimbursable Expenses Schedule

Current agreements for engineering services stipulate that the Reimbursable Expenses are subject to review and adjustment per Exhibit C. Reimbursable expenses for services performed on the date of the Agreement are[A4]:

Schedule #2 **3/30/14 – 03/28/15**

LAMP, RYNEARSON & ASSOCIATES, INC.
MISCELLANEOUS CHARGES

A. SUBSISTENCE:
Subsistence for employees away from headquarters shall be chargeable in accordance with the per diem schedule of the U.S. General Services Administration available at www.gsa.gov.

B. TRANSPORTATION:
Automobile transportation shall be charged for at the maximum IRS employee reimbursable rate per mile plus 15% for travel in connection with work on the project. Costs to Lamp, Rynearson & Associates, Inc., for commercial travel shall be chargeable at the actual cost incurred by Lamp, Rynearson & Associates, Inc.

C. MATERIALS:

All materials other than normal office supplies which are used by Lamp, Rynearson & Associates, Inc., in connection with the rendering of services shall be chargeable at actual cost plus 15 percent to cover general overhead and administration.

D. REPRODUCTIONS AND PLOTS:

All reproduction and plotting work performed by Lamp, Rynearson & Associates, Inc., shall be charged at the locally accepted commercial rate for such work. All outside photographic and direct-process reproduction costs advanced by Lamp, Rynearson & Associates, Inc., in connection with the rendering of services shall be charged at actual cost plus 15 percent to cover general overhead and administration.

E. SPECIAL EQUIPMENT:

The following items of special equipment, when used by Lamp, Rynearson & Associates, Inc., shall be charged for at the following rates:

Item	$ - Hourly Rate
Electronic Total Station	$15 - $25 /Hour
Robotic Total Station	$30 /Hour
w/RCS GPS Rover	$22 – $33 /Hour
GPS Base & Rover	$25 - $62 /Hour
4x4 ATV Polaris Ranger	$20 /Hour
Plots (Color) bond	$2.50 /SF
Plots (Color) mylar	$6.00 /SF
Plots (Color) photo paper	$6.00 /SF

All of the above rates are exclusive of operator.

Specialty material exclusive of above Plotter Rates.

F. FILING FEES AND OTHER COSTS ADVANCED:

All filing or permit fees and other similar outside costs which are advanced or paid by Lamp, Rynearson & Associates, Inc., shall be chargeable at actual cost plus 15 percent to cover general overhead and administration.

Periodically, this schedule may be revised and updated by Lamp, Rynearson & Associates, Inc., who reserves the right to substitute the new miscellaneous charges schedule upon 30 days' notice.

C1.07 Standard Hourly Rates Schedule

A. Standard Hourly Rates:

1. Standard Hourly Rates include salaries and wages paid to personnel in each billing class plus the cost of customary and statutory benefits, general and administrative overhead, non-project operating costs, and operating margin or profit.

2. The Standard Hourly Rates will be adjusted annually (as of April 1) to reflect equitable changes in the compensation payable to the Engineer.

3. The Standard Hourly Rates apply only as specified in Exhibit C.

B. Schedule:

Hourly rates for services performed on or after the date of the Agreement:

Lamp, Rynearson & Associates, Inc.	
HOURLY RATE SCHEDULE	
March 30, 2014 – March 28, 2015	
Position / Title	**$ - Hourly Rate**
Principal II	218.00
Sr. Group Leader III	216.00
Project Manager I	117.00
Sr. Project Manager II	143.00
Sr. Project Engr II	115.00
GIS Specialist III	86.00
Project Designer II	82.00
Sr. Project Designer III	131.00
Engineering Tech II	71.00
Construction Observer IV	78.00
Survey Project Mgr III	116.00
Sr. Survey Project Mgr I	126.00
Survey Technician II	73.00
Party Chief I	67.00
Party Chief II	75.00
Party Chief III	83.00
Survey Field Tech Apprentice	36.00
Survey Field Tech I	54.00
Survey Field Tech II	59.00
Survey Field Tech III	66.00
Administrative Assistant II	59.00

These charges include full compensation for payroll costs, general overhead, administration and anticipated profit on labor. Charges for items other than labor which are applicable to the project are listed on Schedule #2.

Personnel usually perform duties related to their classification; however, in the interest of efficiency, personnel with diversified experience may perform several types of work; in all cases, charges will be made according to payroll classification and not according to the type of work performed.

This is **EXHIBIT D**, consisting of 4 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, 2014 .[A5]

Duties, Responsibilities, and Limitations of Authority of Resident Project Representative

Article 1 of the Agreement is supplemented to include the following agreement of the parties:

D1.01 *Resident Project Representative*

A. Engineer shall furnish a Resident Project Representative ("RPR") to assist Engineer in observing progress and quality of the Work. The RPR may provide full time representation or may provide representation to a lesser degree.

B. Through RPR's observations of Contractor's work in progress and field checks of materials and equipment, Engineer shall endeavor to provide further protection for Owner against defects and deficiencies in the Work. However, Engineer shall not, during such RPR field checks or as a result of such RPR observations of Contractor's work in progress, supervise, direct, or have control over Contractor's Work, nor shall Engineer (including the RPR) have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, for security or safety at the Site, for safety precautions and programs incident to any contractor's work in progress, or for any failure of a contractor to comply with Laws and Regulations applicable to such contractor's performing and furnishing of its work. The Engineer (including RPR) neither guarantees the performances of any contractor nor assumes responsibility for Contractor's failure to furnish and perform the Work in accordance with the Contract Documents. In addition, the specific terms set forth in ~~Paragraph A1.05 of~~ Exhibit A of the Agreement are applicable.

C. The duties and responsibilities of the RPR are as follows:

1. *General:* RPR is Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Contractor's work in progress shall in general be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.

3. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.

4. Liaison:

a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the intent of the Contract Documents.

b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. *Interpretation of Contract Documents:* Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. Shop Drawings and Samples:

   a. Record date of receipt of Samples and ~~approved~~ **reviewed** Shop Drawings.

   b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

   c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been ~~approved~~ **reviewed** by Engineer.

7. M*odifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

8. Review of Work and Rejection of Defective Work:

   a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

   b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection, or approval.

9. Inspections, Tests, and System Start-ups:

   a. Consult with Engineer in advance of scheduled inspections, tests, and systems start-ups.

   b. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

   c. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

   d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to Engineer.

10. Records:

   a. Maintain at the Site orderly files for correspondence, reports of job conferences, reproductions of original Contract Documents including all change orders, field orders, work change directives,

addenda, additional Drawings issued subsequent to the execution of the Construction Contract, Engineer's clarifications and interpretations of the Contract Documents, progress reports, Shop Drawing and Sample submittals received from and delivered to Contractor, and other Project-related documents.

b. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, weather conditions, data relative to questions of change orders, field orders, work change directives, or changed conditions, Site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

c. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

d. Maintain records for use in preparing Project documentation.

e. Upon completion of the Work, furnish original set of all RPR Project documentation to Engineer.

11. Reports:

a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.

b. Draft and recommend to Engineer proposed change orders, work change directives, and field orders. Obtain backup material from Contractor.

c. Furnish to Engineer and Owner copies of all inspection, test, and system start-up reports.

d. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Constituent of Concern.

12. *Payment Requests:* Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

a. Participate in visits to the Project to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.

b. Participate in a final visit to the Project in the company of Engineer, Owner, and Contractor, and prepare a final list of items to be completed and deficiencies to be remedied.

c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the **Statement of Completion**~~Notice of Acceptability of the Work (Exhibit E)~~.

D. Resident Project Representative shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in this Agreement.

3. Undertake any of the responsibilities of Contractor, Subcontractors or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept shop drawing or sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

This is **EXHIBIT G**, consisting of 2 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, 2014 .

Insurance

Paragraph 6.04 of the Agreement is supplemented to include the following agreement of the parties.

G6.04 *Insurance*

A. The limits of liability for the insurance required by Paragraph 6.04.A and 6.04.B of the Agreement are as follows:

1. By Engineer:

a. Workers' Compensation: Statutory

b. Employer's Liability --

1) Each Accident: $100,000
2) Disease, Policy Limit: $500,000
3) Disease, Each Employee: $100,000

c. General Liability --

1) Each Occurrence (Bodily Injury and Property Damage): $1,000,000
2) General Aggregate: $2,000,000

d. Excess or Umbrella Liability --

1) Each Occurrence: $1,000,000
2) General Aggregate: $1,000,000

e. Automobile Liability --Combined Single Limit (Bodily Injury and Property Damage):

Each Accident $1,000,000

f. Professional Liability –

1) Each Claim Made $1,000,000
2) Annual Aggregate $1,000,000

Engineer agrees to maintain continuous professional liability coverage for the period of design and construction of this project, and for a period of two years following substantial completion.

g. Other (specify): $_____

2. By Owner:

a. Workers' Compensation: Statutory

b. Employer's Liability --

1) Each Accident $100,000
2) Disease, Policy Limit $500,000
3) Disease, Each Employee $100,000

c. General Liability --

1) General Aggregate: $2,000,000
2) Each Occurrence (Bodily Injury and Property Damage): $1,000,000

d. Excess Umbrella Liability --

1) Each Occurrence: $1,000,000
2) General Aggregate: $1,000,000

e. Automobile Liability --Combined Single Limit (Bodily Injury and Property Damage):

Each Accident: $1,000,000

f. Other (specify): $_____

B. *Additional Insureds:*

1. The following persons or entities are to be listed on Owner's general liability policies of insurance as additional insureds, and on any applicable property insurance policy as loss payees, as provided in Paragraph 6.04.B:

a. Lamp, Rynearson & Associates, Inc. **dba Larkin Lamp Rynearson**
Engineer

b. (Survey subconsultant to be named **to the City** prior to authorization by Engineer)
Engineer's Consultant

c. _____
Engineer's Consultant

2. During the term of this Agreement the Engineer shall notify Owner of any other Consultant to be listed as an additional insured on Owner's general liability and property policies of insurance.

3. The Owner shall be listed on Engineer's general liability policy as provided in Paragraph 6.04.A.

This is **EXHIBIT H**, consisting of **1** pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, **2014** .

Dispute Resolution

Paragraph 6.08 of the Agreement is amended and supplemented to include the following agreement of the parties:

H6.08 *Dispute Resolution*

A. *Mediation*: Owner and Engineer agree that they shall first submit any and all unsettled claims, counterclaims, disputes, and other matters in question between them arising out of or relating to this Agreement or the breach thereof ("Disputes") to mediation by ~~*[insert name of mediator, or mediation service]*~~ **a mediator approved by both Engineer and Owner and experienced in resolving disputes arising for the performance of engineering services**. Owner and Engineer agree to participate in the mediation process in good faith. The process shall be conducted on a confidential basis, and shall be completed within 120 days. If such mediation is unsuccessful in resolving a Dispute, then (1) the parties may mutually agree to a dispute resolution of their choice, or (2) either party may seek to have the Dispute resolved by a court of competent jurisdiction.

This is **EXHIBIT I**, consisting of _____ pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, _____.

Limitations of Liability

Paragraph 6.10 of the Agreement is supplemented to include the following agreement of the parties:

A. *Limitation of Engineer's Liability*

1. *Engineer's Liability Limited to the Amount of $_____*[A6]: Notwithstanding any other provision of this Agreement, and to the fullest extent permitted by law, the total liability, in the aggregate, of Engineer and Engineer's officers, directors, members, partners, agents, employees, and Consultants, to Owner and anyone claiming by, through, or under Owner for any and all claims, losses, costs, or damages whatsoever arising out of, resulting from, or in any way related to the Project or the Agreement from any cause or causes, including but not limited to the negligence, professional errors or omissions, strict liability, breach of contract, indemnity obligations, or warranty express or implied of Engineer or Engineer's officers, directors, members, partners, agents, employees, or Consultants shall not exceed the total amount of $_____[A7].

This is **EXHIBIT K**, consisting of _____ pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, _____.

AMENDMENT TO OWNER-ENGINEER AGREEMENT
Amendment No. _____

1. Background Data:

   a. Effective Date of Owner-Engineer Agreement: _____

   b. Owner: _____

   c. Engineer: Lamp, Rynearson & Associates, Inc. **dba Larkin Lamp Rynearson**

   d. Project: _____

~~2.~~**1.** Description of Modifications:

[NOTE TO USER: Include the following paragraphs that are appropriate and delete those not applicable to this amendment. Refer to paragraph numbers used in the Agreement or a previous amendment for clarity with respect to the modifications to be made. Use paragraph numbers in this document for ease of reference herein and in future correspondence or amendments.]

   a. Engineer shall perform or furnish the following Additional Services:

   b. The Scope of Services currently authorized to be performed by Engineer in accordance with the Agreement and previous amendments, if any, is modified as follows:

   c. The responsibilities of Owner are modified as follows:

   d. For the Additional Services or the modifications to services set forth above, Owner shall pay Engineer the following additional or modified compensation:

   e. The schedule for rendering services is modified as follows:

   f. Other portions of the Agreement (including previous amendments, if any) are modified as follows:

[List other Attachments, if any]

3. Agreement Summary (Reference only)

a.	Original Agreement amount:	$_____
b.	Net change for prior amendments:	$_____
c.	This amendment amount:	$_____
d.	Adjusted Agreement amount:	$_____

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit C.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The Effective Date of this Amendment is _____.

OWNER:	ENGINEER:
City of Peculiar, Missouri	Lamp, Rynearson & Associates, Inc. **dba Larkin Lamp Rynearson**
By: _____	By: _____
Title: _____	Title: _____
Date Signed: _____	Date Signed: _____

City Administrator
Brad Ratliff

City Clerk
Nick Jacobs

City Engineer
Carl Brooks

Business Office
Trudy Prickett

Chief of Police
Harry Gurin

City Planner
Cliff McDonald

City Attorney
Reid Holbrook

Parks Director
Nathan Musteen

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

To: Mayor & Board of Aldermen
From: Carl Brooks, City Engineer (cbrooks@cityofpeculiar.com)
Date: July 7, 2014
Re: Resolution No. 2014-xx, Mayor & Board of Alderman (BOA) to approve design of the transmission main along J Hwy.

GENERAL INFORMATION

Applicant: City Staff
Requested Actions: Acknowledgement of Received
Purpose: Acceptance of the request to start design of the project of the highest priority per identified in Larkin's 2014 Engineering Report, that is, the transmission main along Route J.
Property Location: Along five (5) miles of Route J from the Raymore elevated storage tank to two different locations per decision of the City Engineer, the Mayor, and Board of Aldermen.

PROPOSAL

City Staff proposes the installation of five (5) miles of a transmission main line running parallel to Route J to connect to KCMO water supply at Raymore's elevated storage tank.

Kansas City has a 24-inch diameter transmission main that extends south of the intersection of J HWY and Hubach Hill Road to the Raymore elevated storage tank.

The system can be connected to the Raymore storage tank from two locations:

1. At a point on Highway J, just east of I-49 to an existing waterline at Branic Road.
2. The second connection point would connect to a proposed main that will be located in preparation for the new 211th street interchange.

Therefore, City staff proposes that the design and construction phase services for the project listed.

PREVIOUS ACTIONS

The City has compiled a list of 11 items identified in a Manual of Practice for Water Main Extensions by Larkin. These improvements have been identified and further explained in the manual. However, the project listed is of the upmost importance and believed to be of the highest urgency as identified in the report.

KEY ISSUES

If the City's updated water hydraulic model, which is part of an engineering grant that the city received, indicates that the City's future growth and development needs are better served by the installation of this project, therefore City staff will recommend the design of said improvements.

STAFF COMMENTS AND SUGGESTIONS

City Staff finds this project to be of great importance and crucial to the wellbeing of the citizens.

STAFF RECOMMENDATION

City staff recommends the approval of the design of the most pressing hydraulic project as identified in the 2014 Engineering Report. Said work is of the upmost importance to the financial well-being of the citizens and city staff feels the money is best spent through the connection installation.

ATTACHMENTS

- Engineering Report: Water Supply, Pumping, Storage, and Distribution Facilities for The City of Peculiar, MO 2014.
    - Page 20-21

- System Improvements Engineering Report 2014 (Excel)
  Improvements:
    1- Supply
- Larkin Agreement Transmission Main

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Laws and Regulations.

AGREEMENT
BETWEEN OWNER AND ENGINEER
FOR
PROFESSIONAL SERVICES

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

EJCDC
ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

ACEC
American Council of Engineering Companies

AGC of America
The Associated General Contractors of America
Quality People. Quality Projects.

ASCE American Society of Civil Engineers

National Society of Professional Engineers
Professional Engineers in Private Practice

AMERICAN COUNCIL OF ENGINEERING COMPANIES

_____

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

_____

AMERICAN SOCIETY OF CIVIL ENGINEERS

_____

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

This Agreement has been prepared for use with the Standard General Conditions of the Construction Contract (EJCDC C-700, 2007 Edition). Their provisions are interrelated, and a change in one may necessitate a change in the other. For guidance on the completion and use of this Agreement, see EJCDC User's Guide to the Owner-Engineer Agreement, EJCDC E-001, 2009 Edition.

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AGREEMENT
BETWEEN OWNER AND ENGINEER
FOR
PROFESSIONAL SERVICES

THIS IS AN AGREEMENT effective as of _____ , **2014** ("Effective Date") between

City of Peculiar, Missouri ("Owner") and

Lamp, Rynearson and Associates, Inc., dba Larkin Lamp Rynearson ("Engineer").

Owner's Project, of which Engineer's services under this Agreement are a part, is generally identified as follows:

Kansas City Water Supply Transmission Main and Master Meter and Appurtenances ("Project").

Engineer's services under this Agreement are generally identified as follows:

Engineering design, engineering survey, construction observation, and construction administration.

Owner and Engineer further agree as follows:

ARTICLE 1 – SERVICES OF ENGINEER

1.01 *Scope*

A. Engineer shall provide, or cause to be provided, the services set forth herein and in Exhibit A.

ARTICLE 2 – OWNER'S RESPONSIBILITIES

2.01 *General*

A. Owner shall have the responsibilities set forth herein and in Exhibit B.

B. Owner shall pay Engineer as set forth in Exhibit C.

C. Owner shall be responsible for, and Engineer may rely upon, the accuracy and completeness of all requirements, programs, instructions, reports, data, and other information furnished by Owner to Engineer pursuant to this Agreement. Engineer may use such requirements, programs, instructions, reports, data, and information in performing or furnishing services under this Agreement.

ARTICLE 3 – SCHEDULE FOR RENDERING SERVICES

3.01 *Commencement*

A. Engineer is authorized to begin rendering services as of the Effective Date.

3.02 *Time for Completion*

A. Engineer shall complete its obligations within a reasonable time. Specific periods of time for rendering services are set forth or specific dates by which services are to be completed are provided in Exhibit A, and are hereby agreed to be reasonable.

B. If, through no fault of Engineer, such periods of time or dates are changed, or the orderly and continuous progress of Engineer's services is impaired, or Engineer's services are delayed or suspended, then the time for completion of Engineer's services, and the rates and amounts of Engineer's compensation, shall be adjusted equitably.

C. If Owner authorizes changes in the scope, extent, or character of the Project, then the time for completion of Engineer's services, and the rates and amounts of Engineer's compensation, shall be adjusted equitably.

D. Owner shall make decisions and carry out its other responsibilities in a timely manner so as not to delay the Engineer's performance of its services.

E. If Engineer fails, through its own fault, to complete the performance required in this Agreement within the time set forth, as duly adjusted, then Owner shall be entitled, as its sole remedy, to the recovery of direct damages, if any, resulting from such failure.

ARTICLE 4 – INVOICES AND PAYMENTS

4.01 *Invoices*

A. *Preparation and Submittal of Invoices*: Engineer shall prepare invoices in accordance with its standard invoicing practices and the terms of Exhibit C. Engineer shall submit its invoices to Owner on a monthly basis. Invoices are due and payable ~~within 30 days of~~ **upon** receipt.

4.02 *Payments*

A. Application *to Interest and Principal*: Payment will be credited first to any interest owed to Engineer and then to principal.

B. *Failure to Pay*: If Owner fails to make any payment due Engineer for services and expenses within ~~30~~ **60** days after receipt of Engineer's invoice, then:

1. amounts due Engineer will be increased at the rate of 1.0% per month (or the maximum rate of interest permitted by law, if less) **computed** from ~~said~~ **the** thirtieth day **after the date of Engineer's invoice**; and

2. Engineer may, after giving seven days written notice to Owner, suspend services under this Agreement until Owner has paid in full all amounts due for services, expenses, and other related charges. Owner waives any and all claims against Engineer for any such suspension.

C. *Disputed Invoices:* If Owner contests an invoice, Owner shall promptly advise Engineer of the specific basis for doing so, may withhold only that portion so contested, and must pay the undisputed portion.

D. *Legislative Actions:* If after the Effective Date any governmental entity takes a legislative action that imposes taxes, fees, or charges on Engineer's services or compensation under this Agreement, then the Engineer may invoice such new taxes, fees, or charges as a Reimbursable Expense to which a factor of 1.0 shall be applied. Owner shall reimburse Engineer for the cost of such invoiced new taxes, fees, and charges; such reimbursement shall be in addition to the compensation to which Engineer is entitled under the terms of Exhibit C.

ARTICLE 5 – OPINIONS OF COST

5.01 *Opinions of Probable Construction Cost*

A. Engineer's opinions of probable Construction Cost are to be made on the basis of Engineer's experience and qualifications and represent Engineer's best judgment as an experienced and qualified professional generally familiar with the construction industry. However, because Engineer has no control over the cost of labor, materials, equipment, or services furnished by others, or over contractors' methods of determining prices, or over competitive bidding or market conditions, Engineer cannot and does not guarantee that proposals, bids, or actual Construction Cost will not vary from opinions of probable Construction Cost prepared by Engineer. If Owner requires greater assurance as to probable Construction Cost, Owner must employ an independent cost estimator as provided in Exhibit B.

5.02 *Designing to Construction Cost Limit*

A. If a Construction Cost limit is established between Owner and Engineer, such Construction Cost limit and a statement of Engineer's rights and responsibilities with respect thereto will be specifically set forth in Exhibit F, "Construction Cost Limit," to this Agreement.

5.03 *Opinions of Total Project Costs*

A. The services, if any, of Engineer with respect to Total Project Costs shall be limited to assisting the Owner in collating the various cost categories which comprise Total Project Costs. Engineer assumes no responsibility for the accuracy of any opinions of Total Project Costs.

ARTICLE 6 – GENERAL CONSIDERATIONS

6.01 *Standards of Performance*

A. *Standard of Care:* The standard of care for all professional engineering and related services performed or furnished by Engineer under this Agreement will be the care and skill ordinarily used by members of the subject profession practicing under similar circumstances at the same time and in the same locality. Engineer makes no warranties, express or implied, under this Agreement or otherwise, in connection with Engineer's services.

B. *Technical Accuracy:* Owner shall not be responsible for discovering deficiencies in the technical accuracy of Engineer's services. Engineer shall correct deficiencies in technical accuracy without additional compensation, unless such corrective action is directly attributable to deficiencies in Owner-furnished information.

C. *Consultants:* Engineer may employ such Consultants as Engineer deems necessary to assist in the performance or furnishing of the services, subject to reasonable, timely, and substantive objections by Owner.

D. *Reliance on Others:* Subject to the standard of care set forth in Paragraph 6.01.A, Engineer and its Consultants may use or rely upon design elements and information ordinarily or customarily furnished by

others, including, but not limited to, specialty contractors, manufacturers, suppliers, and the publishers of technical standards.

E. Compliance with Laws and Regulations, and Policies and Procedures:

1. Engineer and Owner shall comply with applicable Laws and regulations.

2. Prior to the Effective Date, Owner provided to Engineer in writing any and all policies and procedures of Owner applicable to Engineer's performance of services under this Agreement provided to Engineer in writing. Engineer shall comply with such policies and procedures, subject to the standard of care set forth in Paragraph 6.01.A, and to the extent compliance is not inconsistent with professional practice requirements.

3. This Agreement is based on Laws and Regulations and Owner-provided written policies and procedures as of the Effective Date. Changes after the Effective Date to these Laws and Regulations, or to Owner-provided written policies and procedures, may be the basis for modifications to Owner's responsibilities or to Engineer's scope of services, times of performance, or compensation.

F. Engineer shall not be required to sign any documents, no matter by whom requested, that would result in the Engineer having to certify, guarantee, or warrant the existence of conditions whose existence the Engineer cannot ascertain. Owner agrees not to make resolution of any dispute with the Engineer or payment of any amount due to the Engineer in any way contingent upon the Engineer signing any such documents.

G. The general conditions for any construction contract documents prepared hereunder are to be the "Standard General Conditions of the Construction Contract" as prepared by the Engineers Joint Contract Documents Committee (EJCDC C-700, 2007 Edition)**, with revisions by the Engineer,** unless both parties mutually agree to use other general conditions by specific reference in Exhibit J. **Copies of the Engineer revised document are available for review.**

H. Engineer shall not at any time supervise, direct, control, or have authority over any contractor work, nor shall Engineer have authority over or be responsible for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, or the safety precautions and programs incident thereto, for security or safety at the Site, nor for any failure of a contractor to comply with Laws and Regulations applicable to such contractor's furnishing and performing of its work.

I. Engineer neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish and perform the Work in accordance with the Contract Documents.

J. Engineer shall not provide or have any responsibility for surety bonding or insurance-related advice, recommendations, counseling, or research, or enforcement of construction insurance or surety bonding requirements.

K. Engineer shall not be responsible for the acts or omissions of any Contractor, Subcontractor, or Supplier, or of any of their agents or employees or of any other persons (except Engineer's own agents, employees, and Consultants) at the Site or otherwise furnishing or performing any Work; or for any decision made regarding the Contract Documents, or any application, interpretation, or clarification, of the Contract Documents, other than those made by Engineer.

L. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's and Owner's safety programs of which Engineer has been informed in writing.

6.02 *Design Without Construction Phase Services*

A. Engineer shall be responsible only for those Construction Phase services expressly required of Engineer in Exhibit A~~, Paragraph A1.05~~. With the exception of such expressly required services, Engineer shall have no design, Shop Drawing review, or other obligations during construction and Owner assumes all responsibility for the application and interpretation of the Contract Documents, review and response to Contractor claims, contract administration, processing Change Orders, revisions to the Contract Documents during construction, construction surety bonding and insurance requirements, construction observation and review, review of payment applications, and all other necessary Construction Phase engineering and professional services. Owner waives all claims against the Engineer that may be connected in any way to Construction Phase engineering or professional services except for those services that are expressly required of Engineer in Exhibit A~~, Paragraph A1.05~~.

6.03 *Use of Documents*

A. All Documents are **Engineer's** instruments of service in respect to this Project~~, and Engineer shall retain an ownership and property interest therein (including the copyright and the right of reuse at the discretion of the Engineer) whether or not the Project is completed~~. Owner shall not rely in any way on any Document unless it is in printed form, signed or sealed by the Engineer or one of its Consultants.

B. Either party to this Agreement may rely that data or information set forth on paper (also known as hard copies) that the party receives from the other party by mail, hand delivery, or facsimile, are the items that the other party intended to send. Files in electronic media format of text, data, graphics, or other types that are furnished by one party to the other are furnished only for convenience, not reliance by the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern. If the parties agree to other electronic transmittal procedures, such are set forth in Exhibit J.

C. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any transmittal errors detected within the 60-day acceptance period will be corrected by the party delivering the electronic files.

D. When transferring documents in electronic media format, the transferring party makes no representations as to long-term compatibility, usability, or readability of such documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the documents' creator.

E. Owner~~ may make and retain copies of Documents for information and reference in connection with use on the Project by Owner. Engineer grants Owner a limited license to use the Documents on the Project, extensions of the Project, and for related uses of the Owner,~~ **shall receive ownership of the final construction documents prepared under this Agreement,** subject to receipt by Engineer of full payment for all services relating to preparation of the Documents and subject to the following limitations: (1) Owner acknowledges that such Documents are not intended or represented to be suitable for use on the Project unless completed by Engineer, or for use or reuse by Owner or others on extensions of the Project, on any other project, or for any other use or purpose, without written verification or adaptation by Engineer; (2) any such use or reuse, or any modification of the Documents, without written verification, completion, or adaptation by Engineer, as appropriate for the specific purpose intended, will be at Owner's sole risk and without liability or legal exposure to Engineer or to its officers, directors, members, partners, agents, employees, and Consultants; (3) Owner shall indemnify and hold harmless Engineer and its officers, directors, members, partners, agents, employees, and Consultants from all claims, damages, losses, and expenses, including attorneys' fees, arising out of or resulting from any use, reuse, or

modification of the Documents without written verification, completion, or adaptation by Engineer; and (4) such limited license to Owner shall not create any rights in third parties.

F. If Engineer at Owner's request verifies the suitability of the Documents, completes them, or adapts them for extensions of the Project or for any other purpose, then Owner shall compensate Engineer at rates or in an amount to be agreed upon by Owner and Engineer.

6.04 *Insurance*

A. Engineer shall procure and maintain insurance as set forth in Exhibit G, "Insurance." Engineer shall cause Owner to be listed as an additional insured on any applicable general liability insurance policy carried by Engineer.

B. Owner shall procure and maintain insurance as set forth in Exhibit G, "Insurance." Owner shall cause Engineer and its Consultants to be listed as additional insureds on any general liability policies and as loss payees on any property insurance policies carried by Owner which are applicable to the Project.

C. Owner shall require Contractor to purchase and maintain policies of insurance covering workers' compensation, general liability, property damage (other than to the Work itself), motor vehicle damage and injuries, and other insurance necessary to protect Owner's and Engineer's interests in the Project**, as per the requirements of paragraphs 5.04, 5.05 and 5.06 of the "Standard General Conditions of the Construction Contract" as prepared by the Engineers Joint Contract Documents Committee (EJCDC C-700, 2007 Edition, and the Supplementary Conditions prepared by the Engineer**. Owner shall require Contractor to cause Engineer and its Consultants to be listed as additional insureds with respect to such liability and other insurance purchased and maintained by Contractor for the Project.

D. Owner and Engineer shall each deliver to the other certificates of insurance evidencing the coverages indicated in Exhibit G. Such certificates shall be furnished prior to commencement of Engineer's services and at renewals thereafter during the life of the Agreement.

E. All policies of property insurance relating to the Project shall contain provisions to the effect that Engineer's and its Consultants' interests are covered and that in the event of payment of any loss or damage the insurers will have no rights of recovery against Engineer or its Consultants, or any insureds, additional insureds, or loss payees thereunder.

F. All policies of insurance shall contain a provision or endorsement that the coverage afforded will not be canceled or reduced in limits by endorsement, and **that renewal** ~~thatrenewal~~ will not be refused, until at least 30 days prior written notice has been given to Owner and Engineer and to each other additional insured (if any) to which a certificate of insurance has been issued.

G. At any time, Owner may request that Engineer or its Consultants, at Owner's sole expense, provide additional insurance coverage, increased limits, or revised deductibles that are more protective than those specified in Exhibit G. If so requested by Owner, and if commercially available, Engineer shall obtain and shall require its Consultants to obtain such additional insurance coverage, different limits, or revised deductibles for such periods of time as requested by Owner, and Exhibit G will be supplemented to incorporate these requirements.

6.05 *Suspension and Termination*

A. Suspension:

1. By Owner: Owner may suspend the Project for up to 90 days upon seven days written notice to Engineer.

2. By Engineer: Engineer may, after giving seven days written notice to Owner, suspend services under this Agreement if Engineer's performance has been substantially delayed through no fault of Engineer.

B. *Termination*: The obligation to provide further services under this Agreement may be terminated:

1. For cause,

a. By either party upon ~~30~~ **7 calendar** days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party.

b. By Engineer:

1) upon seven days written notice if Owner demands that Engineer furnish or perform services contrary to Engineer's responsibilities as a licensed professional; or

2) upon seven days written notice if the Engineer's services for the Project are delayed or suspended for more than 90 days for reasons beyond Engineer's control.

3) Engineer shall have no liability to Owner on account of such termination.

c. Notwithstanding the foregoing, this Agreement will not terminate under Paragraph 6.05.B.1.a if the party receiving such notice begins, within seven days of receipt of such notice, to correct its substantial failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt thereof; provided, however, that if and to the extent such substantial failure cannot be reasonably cured within such 30 day period, and if such party has diligently attempted to cure the same and thereafter continues diligently to cure the same, then the cure period provided for herein shall extend up to, but in no case more than, 60 days after the date of receipt of the notice.

2. For convenience,

a. By Owner effective **7 calendar days** upon Engineer's receipt of notice from Owner.

C. *Effective Date of Termination*: The terminating party under Paragraph 6.05.B may set the effective date of termination at a time up to 30 days later than otherwise provided to allow Engineer to demobilize personnel and equipment from the Site, to complete tasks whose value would otherwise be lost, to prepare notes as to the status of completed and uncompleted tasks, and to assemble Project materials in orderly files.

D. Payments Upon Termination:

1. In the event of any termination under Paragraph 6.05, Engineer will be entitled to invoice Owner and to receive full payment for all services performed or furnished in accordance with this Agreement and all Reimbursable Expenses incurred through the effective date of termination. Upon making such payment, Owner shall have the limited right to the use of Documents, at Owner's sole risk, subject to the provisions of Paragraph 6.03.E.

2. In the event of termination by Owner for convenience or by Engineer for cause, Engineer shall be entitled, in addition to invoicing for those items identified in Paragraph 6.05.D.1, to invoice Owner and to payment of a reasonable amount for services and expenses directly attributable to termination, both before and after the effective date of termination, such as reassignment of

personnel, costs of terminating contracts with Engineer's Consultants, and other related close-out costs, using methods and rates for Additional Services as set forth in Exhibit C.

6.06 *Controlling Law*

A. This Agreement is to be governed by the law of the state or jurisdiction in which the Project is located.

6.07 *Successors, Assigns, and Beneficiaries*

A. Owner and Engineer are hereby bound and the successors, executors, administrators, and legal representatives of Owner and Engineer (and to the extent permitted by Paragraph 6.07.B the assigns of Owner and Engineer) are hereby bound to the other party to this Agreement and to the successors, executors, administrators and legal representatives (and said assigns) of such other party, in respect of all covenants, agreements, and obligations of this Agreement.

B. Neither Owner nor Engineer may assign, sublet, or transfer any rights under or interest (including, but without limitation, moneys that are due or may become due) in this Agreement without the written consent of the other, except to the extent that any assignment, subletting, or transfer is mandated or restricted by law. Unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under this Agreement.

C. Unless expressly provided otherwise in this Agreement:

1. Nothing in this Agreement shall be construed to create, impose, or give rise to any duty owed by Owner or Engineer to any Contractor, Subcontractor, Supplier, other individual or entity, or to any surety for or employee of any of them.

2. All duties and responsibilities undertaken pursuant to this Agreement will be for the sole and exclusive benefit of Owner and Engineer and not for the benefit of any other party.

3. Owner agrees that the substance of the provisions of this Paragraph 6.07.C shall appear in the Contract Documents.

6.08 *Dispute Resolution*

A. Owner and Engineer agree to negotiate all disputes between them in good faith for a period of 30 days from the date of notice prior to invoking the procedures of Exhibit H or other provisions of this Agreement, or exercising their rights under law.

B. If the parties fail to resolve a dispute through negotiation under Paragraph 6.08.A, then either or both may invoke the procedures of Exhibit H. If Exhibit H is not included, or if no dispute resolution method is specified in Exhibit H, then the parties may exercise their rights under law.

6.09 *Environmental Condition of Site*

A. Owner has disclosed to Engineer in writing the existence of all known and suspected Asbestos, PCBs, Petroleum, Hazardous Waste, Radioactive Material, hazardous substances, and other Constituents of Concern located at or near the Site, including type, quantity, and location.

B. Owner represents to Engineer that to the best of its knowledge no Constituents of Concern, other than those disclosed in writing to Engineer, exist at the Site.

C. If Engineer encounters or learns of an undisclosed Constituent of Concern at the Site, then Engineer shall notify (1) Owner and (2) appropriate governmental officials if Engineer reasonably concludes that doing so is required by applicable Laws or Regulations.

D. It is acknowledged by both parties that Engineer's scope of services does not include any services related to Constituents of Concern. If Engineer or any other party encounters an undisclosed Constituent of Concern, or if investigative or remedial action, or other professional services, are necessary with respect to disclosed or undisclosed Constituents of Concern, then Engineer may, at its option and without liability for consequential or any other damages, suspend performance of services on the portion of the Project affected thereby until Owner: (1) retains appropriate specialist consultants or contractors to identify and, as appropriate, abate, remediate, or remove the Constituents of Concern; and (2) warrants that the Site is in full compliance with applicable Laws and Regulations.

E. If the presence at the Site of undisclosed Constituents of Concern adversely affects the performance of Engineer's services under this Agreement, then the Engineer shall have the option of (1) accepting an equitable adjustment in its compensation or in the time of completion, or both; or (2) terminating this Agreement for cause on 30 days notice.

F. Owner acknowledges that Engineer is performing professional services for Owner and that Engineer is not and shall not be required to become an "owner" "arranger," "operator," "generator," or "transporter" of hazardous substances, as defined in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, which are or may be encountered at or near the Site in connection with Engineer's activities under this Agreement.

6.10 *Indemnification and Mutual Waiver*

A. *Indemnification by Engineer*: To the fullest extent permitted by law, Engineer shall indemnify and hold harmless Owner, and Owner's officers, directors, members, partners, agents, consultants, and employees from reasonable claims, costs, losses, and damages arising out of or relating to the Project, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Engineer or Engineer's officers, directors, members, partners, agents, employees, or Consultants. ~~**This indemnification provision is subject to and limited by the provisions, if any, agreed to by Owner and Engineer in Exhibit I, "Limitations of Liability."**~~

B. Indemnification by Owner: Owner shall indemnify and hold harmless Engineer and its officers, directors, members, partners, agents, employees, and Consultants as required by Laws and Regulations**.** ~~and to the extent (if any) required in Exhibit I, Limitations of Liability.~~

C. Environmental Indemnification: To the fullest extent permitted by law, Owner shall indemnify and hold harmless Engineer and its officers, directors, members, partners, agents, employees, and Consultants from and against any and all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals, and all court, arbitration, or other dispute resolution costs) caused by, arising out of, relating to, or resulting from a Constituent of Concern at, on, or under the Site, provided that (1) any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (2) nothing in this paragraph shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence or willful misconduct.

D. Percentage Share of Negligence: To the fullest extent permitted by law, a party's total liability to the other party and anyone claiming by, through, or under the other party for any cost, loss, or damages caused

in part by the negligence of the party and in part by the negligence of the other party or any other negligent entity or individual, shall not exceed the percentage share that the party's negligence bears to the total negligence of Owner, Engineer, and all other negligent entities and individuals.

E. Mutual Waiver: To the fullest extent permitted by law, Owner and Engineer waive against each other, and the other's employees, officers, directors, members, agents, insurers, partners, and consultants, any and all claims for or entitlement to special, incidental, indirect, or consequential damages arising out of, resulting from, or in any way related to the Project.

6.11 *Miscellaneous Provisions*

A. *Notices*: Any notice required under this Agreement will be in writing, addressed to the appropriate party at its address on the signature page and given personally, by facsimile, by registered or certified mail postage prepaid, or by a commercial courier service. All notices shall be effective upon the date of receipt.

B. *Survival*: All express representations, waivers, indemnifications, and limitations of liability included in this Agreement will survive its completion or termination for any reason.

C. *Severability*: Any provision or part of the Agreement held to be void or unenforceable under any Laws or Regulations shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Engineer, which agree that the Agreement shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

D. *Waiver*: A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

E. *Accrual of Claims*: To the fullest extent permitted by law, all causes of action arising under this Agreement shall be deemed to have accrued, and all statutory periods of limitation shall commence, no later than the date of Substantial Completion.

ARTICLE 7 – DEFINITIONS

7.01 *Defined Terms*

A. Wherever used in this Agreement (including the Exhibits hereto) terms (including the singular and plural forms) printed with initial capital letters have the meanings indicated in the text above, in the exhibits, or in the following provisions:

1. *Additional Services* – The services to be performed for or furnished to Owner by Engineer in accordance with ~~Part 2 of~~ Exhibit A of this Agreement.

2. *Agreement* – This written contract for professional services between Owner and Engineer, including all exhibits identified in Paragraph 8.01 and any duly executed amendments.

3. *Asbestos* – Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

4. *Basic Services* – The services to be performed for or furnished to Owner by Engineer in accordance with ~~Part 1 of~~ Exhibit A of this Agreement.

5. *Construction Contract* – The entire and integrated written agreement between Owner and Contractor concerning the Work.

6. *Construction Cost* – The cost to Owner of those portions of the entire Project designed or specified by Engineer. Construction Cost does not include costs of services of Engineer or other design professionals and consultants; cost of land or rights-of-way, or compensation for damages to properties; Owner's costs for legal, accounting, insurance counseling or auditing services; interest or financing charges incurred in connection with the Project; or the cost of other services to be provided by others to Owner pursuant to Exhibit B of this Agreement. Construction Cost is one of the items comprising Total Project Costs.

7. *Constituent of Concern* – Any substance, product, waste, or other material of any nature whatsoever (including, but not limited to, Asbestos, Petroleum, Radioactive Material, and PCBs) which is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§1801 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; and (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

8. *Consultants* – Individuals or entities having a contract with Engineer to furnish services with respect to this Project as Engineer's independent professional associates and consultants; subcontractors; or vendors.

9. *Contract Documents* – Those items so designated in the Construction Contract, including the Drawings, Specifications, construction agreement, and general and supplementary conditions. Only printed or hard copies of the items listed in the Construction Contract are Contract Documents. ~~Approved~~**Reviewed** Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

10. *Contractor* – The entity or individual with which Owner has entered into a Construction Contract.

11. *Documents* – Data, reports, Drawings, Specifications, Record Drawings, and other deliverables, whether in printed or electronic media format, provided or furnished in appropriate phases by Engineer to Owner pursuant to this Agreement.

12. *Drawings* – That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings are not Drawings as so defined.

13. *Effective Date* – The date indicated in this Agreement on which it becomes effective, but if no such date is indicated, the date on which this Agreement is signed and delivered by the last of the parties to sign and deliver.

14. *Engineer* – The individual or entity named as such in this Agreement.

15. *Hazardous Waste* – The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

16. *Laws and Regulations; Laws or Regulations* – Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

17. *Owner* – The individual or entity with which Engineer has entered into this Agreement and for which the Engineer's services are to be performed. Unless indicated otherwise, this is the same individual or entity that will enter into any Construction Contracts concerning the Project.

18. *PCBs* – Polychlorinated biphenyls.

19. *Petroleum* – Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-hazardous waste and crude oils.

20. *Project* – The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

21. *Radioactive Material* – Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

22. *Record Drawings* – Drawings depicting the completed Project, prepared by Engineer as an Additional Service and based solely on Contractor's record copy of all Drawings, Specifications, addenda, change orders, work change directives, field orders, and written interpretations and clarifications, as delivered to Engineer and annotated by Contractor to show changes made during construction.

23. *Reimbursable Expenses* – The expenses incurred directly by Engineer in connection with the performing or furnishing of Basic and Additional Services for the Project.

24. *Resident Project Representative* – The authorized representative of Engineer assigned to assist Engineer at the Site during the Construction Phase. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative agreed to by Owner. The duties and responsibilities of the Resident Project Representative, if any, are as set forth in Exhibit D.

25. *Samples* – Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

26. *Shop Drawings* – All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

27. *Site* – Lands or areas to be indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

28. *Specifications* – That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and workmanship as applied to the Work and certain administrative details applicable thereto.

29. *Subcontractor* – An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

30. *Substantial Completion* – The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

31. *Supplier* – A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.

32. *Total Project Costs* – The sum of the Construction Cost, allowances for contingencies, and the total costs of services of Engineer or other design professionals and consultants, together with such other Project-related costs that Owner furnishes for inclusion, including but not limited to cost of land, rights-of-way, compensation for damages to properties, Owner's costs for legal, accounting, insurance counseling and auditing services, interest and financing charges incurred in connection with the Project, and the cost of other services to be provided by others to Owner pursuant to Exhibit B of this Agreement.

33. *Work* – The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

ARTICLE 8 – EXHIBITS AND SPECIAL PROVISIONS

8.01 *Exhibits Included:*

A. Exhibit A, Engineer's Services.

B. Exhibit B, Owner's Responsibilities.

C. Exhibit C, Payments to Engineer for Services and Reimbursable Expenses.

D. Exhibit D, Duties, Responsibilities and Limitations of Authority of Resident Project Representative.

E. Exhibit E, Notice of Acceptability of Work. **NOT INCLUDED**

F. Exhibit F, Construction Cost Limit. **NOT INCLUDED**

G. Exhibit G, Insurance.

H. Exhibit H, Dispute Resolution.

I. Exhibit I, Limitations of Liability. **NOT INCLUDED**

J. Exhibit J, Special Provisions. **NOT INCLUDED**

K. Exhibit K, Amendment to Owner-Engineer Agreement.

8.02 *Total Agreement:*

A. This Agreement, (together with the exhibits identified above) constitutes the entire agreement between Owner and Engineer and supersedes all prior written or oral understandings. This Agreement may only be amended, supplemented, modified, or canceled by a duly executed written instrument based on the format of Exhibit K to this Agreement.

8.03 *Designated Representatives:*

A. With the execution of this Agreement, Engineer and Owner shall designate specific individuals to act as Engineer's and Owner's representatives with respect to the services to be performed or furnished by Engineer and responsibilities of Owner under this Agreement. Such an individual shall have authority to transmit instructions, receive information, and render decisions relative to the Project on behalf of the respective party whom the individual represents.

8.04 *Engineer's Certifications:*

A. Engineer certifies that it has not engaged in corrupt, fraudulent, or coercive practices in competing for or in executing the Agreement. For the purposes of this Paragraph 8.04:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the selection process or in the Agreement execution;

2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the selection process or the execution of the Agreement to the detriment of Owner, or (b) to deprive Owner of the benefits of free and open competition;

3. "coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the selection process or affect the execution of the Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement, the Effective Date of which is indicated on page 1.

Owner:	Engineer:
City of Peculiar, Missouri	Lamp, Rynearson & Associates, Inc.**, dba Larkin Lamp Rynearson**
By:	By: **Loren M. Steenson, P.E.**
Title:	Title: **Senior Vice-President**
Date Signed:	Date Signed:
	Engineer License or Firm's Certificate No. **2013011903 valid to 12/31/15**
	State of: **Missouri**
Address for giving notices:	Address for giving notices:
250 S. Main Street	Lamp, Rynearson & Associates, Inc.
Peculiar, Missouri 64078	14710 West Dodge Road, Ste. 100
	Omaha, NE 68154-2027
Designated Representative (Paragraph 8.03.A):	Designated Representative (Paragraph 8.03.A):
Carl Brooks, P.E.	**Anthony P. O'Malley, P.E.**
Title: **City Engineer**	Title: **Water Group Leader**
Phone Number: **(816) 779-2228**	Phone Number: **(816) 823-7282**
Facsimile Number: **(816) 779-5213**	Facsimile Number: **(816) 361-0045**
E-Mail Address: **cbrooks@ cityofpeculiar.com**	E-Mail Address: **Tony.OMalley@LRA-Inc.com**

EXHIBIT A
Engineer's Services

Engineer shall provide Basic and Additional Services as set forth below and in accordance with the schedule included at the end of this Exhibit A.

BASIC SERVICES

A1.01 *Study Phase* ***(Alignment Study and Design Memorandum)***

A. Engineer shall:

1. Consult with Owner to define and clarify Owner's requirements for the Project and available data.

2. Advise Owner of any need for Owner to provide data or services of the types described in Exhibit B which are not part of Engineer's Basic Services.

3. Identify, consult with, and analyze requirements of governmental authorities having jurisdiction to approve the portions of the Project designed or specified by Engineer, including but not limited to mitigating measures identified in the environmental assessment.

4. Identify and evaluate alternate solutions available to Owner and, after consultation with Owner, recommend to Owner those solutions which in Engineer's judgment meet Owner's requirements for the Project.

~~5.~~ Perform or provide the following additional Study Phase tasks or deliverables: **Go over alignment in the field with Owner representatives. Use hydraulic modeling to confirm pipe sizes. Meet with Owner and proposed water supplier to confirm connection point. Meet with Owner and MoDOT to discuss use of highway right-of-way where necessary.**

A1.02 *Preliminary Design Phase*

A. Engineer shall:

1. Prepare Preliminary Design Phase documents consisting of preliminary drawings of the Project.

2. Provide necessary field surveys and topographic and utility mapping for design purposes. Utility mapping will be based upon information obtained from utility owners.

3. Advise Owner if additional reports, data, information, or services of the types described in Exhibit B are necessary and assist Owner in obtaining such reports, data, information, or services.

4. Based on the information contained in the Preliminary Design Phase documents, prepare an opinion of probable Construction Cost and assist Owner in collating the various cost categories which comprise Total Project Costs.

5. Perform or provide the following additional Preliminary Design Phase tasks or deliverables: **Facilitate a utility coordination meeting. Facilitate a public meeting with Owner and affected property owners.**

6. Furnish review copies of the Preliminary Design Phase documents and any other deliverables to Owner and review them with Owner. Owner shall submit to Engineer any comments regarding the Preliminary Design Phase documents and any other deliverables.

7. Revise the Preliminary Design Phase documents and any other deliverables in response to Owner's comments, as appropriate, and furnish to Owner copies of the revised Preliminary Design Phase documents, opinion of probable Construction Cost, and any other deliverables.

B. Engineer's services under the Preliminary Design Phase will be considered complete on the date when the revised Preliminary Design Phase documents, opinion of probable Construction Cost, and any other deliverables have been delivered to Owner.

A1.03 *Final Design Phase*

A. After acceptance by Owner of the Preliminary Design Phase documents, opinion of probable Construction Cost as determined in the Preliminary Design Phase, and any other deliverables subject to any Owner-directed modifications or changes in the scope, extent, character, or design requirements of or for the Project, and upon written authorization from Owner, Engineer shall:

1. Prepare final Drawings and Specifications indicating the scope, extent, and character of the Work to be performed and furnished by Contractor.

2. Provide technical criteria, written descriptions, and design data for Owner's use in filing applications for permits from or approvals of governmental authorities having jurisdiction to review or approve the final design of the Project; assist Owner in consultations with such authorities; and revise the Drawings and Specifications in response to directives from such authorities.

3. Advise Owner of any adjustments to the opinion of probable Construction Cost known to Engineer.

4. Perform or provide the following additional Final Design Phase tasks or deliverables: **Submit final plans and specifications with hydraulics and a construction permit application to the MoDNR. Prepare a Storm Water Pollution Prevention Plan (SWPPP) per MoDNR requirements. In bid documents, require contractor to video project route prior to initiating construction.**

5. Prepare and furnish bidding documents for review by Owner, its legal counsel, and other advisors, and assist Owner in the preparation of other related documents. Following receipt, Owner shall submit to Engineer any comments or instructions for revisions.

6. Revise the bidding documents in accordance with comments and instructions from the Owner, as appropriate, and submit final copies of the bidding documents, a revised opinion of probable Construction Cost, and any other deliverables to Owner.

B. Engineer's services under the Final Design Phase will be considered complete on the date when the submittals required by Paragraph A1.03.A.6 have been delivered to Owner.

A1.04 *Bidding or Negotiating Phase*

A. After acceptance by Owner of the bidding documents and the most recent opinion of probable Construction Cost as determined in the Final Design Phase, and upon written authorization by Owner to proceed, Engineer shall:

1. Assist Owner in advertising for and obtaining bids or proposals for the Work and, where applicable, maintain a record of prospective bidders to whom Bidding Documents have been issued, attend pre-bid conferences, if any, and receive and process contractor deposits or charges for the bidding documents.

2. Issue addenda as appropriate to clarify, correct, or change the bidding documents.

3. Provide information or assistance needed by Owner in the course of any negotiations with prospective contractors.

4. Consult with Owner as to the acceptability of subcontractors, suppliers, and other individuals and entities proposed by prospective contractors for those portions of the Work as to which such acceptability is required by the bidding documents.

5. If bidding documents require, the Engineer shall evaluate and determine the acceptability of "or equals" and substitute materials and equipment proposed by bidders, but subject to the provisions of paragraph A2.02.A.2 of this Exhibit A.

6. Attend the Bid opening, prepare Bid tabulation sheets, and assist Owner in evaluating Bids or proposals and in assembling and awarding contracts for the Work.

7. Perform or provide the following additional Bidding or Negotiating Phase tasks or deliverables: None.[A1]

B. The Bidding or Negotiating Phase will be considered complete upon commencement of the Construction Phase or upon cessation of negotiations with prospective contractors (except as may be required if Exhibit F is a part of this Agreement).

A1.05 *Construction Phase*

A. Upon successful completion of the Bidding and Negotiating Phase, and upon written authorization from Owner, Engineer shall:

1. *General Administration of Construction Contract:* Consult with Owner and act as Owner's representative as provided in the Construction Contract. The extent and limitations of the duties, responsibilities, and authority of Engineer as assigned in the Construction Contract shall not be modified, except as Engineer may otherwise agree in writing. All of Owner's instructions to Contractor will be issued through Engineer, which shall have authority to act on behalf of Owner in dealings with Contractor to the extent provided in this Agreement and the Construction Contract except as otherwise provided in writing.

2. *Resident Project Representative (RPR):* Provide the services of an RPR at the Site to assist the Engineer and to provide more extensive observation of Contractor's work. Duties, responsibilities, and authority of the RPR are as set forth in Exhibit D. The furnishing of such RPR's services will not limit, extend, or modify Engineer's responsibilities or authority except as expressly set forth in Exhibit D. [~~If Engineer will not be providing the services of an RPR, then delete this Paragraph 2 by inserting the word "DELETED" after the paragraph title, and do not include Exhibit D.~~][A2]

3. *Selecting Independent Testing Laboratory:* Assist Owner in the selection of an independent testing laboratory to perform the services identified in Exhibit B, Paragraph B2.01.0.

4. *Pre-Construction Conference:* Participate in a Pre-Construction Conference prior to commencement of Work at the Site.

5. *Schedules:* Receive, review, and determine the acceptability of any and all schedules that Contractor is required to submit to Engineer, including the Progress Schedule, Schedule of Submittals, and Schedule of Values.

6. *Baselines and Benchmarks:* As appropriate, establish baselines and benchmarks for locating the Work which in Engineer's judgment are necessary to enable Contractor to proceed.

7. *Visits to Site and Observation of Construction:* In connection with observations of Contractor's Work while it is in progress:

   a. Make visits to the Site at intervals appropriate to the various stages of construction, as Engineer deems necessary, to observe as an experienced and qualified design professional the progress of Contractor's executed Work. Such visits and observations by Engineer, and the Resident Project Representative, if any, are not intended to be exhaustive or to extend to every aspect of Contractor's Work in progress or to involve detailed inspections of Contractor's Work in progress beyond the responsibilities specifically assigned to Engineer in this Agreement and the Contract Documents, but rather are to be limited to spot checking, selective sampling, and similar methods of general observation of the Work based on Engineer's exercise of professional judgment, as assisted by the Resident Project Representative, if any. Based on information obtained during such visits and observations, Engineer will determine in general if the Work is proceeding in accordance with the Contract Documents, and Engineer shall keep Owner informed of the progress of the Work.

   b. The purpose of Engineer's visits to, and representation by the Resident Project Representative, if any, at the Site, will be to enable Engineer to better carry out the duties and responsibilities assigned to and undertaken by Engineer during the Construction Phase, and, in addition, by the exercise of Engineer's efforts as an experienced and qualified design professional, to provide for Owner a greater degree of confidence that the completed Work will conform in general to the Contract Documents and that Contractor has implemented and maintained the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents. Engineer shall not, during such visits or as a result of such observations of Contractor's Work in progress, supervise, direct, or have control over Contractor's Work, nor shall Engineer have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected or used by Contractor, for security or safety at the Site, for safety precautions and programs incident to Contractor's Work, nor for any failure of Contractor to comply with Laws and Regulations applicable to Contractor's furnishing and performing the Work. Accordingly, Engineer neither guarantees the performance of any Contractor nor assumes responsibility for any Contractor's failure to furnish or perform the Work in accordance with the Contract Documents.

8. *Defective Work:* Reject Work if, on the basis of Engineer's observations, Engineer believes that such Work (a) is defective under the standards set forth in the Contract Documents, (b) will not produce a completed Project that conforms to the Contract Documents, or (c) will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

9. *Clarifications and Interpretations; Field Orders:* Issue necessary clarifications and interpretations of the Contract Documents as appropriate to the orderly completion of Contractor's work. Such clarifications and interpretations will be consistent with the intent of and reasonably inferable from the Contract Documents. Subject to any limitations in the Contract Documents, Engineer may issue field orders authorizing minor variations in the Work from the requirements of the Contract Documents.

10. *Requests for Information:* The Engineer shall provide, with reasonable promptness, written responses to "Requests for Information" from the Contractor for clarification and interpretation of the requirements of the Contract Documents. Such services shall be provided as part of the Engineer's basic services. However, if the Contractor's requests for information, clarification or interpretation are, in the Engineer's professional opinion, for information readily apparent from reasonable observation of field conditions or a review of the Contract Documents, or are reasonably inferable therefrom, the Engineer shall be entitled to compensation for Additional Services in accordance with Exhibit C, for the Engineer's time spent responding to such requests.

11. *Change Orders and Work Change Directives:* Recommend change orders and work change directives to Owner, as appropriate, and prepare change orders and work change directives as required.

12. *Shop Drawings and Samples:* Review or take other appropriate action in respect to Shop Drawings and Samples and other data which Contractor is required to submit, but only for conformance with the information given in the Contract Documents and compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such reviews and approvals or other action will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions and programs incident thereto. Engineer shall meet any Contractor's submittal schedule that Engineer has accepted. Unless Engineer specifically requests that Shop Drawings be submitted for review, Engineer will not accept, review or transmit any Shop Drawing submittals not specifically requested.

13. *Substitutes and "or-equal":* Evaluate and determine the acceptability of substitute or "or-equal" materials and equipment proposed by Contractor, but subject to the provisions of Paragraph A2.02.A.2 of this Exhibit A.

14. *Inspections and Tests:* Require such special inspections or tests of Contractor's work as deemed reasonably necessary, and receive and review all certificates of inspections, tests, and approvals required by Laws and Regulations or the Contract Documents. Engineer's review of such certificates will be for the purpose of determining that the results certified indicate compliance with the Contract Documents and will not constitute an independent evaluation that the content or procedures of such inspections, tests, or approvals comply with the requirements of the Contract Documents. Engineer shall be entitled to rely on the results of such tests.

15. *Disagreements between Owner and Contractor*: Render formal written decisions on all duly submitted issues relating to the acceptability of Contractor's work or the interpretation of the requirements of the Contract Documents pertaining to the execution, performance, or progress of Contractor's Work; review each duly submitted Claim by Owner or Contractor, and in writing either deny such Claim in whole or in part, approve such Claim, or decline to resolve such Claim if Engineer in its discretion concludes that to do so would be inappropriate. In rendering such decisions, Engineer shall be fair and not show partiality to Owner or Contractor and shall not be liable in connection with any decision rendered in good faith in such capacity.

16. *Applications for Payment:* Based on Engineer's observations as an experienced and qualified design professional and on review of Applications for Payment and accompanying supporting documentation:

    a. Determine the amounts that Engineer recommends Contractor be paid. Such recommendations of payment will be in writing and will constitute Engineer's representation to Owner, based on such observations and review, that, to the best of Engineer's knowledge, information and belief, Contractor's Work has progressed to the point indicated, the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, and to any other qualifications stated in the recommendation), and the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe Contractor's Work. In the case of unit price work, Engineer's recommendations of payment will include final determinations of quantities and classifications of Contractor's Work (subject to any subsequent adjustments allowed by the Contract Documents).

    b. By recommending any payment, Engineer shall not thereby be deemed to have represented that observations made by Engineer to check the quality or quantity of Contractor's Work as it is performed and furnished have been exhaustive, extended to every aspect of Contractor's Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in this Agreement and the Contract Documents. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment including final payment will impose on Engineer responsibility to supervise, direct, or

control Contractor's Work in progress or for the means, methods, techniques, sequences, or procedures of construction or safety precautions or programs incident thereto, or Contractor's compliance with Laws and Regulations applicable to Contractor's furnishing and performing the Work. It will also not impose responsibility on Engineer to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or to determine that title to any portion of the Work in progress, materials, or equipment has passed to Owner free and clear of any liens, claims, security interests, or encumbrances, or that there may not be other matters at issue between Owner and Contractor that might affect the amount that should be paid.

17. *Contractor's Completion Documents:* Receive, review, and transmit to Owner maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance required by the Contract Documents, certificates of inspection, tests and approvals, Shop Drawings, Samples and other data approved as provided under Paragraph A1.05.A.11, and transmit the annotated record documents which are to be assembled by Contractor in accordance with the Contract Documents to obtain final payment. The extent of such review by Engineer will be limited as provided in Paragraph A1.05.A.11. Unless Engineer specifically requests that Shop Drawings be submitted for review, Engineer will not accept, review or transmit any Shop Drawing submittals not specifically requested.

18. *Substantial Completion:* Promptly after notice from Contractor that Contractor considers the entire Work ready for its intended use, in company with Owner and Contractor, visit the Project to determine if the Work is substantially complete. If after considering any objections of Owner, Engineer considers the Work substantially complete, Engineer shall deliver a Statement of Completion to Owner.

19. *Additional Tasks:* Perform or provide the following additional Construction Phase tasks or deliverables: None.[A3]

20. *Final Payment to Contractor:* Conduct a final visit to the Project to determine if the completed Work of Contractor is acceptable so that Engineer may recommend, in writing, final payment to Contractor.

B. *Duration of Construction Phase:* The Construction Phase will commence with the execution of the first Construction Contract for the Project or any part thereof and will terminate upon written recommendation by Engineer for final payment to Contractors.

C. *Limitation of Responsibilities:* Engineer shall not be responsible for the acts or omissions of any Contractor, Subcontractor or Supplier, or other individuals or entities performing or furnishing any of the Work, for safety or security at the Site, or for safety precautions and programs incident to Contractor's Work, during the Construction Phase or otherwise. Engineer shall not be responsible for the failure of any Contractor to perform or furnish the Work in accordance with the Contract Documents.

ADDITIONAL SERVICES

A2.01 *Additional Services Requiring Owner's Written Authorization*

A. If authorized in writing by Owner, Engineer shall furnish or obtain from others Additional Services of the types listed below.

1. Preparation of applications and supporting documents (in addition to those furnished under Basic Services) for private or governmental grants, loans, or advances in connection with the Project; preparation or review of environmental assessments and impact statements; review and evaluation of the effects on the design requirements for the Project of any such statements and documents prepared by others; and assistance in obtaining approvals of authorities having jurisdiction over the anticipated environmental impact of the Project.

2. Services to make measured drawings of or to investigate existing conditions or facilities, or to verify the accuracy of drawings or other information furnished by Owner or others.

3. Services resulting from significant changes in the scope, extent, or character of the portions of the Project designed or specified by Engineer or its design requirements including, but not limited to, changes in size, complexity, Owner's schedule, character of construction, or method of financing; and revising previously accepted studies, reports, Drawings, Specifications, or Contract Documents when such revisions are required by changes in Laws and Regulations enacted subsequent to the Effective Date or are due to any other causes beyond Engineer's control.

4. Services resulting from Owner's request to evaluate additional Study Phase alternative solutions beyond those identified in Paragraph A1.01.A.4.

5. Services required as a result of Owner's providing incomplete or incorrect Project information to Engineer.

6. Providing renderings or models for Owner's use.

7. Undertaking investigations and studies including, but not limited to, detailed consideration of operations, maintenance, and overhead expenses; the preparation of financial feasibility and cash flow studies, rate schedules, and appraisals; assistance in obtaining financing for the Project; evaluating processes available for licensing, and assisting Owner in obtaining process licensing; detailed quantity surveys of materials, equipment, and labor; and audits or inventories required in connection with construction performed by Owner.

8. Furnishing services of Consultants for other than Basic Services.

9. Services during out-of-town travel required of Engineer other than for visits to the Site or Owner's office.

10. Preparing for, coordinating with, participating in and responding to structured independent review processes, including, but not limited to, construction management, cost estimating, project peer review, value engineering, and constructability review requested by Owner; and performing or furnishing services required to revise studies, reports, Drawings, Specifications, or other Bidding Documents as a result of such review processes.

11. Preparing additional Bidding Documents or Contract Documents for alternate bids or prices requested by Owner for the Work or a portion thereof.

12. Assistance in connection with Bid protests, rebidding, or renegotiating contracts for construction, materials, equipment, or services.

13. Providing construction surveys and staking to enable Contractor to perform its work other than as required under Paragraph A1.05.A.6, and any type of property surveys or related engineering services needed for the transfer of interests in real property; and providing other special field surveys.

14. Providing Construction Phase services beyond the original date for completion and readiness for final payment of Contractor.

15. Providing assistance in responding to the presence of any Constituent of Concern at the Site, in compliance with current Laws and Regulations.

16. ~~Preparing Record Drawings showing appropriate record information based on Project annotated record documents received from Contractor, and furnishing such Record Drawings to Owner.~~

17. Preparation of operation and maintenance manuals.

18. Preparing to serve or serving as a consultant or witness for Owner in any litigation, arbitration, or other dispute resolution process related to the Project.

19. Providing more extensive services required to enable Engineer to issue notices or certifications requested by Owner.

20. Assistance in connection with the adjusting of Project equipment and systems.

21. Assistance to Owner in training Owner's staff to operate and maintain Project equipment and systems.

22. Assistance to Owner in developing procedures for (a) control of the operation and maintenance of Project equipment and systems, and (b) related record-keeping.

23. Overtime work requiring higher than regular rates.

24. . Other services performed or furnished by Engineer not otherwise provided for in this Agreement. **Including, but not limited to: Preparation of easement descriptions and exhibits, assistance in obtaining easements including ligitation if necessary, and Funding Agency administration during design and construction.**

A2.02 Additional Services Not Requiring Owner's Written Authorization

A. Engineer shall advise Owner in advance that Engineer is will immediately commence to perform or furnish the Additional Services of the types listed below. For such Additional Services, Engineer need not request or obtain specific advance written authorization from Owner. Engineer shall cease performing or furnishing such Additional Services upon receipt of written notice from Owner.

1. Services in connection with work change directives and change orders to reflect changes requested by Owner.

2. Services in making revisions to Drawings and Specifications occasioned by the acceptance of substitute materials or equipment other than "or-equal" items; services after the award of the Construction Contract in evaluating and determining the acceptability of a proposed "or equal" or substitution which is found to be inappropriate for the Project; evaluation and determination of an excessive number of proposed "or equals" or substitutions, whether proposed before or after award of the Construction Contract.

3. Services resulting from significant delays, changes, or price increases occurring as a direct or indirect result of materials, equipment, or energy shortages.

4. Additional or extended services during construction made necessary by (1) emergencies or acts of God endangering the Work (advance notice not required), (2) the presence at the Site of any Constituent of Concern or items of historical or cultural significance, (3) Work damaged by fire or other cause during construction, (4) a significant amount of defective, neglected, or delayed work by Contractor, (5) acceleration of the progress schedule involving services beyond normal working hours, or (6) default by Contractor.

5. Services in connection with any partial utilization of any part of the Work by Owner prior to Substantial Completion.

6. Evaluating an unreasonable claim or an excessive number of claims submitted by Contractor or others in connection with the Work.

7. Services during the Construction Phase rendered after the original date for completion of the Work referred to in A1.05.B.

8. Reviewing a Shop Drawing more than three times, as a result of repeated inadequate submissions by Contractor.

9. While at the Site, compliance by Engineer and its staff with those terms of Owner's or Contractor's safety program provided to Engineer subsequent to the Effective Date that exceed those normally required of engineering personnel by federal, state, or local safety authorities for similar construction sites.

SCHEDULE

Study Phase:	**(Alignment Study and Design Memorandum)**	**45 days**
Preliminary Design Phase:	**(Includes survey)**	**90 days**
Final Design Phase:		**60 days**
Bidding or Negotiation Phase:	**(After R.O.W. and permits are obtained)**	**45 days**
Construction Phase:	**(After Owner issues contractor's notice to proceed)**	**300 days**

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This is **EXHIBIT B**, consisting of 3 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, 2014.

Owner's Responsibilities

Article 2 of the Agreement is supplemented to include the following agreement of the parties.

B2.01 In addition to other responsibilities of Owner as set forth in this Agreement, Owner shall at its expense:

A. Provide Engineer with all criteria and full information as to Owner's requirements for the Project, including design objectives and constraints, space, capacity and performance requirements, flexibility, and expandability, and any budgetary limitations; and furnish copies of all design and construction standards which Owner will require to be included in the Drawings and Specifications; and furnish copies of Owner's standard forms, conditions, and related documents for Engineer to include in the Bidding Documents, when applicable.

B. Furnish to Engineer any other available information pertinent to the Project including reports and data relative to previous designs, or investigation at or adjacent to the Site.

C. Following Engineer's assessment of initially-available Project information and data and upon Engineer's request, furnish or otherwise make available such additional Project related information and data as is reasonably required to enable Engineer to complete its Basic and Additional Services. Such additional information or data would generally include the following:

1. Property descriptions.

2. Zoning, deed, and other land use restrictions.

3. Property, boundary, easement, right-of-way, and other special surveys or data, including establishing relevant reference points.

4. Explorations and tests of subsurface conditions at or contiguous to the Site, drawings of physical conditions relating to existing surface or subsurface structures at the Site, or hydrographic surveys, with appropriate professional interpretation thereof.

5. Environmental assessments, audits, investigations, and impact statements, and other relevant environmental or cultural studies as to the Project, the Site, and adjacent areas.

6. Data or consultations as required for the Project but not otherwise identified in the Agreement or the Exhibits thereto.

D. Give prompt written notice to Engineer whenever Owner observes or otherwise becomes aware of the presence at the Site of any Constituent of Concern, or of any other development that affects the scope or time of performance of Engineer's services, or any defect or nonconformance in Engineer's services, the Work, or in the performance of any Contractor.

E. Authorize Engineer to provide Additional Services as set forth in ~~Part 2 of~~ Exhibit A of the Agreement as required.

F. Arrange for safe access to and make all provisions for Engineer to enter upon public and private property as required for Engineer to perform services under the Agreement.

G. Examine all alternate solutions, studies, reports, sketches, Drawings, Specifications, proposals, and other documents presented by Engineer (including obtaining advice of an attorney, insurance counselor, and other advisors or consultants as Owner deems appropriate with respect to such examination) and render in writing timely decisions pertaining thereto.

H. Provide reviews, approvals, and permits from all governmental authorities having jurisdiction to approve all phases of the Project designed or specified by Engineer and such reviews, approvals, and consents from others as may be necessary for completion of each phase of the Project.

I. Recognizing and acknowledging that Engineer's services and expertise do not include the following services, provide, as required for the Project:

1. Accounting, bond and financial advisory, independent cost estimating, and insurance counseling services.

2. Legal services with regard to issues pertaining to the Project as Owner requires, Contractor raises, or Engineer reasonably requests.

3. Such auditing services as Owner requires to ascertain how or for what purpose Contractor has used the moneys paid.

J. Place and pay for advertisement for Bids in appropriate publications.

K. Advise Engineer of the identity and scope of services of any independent consultants employed by Owner to perform or furnish services in regard to the Project, including, but not limited to, cost estimating, project peer review, value engineering, and constructability review.

L. Furnish to Engineer data as to Owner's anticipated costs for services to be provided by others (including, but not limited to, accounting, bond and financial, independent cost estimating, insurance counseling, and legal advice) for Owner so that Engineer may assist Owner in collating the various cost categories which comprise Total Project Costs.

M. If Owner designates a construction manager or an individual or entity other than, or in addition to, Engineer to represent Owner at the Site, define and set forth as an attachment to this Exhibit B the duties, responsibilities, and limitations of authority of such other party and the relation thereof to the duties, responsibilities, and authority of Engineer.

N. If more than one prime contract is to be awarded for the Work designed or specified by Engineer, designate a person or entity to have authority and responsibility for coordinating the activities among the various prime Contractors, and define and set forth the duties, responsibilities, and limitations of authority of such individual or entity and the relation thereof to the duties, responsibilities, and authority of Engineer as an attachment to this Exhibit B that is to be mutually agreed upon and made a part of this Agreement before such services begin.

O. Attend the pre-bid conference, bid opening, pre-construction conferences, construction progress and other job related meetings, and Substantial Completion and final payment visits to the Project.

P. Provide the services of an independent testing laboratory to perform all inspections, tests, and approvals of samples, materials, and equipment required by the Contract Documents, or to evaluate the performance of materials, equipment, and facilities of Owner, prior to their incorporation into the Work with appropriate professional interpretation thereof.

Q. Provide Engineer with the findings and reports generated by the entities providing services to Owner pursuant to this paragraph.

R. Inform Engineer in writing of any specific requirements of safety or security programs that are applicable to Engineer, as a visitor to the Site.

S. Perform or provide the following additional services: **Including, but not limited to, obtaining easements on private and/or public right-of-way where identified as necessary by the ENGINEER during the design phase.**

EXHIBIT C

Payments to Engineer for Services and Reimbursable Expenses

C1.01 *Compensation for Basic Services (including Resident Project Representative) – Standard Hourly Rate Method of Payment* ***with Maximum Fee Limit.***

A. Owner shall pay Engineer for Basic Services set forth in Exhibit A, including for services of Engineer's Resident Project Representative, if any, as follows:

1. An amount equal to the cumulative hours charged to the Project by each class of Engineer's personnel times Standard Hourly Rates for each applicable billing class for all services performed on the Project, plus Reimbursable Expenses and Engineer's Consultants' charges, if any.

2. Engineer's Reimbursable Expenses Schedule and Standard Hourly Rates are set forth in Paragraph C1.06 and Paragraph C1.07, respectively.

3. The total compensation for services under Paragraph C1.01 is **limited** ~~estimated~~ to **maximum of** ~~be~~ $ **490,831.00** based on the following estimated distribution of compensation:

   a. **Engineering Planning and Design** $ **224,380.00**

   b. **Engineering – Surveying** $ **140,237.00**

   c. **Construction Observation (Resident Project Representative Services)** $ **126,214.00**

4. Engineer may alter the distribution of compensation between individual phases of the work noted herein to be consistent with services actually rendered, but shall not exceed the total estimated compensation amount unless approved in writing by Owner. See also C1.03.C.2 below.

5. The total estimated compensation for Engineer's services included in the breakdown by phases as noted in Paragraph C1.01.A.3 incorporates all labor, overhead, profit, Reimbursable Expenses and Engineer's Consultants' charges.

6. The amounts billed for Engineer's services under Paragraph C1.01 will be based on the cumulative hours charged to the Project during the billing period by each class of Engineer's employees times Standard Hourly Rates for each applicable billing class, plus Reimbursable Expenses and Engineer's Consultants' charges.

7. The Standard Hourly Rates and Reimbursable Expenses Schedule will be adjusted annually (as of April 1) to reflect equitable changes in the compensation payable to Engineer.

C1.02 *Compensation For Reimbursable Expenses*

A. Owner shall pay Engineer for all Reimbursable Expenses at the rates set forth in Paragraph C1.06.

B. Reimbursable Expenses include the following categories: transportation and subsistence incidental thereto; providing and maintaining field office facilities including furnishings and utilities; toll telephone calls and mobile phone charges; reproduction of reports, Drawings, Specifications, Bidding Documents, and similar Project-related items in addition to those required under Exhibit A. In addition, if authorized in advance by Owner, Reimbursable Expenses will also include expenses incurred for the use of highly specialized equipment.

C. The amounts payable to Engineer for Reimbursable Expenses will be the Project-related internal expenses actually incurred or allocated by Engineer, plus all invoiced external Reimbursable Expenses allocable to the Project, the latter multiplied by a factor of 1.15.

C1.03 *Compensation For Standard Hourly Rate Payments:*

A. Owner shall pay Engineer an amount equal to the cumulative hours charged to the Project by each class of Engineer's personnel times Standard Hourly Rates for each applicable billing class for all services performed on the Project at the rates set forth in Paragraph C1.07.

C1.04 *Other Provisions Concerning Payment*

A. Whenever Engineer is entitled to compensation for the charges of Engineer's Consultants, those charges shall be the amounts billed by Engineer's Consultants to Engineer times a factor of 1.0.

B. Factors. The external Reimbursable Expenses and Engineer's Consultants' factors include Engineer's overhead and profit associated with Engineer's responsibility for the administration of such services and costs.

C. Estimated Compensation Amounts:

1. Engineer's estimate of the amounts that will become payable for specified services are only estimates for planning purposes, are not binding on the parties, and are not the minimum or maximum amounts payable to Engineer under the Agreement.

2. When estimated compensation amounts have been stated herein and it subsequently becomes apparent to Engineer that the total compensation amount thus estimated will be exceeded, Engineer shall give Owner written notice thereof, allowing Owner to consider its options, including suspension or termination of Engineer's services for Owner's convenience. Upon notice, Owner and Engineer promptly shall review the matter of services remaining to be performed and compensation for such services. Owner shall either exercise its right to suspend or terminate Engineer's services for Owner's convenience, agree to such compensation exceeding said estimated amount, or agree to a reduction in the remaining services to be rendered by Engineer, so that total compensation for such services will not exceed said estimated amount when such services are completed. If Owner decides not to suspend the Engineer's services during the negotiations and Engineer exceeds the estimated amount before Owner and Engineer have agreed to an increase in the compensation due Engineer or a reduction in the remaining services, then Engineer shall be paid for all services rendered hereunder.

D. To the extent necessary to verify Engineer's charges and upon Owner's timely request, Engineer shall make copies of such records available to Owner at cost.

C1.05 Compensation for Additional Services

A. Owner shall pay Engineer for Additional Services, if any, as follows:

1. General: For services of Engineer's personnel engaged directly on the Project pursuant to Exhibit A, except for services as a consultant or witness under Exhibit A, (which if needed shall be separately negotiated based on the nature of the required consultation or testimony) an amount equal to the cumulative hours charged to the Project by each class of Engineer's personnel times Standard Hourly Rates for each applicable billing class for all Additional Services performed on the Project, plus related Reimbursable Expenses and Engineer's Consultant's charges, if any.

B. Compensation For Reimbursable Expenses:

1. For those Reimbursable Expenses that are not accounted for in the compensation for Basic Services under Paragraph C1.01 and are directly related to the provision of Additional Services, Owner shall pay Engineer at the rates set forth in Paragraph C1.06.

2. Reimbursable Expenses include the following categories: transportation and subsistence incidental thereto; providing and maintaining field office facilities including furnishings and utilities; toll telephone calls and mobile phone charges; reproduction of reports, Drawings, Specifications, Bidding Documents, and similar Project-related items in addition to those required under Exhibit A. In addition, if authorized in advance by Owner, Reimbursable Expenses will also include expenses incurred for the use of highly specialized equipment.

3. The amounts payable to Engineer for Reimbursable Expenses, if any, will be the Additional Services-related internal expenses actually incurred or allocated by Engineer, plus all invoiced external Reimbursable Expenses allocable to such Additional Services, the latter multiplied by a factor of 1.15.

4. The Reimbursable Expenses Schedule will be adjusted annually (as of April 1) to reflect equitable changes in the compensation payable to Engineer.

C. Compensation For Standard Hourly Rate Payments:

1. For Additional Services, Owner shall pay Engineer an amount equal to the cumulative hours charged to the Project by each class of Engineer's personnel times Standard Hourly Rates for each applicable billing class for all services performed on the Project at the rates set forth in Paragraph C1.07.

D. Other Provisions Concerning Payment For Additional Services:

1. Whenever Engineer is entitled to compensation for the charges of Engineer's Consultants, those charges shall be the amounts billed by Engineer's Consultants to Engineer times a factor of 1.0.

2. Factors: The external Reimbursable Expenses and Engineer's Consultant's Factors include Engineer's overhead and profit associated with Engineer's responsibility for the administration of such services and costs.

3. To the extent necessary to verify Engineer's charges and upon Owner's timely request, Engineer shall make copies of such records available to Owner at cost.

C1.06 Reimbursable Expenses Schedule

Current agreements for engineering services stipulate that the Reimbursable Expenses are subject to review and adjustment per Exhibit C. Reimbursable expenses for services performed on the date of the Agreement are:

Schedule #2 **3/30/14 – 03/28/15**

LAMP, RYNEARSON & ASSOCIATES, INC.
MISCELLANEOUS CHARGES

A. SUBSISTENCE:
Subsistence for employees away from headquarters shall be chargeable in accordance with the per diem schedule of the U.S. General Services Administration available at www.gsa.gov.

B. TRANSPORTATION:

Automobile transportation shall be charged for at the maximum IRS employee reimbursable rate per mile plus 15% for travel in connection with work on the project. Costs to Lamp, Rynearson & Associates, Inc., for commercial travel shall be chargeable at the actual cost incurred by Lamp, Rynearson & Associates, Inc.

C. MATERIALS:

All materials other than normal office supplies which are used by Lamp, Rynearson & Associates, Inc., in connection with the rendering of services shall be chargeable at actual cost plus 15 percent to cover general overhead and administration.

D. REPRODUCTIONS AND PLOTS:

All reproduction and plotting work performed by Lamp, Rynearson & Associates, Inc., shall be charged at the locally accepted commercial rate for such work. All outside photographic and direct-process reproduction costs advanced by Lamp, Rynearson & Associates, Inc., in connection with the rendering of services shall be charged at actual cost plus 15 percent to cover general overhead and administration.

E. SPECIAL EQUIPMENT:

The following items of special equipment, when used by Lamp, Rynearson & Associates, Inc., shall be charged for at the following rates:

Item	$ - Hourly Rate
Electronic Total Station	$15 - $25 /Hour
Robotic Total Station	$30 /Hour
w/RCS GPS Rover	$22 – $33 /Hour
GPS Base & Rover	$25 - $62 /Hour
4x4 ATV Polaris Ranger	$20 /Hour
Plots (Color) bond	$2.50 /SF
Plots (Color) mylar	$6.00 /SF
Plots (Color) photo paper	$6.00 /SF

All of the above rates are exclusive of operator.

Specialty material exclusive of above Plotter Rates.

F. FILING FEES AND OTHER COSTS ADVANCED:

All filing or permit fees and other similar outside costs which are advanced or paid by Lamp, Rynearson & Associates, Inc., shall be chargeable at actual cost plus 15 percent to cover general overhead and administration.

Periodically, this schedule may be revised and updated by Lamp, Rynearson & Associates, Inc., who reserves the right to substitute the new miscellaneous charges schedule upon 30 days' notice.

C1.07 Standard Hourly Rates Schedule

E. Standard Hourly Rates:

1. **Standard Hourly Rates include salaries and wages paid to personnel in each billing class plus the cost of customary and statutory benefits, general and administrative overhead, non-project operating costs, and operating margin or profit.**

2. **The Standard Hourly Rates will be adjusted annually (as of April 1) to reflect equitable changes in the compensation payable to the Engineer.**

3. **The Standard Hourly Rates apply only as specified in Exhibit C.**

F. Schedule:

Hourly rates for services performed on or after the date of the Agreement:

Lamp, Rynearson & Associates, Inc.	
HOURLY RATE SCHEDULE	
March 30, 2014 – March 28, 2015	
Position / Title	**$ - Hourly Rate**
Principal II	218.00
Sr. Group Leader III	216.00
Project Manager I	117.00
Sr. Project Manager II	143.00
Sr. Project Engr II	115.00
GIS Specialist III	86.00
Project Designer II	82.00
Sr. Project Designer III	131.00
Engineering Tech II	71.00
Construction Observer IV	78.00
Survey Project Mgr III	116.00
Sr. Survey Project Mgr I	126.00
Survey Technician II	73.00
Party Chief I	67.00
Party Chief II	75.00
Party Chief III	83.00
Survey Field Tech Apprentice	36.00
Survey Field Tech I	54.00
Survey Field Tech II	59.00
Survey Field Tech III	66.00
Administrative Assistant II	59.00

These charges include full compensation for payroll costs, general overhead, administration and anticipated profit on labor. Charges for items other than labor which are applicable to the project are listed on Schedule #2.

Personnel usually perform duties related to their classification; however, in the interest of efficiency, personnel with diversified experience may perform several types of work; in all cases, charges will be made according to payroll classification and not according to the type of work performed.

This is **EXHIBIT D**, consisting of 4 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, 2014 .[A4]

Duties, Responsibilities, and Limitations of Authority of Resident Project Representative

Article 1 of the Agreement is supplemented to include the following agreement of the parties:

D1.01 *Resident Project Representative*

A. Engineer shall furnish a Resident Project Representative ("RPR") to assist Engineer in observing progress and quality of the Work. The RPR may provide full time representation or may provide representation to a lesser degree.

B. Through RPR's observations of Contractor's work in progress and field checks of materials and equipment, Engineer shall endeavor to provide further protection for Owner against defects and deficiencies in the Work. However, Engineer shall not, during such RPR field checks or as a result of such RPR observations of Contractor's work in progress, supervise, direct, or have control over Contractor's Work, nor shall Engineer (including the RPR) have authority over or responsibility for the means, methods, techniques, sequences, or procedures of construction selected or used by any contractor, for security or safety at the Site, for safety precautions and programs incident to any contractor's work in progress, or for any failure of a contractor to comply with Laws and Regulations applicable to such contractor's performing and furnishing of its work. The Engineer (including RPR) neither guarantees the performances of any contractor nor assumes responsibility for Contractor's failure to furnish and perform the Work in accordance with the Contract Documents. In addition, the specific terms set forth in ~~Paragraph A1.05 of~~ Exhibit A of the Agreement are applicable.

C. The duties and responsibilities of the RPR are as follows:

1. *General:* RPR is Engineer's representative at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Contractor's work in progress shall in general be with Engineer and Contractor. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner only with the knowledge of and under the direction of Engineer.

2. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample submittals, and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.

3. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.

4. Liaison:

   a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the intent of the Contract Documents.

   b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.

c. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

5. *Interpretation of Contract Documents:* Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

6. Shop Drawings and Samples:

   a. Record date of receipt of Samples and ~~approved~~ **reviewed** Shop Drawings.

   b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.

   c. Advise Engineer and Contractor of the commencement of any portion of the Work requiring a Shop Drawing or Sample submittal for which RPR believes that the submittal has not been ~~approved~~ **reviewed** by Engineer.

7. M*odifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Engineer.

8. Review of Work and Rejection of Defective Work:

   a. Conduct on-Site observations of Contractor's work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.

   b. Report to Engineer whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection, or approval.

9. Inspections, Tests, and System Start-ups:

   a. Consult with Engineer in advance of scheduled inspections, tests, and systems start-ups.

   b. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.

   c. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.

   d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections, and report to Engineer.

10. Records:

    a. Maintain at the Site orderly files for correspondence, reports of job conferences, reproductions of original Contract Documents including all change orders, field orders, work change directives,

addenda, additional Drawings issued subsequent to the execution of the Construction Contract, Engineer's clarifications and interpretations of the Contract Documents, progress reports, Shop Drawing and Sample submittals received from and delivered to Contractor, and other Project-related documents.

b. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, weather conditions, data relative to questions of change orders, field orders, work change directives, or changed conditions, Site visitors, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.

c. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.

d. Maintain records for use in preparing Project documentation.

e. Upon completion of the Work, furnish original set of all RPR Project documentation to Engineer.

11. Reports:

    a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.

    b. Draft and recommend to Engineer proposed change orders, work change directives, and field orders. Obtain backup material from Contractor.

    c. Furnish to Engineer and Owner copies of all inspection, test, and system start-up reports.

    d. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Constituent of Concern.

12. *Payment Requests:* Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

13. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

14. Completion:

    a. Participate in visits to the Project to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.

    b. Participate in a final visit to the Project in the company of Engineer, Owner, and Contractor, and prepare a final list of items to be completed and deficiencies to be remedied.

    c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the **Statement of Completion**~~Notice of Acceptability of the Work (Exhibit E)~~.

D. Resident Project Representative shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).

2. Exceed limitations of Engineer's authority as set forth in this Agreement.

3. Undertake any of the responsibilities of Contractor, Subcontractors or Suppliers.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of Contractor's work.

5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.

7. Accept shop drawing or sample submittals from anyone other than Contractor.

8. Authorize Owner to occupy the Project in whole or in part.

This is **EXHIBIT G**, consisting of 2 pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, 2014 .

Insurance

Paragraph 6.04 of the Agreement is supplemented to include the following agreement of the parties.

G6.04 *Insurance*

A. The limits of liability for the insurance required by Paragraph 6.04.A and 6.04.B of the Agreement are as follows:

1. By Engineer:

a. Workers' Compensation: Statutory

b. Employer's Liability --

1) Each Accident: $100,000
2) Disease, Policy Limit: $500,000
3) Disease, Each Employee: $100,000

c. General Liability --

1) Each Occurrence (Bodily Injury and Property Damage): $1,000,000
2) General Aggregate: $2,000,000

d. Excess or Umbrella Liability --

1) Each Occurrence: $1,000,000
2) General Aggregate: $1,000,000

e. Automobile Liability --Combined Single Limit (Bodily Injury and Property Damage):

Each Accident $1,000,000

f. Professional Liability –

1) Each Claim Made $1,000,000
2) Annual Aggregate $1,000,000

Engineer agrees to maintain continuous professional liability coverage for the period of design and construction of this project, and for a period of two years following substantial completion.

g. Other (specify): $_____

2. By Owner:

a. Workers' Compensation: Statutory

b. Employer's Liability --

1) Each Accident $100,000
2) Disease, Policy Limit $500,000
3) Disease, Each Employee $100,000

c. General Liability --

1) General Aggregate: $2,000,000
2) Each Occurrence (Bodily Injury and Property Damage): $1,000,000

d. Excess Umbrella Liability --

1) Each Occurrence: $1,000,000
2) General Aggregate: $1,000,000

e. Automobile Liability --Combined Single Limit (Bodily Injury and Property Damage):

Each Accident: $1,000,000

f. Other (specify): $_____

B. *Additional Insureds:*

1. The following persons or entities are to be listed on Owner's general liability policies of insurance as additional insureds, and on any applicable property insurance policy as loss payees, as provided in Paragraph 6.04.B:

a. Lamp, Rynearson & Associates, Inc. **dba Larkin Lamp Rynearson**
Engineer

b. (Survey subconsultant to be named **to the City** prior to authorization by Engineer)
Engineer's Consultant

c. _____
Engineer's Consultant

2. During the term of this Agreement the Engineer shall notify Owner of any other Consultant to be listed as an additional insured on Owner's general liability and property policies of insurance.

3. The Owner shall be listed on Engineer's general liability policy as provided in Paragraph 6.04.A.

This is **EXHIBIT H**, consisting of **1** pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, **2014** .

Dispute Resolution

Paragraph 6.08 of the Agreement is amended and supplemented to include the following agreement of the parties:

H6.08 *Dispute Resolution*

A. *Mediation*: Owner and Engineer agree that they shall first submit any and all unsettled claims, counterclaims, disputes, and other matters in question between them arising out of or relating to this Agreement or the breach thereof ("Disputes") to mediation by ~~*[insert name of mediator, or mediation service]*~~ **a mediator approved by both Engineer and Owner and experienced in resolving disputes arising for the performance of engineering services**. Owner and Engineer agree to participate in the mediation process in good faith. The process shall be conducted on a confidential basis, and shall be completed within 120 days. If such mediation is unsuccessful in resolving a Dispute, then (1) the parties may mutually agree to a dispute resolution of their choice, or (2) either party may seek to have the Dispute resolved by a court of competent jurisdiction.

This is **EXHIBIT I**, consisting of _____ pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, _____.

Limitations of Liability

Paragraph 6.10 of the Agreement is supplemented to include the following agreement of the parties:

A. *Limitation of Engineer's Liability*

1. *Engineer's Liability Limited to the Amount of $_____*[A5]: Notwithstanding any other provision of this Agreement, and to the fullest extent permitted by law, the total liability, in the aggregate, of Engineer and Engineer's officers, directors, members, partners, agents, employees, and Consultants, to Owner and anyone claiming by, through, or under Owner for any and all claims, losses, costs, or damages whatsoever arising out of, resulting from, or in any way related to the Project or the Agreement from any cause or causes, including but not limited to the negligence, professional errors or omissions, strict liability, breach of contract, indemnity obligations, or warranty express or implied of Engineer or Engineer's officers, directors, members, partners, agents, employees, or Consultants shall not exceed the total amount of $_____[A6].

This is **EXHIBIT K**, consisting of _____ pages, referred to in and part of the **Agreement between Owner and Engineer for Professional Services** dated _____, _____.

AMENDMENT TO OWNER-ENGINEER AGREEMENT
Amendment No. _____

1. Background Data:

   a. Effective Date of Owner-Engineer Agreement: _____

   b. Owner: _____

   c. Engineer: Lamp, Rynearson & Associates, Inc. **dba Larkin Lamp Rynearson**

   d. Project: _____

~~2.~~**1.** Description of Modifications:

[NOTE TO USER: Include the following paragraphs that are appropriate and delete those not applicable to this amendment. Refer to paragraph numbers used in the Agreement or a previous amendment for clarity with respect to the modifications to be made. Use paragraph numbers in this document for ease of reference herein and in future correspondence or amendments.]

   a. Engineer shall perform or furnish the following Additional Services:

   b. The Scope of Services currently authorized to be performed by Engineer in accordance with the Agreement and previous amendments, if any, is modified as follows:

   c. The responsibilities of Owner are modified as follows:

   d. For the Additional Services or the modifications to services set forth above, Owner shall pay Engineer the following additional or modified compensation:

   e. The schedule for rendering services is modified as follows:

   f. Other portions of the Agreement (including previous amendments, if any) are modified as follows:

[List other Attachments, if any]

3. Agreement Summary (Reference only)

a.	Original Agreement amount:	$_____
b.	Net change for prior amendments:	$_____
c.	This amendment amount:	$_____
d.	Adjusted Agreement amount:	$_____

The foregoing Agreement Summary is for reference only and does not alter the terms of the Agreement, including those set forth in Exhibit C.

Owner and Engineer hereby agree to modify the above-referenced Agreement as set forth in this Amendment. All provisions of the Agreement not modified by this or previous Amendments remain in effect. The Effective Date of this Amendment is _____.

OWNER:	ENGINEER:
City of Peculiar, Missouri	Lamp, Rynearson & Associates, Inc. **dba Larkin Lamp Rynearson**
By: _____	By: _____
Title: _____	Title: _____
Date Signed: _____	Date Signed: _____

Engineering Report 2014

System Improvements

Hydraulic Priority	Improvememt		
1	Supply	$	3,772,389.00
2	Peculiar DR. North to Hurly	$	640,392.75
3	Spencer Addition	$	369,940.50
4	Harr Grove Rd, South of Elm	$	292,059.00
5	Elm St Between Gregory and School	$	261,481.50
6	Gregpru from Elm to Harr Grove	$	184,248.00
7	Peculiar Dr. from Willow to Maple	$	452,155.50
8	Broadway from Main to 3rd	$	184,045.50
9	3rd St. from South to Legend	$	278,154.00
10	Tank Mixing System (2)	$	100,000.00
11	Emergency Generator	$	35,000.00
	Total	$	6,569,865.75

	Harper from MM#1 South to 12-inch	$	463,725.00
	Looping on 1st, south to Elm	$	12,987.30
	Looping on Cindy Lane, west of J	$	12,400.25
	Looping within Centennial Farms	$	103,842.00
	Looping on Alley south of E. Broadway &west of Norh Main	$	29,637.90
	Looping on Alley north of E. Broadway &west of Norh Main	$	31,814.10
	Looping on W 2nd St. north of W. Center	$	30,726.00
	Looping on E. 2nd St. north of E. Broadway	$	32,358.15
	Looping on W. 2nd st, north to Broadway	$	29,093.85
	Looping at Peculiar Dr. and W 1st St.	$	43,792.95
	Looping on Shug Ave, south of Summerskill	$	24,189.30
	Looping at State YY and Qual Ridge	$	41,608.35
	Looping at 220th St. and S. Harper	$	26,365.50
	Looping across S. Harper at existing 2-inch water line	$	25,821.45
	Total	$	908,362.10

City Administrator
Brad Ratliff

Chief of Police
Harry Gurin

City Clerk
Nick Jacobs

City Planner
Cliff McDonald

City Engineer
Carl Brooks

City Attorney
Reid Holbrook

Business Office
Trudy Prickett

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

Parks Director
Nathan Musteen

To: Mayor & Board of Aldermen
From: Carl Brooks, City Engineer (cbrooks@cityofpeculiar.com)
Date: July 3, 2014
Re: Engineering Services

GENERAL INFORMATION

Applicant: City Staff
Requested Actions: Approve Carollo Engineers for Engineering Services for Wastewater System Engineering Report
Property Location: Northwest area of the City of Peculiar
Purpose: Provide sewer service to the Northwest area of the City of Peculiar as cost effective as possible

PROPOSAL

Address sewer service to this area today and in the future. Projecting flows along with looking at a wastewater sytem that complies with regulatory limits and requirements.

PREVIOUS ACTIONS

None

KEY ISSUES

The grant is up to $50,000.00 for an engineering report This will be a major planned industrial growth area. Evaluate the partnering with the City of Belton to treat the City of Peculiars wastewater along with planned growth or upgradeing. There are other areas, i.e rates, security, GIS etc. we want to investige to see if the grant can be used.

STAFF COMMENTS AND SUGGESTIONS

RFQ's were sent out and two engineering firms responded, Carollo Engineers and George Butler and Associates. Staff evaluated both firms qualifications and feel Carollo Engineers will meet the Citys needs.

STAFF RECOMMENDATION

Staff recommends the City move into an engineering service contract for an engineering report with Carollo Engineers

ATTACHMENTS

Draft of contract

DRAFT - Engineer's Scope of Work
City of Peculiar, MO Wastewater System Engineering Report

GENERAL

The following Scope of Work describes the Design Professional's work associated with the study for sewer service extension in a designated northwest area of the City of Peculiar, Missouri (City). This project will comprise the development of an Engineering Report, including needs assessment, to identify and recommend necessary facilities to extend the City's sewer system and convey the waste flows from this area to the Belton Wastewater Treatment Facility (WWTF) for treatment.

Included in this scope of services is an assessment of sewer alignment and pump station design alternatives. The alternatives will be evaluated based on capital cost and operation and maintenance costs.

The results of this study will be documented and presented in an Engineering Report, formatted in accordance with the current Clean Water Commission Design Guides 10 CSR 20-8. Design Professional will present a brief assessment of the existing facilities, recommendations for proposed new facilities and any necessary modifications, estimated costs and impact on user fees for these improvements.

In the event of a conflict or ambiguity between the Agreement and the details of Engineer's Scope of Work set forth in this attachment, Scope of Services shall take precedence.

Scope of Service Work Tasks

The Design Professional's Scope of Work shall consist of the following tasks:

- Task 1.0 – Project Management
- Task 2.0 – Data Collection and Analysis
- Task 3.0 – Regulatory Audit
- Task 4.0 – Engineering Report
- Task 5.0 – Agency Coordination

Task 1.0 – Project Management

1.1 Project Manual. Prepare project work plan and distribute, internally, to project personnel. The work plan will include the project purpose and objectives, scope of work, an organization chart, project delivery schedule, project flow chart, and Quality Management (QM) Manual.

1.2 Progress Reports. Provide the City with monthly progress reports that identify what work has been performed during the month and work that will be anticipated in the upcoming month. These reports will be delivered with each invoice.

1.3 Meetings. Conduct project meetings and workshops. These meetings and workshops are described further as follows:

1.3.1 Kick-Off Meeting.

Conduct initial project kick-off meeting with City and Design Professional to review the project purpose and objectives, scope of work, organization chart, project delivery schedule, and project flow chart. Existing information, including but not limited to previous reports developed for the City's existing wastewater treatment facilities and collection system, existing collection system drawings, master planning documents, GIS data, and other available information, will also be collected.

1.3.2 Coordination Meeting with the City of Belton.

(This meeting could take place in conjunction with the project kick-off meeting.) Conduct project meeting with the Cities of Peculiar and Belton to discuss previous agreements between the two municipalities regarding land and facility use, and operation and maintenance of the proposed new facilities.

1.3.3 Project Workshops.

Conduct interim project workshops to inform City staff of the findings of the evaluation process and work with City staff in developing alternatives and recommendations for extension of sewer service to the designated northwest area of the City. The Design Professional will record the workshop activities, action

items, and decisions in meeting notes that will be delivered to the City.

1.3.4 MDNR Coordination Meeting.

Conduct project meeting to inform Missouri Department of Natural Resources (MDNR) staff of the evaluation process and work with the City and MDNR staff in developing alternatives for extension of sewer service, and recommendations to convey waste flows to the City of Belton WWTF for treatment. The Design Professional will record the meeting activities, action items, and decisions in meeting notes that will be delivered to the City.

1.4 Progress Meetings. Conduct bi-weekly progress review meetings to inform City staff on the progress, issues, and recommendations of the study. One meeting each month will be conducted in person; the other meetings will take place via teleconference.

1.5 Project Schedule. Maintain a project schedule for management of the study. Each task identified in the scope of work will be included in the project schedule. The project schedule will be updated monthly and reviewed with the City as part of the progress meetings.

1.6 Maintain Action Item and Decision Logs. Create and maintain throughout the project an Action Item and Decision Log.

1.7 Quality Management (QM). The Design Professional will implement a QM program for the Engineering Report project in accordance with Design Professional's established procedures.

Task 2.0 – Data Collection and Analysis

2.1 Review Existing Documents and Information.

The Design Professional will review existing background information and data related to the study area. This includes a review of such documents as:

- Sewer inventory databases;
- Available topographic maps, floodplain maps;

- Aerial photographs and City Geotechnical Information Systems (GIS) data within the designated service area to evaluate sewer alignments and lift station locations;
- Utility location records, property ownership records, property maps, utility maps; and
- Data for any known proposed projects planned by other departments within the City for identification of potential conflicts.

2.2 Review Previously Developed Reports/Studies.

The Design Professional will collect and review existing reports and hydraulic calculations related to historic treatment plant performance and sewer system studies for evaluation of the performance of the existing wastewater system and/or to develop recommendations for system modifications, as required.
The City's most recent Comprehensive Plan will also be reviewed to evaluate land use development and population projections for the designated service area.

2.3 Prepare Technical Memorandum No. 1 (TM-1) that summarizes the data analysis.

Task 3.0 - Regulatory Audit

3.1 This task will include a review of MDNR regulatory guidelines for planning and design of sewer and lift station facilities, as well as coordination between municipalities of the cities of Belton and Peculiar regarding the development, and operation and maintenance of the proposed sewer service facilities. Inter-municipal coordination will also include consideration of existing sewer-use ordinances and rules, pre-treatment, and enforcement provisions for each municipality.

3.2 Prepare a Technical Memorandum No. 2 (TM-2) summarizing compliance issues specific to the proposed new sewer service system.

Task 4.0 – Engineering Report

4.1 Prepare an Engineering Report in general conformance with the current Clean Water Commission Design Guides 10 CSR 20-8. The report will include a summary of the following items:

4.1.1 Existing Facilities Description. Based on data/information from previous reports (by Others) provided by the City, Design Professional will present a summary of the existing treatment capacity at both the City of Peculiar's and Belton's wastewater treatment facilities to demonstrate the ability or inability to accept the additional flow from the designated northwest area of Peculiar. Information from these previous reports will also be used to assess the ability to produce effluent that is in compliance with current and anticipated future NPDES Permit Limitations.

4.1.2 Service Area Description. Based upon discussions with City Staff and available GIS Data (to be provided by the City), Design Professional will prepare a figure and summary description of the extension of the sewer service area in northwest Peculiar.

4.1.3 Wastewater Characteristics. Design Professional will evaluate and summarize the proposed characteristics of the wastewater from the proposed service area based on the City's assumptions for industries to be added to the area. Summary of the wastewater characteristics includes average and peak flow capacity, flow contributors, as well as any pre-treatment needs.

4.1.4 Collection System Alignment Analysis. Design Professional will evaluate alignment alternatives for the new interceptor and sanitary sewer system for the northwest service area. City shall provide any available GIS and topographic data of the service area.

4.1.5 Lift Station Location Evaluation. Based on discussions with City Staff and available GIS data, Design Professional will evaluate the constructability, access, design, and cost of up to three (3) possible locations for the new lift station.

4.1.6 Force Main Routing Analysis. Design Professional will evaluate alignment alternatives for the new force main from the new lift station to the Belton WWTF. A hydraulic profile of the facilities will also be developed to depict the design peak flow rate. This will include an assessment of any applicable stream crossings. City shall provide any available GIS and topographic data of the general area of the northwest service area and the Belton WWTF.

4.1.7 Associated Improvements. Any supplemental improvements required or recommended at the Belton WWTF to accept the additional flow from the northwest Peculiar service area will be evaluated and summarized.

A constructability and construction sequence review of the proposed sewer collection and conveyance system will be performed to confirm that the proposed facilities can be constructed as proposed.

4.1.6 Estimated Project Costs. Design Professional will develop conceptual costs for comparison between developed alternatives. These estimates reflect the Design Professional's professional opinion of costs and will be subject to change as project design develops. The Design Professional cannot and does not warrant or guarantee the proposals, bids, or actual construction costs will not vary from the conceptual cost estimates that are presented in the Engineering Report.

4.1.7 Project Phasing. Design Professional will evaluate and recommend a phased project plan, as appropriate, for development of the recommended improvements to correspond with projected growth.

4.1.8 Project Financing. Design Professional will review existing sewer rate ordinances and past rate and fee analysis, forecast revenues and revenue requirements, develop rate alternatives and impact fee structure to include recommended improvements identified in the engineering report. Provide the City with a copy of the rate model developed utilizing Microsoft Excel software. Provide a technical document and any training necessary to maintain and update the model for annual rate reviews.

4.1.9 Regulatory and Other Legislative Considerations. Design Professional will evaluate and summarize existing and proposed sewer rate ordinances; inter-municipal agreements and arrangements between the Cities of Peculiar and Belton; as well as any regulatory requirements to be addressed during the design of the new facilities.

4.2 Draft Engineering Report. The Design Professional will provide the City with 5 copies of the draft Engineering Report for the new sewer service extension system. This plan will include the findings of the technical memorandums and will identify recommended improvements and a phased implementation plan along with corresponding conceptual costs; and impact of recommended facilities on user fees.

4.2.1 Finalize Engineering Report. The Design Professional will incorporate City comments into the final Engineering Report.

4.2.2 Hard Copy Report. The Design Professional will deliver 5 copies of the Final Engineering Report in 3 ring binders.

4.2.3 Digital Document Conversion. The Design Professional will convert the report to PDF format. The digital version will be text searchable and include a Table of Contents that links to topics within the document. Both versions will feature an index. The digital versions will be distributed via CD-ROM. The CD-ROM will include a user interface and will include the software necessary to view the document in Windows XP. The Final Engineering Report shall contain the CD version in a pocket in the binder of the report.

Task 5.0 - Agency Coordination

Coordination of the findings and recommendations of the Engineering Report with various agencies within the City and State.

The following agencies and/or topics of review will be included in the study. The Design Professional will assist in the arrangement of meetings and discussions to facilitate the required coordination:

5.1 Inter-Municipal Coordination
- 5.1.1 Land and Facility Use
- 5.1.2 Operation and Maintenance Responsibilities
- 5.1.3 User Fees
- 5.1.4 Sewer Use Ordinances

5.2 MDNR Coordination
- 5.2.1 Permitting issues
- 5.2.2 Compliance to existing regulations
- 5.2.3 Acceptance of proposed wastewater system collection and conveyance system

5.3 Design Professional will identify required permits for the sewer system extension and lift station and force main design.

City Administrator
Brad Ratliff

City Clerk
Nick Jacobs

City Engineer
Carl Brooks

Business Office
Trudy Prickett

Chief of Police
Harry Gurin

City Planner
Cliff McDonald

City Attorney
Reid Holbrook

Parks Director
Nathan Musteen

Municipal Offices – 250 S. Main Street, Peculiar, MO 64078
Phone: (816)779-5212 Facsimile: (816)779-1004

To: Mayor & Board of Aldermen
From: Carl Brooks, City Engineer (cbrooks@cityofpeculiar.com)
Date: July 7, 2014
Re: Resolution No. 2014-xx, Mayor & Board of Alderman (BOA) to discuss decision on further action to be taken in the Bridle Trail Subdivision's Curb and Gutter project.

GENERAL INFORMATION

Applicant: City Staff
Requested Actions: Discuss and Decide
Purpose: Find a solution to the Curb and Gutter project in which we have six (6) options in which to proceed.
Property Location: Bridle Trail subdivision on Peculiar Drive.

PROPOSAL

City staff has bid the proposed concrete curb and gutter work to be done in the Bridle Trail Subdivision. With this bid comes several options by which to proceed. Please review and decide which option seems most appropriate.

1. Do nothing
    a. Not recommended due to deteriorating condition of the curb and gutter
2. Lay the necessary 400 linear feet throughout the subdivision
    a. Bid- $30/L.F. $12,000
    b. Above budget of $10,000
3. Replace the entire subdivision's 2900 linear feet
    a. Bid- $23/L.F. $66,700
    b. Above budget of $10,000 but cheaper per L.F.
4. City staff do the work
    a. Tom does not feel city staff is qualified to complete quality work
5. 'Piggy-back' Lees Summit
    a. Lees summit is currently doing work at around $19/L.F. and contractor is willing to give us a similar price if we do around 2900 L.F. of work per year.
6. Wait and include the work in the water main cycle project on peculiar drive.
    a. Project is to include sidewalk and the price of the subdivision could be rolled up into this much larger project

Therefore, City staff requests the opinion of the Board of Aldermen on how to proceed.

PREVIOUS ACTIONS

The subdivision has been bid and priced.

KEY ISSUES

The subdivision of Bridle Trail has quite endured deterioration of the concrete curb and gutter yet the price to repair is over budget, even on a small level of action (400 L.F).

STAFF COMMENTS AND SUGGESTIONS

City Staff finds this project to be important and of an obligation to the citizens in the Bridle Trail Subdivision.

STAFF RECOMMENDATION

Staff recommends work to be done in the Subdivision but does not have an opinion on which of the options to proceed with.

ATTACHMENTS

Lees Summit bid tab

LEE'S SUMMIT MISSOURI

CITY OF LEE'S SUMMIT, MO-PROCUREMENT & CONTRACT SERVICES DIVISION - UNOFFICIAL BID TABULATION

This is an unofficial bid tabulation and only reflects the initial reading of the bids received, not the evaluation of such bids.

BID NO.: 4402-6C
PROJECT: FY2014 CURB REPLACEMENT
DATE/TIME: 6/7/13, 10:00 am

ITEM	DESCRIPTION	UNIT	EST. QTY.	BIDDER NAME/ADDRESS Leath & Sons Inc. Each	Leath & Sons Inc. Total	BIDDER NAME/ADDRESS Freeman Concrete Each	Freeman Concrete Total	BIDDER NAME/ADDRESS Orr Wyatt Streetscapes Each	Orr Wyatt Streetscapes Total	BIDDER NAME/ADDRESS Engineers Estimate Each	Engineers Estimate Total
BASE bid											
1	Curb & Gutter (remove & replace)	LF	52,616	$18.40	$968,134.40	$19.80	$1,041,796.80	$22.93	$1,206,484.88	$18.53	$974,974.48
2	Driveway Approach (remove & replace)	SF	2,288	$6.50	$14,872.00	$9.00	$20,592.00	$7.25	$16,588.00	$8.30	$18,990.40
3	Sidewalk (remove & replace)	SF	8,448	$6.00	$50,688.00	$6.50	$54,912.00	$6.56	$55,418.88	$8.30	$70,118.40
4	Ramps, Type A Sidewalk	Each	95	$1,650.00	$156,750.00	$1,240.00	$117,800.00	$807.00	$76,665.00	$1,150.00	$109,250.00
5	Ramps, Type B Sidewalk	Each	11	$1,800.00	$19,800.00	$1,650.00	$18,150.00	$1,184.00	$13,024.00	$1,600.00	$17,600.00
6	Ramps, Mid-Block Sidewalk	Each	26	$1,800.00	$46,800.00	$1,300.00	$33,800.00	$1,480.00	$38,480.00	$1,400.00	$36,400.00
	TOTAL OF ALL BASE BID PRICES			$1,257,044.40		$1,287,050.80		$1,406,660.76		$1,227,333.28	
ALTERNATE No. 1 bid											
A1	Curb & Gutter (remove & replace)*	LF	3,959	$18.40	$72,845.60	$19.80	$78,388.20	$22.93	$90,779.87	$18.53	$73,360.27
A2	Driveway Approach (remove & replace)*	SF	172	$6.50	$1,118.00	$9.00	$1,548.00	$7.25	$1,247.00	$8.30	$1,427.60
A3	Sidewalk (remove & replace)*	SF	128	$6.00	$768.00	$6.50	$832.00	$6.56	$839.68	$8.30	$1,062.40
A4	Ramps, Type A Sidewalk*	each	2	$1,650.00	$3,300.00	$1,240.00	$2,480.00	$807.00	$1,614.00	$1,150.00	$2,300.00
	TOTAL OF ALTERNATE BID PRICES			$78,031.60		$83,248.20		$94,480.55		$78,150.27	
	TOTAL OF BASE & ALTERNATE BID PRICES			$1,335,076.00		$1,370,299.00		$1,501,141.31		$1,305,483.55	

Opened By: Katie Fritsch & DeeDee Tschirhart

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TOTAL BASE + ALT BID	
AVERAGE OF NON-AWARD	$1,425,720.16
COST AVOIDANCE IN DOLLARS	$100,644.16
COST AVOIDANCE PERCENTAGE	7%