

Agenda Section	Informational Items
Section Number	IV.A
Subject	FEDC (4A) Meeting Minutes
To	Mayor and Council Members
From	Ben White, City Manager
Date	November 8, 2016
Attachment(s)	FEDC (4A) Meeting Minutes: 15 Sep 2016, 18 Aug 2016
Related Link(s)	<a href="http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php">http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php</a>
Consideration and Discussion	City Council discussion as required.
Action	<ul style="list-style-type: none"> <li>• Motion/second/vote <ul style="list-style-type: none"> <li><input type="checkbox"/> Approve</li> <li><input type="checkbox"/> Approve with Updates</li> <li><input type="checkbox"/> Disapprove</li> </ul> </li> <li>• Motion/second/vote to continue to a later date. _____ <ul style="list-style-type: none"> <li><input type="checkbox"/> Approve</li> <li><input type="checkbox"/> Disapprove</li> </ul> </li> <li>• Move item to another agenda. _____</li> <li>• No motion, no action</li> </ul>

**FARMERSVILLE ECONOMIC DEVELOPMENT CORPORATION  
MEETING MINUTES  
August 18th, 2016**

The Farmersville EDC met in regular session on August 18th, 2016 at 7:00 p.m. in the City Council Chambers of City Hall with the following members present: Kevin Meguire, Robbie Tedford, Randy Smith, George Crump, and Jason Lane. Staff members present were City Accountant Daphne Hamlin, City Manager Ben White. Special guest recognized, Mayor Diane Piwko, Councilman Mike Hurst, Lisa and Matt Crowder, and Donna Williams.

**CALL TO ORDER**

Chairman Meguire convened the meeting at 7:00 p.m. and announced a quorum was present.

**RECOGNITION OF CITIZENS AND VISITORS**

Special guest recognized, Mayor Diane Piwko, Councilman Mike Hurst, Lisa and Matt Crowder, and Donna Williams.

**PUBLIC HEARING**

Chairman Meguire opened the public hearing @ 7:00 to receive comments on the EDC 4A Proposed 2016-2017 Budget and Goals. With no proponents or opponents to present their view, Chairman Meguire closed the public hearing @7:01

Mr. Tedford motioned to approve the EDC 4A Proposed 2016-2017 Budget and Goals, Mr. Lane second the motion. Motion passed unanimously.

**UPDATE REGARDING COLLIN COLLEGE CAMPUS**

Chairman Meguire gave a brief review of the Collin College Scholarship Banquet he attended in show of support and recognition for Farmersville.

**DISCUSSION AND POSSIBLE ACTION REGARDING AWARDED FACADE GRANT TO MATT AND LISA CROWDER.**

Chairman Meguire reviewed the façade grant awarded to Matt and Lisa Crowder, showing the before and after pictures. Mr. Crump motioned to accept the completion of the façade grant and payment in the amount of \$8,677.00 to Matt and Lisa Crowder, Mr. Smith second the motion. Mr. Lane abstained. Motion passed

**UPDATE REGARDING PROJECT MATILDA**

Mr. White, City Manager started out by saying that City Accountant Daphne Hamlin receives emails on occasion from Dallas Regional Chamber who works with a consultant group representing companies seeking available land and buildings for relocation. Project Matilda was looking to establish an enterprise data center in the DFW area and looking for property for sale or to purchase existing warehouse.

Chairman Meguire sent out the info to area realtor to respond showing different areas available.

Mr. White discussed the pamphlet that was created a few years ago for such instances. The pamphlet gives informational facts of our City. Including tax rates, highway accessibility, etc.

Mr. White also mentioned within the same week Dallas Regional Chambers was working with a consultant group on a project. Project Peanut Butter is a food processing company seeking a new manufacturing/distribution facility in the DFW area.

Mr. White stated a pamphlet went out to both Project Matilda and Project Peanut Butter. Mr. White stated the pamphlet is on the website and welcomes any feedback in order to provide as much information as possible.

#### UPDATE REGARDING MARKETING PAMPHLET

Chairman Meguire stated that he and Mr. White met to discuss the marketing pamphlet. Chairman Meguire said we need to make more bullet points, try to get the average cost of area land market and compare to surrounding areas, showing the cost differences. Chairman Meguire suggested different pamphlets to target different businesses. Need to be ready to support growth and forecasting.

#### UPDATE REGARDING TRAINING FOR PUBLIC MEETINGS.

Ms. Hamlin reminded the EDC 4A Board regarding training for new members.

#### RECEIVE REPORT ON STATUS REGARDING PROPOSED CITY OF FARMERSVILLE WASTEWATER FACILITY

Mr. White said the application for the loan going forward. Daniel & Brown working on easements east and west side. Mr. White stated biggest item at this time is getting the loan approved. Time frame should be around November.

#### RECEIVE UPDATE REGARDING FIBER OPTIC CABLE FOR THE CITY OF FARMERSVILLE

Mr. White said I-365 consultant will have site survey this week. Mr. White said NCS Company working on procurement of fiber cable. Making sure cable is correct before purchasing and the size is enough for growth.

Mr. White said that I-365 may set up a data center in Farmersville at their cost. Looking for a five to ten thousand square foot facility. This would be a main business model used for rural areas.

#### DISCUSSION AND POSSIBLE ACTION REGARDING MARKETING COMMITTEE

Councilman Hurst said creating a marketing committee would be advantageous to the City. Handing out pamphlets, creating letters, going out to are realtors. Need to strategize to get people and businesses here in Farmersville. Main selling point is the new sewer plant.

Chairman Meguire suggested to have a focus group, bring in marketing groups to give a presentation. Mr. Crump said in the beginning EDC 4A strategized on the Industrial segment and CDC 4B on retail. Mr. Crump said we need to focus on the Industrial side.

Chairman Meguire said we need to find out what drives people to come to a town our size. Councilman Hurst offered to meet with the City Manager of Frisco who helped to bring Stone Briar Mall. We need to bring in someone who has already been thru the growth process. Give us a heads up on what to look for. Mr. Tedford agreed it would be better for us to speak with someone who has been thru this, very interested to speak with someone who has already faced these challenges.

DISCUSSION AND POSSIBLE ACTION REGARDING ITEMS FOR PAYMENT

Mr. Tedford motioned to approve items for payment as presented, Mr. Smith second the motion. All in favor. Motion passed unanimously.

CONSIDERATION AND POSSIBLE ACTION REGARDING FINANCIAL STATEMENT FOR JULY 2016, AND REQUIRED BUDGET AMENDMENTS

Mr. Lane motioned to approve the financial statements for July 2016 as presented Mr. Crump second the motion. All in favor. Motion passed unanimously.

CONSIDERATION AND POSSIBLE APPROVAL OF THE MINUTES OF THE JULY 13<sup>TH</sup> AND JULY 21<sup>ST</sup>, 2016 MEETING

Mr. Crump motioned to approve July 13<sup>TH</sup> and 21<sup>st</sup>, 2016 minutes as presented, Mr. Tedford second the motion. All in favor. Motion passed unanimously.

DISCUSSION IN CONTEMPLATION OF PLACING ITEMS ON FUTURE AGENDA

Invite 4B President to give update

Inflow and Infiltration

ADJOURNMENT

Meeting adjourned at 8:19p.m.

  
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Kevin Meguire, President

ATTEST:

  
\_\_\_\_\_  
George Crump, Secretary

**FARMERSVILLE ECONOMIC DEVELOPMENT CORPORATION**  
**MEETING MINUTES**  
**September 15th, 2016**

The Farmersville EDC met in regular session on September 15<sup>th</sup>, 2016 at 7:01 p.m. in the City Council Chambers of City Hall with the following members present: Kevin Meguire, Robbie Tedford, Randy Smith, George Crump, and Jason Lane. Staff members present were City Accountant Daphne Hamlin, City Manager Ben White. Special guest recognized, Councilman Mike Hurst.

**CALL TO ORDER**

Chairman Meguire convened the meeting at 7:01 p.m. and announced a quorum was present.

**RECOGNITION OF CITIZENS AND VISITORS**

Special guest recognized, Councilman Mike Hurst.

**UPDATE REGARDING COLLIN COLLEGE CAMPUS**

Dr. Collins submitted an update to the EDC 4A Board regarding Collin College. Dr. Collins stated no changes since last month. The Collin College Board will meet in a planning retreat later this month to discuss plans for moving forward with the new master plan which includes the Wylie, Farmersville and Celina sites.

**DISCUSSION AND POSSIBLE ACTION REGARDING COLLIN COLLEGE FOUNDATION**

Ms. Hamlin addressed the EDC 4A Board of an error regarding the Sponsorship Donation given annually to the Collin College Foundation. Ms. Hamlin explained while updating the EDC 4 financial statements discovered Collin College Foundation donation was paid twice within the same budget year 2015-2016. Upon direction of the EDC 4A Board, Ms. Hamlin will contact Dr. Collins to assist to ensure the EDC 4A Board receives recognition in the upcoming budget year 2016-2017 of funds already received.

**UPDATE REGARDING MEETING WITH TOWN OF PROSPER, MAYOR SMITH**

Mr. White updated the EDC 4A Board of the meeting between himself, Mayor Diane Piwko, Chairman Kevin Meguire, Mayor Smith of Prosper, and Councilman Hurst. Mayor Smith was very involved and knowledgeable of the work performed by the EDC Board, and the work they put into bringing in the Cowboy Organization.

Mr. White stated that Mayor Smith noted the need to be prepared and ready to react when the time for growth comes, especially in zoning. Councilman Hurst said what he got from the meeting was the need for people in marketing profession to assist with the development of our area. Currently Mr. White is in the process of developing a letter to local and surrounding area realtors to give out or hand deliver.

Councilman Hurst stated we need to put things out to real estate brokers who can bring development here. Also, the need for good growth, quality housing, development, and education. Councilman Hurst stated we are in line for growth, we have the ball in our

court and it is our decision what direction Farmersville needs. Farmersville is in a unique position we have land, easy access to Highways and Railroads

#### UPDATE REGARDING MARKETING PAMPHLET

Mr. White said he has developed a letter focused towards developers. Also, Mr. White stated need to develop another letter focusing towards realtors or brokers and place in front of pamphlet to communicate that our City is right for growth. Mr. White pointed out the front section of the pamphlet talks about the need for housing and the City has an industrial area that's right for development.

Bo Daffin with Collin County Central Appraisal District is developing data, so we will have charts to add to the pamphlet, showing what kind of growth that is happening here and in the surrounding area.

Mr. White stated the pamphlet was generated in 2013 and revised in 2015, basics of the pamphlet is there, showing Farmersville as the home of Audie Murphy in the front part of the pamphlet. Not sure if that section will stay in the front part of the pamphlet, may need to point out first that we are in the fastest growing county in Texas. Then placing the historic value in the back section referencing this is the home of Audie Murphy.

Mr. White said it is important we keep our historic value, this is the home of Audie Murphy and we have people looking at that who wants to move here. Our small town value is important to people who want to move here. Just trying to find the right balance and be positive and maintain our culture and values.

Chairman Meguire asked if this is the finished product. Mr. White stated this the base product that I am working off of. Chairman Meguire suggested to the EDC 4A Board the possibility of taking a drone and go over the Industrial area, showing what Farmersville has to offer in the Industrial area such as the Railroad access. Place it on a disc or on the City website showing the possibilities the Industrial area offers.

Mr. Crump suggested we take what we currently have for review and come back with comments.

Mr. Smith asked about the TIRZ information showing as proposed 2011. Mr. White stated that is just a carryover will make the correction.

#### UPDATE REGARDING WASTEWATER INFLOW AND INFILTRATION

Mr. White said not a lot of changes within the last month. The environmental reports are turned into TCEQ from DBI. Which is a big accomplishment and waiting for TCEQ to approve so we can go forward with this project. In the meantime working on easement issues and gravity issues around the new proposed lift station on the west side.

#### RECEIVE REPORT ON STATUS REGARDING PROPOSED CITY OF FARMERSVILLE WASTEWATER FACILITY

Mr. White said it is tied in with the inflow and infiltration issues. Waiting on the loan approval to proceed forward. Once environmental is cleared, we will work on the loan application. When loan is approved we will work on all the wastewater treatment plant

issues. Mainly upgrading plant 1 and 2, and acquiring the right-of-ways for the new wastewater treatment plant. Overall no real changes.

#### RECEIVE UPDATE REGARDING FIBER OPTIC CABLE FOR THE CITY OF FARMERSVILLE

Mr. White gave past history to the newly elected board officials on the Fiber Optic project funded by EDC 4A in the amount of 33K. Mr. White explained he went back and developed all the information need for phase 1 and 2. Explaining why building only phase 1 would not give you the full capability until you added phase 2.

Mr. White said with the quotes in, and the ability to tie in to Highway 380 the cost is approximately 75k. The study which is a piece of this is 20k. Mr. White explained will need the additional funds to complete the project. Mr. White is proposing, if the EDC 4A Board is in agreement with this project, for a budget amendment to complete the project.

Mr. White explained the reason this is so important is to be able to compete with other Cities. The concept and future of this is to look like Greenville, offering internet, and cable. This is another utility that Farmersville can offer especially to any business needing gigabit capability. This would come a utility revenue like our other utilities.

Mr. Tedford asked what kind of vision do you have to refund EDC 4A. Mr. Crump said he would like to see the scope of what this is capable of. Mr. Tedford asked if they could have information before the next regular scheduled meeting to have time to study and review the concept. Mr. White said he will contact William and find out from him his timeline on compiling the information requested by the EDC 4A Board. Chairman Meguire asked Mr. White what impact it would have if we waited to vote on this project in November 2016. Mr. White said it would delay the construction, but wants to make sure everyone is in agreement and on the same page with this project.

Mr. Tedford wants to see how much it will cost and what revenues it will generate to be able to pay back the loan. Mr. White said he will get the information back to the EDC 4A Board.

#### DISCUSSION AND POSSIBLE ACTION REGARDING 4A ECONOMIC DEVELOPMENT CORPORATION REVIEW.

Chairman Meguire explained why this item is on the agenda. There are some new members and feels as though maybe a workshop to discuss what direction the EDC 4A Board would like to take.

Chairman Meguire pointed out the 2 key points in the information provided regarding the duties of EDC Boards, are manufacturing and Industrial development, but as you read on it basically covers everything.

Chairman Meguire said the focus so far has been to build up a fund balance to support infrastructure for future development. Now that the City has taken this on it is time for the EDC 4A Board to move in another direction.

Mr. Crump said would like to see the workshop, have all the board members together give each other their thoughts to see if we can get on the same page.

Mr. Smith said his biggest concern is the limitation we have in the sewer system, how could we accommodate a new business within the next few months. Example the Shell Station, are we going to be able to accommodate their facility, without causing any manipulation to the system. When will we run out of capacity to accommodate new businesses? Mr. Crump said are you looking at process Industry, warehouse distribution, depends on utility use they are requiring.

Mr. White said he could respond to these questions. The way we see the approach now is to build the capacity as needed. The way the City Council is taking care of this is being pro-active with having all the engineering in place. We are building capacity although it being slight into Plant 1 and Plant 2, refurbishing them right away that will be in place next year. At the end of next year we will have engineering drawings and right of way acquired for the new plant. Then you are waiting for the need to expand and add capacity, if the need arises. Meaning you are in the shortest time frame to construct the new plant.

Mr. Smith explained he understands you can't have a full system available and no way to pay for it. My question is can we go market for business to come to Farmersville. Mr. White said that they would react to make this work, we are in a position to make this happen if the need arises.

CONSIDERATION AND POSSIBLE ACTION REGARDING FINANCIAL STATEMENT FOR AUGUST 2016, AND REQUIRED BUDGET AMENDMENTS

Mr. Crump motioned to approve the financial statements for August 2016 as presented Mr. Tedford second the motion. All in favor. Motion passed unanimously.

DISCUSSION IN CONTEMPLATION OF PLACING ITEMS ON FUTURE AGENDA

I-365 information update

Budget Amendment

Workshop

ADJOURNMENT

Meeting adjourned at 8:32p.m.



Kevin Meguire, President

ATTEST:



George Crump, Secretary



Agenda Section	Informational Items
Section Number	IV.B
Subject	FCDC (4B) Meeting Minutes
To	Mayor and Council Members
From	Ben White, City Manager
Date	November 8, 2016
Attachment(s)	FEDC (4B) Meeting Minutes: 10 Oct 2016
Related Link(s)	<a href="http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php">http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php</a>
Consideration and Discussion	City Council discussion as required.
Action	<ul style="list-style-type: none"> <li>• Motion/second/vote <ul style="list-style-type: none"> <li><input type="checkbox"/> Approve</li> <li><input type="checkbox"/> Approve with Updates</li> <li><input type="checkbox"/> Disapprove</li> </ul> </li> <li>• Motion/second/vote to continue to a later date. _____ <ul style="list-style-type: none"> <li><input type="checkbox"/> Approve</li> <li><input type="checkbox"/> Disapprove</li> </ul> </li> <li>• Move item to another agenda. _____</li> <li>• No motion, no action</li> </ul>

## **FARMERSVILLE COMMUNITY DEVELOPMENT CORPORATION BOARD (4B)**

**MINUTES ~ October 10, 2016**

### **CALL TO ORDER, ROLL CALL AND RECOGNITION OF VISITORS**

The Farmersville Community Development Corporation Board met on October 10, 2016 in the City Council Chambers at City Hall. President Donna Williams convened the meeting at 5:45 p.m. and announced that a quorum was present after roll call. The following board members were present: Donna Williams, Cynthia Craddock-Clark, Kim Potter, Katherine Hershey, Mike Goldstein, and John Politz. President Williams welcomed Main Street Manager Adah Leah Wolf, Mayor Diane Piwko, and City Council Liaison Leaca Caspari

### **CONSIDER FOR APPROVAL AUGUST 8, 2016 MEETING MINUTES**

Cynthia Craddock Clark made a motion to approve the minutes of August 8, 2016 as written. Motion was seconded by John Politz and passed unanimously.

### **CONSIDERATION AND POSSIBLE APPROVAL OF ITEMS FOR PAYMENT**

Kim Potter made a motion to approve items presented for payment. Motion was seconded by Mike Goldstein and passed unanimously.

### **CONSIDERATION AND POSSIBLE ACTION REGARDING FINANCIAL STATEMENTS FOR AUGUST/SEPTEMBER 2016 AND ANY REQUIRED BUDGET AMENDMENTS**

Kim Potter made a motion to approve the August/September 2016 financial statements as presented. Cynthia Craddock-Clark seconded the motion, which passed unanimously.

### **CITY MANAGER REPORT**

City Manager Ben White was not present

### **MAIN STREET MANAGER UPDATE**

Main Street Manager Adah Leah Wolf presented a written report for August and September 2016, and highlighted the following: The Farmersville Heritage Museum has an updated brochure, which was distributed. A letter from Debra Drescher was received and is useful for benchmarking our Main Street program. Audie Murphy Day postcards have been updated and will be included in bike ride packets. The map of downtown buildings has been revised and is an excellent reference tool. An article about the Northeast Texas Trail ("Track to the Future") which includes Farmersville coverage was distributed, from the Summer 2016 issue of "Authentic Texas" magazine. The burned buildings on South Main have been demolished. Clay Potter's building renovations are nearly complete and a November auction is planned. The metal roof on the First Baptist Church is being replaced with similar, recreated shingles. Juan Bautista has leased the building at 201 McKinney Street for a Mexican imports retail shop. The old candy kitchen is for sale. The Downtown space for sale or lease flier has been revised. The next monthly downtown merchants get together will be hosted by The Hay Loft on Oct. 20. A final Audie Murphy Day sponsorship of \$750 was received from Lexington Lodge.

### **DISCUSSION OF PLACING ITEMS ON FUTURE AGENDAS**

The next meeting will be held on November 14, 2016 at 5:45 PM. Donna Williams wants to discuss an agenda item of a plan to continue marketing the Chaparral Trail, especially since there has been quite a bit of financial investment in the trail to date. Christmas lighting will be ordered as budgeted.

**ADJOURNMENT**

There being no further business, President Williams adjourned the meeting at 6:10 PM

Signatures:

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Donna Williams, President

\_\_\_\_\_  
John Politz, Secretary

DRAFT

Agenda Section	Informational Items
Section Number	IV.C
Subject	Sign Board of Appeals Minutes
To	Mayor and Council Members
From	Ben White, City Manager
Date	November 8, 2016
Attachment(s)	Sign Board of Appeals Minutes: 11 Oct 2016
Related Link(s)	<a href="http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php">http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php</a>
Consideration and Discussion	City Council discussion as required.
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**FARMERSVILLE SIGN BOARD OF APPEALS  
MEETING MINUTES  
October 11, 2016**

The Farmersville Sign Board of Appeals met in a special called session on October 11, 2016 at 5:05 p.m. in the City Council Chamber of City Hall with the following members present: Mayor Diane Piwko, Donny Mason, John Klostermann, Michael Hesse, Mike Hurst and Leaca Caspari. Staff members present were City Manager Ben White, Warrant Officer Rick Ranspot, City Attorney Alan Lathrom and Interim City Secretary Paula Jackson.

**CALL TO ORDER, ROLL CALL**

Mayor Piwko called the meeting to order. Paula Jackson called the roll and announced a quorum was present.

**PUBLIC HEARING**

Public Hearing requests for variances for height and sign area from the sign regulations contained in Chapter 56, "Signs and Advertising," of the Farmersville Code to permit the construction and installation of a sign to be placed at 1806 West Audie Murphy Parkway, Lot 16R of Murphy's Crossing Phase III, Farmersville, Texas

Mayor Piwko, requested anyone who was wanted to speak for or against the variance request to step forward.

Dan Merrit with Lexington Medical Lodge spoke against the sign. He is afraid the sign will bring down the work and Landscaping they have invested to make their building stand out.

Amin Abata who has property cross from this address spoke for the sign. He felt it would be good for future development of his property.

Jim Foy voiced concerns, stating a variance is for a business that is blocked by other buildings and bridges. Mr. Foy stated you could understand a variance request at that point. He spoke regarding the Sign Ordinance which clearly states the proper size of the sign.

Public Hearings were closed at 5:15PM.

**ITEMS FOR DISCUSSION AND POSSIBLE ACTION**

Mayor Piwko ask if the Council would like to speak regarding the public hearing. Mike Hurst stated the sign seems very extravagant and it's huge sign. Mike Hurst ask Ben White if he looked at the plans for the sign, Ben stated we go by the ordinance which is all we have to go by. If it does not fit we have to tell the customer as so. If we do not follow the ordinance it make it hard on staff. Michael Hesse does not want to detour business, but this sign does not work, you will be able to see the building from a distance. Mayor Piwko ask if the Board could approve two signs. City Attorney Alan Lathrom then stated that the Sign Board of Adjustment cannot draw up signs, the owners of the travel center will need to apply for them. Leaca Caspari said she does not approve of the sign and a variance should not be granted. John Klostermann stated he is concerned with issues of the height, and the lighting of the sign.

Motion to Deny by John Klostermann  
Second by Leaca Caspari  
Motion carried

**ADJOURNMENT**

The Sign Board of Appeals adjourned at 5:27pm.

APPROVED

\_\_\_\_\_  
Diane Piwko, Mayor

ATTEST

\_\_\_\_\_  
Paula Jackson, Interim City Secretary

Agenda Section	Informational Items
Section Number	IV.D
Subject	Main Street Board Minutes
To	Mayor and Council Members
From	Ben White, City Manager
Date	November 8, 2016
Attachment(s)	Main Street Board Minutes: 4 Oct 2016
Related Link(s)	<a href="http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php">http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php</a>
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**Farmersville Main Street Board Minutes  
October 4, 2016 City Hall**

The meeting was brought to order at 5:00 PM by President Anne Hall. Present were board members Anne Hall, Glenda Hart, Randy Rice, Kim Potter, and 4B representative Donna Williams. Also present were Main Street Manager Adah Leah Wolf, City Manager Ben White, and Councilman Leaca Caspari.

**Consider for approval August 16, 2016 Meeting Minutes:**

There was no discussion regarding the August 16, 2016 meeting minutes; motion to approve by Kim Potter, second by Glenda Hart. Minutes were approved as presented.

**Consider for approval August and September 2016 Financial Statements:**

One final Audie Murphy Day sponsorship has been received from the Lexington Lodge. Motion to approve as presented by Kim Potter, second by Glenda Hart. The statements were approved as presented.

**Main Street Manager Monthly Update:**

Adah Leah Wolf presented a written monthly report for August and September, and highlighted the following: Updated Heritage Museum brochures are now available and were distributed at Old Time Saturday. Farmersville Police Association members sold T Shirts at the last Farmers & Fleas Market and members of the Citizens Assisting Farmersville Police provided some volunteer assistance. Audie Murphy Day postcards were revised and printed and will be placed in the 500 Trick it Up bike Ride goody bags, as will the Downtown Shoppers Guides. The map of downtown has been updated and is an excellent reference tool. Martha's Thrift store is getting re painted. The First Baptist Church roof (116 years old!) is being replaced with similar custom made metal shingles. The Potter building is still undergoing major interior renovations. The welcome notebook for new downtown business owners has been revised, as well as the downtown buildings for sale or lease flier. The Pink Pug had closed and relocated to McKinney; however, they are coming back to their original location with a new store name of Junksperation. The buildings for sale or lease flier has been updated. The next downtown merchants meeting will be Oct. 20 at The Hay Loft. Juan Bautista has leased 201 McKinney Street and will be selling Mexican imports.

**Review of Work Plan and Mission Statement**

The board reviewed the current vision statement and mission statement. After discussion, the word "recreational" was added to the Vision Statement and "on a pedestrian scale" was removed, to read this way: *"We envision downtown Farmersville to be a unique, historical, and authentic regional destination that proudly offers diverse business, civic, cultural, preservation, recreational, and entertainment activities to professionals, consumers, residents and visitors of all ages both day and night."*



After discussion, the Mission Statement was slightly revised to read: *"Farmersville Main Street Program's overall purpose is to encourage downtown revitalization within the context of historic preservation. Through careful planning and the use of the National Main Street's Four Point Approach of design, economic restructuring, promotion and organization, historic downtown Farmersville will remain a vibrant civic gathering place for all to enjoy by improving public spaces and health/recreation activities, increasing business activity, and expanding heritage tourism programs through business development and retention efforts, physical improvements, historic preservation, and promotional events."*

The "refresh" strategy was used by the board in a discussion to identify two major transformational strategies:"

- 1) Create a downtown environment conducive to healthy buildings and healthy people. This strategy builds on local assets of the Chaparral Trail, parks and existing health related businesses in the Main Street district. It also addresses the "health" of the downtown buildings with the aim of preventative maintenance.
- 2) Involve the community in educating the public about our unique history. This strategy builds on heritage tourism activities including activities around recognizing and celebrating our new National Register Historic District status, which should be finalized in several months.

Suggested activities discussed included the following:

- Marker program for buildings
- Markers for selected major historic properties which are now gone, but not forgotten, including the Standpipe, the Train Station and the Baseball Field.
- Wayfinding signage that helps orient visitors
- Creating walking tours, involving students and both museums
- Events that tie in with groups and events using the Chaparral Trail, and bring visitors downtown to shop and eat.
- Host a quarterly meeting of the NETT board and encourage representation on the board.
- Follow up on pursuing a state historical marker for the Post Office
- Creation of history fliers on the historic buildings, using information and photos. Perhaps the use of another college intern from Commerce for this project.

The board then began to review the work plan objectives, which are grouped by the four areas of Main Street. Many of these are ongoing activities which have continued to be successful for the program.

**Discussion of placing items on future agendas:**

The board will continue with planning during their next agenda. The next meeting will be Monday, November 7 at 5 PM.

**Adjournment:** With no further business to discuss, the meeting was adjourned by Anne Hall at 6:24 PM

DRAFT

Agenda Section	Informational Items
Section Number	IV.E
Subject	Main Street Report
To	Mayor and Council Members
From	Ben White, City Manager
Date	November 8, 2016
Attachment(s)	Main Street Monthly Report: Oct 2016
Related Link(s)	<a href="http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php">http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php</a>
Consideration and Discussion	City Council discussion as required.
Action	<ul style="list-style-type: none"> <li>• Motion/second/vote <ul style="list-style-type: none"> <li><input type="checkbox"/> Approve</li> <li><input type="checkbox"/> Approve with Updates</li> <li><input type="checkbox"/> Disapprove</li> </ul> </li> <li>• Motion/second/vote to continue to a later date. _____ <ul style="list-style-type: none"> <li><input type="checkbox"/> Approve</li> <li><input type="checkbox"/> Disapprove</li> </ul> </li> <li>• Move item to another agenda. _____</li> <li>• No motion, no action</li> </ul>



Main Street Monthly Report  
October 2016  
Reported by Adah Leah Wolf,  
Main Street Program Manager



**ORGANIZATION/ADMINISTRATION:**

4	Main Street Board meeting. Workshop, review of mission, vision, and work program.
12, 19	City Staff meetings attended
7	Administrative assistance provided by Debbie Ranspot.
10	Farmersville Community Development Corp. Board meeting. Meeting preparation including handouts and posting
11,25	Attended City Council meetings.
20	Farmersville Heritage Museum board meets. Discuss first exhibits-history of local churches.
	Correspondence with Lacey Henderson of A & M at Commerce regarding possible intern position for journalism student for this summer.
	Numerous City website updates

**PROMOTION:**

1	Old Time Saturday Event (takes the place of Farmers & Fleas Market), organized by Farmersville Centennial Committee, and fundraiser for Senior Center, Library and Civic Center.
18	E newsletter sent to downtown business owners and building owners
20	Heritage Museum Power Point presentation to First Baptist Church "Ballclub" seniors
22	Successful Scare on the Square event organized by downtown merchants
22	Chamber's Trick it Up Bike Ride brings 350 + people into town. We provided assistance with food preparation, as well as postcards and shoppers guides for the goody bags. Run on Chaparral Trail the same day attracted 120 participants, many of whom had not been to town before.
24-26	"Farmersville 1900" day camp for 4th graders held at Bain Honaker House Museum and Onion Shed by the Farmersville Historical Society.
28	Ads placed for Farmers & Fleas Market; press releases sent. Ten Farmers & Fleas Market signs purchased for downtown area
	Updates made to Downtown Shopping Guide

**DESIGN:**

17	Letter sent to all building owners to request permission for Christmas lights installation
	The new city generator has been installed behind City Hall, and will provide emergency power.
	First Baptist Church replacement metal roof is complete
	Potter Building continues interior renovations—plumbing and electrical this month
	Old Feagin's Supermarket (10,000 sq ft) extensive roof repairs are complete
	Wall repairs begin at Police Department
	Kansas City Southern has completed work on the Railroad crossing on South Main Street.
	711 McKinney Street building has been painted.

**ECONOMIC RESTRUCTURING:**

	Notebooks for new business owners provided for The Hay Loft, Simplexity, and Little Ranch Imports.
	Lindy Murphy opens Junkspiration at 113 McKinney. She previously owned The Pink Pug Store at the same location.
13	Chamber Morning Networking at Independent Bank
20	Monthly Downtown Merchants get-together held, hosted by The Hay Loft
22	Chamber morning networking attended at Lexington Lodge
27	Chamber luncheon with County Commissioner Chris Hill

## **V. Reading of Ordinance**

Agenda Section	Reading of Ordinance
Section Number	V.A
Subject	Consider, discuss, and act upon the first reading of Ordinance # O-2016-1129-001 regarding construction specifications
To	Mayor and Council Members
From	Ben White, City Manager
Date	November 8, 2016
Attachment(s)	Ordinance # O-2016-1129-001
Related Link(s)	<a href="http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php">http://www.farmersvilletx.com/government/agendas_and_minutes/city_council_meetings.php</a>
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**CITY OF FARMERSVILLE  
ORDINANCE #2016-1129-001**

**AN ORDINANCE OF THE CITY OF FARMERSVILLE, TEXAS ADOPTING THE CITY OF FARMERSVILLE, TEXAS STANDARD SPECIFICATIONS, OCTOBER 2016 EDITION; AMENDING THE CODE OF ORDINANCES OF THE CITY OF FARMERSVILLE, TEXAS, AS HERETOFORE AMENDED, THROUGH THE AMENDMENT OF CHAPTER 65, "SUBDIVISIONS," BY THE AMENDMENT OF SECTION 65-5, ENTITLED "ADOPTION OF PLANS AND DESIGN MANUALS," TO REFLECT THE ADOPTION OF THE OCTOBER 2016 EDITION OF THE CITY OF FARMERSVILLE, TEXAS STANDARD SPECIFICATIONS; REPEALING ORDINANCES IN CONFLICT HERewith; PROVIDING FOR SEVERABILITY; PROVIDING FOR GOVERNMENTAL IMMUNITY; PROVIDING FOR INJUNCTIONS; PROVIDING FOR NOTICE AND IMPLEMENTATION; AND PROVIDING AN EFFECTIVE DATE.**

**WHEREAS**, the City desires to consolidate all of the various technical standards that apply to public infrastructure in one location to be known as the City of Farmersville, Texas Standard Specifications ("Standard Specifications"); and

**WHEREAS**, the Standard Specifications will comply with the latest federal and state levels of design, and are more consistent with standards currently utilized throughout the Dallas/Ft. Worth metroplex; and

**WHEREAS**, the Standard Specifications will be a better source of information for engineers and consultants; and

**WHEREAS**, the Standard Specifications should reduce the time City staff spends with engineers and developers in the design review process; and

**WHEREAS**, the City Council of the City of Farmersville, Texas finds that all prerequisites to the adoption of this Ordinance have been met; and

**WHEREAS**, the City Council of the City of Farmersville, Texas finds that it is in the best interest of the public health, safety and welfare to consolidate and adopt a set of Standard Specifications.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FARMERSVILLE, TEXAS, THAT:**

**SECTION 1. INCORPORATION OF FINDINGS**

All of the above premises are hereby found to be true and correct legislative and factual determinations of the City of Farmersville and they are hereby approved and incorporated into the body of this Ordinance as if copied in their entirety.

**SECTION 2. ADOPTION OF THE CITY OF FARMERSVILLE, TEXAS  
STANDARD SPECIFICATIONS, OCTOBER 2016 EDITION**

The City Council of the City of Farmersville hereby adopts The City of Farmersville, Texas Standard Specifications, October 2016 Edition, a true copy of which is on file with the City Secretary's Office and incorporated herein by reference for all purposes allowed by law the same as if fully copied herein.

**SECTION 3. DEVELOPMENT TO CONFORM TO THE CITY OF  
FARMERSVILLE, TEXAS STANDARD SPECIFICATIONS,  
OCTOBER 2016 EDITION**

From and after the effective date of this Ordinance, The City of Farmersville, Texas Standard Specifications, October 2016 Edition, establishes the minimum standards which shall be complied with by any developer or property owner filing an application to develop land within the City or its extraterritorial jurisdiction.

**SECTION 4. AMENDING THE CODE OF ORDINANCES OF THE CITY OF  
FARMERSVILLE, TEXAS, AS HERETOFORE AMENDED,  
THROUGH THE AMENDMENT OF CHAPTER 65,  
"SUBDIVISIONS," BY THE AMENDMENT OF SECTION 65-5,  
ENTITLED "ADOPTION OF PLANS AND DESIGN MANUALS,"  
TO REFLECT THE ADOPTION OF THE OCTOBER 2016  
EDITION OF THE CITY OF FARMERSVILLE, TEXAS  
STANDARD SPECIFICATIONS**

From and after the effective date of this Ordinance, Section 65-5 of the Farmersville Code is hereby amended to read as follows:

**"Sec. 65-5. - Adoption of plans and design  
manuals.**

**A. The city has adopted the:**

- (1) Future Land Use Plan dated November 8, 2005;
- (2) Future Infrastructure Plan dated November 8, 2005;
- (3) City of Farmersville, Texas Manual for the Design of Storm Drainage Systems dated February 13, 2007;
- (4) City of Farmersville, Texas Manual for the Design of Water and Sanitary Sewer Lines dated February 13, 2007;



- (5) City of Farmersville, Texas Standard Construction Details, October 2016 Edition ("Standard Construction Details"); and
- (6) City of Farmersville, Texas Standard Specifications, October 2016 Edition ("Standard Specifications"); and
- (7) City of Farmersville, Texas Thoroughfare Standards Design Manual dated July 13, 2004 and amended June 12, 2007; and
- (8) Master Thoroughfare Plan Adopted September 12, 2006.

The designs and manuals referenced above in subparagraph nos. (3), (4), (6) and (7) are referred to collectively as Design Manuals. True copies of the foregoing Design Manuals, Standard Construction Details, Standard Specifications and various Plans are incorporated herein by reference for all purposes allowed by law, the same as if fully copied herein.

- B. Notwithstanding the provisions of Section 65-9, "Pending applications," of this Code, all applications for plat approval, including final plats and record plats, shall conform to the foregoing Design Manuals, Standard Construction Details, Standard Specifications and/or Plans save and except only to the extent that the application of such regulations are not exempt under Section 245.004 of the Texas Local Government Code. If the applications for plat approval, including final plats and record plats, for a particular project have not lapsed or are not dormant and qualify for consideration under Sections 245.002 and 245.003 of the Texas Local Government Code, such plat applications shall be reviewed under the regulations in effect immediately preceding the effective date of the ordinance from which the individually referenced Design Manuals, Standard Construction Details, Standard Specifications or Plans is derived. However, a property owner may opt, at the owner's sole discretion, that such a plat instead be reviewed under the then current Design Manuals, Standard Construction Details, Standard Specifications and/or Plans referenced."

## **SECTION 5. CUMULATIVE REPEALER**

This Ordinance shall be cumulative of all other Ordinances and shall not repeal any of the provisions of such Ordinances except for those instances where there are direct conflicts with the provisions of this Ordinance. Ordinances or parts thereof in force at the time this Ordinance shall take effect and that are inconsistent with this Ordinance are hereby repealed to the extent that they are inconsistent with this Ordinance. Provided however, that any complaint, action, claim or lawsuit which has been initiated shall continue to be governed by the provisions of such Ordinance and for that purpose the Ordinance shall remain in full force and effect.

## **SECTION 6. SAVINGS**

All rights and remedies of the City of Farmersville are expressly saved as to any and all violations of the provisions of any Ordinances which have accrued at the time of the effective date of this Ordinance; and, as to such accrued violations and all pending litigation, both civil and criminal, whether pending in court or not, under such Ordinances, same shall not be affected by this Ordinance but may be prosecuted until final disposition by the courts.

## **SECTION 7. SEVERABILITY**

It is hereby declared to be the intention of the City Council of the City of Farmersville that the phrases, clauses, sentences, paragraphs, and sections of this Ordinance are severable, and if any phrase, clause, sentence, paragraph, or section of this Ordinance should be declared unconstitutional by valid judgment or final decree of any court of competent jurisdiction, such unconstitutionality shall not affect any of the remaining phrases, clauses, sentences, paragraphs, or sections of this Ordinance, since the same would have been enacted by the City Council without incorporation in this Ordinance of any such unconstitutional phrase, clause, sentence, paragraph, or section.

## **SECTION 8. GOVERNMENTAL IMMUNITY**

All of the regulations provided in this ordinance are hereby declared to be governmental and for the health, safety and welfare of the general public. Any member of the City Council or any City official or employee charged with the enforcement of this ordinance, acting for the City of Farmersville in the discharge of his/her duties, shall not thereby render himself/herself personally liable; and he/she is hereby relieved from all personal liability for any damage that might accrue to persons or property as a result of any act required or permitted in the discharge of his/her said duties.

## **SECTION 9. INJUNCTIONS**

Any violation of this ordinance can be enjoined by a suit filed in the name of the City of Farmersville in a court of competent jurisdiction, and this remedy shall be in addition to any penal provision in this ordinance or in the Code of the City of Farmersville.

## **SECTION 10. ENGROSSMENT AND ENROLLMENT**

The City Secretary of the City of Farmersville is hereby directed to engross and enroll this Ordinance by copying the exact Caption and the Effective Date clause in the minutes of the City Council of the City of Farmersville and by filing this Ordinance in the Ordinance records of the City.

## **SECTION 11. EFFECTIVE DATE**

This Ordinance shall take effect immediately from and after its passage and publication of the caption as required by law.

**PASSED** on first reading on the \_\_\_\_\_ day of July, 2016, and the second reading on the \_\_\_\_\_ day of \_\_\_\_\_, 2016, at properly scheduled meetings of the City Council of the City of Farmersville, Texas, there being a quorum present, and approved by the Mayor on the date set out below.

**APPROVED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2016.**

**APPROVED:**

\_\_\_\_\_  
Diane Piwko, Mayor

**ATTEST:**

\_\_\_\_\_  
Paula Jackson, Interim City Secretary

# **CITY OF FARMERSVILLE, TEXAS**



## **STANDARD SPECIFICATIONS**

Adopted \_\_\_\_\_

By Ordinance # \_\_\_\_\_

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## **SECTION 1001 EARTHWORK**

### **PART 1 - GENERAL**

#### **1.1 SCOPE OF WORK**

- A. The earthwork consists of operations required for excavation, non-expansive earth fill; structure backfill and general earth fill, as may be required during development of the project. The term "embankment" as used in this section refers to the compacted earth fill required for structure pads, roadway embankment fill, and miscellaneous related fill. The "subgrade" refers to the surface of the cleared and stripped areas that are designated to receive fill roadways or structures.
- B. The CONTRACTOR shall inform and satisfy himself as to the character, quantity, and distribution of material to be excavated.
- C. In the event of a conflict between this specification and project plans (drawings) then the plans will take precedence.

#### **1.2 WORK AFFECTING EXISTING UTILITIES**

Above or below grade utilities, which are to remain, shall be protected by the CONTRACTOR. Existing utilities shall not be taken out of service without specific written authorization by the CITY OF FARMERSVILLE.

#### **1.3 PROTECTION**

- A. Protect trees, shrubs, lawns, and other features remaining as part of the final landscaping.
- B. Protect benchmarks, existing structures (not being removed), fences, roads, and paving.
- C. Notify the ENGINEER of unexpected subsurface conditions.
- D. Where damage could result from continuing work, discontinue work in area until ENGINEER notifies CONTRACTOR of the required modifications.

### **PART 2 - PRODUCTS**

#### **2.1 EQUIPMENT**

- A. CONTRACTOR shall furnish, operate and maintain all equipment required to complete this project, including, but not limited to, the following:
- B. Grading Equipment: Equipment necessary to produce uniform layers, sections, and smoothness of grade for compaction and drainage.
- C. Miscellaneous Equipment: Scarifiers, disks, spring tooth or spike tooth harrows, earth hauling equipment and other equipment suitable for removal of material from excavations and for the construction of fills.

#### **2.2 TOPSOIL**

Source: Topsoil shall be obtained from excavation and fill areas. Strip and stockpile the top six (6) inches of material from such areas.

### **PART 3 - EXECUTION**

#### **3.1 CLEARING, GRUBBING AND STRIPPING**

- A. All areas to be excavated or to receive earth fill, roadways, structures, or other such facilities, shall be cleared, grubbed, and stripped prior to excavation and subgrade preparation.
- B. Clearing and grubbing shall consist of the removal of all trees, large vegetation, abandoned structures, and debris, including all roots 1 inch or larger in diameter, to a minimum depth of eighteen (18) inches below the proposed subgrade level. For areas to be planted or sodded and surfaced to a depth of a (24") twenty-four inches below finished grade in areas to be covered by a building or structure.



- C. Stripping shall consist of the removal of all topsoil, roots, vegetation, and rubbish not removed by the clearing and grubbing operation. Additionally, any other unsatisfactory material shall be removed from the subgrade area of future compacted fills or embankments, and from the surfaces underneath the future roadways or other structures. The stripped areas shall be observed to determine if additional excavation is required to remove weak or otherwise unsuitable materials that would adversely affect the fill placement.
  - D. Dispose of removed obstructions and debris off-site in accordance with local requirements.
- 3.2 SUBGRADE PREPARATION
- A. The subgrade shall be firm and able to support the construction equipment without displacement. Soft or yielding subgrade shall be corrected and made stable before construction proceeds. The subgrade shall be proof rolled to detect soft spots, which if exist, shall be reworked. Proof rolling shall be performed using a heavy pneumatic tired roller, loaded dump truck, or similar equipment weighing approximately 25 tons. The proof rolling operations will be observed by the project geotechnical engineer. The sides of stump holes or other similar cavities or depressions shall be broken down to flatten the slopes (no steeper than 4 horizontal to 1 vertical), with the sides of the cuts or holes being scarified to provide bond between the foundation soils and the embankment fill. Each depression or hole shall be filled with the same type of material, which is to be placed immediately above the foundation soil.
  - B. Existing hillsides or slopes, which will receive fill, shall be loosened by scarifying or plowing to a depth of not less than 8 inches. The fill material shall be benched into the existing slope in such a manner as to provide adequate bonding between the fill and slope, as well as to allow the fill to be placed in essentially horizontal lifts.
  - C. Prior to placement of compacted fill in any section of the embankment, after depressions and holes have been filled, the foundation of such sections shall be compacted to the same density and moisture requirement as the embankment.
  - D. In areas of the subgrade, which are too soft, wet or otherwise unstable to allow embankment construction to begin, the use of plating and/or plating in combination with "GEOGRID" soil reinforcement or approved equal, may be required.
  - E. The traffic of heavy equipment, including heavy compaction equipment, may create pumping and general deterioration of the shallower clay soils. Therefore, it shall be anticipated that some construction difficulties will be encountered during periods when these soils are saturated. The clayey, sandy, and silty soils may have to be excavated, mixed, dried, and replaced. At times, excavating and replacing with selected soils, the use of lime or cement treatment, or the use of geo-synthetic materials may be required before an adequate subgrade can be achieved.
- 3.3 PLACING OF MATERIAL
- A. Embankment materials shall be placed on a properly prepared subgrade as recommended above. The combined excavation, placing and spreading operation shall be done in such a manner to obtain blending of material, and to provide that the materials, when compacted in the embankment, will have the most practicable degree of compaction and stability. Materials excavated from cut sections and hauled to construct fills must be mixed and not segregated. Sands and clayey sands shall be blended with sandy clays and clays, rather than having lifts of non-cohesive sandy materials.
  - B. If the surface of the embankment is too smooth and hard to bond properly with a succeeding layer, the surface shall be roughened and loosened by disking before the succeeding layer is placed.
  - C. Where fill is to be placed next to existing fill, that fill shall be removed to unweathered, dense material. Each layer shall be benched and disked as adjoining lifts are placed. Material hauling equipment shall be so routed over the embankment surface to distribute the added compaction afforded by the rolling equipment, and to prevent the formation of ruts on the embankment surface.

- D. The surface of the fill shall be graded to drain freely and maintained throughout construction. During the dumping and spreading process, all roots and debris and all rocks greater than four (4) inches in maximum dimension shall be removed from the embankment materials. No rocks shall be allowed within the final 8 inches of subgrade.

### 3.4 PROCESSING AND MOISTURE-DENSITY CONTROL

- A. Following the spreading and mixing of the soil on the embankment, it shall be processed by disking or pulverizing throughout its thickness to break up and reduce clod size, and provide additional blending of materials. Processing shall consist of at least five passes of a fully penetrating disc plow or three passes of a fully penetrating roto-till pulverize. Additional passes of the processing equipment shall be performed as necessary to accomplish breaking up, reduction of clod size, and blending the fill. Each successive pass of the processing equipment shall be in a direction perpendicular to the previous pass, where working space permits. The maximum recommended loose lift thickness prior to compaction is eight (8) inches. The moisture content of the soil shall be adjusted, if necessary, by either aeration or the addition of water to bring the moisture content within the recommended range. Water required for sprinkling to bring the fill material to the proper moisture content shall be applied evenly through each layer.
- B. Any layers, which become damaged by weather conditions, shall be reprocessed to meet recommended requirements. The compacted surface of a layer of fill shall be lightly loosened by disking before the succeeding layer is placed.
- C. When the moisture content and the condition of the fill layer are satisfactory, compaction shall be performed with a heavy tamping foot roller with fully penetrating feet (feet long enough to penetrate into the previous lift) towed either by a crawler-type tractor or by the self-propelled type. The tamping foot roller shall weigh no less than 2,000 pounds per linear foot of drum width. Vibratory tamping rollers are recommended for compacting sandier fill materials.
- D. The in-place density of the fill shall be no less than 95 percent of the maximum dry density as determined by ASTM D698, Standard Proctor. At a moisture content between optimum and 5 percentage points wet of optimum moisture content for all low-permeability earth fill zones (liners, cores, etc.), and between 2 percentage points below to 5 percentage points above optimum moisture content for non-expansive earth fill zones and general earth fill zones. The moisture content and density of all fill material shall be maintained at the specified range of moisture and density. These moisture ranges represent the maximum limits. It is possible under some circumstances or with some soils, that a more narrow range, within the recommended limits, will be necessary to consistently achieve the recommended density. In order to help provide a homogeneous earth fill mass, a minimum of eight passes of the tamping foot roller shall be provided, even if the recommended density is achieved with fewer passes.
- E. Field density tests (including moisture content) shall be taken as each lift of fill material is placed. A minimum of one field density test per lift for each 2,500 square feet of compacted area is required. For small or critical areas, the frequency of testing shall be reduced to one test per 1,000 square feet or less. A minimum of two density tests shall be taken on each lift, regardless of size. The earthwork operations will be observed and tested on a continuing basis by an experienced geotechnical technician working in conjunction with the project geotechnical engineer.
- F. Each lift shall be compacted, tested, and approved before another lift is added. The actual quality of the fill, as compacted, shall be the responsibility of the CONTRACTOR and satisfactory results from the tests shall not be considered as a guarantee of the quality of the CONTRACTOR's filling operations.

### 3.5 STRUCTURE BACKFILL PLACEMENT AND COMPACTION

The backfill material shall be placed in maximum 8-inch lifts and compacted to a density ranging between 95 and 100 percent of maximum Standard Proctor (ASTM D698) dry density at a moisture content ranging from 2 percentage points below optimum to 5 percentage points above optimum for

the backfill materials. Caution shall be exercised not to over compact the backfill. Hand-operated tampers or other lightweight compactors are required in the 5-foot area adjacent to the wall or other structure. Non-expansive earth fill shall be used for structure backfill. The lift thickness shall be reduced to 4 inches for those areas where hand-operated compactors are required. The backfill surface shall slope away from the structure on a gradient of 1.5 to 3 percent, such that surface water does not pond adjacent to the structure within the backfill zone. Topsoil and seeding shall be accomplished to help prevent drying and cracking of the backfill surface. The slope shall be maintained on a 1.5 to 3 percent gradient after topsoil is placed.

### 3.6 TRENCH BACKFILL

- A. Trench backfill for pipelines or other utilities shall be properly placed and compacted. Non-expansive earth fill shall be used for trench backfill. Free draining granular material shall not be used. The non-expansive soil backfill shall be placed in approximate 4 to 6 inch loose lifts. The density and moisture content shall be as recommended for non-expansive fill in Subsection 3.4 Processing and Moisture-Density Control, of this specification, except all non-expansive backfill above the spring line of the pipes, in sections of the trench underneath pavements, shall be compacted to a minimum of 100 percent of maximum dry density (ASTM D698). In areas where granular backfill is used, it shall be compacted, with a vibratory compactor, to a minimum of 95 percent of maximum density as determined by ASTM D4253, at a moisture content that will facilitate compaction. A minimum of one field density test shall be taken per lift for each 150 linear feet of trench, with a minimum of two tests per lift. In restricted areas where compaction of non-expansive earth fill is not practical, flowable fill shall be used.
- B. Where lean concrete fill or flowable fill is used, each lift or section shall be allowed to reach initial set as required to provide the intended support, prior to the next lift or section being placed. The lean concrete fill or flowable fill will not require compaction.

### 3.7 EARTH FILL AND FLOWABLE FILL MATERIALS

- A. The following information is provided to define the requirements for the various earth fill and flowable fill materials for construction of the project:
- B. Non-Expansive Earth Fill: The non-expansive earth fill shall consist of soil materials with a liquid limit of 35 or less, a plasticity index between 4 and 15, a minimum of 35 percent passing the No. 200 sieve, a minimum of 85 percent passing the No. 4 sieve, and which are free of organics or other deleterious materials. When compacted to the recommended moisture and density, the material shall have a maximum free swell value of 0.5 percent under a maximum seating pressure of 2 psi and a maximum hydraulic conductivity (permeability) of 1 E-05 cm/sec, as determined by laboratory testing of remolded specimens of the actual materials proposed for the non-expansive earth fill.
- C. Low-Permeability Earth Fill: The low-permeability earth fill shall consist of soil materials classified as CH or CL in accordance with ASTM D2487 - *Classification of Soils for Engineering Purposes*. The materials also shall have a minimum liquid limit of 35, a minimum plasticity index of 18, a minimum of 85 percent passing the No. 4 sieve, and shall be free of organics or other deleterious materials. The material shall have Percent Dispersion of less than 20 when tested in accordance with ASTM D4221, STANDARD TEST METHOD FOR DISPERSIVE CHARACTERISTICS OF CLAY SOIL BY DOUBLE HYDROMETER. When compacted to the recommended moisture and density, the material shall have a maximum hydraulic conductivity of 1 E-07 cm/sec, as determined by laboratory testing of remolded specimens of the actual materials proposed for the low-permeability fill.
- D. General Earth Fill: The general earth fill shall consist of any soil materials which have a minimum plasticity index of 8, a minimum of 20 percent passing the No. 200 sieve, a minimum of 85 percent passing the No. 4 sieve, and which are free of organics or other deleterious material.
- E. Flowable Fill: Flowable fill shall consist of a low-cement content ready-mix material with high flow properties. The mix shall consist of approximately one part Portland cement to three parts

fly ash, by weight with sufficient amounts of aggregate, high air generator or foaming agent, and water to produce a 28-day compressive strength in the range of 25 to 200 psi. The flowable fill shall have a maximum hydraulic conductivity of one (1) E-05 cm/sec after curing for seven (7) days. The material shall have an initial set time (walkable surface) of 24 hours or less. The flowable fill shall provide full support to pipeline, adjacent earth walls, structures, or other such facilities, after initial set, but shall be of a low enough compressive strength after reaching final strength to allow future excavation with ordinary small excavation equipment.

- F. The CONTRACTOR shall be required to submit an appropriate mix design along with laboratory test results on the flowable fill prior to beginning work on this item.
- G. **Solid Rock:** In order for any rock material to be considered as solid rock, it shall meet all of the following criteria:
1. The rock shall be massive and in a continuous layer at least 2 feet thick.
  2. The rock shall have an unconfined compressive strength greater than 80 ksf.
  3. The rock shall not be able to be ripped from a starter trench in an open cut excavation with a D-9 "Caterpillar" (or equivalent) bulldozer with a single tooth ripper. Or in a trench excavation with a 235C "Caterpillar" (or equivalent) track hoe excavator equipped with a nominal 30-inch wide extreme service trenching bucket with front and rear mounted rock ripper teeth.

Boulders and cobbles, whether in densely spaced layers or occasional occurrence, shall not be classified as solid rock, regardless of the hardness of the individual boulders or cobbles.

- H. **Compliance Testing** Representative samples of the actual soil materials proposed for use in the various earth fill zones shall be initially tested for compliance with the recommendations by the project geotechnical engineer, prior to use of the materials as fill. The testing program shall continue through construction as a means to verify that the earth fill materials being placed continue to meet the recommended requirements.

### 3.8 EARTH FILL ZONE

- A. Table 1 specifies for the various earth fill zones.

TABLE 1 – EARTH FILL ZONES		
ITEM	ZONE	EARTH FILL MATERIAL
Embankment Fill for structures, pavements and flatwork	Top 10 Feet	Non-Expansive
Embankment Fill for structures, pavement and flatwork	Below 10 Feet	General
Structure Backfill	All	Non-Expansive
Trench Backfill beneath present or future structures, pavements and flatwork	All (exclusive of lean concrete or flowable fill zones)	Non-Expansive
Trench Backfill more than 5 feet outside the limits of present or future structures, pavements and flatwork	To 1 foot above top of pipe (exclusive of lean concrete or flowable fill zones)	Non-Expansive
Trench Backfill more than 5 feet outside the limits of present or future structures, pavements and flatwork	From 1 foot above top of pipe and upward pavements and flatwork	General
General Embankments more than 5 feet outside the limits of present and future structures, pavements	All	General
General Site Grading where no	Top 1 Foot	General



slopes or deep fills are involved		
General Site Grading where no slopes or deep fills are involved	Below 1 Foot	Common
Seepage plugs around pipes, and liners/barriers	All	Low-Permeability

B. Other specific recommendations for earth fill materials and for aggregate fill materials are also presented in other sections of these Specifications.

### 3.9 ACCEPTANCE OF IMPORTED FILL

Any soil imported from off-site sources shall be tested for compliance with the recommendations for the particular application and approved by the project geotechnical engineer prior to the materials being used. The CITY OF FARMERSVILLE will also require the CONTRACTOR to obtain a written, notarized certification from the landowner of each proposed off-site soil borrow source stating that to the best of the landowner's knowledge and belief there has never been contamination of the borrow source site with hazardous or toxic materials. The certification shall be furnished to the CITY OF FARMERSVILLE prior to proceeding to furnish soils to the site. The CONTRACTOR shall be required to provide the services of an EPA approved laboratory to perform, as a minimum, a toxic contaminant scan of composite soil. Samples representative of each separate proposed borrow source, in accordance with EPA protocol for the list of contaminants contained in the 40 CFR, Part 261, Appendix VIII, by EPA methods SW-846, prior to importing the soil borrow. Any potential off-site borrow on which the test results indicate the presence of contaminants above background levels shall be rejected. Soil materials derived from the excavation of underground petroleum storage tanks shall not be used as fill on this project.

### 3.10 EXCAVATION

- A. Temporary slopes of 2-horizontal to 1-vertical and flatter shall be used for this site. In all cases, the requirements of the Occupational Safety and Health Administration (OSHA) must be followed. The CONTRACTOR shall monitor the slope stability by observation and measurement, and to prevent excessive loads (especially heavy vibratory loads) from being applied to the slope. The CONTRACTOR shall be responsible for maintaining the slopes in a safe condition during construction and the use of slope stability monitoring equipment shall be used.
- B. The side slopes of excavations through the overburden soils shall be made in such a manner to provide for their stability during construction. Structures, pipelines or other facilities which are constructed prior to or during the currently proposed construction and which require excavation, shall be protected from loss of end bearing or lateral support.
- C. Temporary construction slopes and/or permanent embankment slopes shall be protected from surface runoff water. Site grading shall be designed to allow drainage at planned areas where erosion protection is provided, instead of allowing surface water to flow down unprotected slopes.
- D. Drainage: During excavation, maintain grades for complete drainage. Install temporary drains or drainage ditches as needed to intercept or divert surface water and prevent interference or delay the work. The pumping of water shall be included in the bid items. No separate payment will be made for drainage control and pumping.
- E. The CONTRACTOR shall comply with all applicable safety regulations concerning trench safety and excavations, including, but not limited to OSHA regulations.

### 3.11 DEWATERING OF EXCAVATIONS

- A. Ground water may be encountered within the excavations. The CONTRACTOR shall be responsible for selecting and providing appropriate excavation dewatering systems for use during construction.

- B. The dewatering method selected shall be capable of lowering and continuously maintaining the ground water surface a minimum of 3 feet below the base of all excavations throughout the construction period. The CONTRACTOR shall be required to provide adequate personnel and equipment to operate and maintain the dewatering system on a 24-hour basis, as required.

**3.12 SOIL CORROSION AND REACTION POTENTIAL**

The clays at this site may be corrosive. Standard construction practices for protecting metal pipe and similar facilities in contact with these soils shall be used.

**3.13 EROSION AND SEDIMENT CONTROL**

All disturbed areas shall be protected from erosion and sedimentation during construction, and all permanent slopes and other areas subject to erosion or sedimentation shall be provided with permanent erosion and sediment control facilities. All applicable ordinances and codes regarding erosion and sediment control shall be followed.

END OF SECTION

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## SECTION 1002 ROCK RIPRAP

### PART 1 - GENERAL

#### 1.1 SCOPE OF WORK

- A. Erosion protection of drainage channel side slopes including placement of:
  - 1. Geotextile fabric; or
  - 2. Filter blanket material; and
  - 3. Stone riprap.
- B. In the event of a conflict between this specification and project plans (drawings) then the plans will take precedence.

#### 1.2 QUALITY ASSURANCE

- A. Standards and Applicable Specification:
  - 1. ASTM C88: *Test for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.*
  - 2. ASTM C127: *Test for Specific Gravity and Absorption of Coarse Aggregate.*
  - 3. ASTM C136: *Test for Sieve or Screen Analysis of Fine and Coarse Aggregates.*
  - 4. ASTM C535: *Test for Resistance to Abrasion of Large Size Coarse Aggregate by Use of the Los Angeles Machine.*
  - 5. ASTM D75: *Sampling Aggregates.*

#### 1.3 SUBMITTALS

- A. Submittals shall be prepared and submitted in accordance with the Contract Documents.
- B. Submit Record Data on geotextile fabric, tests for filter blanket and riprap for compliance with specifications.

#### 1.4 MATERIALS

- A. Sources and Evaluation for Compliance:
  - 1. All material for filter blanket and riprap protection work shall be produced from approved sources, and tested for compliance with specification.
  - 2. Tests to which the material may be subjected include specific gravity, adsorption, unit weight, Los Angeles Abrasion, soundness, freezing and thawing, wetting and drying, petrographic analysis, and such other tests as may be considered necessary to demonstrate the source will produce materials which are acceptable for use in the Work.
  - 3. Tests may be conducted either by source supplying materials or an independent laboratory. The CONTRACTOR shall be responsible for all costs associated with compliance testing, all of which will be considered subsidiary to construction, and no separate measurement and payment will be made.
  - 4. The CONTRACTOR shall furnish the CITY OF FARMERSVILLE with written certification from independent laboratory or supplier of material that riprap and filter blanket material comply with the conditions set forth in the specifications.
- B. Filter Blanket Material:
  - 1. Composition:
    - a. Composed of tough durable particles.
    - b. Reasonably free from thin, flat and elongated pieces.
    - c. Well graded between the prescribed limits as specified.
    - d. Contain no organic matter or soft, friable particles in quantities greater than 1 percent by weight.
  - 2. Material shall meet the following specific requirements:
    - a. Resistance to Abrasion: Maximum percentage of wear shall be 40 after 1,000 revolutions, as determined by ASTM C 535, Grading 1.
    - b. Soundness: Maximum loss shall be 25 percent weighted average at 5 cycles when tested for soundness in compliance with ASTM C88.



c. Gradation:

Filter Blanket

Sieve Size or No	Percent Passing By Weight
8"	100
6"	93-100
4"	83-98
2"	63-80
3/4"	35-55
No. 4	2-5
No. 10	0-10

- d. In addition, the right is reserved to perform such other tests as may be considered necessary to determine the acceptability of the material. Additional testing as required will be at the expense of the CITY OF FARMERSVILLE. In the event the materials fail to meet the requirements specified, the tests shall be at the expense of the CONTRACTOR.

- e. Install filter blanket material to a 6" minimum thickness, unless otherwise noted.

C. Riprap Stone:

1. Composition:

- Durable and of such quality to insure permanence in the structure and in the climate in which it is to be used.
- Free from cracks, seams and other defects which would tend to increase unduly its deterioration from natural causes.
- Reasonably well graded within the specified limits.

2. Material shall meet the following specific requirements:

- Weight: The weight shall be 165 pounds per solid cubic foot minimum calculated from the bulk specific gravity (saturated surface dry) of the sample, determined in compliance with the procedure in ASTM C127.
- Resistance to Abrasion: The maximum percentage of wear shall be 40 after 1000 revolutions as determined by ASTM C 535, Grading 1.
- Soundness: Maximum loss shall be 25 percent weighted average at five cycles when tested for soundness in compliance with ASTM C 88, using particles passing a 2-1/2" sieve and retained on a 1-1/2" sieve. After final drying the material shall be screened over a 1-1/4" sieve.

d. Gradation:

- 1) Install riprap to an 18" minimum thickness using the following graded stone:

18" Riprap

Sieve Size or No	Percent Passing By Weight
24"	65-100
18"	55-75
12"	15-40
8"	5- 20
6"	0-10

- 2) Shake and wash sample through sieves.

- e. Shape: Neither the breadth nor the thickness of any piece of riprap shall be less than one-third of its length. Stones shall be angular in shape.

**D. GEOTEXTILE FABRIC**

1. The geotextile fabric shall be inert to commonly encountered chemicals, hydrocarbons, mildew and rot resistant, resistant to ultraviolet light exposure, insect and rodent resistant, and conform to the properties in the following table.

<u>Physical Properties</u>	<u>Average Roll Minimum Value (Weakest Principal Direction)*</u>
Grab Tensile Strength* ASTM D-4632 (Lbs.)	200
Elongation at Failure* ASTM D-4632 (%)	60
Mullen Burst Strength ASTM D-3786 (psi)	320
Water Flow Rate (gal/min/ft <sup>2</sup> ) ASTM D-4491	100
AOS (0 <sub>95</sub> ) MM, ASTM D-4751	0.3
Trapezoid Tear Strength* ASTM D-4533 (Lbs.)	60
Permeability – k (cm/sec) ASTM D-4491	0.1
Puncture Resistance ASTM D-4833 (modified) (Lbs.)	80

2. The average roll minimum value (weakest principal direction) for strength properties of any individual roll tested from the manufacturing lot or lots of a particular shipment shall be in excess of the average roll minimum value (weakest principal direction) stipulated herein.

**E. Cost of Testing:**

Testing as required will be at the expense of the CONTRACTOR.

**PART 2 - PRODUCTS**

**2.1 COMPOSITION**

- A. Geotextile shall be non-woven fabric consisting only of continuous chain polymer filaments or yarns of polyester, formed into a stable network by needle punching.  
Acceptable Products and Manufacturers:
  1. Trivera -1125
  2. Auline - Q80
  3. Polyfilter - FX80NW
- B. Stone for riprap shall be durable stone. Filter blanket material shall be crushed, angular stone approved for riprap or filter blanket material. Riprap and filter blanket material shall meet the specified gradations.

**PART 3 - EXECUTION**

**3.1 PREPARATION OF FOUNDATION**

- A. Trim and dress areas on which the filter blanket layers or geotextile fabric are to be placed.
- B. Immediately prior to placing the geotextile fabric or filter blanket, the prepared base will be inspected and no material shall be placed thereon until that area meets the requirements of these Specifications and is approved by the CITY OF FARMERSVILLE.
- C. No additional payment will be made for preparation of foundation, but will be considered subsidiary to placement of the riprap.

### 3.2 RIPRAP STONE PLACEMENT

- A. Place 24" minimum thickness riprap unless otherwise shown on the plans, on top of filter blanket or geotextile fabric and within the limits indicated on the Drawings or as directed by the CITY OF FARMERSVILLE.
- B. Place rock riprap on the filter blanket layers or geotextile fabric in such manner as to produce a well-graded mass of rock with the minimum practical percentage of voids.
- C. Construct toe on sides of riprap as shown on the Plans. Toe shall have a minimum width and depth of 2 times the minimum riprap thickness, or as shown on the plans.
- D. Construct within the specified tolerance to the lines and grades indicated on the Drawings or staked in the field.
  - 1. A tolerance of plus 9" or minus 3" from the slope line and grades indicated on the Drawings will be allowed in the finished surface of the riprap in an area not exceeding 1,000 square feet. Such areas shall not be contiguous.
  - 2. Place riprap to its full course thickness in one operation and in such manner as to avoid displacing filter blanket material.
  - 3. The larger stones shall be well distributed and the entire mass of stones in their final position shall comply with the gradation specified. The finished riprap shall be free from objectionable pockets of small stones and clusters of larger stones.
  - 4. Placing riprap in layers will not be permitted.
  - 5. Placing riprap by dumping into chutes, dumping from top of slope, pushing from top of slope, or by methods likely to cause segregation of the various sizes will not be permitted.
  - 6. Obtain specified distribution of the various sizes of stones throughout the mass by selective loading of the material at the quarry or other source, or by other methods of placement which will produce the specified results.
  - 7. Rearranging of individual stones by mechanical equipment or by hand will be required to the extent necessary to obtain a reasonably well graded distribution of stone sizes as specified above.
  - 8. Maintain riprap protection until accepted and replace material displaced by any cause to the lines and grades indicated on the Drawings at no additional cost to the CITY OF FARMERSVILLE.
  - 9. Finished surface of riprap shall not extend above preconstruction grade (contour) except in areas where riprap is placed in eroded areas.
- E. Riprap shall be furnished and installed in the locations designated on the drawings and/or as otherwise directed by the CITY OF FARMERSVILLE.
- F. Any changes and/or alternations will be performed as set forth in the Contract Documents.

### 3.3 FILTER BLANKET PLACEMENT

- A. Place 6" thick minimum filter blanket layer unless otherwise shown on drawings, under riprap and within the limits indicated on the Drawings or as staked in the field.
- B. Spread filter blanket material uniformly on the prepared base to the slope lines and grades indicated on the Drawings, or as directed.
  - 1. Placing of material by dumping from top of slope or by other methods, which will tend to segregate particle sizes within the layers will not be permitted.
  - 2. Repair damage to the surface of the filter blanket base during placing of the filter blanket before proceeding with the work.
  - 3. Compaction of the filter blanket layers will not be required but shall be finished to present a reasonably even surface free from mounds or windows.
  - 4. A tolerance of plus 2" or minus 1" will be allowed.
- C. No additional payment will be made for furnishing and installing the filter blanket material, but will be considered subsidiary to placement of the rock riprap.

### 3.4 GEOTEXTILE FABRIC PLACEMENT

- A. Install the geotextile fabric under the rock riprap as shown on plans. Construction vehicles will not be allowed to traffic directly on the fabric or filter blanket. Overlaps when necessary shall be 36" minimum. Use securing pins when necessary to insure proper anchoring of the fabric, with securing pins spaced at 5 to 10 foot centers. Securing pins shall be 3/16" steel bars, pointed at one end and fabricated with a head to retain a steel washer having an outside diameter of not less than 1-½". The pin length shall not be less than 18". U-shaped pins or special staples shall be an acceptable option, if approved by the ENGINEER.
- B. Place the riprap onto the fabric maintaining design aggregate thickness at all times. Avoid over-stressing the soil by utilizing equipment in spreading and dumping that exerts only moderate pressures on the soil. Severe rutting at the time of placement is an indication of over-stressing the soil. Such soil over-stressing must be avoided. Increasing aggregate depths and reducing loads are two methods of reducing pressures on the soil. Fill any ruts, which develop during spreading or compacting with additional aggregate rather than blading from surrounding areas.
- C. No additional payment will be made for furnishing and installing the geotextile fabric, but will be considered subsidiary to placement of the rock riprap.

END OF SECTION

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## SECTION 1003 SEEDING

### PART 1 - GENERAL

#### 1.1 SCOPE OF WORK

- A. Seeding is required on all areas (unless otherwise stated in the plans) where existing topsoil or vegetation is modified, damaged, or otherwise disturbed during construction of this project and in areas where erosion protection is required.
- B. Seeding work includes:
  - 1. Preparation of subsoil.
  - 2. Placing topsoil.
  - 3. Fertilizing.
  - 4. Seeding.
  - 5. Mulching.
  - 6. Maintenance.
- C. In the event of a conflict between this specification and project plans (drawings) then the plans will take precedence.

#### 1.2 DEFINITIONS

Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

#### 1.3 REGULATORY REQUIREMENTS

Comply with regulatory agencies for fertilizer and herbicide composition.

#### 1.4 QUALITY ASSURANCE

Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

#### 1.5 DELIVERY, STORAGE, AND HANDLING

Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

#### 1.6 MAINTENANCE SERVICE

Maintain seeded areas immediately after placement until grass is well established and exhibits a vigorous growing condition covering 75 percent of the seeded area, with no bare areas larger than one square foot.

#### 1.7 SUBMITTALS

Submit information as to fertilizer, seed type(s), seeding procedures, etc. in accordance with Contractor's Submittals.

### PART 2 - PRODUCTS

#### 2.1 SEED MIXTURE

Seed Mixture:   1) Type 1: Hulled Bermuda  
                          2) Type 2: Rye

#### 2.2 SOIL MATERIALS

Topsoil: Excavated from site and free of weeds, roots, stone and foreign matter.

#### 2.3 ACCESSORIES

- A. Fertilizer: As recommended for grass with the following proportions: Nitrogen, 13 percent; phosphoric acid, 13 percent; and soluble potash, 13 percent, or approved substitute.
- B. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

- C. Erosion Fabric: To be placed on all slopes steeper than 3:1 and other specific locations shown on the Plans.

## PART 3 - EXECUTION

### 3.1 INSPECTION

Verify that prepared soil base is ready to receive the work of this section. Beginning work on this item shall be interpreted as CONTRACTOR's acceptance of existing site conditions.

### 3.2 PREPARATIONS OF SUBSOIL

- A. Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels profiles and contours. Make changes in grade gradual and blend slopes into level areas.
- B. Remove foreign materials, weeds, undesirable plants and their roots, and contaminated subsoil.
- C. Scarify subsoil to a depth of 3" where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

### 3.3 PLACING TOPSOIL

- A. Place topsoil during dry weather and on dry, unfrozen subgrade.
- B. Remove vegetative material and foreign non-organic material while spreading.
- C. Grade to eliminate rough, low, or soft areas, and to ensure positive drainage.

### 3.4 FERTILIZING

- A. Apply fertilizer after smooth raking of topsoil in accordance with manufacturer's instructions at a minimum rate of 200 lb/acre.
- B. Do not apply fertilizer at the same time or with the same machine that will be used to apply seed unless hydro mulching.
- C. Mix fertilizer thoroughly into upper 2" of topsoil.
- D. Lightly water to aid the dissipation of fertilizer.

### 3.5 SEEDING

- A. Apply seed at a rate of 12 lbs per acre (Type 1), or 30 lbs per acre (Type 2) and rake in lightly.
- B. Planting Season:
  - 1. Type 1: April 15 to September 1
  - 2. Type 2: September 1 to April 15.
- C. Do not sow immediately following a heavy rain, when ground is too dry, or during windy periods.
- D. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4".
- E. Grass planting of seed mixture by hydro mulching shall be acceptable. Hydro mulching shall consist of applying water, seed, fertilizer and fibrous mulch and shall generally conform to the requirements listed by the Texas Department of Transportation *Standard Specifications for Construction of Highways, Streets and Bridges*.

### 3.6 SEED PROTECTION

- A. Cover seeded slopes where grade is steeper than 3:1 with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- B. Lay fabric smoothly on surface, bury top end of each section in 6" deep excavated topsoil trench. Provide 3" overlap of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36" intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges a minimum of 6".

### 3.7 MAINTENANCE

- A. City of Farmersville will water to prevent drying of grass and soil.
- B. Control growth of weeds: City of Farmersville will apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- C. Contractor will immediately reseed areas which show bare spots of one square foot and larger.

END OF SECTION



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## SECTION 1004 WATERLINE INSTALLATION

### PART 1 - GENERAL

#### 1.1 SCOPE OF WORK

This work consists of constructing water mains and service branches, including fire hydrants, water meters, service stops, valves, fittings and boxes. The CONTRACTOR shall provide all tools and equipment required for installing these items. The work also includes furnishing all materials, excavating, bedding, laying pipe, jointing, backfilling, hydrostatic testing, disinfection, restoration of disturbed facilities and surfaces, line (location) and grade, disposal of all surplus excavation and discarded materials, and other work necessary to complete the items. In the event of a conflict between this specification and the project plans (drawings) then the plans will take precedence.

#### 1.2 JOB CONDITIONS

A. Control of Water: Provide sufficient pumping equipment in good working order, available at all times, to remove any water that accumulates in excavations. Where the waterline crosses natural drainage channels, conduct work in such a manner that unnecessary damage or delays in the prosecution of the work will be prevented. Make provisions for the satisfactory disposal of surface water pumped so as to prevent damage to public or private property.

B. Protection of Existing Utilities: It shall be the responsibility of the CONTRACTOR to verify the existence and location of all underground utilities along the route of the work. The omission from or the inclusion of utility locations on the Plans is not being considered as the non-existence of, or a definite location of existing underground utilities.

The CONTRACTOR shall take the necessary precautions to protect existing utilities from damage due to his operations. The CONTRACTOR shall notify DIG TESS, Texas One-Call System, and all other utility locator services to request utility locates. In addition, other utilities within the project area shall be notified to locate their utilities. CONTRACTOR shall keep a notebook of all location requests. Each notation will contain the following information: Date, Time, Brief Location Summary, Request ID Number, and Call Back Repair Number. Any damage to the utilities, whether marked or unmarked, will be repaired at the CONTRACTORS expense.

C. Protection of Trees, Plants and Shrubbery:

1. Where trees, plants and shrubbery are adjacent to the line of the work and are not to be removed and replaced, protect such trees, plants, shrubbery, etc., by substantial wooden boxes and guards and do not permit machinery or employees to scrape, tear the limbs from or damage or attach guy cables to them and if, in the opinion of the ENGINEER, such trees, plants and shrubbery would be damaged by machinery, etc., hand excavation may be required. The CONTRACTOR shall be responsible for all damages to adjacent trees, plants and shrubbery.

2. Where waterlines cross lawns, remove the sod for the full width of the excavation. Lawns are defined as those areas where, in the opinion of the ENGINEER, grasses such as Bermuda, St. Augustine, Fescue or other similar grasses generally cover the area being excavated and generally have been kept mowed to a height of 6" or less. Remove sod in squared cut out with a sharp spade, and of such sizes that they may be handled conveniently without breaking. The sod shall be removed in one layer not less than 3" in depth, and shall be carefully stored and given proper attention. During hot, dry weather, the stored sod shall be protected by covering with canvas or burlap. After backfilling is completed, replace sod, tamp and water sod thoroughly.

D. Protection of Streets and Roadways:

1. Where waterlines cross public streets, no more than one-half of the street may be closed at one time and that one-half for only 24 hours. Where waterlines cross plant roadways, an all access road shall be constructed if required to maintain access to any facility served by the severed road. Cover trenches crossing roadways and streets with 1" minimum thickness

steel plates until backfill is complete and compacted. On heavily traveled streets as determined by the ENGINEER, steel plates are to remain in place until street pavement repair is completed. After backfilling trenches in roadways and streets (either crossing or parallel), keep roadways and streets passable at all times. Cover and maintain the top of the trench with at least 4" of compacted flexible base until pavement repair is complete. Keep top of ditch elevation within plus or minus 2" of elevation of adjacent roadway or street. The work described above is not a separate pay item and the cost of labor and materials required to protect streets and roadways is to be included in the lump sum amount or unit price, as applicable.

2. Protect existing pavement, including plant roadways, from damage from heavy equipment and vehicles with lugs throughout construction. Saw cut pavement with a concrete saw before beginning excavation. Saw cuts are to be straight and parallel to the line of work.

### 1.3 GUARANTEE

- A. Guarantee the backfilling of excavation and trenches against excessive (as determined by the ENGINEER) settlement for a period of one year after the final completion of the contract under which the work is performed.
- B. Guarantee the backfilled ditch against erosion and erosional rivulets exceeding 3" in depth. The CONTRACTOR may, at his own cost, place erosion protection including jute mats, sodding, seeding and the like on erosion prone areas.
- C. Make all repairs or replacements necessary by settlement or erosion including refilling and compacting the upper portion of the ditch and repairing broken or settled pavements within ten (10) days after notice from the ENGINEER or CITY OF FARMERSVILLE.

### 1.4 PAYMENT FOR COMPLETED PORTIONS

The CITY OF FARMERSVILLE will pay for ninety-five (95%) percent of the actual quantity of pipe laid and backfilled. The remainder shall be held in retainage.

## PART 2 - PRODUCT

### 2.1 CONCRETE AND REINFORCING STEEL DESCRIPTION

This section covers the materials and installation of concrete and reinforced concrete for paving, structures, slabs, riprap, blocking and encasement.

- A. Concrete: Concrete materials and construction methods should conform to Texas Highway Department Standard Specifications for Construction of Highways, Streets and Bridges except as modified and amended below.

Concrete for manhole base construction, blocking and encasement shall be Class B concrete with a maximum slump of 4".

Concrete for structures and riprap shall be Class A concrete with a maximum slump of 3".

Exposed concrete slabs shall have a steel troweled finish. Exposed riprap shall be float finished.

Concrete for paving shall be Class A concrete with a slump of 1" to 3".

The concrete finish for walking surfaces exposed to the weather shall be broom finished.

- B. Reinforcing Steel: Reinforcing steel shall conform to Texas Highway Department Standard Specifications for *Construction of Highways, Streets and Bridges, Item 440, Grade 60*.
- C. Expansion Joint: Expansion joint material shall be ½" asphalt impregnated fiberboard conforming to ASTM D 1751.
- D. Testing: Compression strength tests shall be performed on all reinforced concrete. The CONTRACTOR shall retain an approved testing laboratory which shall make one compression test set of three cylinders for each day's run or separate pour. Cylinders shall be continuously cured in water until tested. The CONTRACTOR shall pay for and provide two (2) copies of test results to the ENGINEER.

## 2.2 PIPE MATERIALS

No materials shall be utilized which have been used for any purpose other than the conveyance of drinking water. All materials covered in this specification shall be of domestic origin only, unless noted otherwise. Similarly, all materials in this specification shall be American National Standards Institute/National Sanitation Foundation (ANSI/NSF) and American Water Works Association (AWWA) approved. Materials utilized shall conform to applicable current American Society of Testing Materials (ASTM) Standards. The pipe shall be transported to the job site by acceptable transportation methods and the front end of the pipes shall be covered with a tarp to prevent foreign materials from entering pipes. Each load of pipe and other materials delivered to the job-site will be inspected, before unloading, by the INSPECTOR or ENGINEER to assure that it meets specifications. The ENGINEER or CITY OF FARMERSVILLE shall have the right to reject any load of pipe that he feels does not meet the specifications. It will be the CONTRACTOR's and pipe manufacturer's responsibility to determine if any laboratory testing is warranted. The cost of any such testing will be borne by the CONTRACTOR. Any pipe with bell or gasket damage shall be immediately rejected and replaced at no additional cost to the CITY OF FARMERSVILLE.

The use of pipes and pipe fittings that contain more than 8.0% lead or solder and flux that contains more than 0.2% lead is prohibited.

All plastic pipe used in public water systems must also bear the National Sanitation Foundation Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less.

**PVC Pipe Materials:** PVC pipe shall conform to AWWA C900, AWWA C905, AWWA C909 (Molecularly Oriented Polyvinyl Chloride (PVCO), C.I.O.D.), ASTM F1483 (Molecularly Oriented Polyvinyl Chloride (PVCO), I.P.S.) or ASTM D2241. Pipe joints shall be push-on type with a thickened bell, and shall conform to ASTM D3139 with a rubber gasket conforming to ASTM F477.

Qualification for potable-water service: PVC, PE, or PB compounds used to make pipe and couplings, as well as solvent cements used, shall contain no ingredient in an amount that has been demonstrated to migrate into water in quantities considered to be toxic, as tested in accordance with Sections 3 and 4 of National Sanitation Foundation (NSF) Standard Number 14. Such compounds or products shall be tested and certified as suitable for portable-water distribution products by the NSF Testing Laboratory or the Canadian Standards Association Testing Laboratory, or any other similarly accredited testing agency acceptable to the Laboratory.

- A. **Steel Pipe Materials:** Steel casing pipe shall conform to ASTM A252 Grade 2 with a minimum wall thickness of 0.250 inch.
- B. **Ductile Iron Pipe Materials:** Ductile iron pipe shall conform to ANSI/AWWA C151/A21.51 and to ANSI/AWWA C150/A21.50 for thickness design. The pipe shall be furnished with a cement mortar lining conforming to ANSI/AWWA C104/A21.4. A gasket conforming to ANSI/AWWA for each length of pipe and suitable for the type of joint of the pipe shall be furnished and shipped in a separate container.

Push-on and mechanical joints shall conform to ANSI/AWWA C111/A21.11.

Boltless restrained joints shall conform to ANSI/AWWA C111/A21.11. The restraint shall be an approved design which provides a positive lock against joint separation. Steel locking segments molded into a gasket to grip the pipe do not meet the requirements for this joint.

Ball and socket joints are suited for underwater installations and may be used for other types of installations where an appreciable amount of joint deflection and a positive lock against joint separation are required.

Fittings for ductile iron pipe shall be manufactured in accordance with ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53, and ANSI/AWWA C111/A21.11. Fittings 406 mm (16-inch) or larger shall be manufactured of ductile iron only. Fittings shall be cement mortar lined in accordance with ANSI/AWWA C104/A21.4.

- C. Polyethylene Pipe Materials: PE pipe and fittings shall conform to AWWA C901. The pressure class shall be 200 unless otherwise indicated on the plans. Material shall be furnished with plain ends and meet the requirements of DR9 IPS for potable waterlines.
- D. Copper Tubing Materials: Copper service branches shall conform to ASTM B 88M (B 88) Type K, and be assembled using flare-type compression fittings conforming in AWWA C800. Minimum working pressure for the branches shall be 1.0 MPa (150 psi). The material shall be either coil type (temper 060 annealed) or drawn type (temper H). Fittings for copper service branches shall be high quality copper brass with AWWA C800 dimensions.
- F. Brass Materials: Brass shall conform to the requirements of current specification ANSI B 16.5 and ASTM B584.

### 2.3 FIRE HYDRANTS:

Fire hydrants shall be Mueller or approved equal, and shall conform strictly to the latest edition of AWWA specification C-502, with the following changes or additions and supplementary details where applicable:

- Type of shut-off shall be compression.
- Inlet connection shall be 6" standard mechanical joint, complete with all joint accessories. Inlet valve shall have not less than a 5" opening.
- All hydrants shall be equipped with two 2-2" hose nozzles and one 4-2" steamer nozzle.
- The hydrant bury shall be 3-2" plus the diameter of the main to which it is connected, rounded to the nearest half foot or as shown on plans.
- A drain opening will be required and drain valves operating by springs or gravity is not acceptable.
- All fire hydrants shall open by turning to the left (counterclockwise).
- All fire hydrants shall be primed with a suitable rust inhibiting metal primer. After installation, hydrants shall be painted with two coats of bright red machinery enamel or color as indicated on plans.
- The body of the hydrant shall be equipped with a breakable flange, or breakable cast iron flange bolts just above the grade line.
- All hydrants shall be of such design as will permit their extension without excavating in case of future grade changes.
- The complete hydrant shall be of such design that when the hydrant barrel is broken through traffic collision, it may be replaced without excavating or breaking the pavement. The barrel and operating mechanism shall be so designed that in case of accident, damage or breaking of the hydrant above or near the grade level, the main valve will remain reasonably tight against leakage or flooding.
- All hydrant installations shall include a swivel coupling as may be necessary.
- Fire hydrants shall be located as shown on the plans or as directed by the ENGINEER and shall be set truly vertical at finish grade height with the base resting up on a stone or concrete slab four (4) inches thick approximately twenty-four (24) inches square. The base of the hydrant shall be surrounded by not less than five (5) cubic feet of clean crushed stone or gravel, size one (1) inch to two (2) inches. Pipe joints shall be made as specified for pipe laying. The hydrants shall be carefully and substantially blocked against firm trench walls with sound stone, sound slabs of old concrete or 2,000 psi concrete, but no additional pay will be allowed for same.
- Where required by local code requirements or as shown on the plan sheets, street reflectors indicating the presence of a fire hydrant shall be installed.
- All fire hydrants shall be painted in accordance with the local code requirements, manufacturer's specifications, and CITY OF FARMERSVILLE's requirements unless otherwise shown on the plan sheets.



#### 2.4 SERVICE LINES:

The service lines shall be as follows: ¾" and 1" -- Type K Copper or HDPE Polyethylene 1-2" and larger -- Type K Copper, HDPE Polyethylene, or 200 psi PVC or other material as may be shown on the plans.

#### 2.5 METER BOXES:

Meter boxes shall be as indicated on the plan sheets and approved by the ENGINEER or CITY OF FARMERSVILLE.

#### 2.6 VALVES

- A. Gate Valves: Gate valves shall be designed for a minimum water working pressure of not less than 150 psi. Valves shall be FIP, Flanged or MJ as required for the piping in which they are installed. Valves shall be resilient seat only. Gate valves shall have a clear waterway equal to the full nominal diameter of the valve, and shall be opened by turning counterclockwise. The operating nut (underground) or wheel (above ground) shall have an arrow, cast in the metal, indicating the direction of opening. Each valve shall have the maker's initials, pressure rating and a year of manufacture cast on the body. Prior to shipment from the factory, each valve shall be tested by hydraulic pressure equal to twice the specified hydrostatic working pressure. Valves two inches and larger shall be square operating nut, brass mounted, double disc, non-rising screw and shall conform to the requirements of the AWWA Standard C515, or to Federal Specification WW V-58, Class A. Smaller valves shall be brass or bronze, in accordance with Federal Specification WW-V-54. Gate valves shall be Mueller Mechanical Joint Resilient Seat Gate Valve Open Left or approved equivalent. Handwheel valves only allowed in above ground application.

All valves shall be installed as shown on the plans, and in accordance with the appropriate material specifications. For each gate valve, the CONTRACTOR shall furnish and install a valve box as shown on plans.

Valves shall be carefully handled and lowered into position in such a manner as to prevent damage to any parts of the valve. Gate valves shall be supported by a concrete block.

Valves shall be placed in such positions as indicated on the plans with the stem in a vertical position and securely held until all connections have been made.

Gate valves and pipefittings shall be set and jointed to new pipe in the manner described herein for cleaning, laying and jointing pipe. Mechanical joint valves will be installed unless specified otherwise.

- B. Check Valves: Unless otherwise specified, all check valves for service taps will be the silent spring loaded double check type as approved by the ENGINEER or CITY OF FARMERSVILLE. Water Distribution check valves shall be weight and lever type as manufactured by Watts, Mueller, Clow, or approved equal or as shown on plans.
- C. Air Valves: Air valves shall be the float and lever type, or equal, or the vacuum breaker type, as is manufactured by the APCO No. 145C or approved equal or as shown on plans.
- D. Miscellaneous Valves: Flush, blow-off, air relief and pressure-regulating valves shall be of types and sizes and at the location shown on the Plans. All valves and associated materials shall be of domestic origin. Pressure regulating valves shall be of the quality to provide the utmost protection for service lines. Air-relief and pressure regulating valves shall be Cla-Val or approved equal. Gate valves used on flush valve assemblies shall be Mueller FIP Resilient Seat Gate Valve, or approved equal.

#### 2.7 VALVE BOXES

Valve boxes shall be 6" PVC, SDR-35 pipe complete with valve box mushroom lid, Tyler cast iron adjustable, or as shown on the Detail Sheet. Boxes shall be installed over each outside gate valve and shall rise to a height of 6" above natural ground at the valve location. Valve boxes shall be firmly supported and maintained centered and plumb over the wrench nut of the gate valve. The box cover shall be set flush with the surface of the ground or at such other level as may be directed. If valve is



located in a ditch, the riser may need to be extended more than 6" above natural ground. Locations for these extended risers shall be designated by ENGINEER or CITY OF FARMERSVILLE. Valve box covers to have "W" imprinted on them. Signs to be placed at each valve box for each valve. However, only one valve sign is required per valve cluster. Valve boxes shall be installed where shown on the drawings and as directed by the ENGINEER. Valve boxes shall be centered on the valves. Where feasible, valves shall be located outside the limits of roads and streets. Earth fill shall be carefully tamped around each valve box to a distance of 4 feet on all sides of the box, or to the undisturbed trench face, if less than 4 feet.

## 2.8 VALVE EXTENSIONS

Valve extensions shall be placed on all valves greater than or equal to 5 feet below grade.

## 2.9 FITTINGS

Fittings 2" and larger shall be compact mechanical joint ductile iron with appropriate accessory sets to match the outside diameters of mainline piping. Fittings shall conform to ANSI/AWWA C153 and joints shall be in accordance with ANSI/AWWA C-111/A21.11. The working pressure rating shall be 350 psi for all sizes of piping and fittings. Flanged fittings shall have full body dimensions and also be rated for a working pressure of 350 Psi. Underground fittings shall be asphalt coated outside in accordance with ANSI/AWWA C151. Above ground fittings shall be painted if shown on the Plans. Fittings shall have cement mortar lining inside in accordance with ANSI/AWWA C104. All coated fittings shall meet or exceed the requirements of NSF-61. Fittings shall be manufactured by Tyler or approved equal. Gaskets for mechanical joints shall conform to ANSI/AWWA C-111. Gaskets for flanged joints shall be 1/8 inch thick rubber, either ring or full face, conforming to dimensions in ANSI/AWWA C-115. All accessory packs must match brand of fitting. Accessory packs shall be Tyler or approved equal.

Fittings, smaller than 2", shall be PVC or as shown on plans as manufactured by Harco or equal. Plastic fittings shall be joined by solvent weld.

All valves and fittings shall be restrained with Mega-Lug 2000 or Series 1100 Ford Uni-Flange Series 1500-S or equal style restraining devices as may be shown on plans or as approved by the ENGINEER at each connection point. Restraint for PVC pipe joined with standardized mechanical joint fittings shall be incorporated in the design of the follower gland and shall provide full circle contact and support of the pipe wall. Restraint shall be accomplished by a series of ring segments mechanically retained inside the gland housing and designed to grip the pipe wall in an even and uniform manner. Restraining ring segments shall be actuated by bolts featuring "Auto-Tork" twist off heads to ensure proper installation torque is applied. A safety stop on the Auto-Tork bolt shall limit the force applied to the ring segment against the pipe. All components of the restrainer, including the gland, bolts, and restraint segments shall be of high strength ductile iron, ASTM A536, Grade 65-45-12. The manufacturer of the retainer glands shall be registered to the International Standards Organization for the ISO 9001 standard (as a minimum) for quality. The saddles shall be listed in the Underwriters Laboratories Listing of Drinking Water System Components in Accordance with ANSI/NSF 60 & 61.

Bell and spigot joints for piping immediately upstream and downstream of fittings that are less than a full joint of pipe shall be restrained with Ford Uni-Flange Series 1390 or approved equal as may be required. Restraint devices for PVC pipe shall incorporate a series of machined serrations (not "as cast") on the inside diameter to provide positive restraint, exact fit, and 360° contact and support of the pipe wall. Restraint devices shall be manufactured of high strength ductile iron, ASTM A536, grade 65-45-12. Bolts and connecting hardware shall be manufactured of high strength, low alloy material in accordance with ANSI/AWWA C-111. All restraint devices shall have a working pressure equivalent to the full rated pressure of the PVC pipe on which they are installed, with a minimum 2:1 safety factor when tested in a dead end situation. Restraint devices shall meet or exceed the requirements of Uni-B 13-94 *Recommended Performance Specification for Joint Restraint Devices for Use with Polyvinyl Chloride Pipe*.

One-Bolt epoxy coated ductile iron with integral restrained joints fittings may be substituted for the conventional ductile iron fittings with external restraining devices if shown on plans or approved by CITY OF FARMERSVILLE/ENGINEER.

**2.10 TRACER TAPE**

The tracer tape shall be a minimum of 2" metallic tape detectable mesh for marking and detecting buried underground utilities if required.

**2.11 TRACER WIRE**

The tracer wire shall be designed specifically for the purpose of detecting buried utilities. Tracer wire shall be solid-core 12 AWG (minimum) copper wire coated with a 30-mil (minimum) polyethylene jacket designed specifically for buried use, or equal as approved by ENGINEER.

**2.12 TEST STATION**

The test station is designed specifically for the purpose of terminating tracer tape or tracer wire and shall have a minimum of two leads, Little Fink manufactured by COTT Manufacturing or equivalent approved by the ENGINEER. Blue is the color of choice for waterlines.

**2.12 TAPPING VALVES AND SLEEVES**

Tapping valves shall be in accordance with Gate Valves of this specification. Ends shall be flanged by mechanical joint. Sleeves shall be cast iron and epoxy coated as manufactured by Smith-Blair or approved equivalent. Bolts shall be stainless steel.

**2.13 INSULATION**

All exposed piping, fittings, and valves shall be insulated with a pre-formed fiberglass insulation such as Johns-Manville's Micro-Loc 650 with aluminum jacket or equal.

**2.14 FLUSH VALVES AND HYDRANTS**

Flush valves shall be as shown on plans. If designated, flush hydrants shall be installed and shall be Eclipse Post Hydrant #2 or equal with on 2-½" NST nozzle and 2" MJ inlet or as shown on plans.

**2.15 VALVE, WATERLINE, TEST STATION MARKERS**

A high visibility, flexible, durable white marker post, 4" x 66", with sharp blue contrasting color incorporating the international "no Dig" symbol and all weather decal WARNING WATER PIPELINE; Rhino 3-Rail or equivalent or as shown on plans.

**2.16 COLD WATER METERS**

The cold-water meters shall conform to AWWA Standard C-700-6 1 T. All meters shall be as shown on plans.

**2.17 MISCELLANEOUS METER MATERIALS**

A. Meter tapping Saddles: Service Saddles shall conform to AWWA Standard C-800 and latest revisions. C83 600 and AWWA C-800. Saddles 1-½" through 8" shall be of the one-piece design style and have its top and bottom section hinged together with a silicon bronze pin. A slotted hex head screw (5/16" x 1-½" long for 1-½" through 8" Saddles) is used to tighten the upper and lower castings around the pipe (two screws for 1-½" & 2" taps). The saddle shall provide 360-degree support of the pipe, at least 2" wide. This specification is for 1-½" through 8" nominal pipe size saddles. The saddles shall conform to the Uni-Bell PVC Pipe Association and the American Water Works Association recommendations for saddles used on PVC pipe. The saddle shall be manufactured in the United States and submitted for listing in the Underwriters Laboratories Listing of Drinking Water System Components in Accordance with ANSI/NSF 60 & 61. Saddles shall be Ford or Mueller Series or approved equal.

B. Corporation Stop: The ¾" corporation stop shall have ¾" male iron pipe taper thread (MIPT) inlet by ¾" compression outlet connections and conform to AWWA Standard C800 and latest revisions regarding thread types and diameters. The ¾" Corporation Stops shall be Ford or Mueller or approved equal.



Two-inch (2") Corporation Stops shall be of the ball valve type, meeting AWWA Standard C800. The Inlet connection shall be 2" male iron pipe threads. All thread types and diameters shall conform to AWWA C800. Corporation Stop outlets will be supplied with 2" female iron pipe threads or copper compression as shown on plans. 2" Corp Stops shall be Ford or Mueller or approved equal.

- C. Angle Stop Ball Valve: The ¾" angle stop shall have ¾" copper compression inlet by meter swivel nut outlet connections and conform to AWWA Standard C800 and latest revisions regarding thread types and diameters. The valve shall be a substantial tee head for opening and closing with a 360-degree rotation of a standard slotted wrench and shall have padlock wings to lock the valve in the closed position. The manufacturer of the Angle Stops shall be registered to the International Standards Organization for the ISO 9001 standard (as a minimum) for quality. The Angle Stop shall be manufactured in the United States and submitted for listing in the Underwriters Laboratories Listing of Drinking Water System Components in Accordance with ANSI/NSF 60 & 61. Angle Stop Ball Valves shall be Ford or Mueller or approved equal.
- D. Meter Couplings: This specification covers Meter Couplings for 5/8" x ¾" meters. The service line connection shall be ¾" NPT, Male Iron Pipe. The meter coupling shall conform to AWWA Standard C700 or latest revision, regarding thread types and diameters. The meter swivel nut shall rotate freely without binding and shall be drilled with a hole for a seal wire. The manufacturer of the couplings shall be registered to the International Standards Organization for the ISO 9001 standard (as a minimum) for quality. The Corporation Stop shall be manufactured in the United States and submitted for listing in the Underwriters Laboratories Listing of Drinking Water System Components in Accordance with ANSI/NSF 60 & 61. Couplings shall be Ford or Mueller or approved equal.

## 2.18 EXCAVATION MATERIALS

### A. SELECT MATERIAL

Excavated material which is free of rocks, lumps, organic material, clods or debris which are larger than 6" in the largest dimension or other maximum size indicated on the plans, whichever is smaller.

### B. GRANULAR MATERIAL (SAND)

Material which is free of detrimental quantities of clay, debris or organic material and which when tested by standard laboratory methods meets the following requirements:

Maximum liquid limit	45
Maximum plasticity index	15
Minimum plasticity index	4
Maximum percent passing No. 200 sieve	15
Minimum percent passing 3/4" sieve	100

The material shall be free flowing and when wet shall not adhere to form a ball when pressed in the hand.

### C. CRUSHED STONE - STANDARD GRADATION

Crushed stone consisting of hard durable limestone or quartzite particles and meeting the following requirements:

Passing 2" sieve	100%
Passing 1½" sieve	95 - 100%
Passing ¾" sieve	35 - 70%

Passing 3/8" sieve	0 - 15%
Passing No. 4 sieve	0 - 5%
Passing No. 10 sieve	Less than 2%

**D. CONCRETE**

Conform to ASTM C94. The compressive strength of the concrete shall contain at least 2000 psi and shall contain at least four (4) sacks of cement per cubic yard.

**PART 3 - EXECUTION**

**3.1. EXCAVATION**

CONTRACTOR shall have certified excavation-competent operators, with a minimum five (5) years experience, on job site at all times.

A. General: All excavation shall be unclassified and will not be measured or paid for as a separate bid item. The cost of excavation shall be included in the contract price for the related items of work in the Bid Proposal. Excavation shall include the removal of any trees, stumps, brush, debris or other obstacles that may obstruct the line of work, and the excavation and removal of all earth, rock or other materials to the extent necessary to install the pipe and appurtenances in conformance with the line and grades shown in Plans, or as specified. The CONTRACTOR shall keep the area free of spoil for a sufficient distance back from the edge of the excavation in order to avoid overloading and to prevent slides or caving. The excavated materials shall be kept trimmed in such a manner as to be of as little inconvenience as possible to the public and adjoining property City of Farmersville. At street crossings, sidewalks, and other places where the ENGINEER deems necessary, the trenches shall be bridged in a secure manner so as to prevent serious interruption of travel and to provide access to fire hydrants and public and private premises. Such bridging shall be approved by the ENGINEER.

**B. TRENCH AND EXCAVATION SAFETY**

1. After award, the CONTRACTOR shall submit to the CITY OF FARMERSVILLE six (6) sets of a trench excavation plan for record purposes. This excavation plan must be designed and sealed by a professional engineer registered in the State of Texas with professional experience in Soil Mechanics.
2. The CONTRACTOR is responsible for obtaining borings and soil analysis as required for plan design. The trench excavation plan shall be designed in conformance with OSHA standards and regulations.
3. No trenching in excess of 5 feet below existing grade will be allowed until this plan is reviewed. Any changes in the trench excavation plan after initiation of construction will not be cause for extension of time or change order and will require the same review process. The CONTRACTOR accepts sole responsibility for compliance with all applicable safety requirements.
4. The plan is for information and record purposes only.

C. Maximum and Minimum Width of Trenches: The sides of all trenches shall be cut as nearly vertical as possible. Unless otherwise specified on the Plans, the minimum width of trench in which the pipe may be installed shall not be less than 12" plus the outside diameter of the pipe, and the maximum width shall not be more than 20" plus the outside diameter of the pipe, measured at an elevation in the trench which is 12" above the top of the pipe when it is laid to grade.

D. Clearing: The entire work area shall be cleared of all trees, stumps, brush and other matter except for such trees and brush as may be designated by the ENGINEER or CITY OF FARMERSVILLE to be saved. Trees and brush designated to save shall be marked and trimmed and shall be protected from scarring and other damage during construction. Any cuts or scarring shall be painted with an acceptable pruning paint as approved by the ENGINEER.

- E. Grubbing: All areas required for construction of structures, channels, embankments, or pavements shall have stumps and roots removed to a depth of a minimum of 2 feet below the excavated elevation.
- F. Fencing: All fences which are interfered with during construction shall be removed, salvaged, reconstructed and/or replaced after completion of the work. Fences shall be replaced or repaired to an equal or better condition than original. Temporary fences shall be placed and removed where livestock or security is required at the CONTRACTORS expense and at the direction of the ENGINEER or CITY OF FARMERSVILLE.
- G. Dewatering Excavations: The CONTRACTOR shall immediately remove all surface or seepage water from sewers, drains, ditches, and other sources which may accumulate during the excavation and the construction work, by providing the necessary under-drains or otherwise, and by doing the necessary pumping, bailing or draining. The CONTRACTOR shall have available at all times sufficient pumping equipment in proper working order for doing the work herein required. All water removed from excavations shall be disposed of in an approved manner, so as not to create unsanitary conditions, nor to cause injury or damage to persons or property, or damage to the work in progress, nor to interfere unduly with the use of streets, private driveways or entrances. Pumping, bailing and draining, under-drains, and ditches shall be considered as incidental work and will not be paid for as separate items, but their cost shall be included in such contract prices as are provided in the contract.
- H. Shoring: Trenches shall be sheeted, braced or shored to the extent necessary to maintain sides of the trench in a safe manner. Excavations, trenching and shoring shall be in accordance with Subpart P, Construction Industry, OSHA Safety and Health Standards or other applicable standards.
- I. Subgrade in Natural Soil: Where a firm and stable foundation for the pipe can be obtained in a natural soil and where special embedment is not specified or shown on the plans, the bottom of the trench shall be carefully and accurately trimmed to fit the lower portion of the pipe barrel. Should the excavation be carried below grade, except where specified, the CONTRACTOR shall at his own expense refill the trench to the proper grade with selected backfill material approved by the ENGINEER. The backfill material shall then be compacted by methods approved by the ENGINEER.
- J. Subgrade in Rock: If the bottom of the excavation for the waterline is found to be in rock or other hard material that cannot be excavated to a true sub-grade and shaped to provide uniform bearing for the pipe barrel, the rock or other material shall be removed to a depth not less than three inches below sub-grade and the bottom of the trench brought to true sub-grade elevations by filling with pea gravel or suitable rock cuttings and shavings from the excavation and compacting by means of tamping until a firm and uniformly unyielding foundation is obtained, as specified by the ENGINEER. No extra payment will be made for this work unless specified elsewhere herein.
- K. Soft Subgrade: Where soft or sponge material is encountered in excavation at subgrade level to the degree that a firm foundation cannot be obtained for the pipe line, the unsuitable materials shall be removed upon direction of the ENGINEER to such a depth that by replacing the unsuitable material with sand or gravel a firm and stable foundation can be secured. No extra payment will be made for this work unless specified elsewhere herein.
- L. Disposal of Excavated Materials: Suitable excavated materials shall be piled adjacent to the work to be used for backfilling. Excavated materials unsuitable for the backfilling, or in excess of that required for backfilling, shall be disposed of by the CONTRACTOR at locations designated on the Plans or approved by the ENGINEER. Desirable top soil, sod, etc., shall be carefully piled separately and replaced in its original position when required. Excavated materials shall be handled at all times in such a manner as to minimize the inconvenience to public travel and to permit safe and convenient access to private and public property adjacent to or along the line or work. In parkways and easements where it is necessary to deposit excavated materials on lawns or other green areas during the work, burlap or similar materials shall be placed on the

lawn to prevent contact between excavated materials and the lawn. No extra payment will be made for this work unless specified elsewhere herein.

- M. Private Road Crossings: Where the waterline crosses private or farm roads the CONTRACTOR shall conduct his work so as to cause the least inconvenience to the property CITY OF FARMERSVILLE involved and upon completion of backfilling shall restore the road to a condition as good as, or better than, that in which it was originally, as determined by the ENGINEER. Replacement will be of the same type and quality as the original surface as shown on the Plans or as specified below.

- N. Street, Roadway and Railroad Crossing Excavation: Where the waterline crosses a street, roadway, driveway, highway or railroad the method of excavation shall meet the requirements set forth herein and as shown on the Plans. Public Street, roadway, railroad crossings shall be bored regardless of pavement type, unless clearly designated as open cut on the Plans.

1. Open Cut Where open cuts are allowed through roadways the side of the trench shall be kept as nearly vertical as possible and, where necessary, shall be sheeted and braced to prevent caving. The trenches shall be backfilled as shown on the Plans and compacted to 95% Standard Proctor. The pavement replacement shall be of the same type and quality as the original surface as shown on the Plans or as specified below.

PAVED ROADWAYS will not be open cut, unless specifically noted on the Plans. In all cases when open cuts are allowed through pavements, the methods of construction must meet the requirements of the appropriate agency in all respects, superceding these requirements and those shown on the Plans.

2. Boring, Jacking or Drilling: Where indicated on the Plans and/or as directed, the pipe will be pushed or jacked under roadways; or the pipe will be installed in a casing that has been placed under the roadway by boring, jacking or drilling. Casing shall be steel (0.25 minimum wall thickness), PVC SDR-21, or Polyethylene SDR-21 as indicated on plans. Casing shall have casing spacers and molded end seals (Maloney Type or Equal), where indicated on plans. Spacers shall be appropriate for the weight of the carrier pipe and shall be spaced along the pipe as recommended by the manufacturer. In the absence of such guidelines, three spacers shall be equally spaced on each pipe joint for all pipe sizes. Molded rubber casing end seals shall be installed using stainless steel bands on both the carrier pipe as well as the casing. Overlapping, adhesive-type end seals are not acceptable.

- a) Bores and Encasement Description: Work under this item shall consist of furnishings all materials, equipment and labor for installing complete Street Bore, Highway Bore, or Railroad Bore and Encasement where required.

The CITY OF FARMERSVILLE will obtain a permit from the City, County, Texas Department of Transportation and/or the railroad company for these crossings. The CONTRACTOR will be required to abide by the terms of these permits. This will include the CONTRACTOR giving proper notice of the time he expects to begin work on each crossing, to the proper railroad or highway official at the appropriate time.

Materials: Encasement pipe shall be heavy weight steel pipe of sufficient size to permit passage of carrier pipe. The minimum length of encasement pipe shall be determined as indicated on the plans. The encasement pipe shall be tightly jointed to prevent leakage. The ends of the pipe shall be plugged with clay core to prevent entrance of excessive ground water.

Carrier pipe shall be of the size and class shown on the plans.

Construction: The encasement shall be installed with even bearing throughout its length and all voids between earth and encasement pipe shall be filled with grout or other methods approved by the ENGINEER. Any settlement or damage to highway caused by boring and encasement operations will be the CONTRACTOR's responsibility and his own expense.



For boring the CONTRACTOR will be permitted a tolerance from exact grade or alignment of 1" per 100 feet.

All excavations within the right-of-way and not under surfacing shall be backfilled by tamping in 6" horizontal layers or by ponding. All surplus material shall be removed from the right-of-way and the excavation finished flush with surrounding natural ground.

Where sodding is disturbed by excavation or backfilling operations, such areas shall be replaced by mulch sodding on all slopes of 2% or less. All slopes over 2% shall be replaced by block sodding.

Highway crossing under surfaced roads and under surfaced cross roads and surfaced driveways within the right-of-way shall be placed by boring.

Operations along highways shall be performed in such manner that all excavation material be kept off the pavements at all times, as well as all operating equipment.

Barricades and warning signs and flagmen when necessary shall be provided by the CONTRACTOR or CITY OF FARMERSVILLE.

- b) Driveway Bore Description: Work under this item shall consist of furnishing all materials, equipment, labor and incidentals for installing a complete driveway bore.

Materials: The proposed crossing or bore shall not require encasement pipe unless shown on plans. The carrier pipe shall be of the type and class as called for on the Plans.

Construction: Carrier shall be installed by boring. All voids between carrier pipe and the bored hole shall be filled with grout, soil cement, or other materials approved by the ENGINEER.

Carrier pipe joints shall be so arranged that the middle of the carrier pipe, when installed, shall be directly in line with the centerline of the driveway.

Any chipping or other damage of the concrete driveway being bored shall be repaired to its original condition all at the CONTRACTORS expense.

3. Street and Drive Repair Description:

This item shall govern the repair of streets or driveway pavement which has been damaged by the construction of underground utilities.

Excavation and Backfilling: The CONTRACTOR shall excavate the trench with every effort made to keep the trench width to a minimum. Asphalt and oil pavement cuts shall be made in a neat and workmanlike manner and concrete pavement shall be saw-cut unless otherwise approved by the ENGINEER.

After the pipe has been laid and bedded, the trench shall be backfilled with select material free from rock, large lumps, or other unsuitable material. The backfill material shall be placed in layers not exceeding 4" of thickness and shall be tamped on both sides of the pipe. Mechanical tamping will not be allowed until there is a minimum of 12" of soil covering the pipe. The backfill shall be completely tamped from bottom to top and shall have a minimum of 95% Mod ASTM 1557 density.

Pavement Patch: Street and driveway pavements shall be replaced as shown on the plans for the particular type of pavement.

The pavement patch is to be constructed in a neat and workman like manner, and the CONTRACTOR shall make every effort to provide a smooth riding surface.

- O. Use of Explosives: Unless prior written permission is received from the ENGINEER and CITY OF FARMERSVILLE, no blasting will be allowed on this project. Bonds may be required from the blaster prior to receiving such permission. If approved, the CONTRACTOR shall advise the ENGINEER and CITY OF FARMERSVILLE regarding the scheduling of such work. Should the CONTRACTOR elect to use explosives in the performance of the work, they shall be used with utmost precaution, and no blasting shall be done within one hundred (100) feet of the completed

work or exposed pipes, conduits, and other related materials, and the CONTRACTOR shall assume all liability for any injury or damage to persons or property resulting from such usage. Only a sufficient quantity of explosives for the immediate day's work shall be kept on hand by the CONTRACTOR. Caps, exploders, and explosives shall be stored separately. The CONTRACTOR shall be responsible for, and shall make good any damage caused by blasting or accidental explosion.

- P. Depth of Trench: All piping and associated appurtenances shall have a minimum cover 36" or as shown on plans. Depth of excavation should not exceed 60", unless required by significant grade changes. The CONTRACTOR is responsible for providing an OSHA-approved trench safety system in the event that the excavation depth exceeds 60". See Section 1002 for trench excavation safety systems.

Q. Pipe Laying:

1. Pipe Handling: Pipe shall be handled in such a manner as will prevent damage to the pipe, pipe lining or coating. Pipe and fittings shall be loaded, unloaded, and placed using hoists and slings in a manner so as to avoid shock or damage. Under no circumstances shall they be dropped or skidded, or rolled against other pipe.
2. Pipe Cutting: Whenever it becomes necessary to cut a length of pipe, pipe ends shall be square with the longitudinal axis of the pipe and otherwise smoothed so that good connections can be made. Pipe shall be cut by cutters recommended by the manufacturer. Ductile iron pipe shall not be cut by oxyacetylene torch. Field-cut pipe lengths shall be filed or ground to obtain a chamfer on the outside of the pipe, according to the manufacturer's recommendations. Rough or sharp edges shall be removed from the cut end.
3. Pipe Laying: Pipe and fittings shall be clean when laid. Precautions shall be taken to prevent floating. The pipe shall be placed on the trench bottom or bedding. After the pipe has been aligned, jointed, and thrust blocking placed, the pipe shall be secured in place with approved backfill material. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug.
4. Pipe Laying on Curves: If the pipe is shown curved in the plans, the curves shall be accomplished by special fittings or by deflecting the joints in accordance with the manufacturer's recommendations. Joint deflections shall not be permitted at valves.  
When rubber-gasketed pipe is laid on a curve, the pipe shall be jointed in a straight alignment and then deflected to the curved alignment. Trenches shall be made wider on curves for this purpose.
5. Pipe Laying where earth grading is necessary: Where a pipe is to be placed within an embankment or the top of the pipe is above the existing ground, the embankment shall be constructed to at least 150 mm (6 inches) above the top of the pipe before trenching for the pipe. The trench shall then be excavated to the minimum width necessary for the proper placing and backfilling of the pipe.
6. Tracer Tape: Tracer tape shall be installed over copper and non-metallic water lines including service lines only if shown on plans. The tracer tape shall be placed approximately 0.3 m (1 foot) above the top of the line and shall extend its full length. Tracer tape shall be a detectable type and shall be marked "WATER". Tracer tape shall also be brought up at distances not to exceed 1,000 feet in test stations as shown on Detail Sheet. After installation, tracer tape shall be spot-tested to ensure continuity.
7. Tracer Wire: Tracer wire shall be installed in the same trench with nonmetallic pipe during pipe installation. The tracer wire shall be designed specifically for the purpose of detecting buried utilities. It shall be taped with vinyl electric tape to the pipe at a minimum of 3 locations per joint (not to exceed 6-½ foot spacing) or as required by ENGINEER or INSPECTOR to insure that the wire remains on top of pipe. The tracer wire shall be securely bonded together at all wire joints with waterproof, jelly-filled wire nut splice connectors to provide electrical continuity. Tracer wire shall also be brought up at distances

not to exceed 1,000 feet in test stations as shown on Detail Sheet. After installation, tracer wire shall be spot-tested to ensure continuity.

8. **Test Stations:** Test stations shall be installed at approximately 1,000' intervals next to a physical barrier i.e. utility pole, fence line, tree, etc to provide physical security for the test station.
9. **Valve and Test Station Markers:** shall be installed next to the item to identify physical location of and provide security. Waterline markers shall be installed at property/fence lines and road crossings.
10. **Blocking and Wedging:** Fire hydrants, valves and fittings shall be laid on concrete blocks and held in position by hardwood wedges. Blocks shall be bedded firmly in the bottom of the trench with uniform bearing and with the long dimension of the block perpendicular to the pipe barrel. Blocks shall be level across the trench and the proper number of blocks placed one upon the other to bring the fittings to the required grade for jointing.
11. **Thrust blocking:** Plugs, caps, tees, hydrants, and elbows or bends having a deflection of 1 1/4 degree or greater shall be provided with concrete thrust blocking. The blocking shall be TxDOT Class B concrete placed between firm original undisturbed earth and the fitting to be anchored. The concrete thrust blocking shall be placed and shaped in a manner satisfactory to the ENGINEER with the thrust force contained by the blocking. The blocking placement shall allow for pipe and joint accessibility or repair.
12. **Restrained joints and fittings:** In addition to thrust blocking, valves and fittings shall be restrained by approved joint restraint devices. Bell and spigot joints for piping immediately upstream and downstream of fittings that are less than a full joint of pipe shall be restrained with Ford Uni-Flange Series 1390 or approved equal as may be required. The devices shall be protected against corrosion by protective coatings or the application of an asphaltic coating. If polyethylene encasement is specified, the encasement shall cover the entire assembly. Restraining devices may be used in lieu of concrete thrust blocking only when approved by the ENGINEER.

### 3.2 BACKFILLING

**No backfilling shall occur until the CITY OF FARMERSVILLE or ENGINEER has approved the installation.**

Backfilling shall include the refilling and consolidating of the fill in trenches and excavations up to the surrounding ground surface or road grade at crossings.

Backfilling shall be done with good earth, sand or gravel as shown on plans and shall be free from large rocks or hard lumpy materials unless the rocks or lumps are not more than approximately 4" in greatest diameter and are scattered in the spoil. No material of a perishable, spongy, or otherwise deleterious nature shall be used in backfilling. If rock is encountered, sand bedding free of lumpy clay shall be used around piping. See Detail Sheet for sand bedding.

Excavated material, which is suitable for backfilling, and excess material shall be disposed of in a manner approved by the ENGINEER. Except in cultivated fields, surplus spoil may be neatly distributed and spread on the right-of-way, which shall be left in a clean and sightly condition.

Where construction enters the limits of State or County rights-of-way, the CONTRACTOR shall comply with the special requirements of those agencies with respect to backfilling.

- A. **Embedment:** Work under this item shall be installed as per the plans and specifications around all pipes except where otherwise noted. Granular embedment material shall be free flowing sandy or gravel material which contains no clay and is free of organic material. The material shall be approved by the ENGINEER.
- B. **Borrow:** Where sufficient fill and backfill materials are not available in such quantity as necessary to properly backfill, borrow material shall be provided by the CONTRACTOR at his expense and shall be approved by the ENGINEER.

- C. Testing: Tests may be required by the ENGINEER for backfill or embedment density. Initial tests shall be at the expense of the CITY OF FARMERSVILLE. In the event of a test failure CONTRACTOR shall be responsible for additional costs associated with additional testing.

### 3.3 BLOCKING TRAFFIC AND BARRICADES

The CONTRACTOR will not be allowed to completely block traffic on any major thoroughfare or dead end street, and shall keep inconvenience to the public to a minimum. It shall be the CONTRACTORS responsibility to provide any signs, barricades, or lights needed to warn the public about construction, or obstructions on the road, and to inform the City of his approximate schedule of construction.

### 3.4 TESTS FOR WATER LINES

- A. Hydrostatic Pressure Test: After the pipe is laid, the joints completed, and the trench backfilled.

1. Description:

- a. This section specifies hydrostatic testing all pipes having a pressure rating more than 20 psi. Follow AWWA C605-94, Underground Installation of PVC Pressure Pipe and Fittings for Water and/or AWWA C600, Installation of Cast Iron Water Mains, Section 13, Hydrostatic Tests.
- b. Test waterlines in sections so that the maximum pressure at the lowest point in the section being tested does not exceed 120 percent at the nominal pressure rating of the pipe and the minimum pressure at the highest point in the section being tested is at least 80 percent of the pressure rating. The nominal pressure rating for all potable water systems is not less than 150 psi. Permission to vary from these pressure ratings shall be obtained from the ENGINEER.

2. Leakage Allowance:

- a. No pipe installation will be accepted until the leakage is less than a rate equal to ten (10) gallons per inch of nominal diameter of waterline per mile over a twenty-four (24) hour period.
- b. Leakage is defined as the quantity of water supplied into the newly laid pipe, or any valved section of it, necessary to maintain the specified leakage test after the pipe has been filled with water and the air expelled.

3. By Contractor:

Furnish pump, pipe connection and all necessary apparatus including gages and meters to allow continuous pumping at specified constant pressure for duration of test. Also, provide all test plugs required to test the line. CONTRACTOR is responsible for costs associated with all bacteriological tests.

4. By City of Farmersville:

The CITY OF FARMERSVILLE will furnish water for filling lines and any 3<sup>rd</sup> party tests (except bacteriological tests) through existing mains or fire hydrants the first time. Subsequent fillings and tests shall be at the expense of the CONTRACTOR.

5. Test Procedure:

- a. Slowly fill the piping system with water and supply the specified test pressure by means of a pump connected to the pipe in a satisfactory manner.
- b. Before applying the specified test pressure, expel all air from the pipe. To accomplish this, make taps, if necessary, at the points of highest elevation and afterwards tightly plug them.
- c. The duration of each pressure test shall be a minimum of four hours after the line has been brought up to test pressure. Maintain pressure within the limits specified in paragraph 1.b. Continue all pressure tests until the ENGINEER is satisfied that the waterline meets the requirements of these specifications.
- d. At intervals during the test, inspect the entire route of the waterline to find any leaks or breaks. Remove and replace any defective joints, cracked or defective pipe, fittings or



valves discovered in consequence of this pressure test with sound material in the manner provided, and repeat the test until satisfactory results are obtained.

- e. Should any test of pipe in place show greater leakage than that specified, the CONTRACTOR shall at own expense, find and repair the defective joints until the leakage is within the specified allowance.
  - f. Bear the cost of purchasing water for refilling the line should any section of line fail to pass the pressure test.
- B. Removal of Air: In the event air is admitted to the waterline after being expelled for the hydrostatic tests, such air shall be removed prior to completion of the system and acceptance by the CITY OF FARMERSVILLE. In no case shall the system be placed in operation prior to the removal of the air.
- C. Disinfection of Water Mains:
- 1. Description:
    - a. This section specifies the procedure for disinfection of the potable water system, and overall conforms to AWWA C651, Disinfecting Water Mains.
    - b. During the construction operations, workers shall be required to use utmost care to see that parts of the structures, inside pipes, fittings, jointing materials, valves, etc., the surface of which contact potable water, are maintained in a sanitary condition.
    - c. Every effort must be made to keep the inside of the pipe, fittings, and valves free of all foreign matter, sticks, dirt, rocks, etc. As each joint of pipe is being laid, it must be effectively swabbed so that all foreign matter is removed. Placing dry powdered chlorine in the waterline will not be permitted. All fittings and exposed open ends of pipe must be blocked or capped until the line is completed.
    - d. Disinfection of the line or any section thereof shall not be commenced until the ENGINEER review of the method, apparatus, disinfecting agent and the section of the line has been obtained.
  - 2. Chlorine (Cl<sub>2</sub>): Seventy (70) percent calcium hypochlorite or equal.
  - 3. Disinfection Procedure:

When the entire waterline or certain selected sections thereof have been completed, tested and made ready for turning over to the CITY OF FARMERSVILLE, ready for use, the line or section of line shall be thoroughly disinfected according to the following procedure:

    - a. The CONTRACTOR shall provide all necessary taps to complete this section of the specifications.
    - b. The line shall be flushed out, completely replacing its entire volume with water furnished by the CITY OF FARMERSVILLE.
    - c. Chlorine will be injected into the section of line being disinfected so that its entire capacity will be filled with water containing chlorine with at least 50 ppm or other concentration determined by the ENGINEER. The disinfecting agent shall be introduced at one end of the section and the water released from the opposite end until the disinfecting agent is present at the discharge end in such quantity as to indicate a residual chlorine of more than 50 ppm or as otherwise determined by the ENGINEER. All valves shall be closed and the disinfecting solution permitted to remain in the waterline section for not less than twenty-four (24) hours.