



**TOWN OF HARRISBURG, NORTH CAROLINA
HARRISBURG TOWN HALL
TOWN COUNCIL MEETING**

**November 9, 2020
6:00 PM**

AGENDA

1. CALL TO ORDER

- A. The Town Hall Council Chambers will be open to the public on a very limited basis, with a total of 12 members of the public allowed inside due to social distancing requirements. The 12 available seats will be filled on a first come, first served basis. Masks are required to be worn by the public during the meeting, and anyone attending in person will have to successfully complete a COVID-19 screening questionnaire and temperature check before being admitted to the Council Chambers.

You may also join the meeting via the Zoom platform at the following link:

<https://us02web.zoom.us/j/85227352708?pwd=bCtTczMzVEg2cG03cldKVjdVSO9UUT09>

Meeting ID#: 852 2735 2708
Passcode: 053856

Or join by phone:

1 929 205 6099 or
1 301 715 8592

- B. AGENDA ADOPTION

- C. INVOCATION

- D. PLEDGE OF ALLEGIANCE

- E. SPECIAL PRESENTATIONS

1. Veterans Day Proclamation
2. Recognition of Fall 2020 Citizens Academy Graduates

- F. PUBLIC COMMENT - Anyone wishing to address the Town Council may do so during the Public Comment section. Please state your name and address for the record, be courteous and do not repeat what has already been said. Please keep your comments about the subject and not personal in nature.

2. CONSENT AGENDA

- A. Consider the minutes of the October 12, 2020 Town Council Meeting
- B. Consideration of FY2021 Budget Ordinance Amendment for Deputy Insurance Proceeds

3. COMMUNICATIONS

- A. TOWN MANAGER/FINANCE MONTHLY REPORT
- B. MAYOR'S COMMENTS
- C. COUNCIL COMMENTS

4. PUBLIC HEARINGS

5. OLD BUSINESS

- A. Consideration of Conditional Rezoning and Zoning Map Amendment for property at 7800 Robinson Church Rd. (Howie property) H2019-03-(R)
- B. Consideration of annexation of property at 7800 Robinson Church Rd (Howie property)-H2019-03-(R)
- C. Consideration of Formal Complaint of Councilmember

6. NEW BUSINESS

- A. Consideration of Resolution to Denounce Racism and Racial Inequity
- B. Consideration of FY2021 Budget Ordinance Amendments related to Holcomb Park
- C. Consideration of Approval of Contract with Herrin Industrial Inc. for the 2020 Waterline Project
- D. To set a public hearing for December 14, 2020 to consider the refunding of up to six of the Town's existing installment loans, the related financing agreement, per N.C.G.S. 160A-20 and adopt a resolution authorizing the filing of an application for approval of a financing agreement authorized by N.C.G.S. 160A-20.

7. ACTION ITEMS

8. CLOSED SESSION

9. ADJOURNMENT

Town of Harrisburg's Vision Statement

Harrisburg will be the best small town in North Carolina based on low density housing, excellent economic opportunities, a safe living environment, and efficient and effective municipal services. Amenities such as excellent recreational programs, adequate open space, attractive shopping opportunities, a diversity of restaurants, and a connected system of roadways, sidewalks, greenways, and bicycle lanes will continue to enhance the quality of life of the Town. These services and amenities will be provided while retaining reasonable tax rates and debt levels.



TOWN OF HARRISBURG

Agenda Item Details

Title:

Veterans Day Proclamation

Presenting Personnel:

Suggested Motion or Action:

None necessary.

Description/Background:

Recommendation:

Fiscal Impact:

Attachments:

1. Veterans Day Proclamation



Veterans Day Proclamation

Whereas, since the birth of our Nation, American patriots have stepped forward to serve our country and defend our way of life; winning our independence, preserving our Union, and securing our freedom; and

Whereas, by answering the call of duty and risking their lives to protect their fellow countrymen, these patriots have inspired the Nation with their courage and dedication; and

Whereas, this day, and every day, we are reminded to pay tribute to America's sons and daughters who have answered our country's call and recognize the sacrifice of those who have been part of the finest fighting force the world has ever known and the loved ones who stand beside them; and

Whereas, we will never forget the heroes who made the ultimate sacrifice and all those who have not yet returned home; and

Whereas, with respect for and in recognition of the contributions our service members have made to the cause of peace and freedom around the world, Congress has provided that November 11 of each year shall be set aside as a legal public holiday to honor our Nation's veterans;

Now, Therefore I, Steven J. Sciascia, Mayor of the Town of Harrisburg, North Carolina, do hereby proclaim November 11, 2020 as

Veterans Day

and encourage the citizens of the Town of Harrisburg to recognize the valor and sacrifice of our veterans through appropriate public ceremonies and private prayers.

This the 9th day of November, 2020.

Steven J. Sciascia, Mayor

ATTEST:

Janet Rackley, Town Clerk



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consider the minutes of the October 12, 2020 Town Council Meeting

Presenting Personnel:

Suggested Motion or Action:

Motion to approve minutes of October 12, 2020 Town Council Meeting.

Description/Background:

Recommendation:

Fiscal Impact:

Attachments:

1. October 12, 2020

**TOWN OF HARRISBURG, NORTH CAROLINA
TOWN COUNCIL MEETING
MONDAY, OCTOBER 12, 2020
6:00 PM**

MINUTES

This meeting was a teleconferenced meeting via the Zoom platform due to current COVID-19 restrictions.

Mayor Steve Sciascia called the meeting to order.

PRESENT: Mayor Steve Sciascia; Mayor Pro-Tem Ron Smith, Councilmembers Diamond Staton-Williams, Ian Patrick, Rick Russo, Rodney Dellinger, Troy Selberg, John Booth

1A.

ZOOM NOTIFICATION

The Zoom meeting link and details were published and advertised before the meeting took place and were shown on the agenda.

1B.

AGENDA ADOPTION

One agenda change was proposed:

- Add discussion of Michael Painter as Item 5D.

MOTION:

Councilmember Selberg made a motion to adopt the agenda with the change as proposed. Second was made by Councilmember Russo. **The motion passed 7-0.**

1B.

INVOCATION

Councilmember Russo conducted the invocation.

1C.

PLEDGE OF ALLEGIANCE

1D.

SPECIAL PRESENTATIONS

- Oak Grove Baptist Church 130th Anniversary Proclamation

1E.

PUBLIC COMMENT

- Kirk Angel – sent letter to Town Manager – concerning complaint made against Councilmember Staton-Williams. Letter was read aloud by Mr. Brigman. Following his comment, Councilmember Staton-Williams asked if the Town could create a resolution denouncing racism and supporting equity. Following this, Councilmember Staton-Williams asked if the Town could look into creating a resolution in support of racial equity.
- Chris Almond - some small businesses hurting more than others during the pandemic. Taxes increased this year and wants the taxes reassessed. He has lost over 80% of his business during this time. Other counties are offering financial relief for small businesses and would like to see Harrisburg or Cabarrus County do the same. Following his comment, Councilmember Patrick asked if staff could look at some ways to help small businesses.
- Wilson Patterson, 7203 Hathaway Court, Harrisburg – spoke concerning comments made about racism by certain Councilmembers. Would like to see a public forum for more discussion on this subject. Support Councilmember Staton-Williams.

- Rev. Franklin Watkins – Oak Grove Baptist Church – spoke on the comments made about racism by certain Councilmembers. Offered any help he could bring to help with sensitivity training, etc. Support Councilmember Staton-Williams.
- Pat White, 6123 The Meadows Lane, Harrisburg – expressed her disappointment of certain Councilmembers and their comments about racism. Support Councilmember Staton-Williams.

2.

CONSENT AGENDA

- A. Consider the minutes of the September 14, 2020 Town Council Meeting.
- B. Consider the minutes of the September 14, 2020 Closed Session.
- C. Consider FY2020 Budget Ordinance Amendments for end-of-year Capital Reserve Fund transfers.
- D. Consider FY2021 Budget Ordinance Amendment for Fire Insurance proceeds.
- E. Consider Change Orders to the Fire Engine #2 contract.

MOTION:

Mayor Pro-Tem Smith made a motion to approve the Consent Agenda. Second was made by Councilmember Selberg.
The motion passed 7-0.

3A.

COMMUNICATIONS

TOWN MANAGER/FINANCE REPORT

Manager Report:

- Harrisburg Park Project – youth sports camps have started and are going very well, however the park is still closed during the day while the construction is being completed. We hope to have the park open in November.
- The Town has paving projects going on all around town, and all the projects can be found on our website. If you are directly affected by one of these projects, you will be notified with a doorhanger.

Finance Report:

Finance Director Brian Lee presented the Finance report.

Law Enforcement Update:

Lt. Chris Measimer presented the Law enforcement report.

- Currently fully staffed
- Newest staff member is a new service dog
- Recent uptick in shoplifting and bank fraud
- All law enforcement stats can be found on Harrisburg website or SBI website
- 51% of crimes in Harrisburg are property only. Many of these can be prevented by locking car doors, garage doors, etc. Also, construction always brings property crime on the construction sites.

3B.

COMMUNICATIONS

MAYOR'S COMMENTS

- We talked about scheduling a team building event for Council. Believes it is time to go ahead and schedule that now and would also suggest including diversity training as well. It would be best if we can do this in person, but we can do it virtually if we have to. Staff will work to get this scheduled in early December.
- Auto-drafts of water bills – currently only 27% of our customers utilize the auto-draft option. We would like to look into ways to increase this percentage. Suggestion from Haynes Brigman is to put everyone who is using the auto-draft option into a drawing for a free water bill each month. Councilmember Patrick also requested that we look at the possibility of averaging water bills throughout the year like Duke Energy does and settling up at the end of the year. That might make it easier for some to utilize the auto-draft option.
- The Racial Equity Task Force will be breaking into three subgroups to gather data in the areas of police, health and education. We are also looking at creating a community survey to help us know what the public is thinking about these things. We hope to be able to work with the County on this as well.
- There is some training available next week that would be very beneficial for Councilmembers concerning racism. The cost is \$265 and would like to see if the Town could cover at least part of the cost for Councilmembers. There is a \$25 version that would be beneficial for the task force members as well.

- Community Chats – would like to get these started up again. Best if we can do them in person but can hold one virtually if necessary. Racism dialogue would be a good subject to start with. Staff will work on scheduling.

3C.

COMMUNICATIONS

COUNCIL'S COMMENTS

Mayor Pro-Tem Smith

- Asked if a traffic problem was created when Harris Depot was paved. Seems to be causing some traffic backup. Haynes Brigman stated that staff and NCDOT are aware of this issue and NCDOT will be correcting it.
- When he filed the complaint concerning Councilmember Staton-Williams, it was because he wanted dialogue between councilmembers and felt that had been shut down. Thought he had to make the complaint formal as part of the process. His intent was to have Council talk about it and not have the public involved. Never got a response, but it was just about the ability to communicate and wasn't race related. He is open to have a discussion on this subject with anyone who would like to. His phone number and information are on the Town's website.

Councilmember Russo

- Town Construction Inspector, Jason Patrick should be recognized for his work. There was paving being done on Councilmember Russo's street last week and Mr. Patrick stayed out there until 7:30 pm to make sure everything was done correctly.

Councilmember Selberg

- Centralina Regional Council – there are nine counties involved with this council and they are leading the regional transportation efforts. The Town putting together a Transportation Plan gives us a voice in future development in this area.
- HBA – have had several presidency changes and have an interim president currently. There are 612 brick and mortar businesses in the Town now, with Chris Almond and Harrisburg Printing being the oldest. Our tax base is primarily residential and needs to be more balanced. HBA is coordinating what our businesses needs are. The next Zoom meeting of HBA will be on October 22, 2020. Town Manager, Haynes Brigman will be speaking on the "State of the Town".

Councilmember Staton-Williams

- Asked whether we need to put the complaint against her on the agenda for tonight. After some discussion, it was decided that it would be added to the November Council agenda.

Councilmember Dellinger

- Thanked everyone for attending our meeting tonight. Would like to look into using the school auditorium for meetings so we can accommodate the public in person.
- Asked a couple of months ago whether there was anything the Town can do to help those who are having trouble paying their water bills. Has there been any progress on this? Can we take some funds that are earmarked for studies to help out?
- We will be hearing about the Law Enforcement Feasibility Study later tonight. Encouraged everyone to stay on the meeting to hear this item.

Councilmember Patrick

- His phone number and email address are on the Town's website and he will respond to anyone wishing to speak with him. He will make himself available for dialogue.

4A.

PUBLIC HEARING

Public Hearing to consider the Conditional Rezoning and Zoning Map Amendment for property at 7800

Robinson Church Rd. (Howie property) H2019-03-(R). Epcon Communities, on behalf of the property owners (Parks and Carloyn Howie) has submitted a request to rezone approximately 32.85 acres located at the southwest corner of the intersection of Robinson Church Road and Tom Query Road (PIN 55075084100000). The applicant proposes to develop 77 age-restricted single-family detached residential dwellings. To achieve this, the applicant is requesting that

the property be rezoned from the current Rural Estate (RE) district to Conditional Residential Village (CZ-RV) in accordance with the site plan submitted with the application.

A Public Hearing and Action on this matter was previously taken during the April 13, 2020 Town Council meeting. With COVID-19 and use of the remote meeting platform for the first time in April, there were some technical difficulties during the hearing and Town Council has agreed to re-hear the case at their September meeting. In line with State Statutes that have since been put in place, the public hearing will be recessed to the November 2020 meeting for Town Council to consider and make a decision.

A public hearing for the annexation associated with this project will also be held during the October 12, 2020 Town Council meeting (as a separate agenda item). Town Council action on both items will occur at the November 9, 2020 meeting.

Planning and Economic Development Director, Sushil Nepal presented the basic information. Mike Davis, Director of Land Development for Epcon - 11020 David Taylor Drive, Charlotte, NC 28262 – presented detailed information about this rezoning request.

Questions and concerns surrounded the use of the passive rear yards, building materials, heritage trees, lot sizes, roads, traffic, power lines, pedestrian crossing for greenway, build-out time.

After some discussion, the public hearing was opened.

Speaking:

- Read - submitted via email – Michael Campbell, 7828 Grimsby Circle, Harrisburg – for
- James Eskew, 8010 Wycombe Court, Harrisburg – against
- Patrick Rhyne, 7250 Streamhaven Drive, Harrisburg – against
- Angie Brown, against
- Ross Goldberg, 4388 Foxfield Court, Harrisburg – against

The public hearing was then closed.

No action will be taken at this time. Council will deliberate and consider action at the November 9, 2020 Town Council meeting.

4B.

PUBLIC HEARING

Public Hearing to consider the annexation of property at 7800 Robinson Church Rd (Howie property)-H2019-03-(R). This public hearing is to consider the annexation of the property at 7800 Robinson Church Rd (Howie property) H2019-03-(R). The property is in the Town's ETJ, and the applicant has requested rezoning of this property to allow for age-restricted single-family homes on the site.

A public hearing for the rezoning associated for this property was held earlier in the agenda tonight, but no decision was made. The Town Council action on both items will occur at the November 9, 2020 meeting.

After some discussion, the public hearing was opened.

Speaking: none

The public hearing was then closed.

No action will be taken at this time. Council will deliberate and consider action at the November 9, 2020 Town Council meeting.

5A.

OLD BUSINESS

Consideration of Amendment to the rezoning condition #15 for the Harrisburg Town Center project (H 2018-14 (R)). Town Council approved the rezoning request H2018-14-(R) at the May 13, 2019 meeting and amended condition #15 at the December 9, 2019 meeting. The approval was to rezone 15.03 acres of property in Harrisburg Town Center (PIN #55079703680000 & 55078785890000) from Planned Unit Development (PUD) to Conditional City Center (CZ-CC). The rezoning was approved with following conditions:

1. Applicant agrees to obtain any and all applicable local, state, and federal permits required for development before any development activity can take place.
2. Applicant agrees not to use vinyl siding and utilize high quality building materials for all buildings. All architectural design and building elevations shall be submitted to the town for review and approval.
3. Applicant agrees to restrict outside storage.
4. Applicant agrees to continued maintenance of buildings and grounds in the form of deed restrictions, establishment of HOA or restrictive covenants recorded and will run with the land.
5. Applicant agrees to contribute proportionate funds to the Towns' regional storm water management system servicing the proposed Town Center Development.
6. Applicant agrees to contribute funds for onsite and off-site roadway improvements documented in the Traffic Impact Analysis (TIA) directly related to proposed development.
7. Applicant reserves the right to combine Buildings 10 and 11, contingent on future market demand. Additionally, the Applicant reserves the right to renovate or demolish and rebuild in place Building 13 dependent upon future structural investigations of the existing structure. Any changes will need to be reviewed and approved by the Town.
8. Applicant agrees to build a maximum of 333 residential units and 829,600 square feet of mixed use. Applicant reserves the right to trade up to 10% of the gross floor area of proposed office use to retail use and/or trade up to 20% of the gross floor area of proposed retail use to office use. Any changes will need to be reviewed and approved by the Town.
9. Applicant agrees to build approximately 15,000 square feet Public Green Space and 9,000 square feet Central Plaza at no cost to the Town. Applicant will provide approximately 19,500 square feet for the Art Center. The Applicant reserves the right to arrange the program, operate and control the use of these spaces within the limits of Federal, State and Local laws and shall not conflict with Town's Park and Recreation Programs.
10. Applicant agrees that parking for each phase will be reviewed and approved as part of site plan and appropriate temporary surface parking lots in lieu of parking garages to support early phases of development.
11. Applicant agrees that loading/unloading spaces on the street will be serviced at night-time off-hours.
12. Applicant shall be permitted to convert Professional Blvd and Physicians Blvd as a pedestrian friendly and a living streets and may be temporarily closed for special events in accordance with Town's Street Closure Guidelines.
13. Applicant shall be permitted to allow retail spaces for Pharmacies, Health and Personal Care Stores to the extent that such uses are not stand-alone buildings but are integrated within the mixed-use buildings.
14. Applicant shall be permitted for ground floor residential on Building 17 on Parcel 4, where the building is designed to setback from the street and have a central courtyard and the ground floor of building 16 and 18 on Parcel 4 shall be restricted to retail, office and other commercial uses.
15. Applicant agrees that the zoning shall revert to its original PUD if the Applicant fails to close the land purchase by December 31, 2020.

The previous applicant is no longer pursuing the Town Center project, the current property owner has submitted a revision of previously approved rezoning site plan for staff review. In discussion with Town Council and staff regarding the revised site plan, there are several pending questions that need to be addressed, and that the extension of Condition #15 will allow the applicant to do so before it is brought forward for Council consideration.

The property owner reached out to the Town requesting an extension of Condition #15 by 60 days from the current expiration date of December 31, 2020. If Condition #15 is not extended, the approved Center City rezoning on the property will expire and will revert back to the original Planned Unit Development (PUD).

If the zoning is reverted back to the PUD, any new development of the site outside of the PUD allowances would be required to begin the rezoning process over from the beginning. With the current property owner and Town interested in moving the Town Center project forward, reverting back to the PUD would not be beneficial to either party.

The property owner is requesting the rezoning condition #15 be amended to say "**Applicant agrees that the zoning shall revert to its original PUD if the Applicant fails to submit and secure Council approval on revised Site Plan by March 01, 2021**".

Staff consulted legal counsel to discuss the appropriate process to bring forward the applicant's request to Town Council and, as advised, this item is put under "old business" for Town Council's consideration.

After some questions and further discussion, the following action was taken:

MOTION:

Councilmember Patrick made a motion to approve extending the timeline for the Rezoning Condition #15 by 60 days, to end on March 1, 2021, for the Harrisburg Town Center project (H 2018-14-R). Second was made by Mayor Pro-Tem Smith. **The motion passed 7-0.**

5B.

OLD BUSINESS

Consideration of bid on Old Fire Station #2 Property. Given Council action and direction provided in September, Old Fire Station #2 was approved for surplus and placed on the market for sale. The first bid was received for \$300,000 with no contingencies or conditions. A deposit of \$15,000, or 5%, has been received and is being held by the Town.

If accepted tonight, a 10-day upset bid period will be posted to MLS and property sites as well as publicly advertised, as required by NC State Statute. Accepting the bid tonight does not constitute an agreement to sell the property at this value, it is accepting the initial bid in the upset bid process and at the conclusion of the upset bid period, Town Council will have the ability to accept the highest offer or decline all offers.

As a reminder of the upset bid process, if this initial bid is accepted, the Town will then advertise a 10-day period during which any higher bids will be accepted. A minimum bid that is greater than 10% of the first \$1,000 and 5% of the remainder of the first bid is required to continue the process. Thus, if a new bid is received for \$315,095 or greater, that will begin a new 10-day advertisement period for higher bids.

$10\% \times \$1,000 = \100

$5\% \times \$299,000 = \$14,995$

Total upset bid increase required = \$15,095

At such time as the 10-day period passes and no valid higher bids have been received, staff will bring the last valid bid to Council at the next Council meeting for consideration. At that time, Council may vote to accept the bid for sale or not accept any bids and start the process over.

After some discussion, the following action was taken:

MOTION:

Councilmember Selberg made a motion to accept the bid on Fire Station #2 property in the amount of \$300,000 and begin the upset bid process. Second was made by Mayor Pro-Tem Smith. **The motion passed 7-0.**

5C.

OLD BUSINESS

Consideration of Water and Sewer Revenue Bonds. The Water and Sewer Fund has \$500k in equipment and other capital purchases and over \$13M in capital projects either underway or beginning in FY2021. The ten-year CIP and financial model show total capital spending of just over \$25M over the remaining nine years of the model. In the latter part of FY2021, the Town is planning to finance over \$4.5M of Water and Sewer projects and has \$20M remaining to finance over the life of the current CIP. This consists of 22 financing projects with as many as five issuances in a single fiscal year.

The Town currently uses installment financing contracts as the only methodology to finance its water and sewer projects; however, the current methodology has some drawbacks as the Town's water and sewer system grows and the number and size of projects increases as well.

Installment financing contracts are relatively simple, are held by a bank or other financing institution, are collateralized with the physical water and sewer system that was built with the proceeds, have low issuance costs, and have slightly higher interest rates than other financing options. During rapid project construction times using installment contracts, such as the last four to five years, the water and sewer system can become heavily leveraged or pledged, which makes it difficult to undertake additional projects in the future, especially large ones.

Water and Sewer Revenue Bonds are the next level in financing for the Town's water and sewer projects. Revenue

bonds are a class of municipal bonds but differ in what is pledged to collateralize the debt from both installment financing and general obligation bonds.

Installment contracts pledge the asset being financed as the collateral for the loan while General Obligation Bonds pledge the full faith and credit of the taxing authority of the Town to satisfy the payment requirements of those bonds. Water and Sewer Revenue Bonds do not pledge the assets being constructed and the Fund does not have tax or assessment authority to guarantee the repayment of the bonds, so the bond is guaranteed by the future revenues of the entire water and sewer system of the Town.

Bond covenants will require the Town to continue to meet certain financial conditions and the bonds ultimately have the power to adjust water and sewer rates in order to satisfy the repayment requirements of the Revenue Bond. Management and staff currently perform this task by using existing and future expected debt service as well as all other projected operating and capital expenses in our financial and rate models. During the budget process annually, these evaluations are performed and, if necessary, to maintain financial health or to meet existing covenants, recommendations for an adjustment to rates is proposed and substantiated. Revenue bonds provide the bondholders more teeth if we are not meeting our obligations and if we are not adjusting rates in response to that. Revenue bonds also differ from General Obligation bonds, such as the Town's Transportation bonds, in that Revenue bonds are not required to be voted on with a public referendum but can be authorized by Council action and reinforced by LGC and bond counsel approval.

The primary difference in debt structures, as noted above, is based on collateral, or what from the utility is being pledged in relation to the debt, whether that be an asset, the faith of the Town, or guaranteed future revenues. In addition to deleveraging our infrastructure, there are other benefits to converting to a Revenue Bond structure. Revenue bonds are established and authorized with a Master debenture. This agreement sets forth the maximum amount to be financed and the general terms, conditions, guarantees, and provisions of the Town's bond structure. Each year, as needed, we will accumulate several water and sewer projects and issue a Series debenture. The Series issue will be under the umbrella of the Master agreement but will define certain key elements that can and likely will be different for each Series, such as value (amount financed), interest rate, payment terms, and specific covenants, as applicable. In comparison to the traits of an installment financing contract above, Water and Sewer Revenue Bonds are more complex to issue but can be held by a bank or financial institution or can be sold to the public market, are collateralized by the future revenues of the entire Water and Sewer Fund, have higher initial issuance costs, and have much lower interest rates and longer repayment terms available. Buyers of debt are typically much more inclined and motivated to hold interests in a revenue generating system in comparison to physical water and sewer lines buried in the ground. This helps to drive down the interest rate on the debt.

Given the eventual necessity and the current and long-term financial benefits of a conversion to the Water and Sewer Revenue Bond structure, it is staff's recommendation to move forward with this financing methodology for the Water and Sewer Fund, beginning with the FY2021 debt issuance in or about April, 2021.

Mitch Brigulio , Senior Vice President of Davenport Public Finance, presented some more detailed information concerning the use of Water and Sewer Revenue Bonds.

After some discussion, the following action was taken:

MOTION:

Councilmember Russo made a motion to approve the use of Revenue Bonds as a financing methodology for projects in the Water and Sewer Fund. Second was made by Councilmember Selberg. **The motion passed 7-0.**

5D.

OLD BUSINESS

Discussion Concerning Michael Painter's Position on the UDO Committee. Discussion concerned the reputational risk to the Town of having Mr. Painter serve on the UDO Committee based on his email calling a proposed development "Ebony Acres". After some discussion it was determined that Council will ask Mr. Painter to step down from the committee.

MOTION:

Councilmember Russo made a motion to ask Mr. Painter to step down from the UDO Committee. Second was made by Councilmember Staton-Williams. **The motion passed 6-1 (Councilmember Patrick voting against).**

6A.**NEW BUSINESS**

Consider the adoption of Harrisburg's Community Transportation Plan (CTP). Town Council approved the contract in June 2019 to kick-off a 10-month Planning Process (\$75,000 budget) to create Harrisburg's Community Transportation Plan (CTP).

The plan's objective was to identify the transportation needs for motorists, bicyclists, pedestrians, and transit in the community. The community-driven planning process established a vision for the transportation system in Harrisburg, identifying needs and deficiencies, recommending specific projects and strategies, and creating an action plan for implementation.

The goal of the CTP was to:

- Create and document current conditions and inventory of our transportation system.
- Align the recommendations from HALUP and other plans to provide recommended transportation improvements.
- Identify key corridors and create recommended cross-section design
- Prioritize projects and provide planning level cost estimates along with an implementation action plan.
- This document will serve as our local transportation plan to be included in the Cabarrus-Rowan MPO's Comprehensive Transportation Plan (CTP).

A presentation was provided to the Town Council on the final DRAFT of the plan during the September Council meeting. Staff will discuss feedback received and any changes made to the DRAFT plan before asking Council to adopt the plan.

After some discussion, the following action was taken:

MOTION:

Councilmember Selberg made a motion to adopt the Harrisburg's Community Transportation Plan (CTP), as presented. Second was made by Councilmember Staton-Williams. **The motion passed 6-1 (Councilmember Dellinger voting against).**

6B.**NEW BUSINESS**

Consideration of Law Enforcement Feasibility Study. David Graham, with U.S. ISS Agency, LLC, will be providing a presentation on the completed Law Enforcement Feasibility Study conducted for the Town.

In 2019, the Town Council agreed to hire U.S. ISS Agency, LLC to conduct a feasibility study for the Town to understand the need for a local law enforcement department, and the steps it would take to transition from contracted law enforcement services with the Cabarrus County Sheriff's Department to establishing the Town's own law enforcement agency.

A detailed report of this transition is included with the packet for review. Highlights from the report include:

- Proposed organizational structure and staffing needs of a Department needed to meet the demands of the Town
- Facility and Capital Needs to start up a department
- Cost projections for early start-up, and on-going expenses of a Town Department
- Grant opportunities to reduce the start-up expenses of a Department
- Timeline for implementation once a decision is made to establish a local law enforcement department
- Recommendations from the consultant about when to consider establishing a local law enforcement agency

The report is intended to be a blueprint for the Town to use when a decision is made to establish a Harrisburg Police Department. This report can be used and updated as time goes on.

Due to the nature of the current contract with the Sheriff's Department, the Town has access to all of the Sheriff's Department's resources; however, we only have a few dedicated deputies patrolling our community at any given time.

The establishment of a Town Police Department would provide the Town with more control over law enforcement actions and service level and would provide a significantly greater number of officers on patrol compared to the contract with the Sheriff's Department.

The greater number of officers under the Town's establishment of its own Police Department is achieved by reaching minimum staffing levels for a standalone department, which is not a concern with the Sheriff's Department contract because of their access to other Sheriff's deputies outside of our Harrisburg jurisdiction.

Because of these staffing differences between contracted services with the Sheriff's Department, and establishing our own Department, it is impossible to conduct an apples-to-apples comparison of the two from a service level perspective. However, establishing our own Department would increase the number of officers on patrol within our community, but this would come at a much higher cost than continuing to contract with the Sheriff's Department.

The report did not look at the quality of service currently being provided by the Cabarrus County Sheriff's Department, and notes that the relationship between the Town and the Sheriff's Department would likely be a key factor in determining whether the Town should pursue its own Department due to the level of service the Town felt it was receiving from the Sheriff's Department.

The decision to move forward with establishing a Harrisburg Police Department should be one that is carefully thought out, and one that has buy in from the community before proceeding forward. This report offers the detail and planning necessary to take on that task when the Town believes it is in its best interest.

Staff understands any decision related to establishing a Police Department is one that will take significant time and discussion. However, feedback and direction for how to proceed over the coming months will be important to ensure we meet the expectations of the Town Council due to the extensive time it will take to gather public input, generate a specific plan and timeline, and consider a referendum in November 2021.

Some questions and discussion took place following the presentation. Council would like to hold a special work session to dive deeper into this study. Haynes Brigman will send some dates to Council to consider.

6C.

NEW BUSINESS

Consideration of Memorandum of Understanding with the Town Center Homeowners' Association (Cusick Company) for the Relocation of the Community Compactor and related Budget Amendments. The Town currently provides and services a compactor outside of the limits of the HOA community on a currently undeveloped parcel within Town Center. This arrangement has been in place since Town Center was built.

As the Town considers the condos in Town Center a commercial property, trash and recycling services are not typically provided to commercial properties by ordinance. A couple of years ago, Town staff and members of the Town Center HOA met and decided to have the compactor relocated onto the HOA's property where they would own/lease it and be able to properly service it moving forward. This would not only get this commercial property to be consistent with other similar developments around Town, it also removes the responsibility from the Town for having to maintain that site, which is also not the Town's property.

Relocating the compactor to inside of the community will also allow economic development on the parcel where the compactor is currently located, and helps to eliminate illegal dumping at the site from non-residents of the Town Center area.

Per this agreement with the HOA, the Town of Harrisburg will be responsible for coordination with WastePro to remove the existing compactor. The Town of Harrisburg will coordinate removal of the existing pad either by utilizing its own forces or requiring it of the party that chooses to redevelop the parcel. The HOA will be responsible for constructing a new compactor pad, with the design, location, and cost subject to the approval of the Town. The HOA will be responsible for contracting with a service provider of their choosing for a new compactor, and if they choose, hand-held recycling services. Once the work is complete, reviewed, and deemed acceptable by the Town, the Town will

reimburse the HOA for the costs associated with this work up to a maximum contribution of \$150,000.

Work eligible for reimbursement is outlined in the proposed MOU but is limited to construction of the pad and related facilities. The purchase or rental of a compactor shall be a separate cost bore by the HOA alone.

After some discussion, the following action was taken:

MOTION:

Mayor Pro-Tem Smith made a motion to approve the attached Memorandum of Understanding with the Town Center Homeowner's Association for the relocation of the community compactor and the related FY2021 Budget Ordinance Amendments. Second was made by Councilmember Russo. **The motion passed 7-0.**

6D.

NEW BUSINESS

Request for approval of the Assistant Public Works Director Position. As part of the Public Works Department's reorganization two years ago, a succession plan was put in place for the department and approved by Council. Part of this plan was to replace the existing Public Works Superintendent, upon his retirement, with two positions: Utility Supervisor and Assistant Public Works Director. This was critical to have a supervisor closer to the utility crews guiding them on a day to day basis. The Assistant Public Works Director was needed to assist the Engineering and Public Works Director manage the entire Public Works Department. Justification forms were provided and reviewed with Council during the FY2021 budget process.

To facilitate the succession plan effectively a timeline was established and presented to Council in early 2020 and with the FY2021 budget preparation. This included the critical timing of the current Public Works Superintendent retiring within the next two years.

In an effort to have as much institutional knowledge passed on to the two new positions as possible, staff requested them to be hired as soon as practical. The Assistant Public Works Director was requested in January 2020 and again in the FY2021 budget process, along with the Utility Supervisor being requested during the FY2021 budget process. In part due to concerns with COVID-19, related unknown economic impacts and the projected retirement of the Town's Public Works Superintendent being estimated but unknown, the Town Council approved the addition of the Utility Supervisor in the FY2021 budget, but delay the addition of the Assistant Public Works Director until the FY2022 budget.

Since that time, the Town has been notified that the Public Works Superintendent will retire in February 2021, which is about a year sooner than anticipated, but still within the general timeline planned for in the succession plan. While having the Utility Supervisor will still provide for some institutional knowledge transfer of the operational portion of the Public Works Superintendent, the opportunity to pass the management knowledge on to the Assistant Public Works Director would be lost.

Due to the change in retirement plans for the Public Works Superintendent, staff is requesting Council to reconsider the FY2022 hire of the Assistant Public Works Director and authorize staff to hire this position as soon as possible. The sooner the position is filled, the more time would be available to pass on the institutional knowledge from the Public Works Superintendent. The position will also help the Public Works and Engineering Director with their ever-increasing responsibilities and project management.

Please keep in mind that the existing plan was to net one new employee, as upon retirement, the Public Works Superintendent position will not be filled. The Department will operate with a net loss of one employee until the Assistant Public Works position is approved, which could negatively impact the service level and management of the utility side of the Public Works Department.

From a financial perspective, the hiring of the Assistant Public Works Director would not require additional funding, as the early retirement of the Utility Supervisor, and the not yet hired Utility Supervisor position will provide the Town will salary savings that will approximate the cost of hiring the Assistant Public Works Director for the remaining half of the year. Therefore, there will be no requests for additional funding for this position being hired in FY2021.

Going into FY2022, the Town would actually realize savings from what was planned to be a period of time next year

that would have all three employees working together for a period of time.

After some discussion, the following action was taken:

MOTION:

Councilmember Russo made a motion to approve the additional position of Assistant Director of Public Works. Second was made by Councilmember Booth. **The motion passed 7-0.**

7.

ACTION ITEMS

- Schedule a facilitated team-building/diversity training for Council in December
- Come up with some sort of promotion to increase auto-draft utility payment participation
- Schedule Community Chat
- Look into renting the school auditorium for in-person Council meetings
- Work to see if there is a way to give some relief of water bills
- Schedule a special meeting to discuss the law enforcement study in more depth
- Have Finance Director take a look at our cut-off fees
- Create a resolution in support of racial equity
- Look into small business tax relief

8.

ADJOURNMENT:

MOTION:

There being no further business, Mayor Pro-Tem Smith made a motion to adjourn the meeting. Second was made by Councilmember Russo. **The motion passed 7-0.**

ATTEST:

Janet Rackley, Town Clerk

Steve Sciascia, Mayor



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consideration of FY2021 Budget Ordinance Amendment for Deputy Insurance Proceeds

Presenting Personnel:

Brian Lee, Finance Director

Suggested Motion or Action:

Motion to approve the FY2021 Budget Ordinance Amendment, as attached.

Description/Background:

On 10/6/2020, a Town-owned Deputy vehicle was rear-ended which led to \$1,500 in damage to the vehicle. The deductible for a vehicle claim is \$500. If the claim is recovered from the party-at-fault, this deductible will be reimbursed to the Town.

Recommendation:

Staff recommends approval of the budget amendments, as attached.

Fiscal Impact:

The fiscal impact to the Town for FY2021 is additional revenue of \$1,000. This will be utilized toward the total cost to repair the vehicle, resulting in a net cost to the Town of \$500, or the Town's insurance deductible on vehicle claims.

In the event the claim is recovered from the other party's insurance provider, this deductible will be reimbursed to the Town.

Attachments:

1. Amendment - GF - Deputy Insurance Proceeds 11092020



AN ORDINANCE AMENDING THE 2020-2021 BUDGET ORDINANCE OF THE TOWN OF HARRISBURG, NORTH CAROLINA

Be it ordained by the Town Council of the Town of Harrisburg, North Carolina, that the following amendment be made to the annual budget ordinance for the fiscal year ending June 30, 2021:

Section 1. Amend the General Fund to account for Deputy insurance proceeds received.

Section 2. To amend the General Fund, the appropriations are to be changed as follows:

Increase line item 100-2000-54303	\$ 1,000
M/R – Vehicles	

Section 3. To amend the General Fund, the revenues are to be changed as follows:

Increase line item 100-49121	\$ 1,000
Insurance Proceeds	

Section 4. Copies of this budget amendment shall be furnished to the Clerk of the Town Council, and to the Budget Officer and the Finance Officer for their direction.

Section 5. That this ordinance shall be effective upon its passage. Adopted this 9th day of November, 2020.

Steve Sciascia, Mayor

ATTEST:

Janet Rackley, Town Clerk



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consideration of Conditional Rezoning and Zoning Map Amendment for property at 7800 Robinson Church Rd. (Howie property) H2019-03-(R)

Presenting Personnel:

Sushil Nepal, Planning & Economic Development Director

Suggested Motion or Action:

Motion to approve the Conditional Rezoning and Zoning Map Amendment for property at 7800 Robinson Church Rd. (Howie property) H2019-03-(R).

Description/Background:

Epcon Communities, on behalf of the property owners (Parks and Carloyn Howie) has submitted a request to rezone approximately 32.85 acres located at the southwest corner of the intersection of Robinson Church Road and Tom Query Road (PIN 55075084100000).

The applicant proposes to develop 77 age-restricted single-family detached residential dwellings. To achieve this, the applicant is requesting that the property be rezoned from the current Rural Estate (RE) district to Conditional Residential Village (CZ-RV) in accordance with the site plan submitted with the application.

A rescheduled Public Hearing on this matter was held during the October 12, 2020 Town Council meeting (Initial Public Hearing and Action in April 2020). The public hearing was closed at the October meeting and a decision was recessed to the November 9, 2020 meeting for Town Council.

A site plan along with applicable conditions and staff report is attached for Town Council's consideration.

A request to annex the property associated with this project was also requested during the November 9, 2020 Town Council meeting (as a separate agenda item). Town Council action on both items will occur at the November 9, 2020 meeting.

Recommendation:

The Planning and Zoning Board (in February 2020) along with Town Staff recommend approval of Conditional Rezoning and Zoning Map Amendment for property at 7800 Robinson Church Rd. (Howie property) H2019-03-(R).

Fiscal Impact:

None.

Attachments:

1. H_2019_03_R Staff Report TC (1)
2. Conditional Rezoning Application (1)

3. 7800 Robinson Ch Rd- Site Location Map (1)
4. Robinson Church Rd 04022020-SKETCH PLAN rev (2)
5. Epcon-ElevationExamples (1)
6. Neighborhood Meeting Summary for H2019-03 Robinson Church Road (2) (1)



Town of Harrisburg
Planning and Economic Development Department
Rezoning Staff Report

DATE: April 02, 2020

SUBJECT:

Request H-2019-03-(R): To rezone approximately 32.85 acres from RE, Rural Estate to CZ-RV, Conditional Residential Village

Location: The subject property is located at the southwest corner of the intersection of Robinson Church Road and Tom Query Road. (PIN 55075084100000)

Applicant: Epcon Communities on behalf of owners (Parks and Carolyn Howie)

Staff Report Prepared by: Sushil Nepal, AICP, Planning & Economic Development Department

Neighborhood Meeting: Held November 21st, 2019

BACKGROUND:

Area: ±32.85 acres Total

Existing Land Use: Vacant/Single-Family Residential

Zoning within 500 feet: North – RE, Rural Estate
South – RE, Rural Estate
East – RE, Rural Estate
– RM-1, Residential Medium Density
West – RE, Rural Estate
– RM-1, Residential Medium Density

Land Uses within 500 feet: North – Vacant and Single-Family Residential
South – Vacant and Single-Family Residential

East – Single-Family Residential
West – Single-Family Residential

APPLICATION SUMMARY:

- The applicant proposes to develop a 77-lot single-family age-restricted (55 and above) subdivision. To achieve this, the applicant is requesting that the property be rezoned from the current Rural Estate (RE) district to Conditional Residential Village (CZ-RV) in accordance with the site plan submitted with the application.
- The proposed density of the site is 2.34 dwelling units per acre. The RV district has a maximum density of 8 dwelling units per acre but upon approval of this rezoning, the density will be capped at 2.34 unit/acre and the site plan will be attached with the land.
- Per the Town subdivision regulations, the applicant is providing dedicated public open space. The applicant proposes the development of 6.3 acres of open space as part of the development.
- The applicant agreed to install a ten (10) foot wide paved greenway trail near the southern boundary of the site along Fuda Creek and to dedicate a twenty-five (25) foot wide greenway easement to complete a segment of the Fuda Creek Greenway. The greenway would directly link to both the proposed development and the Fenton Dell community immediately to the west, and to the existing greenway across Robinson Church Road to the east. The applicant also proposes to construct a pedestrian grade crossing (including pedestrian signal) crossing Robinson Church Road that will link the proposed segment of the greenway to the existing greenway across Robinson Church Road.
- The applicant also agreed to re-design and participate financially in the reconfiguration of the Robinson Church/Tom Query intersection, and to dedicate a portion of the site for the reconfigured intersection street right-of-way. This intersection improvement is prescribed in the Harrisburg Area Land Use Plan.
- As a conditional zoning request, the applicant has submitted a site plan along with the request for rezoning, which is attached for your consideration.
- The property is in the Town's Extra-Territorial Jurisdiction (ETJ), applicant has also submitted a Petition requesting Annexation for the subject property which is contiguous to the current Town of Harrisburg corporate limits.

APPROVAL CRITERIA:

1. The size of the tract in question;

The subject property is approximately 32.85 acres in size.

2. Whether the proposal conforms with and is in furtherance of the implementation of the goals and policies of the Comprehensive Plan, other adopted plans, and the goals, objectives and policies of the Ordinance;

Per the Unified Development Ordinance, the intent of the proposed district depicted on the submitted site plan is as follows:

***RV:** The RV district is established to provide areas for detached and attached single family homes, with a maximum of eight (8) dwelling units per acre, in areas where large-lot development is discouraged and adequate public facilities and services are available. RV supports the principles of concentrating urban growth and reinforcing existing community centers.*

Per the Harrisburg Area Land Use Plan, the subject property is located in an area designated on the future land use map as Medium Density Residential. The description of Medium Density Residential is as follows:

“This area is comprised of predominantly single-family detached homes but may include attached single family units, such as townhomes and duplexes. The mix of housing types are intended to create neighborhoods with a density range of 3 to 4 dwelling units per acre. Improved open spaces are interspersed and the streetscape is more formal.”

Based on the description of the Medium Density Residential land use classification, the proposed development, at 2.34 dwelling units per acre would fall within the threshold of 2 to 3 dwelling units per acre that has been set for this area in the Land Use Plan.

With regard to the overall goals of the Land Use Plan, **recommendation LU-5** states that the Town should “Expand Housing Options” to appeal to a broad range of audiences. It specifically mentions offering a housing product that could appeal to residents wishing to age in place. The Plan’s demographic section documents that “the Planning area has a growing mature population with more than 40 percent of households being over the age of 55”. The Market Conditions Projections section states that close to half of the future demand for for-sale housing will be for homes and villas on smaller lots.

Recommendation LU-7 of the Plan recommends consistency between the Town’s zoning regulations and the adopted Future Land Use Map. A table included as part of this goal establishes the “appropriate” zoning districts to use when making zoning decisions based on the Future Land Use Map. The map, as previously stated, designates this area as Medium Density Residential. The table indicates that the RV district is appropriate for this land use classification.

3. The benefits or detriments for the owner, neighbors and surrounding community;

The benefits to the owner of the property would be that single-family residential development at the proposed density of 2.34 dwelling units per acre could be achieved under the proposed zoning. The existing zoning restricts density to 1 dwelling unit per acre.

Detriments to the neighbors and surrounding community are consistent with those expected with additional residential development, such as generation of additional traffic

and potential traffic congestion during peak times. Since the proposal is for an age-restricted community, traffic generation is less compared to traditional single-family subdivision and that there should be no impact upon student populations in the schools.

Benefits to the neighbors and the surrounding community include the dedication and construction of an additional segment of the Fuda Creek Greenway and installation of a greenway pedestrian crossing across Robinson Church Road, and the re-alignment of Tom Query Road at its intersection with Robinson Church Road to make it a safe intersection.

4. Whether the proposed request is in compliance with the adequate public facilities criteria;

a. Utilities:

Utilities are available in this area, and are sufficient to meet the needs of this property. Water and sewer access are located along Robinson Church Road, and will be available to the development upon annexation. Any utility line extensions or upgrades necessary to serve this development will be the responsibility of the developer.

b. Transportation:

A TIA was not required based on the lower amount of traffic generated by an age-restricted community. However, several transportation-related improvements will be completed as part of this development. In addition to the afore-mentioned greenway and intersection improvements, the developer has committed to installation of sidewalks along the Robinson Church and Tom Query frontages, and some perimeter road widenings to accommodate turn movements into the development.

c. Safety and Sanitation Services:

Adequate police, fire, and sanitation services are available for the proposed use, and will be provided upon annexation.

d. Schools:

The proposal is for an age-restricted (55 plus) adult community, so the generation of school-age populations is extremely unlikely. In recognition of the community's characteristics, Cabarrus County Schools states that they do not estimate students from age-restricted communities.

5. The relationship of the uses envisioned under the new zoning and the uses currently present in adjacent tracts. The Commission shall consider the following:

a. Whether the proposed zoning is compatible with the surrounding area or whether there will be adverse impacts on the capacity or safety of the portion of street network influenced by the rezoning, parking problems, or

environmental impacts that the new use will generate such as excessive storm water runoff, water, air or noise pollution, excessive nighttime lighting or other nuisances;

The density of the proposed development (2.34 dwelling units per acre) is slightly higher than the observed density of the newer developed neighborhoods to the east and west of the site (although those neighborhoods are the same RV zoning as being requested for this site). Although such a density is not uncommon with an age-restricted community. The development proposes 6.3 acres of the site be devoted to open space. With regard to specific uses, the single-family homes proposed for this development would not be incompatible with surrounding land uses.

Properties to the north and south of the site are currently exists as rural homesteads, so the proposed development would represent a change compared to those areas.

b. Any change of character in the area due to installation of public facilities, other zoning changes, new growth changes, deterioration, and development;

Sizable portions of the Robinson Church Road corridor continue to remain rural or undeveloped in character although the Harrisburg Area Land Use Plan prescribes medium density residential uses for the portion of the corridor north of Rocky River Road. Several residential developments including Bridge Pointe to the east of the site suggests increased development interest and pressure in this part of Harrisburg.

Like all other development activity in this area, the development of this land would convert former farmland and forestland into residential neighborhoods, while preserving appropriate area for open space/tree save.

c. The zoning districts and existing land uses of the surrounding properties;

The areas around this property are generally zoned for low to medium density residential use. Existing land use patterns in the area typically consist of low to medium density residential neighborhoods and vacant forested land and land previously used for agricultural purposes.

d. Whether the subject property is suitable for the uses to which it has been restricted under the existing zoning classification;

The property is suitable for the uses which it has been restricted to under the existing zoning classification.

e. Whether the rezoning is compatible with the adjacent neighborhood, especially concerning neighborhood stability and character;

As previously mentioned, the specific use of the property, single family residential, is consistent with surrounding neighborhoods. The primary point of potential inconsistency would be the introduction of smaller lots into this area, which however is in alignment with the Land Use Plan.

- f. The length of time the subject property has remained vacant as zoned (if applicable);**

This property has been used for residential and agricultural purposes.

- g. Whether there is an adequate supply of land available in the subject area and the surrounding community to accommodate the zoning and community needs;**

Land supply is not a direct issue in this area.

- 6. Whether the existing zoning was in error at the time of adoption.**

The existing zoning was not in error at the time of adoption.

Furthermore, as a Conditional Zoning request, the Board must consider the following criteria:

- 7. The proposed Conditional Zoning (CZ) District use's appropriateness for its proposed location and consistency with the purposes, goals, objectives, and policies of the current Land Use Plan.**

The rezoning application to RV district to the property, with the proposed density limitation, is consistent with the density and lot size standards established for the base RV Zoning District in the Unified Development Ordinance and Medium Density Residential land use classification in the Land Use Plan.

The development proposal accompanying the rezoning request would restrict permitted uses to single family residences, which are appropriate in this area.

- 8. The use(s) requested are among those listed as an eligible permitted or conditional use in the general use district as included in the rezoning request.**

The applicant is seeking for the following uses to be allowed in this Conditional Zoning District:

- Single-Family Detached Residential; this use is allowed in the RV District.

- 9. The design of the proposed Conditional Zoning (CZ) District use's minimization of adverse effects, including visual impact of the proposed use on adjacent lands; and avoidance of significant adverse impacts on surrounding lands regarding trash, traffic, service delivery, parking and loading, odors, noise, glare and vibration and not create a nuisance.**

The applicant intends to work collaboratively with both Harrisburg town staff and the NC Department of Transportation in identifying and implementing roadway improvement measures on perimeter roadways intended to mitigate adverse transportation impacts associated with the proposed development. Currently two vehicular site access points are planned, one onto Tom Query Road (planned as a right in/right out intersection) and one full-movement access point onto Robinson Church Road to be aligned opposite Baybrooke Lane.

Furthermore, the re-alignment of the Tom Query/Robinson Church intersection will provide benefits to both residents of the proposed development as well as to citizens and motorists of the larger community. Finally, the planned extension of the Fuda Creek Greenway will provide residents in the area greater bicycle and pedestrian mobility alternatives.

Landscaping buffers shown are adequate to meet the needs of the adjacent properties, and town staff is working with the applicant to identify any prospective tree save opportunities on the site that could be incorporated into the final planting plan.

10. The use limitations and conditions as proposed and/or imposed for the requested district can reasonably be implemented and enforced for the subject property.

The conditions proposed and imposed for this district can be reasonably implemented on this site.

11. When implemented the proposed and/or imposed use limitations and conditions will mitigate specific land development issues that would likely result if the subject property were zoned to accommodate all the uses and the minimum standards of the corresponding general zoning district. If any standards are proposed that are different from the underlying zoning district, the applicant must clearly demonstrate that the overall resultant project is greater than that which is typically allowed by the general district.

All proposed conditions recommended by staff are to bring the site into conformance with applicable local and state regulations.

12. The applicant has agreed to accept the use limitations and conditions as proposed and/or imposed for the requested district.

The applicant will need to agree to all conditions listed in this staff report. Any additional conditions placed on this property will need the acceptance of the applicant before a decision can be made on this application.

13. For an approval, the Board must adopt a consistency statement that the amendment being considered is either consistent or inconsistent with the adopted land use plan and that the Board considers the action to be reasonable and in the public interest.

Both the Planning Board and the Town Council will need to adopt a consistency statement when a recommendation or decision is made on this item.

APPROVAL WITH CONDITIONS:

The proposal is a conditional rezoning request. Conditions may be imposed on the zoning action; staff recommends that the following conditions be placed on this project. Applicant agrees to the following:

1. Applicant agrees to obtain any and all applicable local, state, and federal permits required for development before any development activity can take place.
2. Applicant agrees the community will be age-restricted and require 90% of the home owners will be 55 or older, through deed restrictions.
3. Applicant agrees to restrict exterior cladding materials to non-vinyl products.
4. Applicant agrees to construct a ten (10) foot wide paved greenway trail connection and dedicate a twenty-five (25) foot wide easement to provide access to the greenway connection from the proposed development, to Robinson Church Road, and to the adjoining Fenton Dell community (including constructing the paved trail to Tottenham Drive).
5. Applicant agrees to install a pedestrian crosswalk and signal on the greenway crossing at Robinson Church Rd.
6. Applicant agrees to work collaboratively with the Town Staff and the NC Department of Transportation in identifying and participating in the development of right-of-way improvements on perimeter roads, including left and right turn lanes at site entrances, re-alignment of Tom Query Road at its intersection with Robinson Church Road, and a streetlighting plan.
7. Applicant agrees to identify any potential tree save areas (including heritage trees) on the site that might be able to be retained post-development.

RECOMMENDATION:

With the conditions proposed, the rezoning request is consistent with the Harrisburg Area Land Use Plan. Planning and Zoning Department staff supports approval of the rezoning request with conditions.



APPLICATION FOR CONDITIONAL REZONING

Applications for a Conditional District must be accompanied by an application for a Zoning Map Amendment.

1. Please submit fifteen (15) copies of a complete development plan in conformance with Appendix B, Section B-4 of the UDO (all conditional rezoning applications shall include a site specific development plan which, if approved, shall be binding on the property in question). If approved, a zoning site plan review and approval will be required to receive a zoning compliance permit. For specific requirements, please see the form entitled "Site Plan Requirements".
2. Please list the specific permitted land use(s) that you are proposing. Land use(s) shall be chosen from Article 4.6 in the Harrisburg UDO titled "Use Regulations" and shall correspond to the Zoning District requested.

Age Restricted detached Residential

3. Please list any specific conditions that you would be willing to impose as part of this application (example: no outside storage permitted on-site, increased buffer width, etc.).

This will be a 55 and older age restricted community with walking trails and
an amenity area for the residents. Additional berms and landscaping will be
provided within the proposed lots in addition to the required buffers. Epcon
proposes on all homes to have painted composite siding with stone & brick accents
and architectural shingles.



Harrisburg NC

The right side of opportunity

Owner Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner. In addition, it is understood and acknowledged that if the property is rezoned as requested, the property involved in this request will be perpetually bound by the use(s) authorized and subject to such conditions as imposed, unless subsequently changed or amended through the rezoning process. It is further understood and acknowledged that it is the responsibility of the petitioner to file the development plan in the Cabarrus County Register of Deeds Office as a deed restriction upon the subject property.

If, after two years from the date of approval substantial construction has not begun, the property in question may revert to its prior zoning designation after a public hearing is held in compliance with the required procedure for a zoning map amendment.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

Property Owner	Carolyn Howie
Address	PO Box 248 Harrisburg, NC 28075
Phone	
Fax	
Signature	<i>James H. Wolfe POA</i>

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.

OFFICIAL USE ONLY:

Petition Number: _____
Date Filed: _____
Received By: _____



APPLICATION FOR ZONING MAP AMENDMENT

The following steps are required in order for your application to be considered complete.

Incomplete applications will be returned to the applicant and will not be processed.

1. Schedule a pre-application meeting with staff.
2. Submit a completed application for an amendment to the official zoning map. All applications must include:
 - a. A list of all adjacent property owners (include owner name, address, and Parcel Identification Number)
 - b. A recent survey or legal description of the property or area to be rezoned
 - c. A copy of the letter, minutes, and the sign-up sheet from the Neighborhood Meeting
 - d. Copies of the Traffic Impact Analysis (TIA), proposed site plan, landscape plan, and proposed building elevations (applicability determined at pre-application meeting with staff)
3. Submit cash, checks, or money orders made payable to the Town of Harrisburg for all fees listed in the pre-application checklist.

Overview of the Rezoning Process:

1. Hold a pre-application meeting with staff to discuss your rezoning request and the map amendment process.
2. Hold a **neighborhood meeting** with the adjacent property owners. All adjacent property owners must be contacted and given an opportunity to meet with the applicant at a meeting established at a reasonable time. No member of the Town decision-making entity may participate in this meeting.
3. Submit a Zoning Map Amendment application to the Town of Harrisburg Planning Department. All applications must be submitted by the third Tuesday of the Month to go before the Planning and Zoning Board on the following month. NOTE: If the request is a Conditional Zoning request, complete and submit, with this application, a Conditional Rezoning Application.
4. Planning staff will review your application and subsequent information, prepare a staff report for the Board and take your request to the Planning and Zoning Board for a recommendation to the Town Council. Planning Board meetings are held on the third Tuesday of every month at 7:00 PM.
5. Once the Planning and Zoning Board has made a recommendation, staff will notify the adjacent property owners of the public hearing, post a sign on the property, and place announcements of the hearing in the local newspaper.
6. Town Council meetings are held on the second Monday of every month at 7:00 PM. At this meeting the Council will hold a public hearing and may vote on your request. Meetings are held at the Harrisburg Town Hall located at 4100 Main Street, Suite 101.

Questions: Contact the Town of Harrisburg Planning Department with any questions regarding rezonings in the Town of Harrisburg. Staff can be reached at 704-455-0709.



Subject Property Information

1. Street Address 7800 Robinson Church Road
2. PIN(s) (10 digit#) 5507 -- 50 -- 8410 ; -- -- --
3. Deed Reference Book Null Page
4. Township # 1

Description of Subject Property

5. Size (square feet or acreage) 32.85 Acres
 6. Street Frontage (feet) 3000
 7. Current Land Use Residential (One home)
 8. Surrounding Land Use and Zoning Classification
 - North: Zoning RE Land Use Residential
 - South: Zoning RE Land Use Residential
 - East: Zoning RE, RM-1 Land Use Residential
 - West: Zoning RE, RM-1 Land Use Residential
 9. Request to Change Zoning From RE to CZ-RV
 10. Is this a request for a Conditional Rezoning? YES NO
- (If YES, you must also submit an application for a Conditional Rezoning)
11. Purpose for Request: A 76 Lot Age-restricted Community
- _____
- _____
- _____
- _____
- _____
- _____



HarrisburgNC

The right side of opportunity

Owner/Agent/Applicant Information

It is understood by all parties hereto that while this application will be carefully considered and reviewed, the burden of providing its need and providing all required evidence rests with the below named petitioner.

I do hereby certify that all information which I have provided for this application is, to the best of my/our knowledge, correct.

12. Property Owner

Carolyn Howie

Address

PO Box 248, Harrisburg, NC 28075

Phone

Fax

Email:

Signature

James H. Wolfe POA

13. Agent (if any)

Address

Phone

Fax

Email

Signature

14. Applicant (if any)

Epcon Communities

Address

11020 David Taylor Dr., Suite 106
Charlotte, NC 28262

Phone

704-589-4821

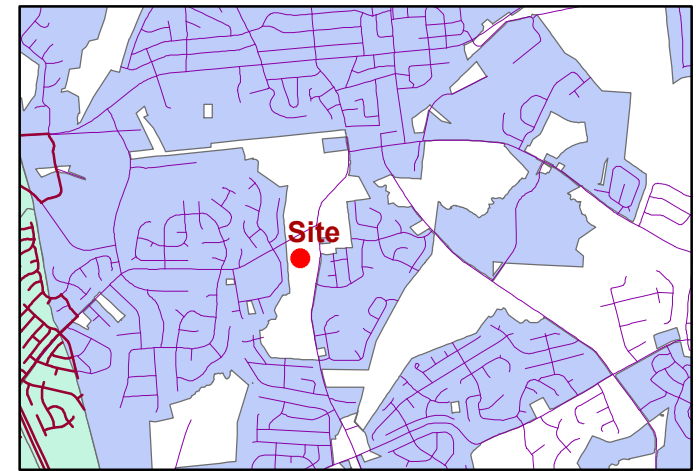
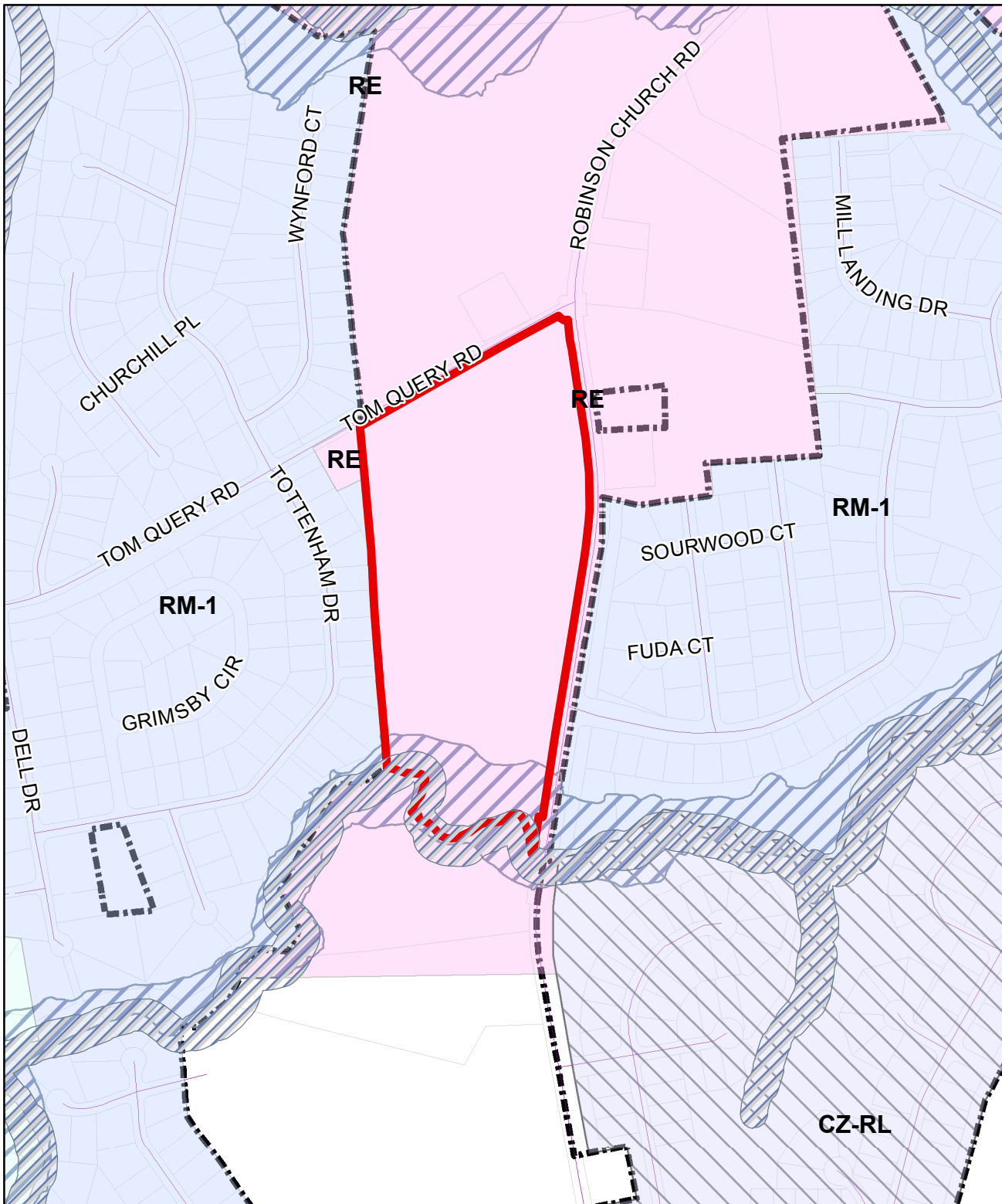
Fax

Email

mdavis@epconcommunities.com

Signature

NOTE: If multiple parcels are involved in a request, property owners must sign an application identifying the individual parcel(s) represented. Each parcel included in the request must be accounted for in the application process for the application to be considered complete.



H 2019-03-(R) 7800 Robinson Church Road Epcon Communities

Applicant: Epcon Communities

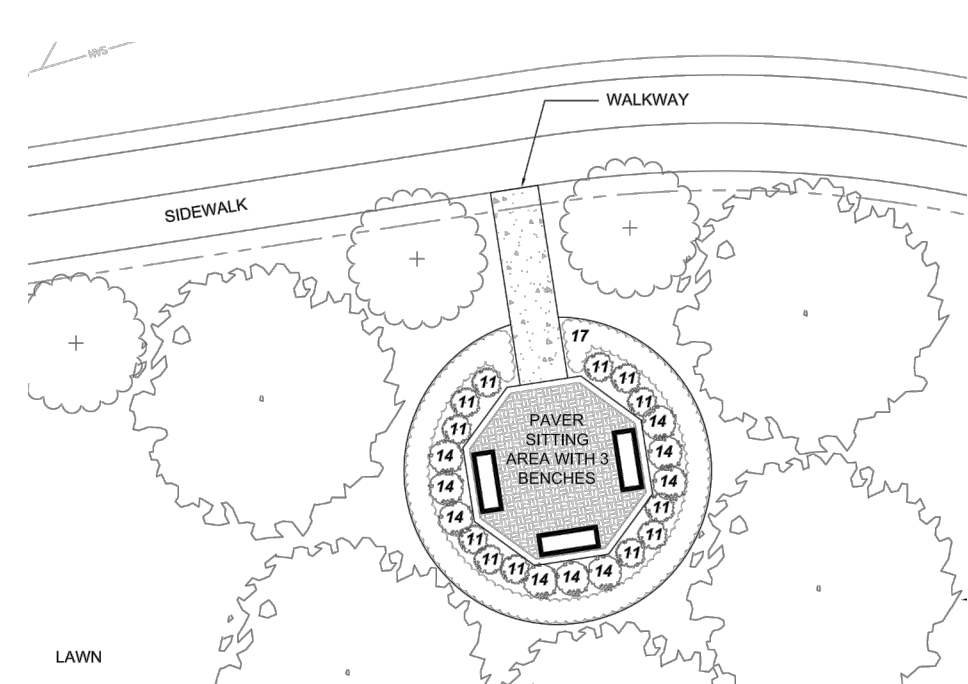
Current Zoning: RE

Proposed Zoning: Conditional Residential Village
(CZ-RV)

-  Site
-  Town Limits
-  Floodplain Overlay
-  Parcels



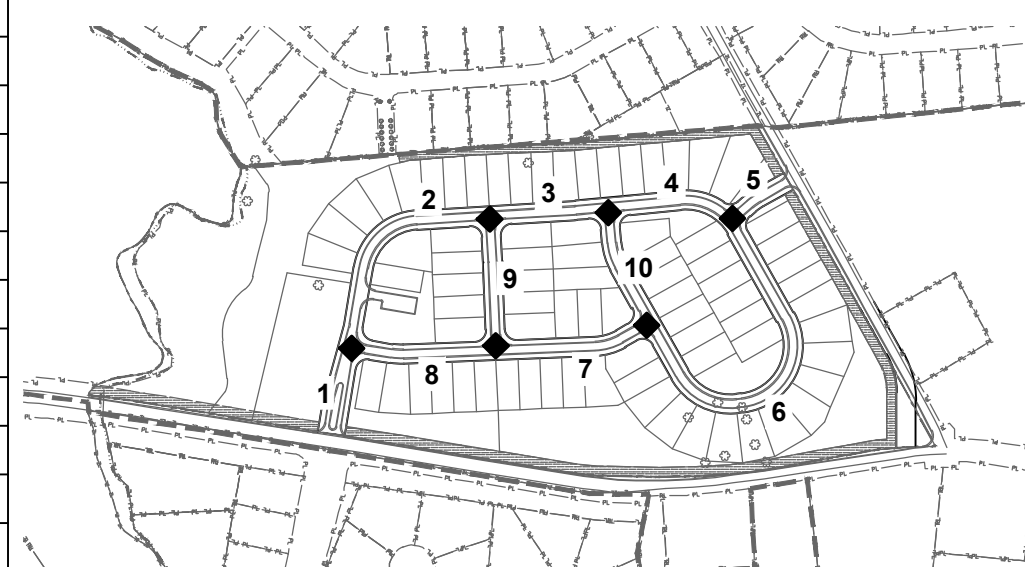
0 350 700 1,400 Feet



CONCEPT POCKET PARK FOR ACTIVE OPEN SPACE

TREE #	DBH	TREE SPECIES	TO BE REMOVED (TBR) OR TO REMAIN
01	31"	MAPLE	TO REMAIN
02	34"	SWEET GUM	TO REMAIN
03	34"	MAPLE	TBR
04	37"	OAK	TO REMAIN
05	30"	MAPLE	TO REMAIN
06	30"	OAK	TO REMAIN
07	45"	OAK	TBR
08	30"	MAPLE	TBR
09	30"	MAPLE	TBR
10	36"	OAK	TO REMAIN
11	45"	MAPLE	TO REMAIN
12	31"	MAPLE	TBR
13	32"	MAPLE	TBR

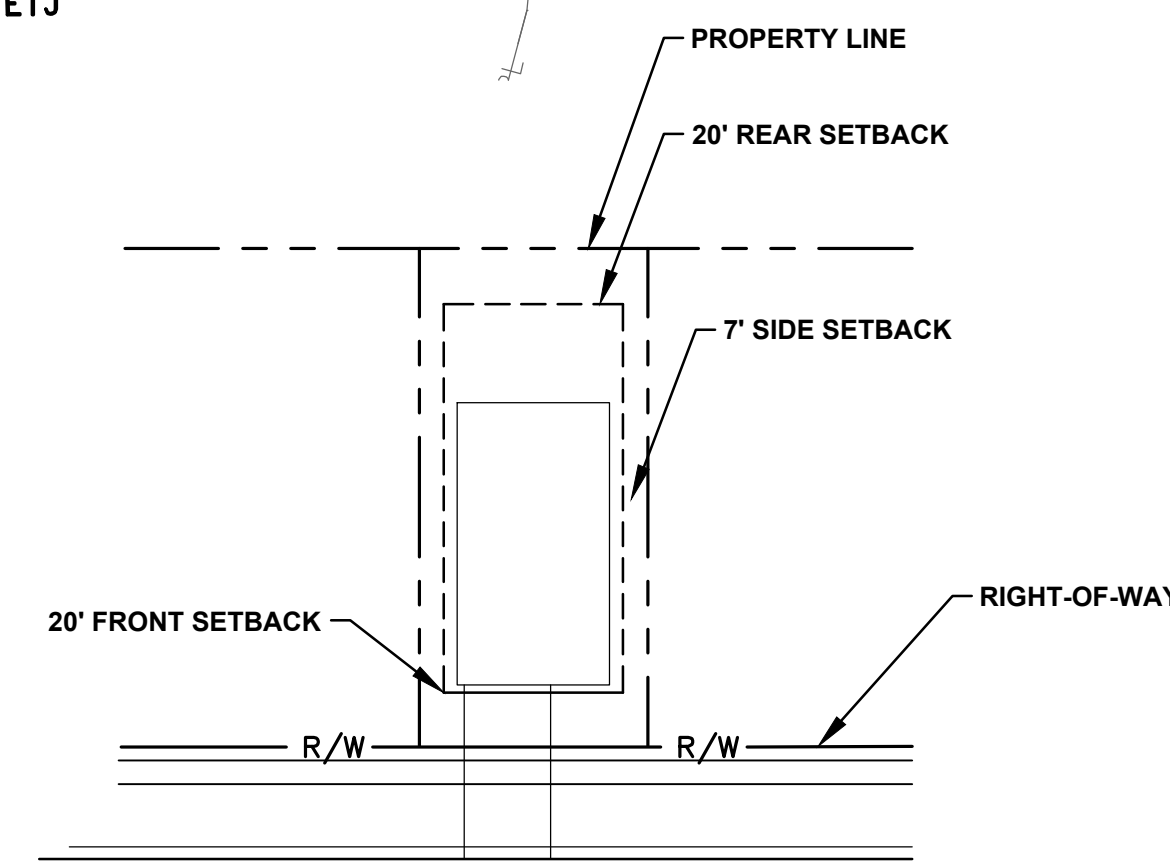
EXISTING HERITAGE TREES



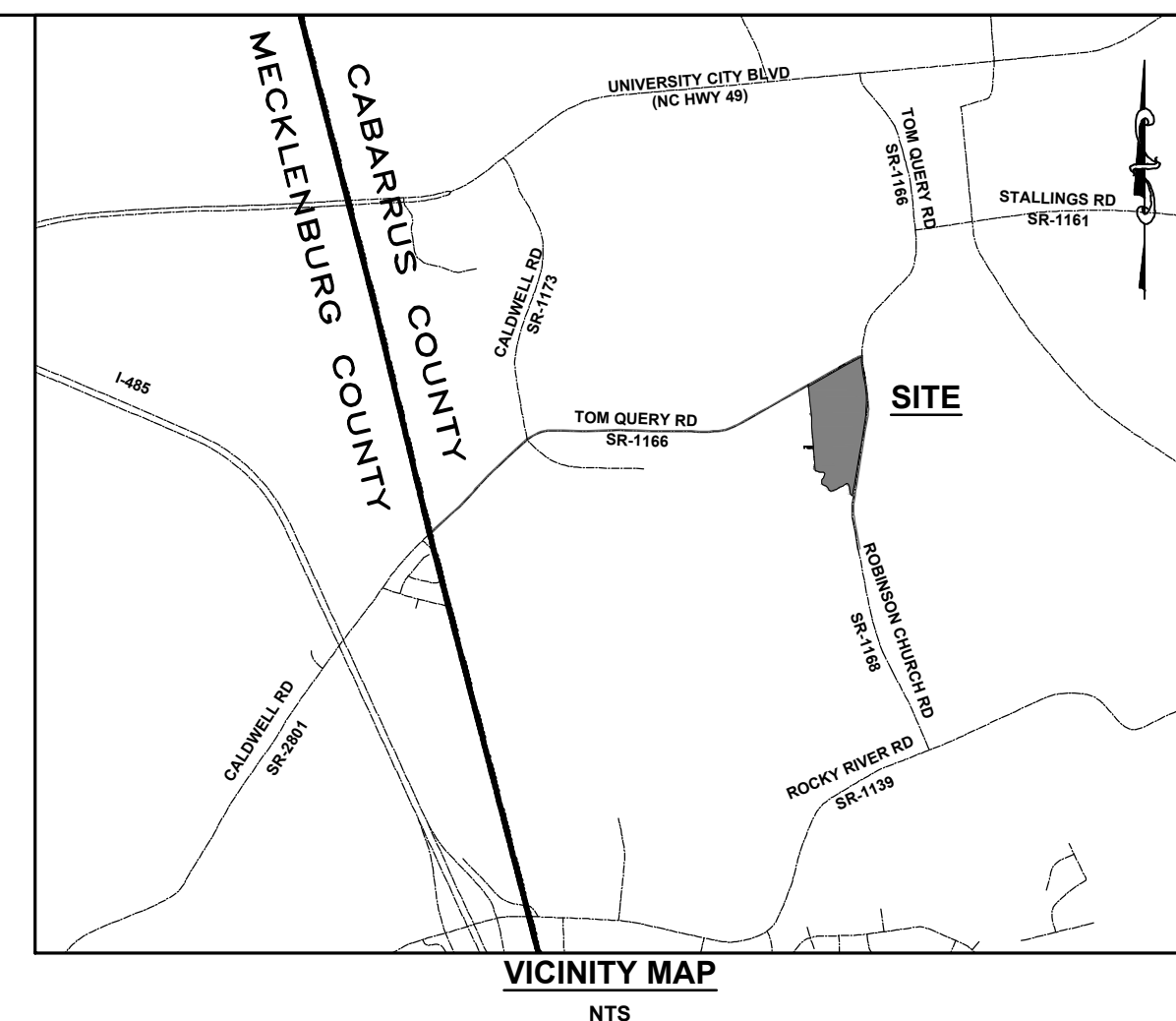
STREET CONNECTIVITY RATIO
10 LINKS / 6 NODES = 1.67 RATIO

BLOCK	LOTS	LENGTH / PERIMETER
A	1 - 17	956'
B	17 - 22	392'
C	23 - 28	347'
D	29 - 36	445'
E	37 - 42	305'
F	42 - 47	328'
G	48 - 60	1,406'
H	61 - 70	1,149'
J	71 - 77	1,105'

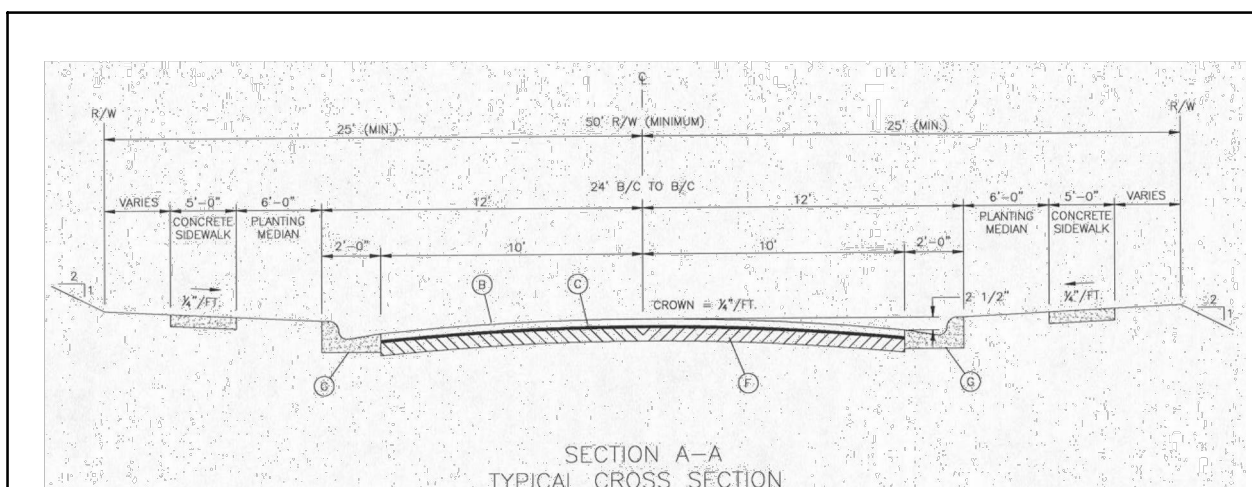
BLOCK LENGTH / PERIMETER



TYPICAL LOT



VICINITY MAP
NTS



**TYPICAL SECTION
RESIDENTIAL STREET**

SITE STATISTICS

PARCEL NUMBERS:	5507-50-9410
CURRENT ZONING:	RE
PROPOSED ZONING:	CZ-RV
TOTAL SITE AREA:	32.85 ACRES
PROPOSED USE:	SINGLE FAMILY RESIDENTIAL
NUMBER OF LOTS:	7
DENSITY:	2.34 DU / ACRE
TOTAL LOT AREA:	640,989 SF / 14.72 AC
SMALLEST LOT SIZE:	7,500 SF
MINIMUM SETBACKS:	
-FRONT:	20'
-SIDE:	7'
-SIDE CORNER:	12.5'
-REAR:	20'
NCDDOT RIGHT-OF-WAY DEDICATION	9,891 SF / 0.22 AC
NET SITE AREA (LESS NCDDOT R/W):	32.63 AC

PUBLIC OPEN SPACE REQUIREMENTS:
PUBLIC OPEN SPACE REQUIRED: 2.20 AC. (1/35 AC. x 77 LOTS)
PUBLIC OPEN SPACE PROVIDED: 2.20 AC.

SUBDIVISION OPEN SPACE REQUIREMENTS:	3.26 AC. (10% OF NET AREA)
ACTIVE OPEN SPACE REQUIRED:	1.93 AC. (0.025 AC x 77 LOTS)
ACTIVE OPEN SPACE PROVIDED:	2.06 AC.
PASSIVE OPEN SPACE PROVIDED:	4.16 AC.
TOTAL SUBD. OPEN SPACE AREA:	6.22 AC.
PERCENTAGE OF INACCESSIBLE LAND:	0.0%

RIGHT-OF-WAY:
TOTAL RIGHT-OF-WAY AREA: 201,477 SF / 4.63 AC
PROPOSED RIGHT-OF-WAY: ROAD 'A' 160 LF

GENERAL NOTES:

1. BOUNDARY INFORMATION PROVIDED BY CABARRUS COUNTY GIS.
2. EXISTING TOPOGRAPHIC CONTOURS PROVIDED BY CABARRUS COUNTY GIS.
3. ACCESS POINTS MUST BE STAKED IN THE FIELD FOR VERIFICATION OF SIGHT DISTANCE.
4. ALL ROADS SHALL BE DESIGNED ACCORDING TO THE TOWN OF HARRISBURG STANDARDS.
5. 25' X 25' SIGHT TRIANGLE PLACEMENTS SHALL BE PROVIDED AT ALL INTERNAL INTERSECTIONS.
6. 25' X 50' SIGHT TRIANGLES SHALL BE PROVIDED AT THE ROBINSON CHURCH ENTRANCE.
7. THE SUBDIVISION WILL BE SERVED BY PUBLIC WATER AND GRAVITY SEWER SERVICE FROM THE TOWN OF HARRISBURG. ALL WATER AND SEWER EXTENSIONS REQUIRED FOR THIS PROJECT ARE THE RESPONSIBILITY OF THE DEVELOPER.
8. ADA RAMPS SHALL BE PLACED AT ALL INTERSECTIONS. ADA RAMPS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT ADA REQUIREMENTS.
9. PORTIONS OF THIS PROPERTY ARE LOCATED WITHIN A SPECIAL FLOOD HAZARD AREA PER FEMA FIRM MAP NO. 3710550600K AND 3710550700K BOTH DATED NOV 16, 2018.
10. A LIGHTING PLAN WILL BE SUBMITTED TO THE TOWN ENGINEER FOR APPROVAL THAT WILL COMPLY WITH THE TOWN OF HARRISBURG STREET LIGHTING REQUIREMENTS.
11. BMP TO BE LANDSCAPED WITH FOUNTAIN AND FENCED.
12. HERITAGE TREES TO BE REMOVED DURING CONSTRUCTION SHALL BE MITIGATED PURSUANT TO ARTICLE 9 OF THE U.D.O.



DATE:	MARCH 202
MCE PROJ. #	
DRAWN	
DESIGNED	
CHECKED	
PROJ. MGR.	

SCALE
HORIZONTAL
1"=100'
VERTICAL
NA

1

DRAWING NUMBER

STATUS: **SKETCH PLAN**
NOT FOR CONSTRUCTION

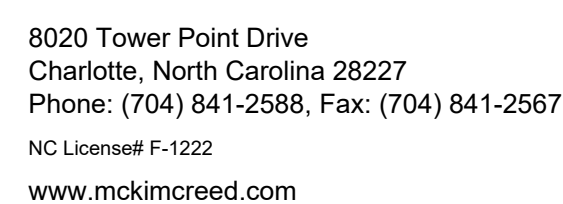
[illegible]

This electronic document is the property of

McKim & Creed, Inc.

and is not to be used for any purpose without the written consent of the engineer whose seal appears on the original certified document.

**DO NOT REMOVE FROM
ELECTRONIC FILE**



TOWN OF HARRISBURG, NC
ROBINSON CHURCH ROAD

SKETCH PLAN

Epcon Product



Epcon Product



Promenade III
© 2018 IP86, LLC

Epcon Product



Palazzo

© 2016 Epcon Communities Franchising, Inc.

Aerial View of Product – Rear Yard



BIRDS EYE VIEW – COURTYARDS & HOMES



© 2014 Epcn Communities Franchising, Inc.



Neighborhood Meeting Summary
Epcon Communities
Case: H2019-03-® 7800 Robinson Church Road

Aa required by the Town of Harrisburg, a neighborhood meeting was held on Thursday, November 21st at 6:00 PM at the Town of Harrisburg. Epcon was represented by Mike Davis and John Shamp. Keith Rains from McKim & Creed was the engineer for Epcon. The following is a summary of some of the comments, concerns, and responses from the meeting:

- There was a question if the existing gas easement would be affecting the realignment of Tom Query Road and Robinson Church Road. It was responded to that the gas easement would not affect the widening.
- There was a request to consider additional buffering to the Fenton Dell residents. Epcon explained the current 20' buffer will preserve the trees that exist and additional buffering will be provided within the rear setbacks of the lots that would include trees and shrubs.
- The question was asked if there was a double yellow line where the proposed drive would be on Tom Query. It was confirmed that there was.
- A resident from Fenton Dell was concerned about water runoff stating that they currently have a ditch that gets flooded regularly. Requested a bigger buffer to help with that. Epcon's engineer stated that the stormwater from the site would be captured in a new storm drainage system and piped to a proposed wet pond. This would significantly reduce the water that currently drains to the Fenton Dell residents.
- There was a concern that the curve on Robinson Church Road as you drive towards to Harrisburg was dangerous. It was asked if this project would be required to do anything about it. Harrisburg planning staff said it would not be a requirement for this site, but they would notify the appropriate agencies about the concern.
- A resident asked if Epcon would agree in writing to meet the state stormwater requirements. The engineer stated that they would have to before they could get a permit to do the project from the state.
- A resident asked about preserving the trees shown in the buffer along Robinson Church Road. Epcon stated that they wanted as much of the buffer to remain as possible. They stated they would only clear as much as possible that was required for grading.
- A resident was concerned about tree removal to install a trail access to Fenton Dell. The engineer stated that the trail would meander as needed to minimize the tree removal.
- A question was asked if the BMP would be fenced. Epcon responded that it would be and landscaped with a fountain in the wet pond as well.

- A question was asked about a cross-walk across Robinson Church Road to connect the trail system. Epcon stated that they are in discussions with the Town regarding the cross-walk.
- A question was asked if the project would be installing any turn lanes on Robinson Church Road. Epcon stated that any improvements NCDOT required would be installed. They were concerned about Bridgepoint drivers making left turns into their site waiting on slow drivers. Planning staff informed them that they would be formally reviewing the plan now and that NCDOT would be involved with that review.
- A question was asked about the HOA dues and when it would be taken over by the residents. Epcon stated that their typical dues were around \$250 per month and that it depended on how quick the community sells as to when the residents took over.
- A question was asked about how would they know the comments from the meeting were addressed before it went to Planning Board and Council. Planning staff stated that they would not take it to the Board and Council without the issues being addressed to the extent Epcon agreed to address.
- One resident spoke in support of the greenway/trail system

Attachments:

Agenda

Sign-in Sheet

**TOWN OF HARRISBURG, NORTH CAROLINA
HARRISBURG TOWN HALL
NEIGHBORHOOD MEETING
THURSDAY, November 21, 2019
6:00 PM**

AGENDA

1. CALL TO ORDER:

2. PRESENTATIONS:

A. 6:00 PM H2019-01-(R) – Pharr Mill/ Mulberry Road Parcels –
Request to rezone parcels # 55177993000000, 55179854430000 and 55179699450000, generally locate at the intersection of Phar Mill and Mulberry Rd. The property owner is requesting a rezoning of these parcels, currently located in the County, from LI (Light Industrial) and OI (Office Institutional) to CZ-RV, Conditional Zoning Residential Village. The purpose of the rezoning is to enable the property owner to develop and subdivide the property for single family homes.

B. 6:30 PM H2019-03-(R) 7800 Robinson Church Rd – Request to rezone parcel # 55075084100000, located at the intersection of Robinson Church and Tom Query Rd. The property owner is requesting a rezoning of these parcels from RE, Rural Estate, to CZ-RV, Conditional Zoning Residential Village. The purpose of the rezoning is to enable the property owner to develop and subdivide the property for age-restricted (55+ only) single family homes.

3. ADJOURNMENT

7800 Robinson Church Road Rezoning

Sign in Sheet

Neighborhood Meeting

11/21/19

6:30 PM - 7:00 PM

Name

Address

Ken & Darlene Seibert 7917 Tottenham Dr.

Virginia & Nick Lieto 7869 TOTTENHAM DR.

JESSICA Fava 4455 Millard Dr.

ASHOK Kumar Kotte 7232 old valley way.

Betty Lee Robinson Ch

Cathy Idunsa 7525 Robinson Ch

* Bob & Angela Brokin 7853 Tottenham Drive

Jan Maynard 7829 Tottenham Drive

Kathleen Murphy 7829 Tottenham Dr.

MIKE Smith 6325 PHARR MCK RD

DAVE A. PARKER 8152 CAMELOT DR.

Joe-Phillip Tudard - 7813 Tottenham Dr.

GREG HOWARD 5045 WYNFORD CT

Jeff Phillips 6005 The Meadows LN

Sandy Morgan 7173 Ruth Fidler Ln

Robert & Susan ADAM 4655 Rice Hill DR.

Sheryl Cheek 7746 Coachman Ct Harrisburg NC 28075

Bo & Dixie Clark 8026 Wycombe Ct Harrisburg

7800 Robinson Church Road Rezoning

Sign in Sheet

Neighborhood Meeting

11/21/19

6:30 PM - 7:00 PM

Name

Address

Patrizia Rhyne

7250 Streamhaven Dr. Harrisburg NC

Victoria Minchin

7901 Tottenham Dr. Harrisburg

GREG HOWARD

5045 WYNFORD CT

Elizabeth Scott

4895 Sherburne Dr Harrisburg

Deborah Beale

7967 Grimsby Circle Harrisburg

Kim Harman

7837 Tottenham Dr Harrisburg

Todd MAY

8018 WYCOMBE COURT

Nicole Eskew

8010 Wycombe Ct.

Jan Eskew

8010 Wycombe Ct.

Ron Smith

3118 SEA ISLAND.



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consideration of annexation of property at 7800 Robinson Church Rd (Howie property)-H2019-03-(R)

Presenting Personnel:

Sushil Nepal, Planning & Economic Development Director

Suggested Motion or Action:

If approved:

Motion to approve the annexation of the property at 7800 Robinson Church Rd (Howie property) H2019-03-(R).

Description/Background:

If Town Council approves the rezoning request H2019-03-(R) on November 9, 2020, the parcels were rezoned from RE, Rural Estate to RV-CZ, Conditional Residential Village to allow for 77 age-restricted single family home. The rezoned property, which is in the Town's Extra-Territorial Jurisdiction (ETJ) would then need to be annexed and incorporated into Town limit to be serviced by public utilities.

Applicant is requesting the property associated with approved rezoning H2019-03-(R) be annexed into the Town limits. A survey of the property and Town Clerk's certification along with Annexation resolution is attached for Town Council's consideration. A Public Hearing on this matter was held at the October 12, 2020 Town Council meeting.

Recommendation:

If Council approves the associated rezoning, staff then recommends approval of annexation of the property at 7800 Robinson Church Rd (H2019-03-R).

Fiscal Impact:

The annexation has no direct fiscal impact as a result of the annexation itself, however, the result of the development on the annexed properties will both generate additional property tax revenues for the Town and add to the costs associated with providing the additional homes with Town services.

Attachments:

1. Petition Requesting Annexation
2. Legal Property Description
3. Property Map
4. Certificate of Sufficiency
5. Resolution Fixing Date of Public Hearing - Howie (3)
6. Annexation Ord 7014



Harrisburg NC

The right side of opportunity

PETITION REQUESTING ANNEXATION

DATE: 10/30/19

TO THE TOWN COUNCIL OF THE TOWN OF HARRISBURG

1. We the undersigned owners of real property respectfully request that the area described in paragraph 2. below be annexed to the Town of Harrisburg.

2. The area to be annexed is:

☒ CONTIGUOUS

☐ NON-CONTIGUOUS

to the Town of Harrisburg and the boundaries of such territory are:

☒ ATTACHED

☐ DESCRIBED AS FOLLOWS:

SEE EXHIBIT "A"

3. A sealed survey is attached showing the area proposed for annexation in relation to the primary corporate limits of the Town of Harrisburg.

4. SIGNATURE OF OWNERS

NAME

ADDRESS

Ann H Wolfe POA For

Carolyn O. Howie PO Box 248

HARRISBURG, NC

28075

PIN 55075084100000



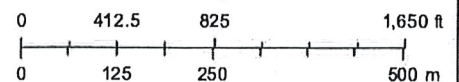
Property Real ID	01-016 -0053.00	Parcel PIN	55075084100000
Physical Address:	7800 ROBINSON CHURCH RD HARRISBURG NC 28075	Land Units	32.99
Owner Name 1:	HOWIE PARKS H	Land Units Type	AC
Owner Name 2:	HOWIE CAROLYN O WF	Land Value	1127130
Mailing Address:	P O BOX 248	Building Value	118640
Mail City:	HARRISBURG	Assessed Value	217140
Mail State:	NC	Market Value	1260830
Mail Zip:	28075		

Cabarrus County shall not be held liable for any errors in the data represented on this record. This includes errors of omission, commission, concerning the content of the data, and relative positional accuracy of the data. The data cannot be construed to be a legal document. Primary sources from which this data was compiled must be consulted for verification of information represented on this map document.

Map Created By Cabarrus County IT Department
Data Sources: Cabarrus County Land Records

Sources: Esri, HERE, Garmin, Intermap, Increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

1:9,028



Print Date: October 30, 2019

	<u>Zoning</u>	<u>Name / Owner</u>	<u>Mailing Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>
	<u>Original Site</u>	<u>RE</u>	<u>Property #55075084100000</u>	<u>7800 ROBINSON CHURCH RD.</u>	<u>HARRISBURG</u>	<u>NC</u>
						<u>28075</u>
1	RE	Vincent & Kary Love	8140 ROBINSON CHURCH RD	Harrisburg	NC	28075
2	RM 1	BRIDGE POINTE HOMEOWNERS ASSOCIATION INC; C/O CUSICK COMMUNITY MGMT LLC	11111 CARMEL COMMONS BLVD STE 410	Charlotte	NC	28226
3	RM 1	BRIDGE POINTE HOMEOWNERS ASSOCIATION INC; C/O CUSICK COMMUNITY MGMT LLC	11111 CARMEL COMMONS BLVD STE 410	Charlotte	NC	28226
4	RE	Betty B. Lee	7725 ROBINSON CHURCH RD	Harrisburg	NC	28075
5	RE	Ossama Bianouni	7910 TOTTENHAM DR	Harrisburg	NC	28075
6	RE	Betty B. Lee	7725 ROBINSON CHURCH RD	Harrisburg	NC	28075
7	RE	Joshua & Linda Goodman	7535 ROBINSON CHURCH RD	Harrisburg	NC	28075
8	RE	Walter & Betti Howie	7600 ROBINSON CHURCH RD	Harrisburg	NC	28076
9	RE	John & Barbara Howie	4848 TOM QUERY ROAD	Harrisburg	NC	28077
10	RE	Ruby Harris	4949 TOM QUERY RD	Harrisburg	NC	28078
11	RM 1	David & Kimberlee Harman	7837 TOTTENHAM DRIVE	Harrisburg	NC	28079
12	RM 2	Casey Johnson	7845 TOTTENHAM DR	Harrisburg	NC	28080
13	RM 3	Robert & Angela Brown	7853 TOTTENHAM DRIVE	Harrisburg	NC	28081

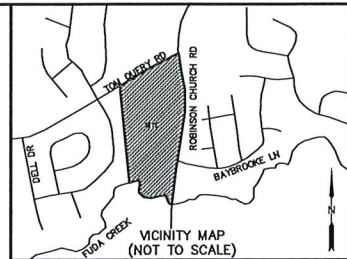
14	RM 4	James & Carolyn Stubbs	7861 TOTTENHAM DR	Harrisburg	NC	28082
15	RM 5	Nicholas & Virginia Lieto	7869 TOTTENHAM DR	Harrisburg	NC	28083
16	RM 6	Victoria Minchin	7901 TOTTENHAM DR	Harrisburg	NC	28084
17	RM 7	Maura Cooper & Stuart Ott	7909 TOTTENHAM DR	Harrisburg	NC	28085
18	RM 8	Kenneth & Darlene Seibert	7917 TOTTENHAM DRIVE	Harrisburg	NC	28086

Being located in Number 1 Township, Town of Harrisburg, Cabarrus County, North Carolina and being more particularly described as follows:

Beginning at a point in the centerline of Tom Query Road having NC Grid Coordinates of N: 571,136.87, E: 1,505,352.79, said point being the northeastern corner of Ruth S. Harris, and runs thence from the point of beginning along the centerline of Tom Query Road the following calls: 1) N 60° 35' 42" E 254.14 to a computed point; 2) N 60° 41' 59" E 307.76' to a computed point; 3) N 61° 12' 25" E 295.65' to a computed point; 4) N 63° 08' 49" E 56.12 to a computed point; 5) N 64° 20' 59" E 79.41' to a computed point, said point being the northwestern corner of Betty B. Lee as recorded in DB 10127 PG 18; thence S 6° 57' 58" E 225.12' to a found iron rod; thence S 3° 39' 41" E 297.79' to a computed point; thence S 3° 39' 41" E 261.20' to a computed point; thence S 78° 26' 59" E 5.73' to a computed point in the centerline of Robinson Church Road; thence with the centerline of Robinson Church Road the following seven (7) calls: 1) S 2° 39' 57" E 59.08' to a computed point; 2) S 4° 15' 07" W 59.14' to a computed point; 3) S 5° 18' 18" W 57.04' to a computed point; 4) S 8° 44' 35" W 437.63' to a computed point; 5) S 9° 01' 22" W 296.16' to a computed point; 6) S 9° 58' 08" W 198.99' to a computed point; 7) S 10° 06' 16" W 164.99' to a computed point; thence leaving the centerline of Robinson Church Road N 79° 57' 52" W 45.00' to a set iron rod on the western right of way of Robinson Church Road; thence with the western right of way of Robinson Church Road along a circular curve having a radius of 15,645.00', an arc length of 146.31', and a chord bearing and distance of S 9° 46' 03" W 146.31' to a set iron rod; thence again with the western right of way of Robinson Church Road along a circular curve having a radius of 4,345.00', an arch length of 13.31', and a chord bearing and distance of S 9° 24' 42" W 13.31' to a point in the centerline of Fuda Creek; thence with the centerline of Fuda Creek the following twenty-eight (28) calls: 1) thence N 47° 41' 21" W 12.35' to a computed point; 2) thence N 34° 27' 01" W 10.52 to a computed point; 3) thence N 11° 25' 55" W 7.93' to a computed point; 4) thence N 7° 51' 23" W 16.93' to a computed point; 5) thence N 14° 29' 22" W 120.59' to a computed point; 6) thence N 60° 22' 14" W 12.56' to a computed point; 7) thence N 89° 46' 11" W 21.65' to a computed point; 8) thence S 58° 32' 31" W 24.99' to a computed point; 9) thence S 73° 21' 29" W 74.22' to a computed point; 10) thence S 80° 48' 58" W 36.20' to a computed point; 11) thence S 54° 48' 23" W 52.16' to a computed point; 12) thence S 65° 11' 40" W 52.52' to a computed point; 13) thence S 81° 58' 53" W 30.42' to a computed point; 14) thence N 70° 48' 13" W 36.67' to a computed point; 15) thence N 45° 07' 45" W 41.75' to a computed point; 16) thence N 54° 56' 39" W 75.01' to a computed point; 17) N 38° 22' 54" W 21.23' to a computed point; 18) N

15° 27' 47" W 20.45' to a computed point; 19) thence N 20° 04' 27" E 17.10' to a computed point; 20) thence N 38° 43' 31" E 36.05' to a computed point; 21) thence N 15° 34' 48" E 100.36' to a computed point; 22) thence N 21° 26' 51" W 13.35' to a computed point; 23) thence N 69° 16' 14" W 10.79' to a computed point; 24) thence S 85° 37' 08" W 27.46' to a computed point; 25) thence N 84° 42' 51" W 33.90' to a computed point; 26) thence N 72° 40' 36" W 62.72' to a computed point; 27) S 75° 25' 21" W 17.59' to a computed point; 28) thence S 46° 36' 55" W 22.78' to a computed point, thence leaving the centerline of Fuda Creek and running with the eastern line of the Fenton-Dell Subdivision as recorded in PB 37 at Page 18 N 4° 17' 21" W 409.54' to a found iron rod; thence N 4° 08' 00" W 199.94' to a found iron pipe; thence N 4° 10' 34" W 761.05' to the point and place of BEGINNING. Said parcel contains 34.17 acres, more or less.

○ AX	AXLE
○ IPF	IRON PIPE FOUND
○ IRF	(AS DESCRIBED)
○ JI	IRON FOUND
○ JI	(AS DESCRIBED)
○ PKF	ANGLE IRON
○ PKS	PK NAIL FOUND
○	PK NAIL SET
○	SET IRON ROD
○	(TRAVERSE)
●	SET IRON ROD
○	(IF REBAR)
○ RR	R.R. SPIKE
■ CMF	CONCRETE MONUMENT
■ CMS	(FOUND)
■	CONCRETE MONUMENT
■	(SET)
■	HUB (FOUND)
■	HUB (SET)
▲	NAIL (FOUND)
▲	NAIL (SET)



NOTES:

ALL DISTANCES ARE IN FEET (US SURVEY FOOT) AND DECIMALS THEREOF AND REPRESENT HORIZONTAL GROUND DISTANCES UNLESS SHOWN OTHERWISE.

THIS BOUNDARY SURVEY IS BASED ON EXISTING PHYSICAL EVIDENCE OBSERVED ON THE DATE OF THE FIELD SURVEY.

BEARING AND DISTANCES SHOWN IN PARENTHESIS REPRESENT
DEED CALLS FROM THE REFERENCE SHOWN HEREON, I.E.
(N0°00'00"E 100.00)

A HORIZONTAL CONTROL MONUMENT OF A FEDERAL OR STATE AGENCY WAS NOT FOUND WITHIN 2000 FEET OF THE SUBJECT PROPERTY.

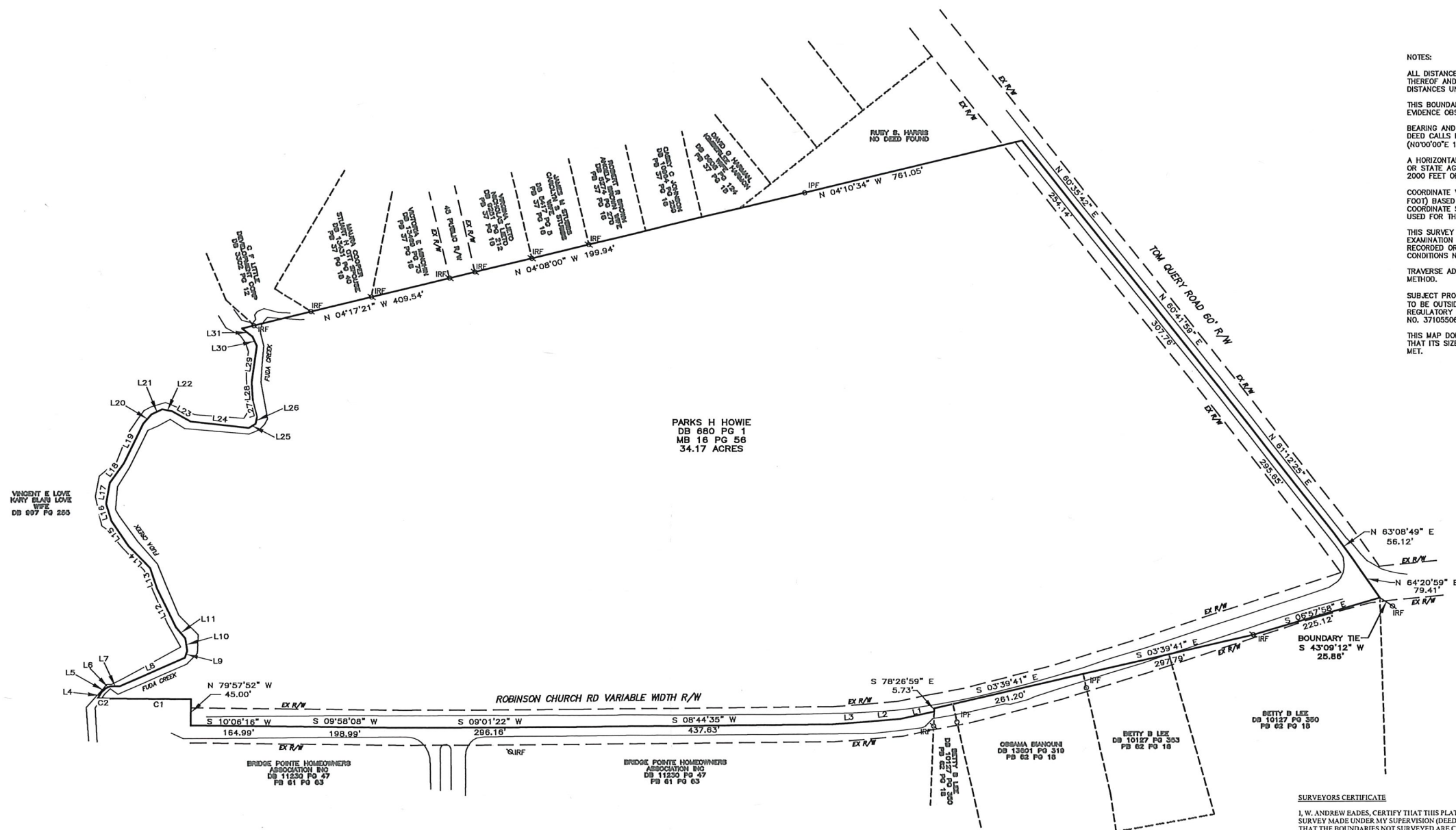
COORDINATE VALUES SHOWN HEREON ARE GRID (US SURVEY
FOOT) BASED ON THE NORTH CAROLINA STATE PLANE
COORDINATE SYSTEM NAD 83. THE AVERAGE COMBINED FACTOR
USED FOR THE PROJECT WAS 0.99999999999.

THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE EXAMINATION BY AN ATTORNEY. PROPERTY MAY BE SUBJECT TO RECORDED OR UNRECORDED RIGHT-OF-WAY, EASEMENTS, OR CONDITIONS NOT OBSERVED OR SHOWN HEREON.

TRAVERSE ADJUSTED BY THE LEAST SQUARES ADJUSTMENT METHOD.

SUBJECT PROPERTY IS LOCATED IN ZONE X (AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD PLAIN)} AND ZONE AE REGULATORY FLOODWAY AS PER FEMA FIRM COMMUNITY PANEL NO. 3710550600K; EFFECTIVE DATE NOVEMBER 16,2018.

THIS MAP DOES NOT CONFORM TO GS 47-30, AS AMENDED, IN THAT ITS SIZE AND BORDER REQUIREMENTS HAVE NOT BEEN MET.

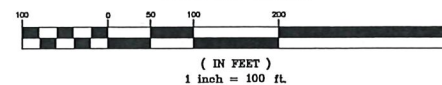


LINE	BEARING	DISTANCE
1	S 02° 39' 57"	E 69.08
2	C 04° 15' 07"	W 59.14
3	S 12° 01' 12"	E 69.08
4	N 47° 41' 21"	W 12.35
5	C 34° 57' 01"	W 10.52
6	S 05° 25' 15"	E 69.08
7	N 07° 51' 23"	E 116.93
8	N 14° 29' 22"	W 120.55
9	N 07° 51' 23"	E 116.93
10	S 58° 32' 31"	W 24.99
11	S 58° 32' 31"	W 24.99
12	S 60° 48' 58"	W 56.20
13	S 60° 48' 58"	W 56.20
14	S 64° 48' 23"	W 52.16
15	S 64° 48' 23"	W 52.16
16	S 61° 58' 53"	W 50.42
17	N 70° 48' 13"	W 36.67
18	N 70° 48' 13"	W 36.67
19	S 54° 58' 39"	W 73.01
20	N 38° 22' 54"	W 21.23
21	S 54° 58' 39"	W 73.01
22	N 00° 04' 27"	W 10.45
23	N 38° 43' 31"	E 136.05
24	N 15° 34' 48"	E 100.35
25	N 69° 16' 14"	W 10.79
26	N 85° 37' 08"	W 27.46
27	N 85° 37' 08"	W 27.46
28	N 72° 40' 36"	W 62.72
29	S 75° 25' 21"	W 17.78
30	S 75° 25' 21"	W 17.78

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	146.31'	15645.00'	0°32'09"	S 09°46'03" W	146.31'
C2	13.31'	4345.00'	0°10'32"	S 09°24'42" W	13.31'

PRELIMINARY PLAT:
NOT FOR RECORDATION,
CONVEYANCES, OR SALES

GRAPHIC SCALE



SURVEYORS CERTIFICATE

I, W. ANDREW EADES, CERTIFY THAT THIS PLAT WAS DRAWN UNDER MY SUPERVISION FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION (FIELD DESCRIPTIONS ARE RECORDED IN BOOK 1600, PAGE 1600, AND BOUND VOLUMES NOT SURVEYED) ARE CLEARLY INDICATED AS DRAWN FROM INFORMATION FOUND IN BOOK AND PAGE AS SHOWN; THAT THE RATION OF PRECISION AS CALCULATED IS 1:10,000; THAT THIS SURVEY AND PLAT WERE PREPARED IN ACCORDANCE WITH TITLE 21, CHAPTER 56, SECTION .1600 OF THE NORTH CAROLINA ADMINISTRATIVE CODE.

THIS SURVEY IS OF AN EXISTING PARCEL OR PARCELS OF LAND AND DOES NOT CREATE A NEW ROAD OR SUBDIVISION.

WITNESS MY ORIGINAL SIGNATURE, REGISTRATION NUMBER AND SEAL THIS 4TH DAY OF NOVEMBER, 2019.

W. ANDREW EADES, PLS L-3413 DATE: 11-04-19

PRELIMINARY BOUNDARY
OF
ROBINSON CHURCH ROAD
FOR
EPCON COMMUNITIES

DATE: NOVEMBER 2019 SCALE: 1" = 100'

PROJECT # : 077720002
PROJ. SVYR : WAE
DRAWN BY : WEH
FIELD BK. :
COMP. FILE :
SHEET # : 1 OF 1

DWG. # : ROBINSON CHURCH PRELIM BND

[illegible]

McKIM & CREED

8020 Tower Point Drive
Charlotte, North Carolina 28227
Phone: (704)841-2588, Fax: (704)841-2567
F-1222

Internet Site: <http://www.mckimcreed.com>

DATE: _____



CERTIFICATE OF SUFFICIENCY

To the Town Council of the Town of Harrisburg of Harrisburg North Carolina:

I, Janet Rackley, Clerk, do hereby certify that I have investigated the petitions attached hereto and have found as a fact that said petition is signed by all owners of real property lying in the area described therein, in accordance with G.S. 160A-31.

In witness whereof, I have hereunto set my hand and affixed the seal of the Town of Harrisburg of Harrisburg, North Carolina, this 26th day of February 2020.




Janet Rackley, Clerk



**RESOLUTION FIXING DATE OF PUBLIC HEARING ON QUESTION
OF ANNEXATION PURSUANT TO G.S. 160A-31**

WHEREAS, a petition requesting annexation of the area described herein has been received; and

WHEREAS, the Town Council has by resolution directed the Town of Harrisburg Clerk to investigate the sufficiency of the petition; and

WHEREAS, certification by the Town Clerk as to sufficiency of the petition has been made;

NOW, THEREFORE, BE IT RESOLVED by the Town Council of the Town of Harrisburg, North Carolina that:

Section 1. A public hearing on the question of annexation of the area described herein will be held (virtually) at Harrisburg Town Hall at 4100 Main Street, Harrisburg, North Carolina at 6:00 p.m. on October 12, 2020.

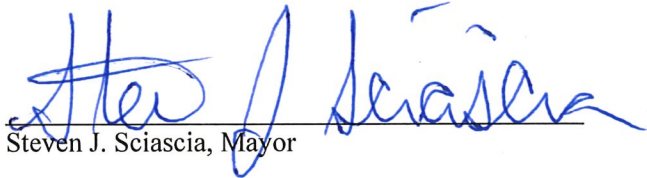
Section 2. The area proposed for annexation is described as follows:

Being located in Number 1 Township, Town of Harrisburg, Cabarrus County, North Carolina and being more particularly described as follows:

Beginning at a point in the centerline of Tom Query Road having NC Grid Coordinates of N: 571,136.87, E: 1,505,352.79, said point being the northeastern corner of Ruth S. Harris, and runs thence from the point of beginning along the centerline of Tom Query Road the following calls: 1) N 60° 35' 42" E 254.14 to a computed point; 2) N 60° 41' 59" E 307.76' to a computed point; 3) N 61° 12' 25" E 295.65' to a computed point; 4) N 63° 08' 49" E 56.12 to a computed point; 5) N 64° 20' 59" E 79.41' to a computed point, said point being the northwestern corner of Betty B. Lee as recorded in DB 10127 PG 18; thence S 6° 57' 58" E 225.12' to a found iron rod; thence S 3° 39' 41" E 297.79' to a computed point; thence S 3° 39' 41" E 261.20' to a computed point; thence S 78° 26' 59" E 5.73' to a computed point in the centerline of Robinson Church Road; thence with the centerline of Robinson Church Road the following seven (7) calls: 1) S 2° 39' 57" E 59.08' to a computed point; 2) S 4° 15' 07" W 59.14' to a computed point; 3) S 5° 18' 18" W 57.04' to a computed point; 4) S 8° 44' 35" W 437.63' to a computed point; 5) S 9° 01' 22" W 296.16' to a computed point; 6) S 9° 58' 08" W 198.99' to a computed point; 7) S 10° 06' 16" W 164.99' to a computed point; thence leaving the centerline of Robinson Church Road N 79° 57' 52" W 45.00' to a set iron rod on the western right of way of Robinson Church Road; thence with the western right of way of Robinson Church Road along a circular curve having a radius of 15,645.00', an arc length of 146.31', and a chord bearing and distance of S 9° 46' 03" W 146.31' to a set iron rod; thence again with the western right of way of Robinson Church Road along a circular curve having a radius of 4,345.00', an arch length of 13.31', and a chord bearing and distance of S 9° 24' 42" W 13.31' to a point in the centerline of Fuda Creek; thence with the centerline of Fuda Creek the following twenty-eight (28) calls: 1) thence N 47° 41' 21" W 12.35' to a computed point; 2) thence N 34° 27' 01" W 10.52 to a computed point; 3) thence N 11° 25' 55" W 7.93' to a computed point; 4) thence N 7° 51' 23" W 16.93' to a computed point; 5) thence N 14° 29' 22" W 120.59' to a computed point; 6) thence N 60° 22' 14" W 12.56' to a computed point; 7) thence N 89° 46' 11" W 21.65' to a computed point; 8) thence S 58° 32' 31" W 24.99' to a computed point; 9) thence S 73° 21' 29" W

74.22' to a computed point; 10) thence S 80° 48' 58" W 36.20' to a computed point; 11) thence S 54° 48' 23" W 52.16' to a computed point; 12) thence S 65° 11' 40" W 52.52' to a computed point; 13) thence S 81° 58' 53" W 30.42' to a computed point; 14) thence N 70° 48' 13" W 36.67' to a computed point; 15) thence N 45° 07' 45" W 41.75' to a computed point; 16) thence N 54° 56' 39" W 75.01' to a computed point; 17) N 38° 22' 54" W 21.23' to a computed point; 18) N 15° 27' 47" W 20.45' to a computed point; 19) thence N 20° 04' 27" E 17.10' to a computed point; 20) thence N 38° 43' 31" E 36.05' to a computed point; 21) thence N 15° 34' 48" E 100.36' to a computed point; 22) thence N 21° 26' 51" W 13.35' to a computed point; 23) thence N 69° 16' 14" W 10.79' to a computed point; 24) thence S 85° 37' 08" W 27.46' to a computed point; 25) thence N 84° 42' 51" W 33.90' to a computed point; 26) thence N 72° 40' 36" W 62.72' to a computed point; 27) S 75° 25' 21" W 17.59' to a computed point; 28) thence S 46° 36' 55" W 22.78' to a computed point, thence leaving the centerline of Fuda Creek and running with the eastern line of the Fenton-Dell Subdivision as recorded in PB 37 at Page 18 N 4° 17' 21" W 409.54' to a found iron rod; thence N 4° 08' 00" W 199.94' to a found iron pipe; thence N 4° 10' 34" W 761.05' to the point and place of BEGINNING. Said parcel contains 34.17 acres, more or less.

Section 3. Notice of the public hearing shall be published in the Independent Tribune, a newspaper having general circulation in the Town of Harrisburg, at least ten (10) days prior to the date of the public hearing.


Steven J. Sciascia, Mayor

ATTEST:


Janet Rackley, Town Clerk



ORDINANCE #7014
AN ORDINANCE TO EXTEND THE CORPORATE LIMITS
OF THE TOWN OF HARRISBURG, NORTH CAROLINA

WHEREAS, the Town Council has adopted a resolution under G. S. 160A-31 stating its intent to annex the area described below; and

WHEREAS, a public hearing on the question of annexation was held (virtually) at Harrisburg Town Hall, 4100 Main Street, Suite 101, Harrisburg NC at 6:00 p.m. on October 12th, 2020 after due notice; and

WHEREAS, the Town Council finds that the proposed annexation meets the requirements of G. S. 160A-31;

NOW THEREFORE, BE IT ORDAINED by the Town Council of the Town of Harrisburg, North Carolina that:

Section 1. By virtue of the authority granted by G. S. 160A-31, the following described contiguous property is hereby annexed into the Town of Harrisburg as of November 9th, 2020:

Being located in Number 1 Township, Town of Harrisburg, Cabarrus County, North Carolina and being more particularly described as follows:

Beginning at a point in the centerline of Tom Query Road having NC Grid Coordinates of N: 571,136.87, E: 1,505,352.79, said point being the northeastern corner of Ruth S. Harris, and runs thence from the point of beginning along the centerline of Tom Query Road the following calls: 1) N 60° 35' 42" E 254.14' to a computed point; 2) N 60° 41' 59" E 307.76' to a computed point; 3) N 61° 12' 25" E 295.65' to a computed point; 4) N 63° 08' 49" E 56.12' to a computed point; 5) N 64° 20' 59" E 79.41' to a computed point, said point being the northwestern corner of Betty B. Lee as recorded in DB 10127 PG 18; thence S 6° 57' 58" E 225.12' to a found iron rod; thence S 3° 39' 41" E 297.79' to a computed point; thence S 3° 39' 41" E 261.20' to a computed point; thence S 78° 26' 59" E 5.73' to a computed point in the centerline of Robinson Church Road; thence with the centerline of Robinson Church Road the following seven (7) calls: 1) S 2° 39' 57" E 59.08' to a computed point; 2) S 4° 15' 07" W 59.14' to a computed point; 3) S 5° 18' 18" W 57.04' to a computed point; 4) S 8° 44' 35" W 437.63' to a computed point; 5) S 9° 01' 22" W 296.16' to a computed point; 6) S 9° 58' 08" W 198.99' to a computed point; 7) S 10° 06' 16" W 164.99' to a computed point; thence leaving the centerline of Robinson Church Road N 79° 57' 52" W 45.00' to a set iron rod on the western right of way of Robinson Church Road; thence with the western right of way of Robinson Church Road along a circular curve having a radius of 15,645.00', an arc length of 146.31', and a chord bearing and distance of S 9° 46' 03" W 146.31' to a set iron rod; thence again with the western right of way of Robinson Church Road along a circular curve having a radius of 4,345.00', an arch length of 13.31', and a chord bearing and distance of S 9° 24' 42" W 13.31' to a

point in the centerline of Fuda Creek; thence with the centerline of Fuda Creek the following twenty-eight (28) calls: 1) thence N 47° 41' 21" W 12.35' to a computed point; 2) thence N 34° 27' 01" W 10.52' to a computed point; 3) thence N 11° 25' 55" W 7.93' to a computed point; 4) thence N 7° 51' 23" W 16.93' to a computed point; 5) thence N 14° 29' 22" W 120.59' to a computed point; 6) thence N 60° 22' 14" W 12.56' to a computed point; 7) thence N 89° 46' 11" W 21.65' to a computed point; 8) thence S 58° 32' 31" W 24.99' to a computed point; 9) thence S 73° 21' 29" W 74.22' to a computed point; 10) thence S 80° 48' 58" W 36.20' to a computed point; 11) thence S 54° 48' 23" W 52.16' to a computed point; 12) thence S 65° 11' 40" W 52.52' to a computed point; 13) thence S 81° 58' 53" W 30.42' to a computed point; 14) thence N 70° 48' 13" W 36.67' to a computed point; 15) thence N 45° 07' 45" W 41.75' to a computed point; 16) thence N 54° 56' 39" W 75.01' to a computed point; 17) N 38° 22' 54" W 21.23' to a computed point; 18) N 15° 27' 47" W 20.45' to a computed point; 19) thence N 20° 04' 27" E 17.10' to a computed point; 20) thence N 38° 43' 31" E 36.05' to a computed point; 21) thence N 15° 34' 48" E 100.36' to a computed point; 22) thence N 21° 26' 51" W 13.35' to a computed point; 23) thence N 69° 16' 14" W 10.79' to a computed point; 24) thence S 85° 37' 08" W 27.46' to a computed point; 25) thence N 84° 42' 51" W 33.90' to a computed point; 26) thence N 72° 40' 36" W 62.72' to a computed point; 27) S 75° 25' 21" W 17.59' to a computed point; 28) thence S 46° 36' 55" W 22.78' to a computed point, thence leaving the centerline of Fuda Creek and running with the eastern line of the Fenton-Dell Subdivision as recorded in PB 37 at Page 18 N 4° 17' 21" W 409.54' to a found iron rod; thence N 4° 08' 00" W 199.94' to a found iron pipe; thence N 4° 10' 34" W 761.05' to the point and place of BEGINNING. Said parcel contains 34.17 acres, more or less.

Section 2. Upon and after 9th day of November, 2020 the above described territory and its citizens and property shall be subject to all debts, laws, ordinances and regulations in force in the Town of Harrisburg and shall be entitled to the same privileges and benefits as other parts of the Town of Harrisburg. Said territory shall be subject to municipal taxes according to G.S. 160A-58.10.

Section 3: The Mayor the Town of Harrisburg shall cause to be recorded in the office of Register of Deeds Cabarrus County, and in the Office of Secretary of the State in Raleigh, North Carolina, an accurate map of the annexed property, along with a certified copy of the ordinance. Such a map shall also be delivered to the County Board of Elections, as required by G. S. 163-288.1.

Adopted this the 9th day of November 2020.

Steven J. Sciascia, Mayor

ATTEST:

Janet Rackley, Town Clerk



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consideration of Formal Complaint of Councilmember

Presenting Personnel:

Suggested Motion or Action:

Decision on how to proceed will be dependent upon any formal motion decided by the Town Council.

Description/Background:

On June 5, 2020, Councilman Ron Smith filed a formal complaint against Councilwoman Diamond Staton-Williams via email to Mayor Steve Sciascia. The formal complaint is attached, and outlines what Councilman Smith asserts are violations of the Town Council's Code of Conduct by Councilwoman Staton-Williams.

During the October 12, 2020 Town Council meeting, the Council directed the formal complaint be placed on the November 9, 2020 Town Council agenda for discussion and consideration.

Generally, when a formal complaint is filed against a Council member, there is an expected outcome or objective desired by the complainant. The Town Council may consider the following options regarding the formal complaint:

- The formal complaint can be withdrawn by the complainant against the defendant.
- The complainant, or any other member of Council, can make a motion to approve/accept the formal complaint with no action taken against, or requested from, the defendant. Meaning Council agrees the defendant was in violation of the Code of Conduct as outlined in the complaint, but wishes to take no action or require any action from the defendant.
- The complainant, or any member of Council, can make a motion to approve/accept the formal complaint and request action(s) be taken against, or requested from, the defendant. Action(s) requested/taken can be determined by the individual filing the motion, but the only formal action the Town Council can take against another Council member is to censure them for their actions.

If a motion fails to support the complainant's assertion of Code of Conduct violations by the defendant, the formal complaint will effectively die without support or action from the Council.

Recommendation:

No recommendation is provided from staff on this matter.

Fiscal Impact:

None.

Attachments:

1. Formal Complaint - Diamond Staton-Williams

From: Ron Smith <rsmith@harrisburgnc.org>
Sent: Friday, June 5, 2020 11:05 AM
To: Steve Sciascia <ssciascia@harrisburgnc.org>
Subject: Formal Complaint

Mr. Mayor,

As per our discussion being that I did not hear back from you I am now making my complaint a formal complaint with regards to the exchange provided by Council member Diamond Stanton Williams.

On June 3rd the council was presented with a proposed statement to be released by the town with reference to the George Floyd incident in Minneapolis. In the dialog of emails Council Member Patrick suggested a change to the existing wording along with providing an explanation of his request to remove specific wording.

Later that afternoon Council Member Williams responds "Please use the sentence. My statement is from a person of color perspective. Thank you." Please do not email or call me to try and explain. (At this point the statement no longer becomes a statement of the town but the statement of one)

Mr. Mayor, the above statement from Council Member Williams goes against the role for which we serve and serve our community. There will be times we as council members will hear arguments that do not match our view but it is in these times that we must find it within ourselves to listen and be respectful to one another. Being respectful and professional are 2 of our main tenants in our code of conduct.

The following day the statement was still being debated and Council Member Patrick notes the statement by Council Member Williams "Please do not email me or call me to try and explain". To which Mr. Patrick notes he fails to see how we can issue a statement that says: "We encourage everyone to work in unity to find solutions that fosters acknowledgement and change in our community and within our homes." This very statement is contradictory to the response provided by Council Member Williams.

Lastly, on June 4th at 10:37 am we received another reply from Council Member Williams stating she will provide her statement in the "nicest way possible". Once again Council Member Williams has yet to be open to hearing other ideas which as stated above goes to the core of why we are our position. In this email Council Member Williams explains that "we have an ethical and moral obligation to acknowledge and recognize the very issues that impact our constituents". Mr. Mayor, does that courtesy not convey to our own council given we all are residents and constituents? Mrs. Williams then closes her email with a reminder of a prayer vigil on Sunday but reminds us to Listen and not respond. I am not sure of her intent here but it certainly sounds as though we are to be seen but not heard.

Mr. Mayor this behavior is not conducive of an engaging environment nor is it how we want to present ourselves to our constituents. While I understand we all at times may feel we are closer to an issue this does not provide you with a free pass to shut down or ignore your fellow council members.

This complaint is being filed as a violation(s) to our current code of conduct and I am asking that it be addressed appropriately and resolved as quickly as possible.

Regards,

Ron Smith

Harrisburg Council Member

704-455-0715 (o)

704-724-9516 (c)



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consideration of Resolution to Denounce Racism and Racial Inequity

Presenting Personnel:

Suggested Motion or Action:

Motion to approve resolution as presented.

Description/Background:

The Mayor and Council requested the Town prepare a Resolution denouncing racism during the October 12, 2020 Council meeting. The attached Resolution has been prepared for approval.

Recommendation:

Staff recommends approving the Resolution as presented.

Fiscal Impact:

None.

Attachments:

1. Resolution Denouncing Racism



Resolution

Denouncing Racism and Racial Inequity

WHEREAS, the Harrisburg Town Council denounces racism in all forms, and decries the police brutality, racially motivated violence and underlying structural, systemic and cultural racism that exists in our country; and

WHEREAS, the Town of Harrisburg acknowledges and celebrates the diversity of our community, and strives to provide a harmonious, healthy environment, where all feel welcome and comfortable in our community; and

WHEREAS, the American Public Health Association (APHA) has declared racism an ongoing public health crisis that needs our attention now; and

WHEREAS, acknowledging inequity is the first step in correcting these issues, but a statement is not enough; and

WHEREAS, we all must make necessary changes in our thinking, behavior and systems; and

WHEREAS, members of the Town Council commit to do all we can to eliminate racism, its underlying roots of power and privilege and its impact within our community; and

WHEREAS, as Harrisburg's public servants, we will use our positions to promote and encourage the exposure and elimination of policies and actions that perpetuate racism; and

WHEREAS, we are actively focusing on equity and justice in our organization, policies and programs; and

WHEREAS, the Town of Harrisburg has established a Racial Equity Task Force as an initial step in understanding the specific challenges our community faces; and

WHEREAS, the Town Council, in coordination with the Racial Equity Task Force and management staff, will review and update any and all policies, practices, and procedures that may have implicit bias or inequitable outcomes for any member of our workforce or community; and

WHEREAS, the Town is engaging our Harrisburg Youth Council to bring our young citizens to the table to assist in our efforts, providing Diversity, Equity and Inclusion Training for employees, and are making conscious efforts to expand our workforce's diversity; and

WHEREAS, we understand and recognize that there is a racial divide throughout the country, and it is our duty to current and future generations to ensure racial biases will become a thing of the past;

NOW, THEREFORE, BE IT RESOLVED, that we, members of the Harrisburg Town Council hereby declare racism as a public health crisis in our community and we commit our full attention to ending racism and improving the quality of life of all residents.

Adopted this 9th day of November 2020.

Steven J. Sciascia, Mayor

ATTEST:

Janet Rackley, Town Clerk



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consideration of FY2021 Budget Ordinance Amendments related to Holcomb Park

Presenting Personnel:

Daniel Stines, Parks & Recreation Director

Suggested Motion or Action:

Motion to approve the FY2021 Budget Ordinance Amendments, as attached, in the amount of \$255,000.

Description/Background:

In May 2020, Town Council made a unanimous decision to accept a payment of \$244,500 from TAC Holcomb, LLC and a land donation of 13.44 acres with acknowledgement that the Town would utilize said funds to procure a qualified field builder to construct two regulation soccer fields for public and program use of the Town. During the same meeting, Council awarded the bid for construction of these fields to Furr's Athletic Fields, Inc. in the amount of \$240,000.

Staff's intentions were to begin construction prior to June 30, 2020, however, delays related to contractor availability and project load caused a postponement of the project. The Town's program delays or cancellations as a result of Covid-19 removed some of the pressure for immediate field space and allowed staff to postpone initiating this project until late fall/winter 2020 without affecting the programs and athletics.

Also, at the time of approval in May, staff understood that erosion control measures would be obtained under the existing Holcomb Development Erosion Control Plan. The Department of Environmental Quality (DEQ) has since provided feedback to staff over this period of time, indicating that significant enough changes are being made to the existing Holcomb Woods Development Erosion Control Plan, to the extent that the Town is required to engage a firm, LandDesign, Inc., to make these changes and provide the Town with a stand-alone set of Erosion Control Plans.

The Town will see significant savings since TAC Holcomb, LLC has agreed to allow the existing plan set to be modified to comply with DEQ requests and by utilizing the same firm who has ownership of these files. The fee to complete the plans is \$6,600. This fee does not cover permit fees from DEQ, those will be separate and are based on acreage to be disturbed.

\$244,500 in revenue was received in FY2020. However, the project amount that was budgeted for FY2020 in the amount of \$240,000 was not expended on this project and was transferred to the Capital Reserve Fund - General Fund on June 30th, 2020, carrying with it a commitment to be used on capital outlay expenditures only.

The total estimated cost of the project, including NCDEQ permit fees and potential legal or administrative fees and a small contingency, is \$255,000. Thus in addition to the existing amount from FY2020 of \$240,000, the Town will need an additional \$15,000 for the items noted above.

The attached budget amendments move these committed funds back from the Capital Reserve Fund to the General Fund in FY2021 to be used on this capital outlay project. As previously mentioned, TAC Holcomb, LLC contributed \$244,500

toward this total cost, leaving the Town with a cost of up to approximately \$10,500 to complete the field construction project.

With approval tonight, staff would anticipate utilization of these fields in the Spring of 2021 for athletics and programs.

Recommendation:

Staff recommends approval of the FY2021 Budget Ordinance Amendments, as attached, in the amount of \$255,000.

Fiscal Impact:

If approved, the attached budget amendments move \$255,000 in Capital Reserve Fund dollars to the General Fund for expenditure on the design and construction contracts attached, as well as provide funds for NCDEQ permit fees and potential legal expenses through the closeout of the project.

TAC Holcomb, LLC contributed \$244,500 to the Town in May, 2020 which is the source of the majority of the transferred funds mentioned above. The remainder of up to \$10,500 is the maximum net expense to the Town to complete the field construction project.

Attachments:

1. Amendment - GF - Holcomb Park Soccer Fields 11092020 2
2. Amendment - CRF-GF - Holcomb Park Soccer Fields 11092020 2



AN ORDINANCE AMENDING THE 2020-2021 BUDGET ORDINANCE OF THE TOWN OF HARRISBURG, NORTH CAROLINA

Be it ordained by the Town Council of the Town of Harrisburg, North Carolina, that the following amendment be made to the annual budget ordinance for the fiscal year ending June 30, 2021:

Section 1. Amend General Fund to account for the Holcomb Park athletic field construction project.

Section 2. To amend the General Fund, the appropriations are to be changed as follows:

Increase line item 100-5000-57103	\$ 255,000
Capital Outlay	
Project #: 2021-5000-009	

Section 3. To amend the General Fund, the revenues are to be changed as follows:

Increase line item 100-49905	\$ 255,000
Transfers In – Capital Reserve Fund – General Fund	

Section 4. Copies of this budget amendment shall be furnished to the Clerk of the Town Council, and to the Budget Officer and the Finance Officer for their direction.

Section 5. That this ordinance shall be effective upon its passage. Adopted this 9th day of November, 2020.

Steve Sciascia, Mayor

ATTEST:

Janet Rackley, Town Clerk



AN ORDINANCE AMENDING THE 2020-2021 BUDGET ORDINANCE OF THE TOWN OF HARRISBURG, NORTH CAROLINA

Be it ordained by the Town Council of the Town of Harrisburg, North Carolina, that the following amendment be made to the annual budget ordinance for the fiscal year ending June 30, 2021:

- Section 1.** Amend Capital Reserve Fund – General Fund to account for the Holcomb Park athletic field construction project.
- Section 2.** To amend the Capital Reserve Fund – General Fund, the appropriations are to be changed as follows:
- | | |
|-----------------------------------|------------|
| Increase line item 200-8500-59100 | \$ 255,000 |
| Transfers Out – General Fund | |
- Section 3.** To amend the Capital Reserve Fund – General Fund, the revenues are to be changed as follows:
- | | |
|------------------------------|------------|
| Increase line item 200-48599 | \$ 255,000 |
| Appropriated Fund Balance | |
- Section 4.** Copies of this budget amendment shall be furnished to the Clerk of the Town Council, and to the Budget Officer and the Finance Officer for their direction.
- Section 5.** That this ordinance shall be effective upon its passage. Adopted this 9th day of November, 2020.

Steve Sciascia, Mayor

ATTEST:

Janet Rackley, Town Clerk



TOWN OF HARRISBURG

Agenda Item Details

Title:

Consideration of Approval of Contract with Herrin Industrial Inc. for the 2020 Waterline Project

Presenting Personnel:

Robert Donham, Town Engineer

Suggested Motion or Action:

Motion to award a contract in the amount of \$999,939.33 to Herrin Industrial, Inc. for the 2020 Waterline Projects.

Description/Background:

The project consists of the replacement of approximately 8,850 LF of existing 2-inch and 3-inch watermain with 6-inch waterline. The project will occur along Plaza Drive, Parallel Drive, Patricia Ave, Pine Street, and Ford Street. The purpose for the project is to replace thin walled PVC and small diameter waterlines that remain throughout portions of the old system. Replacing with 6-inch lines with fire hydrants that will provide fire protection.

The project was competitively bid and bids were opened on October 16, 2020. The Town received bids from eight qualified contractors. The engineer's estimate was \$1.3 million.

Since 2017, the Town of Harrisburg has replaced 17,000 linear feet (over three miles) of waterline in the downtown area of Harrisburg.

The attached contract has been reviewed by the Town attorney and approved for Council consideration.

Recommendation:

Staff recommends approval of the attached contract with Herrin Industrial Inc.

Fiscal Impact:

The fiscal impact to the Town is a project expenditure of \$999,939. The original construction budget for this project is \$1,150,000. No budget or project amendments are required.

This contract will be funded in the latter part of the fiscal year by including it in the first Water and Sewer Fund Revenue bond issuance.

Attachments:

1. FY2020 Waterlines - Bid Tab - 10.16.2020
2. Contract - FY2020 Waterlines - Herrin Industrial
3. Project Summary and Specifications - FY2020 Waterlines

Bid Tabs
Harrisburg Waterline Project

				1		2		3		4	
				Herrin Industrial Inc. PO Box 523 Mt. Pleasant, NC 28124 License No. 71184		Buckeye Bridge LLC PO Box 1367 Canton, NC 28716 License No. 72900		Carolina Siteworks, Inc. PO Box 280 China Grove, NC 28023 License No. 45224		RNF Construction, LLC 2657 McFarland Road York, SC 29745 License No. 79991	
Item	Item Description	Quantity	Unit	Unit Price	Total Bid Price	Unit Price	Total Bid Price	Unit Price	Total Bid Price	Unit Price	Total Bid Price
1	Mobilization	1	LS	20,000.00	\$ 20,000.00	21,915.00	\$ 21,915.00	59,866.00	\$ 59,866.00	66,000.00	\$ 66,000.00
2	Incidental Stone Bedding	490	CY	52.33	\$ 25,641.70	56.60	\$ 27,734.00	65.00	\$ 31,850.00	56.00	\$ 27,440.00
3	Rock Excavation	180	CY	186.98	\$ 33,656.40	89.00	\$ 16,020.00	300.00	\$ 54,000.00	125.00	\$ 22,500.00
4	Erosion and Sedimentation Control Measures	1	LS	10,282.00	\$ 10,282.00	25,391.00	\$ 25,391.00	8,000.00	\$ 8,000.00	25,080.00	\$ 25,080.00
5	Open Cut/Patch Gravel Drive @ 5' Width	170	LF	10.39	\$ 1,766.30	9.20	\$ 1,564.00	8.00	\$ 1,360.00	29.04	\$ 4,936.80
6	Open Cut/Patch Asphalt Drive	1420	SF	10.39	\$ 14,753.80	10.60	\$ 15,052.00	7.00	\$ 9,940.00	6.60	\$ 9,372.00
7	Open Cut/Patch Asphalt Surface@ 5' Width - Non NCDOT Road	320	LF	56.16	\$ 17,971.20	51.40	\$ 16,448.00	73.00	\$ 23,360.00	92.40	\$ 29,568.00
8	16" Jack and Bore	40	LF	1,850.00	\$ 74,000.00	427.70	\$ 17,108.00	628.00	\$ 25,120.00	1,250.00	\$ 50,000.00
9	Temporary Shoring	1	LS	12,000.00	\$ 12,000.00	13,055.00	\$ 13,055.00	2,000.00	\$ 2,000.00	29,700.00	\$ 29,700.00
10	Open Cut/Patch Concrete Driveway*	5800	SF	8.23	\$ 47,734.00	11.20	\$ 64,960.00	11.74	\$ 68,092.00	11.92	\$ 69,136.00
10A	Dry Bore Concrete Driveway-Alternate to Line Item 10*	31	EA	1,650.00	\$ 51,150.00	1,780.00	\$ 55,180.00	2,365.00	\$ 73,315.00	2,230.80	\$ 69,154.80
11	Open Cut/Patch Concrete Sidewalk	50	SF	20.00	\$ 1,000.00	10.20	\$ 510.00	10.00	\$ 500.00	66.00	\$ 3,300.00
12	Restoration of Distrubed Areas	3	AC	4,000.00	\$ 12,000.00	2,147.60	\$ 6,442.80	7,868.00	\$ 23,604.00	15,840.00	\$ 47,520.00
13	Connection to Existing Line	15	LF	4,201.31	\$ 63,019.65	1,782.00	\$ 26,730.00	3,946.00	\$ 59,190.00	1,320.00	\$ 19,800.00
14	6" PVC Water Line	6920	LF	31.60	\$ 218,672.00	42.40	\$ 293,408.00	42.65	\$ 295,138.00	34.32	\$ 237,494.40
15	6" RJ Ductile Iron Water Line	550	LF	48.27	\$ 26,548.50	58.30	\$ 32,065.00	61.60	\$ 33,880.00	84.48	\$ 46,464.00
16	4" Ductile Iron Sewer Lateral	20	LF	71.82	\$ 1,436.40	77.70	\$ 1,554.00	62.00	\$ 1,240.00	66.00	\$ 1,320.00
17	Fire Hydrant with Gate Valve	13	EA	4,510.14	\$ 58,631.82	4,764.00	\$ 61,932.00	5,580.00	\$ 72,540.00	5,148.00	\$ 66,924.00
18	6" Gate Valve with Adjustable Cast-Iron Box	11	EA	916.97	\$ 10,086.67	924.00	\$ 10,164.00	1,400.00	\$ 15,400.00	1,980.00	\$ 21,780.00
19	12" x 6" Tapping Sleeve and Valve Assembly	2	EA	5,758.50	\$ 11,517.00	4,825.00	\$ 9,650.00	5,580.00	\$ 11,160.00	4,884.00	\$ 9,768.00
20	Abandon Existing Water Lines	8	EA	464.57	\$ 3,716.56	977.00	\$ 7,816.00	500.00	\$ 4,000.00	3,300.00	\$ 26,400.00
21	Abandon Existing Valves	8	EA	436.87	\$ 3,494.96	139.00	\$ 1,112.00	500.00	\$ 4,000.00	1,980.00	\$ 15,840.00
22	Abandon/Remove Existing Fire Hydrant Assembly	5	EA	664.57	\$ 3,322.85	173.00	\$ 865.00	500.00	\$ 2,500.00	1,980.00	\$ 9,900.00
23	New Long-Side Residential Service Connection	40	EA	1,079.64	\$ 43,185.60	1,290.00	\$ 51,600.00	1,595.00	\$ 63,800.00	2,112.00	\$ 84,480.00
24	New Short-Side Residential Service Connection	47	EA	754.22	\$ 35,448.34	1,143.00	\$ 53,721.00	1,295.00	\$ 60,865.00	1,188.00	\$ 55,836.00
25	Asphalt Repair Overlay	1	LS	108000	\$ 108,000.00	108,000.00	\$ 108,000.00	108,000.00	\$ 108,000.00	108,000.00	\$ 108,000.00
Subtotal: Base Bid Items 1 through 24					\$ 909,035.75		\$ 939,996.80		\$ 1,112,720.00		\$ 1,157,714.00
10% Contingency Allowance of Subtotal:					\$ 90,903.58		\$ 93,999.68		\$ 111,272.00		\$ 115,771.40
Total Bid:					\$ 999,939.33		\$ 1,033,996.48		\$ 1,223,992.00		\$ 1,273,485.40

Bid Tabs
Harrisburg Waterline Project

5

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Dellinger, Inc. PO Box 929 Monroe, NC 28111 License No. 5992	Caroling Grading and Utilities, Inc. PO Box 785 Jefferson, NC 28640 License No. 30287	State Utility Contractors, Inc. 4417 Old Charlotte Highway Monroe, NC 28110 License No. 17793	Fuller & Co. Construction, LLC 697 St. Marks Church Rd. Bessemer City, NC 28016 License No.
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Item	Item Description	Quantity	Unit	Unit Price	Total Bid Price	Unit Price	Total Bid Price	Unit Price	Total Bid Price	Unit Price	Total Bid Price
1	Mobilization	1	LS	50,000.00	\$ 50,000.00	20,000.00	\$ 20,000.00	50,000.00	\$ 50,000.00	39,729.79	\$ 39,729.79
2	Incidental Stone Bedding	490	CY	45.00	\$ 22,050.00	12.00	\$ 5,880.00	54.50	\$ 26,705.00	50.20	\$ 24,598.00
3	Rock Excavation	180	CY	160.00	\$ 28,800.00	80.00	\$ 14,400.00	200.00	\$ 36,000.00	18.00	\$ 3,240.00
4	Erosion and Sedimentation Control Measures	1	LS	38,500.00	\$ 38,500.00	25,000.00	\$ 25,000.00	46,000.00	\$ 46,000.00	37,438.74	\$ 37,438.74
5	Open Cut/Patch Gravel Drive @ 5' Width	170	LF	18.00	\$ 3,060.00	24.00	\$ 4,080.00	17.00	\$ 2,890.00	14.34	\$ 2,437.80
6	Open Cut/Patch Asphalt Drive	1420	SF	12.00	\$ 17,040.00	15.00	\$ 21,300.00	7.00	\$ 9,940.00	6.24	\$ 8,860.80
7	Open Cut/Patch Asphalt Surface@ 5' Width - Non NCDOT Road	320	LF	70.00	\$ 22,400.00	85.00	\$ 27,200.00	52.00	\$ 16,640.00	23.68	\$ 7,577.60
8	16" Jack and Bore	40	LF	1,000.00	\$ 40,000.00	499.00	\$ 19,960.00	1,100.00	\$ 44,000.00	836.49	\$ 33,459.60
9	Temporary Shoring	1	LS	45,000.00	\$ 45,000.00	6,500.00	\$ 6,500.00	25,000.00	\$ 25,000.00	41,497.68	\$ 41,497.68
10	Open Cut/Patch Concrete Driveway*	5800	SF	10.00	\$ 58,000.00	8.00	\$ 46,400.00	12.50	\$ 72,500.00	11.50	\$ 66,700.00
10A	Dry Bore Concrete Driveway-Alternate to Line Item 10*	31	EA	575.00	\$ 17,825.00	4,000.00	\$ 124,000.00	2,100.00	\$ 65,100.00	2,799.07	\$ 86,771.17
11	Open Cut/Patch Concrete Sidewalk	50	SF	12.00	\$ 600.00	89.00	\$ 4,450.00	10.00	\$ 500.00	9.20	\$ 460.00
12	Restoration of Distrubed Areas	3	AC	25,000.00	\$ 75,000.00	8,000.00	\$ 24,000.00	3,000.00	\$ 9,000.00	5,592.31	\$ 16,776.93
13	Connection to Existing Line	15	LF	3,000.00	\$ 45,000.00	3,000.00	\$ 45,000.00	2,750.00	\$ 41,250.00	11,860.20	\$ 177,903.00
14	6" PVC Water Line	6920	LF	53.00	\$ 366,760.00	42.00	\$ 290,640.00	65.00	\$ 449,800.00	56.48	\$ 390,841.60
15	6" RJ Ductile Iron Water Line	550	LF	100.00	\$ 55,000.00	62.00	\$ 34,100.00	85.00	\$ 46,750.00	60.53	\$ 33,291.50
16	4" Ductile Iron Sewer Lateral	20	LF	90.00	\$ 1,800.00	65.00	\$ 1,300.00	120.00	\$ 2,400.00	54.24	\$ 1,084.80
17	Fire Hydrant with Gate Valve	13	EA	5,000.00	\$ 65,000.00	6,950.00	\$ 90,350.00	4,800.00	\$ 62,400.00	6,331.39	\$ 82,308.07
18	6" Gate Valve with Adjustable Cast-Iron Box	11	EA	900.00	\$ 9,900.00	2,450.00	\$ 26,950.00	950.00	\$ 10,450.00	1,256.48	\$ 13,821.28
19	12" x 6" Tapping Sleeve and Valve Assembly	2	EA	5,000.00	\$ 10,000.00	3,950.00	\$ 7,900.00	6,500.00	\$ 13,000.00	7,464.33	\$ 14,928.66
20	Abandon Existing Water Lines	8	EA	3,500.00	\$ 28,000.00	3,500.00	\$ 28,000.00	800.00	\$ 6,400.00	485.06	\$ 3,880.48
21	Abandon Existing Valves	8	EA	500.00	\$ 4,000.00	1,000.00	\$ 8,000.00	300.00	\$ 2,400.00	245.62	\$ 1,964.96
22	Abandon/Remove Existing Fire Hydrant Assembly	5	EA	725.00	\$ 3,625.00	980.00	\$ 4,900.00	650.00	\$ 3,250.00	478.88	\$ 2,394.40
23	New Long-Side Residential Service Connection	40	EA	700.00	\$ 28,000.00	2,950.00	\$ 118,000.00	1,900.00	\$ 76,000.00	1,775.14	\$ 71,005.60
24	New Short-Side Residential Service Connection	47	EA	550.00	\$ 25,850.00	2,000.00	\$ 94,000.00	1,400.00	\$ 65,800.00	1,021.12	\$ 47,992.64
25	Asphalt Repair Overlay	1	LS	108,000.00	\$ 108,000.00	108,000.00	\$ 108,000.00	108,000.00	\$ 108,000.00	108,000.00	\$ 108,000.00
Subtotal: Base Bid Items 1 through 24					\$ 1,169,210.00		\$ 1,200,310.00		\$ 1,292,175.00		\$ 1,318,965.10
10% Contingency Allowance of Subtotal:					\$ 116,921.00		\$ 120,031.00		\$ 129,217.50		\$ 131,896.51
Total Bid:					\$ 1,286,131.00		\$ 1,320,341.00		\$ 1,421,392.50		\$ 1,450,861.61

DOCUMENT 00 52 15
AGREEMENT FORM

THIS AGREEMENT, made the _____ day of _____, 2020
by and between Town of Harrisburg, hereinafter called "Owner", and Herrin Industrial, Inc ,
doing business as (x) a corporation, () a partnership, () an individual, hereinafter called
"Contractor".

WITNESSETH: That for and in consideration of payments and agreements hereinafter mentioned:

1. The Contractor will commence and complete the construction of 2020 Water Line Replacements.
2. The Contractor will furnish all of the materials, supplies, tools equipment, labor, and other services necessary for the construction and completion of the project described herein.
3. The Contractor will commence the work required by the Contract Documents within 10 calendar days after the date of the Notice to Proceed. Work will be fully complete within 180 calendar days from the date of the Notice to Proceed. Should the Contractor fail to complete the work within the time stated above, the Contractor agrees to pay as liquidated damages the sum of \$500 for each consecutive calendar day thereafter until said work is fully complete.
4. The Contractor agrees to perform all of the Work described in the Contract Documents and comply with the terms herein for the sum of \$ 999,939.33 (Words) Nine hundred ninety nine thousand, nine hundred thirty nine and thirty three cents.
_____ as shown in the attached bid form.
5. The term "Contract Documents" means and includes the following:
 - Invitation to Bid
 - Instructions to Bidders
 - Available Project Information
 - Affidavit of Compliance
 - Bid Form
 - Bid Bond
 - Notice of Award
 - Agreement Form
 - Notice to Proceed
 - Performance Bond and Payment Bond
 - Contractor's Affidavit
 - Minority Business Enterprises
 - Partial Payment Estimate
 - Tax Statement
 - Material Inventory
 - General Conditions
 - Supplementary Conditions
 - Special Provisions
 - Addendum (Sample)

Change Order (Sample)
Technical Specifications

Addenda

No. 1, Dated October 12, 2020 Signature _____
No. _____, Dated _____, 20____ Signature _____

Drawings prepared by W. K. Dickson & Co. Inc., 401 4th Street SW, Suite 201, Hickory, NC 28602, Numbered G.1, G.2, C.1 through C.10, D.1 through D.9, dated August 27th, 2020.

6. The Owner will pay to the Contractor in the manner and such times as set forth in the General Conditions such amounts as required by the Contract Documents.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in _____ counterparts, each of which shall be deemed an original on the date first above written.

OWNER:

ATTEST:

Town of Harrisburg

By (Signature) _____

By (Signature) _____

Printed Name _____

Printed Name _____

Title _____

Title _____

(Seal)

CONTRACTOR:

ATTEST:

By (Signature) _____

By (Signature) _____

Printed Name _____

Printed Name _____

Title _____

Title _____

(Seal)

This instrument has been preaudited in the manner required by the “Local Government Budget and Fiscal Control Act”.

By: _____
Finance Officer

Date: _____

Herrin Industrial Bid Form
FY2020 Waterline Project

1

Herrin Industrial Inc.
PO Box 523
Mt. Pleasant, NC 28124
License No. 71184

Item	Item Description	Quantity	Unit	Unit Price	Total Bid Price
1	Mobilization	1	LS	20,000.00	\$ 20,000.00
2	Incidental Stone Bedding	490	CY	52.33	\$ 25,641.70
3	Rock Excavation	180	CY	186.98	\$ 33,656.40
4	Erosion and Sedimentation Control Measures	1	LS	10,282.00	\$ 10,282.00
5	Open Cut/Patch Gravel Drive @ 5' Width	170	LF	10.39	\$ 1,766.30
6	Open Cut/Patch Asphalt Drive	1420	SF	10.39	\$ 14,753.80
7	Open Cut/Patch Asphalt Surface@ 5' Width - Non NCDOT Road	320	LF	56.16	\$ 17,971.20
8	16" Jack and Bore	40	LF	1,850.00	\$ 74,000.00
9	Temporary Shoring	1	LS	12,000.00	\$ 12,000.00
10	Open Cut/Patch Concrete Driveway*	5800	SF	8.23	\$ 47,734.00
10A	Dry Bore Concrete Driveway-Alternate to Line Item 10*	31	EA	1,650.00	\$ 51,150.00
11	Open Cut/Patch Concrete Sidewalk	50	SF	20.00	\$ 1,000.00
12	Restoration of Distrubed Areas	3	AC	4,000.00	\$ 12,000.00
13	Connection to Existing Line	15	LF	4,201.31	\$ 63,019.65
14	6" PVC Water Line	6920	LF	31.60	\$ 218,672.00
15	6" RJ Ductile Iron Water Line	550	LF	48.27	\$ 26,548.50
16	4" Ductile Iron Sewer Lateral	20	LF	71.82	\$ 1,436.40
17	Fire Hydrant with Gate Valve	13	EA	4,510.14	\$ 58,631.82
18	6" Gate Valve with Adjustable Cast-Iron Box	11	EA	916.97	\$ 10,086.67
19	12" x 6" Tapping Sleeve and Valve Assembly	2	EA	5,758.50	\$ 11,517.00
20	Abandon Existing Water Lines	8	EA	464.57	\$ 3,716.56
21	Abandon Existing Valves	8	EA	436.87	\$ 3,494.96
22	Abandon/Remove Existing Fire Hydrant Assembly	5	EA	664.57	\$ 3,322.85
23	New Long-Side Residential Service Connection	40	EA	1,079.64	\$ 43,185.60
24	New Short-Side Residential Service Connection	47	EA	754.22	\$ 35,448.34
25	Asphalt Repair Overlay	1	LS	108000	\$ 108,000.00
Subtotal: Base Bid Items 1 through 24					\$ 909,035.75
10% Contingency Allowance of Subtotal:					\$ 90,903.58
Total Bid:					\$ 999,939.33

SECTION 01 10 00
SUMMARY

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Contract description.
 - 2. Specification Conventions.

1.2 CONTRACT DESCRIPTION

- A. Work of the Project includes the replacement of approximately 7,550 LF of 6-inch water line as follows: Pine St. (Lakeview Dr. to Dogwood Ln.-760 LF of 6-inch water line); Dogwood Ln. (Pine St. to Valhalla Dr.-400 LF of 6-inch water line); Ford St. (Valhalla Dr. to Hwy 49-820 LF of 6-inch water line); Valhalla Dr./Plaza Dr. (Williams Rd. to School Ave.-3,620 LF of 6-inch water line); Parallel Dr. (Plaza Dr. to Patricia Ave.-1,510 LF of 6-inch water line); and Patricia Ave. (Plaza Dr. to Morris Dr.-440 LF of 6-inch water line); including new water services, fire hydrants, valves and all necessary appurtenances for a successful project completion.
- B. Perform Work of Contract under unit prices contract with Owner in accordance with Conditions of Contract.
- C. Work of the Contract is identified on Drawings.

1.3 SPECIFICATION CONVENTIONS

- A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.
- B. The words Owner and Engineer are interchangeable for the purposes of this project.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Applications for payment.
- B. Change procedures.
- C. Defect assessment.
- D. Unit prices.
- E. Contingency allowances.

1.2 APPLICATIONS FOR PAYMENT

- A. Submit printed schedule on EJCDC C-620 Contractor's Application for Payment (2013). Electronic format will be provided by the Engineer.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in the Agreement.
- E. Submit with transmittal letter as specified for Submittals in Section 01 33 00 - Submittal Procedures.
- F. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
 - 1. Current construction photographs specified in Section 01 33 00.
 - 2. Partial release of liens from major subcontractors and vendors.
 - 3. Record documents as specified in Section 01 70 00, for review by Owner which will be returned to Contractor.
 - 4. Affidavits attesting to off-site stored products.
 - 5. Construction progress schedules, revised and current as specified in Section 01 33 00.

1.3 CHANGE PROCEDURES

- A. Submittals: Submit name of individual authorized to receive change documents and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

- B. The Engineer will advise of minor changes in the Work not involving adjustment to Contract Price or Contract Time by issuing supplemental instructions.
- C. The Engineer may issue a Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with stipulation of overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 15 days.
- D. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Price and Contract Time with full documentation and a statement describing effect on Work by separate or other Contractors. Document requested substitutions in accordance with Section 00 21 13 – Instructions to Bidders.
- E. Stipulated Price Change Order: Based on Notice of Change and Contractor's fixed price quotation or Contractor's request for Change Order as approved by Engineer.
- F. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under Work Change Directive. Changes in Contract Price or Contract Time will be computed as specified for Time and Material Change Order.
- G. Work Change Directive: Engineer may issue directive, signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Price or Contract Time. Promptly execute change.
- H. Force Account Change Order: Submit itemized account and supporting data after completion of change within time limits indicated in Conditions of the Contract. Engineer will determine change allowable in Contract Price and Contract Time as provided in Contract Documents.
- I. Maintain detailed records of work done on Force Account basis. Provide full information required for evaluation of proposed changes and to substantiate costs for changes in the Work.
- J. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.
- K. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- L. Correlation Of Contractor Submittals:
 - 1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Price.

2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
3. Promptly enter changes in Project Record Documents.

1.4 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but unit price will be adjusted to new price at discretion of Owner.
- D. Defective Work will be partially repaired to instructions of Owner, and unit price will be adjusted to new price at discretion of Owner.
- E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.
- F. Authority of Engineer to assess defects and identify payment adjustments is final.
- G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
 1. Products wasted or disposed of in a manner that is not acceptable.
 2. Products determined as unacceptable before or after placement.
 3. Products not completely unloaded from transporting vehicle.
 4. Products placed beyond lines and levels of required Work.
 5. Products remaining on hand after completion of the Work.
 6. Loading, hauling, and disposing of rejected products.

1.5 UNIT PRICES

- A. Authority: Measurement methods are delineated in individual Specification Sections.
- B. Measurement methods delineated in individual Specification Sections complement criteria of this Section. In event of conflict, requirements of individual Specification Section govern.
- C. Engineer or Owner will take measurements and compute quantities accordingly. Provide assistance in taking of measurements.
- D. Unit Quantities: Quantities and measurements indicated in Bid Form are for contract purposes only. Actual quantities provided shall determine payment.
 1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at unit sum/prices contracted.

- E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals, erection, application or installation of item of the Work, overhead, and profit.
- F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.
- G. Measurement Of Quantities:
 - 1. Weigh Scales: Inspected, tested, and certified by applicable State Weights and Measures Department within past year.
 - 2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
 - 3. Metering Devices: Inspected, tested, and certified by applicable State Department within past year.
 - 4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
 - 5. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
 - 6. Measurement by Area: Measured by square dimension using mean length and width or radius.
 - 7. Linear Measurement: Measured by linear dimension at item centerline or mean chord.
 - 8. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.
- H. Unit Price Schedule: Refer to Bid Form.

1.6 CONTINGENCY ALLOWANCES

- A. Include in the Contract, a stipulated price of 5% of the base bid for use upon Owner's instruction.
- B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead, and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- C. Funds will be drawn from Contingency Allowance only by Change Order.
- D. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination.
- B. Field engineering.
- C. Preconstruction meeting.
- D. Progress meetings.
- E. Pre-installation meetings.
- F. Cutting and patching.

1.2 COORDINATION

- A. Coordinate scheduling, submittals, and Work of various specification sections to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with existing utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy or partial occupancy.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 FIELD ENGINEERING

- A. Employ Land Survey licensed in State of Project location.

- B. Locate and protect survey control and reference points. Promptly notify Engineer of discrepancies discovered.
- C. Control datum for survey is that indicated on Drawings.
- D. Verify set-backs and easements; confirm drawing dimensions and elevations.
- E. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.
- F. Maintain complete and accurate log of control and survey work as Work progresses.
- G. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- H. Promptly report to Engineer loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- I. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

1.4 PRECONSTRUCTION MEETING

- A. Owner will schedule meeting after Contract time starts to run.
- B. Attendance Required: Owner, Engineer, and Contractor.
- C. Agenda:
 - 1. Execution of Owner-Contractor Agreement.
 - 2. Submission of executed bonds and insurance certificates.
 - 3. Distribution of Contract Documents.
 - 4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
 - 5. Designation of personnel representing parties in Contract, Engineer, independent testing firm.
 - 6. Procedures and processing of field decisions, submittals, and substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout procedures.
 - 7. Scheduling.
 - 8. Maintaining record documents.
 - 9. Use of premises, office and storage areas, security, housekeeping, and Utility Owner's needs.
 - 10. Major equipment deliveries and priorities.
 - 11. Contractor's assignments for safety and first aid.
- D. Engineer will record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, Contractor, and those affected by decisions made.

1.5 PROGRESS MEETINGS

- A. Engineer will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings and administer meetings.
- B. Schedule: Throughout progress of the Work at maximum interval of monthly. Meet more often if Work dictates need.
- C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Engineer, and others as appropriate to agenda topics for each meeting.
- D. Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems impeding planned progress.
 - 5. Review of submittals schedule and status of submittals.
 - 6. Review of off-site fabrication and delivery schedules.
 - 7. Maintenance of progress schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on progress schedule and coordination.
 - 13. Other business relating to Work.
- E. Engineer will record minutes and distribute copies within three days after meeting to participants, with two copies to Owner, Contractor, and those affected by decisions made.

1.6 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific Section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific Section.
- C. Notify Engineer four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
 - 1. Review conditions of installation, preparation and installation procedures.
 - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, and those affected by decisions made.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Cut pavements using concrete saw.
- G. Restore Work with new products in accordance with requirements of Contract Documents.
- H. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- I. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- J. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- K. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to maintain original fire rating.
- L. Identify hazardous substances or conditions exposed during the Work to Engineer for decision or remedy.

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes.
 - 1. Submittal procedures.
 - 2. Product data.
 - 3. Shop drawings.
 - 4. Design data.
 - 5. Test reports.
 - 6. Certificates.
 - 7. Manufacturer's instructions.
 - 8. Manufacturer's field reports.
 - 9. Construction progress schedules.
 - 10. Proposed products list.
 - 11. Construction photographs.

1.2 SUBMITTAL PROCEDURES

- A. Submit number of copies Contractor requires, plus two copies Engineer will retain.
- B. Deliver to Engineer at business address.
- C. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.
- D. Transmit each submittal with Engineer accepted form.
- E. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- F. Identify Project, Contractor, subcontractor and supplier, pertinent drawing and detail number, and specification Section number appropriate to submittal.
- G. Apply Contractor's stamp signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- H. Schedule submittals to expedite Project. Coordinate submission of related items.
- I. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.
- J. Allow space on submittals for Contractor and Engineer review stamps.
- K. When revised for resubmission, identify changes made since previous submission.

L. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

M. Submittals not requested will not be recognized or processed.

1.3 PRODUCT DATA

A. Product Data: Submit to Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

1.4 SHOP DRAWINGS

A. Shop Drawings: Submit to Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.

1. Include signed and sealed calculations to support design.

2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.

3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. Submit number of copies described in SUBMITTAL PROCEDURES article.

1.5 DESIGN DATA

A. Submit for Engineer's knowledge as contract administrator or for Owner.

B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.6 TEST REPORTS

A. Submit for Engineer's knowledge as contract administrator or for Owner.

B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.7 CERTIFICATES

- A. When specified in individual specification Sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Engineer.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product but must be acceptable to Engineer.

1.8 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing to Engineer for delivery to Owner.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.9 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for Engineer's knowledge as contract administrator or for Owner.
- B. Submit report within 72 hours of observation to Engineer for information.
- C. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.10 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedules within 15 days after date established in Notice to Proceed. After review, resubmit required revised data within 10 days.
- B. Submit revised Progress Schedules with each Progress Meeting or Application for Payment, but not less than monthly.
- C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
- D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- E. Submit computer generated Gantt chart with separate line for each major portion of Work or operation, identifying first work day of each week.
- F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.

- G. Indicate estimated percentage of completion for each item of Work at each submission.
- H. Submit separate schedule of submittal dates for shop drawings, product data, and samples. Indicate dates reviewed submittals will be required from Engineer. Indicate decision dates for selection of finishes.
- I. Indicate delivery dates for Owner furnished products and products identified under Allowances if required.
- J. Revisions To Schedules:
 - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
 - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
 - 3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect, including effect of changes on schedules of separate contractors.

1.11 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.12 CONSTRUCTION PHOTOGRAPHS

- A. Provide photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Engineer.
- B. Submit photographs monthly or to show milestones of Work.
- C. Photographs: Digital files; jpg or tiff format. File name: Year-Month-Day_Jng.no.
- D. Take three photographs from differing directions for each section of work indicating relative progress of the Work, three days maximum prior to submitting.
- E. Take photographs as evidence of existing project conditions.
- F. Identify each print on front. Identify name of Project, contract number, phase orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of exposure.
- G. Deliver digital files to Owner with project record documents on flash drive. Catalog and index files in chronological sequence; include typed table of contents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

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SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Quality control and control of installation.
 - 2. Tolerances.
 - 3. References.
 - 4. Testing and inspection services.
 - 5. Labeling.
 - 6. Examination.
 - 7. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. For products or Work specified by association, trades, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving Bids, (date of Owner-Contractor Agreement when there are no Bids), except where specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. Contractual relationships, duties, and responsibilities of parties in Contract and those of Engineer shall not be altered from Contract Documents by mention or inference otherwise in reference documents.

1.5 TESTING AND INSPECTION SERVICES

- A. Employ and pay for services of an independent firm acceptable to Owner to perform specified testing and inspection.
 - 1. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full time registered Engineer, specialists and responsible officer.
 - 2. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.
- B. Independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Engineer.
 - 1. Laboratory: Authorized to operate in State of Project location.
 - 2. Laboratory Staff: Maintain full time registered Engineer and necessary specialists on staff to review services.
 - 3. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing and inspections may occur on or off project site. Perform off-site testing as required by Engineer or Owner.
- D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

- E. Testing and employment of independent firm does not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- F. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Engineer and in the presence of the Engineer or Owner's representative.
 - 1. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
 - 2. Payment for all testing services which are not properly scheduled will be charged to Contractor by deducting testing charges from Contract Sum/Price.
 - 3. Submit final report indicating correction of Work previously reported as non-compliant.
- G. Independent Firm Responsibilities:
 - 1. Test samples of mixes submitted by Contractor.
 - 2. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
 - 3. Perform specified sampling and testing of products in accordance with specified standards.
 - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 5. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 - 6. Perform additional tests required by Engineer.
 - 7. Attend preconstruction meetings and progress meetings.
- H. Independent Firm Reports: After each test, promptly submit one copy of report to Engineer and Owner; and two copies to Contractor, and authority having jurisdiction. When requested by Engineer, provide interpretation of test results. Include the following:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and specifications section.
 - 6. Location in Project.
 - 7. Type of inspection or test.
 - 8. Date of test.
 - 9. Results of tests.
 - 10. Conformance with Contract Documents.
- I. Limits On Independent Firm:
 - 1. May not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. May not approve or accept any portion of the Work.
 - 3. May not assume duties of Contractor.
 - 4. Has no authority to stop the Work.

1.6 LABELING

- A. Attach label from agency approved by authority having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label.
 - 1. Model number.
 - 2. Serial number.
 - 3. Performance characteristics.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

END OF SECTION

SECTION 01 43 13 REFERENCES

GENERAL

1.1 SECTION INCLUDES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
 - 1. Quality assurance.
 - 2. Schedule of references.

1.2 RELATED SECTIONS

- A. Document – General Conditions: Reference Standards.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trades, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
 - 1. Applicable Codes:
 - a. BOCA National Building Code.
 - b. The National Electrical Code, NFPA 70.
 - c. The Life Safety Code, NFPA 101.
- B. Obtain copies of standards when required by product specification sections.
- C. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 SCHEDULE OF REFERENCES

END OF SECTION

AA

Aluminum Association
900 19th St., NW
Washington, DC 20006
www.aluminum.org
(202) 862-5100

AABC

Associated Air Balance Council
1518 K St., NW
Washington, DC 20005
www.aabchg.com
(202) 737-0202

AAMA

American Architectural
Manufacturers Association
1827 Walden Office Sq., Suite
104
Schaumburg, IL 60173-4268
www.aamanet.org
(847) 303-5664

AASHTO

American Association of State
Highway and Transportation
Officials
444 North Capitol St., NW, Suite
249
Washington, DC 20001
www.aashto.org
(202) 624-5800
(800) 231-3475

ABMA

American Bearing Manufacturers
Association
1200 19th St., NW, Suite 300
Washington, DC 20036-2422
www.abma-dc.org
(202) 429-5155

ACGIH

American Conference of
Governmental
Industrial Hygienists
1330 Kemper Meadow Dr. Suite
600
Cincinnati, Ohio 45240
www.acgih.org
(513) 742-2020

ACI

American Concrete Institute
P.O. Box 9094
Farmington Hills, MI 48333
www.aci-int.org
(248) 848-3700

ADC

Air Diffusion Council
104 South Michigan Ave., Suite
1500
Chicago, IL 60603
(312) 201-0101

ADSC

The International Association of
Foundation Drilling
9696 Skillman Street, Suite 280
Dallas, TX 75243
www.adsc-iafd.com
(214) 681-5994

AF&PA

American Forest and Paper
Association
1111 19th St., NW, Suite 800
Washington, DC 20036
www.afandpa.org
(202) 463-2700

AHA

American Hardboard Association
1210 W. Northwest Hwy
Palatine, IL 60067
(847) 934-8800

AI

Asphalt Institute
Research Park Drive
P.O. Box 14052
Lexington, KY 40512-4052
www.asphaltinstitute.org
(606) 288-4960

AISC

American Institute of Steel
Construction
One East Wacker Dr., Suite
3100
Chicago, IL 60601-2001
www.aisc.org
(312) 670-2400

AISI

American Iron and Steel Institute
1101 17th St., NW, Suite 1300
Washington, DC 20036
www.steel.org
(202) 452-7100
(800) 277-3850

AITC

American Institute of Timber
Construction
7012 S. Revere Pkwy, Suite 140
Englewood, CO 80112
www.aitc-glulam.org
(303) 792-9559

AMCA

Air Movement and Control
Association International, Inc.
30 W. University Dr.
Arlington Heights, IL 60004-1893
www.amca.org
(847) 394-0150

ANSI

American National Standards
Institute
1819 L. Street, N.W.
Washington, DC 20036
www.ansi.org
(202) 293-8020

APA/EWA

APA-The Engineered Wood
Association
P.O. Box 11700
Tacoma, WA 98411-0700
www.apawood.org
(253) 565-6600

API

American Petroleum Institute
1220 L St., NW
Washington, DC 20005-4070
www.api.org
(202) 682-8000

AREMA

American Railway Engineering
and
Maintenance-of-Way Association
8201 Corporate Drive, Suite
1125
Landover, MD 02785-2230
www.arema.org
(301) 459-3200

ARI

Air-Conditioning and
Refrigeration Institute
4301 Fairfax Dr., Suite 425
Arlington, VA 22203
www.ari.org
(703) 524-8800

ARRA

Asphalt Recycling and
Reclaiming Association
#3 Church Circle, PMB 250
Annapolis, MD 21401
www.arra.org
(410) 267-0023

ASCE

American Society of Civil
Engineers
World Headquarters
1801 Alexander Graham Bell Dr.
Reston, VA 20191-4400
www.asce.org
(800) 548-2723
(703) 295-6300

ASHRAE

American Society of Heating,
Refrigerating and Air-
Conditioning Engineers
1791 Tullie Circle, NE
Atlanta, GA 30329
www.ashrae.org
(800) 527-4723
(404) 636-8400

ASME

American Society of Mechanical
Engineers
3 Park Ave.
New York, NY 10016-5990
www.asme.org
(800) 843-2763

ASSE

American Society of Sanitary
Engineering
901 Canterbury, Suite A
Westlake, OH 44145
www.asse-plumbing.org
(440) 835-3040

ASTM

ASTM International
100 Barr Harbor Dr.
West Conshohocken, PA 19428-
2959
www.astm.org
(601) 832-9585

AWI

Architectural Woodwork Institute
1952 Isaac Newton Sq. West
Reston, VA 20190
www.awinet.org
(703) 733-0600

AWPA

American Wood-Preservers'
Association
P.O. Box 5690
Granbury, TX 76049
www.awpa.com
(817) 326-6300

AWS

American Welding Society
550 NW LeJeune Rd.
Miami, FL 33126
www.amweld.org
(800) 443-9353
(305) 443-9353

AWWA

American Water Works
Association
6666 W. Quincy Ave.
Denver, CO 80235
www.awwa.org
(303) 794-7711

BAAQMD

Bay Area Air Quality
Management District
939 Ellis St.
San Francisco, CA 94109
www.baaqmd.gov
(415) 771-6000

CDA

Copper Development
Association Inc.
260 Madison Ave., 16th Floor
New York, NY 10016
www.copper.org
(800) 232-3282
(212) 251-7200

CGA

Compressed Gas Association
1725 Jefferson Davis Hwy, Suite
1004
Arlington, VA 22202-4102
www.cganet.com
(703) 412-0900

CISCA

Ceilings and Interior Systems
Construction Association
1500 Lincoln Hwy, Suite 202
St. Charles, IL 60174
www.cisca.org
(630) 584-1919

CISPI

Cast Iron Soil Pipe Institute
5959 Shallowford Rd., Suite 419
Chattanooga, TN 37421
www.cispi.org
(423) 892-0137

CLFMI

Chain Link Fence Manufacturers
Institute
9891 Broken Land Pkwy, Suite
300
Columbia, MD 21046
www.chainlinkinfo.org
(301) 596-2583

CRI

Carpet and Rug Institute
310 S. Holiday Ave.
Dalton, GA 30722-2048
www.carpet-rug.com
(800) 882-8846
(706) 278-3176

CRSI

Concrete Reinforcing Steel
Institute
933 N. Plum Grove Rd.
Schaumburg, IL 60173-4758
www.crsi.org
(847) 517-1200

CSSB

Cedar Shake and Shingle
Bureau
P.O. Box 1178
Sumas, WA 98295
www.cedarbureau.org
(604) 462-8961

CSI

Construction Specifications
Institute
99 Canal Center Plaza, Suite
300
Alexandria, VA 22314
www.csinet.org
(800) 689-2900

CTI

Cooling Technology Institute
530 Wells Fargo Drive, Suite
218
Houston, TX 77090
www.cti.org
(281) 583-4087

DASMA

Door and Access Systems
Manufacturers
Association International
1300 Summer Avenue
Cleveland, OH 44115-2851
www.dasma.com
(216) 241-7333

DHI

The Door and Hardware Institute
14150 Newbrook Dr., Suite 200
Chantilly, VA 20151
www.dhi.org
(703) 222-2010

DIPRA

Ductile Iron Pipe Research
Association
245 Riverchase Parkway East,
Suite O
Birmingham, AL 35244
www.dipra.org
(205) 402-8700

EIMA

EIFS Industry Members
Association
3000 Corporate Center Dr.,
Suite 270
Morrow, GA 30260
www.eifsfacts.com
(800) 294-3462
(770) 968-7945

EPA

Environmental Protection
Agency
US EPA/NSCEP
P.O. Box 42419
Cincinnati, Ohio 45242
www.epa.gov
(800) 490-9198

EPRI

Electric Power Research
Institute
3412 Hillview Avenue
Palo Alto, California 94304
WWW.EPRI.COM
(650) 855-8900

FAA

Federal Aviation Administration
800 Independence Ave., SW
Washington, DC 20591
www.faa.gov
(202) 366-4000

FIBA

International Basketball
Federation
(Federation Internationale De
Basketball)
8, Ch. De Blandonnet
1214 Vernier / Geneva
Switzerland
www.fiba.com
(+41-22) 545.00.00

FM

FM Global
Corporate Headquarters.
P.O. Box 7500
Johnston, RI 02919
www.fmglobal.com
(401) 275-3000

FS

Federal Specification Unit
General Services Admin.
Federal Supply Service
FSS Acquisition Management
Center
Environmental Programs and
Engineering Policy Division
Washington, DC 20406
www.gsa.gov
(703) 305-5682

FSC

Forest Stewardship Council
1155 30th St. NW
Suite 300
Washington, DC 20007
www.fscus.org
(877) 372-5646

GA

Gypsum Association
810 First St., NE, Suite 510
Washington, DC 20002
www.usg.com
www.gypsum.org
(202) 289-5440

GANA

Glass Association of North
America
2945 Southwest Wanamaker
Dr., Suite A
Topeka, KS 66614
www.glasswebsite.com
(785) 271-0208

GS

Green Seal
1001 Connecticut Ave.
Suite 827
Washington, DC 20036-5525
www.greenseal.org
(202) 872-6400

HI

Hydronics Institute
Division of Gas Appliance
Manufacturers Association
2107 Wilson Blvd., Suite 600
Arlington, VA 22201
www.gamanet.org
(703) 525-7060

HMMA

Hollow Metal Manufacturers
Association
Division of NAAMM
8 South Michigan Ave., Suite
1000
Chicago, IL 60603
www.naamm.org
(312) 332-0405

HPVA

Hardwood Plywood and Veneer
Association
P.O. Box 2789
Reston, VA 20195-0789
www.hpva.org
(703) 435-2900

IAS

International Approval Services
U.S. Operations
8501 E. Pleasant Valley Rd.
Cleveland, Ohio 44131-5575
www.iasonline.org
(216) 524-4990

ICC

International Code Council
5203 Leesburg Pike #708
Falls Church, VA 22041
www.iccsafe.org
(703) 931-4533

IEEE

Institute of Electrical and
Electronics Engineers
3 Park Ave., 17th Floor
New York, NY 10016-5997
www.ieee.org
(212) 419-7900

IES

Illuminating Engineering Society
of North America
120 Wall Street, 17th Floor
New York, NY 10005
www.iesna.org
(212) 248-5000

IGSHPA

International Ground Source
Heat Pump Association
Oklahoma State University
499 Cordell South
Stillwater, OK 74078
www.igshpa.okstate.edu
(800) 626-4747

ILI

Indiana Limestone Institute of
America
400 Stone City Bank Building
Bedford, IN 47421
www.ili.ai.com
(812) 275-4426

ISO

International Organization for
Standardization
1, rue de Varembe, Case
postale 56
CH-1211 Geneva 20,
Switzerland
www.iso.org
+41 22 749 01 11

KCMA

Kitchen Cabinet Manufacturers
Association
1899 Preston White Dr.
Reston, VA 20191-5435
www.kcma.org
(703) 264-1690

LPI

Lightning Protection Institute
3335 N. Arlington Heights Rd.,
Suite E
Arlington Heights, IL 60004
www.lightning.org
(800) 488-6864
(847) 577-7200

MBMA

Metal Building Manufacturers
Association
1300 Sumner Ave.
Cleveland, OH 44115-2851
www.mbma.com
(216) 241-7333

MFMA

Maple Flooring Manufacturers
Association
60 Revere Dr., Suite 500
Northbrook, IL 60062
www.maplefloor.org
(847) 480-9138

MIA

Marble Institute of America
30 Eden Alley, Suite 301
Columbus, OH 43215
www.marble-institute.com
(614) 228-6194

MIL

Military Standardization
Documents
Defense Automated Printing
Service
700 Robbins Ave., Building 4D
Philadelphia, PA 19111-5094
www.dodssp.daps.mil
(215) 697-2179

MSS

Manufacturers Standardization
Society of the Valve
and Fittings Industry
127 Park St., NE
Vienna, VA 22180-4602
www.mss-hq.com
(703) 281-6613

NAA

National Arborist Association
Route 101, P.O. Box 1094
Amherst, NH 03031-1094
www.natlarb.com
(800) 733-2622
(603) 673-3311

NAAMM

National Association of
Architectural Metal
Manufacturers
800 Roosevelt Road, Building C,
Suite 312
Glen Ellyn, IL 60137
www.naamm.org
(630) 942-6591

NAAMM

North American Association of
Mirror Manufacturers
(Division of GANA)
2945 Southwest Wanamaker
Dr., Suite A
Topeka, KS 66614
www.glasswebsite.com
(913) 266-7013

NACE

NACE International
1440 South Creek Drive
Houston, TX 77084
www.nace.org
(281) 228-6200

NAIMA

North American Insulation
Manufacturers Association
44 Canal Center Plaza, Suite
310
Alexandria, VA 22314
www.naima.org
(703) 684-0084

NBGQA

National Building Granite
Quarries Association, Inc.
1220 L. St., NW, Suite 100-167
Washington, DC 20005
www.nbgqa.com
(800) 557-2848

NCAA

The National Collegiate Athletic
Association
700 W. Washington Street
P.O. Box 6222
Indianapolis, Indiana 46206-
6222
www.ncaa.org
(317) 917-6222

NCMA

National Concrete Masonry
Association
2302 Horse Pen Rd.
Herndon, VA 20171-3499
www.ncma.org
(703) 713-1900

NCRP

National Council on Radiation
Protection and Measurement
7910 Woodmont Ave., Suite 800
Bethesda, MD 20814-3095
www.ncrponline.com
(301) 657-2652

NEBB

National Environmental
Balancing Bureau
8575 Grovemont Circle
Gaithersburg, MD 20877
www.nebb.org
(301) 977-3698

NECA

National Electrical Contractors
Association
3 Bethesda Metro Center, Suite
1100
Bethesda, MD 20814
www.necanet.org
(301) 657-3110

NELMA

Northeastern Lumber
Manufacturers Association
272 Tuttle Rd.
P.O. Box 87A
Cumberland Center, ME 04021
www.nelma.org
(207) 829-6901

NEMA

National Electrical
Manufacturers Association
1300 N 17th St., Suite 1847
Rosslyn, VA 22209
www.nema.org
(703) 841-3200

NETA

International Electrical Testing
Association
P.O. Box 687
106 Stone St.
Morrison, CO 80465
www.netaworld.org
(303) 697-8441

NFHS

National Federation of State
High School Associations
P.O. Box 690
Indianapolis, Indiana 46206
www.nfhs.org
(317) 972-6900

NFPA

National Fire Protection
Association
One Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101
www.nfpa.org
(800) 344-3555
(617) 770-3000

NFRC

National Fenestration Rating
Council
1300 Spring St., Suite 500
Silver Spring, MD 20910
www.nfrc.org
(301) 589-6372

NIBS

National Institute of Building
Sciences
1090 Vermont Ave., NW, Suite
700
Washington, DC 20005-4905
www.nibs.org
(202) 289-7800

NIST

National Institute of Standards
and Technology
100 Bureau Dr., MS 2150
Gaithersburg, MD 20899-2150
www.nist.gov
(301) 975-4025

NLA

National Lime Association
200 North Glebe Rd., Suite 800
Arlington, VA 22203
www.lime.org
(703) 243-5463

NLGA

National Lumber Grades
Authority
#406-First Capital Pl.
960 Quayside Dr.
New Westminster, BC V3M 6G2
CANADA
www.nlga.org
(604) 524-2393

NOFMA

National Oak Flooring
Manufacturers Association
P.O. Box 3009
Memphis, TN 38173-0009
www.nofma.org
(901) 526-5016

NOMMA

National Ornamental and
Miscellaneous Metals
532 Forest Pkwy., Suite A
Forest Park, GA 30297
www.nomma.org
(404) 363-4009

NPCA

National Paint and Coatings
Association
1500 Rhode Island Ave., NW
Washington, DC 20005
www.paint.org
(202) 462-6272

NPCA

National Precast Concrete
Association
10333 N Meridian St. Ste. 272
Indianapolis IN 46290-1081
www.precast.org
(317) 571-9500

NRCA

National Roofing Contractors
Association
O'Hare International Center
10255 W. Higgins Rd., Suite 600
Rosemont, IL 60018
www.roofonline.org
(847) 299-9070

NSF

NSF International
P.O. Box 130140
Ann Arbor, MI 48113-0140
www.nsf.org
(734) 769-8010
(800) 673-6275

NSPI

National Spa and Pool Institute
2111 Eisenhower Ave.
Alexandria, VA 22314
www.nesapool.org
(703) 838-0083

NTMA

National Terrazzo and Mosaic
Association
110 E. Market St., Suite 200-A
Leesburg, VA 20176
www.ntma.com
(800) 323-9736
(703) 779-1022

NUCA

National Utility Contractors
Association
4301 North Fairfax Dr., Suite
360
Arlington, VA 22203-1627
www.nuca.com
(703) 358-9300

PCA

Portland Cement Association
5420 Old Orchard Rd.
Skokie, IL 60077
www.cement.org
(847) 966-6200

PCI

Precast/Prestressed Concrete
Institute
209 W. Jackson Blvd.
Chicago, IL 60606-6938
www.pci.org
(312) 786-0300

PDCA

Painting and Decorating
Contractors of America
3913 Old Lee Hwy, Suite 33-B
Fairfax, VA 22030
www.pdca.com
(703) 359-0826

PDI

Plumbing and Drainage Institute
45 Bristol Dr.
South Easton, MA 02375
www.PDlonline.org
(800) 589-8956

PEI

Petroleum Equipment Institute
P.O. Box 2380
Tulsa, OK 74101-2380
www.pei.org
(918) 494-9696

PTI

Post Tensioning Institute
1717 W. Northern Ave., Suite
114
Phoenix, AZ 85021
www.post-tensioning.org
(602) 870-7540

RCSC

Research Council on Structural
Connections
www.boltcouncil.org

RIS

The Redwood Inspection
Service
630 J Street
Eureka, CA 95501
(707) 444-3024

SCAQMD

South Coast Air Quality
Management District
21865 E. Copley Dr.
Diamond Bar, CA 91765
www.cypressinfo.org
(800) 288-7664
(909) 396-2000

SCMA

Southern Cypress
Manufacturers Association
400 Penn Center Blvd., #530
Pittsburgh, PA 15235
www.cypressinfo.org
(877) 607-7262

SDI

Steel Deck Institute
P.O. Box 25
Fox River Grove, IL 60021
www.sdi.org
(847) 462-1930

SDI

Steel Door Institute
30200 Detroit Rd.
Cleveland, OH 44145-1967
www.steeldoor.org
(440) 899-0010

SIGMA

Sealed Insulating Glass
Manufacturers Association
401 N. Michigan Ave.
Chicago, IL 60611
www.igmaonline.org
(312) 644-6610

SJI

Steel Joist Institute
3127 10th Ave., North Ext.
Myrtle Beach, SC 29577-6760
(843) 626-1995

SMACNA

Sheet Metal and Air Conditioning
Contractors'
National Association
4201 Lafayette Center Dr.
Chantilly, VA 20151-1209
www.smacna.org
(703) 803-2980

SPIB

Southern Pine Inspection
Bureau
4709 Scenic Hwy
Pensacola, FL 32504-9094
www.spib.org
(850) 434-2611

SPRI

Single Ply Roofing Institute
200 Reservoir St., 309 A
Needham, MA 02494
www.spri.org
(781) 444-0242

SSPC

SSPC: The Society for
Protective Coatings
40 24th St., 6th Floor
Pittsburgh, PA 15222-4656
www.sspc.org
(800) 837-8303
(412) 281-2331

STI

Steel Tank Institute
570 Oakwood Rd.
Lake Zurich, IL 60047
www.steeltank.com
(847) 438-8265

SWI

Steel Window Institute
1300 Sumner Ave.
Cleveland, OH 44115-2851
www.steelwindows.com
(216) 241-7333

SWRI

Sealant, Waterproofing and
Restoration Institute
2841 Main St.
Kansas City, MO 64108
www.swrionline.org
(816) 472-7974

TCA

Tile Council of America, Inc.
100 Clemson Research Blvd.
Anderson, S.C. 29625
www.tileusa.com
(864) 646-8453

TIA/EIA

Telecommunications Industry
Association
/Electronic Industries Alliance
2500 Wilson Blvd., Suite 300
Arlington, VA 22201
www.tiaonline.org
(703) 907-7700

TMS

The Masonry Society
3970 Broadway, Suite 201-D
Boulder, CO 80304-1135
www.masonrysociety.org
(303) 939-9700

TPI

Truss Plate Institute
583 D'Onofrio Dr., Suite 200
Madison, WI 53719
www.tpinst.org
(608) 833-5900

TPI

Turfgrass Producers
International
1855-A Hicks Rd.
Rolling Meadows, IL 60008
www.turfgrassod.org
(800) 405-8873
(847) 705-9898

UL

Underwriters Laboratories Inc.
333 Pfingsten Rd.
Northbrook, IL 60062-2096
www.ul.com
(847) 272-8800

USGBC

U.S. Green Building Council
1015 18th St., NW, Suite 805
Washington, DC 20036
www.usgbc.org
(202) 828-7422

WCLIB

Town of Harrisburg
2020 Water Line Replacements
WKD Project Number: 20200074.00.HI

West Coast Lumber Inspection
Bureau
P.O. Box 23145
Portland, OR 97281
www.wclib.org
(503) 639-0651

WDMA

Window and Door Manufacturers
Association
1400 E. Touhy Ave., Suite 470
Des Plaines, IL 60018
(800) 223-2301

WH

Intertek Testing Services
(Warnock Hersey Listed)
3210 American Drive
Mississauga, Ontario
Canada L4V 1B3
www.intertek-etlsemko.com
(905) 678-7820

WI

Woodwork Institute
3188 Industrial Blvd.
West Sacramento, CA 95691
www.woodworkinstitute.com
(916) 372-9943

WWPA

Western Wood Products
Association
522 SW 5th Ave., Suite 500
Portland, OR 97204-2122
www.wwpa.org
(503) 224-3930

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities:
 - 1. Temporary electricity.
 - 2. Temporary lighting for construction purposes.
 - 3. Temporary water service.
 - 4. Temporary sanitary facilities.
- B. Construction Facilities:
 - 1. Contractor's storage areas and sheds.
 - 2. Vehicular access.
 - 3. Progress cleaning and waste removal.
 - 4. Traffic regulation.
 - 5. Fire prevention facilities.
- C. Temporary Controls:
 - 1. Barriers.
 - 2. Security.
 - 3. Water control.
 - 4. Dust control.
 - 5. Erosion and sediment control.
 - 6. Noise control.
 - 7. Pest and rodent control.
 - 8. Pollution control.
- D. Removal of temporary utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from utility source as needed for construction operation.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations.

1.4 TEMPORARY WATER SERVICE

- A. Provide and pay for suitable quality water service as needed to maintain specified conditions for construction operations. Connect to existing water source if available and provide separate metering per utility company requirements.

1.5 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Provide facilities at time of project mobilization.
- B. At end of construction, return existing facilities used for construction operations to same or better condition as original condition.

1.6 CONTRACTORS STORAGE AREAS AND SHEDS

- A. Storage Areas And Sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements.
- B. Location as coordinated by Contractor. The use of private property must be secured in writing by the property owner.
- C. Provide unimpeded access for emergency vehicles. Maintain 20-foot wide driveways with turning space between and around combustible materials.
- D. Provide and maintain access to fire hydrants and control valves free of obstructions.
- E. Provide means of removing mud from vehicle wheels before entering streets.

1.7 VEHICULAR ACCESS

- A. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- B. Location as indicated on Drawings or approved by Engineer.
- C. Provide unimpeded access for emergency vehicles. Maintain 20-foot wide driveways with turning space between and around combustible materials.
- D. Provide and maintain access to fire hydrants and control valves free of obstructions.
- E. Provide means of removing mud from vehicle wheels before entering streets.

1.8 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

1.9 TRAFFIC REGULATION

- A. Signs, Signals, and Devices:

1. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by authority having jurisdiction.
 2. Automatic Traffic Control Signals: As approved by local jurisdictions.
 3. Traffic Cones and Drums, Flares and Lights: As approved by authority having jurisdiction.
 4. Flagperson Equipment: As required by authority having jurisdiction.
- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- D. Haul Routes:
1. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
 2. Use haul routes and site access as indicated on Drawings.
 3. Confine construction traffic to designated haul routes.
 4. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.
- E. Traffic Signs And Signals:
1. Provide signs at approaches to site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
 2. Provide, operate, and maintain automatic traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
 3. Relocate as Work progresses, to maintain effective traffic control.
- F. Removal:
1. Remove equipment and devices when no longer required.
 2. Repair damage caused by installation.
 3. Remove post settings to depth of 2 feet.

1.10 FIRE PREVENTION FACILITIES

- A. Establish fire watch for cutting and welding and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- B. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60BC UL rating.
1. Provide minimum one fire extinguisher in every construction trailer and storage shed.

1.11 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.
- D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.12 SECURITY

- A. Security Program:
 - 1. Protect Work and existing premises from theft, vandalism, and unauthorized entry.
 - 2. Initiate program at project mobilization.
 - 3. Maintain program throughout construction period until Owner acceptance precludes need for Contractor security.

1.13 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

1.14 DUST CONTROL

- A. Execute Work by methods to minimize raising dust from construction operations.
- B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

1.15 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
- B. Minimize surface area of bare soil exposed at one time.
- C. Provide temporary measures including berms, dikes, and drains, and other devices as indicated to prevent water flow.
- D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
- E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.16 NOISE CONTROL

- A. Provide methods, means, and facilities to minimize noise produced by construction operations.

1.17 PEST AND RODENT CONTROL

- A. Provide methods, means, and facilities to prevent pests, insects, and rodents from damaging the Work.

1.18 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.19 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet. Return grade to original conditions
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

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SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Starting of systems.
- D. Demonstration and instructions.
- E. Protecting installed construction.
- F. Project record documents.
- G. Spare parts and maintenance products.
- H. Product warranties and product bonds.

1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.
- B. Provide submittals to Engineer required by authorities having jurisdiction.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.
- C. Clean site; sweep paved areas, rake clean landscaped surfaces.
- D. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Engineer and Owner seven days prior to start-up of each water line segment.
- C. Submit a written report in accordance with Section 01 33 00 - Submittal Procedures that equipment or system has been properly installed and is functioning correctly.

1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of substantial completion.
- B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time at equipment location.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- E. Required instruction time for each item of equipment and system is specified in individual Sections.

1.6 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Prohibit traffic from landscaped areas.

1.7 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.

- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
 - 3. Field changes of dimension and detail.
 - 4. Details not on original Contract drawings.
- G. As-Built Survey: Contractor to provide As-Built survey to be completed by a licensed Professional Land Surveyor in the State of North Carolina.
 - 1. Horizontal Datum: NC Grid NAD83
 - 2. Vertical Datum: NAVD 88
 - 3. As-Built survey shall be tied to the nearest NC Geodetic Monument.
 - 4. Engineer can provide, upon request, design drawings in AUTOCADD format for use by the Surveyor.
 - 5. As-Built Survey to include location of installed water main in the x, y, and z planes and include all above ground appurtenances. All above ground appurtenances shall be labeled with the name of the appurtenance and the Northing, Easing, and Elevation. The water line shall be located, field marked, and surveyed after construction. If necessary, the Contractor may survey installation depths during the construction of the project.
 - 6. As-Built survey to include all recorded easements associated with this project, NCDOT or City Rights-of-Way, and all structures, appurtenances, markers, and unique items within each of the easements.
 - 7. Survey should include the start and end point of all bore and jack and horizontal directional drill installations included as part of this project.
 - 8. Final Completion will not be considered reached until the submittal and acceptance of the As-Built survey by the Owner and Engineer.
- H. Submit documents to Engineer.

1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.

- B. Deliver to project site and place in location as directed by Owner; obtain receipt prior to final payment.

1.9 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of work.
- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - 2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond date of substantial completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 71 13
MOBILIZATION

PART 1 GENERAL

1.1 SUMMARY:

- A. The work covered by this section consists of preparatory work and operations, including but not limited to:
 - 1. Those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site.
 - 2. Those items necessary for providing the items required by the General Provisions, Special Provisions, and General Requirements.
 - 3. Those items including but not limited to: the establishment of all temporary fencing, staging areas, temporary access and haul routes, and other facilities necessary for work in the project.
 - 4. Those items necessary for the maintenance of vehicle and construction traffic; including but not limited to: portable and stationary construction signs, barricades, drums, cones, and other traffic control devices.
 - 5. Surveying and construction staking.
 - 6. All barricades, barricade lights, and other phasing and detour devices.
 - 7. Performance bond, labor and materials bond, insurance.
 - 8. Those items for all other work in the various items on the project site which must be performed or costs incurred prior to beginning work.
 - 9. This item also includes all work outside the limits of construction that is necessary to demobilize and restore areas disturbed by the Contractor to their original condition including, but not limited to, pavement rehabilitation, grading, seeding, mulching, cleaning, and disposal.

1.2 MEASUREMENT AND PAYMENT:

- A. All work covered by this section will be paid for at the contract lump sum price for "Mobilization."
- B. Should "Mobilization" exceed 5% of the total bid amount for the Contract, partial payments for the item of "Mobilization" will be made with the first and second partial pay estimates, paid on the Contract, and will be made at the rate of 2.5% percent of the total bid amount on each of these partial pay estimates, less retainage provided for in the Contract; the remaining amount over 5% shall be paid in the final pay request of the project. If the Mobilization bid amount does not exceed 5%, it shall be paid equally in the first two (2) partial pay estimates.
- C. Payment will be made per lump sum.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION - Not Used.

END OF SECTION

SECTION 31 10 00
SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removing surface debris.
 - 2. Removing designated paving, curbs, and slabs.
 - 3. Removing designated trees, shrubs, and other plant life.
 - 4. Removing abandoned utilities and structures where indicated.
 - 5. Plugging abandoned utilities and filling abandoned structures where indicated.
 - 6. Protecting plant life and structures designated to remain.
- B. Related Sections:
 - 1. Section 31 23 16.26 - Rock Removal.
 - 2. Section 31 25 13 - Erosion Controls.
 - 3. Section 32 92 19 - Seeding.

1.2 MEASUREMENT AND PAYMENT

- A. General: Site Clearing
 - 1. Will not be measured for payment but is included in the unit cost for the pipe installed.

1.3 REFERENCES

- A. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 QUALITY ASSURANCE

- A. Perform Work in accordance with Section 200 of the NCDOT Standard Specifications.
- B. Maintain one copy of document on site.
- C. Conform to applicable code for environmental requirements and disposal of debris.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify existing plant life designated to remain is tagged or identified.
- C. Identify waste area or salvage area for placing removed materials when materials are indicated to remain on site.

3.2 PREPARATION

- A. Call local utility line information service indicated on Drawings not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.

3.3 PROTECTION

- A. Locate, identify, and protect from damage utilities indicated to remain.
- B. Protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect bench marks and survey control points from damage or displacement.

3.4 CLEARING

- A. Remove trees and shrubs within areas indicated on Drawings.
- B. Trees 6 inches in diameter and larger shall only be removed from temporary construction easement when it is necessary for the trenching operation; and only then with permission of the Owner.
- C. Remove stumps, main root ball, root system, surface rock, and pavements to depth of 12 inches below proposed Subgrade elevation.
- D. Clear undergrowth and deadwood without disturbing subsoil.

3.5 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Remove paving, curbs, and site slabs.

- C. Where indicated on Drawings partially remove paving, curbs, and slabs. Neatly saw cut edges at right angle to surface.
- D. Remove abandoned utilities. Indicate removal termination point for underground utilities on Record Documents.
- E. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- F. Do not burn or bury materials on site unless authorized in writing by authority having jurisdiction.
- G. Leave site in clean condition.

END OF SECTION

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SECTION 31 23 16.13
TRENCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating trenches for utilities and utility structures.
 - 2. Bedding.
 - 3. Backfilling and compacting to subgrade elevations.
 - 4. Sheeting and Shoring.
 - 5. Dewatering.
 - 6. Compacting backfill material.
- B. Related Sections:
 - 1. Section 31 23 16.26 - Rock Removal: Removal of rock found during excavating.
 - 2. Section 31 25 13 - Erosion Controls: Controlling sediment and erosion from Work of this section.
 - 3. Section 33 11 00 - Water Utility Distribution Piping: Water piping and appurtenances.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. General: Work of this Section will not be measured for payment but is included in the unit cost for the various utilities and structures installed. (Exception: Paragraphs noted below.)
- B. Trench Excavation: Will not be measured for payment.
- C. Bedding: Will not be measured for payment.
- D. Incidental Stone Bedding:
 - 1. Basis of Measurement: By cubic yard to maximum trench width of 16 inches wider than outside diameter of pipe and maximum depth of 6 inches below bottom of pipe.
 - 2. Basis of Payment: Includes equipment, furnishing material, stockpiling, preparing substrate surface, placing, compacting and labor required for the complete installation of extra pipe foundation stone over and above that called for on the plans.
- E. Subsoil Fill: Will not be measured for payment.
- F. Granular Fill: Will not be measured for payment.
- G. Foundation Stone: Will not be measured for payment.
- H. Flowable Fill: Will not be measured for payment.

- I. Sheeting and Shoring: Will not be measured for payment.
- J. Dewatering: Will not be measured for payment.
- K. Geotextile Fabric: Will not be measured for payment.
- L. Rock Removal: Refer to Section 31 23 16.26.

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International:
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 3. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - 4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 5. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 6. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- C. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, or cable.
- B. Utility Structures: Manholes, catch basins, inlets, valve vaults, hand holes, and other utility access structures as indicated on Drawings.
- C. Trench Terminology:
 - 1. Foundation: Area under bottom of trench supporting bedding.
 - 2. Bedding: Fill placed under utility pipe.
 - 3. Haunching: Fill placed from bedding to center line of pipe.
 - 4. Initial Backfill: Fill place from center line to 6 to 12 inches above top of pipe.
 - 5. Final Backfill: Fill placed from initial backfill to subgrade.

1.5 UNIFIED SOIL CLASSIFICATION SYSTEM

- A. Class I

1. 1/4" – 1-1/2" well graded stone including coral, slag, cinders, crushed stone and crushed shells.
- B. Class II
1. GW Coarse gravel well graded stone and crushed shells
 2. GP Coarse gravel poorly graded
 3. SW Coarse sands well graded
 4. SP Coarse sands poorly graded
- C. Class III
1. GM Silty-sandy gravel
 2. GC Clayey-sandy gravel
 3. SM Silty-sands
 4. SC Clayey-sands
- D. Class IV
1. ML Inorganic silts and fine sands
 2. CL Inorganic clays – low plasticity
- E. Fill material shall exhibit a plasticity index of less than 15 and Standard Proctor maximum density at optimum moisture greater than 90 pounds per cubic foot. The following materials are unacceptable.
- F. Class V
1. OL Organic silts
 2. OH Organic clays
 3. PT Highly organic soil
 4. MH Inorganic elastic silts
 5. CH Inorganic clays – high plasticity

1.6 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of North Carolina.
- C. Dewatering Plan if required: Describe methods of dewatering and disposal of water.
- D. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- E. Samples: Submit to testing laboratory, in air-tight containers, 10-pound sample of each type of fill.
- F. Materials Source: Submit name of imported fill material suppliers.
- G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with Section 1505 of NCDOT Standard Specifications.
- B. Maintain one copy of document on site.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements prior to excavation.

1.9 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.1 BACKFILL MATERIALS

- A. Subsoil Fill: Class II, III, or IV - Clean natural soil with a plasticity index of 15 or less that is free of clay, rock, or gravel lumps larger than 2 inches in any dimension; debris; waste; frozen material; and any other deleterious material that might cause settlement. Suitable material excavated from the site may be used as subsoil fill under optimum moisture conditions.
- B. Granular Fill: Class II, III - Clean sand, slightly silty sand, or slightly clayey sand having a Unified Soil Classification of SW, SP, SP-SM or SP-SC.
- C. Flowable Fill: Flowable fill consists of Portland cement, water, pozzolan and/or fine aggregate and, optionally, concrete admixtures in accordance with the NCDOT latest edition Standard Specifications, section 1000-6.
 - 1. Excavatable:
 - a. Compressive Strength: 150 psi max at 56 days
 - b. Air Content: As Needed
 - c. Slump: Flowable
 - d. Cement: Non-Vibrated; Min: 40 pounds per cubic yard; Max: 100 pounds per cubic yard
 - 2. Non-excavatable:
 - a. Compressive Strength: 125 psi min at 28 days
 - b. Air Content: As needed
 - c. Slump: Flowable
 - d. Cement: Non-Vibrated; Min: 100 pounds per cubic yard; Max: as needed
- D. Foundation Stone: Class I - Clean course aggregate Gradation No. 57 conforming to Sections 1005 and 1006 of the NCDOT Standard Specifications.

- E. Bedding and Haunching Material:
 - 1. Rigid Pipe: Granular Fill.
 - 2. Flexible Pipe: Foundation Stone.
- F. Bedding for Structures: Foundation Stone.
- G. Initial Backfill to 6 inches Minimum Above Utility:
 - 1. Rigid Pipe: Subsoil Fill.
 - 2. Flexible Pipe: Foundation Stone.
- H. Final Backfill to Subgrade:
 - 1. Under Pavement: Granular Fill.
 - 2. Under Landscape: Subsoil Fill.

2.2 ACCESSORIES

- A. Geotextile Fabric: Non-woven, non-biodegradable conforming to Section 1056 of the NCDOT Standard Specifications for Type 1 Engineering Fabric.
- B. Concrete: Class A Concrete conforming to Section 1000 of the NCDOT Standard Specifications.
 - 1. Compressive strength of 3,000 psi at 28 days.
 - 2. Air entrained.
 - 3. Water cement ratio of 0.488 with rounded aggregate and 0.532 with angular aggregate.
 - 4. Maximum slump of 3.5 inches for vibrated concrete and 4 inches for non-vibrated concrete.
 - 5. Minimum cement content of 564 lbs per cubic yard for vibrated and 602 lbs. per cubic yard for non-vibrated concrete.

PART 3 EXECUTION

3.1 PREPARATION

- A. Call local utility line information service indicated on Drawings not less than three working days before performing Work.
 - 1. Request underground utilities to be located and marked within and surrounding construction areas.
 - 2. Contractor will not perform work prior to the expiration of the mandatory period unless all utilities have been located.
- B. Notify affected utility companies before starting work and comply with utility's requirements.
- C. Identify required lines, levels, contours, and datum locations.
- D. Protect plant life, lawns, rock outcropping, and other features remaining as portion of final landscaping.

- E. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Maintain and protect above and below grade utilities indicated to remain.
- G. Establish temporary traffic control and detours when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

3.2 LINES AND GRADES

- A. Excavate to lines and grades indicated on Drawings.
 - 1. Owner reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
 - 2. Use laser-beam instrument with qualified operator to establish lines and grades.

3.3 TRENCHING

- A. Excavate subsoil required for utilities.
- B. Remove lumped subsoil, boulders, and rock up of 1/2 cubic yard, measured by volume. Remove larger material as specified in Section 31 23 16.26.
- C. Perform excavation within 48 inches of existing utility service in accordance with utility's requirements.
- D. Do not advance open trench more than 200 feet ahead of installed pipe.
- E. Remove water or materials that interfere with Work.
- F. Trench Width: Excavate bottom of trenches maximum 16 inches wider than outside diameter of pipe or as indicated on Drawings.
- G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
- H. Maintain vertical faces to an elevation equal to 12 inches above top of pipe.
 - 1. When Project conditions permit, side walls may be sloped or benched above this elevation.
 - 2. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this Section.
- I. Support Utilities and Structures:
 - 1. Keep trench width at top of trench to practical minimum to protect adjacent or crossing utility lines
 - 2. Support utilities crossing trench by means acceptable to utility company.
 - 3. Do not interfere with 45-degree bearing splay of foundations.
 - 4. Provide temporary support for structures above and below ground.
- J. When subsurface materials at bottom of trench are loose or soft, excavate to firm subgrade or to depth directed by Engineer.

1. Cut out soft areas of subgrade not capable of compaction in place.
 2. Backfill with foundation stone and compact to density equal to or greater than requirements for subsequent backfill material.
- K. Trim Excavation: Hand trim for bell and spigot pipe joints where required. Remove loose matter.
- L. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Engineer.
- M. Place geotextile fabric over trench foundation stone prior to placing subsequent bedding materials.

3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures, and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of excavation work unless approved by Engineer.

Trench sheeting shall be removed slowly and in a manner not to disturb the pipelines. The pipe shall be backfilled with at least the first lift prior to removing the sheeting. When directed by the Owner, sheeting shall be left permanently in the trench. Payment for the timber portion of the sheeting will be made in accordance with the provisions of the Contract Documents for changes in the Work and the Contract Price at the local market price for such timber and no allowance being made for any labor used in connection with handling or placing thereof.

Where trench sheeting is left in place, such sheeting shall not be braced against the pipe, but shall be supported in a manner which will preclude concentrated loads or horizontal thrusts on the pipe. Cross braces installed above the pipe to support sheeting may be removed after pipe embedment has been completed.

- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing Work from settlement, water, or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.5 SURFACE WATER CONTROL

- A. Control and remove unanticipated water seepage into excavation.
- B. Provide ditches, berms, and other devices to divert and drain surface water from excavation area as specified in Section 31 25 13.

- C. Divert surface water and seepage water within excavation areas into sumps or settling basins prior to pumping water into drainage channels and storm drains.

3.6 DEWATERING

- A. Design and provide dewatering system to permit Work to be completed on dry and stable subgrade.
- B. Operate dewatering system continuously until backfill is minimum 2 feet above normal ground water table elevation.
- C. When dewatering system cannot control water within excavation, notify Engineer and stop excavation work.
 - 1. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.
 - 2. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.
- D. Modify dewatering systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.
- E. Discharge ground water and seepage water within excavation areas into sumps or settling basins prior to pumping water into drainage channels and storm drains.
- F. Remove dewatering and surface water control systems after dewatering operations are discontinued.

3.7 BEDDING, HAUNCHING, AND INITIAL BACKFILL

- A. Place bedding full width of trench to the depth indicated on Drawings and compact to 95 percent maximum density. Excavate for pipe bells.
- B. Install utility pipe and conduit in accordance with the respective utility section.
- C. Support pipe uniformly along entire length of pipe.
- D. Carefully place haunching material to center of pipe, rod and tamp material to fill voids and provide uniform support of pipe haunches. Compact to 90 percent maximum density.
- E. Carefully place initial backfill to 6 inches above top of pipe or to depth indicated on Drawings. Compact to 95 percent maximum density.

3.8 FINAL BACKFILLING TO SUBGRADE

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

- C. Place fill material in continuous layers and compact in accordance with schedule at end of this Section.
- D. Employ placement method that does not disturb or damage utilities in trench or foundation perimeter drainage.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Do not leave more than 50 feet of trench open at end of working day.
- G. Protect open trench to prevent danger to the public.
- H. Where trenches are constructed in ditches or other watercourses, backfill shall be protected from surface erosion. Where the grade of the ditch exceeds one percent, ditch checks shall be installed. Ditch checks shall extend at least 2 feet below the original ditch or watercourse bottom for the full bottom width and at least 18 inches into the side slopes, and shall be at least 12 inches thick.
- I. After other outside work has been finished, and backfilling and embankments completed and settled, all areas which are to be graded shall be brought to grade at the indicated elevations, slopes, and contours. All cuts, fills, embankments, and other areas which have been disturbed or damaged by construction operations shall be surfaced with topsoil to a depth of at least 4 inches. Topsoil shall be of a quality at least equal to the existing topsoil in adjacent areas, free from trash, stones, and debris, and well suited to support plant growth.

Use of graders or other power equipment will be permitted for final grading and dressing of slopes, provided the result is uniform and equivalent to hand work. All surfaces shall be graded to secure effective drainage. Unless otherwise indicated, a slope of at least one percent shall be provided.

Final grading and surfacing shall be smooth, even, and free from clods and stones larger than one inch in greatest dimension, weeds, brush, and other debris.

- J. The Contractor shall be responsible for all settlement of backfill, fills, and embankments which may occur within the correction period.

The Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within 30 days after notice from the Engineer or the Owner.

3.9 DISPOSAL OF EXCESS MATERIAL

- A. Dispose of excess material offsite and legally.
- B. Furnish Engineer with certificate of disposal site or agreement from private property owner.

3.10 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.

3.11 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform laboratory material tests in accordance with ASTM D1557 or AASHTO T180.
- C. Perform in place compaction tests in accordance with the following:
 - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D6938.
 - 2. Moisture Tests: ASTM D6938.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.
- E. Frequency of Tests: Two tests per lift for every 1,000 feet of trench.

3.12 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

3.13 SCHEDULE OF COMPACTION

- A. Under Pavement and Slabs:
 - 1. Granular Fill in maximum 8-inch loose lifts.
 - 2. Compact to minimum 95 percent maximum density except the top 12 inches.
 - 3. Compact top 12 inches to minimum 98 percent maximum density.
- B. Under Landscape Areas:
 - 1. Subsoil Fill in maximum 8-inch loose lifts.
 - 2. Compact to minimum 90 percent maximum density.
- C. In Unstable or Unsuitable Trench Foundation Areas:
 - 1. Foundation Stone in maximum 12-inch loose lifts.
 - 2. Compact to 98 percent maximum density.

END OF SECTION

SECTION 31 23 16.26
ROCK REMOVAL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removing identified and discovered rock during excavation.
 - 2. Expansive tools to assist rock removal.
 - 3. Explosive tools to assist rock removal.
- B. Related Sections:
 - 1. Section 31 23 16 - Excavation and Fill: Excavating and filling for road or site work.
 - 2. Section 31 23 16.13- Trenching: Excavating and backfilling for utilities.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Rock is not expected to be discovered on this Project. If found, remove as specified for payment by Unit Prices.
- B. Rock Removal:
 - 1. Basis of Measurement for Trenches: By cubic yard calculated to maximum trench width of 36 inches wider than the pipe diameter and maximum depth of 6 inches below bottom of pipe measured before disintegration and removal.
 - 2. Basis of Payment: Includes preparation of rock for removal, explosive and mechanical disintegration of rock, removal from position and loading, and removing from site. No payment will be made for over excavated work or for replacement materials.

1.3 REFERENCES

- A. National Fire Protection Association:
 - 1. NFPA 495 - Explosive Materials Code.

1.4 DEFINITIONS

- A. Rock: Solid mineral material with volume in excess of 1/3 cubic yard or solid material that cannot be removed with 3/4 cubic yard capacity excavator without drilling or blasting.
- B. Rock: Sandstone, limestone, flint, granite, quartzite, slate, hard shale, or other similar solid mineral material with a volume in excess of 1/3 cubic yard that cannot be removed by a Caterpillar 225 or equivalent excavator with rock teeth, having a bucket curling force rated at not less than 25,700 pounds without drilling or blasting, drilling and the use of expansion jacks or feather wedges, or the use of backhoe-mounted pneumatic hole punchers or rock breakers

- C. Should rock be encountered in two or more ledges, each ledge being not less than 3 inches thick and with underlying strata of earth, clay, or gravel not more than 12 inches thick in each stratum, the entire volume between the top of the top ledge and the bottom of the bottom ledge will be classified as rock.
Removal of Hard Material will not be considered rock excavation because of intermittent drilling and blasting that is performed solely to increase production.
- D. Hard Material: Weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of Rock, but which usually require the use of heavy excavation equipment, ripper/rock teeth, or jack hammers for removal.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures
- B. Shop Drawings: Indicate proposed method of blasting, delay pattern, explosive types, and type of blasting mat or cover. Indicate intended rock removal method.
- C. Structure Survey Report: Submit survey report on conditions of buildings and structures near locations of rock removal.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with NFPA 495 – Explosive Materials Code.
- B. Seismic Survey Firm: Licensed company specializing in seismic surveys with five years documented experience.
- C. Explosives Firm: Company specializing in explosives for disintegration of rock with five years documented experience.

1.7 PROJECT CONDITIONS FOR USE OF EXPLOSIVES

- A. Conduct survey and document conditions of buildings near locations of rock removal prior to blasting; photograph existing conditions identifying existing irregularities.
- B. Advise owners of adjacent buildings or structures, in writing, prior to executing seismographic survey. Explain planned blasting and seismic operations.
- C. Obtain seismic survey prior to rock excavation to determine maximum charges that can be used at different locations in area of excavation without damaging adjacent properties or other work.

1.8 SCHEDULING

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Schedule Work to avoid disruption to occupied buildings nearby.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Conform to NFPA 495 – Explosive Materials Code.
- B. Explosives, Delay Devices, and Blast Mat Materials: Type recommended by explosive firm following seismic survey and required by authorities having jurisdiction.
- C. Mechanical Disintegration Compound: Grout mix of materials that expand on curing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify site conditions and note subsurface irregularities affecting Work of this Section.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.

3.3 ROCK REMOVAL BY MECHANICAL METHOD

- A. Excavate and remove rock by mechanical method.
 - 1. Drill holes and use expansive tools, wedges, and mechanical disintegration compound to fracture rock.
- B. Cut away rock at bottom of excavation to form level bearing.
- C. Remove shaled layers to provide sound and unshattered base for footings and foundations.
- D. In utility trenches, excavate to 6 inches below invert elevation of pipe and 16 inches wider than pipe diameter.
- E. Remove excavated materials from site.
- F. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 31 23 16 – Excavation and Fill.

3.4 ROCK REMOVAL BY EXPLOSIVE METHODS

- A. When rock is uncovered requiring explosives method for rock disintegration, notify Architect/Engineer prior to executing as follows.
 - 1. Provide seismographic monitoring during progress of blasting operations.
 - 2. Drill blasting holes within 12 feet of finished slope.
 - 3. Disintegrate rock and remove from excavation.

4. Remove rock at excavation bottom to form level bearing.
 5. Remove shaled layers to provide sound and unshattered base for footings and foundations.
 6. In utility trenches, excavate to 6 inches below invert elevation of pipe and 16 inches wider than pipe diameter.
 7. Remove excavated material from site.
 8. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section 31 23 16 – Excavation and Fill.
- B. Notify affected parties 72 hours in advance of using explosives including:
1. Home owners.
 2. Schools
 3. Fire department.
 4. Rescue.
 5. Emergency management.
 6. Local Law Enforcement department.
 7. NC Department of Transportation.
 8. Railroads.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Request visual inspection of foundation bearing surfaces by Architect/Engineer and inspection agency before installing subsequent work.

END OF SECTION

SECTION 31 25 13
EROSION CONTROLS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes installing, maintaining and removing:
 - 1. Silt Fence.
 - 2. Temporary Construction Entrances.
 - 3. Diversion Channels.
 - 4. Rip Rap.
 - 5. Check Dams.
 - 6. Inlet Protection.
 - 7. Site Stabilization.
- B. Related Sections:
 - 1. Section 31 10 00 - Site Clearing.
 - 2. Section 31 23 16.13 - Trenching.
 - 3. Section 31 37 00 - Riprap.
 - 4. Section 32 92 19 - Seeding.

1.2 MEASUREMENT AND PAYMENT

- A. General:
 - 1. Basis of Measurement: By Lump Sum.
 - 2. Basis of Payment: Includes all work related to erosion and sediment control.

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-pound) rammer and a 457-mm (18-inch) drop.
- B. ASTM International:
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 2. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - 3. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- C. NCDENR Erosion and Sediment Control Planning and Design Manual.
- D. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on geotextile, posts, sediment socks, woven wire, concrete mix design, and pipe.
- C. Manufacturer's Certificate: Certify products and aggregates meet or exceed specified requirements.
- D. Closeout Submittals: Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with Division 16 of NCDOT Standard Specifications and the NCDENR Erosion and Sediment Control Planning and Design Manual.
- B. Maintain one copy of each document on site.

1.6 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this Section.

PART 2 PRODUCTS

2.1 GEOTEXTILE MATERIALS

- A. Engineering Fabric Materials: Non-biodegradable conforming to Section 1056 of NCDOT Standard Specifications:
 - 1. Silt Fence: Type 3, Class A or B Engineering Fabric.
 - 2. Under Rip Rap or Construction Entrances: Type 2 Engineering Fabric.

2.2 CHECK DAMS/SEDIMENT TUBES

- A. Check dams and sediment tubes shall be of tubular design and constructed of a coarse composted or recycled rubber material that is specifically designed for removal of solids from storm water runoff.
- B. Manufacturers:
 - 1. Filtrexx
 - 2. Silt Sock
 - 3. Friendly Environment
 - 4. Substitutions: Equal per Section 00 21 13 – Instructions to Bidders.

2.3 STONE, AGGREGATE, AND SOIL MATERIALS

- A. Stone for Sediment Trap and Check Dam: Class B erosion control stone conforming to Section 1042 of the NCDOT Standard Specifications. Minimum size 5 inches, midrange size 8 inches, and maximum size 12 inches equally distributed.
- B. Stone for Rip Rap: Class 1 erosion control stone conforming to Section 1042 of the NCDOT Standard Specifications. Minimum size 5 inches, midrange size 10 inches, and maximum size 17 inches equally distributed.
- C. Washed Stone: Coarse aggregate, Gradation No. 57 conforming to Section 1005 and 1006 of the NCDOT Standard Specifications.
- D. Aggregate for Construction Entrance: Coarse aggregate, Gradation No. 4 or larger with maximum size of 3 inch, conforming to Sections 1005 and 1006 of the NCDOT Specifications.
- E. Soil Fill: Clean natural soil with a plasticity index of 15 or less that is free of clay, rock, or gravel lumps larger than 2 inches in any dimension; debris; waste; frozen material; and any other deleterious material that might cause settlement. Suitable material excavated from the site may be used as soil fill under optimum moisture conditions.

2.4 PLANTING MATERIALS

- A. General: Conform to North Carolina Board of Agriculture rules and regulations as specified in Section 1060 of NCDOT Standard Specifications for seed, agricultural ground limestone, fertilizers, and mulch.
- B. Temporary Seed Mixture: See Drawings.
- C. Fertilizer: Commercial grade; recommended for grass.
- D. Lime: ASTM C602, Class O agricultural ground limestone containing a minimum 80 percent calcium carbonate equivalent.
- E. Mulch: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- F. [Live Stakes: Materials shall be installed the same day as prepared or stored for no longer than 2 weeks in a refrigerated area that has been kept moist. Harvest and installation shall occur during the dormant season. (i.e., late fall, winter, if the ground is not frozen, to early spring before growth begins). Species shall be as noted on project drawings. Live stakes shall be ½" to 3" diameter, 2 to 3 feet in length, angled on the bottom and cut flush on the top, with buds oriented upwards. Live stakes shall be living based on the presence of young buds and green bark. All side branches shall be cleanly trimmed so the cutting is one single stem.]

2.5 [COIR MATTING

- A. Provide matting to meet the following requirements:
 - 1. 100 % coconut fiber (coir) twine woven into a high strength matrix.
 - 2. Thickness - 0.35 in. minimum.
 - 3. Tensile Strength - 1740 lbs/ft minimum
 - 4. Shear Stress – 4.5 lbs/sq. ft.
 - 5. Flow Velocity- Observed 12 ft/sec
 - 6. Weight - 23 oz/SY
 - 7. Size – 9.84 ft. x 165 ft. (180 SY)
 - 8. “C” Factor - 0.002
 - 9. Open Area (measured) - 48%
 - 10. Slopes – up to a maximum of 1:1]

2.6 CONCRETE

- A. Concrete: Class B concrete conforming to Section 1000 of the NCDOT Standard Specifications.
 - 1. Compressive strength of 2,500 psi at 28 days.
 - 2. Air entrained.
 - 3. Water cement ratio of 0.488 with rounded aggregate and 0.567 with angular aggregate.
 - 4. Maximum slump of 2.5 inches for vibrated concrete and 4 inches for non-vibrated concrete.
 - 5. Minimum cement content of 508 lbs per cubic yard for vibrated and 545 lbs per cubic yard for non-vibrated concrete.

2.7 PIPE MATERIALS

- A. Pipe: Corrugated steel pipe and fittings conforming to Sections 1032-3 of NCDOT Standard Specifications.

2.8 ACCESSORIES

- A. Posts for Silt Fence and Inlet Protection: Steel posts 5 feet long, 1-3/8 inches wide, minimum weight 1.25 lbs/ft. conforming to Section 1605 of NCDOT Standard Specifications.
- B. Woven Wire Fence for Silt Fence: Minimum 32 inches high, minimum 5 horizontal wires, vertical wires spaced 12 inches apart, minimum 10 gage top and bottom wires, and minimum 12-1/2 gage; all other wires conforming to Section 1605 of NCDOT Standard Specifications.
- C. Attachment Devices for Silt Fence: No. 9 staple, minimum 1-1/2 inches long, or other approved attachment devices.
- D. Hardware Cloth for Inlet Protection: 24 gage, 1/4-inch mesh opening hardware cloth.

2.9 MATTING FOR EROSION CONTROL

- A. General
 - 1. Matting for erosion control shall be excelsior matting or straw matting. Matting for erosion control shall not be dyed, bleached or otherwise treated in a manner that will result in toxicity to vegetation.
- B. Excelsior Matting
 - 1. Excelsior matting shall consist of a machine produced mat of curled wood excelsior at least 47" in width and weight 0.975 lb/sy with a tolerance of $\pm 10\%$. At least 80% of the individual excelsior fibers shall be 6" or more in length. Evenly distribute the excelsior fibers over the entire area of the blanket. Cover one side of the excelsior matting with an extruded plastic mesh. The mesh size for the plastic mesh shall be no more than 1" x 1".
- C. Straw Matting
 - 1. Straw matting shall consist of a machine produced mat of 100% grain straw. The straw matting shall have a width of at least 48" and no more than 90" and weighing at least 0.50 lb/sy and no more than 0.75 lb/sy. Evenly distribute the straw over the entire area of the blanket. Cover one side of the blanket with photodegradable netting with a maximum mesh (netting) size of 0.75" x 0.75" sewn together with a degradable thread. The grain straw shall contain no weed seeds. Package each roll separately.
- D. Wire Staples
 - 1. Staples shall be machine made of No. 11 gauge new steel wire formed into a U-shape. The size when formed shall be not less than 6" in length with a throat of not less than 1" in width.

2.10 SOURCE QUALITY CONTROL (AND TESTS)

- A. Section 01 40 00 - Quality Requirements: Testing, inspection, and analysis requirements.
- B. Perform tests on cement, aggregates, and mixes to ensure conformance with specified requirements.
- C. Make rock available for inspection at producer's quarry prior to shipment. Notify Architect/Engineer at least seven days before inspection is allowed.
- D. Allow witnessing of inspections and tests at manufacturer's test facility. Notify Architect/Engineer at least seven days before inspections and tests are scheduled.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify compacted subgrade is acceptable and ready to support devices and imposed loads.

- C. Verify gradients and elevations of base or foundation for other work are correct.

3.2 SILT FENCE

- A. Install in accordance with Section 1605 of NCDOT Standard Specifications at locations shown on Drawings.
- B. Use wire fence with Class A fabric.
- C. Class B fabric may be used without woven wire backing subject to the following:
 - 1. Fabric is approved by Architect/Engineer.
 - 2. Maximum post spacing is 6 feet.
 - 3. Posts are inclined toward runoff source not more than 20 degrees from vertical.

3.3 TEMPORARY CONSTRUCTION ENTRANCES

- A. Install construction entrances to the dimensions and locations as shown on Drawings. Minimum thickness is 6 inches.
- B. Mound aggregate near intersection with public road to prevent site runoff entering road.
- C. Periodically dress entrances with 2-inch thick course aggregate when aggregate becomes clogged with soil.

3.4 DIVERSION CHANNELS

- A. Windrow excavated material on low side of channel.
- B. Compact to 95 percent maximum density.
- C. On entire channel area, apply soil supplements and sow seed as specified in Section 32 92 19.
- D. Mulch seeded areas with hay as specified in Section 32 92 19.

3.5 ROCK LINING (RIP RAP)

- A. Excavate to depth of rock lining as indicated on Drawings or nominal placement thickness as follows. Remove loose, unsuitable material below bottom of rock lining and replace with suitable material. Thoroughly compact and finish entire foundation area to firm, even surface.
- B. Lay and overlay geotextile fabric over substrate. Lay fabric parallel to flow from upstream to downstream. Overlap edges upstream over downstream and upslope over downslope. Provide a minimum overlap of 3 feet. Offset adjacent roll ends a minimum of 5 feet when lapped. Cover fabric as soon as possible and in no case leave fabric exposed more than 4 weeks.

- C. Carefully place rock on geotextile fabric to produce an even distribution of pieces with minimum of voids and without tearing geotextile.
- D. Unless indicated otherwise, place full course thickness in one operation to prevent segregation and avoid displacement of underlying material. Arrange individual rocks for uniform distribution.

3.1 STONE CHECK DAM

- A. Determine length required for ditch or depression slope and excavate, backfill, and compact foundation area to firm, even surface.
- B. Place Class B erosion control stone in an even distribution of rock pieces with minimum voids to the indicated shape, height, and slope.
- C. Construct washed stone filter blanket against upstream face of stone heck dam to the thickness indicated on Drawings.

3.2 CHECK DAMS/SEDIMENT TUBES

- A. Determine length required for ditch or depression slope and excavate, backfill, and compact foundation area to firm, even surface.
- B. Check dams shall exceed the width of the normal ditch or channel flow line by at least 4 feet.
- C. Check dams shall be secured using stakes installed in an “X” pattern. Stakes shall not be placed through the middle of the check dam.

3.3 INLET PROTECTION

- A. Install check dam tubing around drainage structure and stake as indicated on Drawings.

3.4 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize, and activate erosion controls before site disturbance within tributary areas of those controls.
- C. Stockpile and waste pile heights shall not exceed 35 feet. Slope stockpile sides at 2:1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
 - 1. During non-germinating periods, apply mulch at recommended rates.
 - 2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year in accordance with Section 32 92 19 at 75 percent of permanent application rate with no topsoil.

- 3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with Section 32 92 19 permanent seeding specifications.
- E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.

3.6 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.
- B. When sediment accumulation in sedimentation structures has reached a point one-half depth of sediment structure or device, remove and dispose of sediment.
- C. Do not damage structure or device during cleaning operations.
- D. Do not permit sediment to erode into construction or site areas or natural waterways.
- E. Clean channels when depth of sediment reaches approximately one-half channel depth.

END OF SECTION

SECTION 31 37 00
RIPRAP

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating, backfilling, and compacting subgrade.
 - 2. Placing geotextile.
 - 3. Placing loose riprap.
 - 4. Removing excess material from site.
- B. Related Sections:
 - 1. Section 31 23 16.13 - Trenching.
 - 2. Section 31 25 13 - Erosion Controls.

1.2 MEASUREMENT AND PAYMENT

- A. Riprap:
 - 1. Basis of Measurement: Included in Lump Sum cost of Erosion Controls.
 - 2. Basis of Payment: Includes excavating, backfilling and compacting subgrade, providing and placing geotextile, providing and placing riprap, and removing excess material from site.

1.3 REFERENCES

- A. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data for riprap and geotextile fabric.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout the Work.
- B. Perform Work in accordance with Section 876 of NCDOT Standard Specifications.
- C. Maintain one copy of document on site.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Field stone or rough hewn quarry stone conforming to Section 1042 of NCDOT Standard Specifications.
 - 1. Class 1 Riprap: Minimum size 5 inches, midrange size 10 inches, and maximum size 17 inches equally distributed.
 - 2. Class 2 Riprap: Minimum size 9 inches, midrange size 14 inches, and maximum size 23 inches equally distributed.
 - 3. Class A Stone for Erosion Control: Minimum size 2 inches, midrange size 4 inches, and maximum size 6 inches equally distributed.
 - 4. Class B Stone for Erosion Control: Minimum size 5 inches, midrange size 8 inches, and maximum size 12 inches equally distributed.
- B. Geotextile Fabric: Non-woven, needle punched, non-biodegradable, filter fabric conforming to Section 1056 of the NCDOT Standard Specifications for Type 2 Engineering fabric.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Do not place riprap over frozen or spongy subgrade surfaces.

3.2 PLACEMENT

- A. Excavate to depth of riprap as indicated on Drawings. Remove loose, unsuitable material below bottom of rock lining and replace with suitable material. Thoroughly compact and finish entire foundation area to firm, even surface.
- B. Lay and overlay geotextile fabric over substrate. Lay fabric parallel to flow from upstream to downstream. Overlap edges upstream over downstream and upslope over downslope. Provide a minimum overlap of 3 feet. Offset adjacent roll ends a minimum of 5 feet when lapped. Cover fabric as soon as possible and in no case leave fabric exposed more than 4 weeks.
- C. Carefully place rock on geotextile fabric to produce an even distribution of pieces with minimum of voids and without tearing geotextile.
- D. Unless indicated otherwise, place full course thickness in one operation to prevent segregation and to avoid displacement of underlying material. Arrange individual rocks for uniform distribution.

- E. Remove excess stone and soil from site.

END OF SECTION

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SECTION 31 40 00
TEMPORARY SHORING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Cantilever and Braced Shoring
 - 2. Anchored Shoring
 - 3. Temporary MSE Walls
 - 4. Embedment
 - 5. Positive Protection
- B. Related Sections:
 - 1. Section 31 23 16.13 – Trenching: Excavating and backfilling access pits.
 - 2. Section 33 01 10.58 – Disinfection of Water Utility Piping Systems.
 - 3. Section 33 05 07 – Trenchless Installation of Utility Piping (Jacking).
 - 4. Section 33 11 00 – Water Utility Distribution Piping.

1.2 MEASUREMENT AND PAYMENT

- A. Temporary Shoring:
 - 1. Basis of Measurement: By lump sum unit price.
 - 2. Basis of Payment: Includes labor, equipment and materials for field engineering and preparation, furnishing, installing, removing and disposal of temporary shoring measures.

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO M145 - Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes
 - 2. AASHTO M275 - Standard Specification for Uncoated High-Strength Steel Bar for Pre-stressing Concrete
- B. ASTM International:
 - 1. ASTM A886 - Standard Specification for Steel Strand, Indented, Seven-Wire Stress-Relieved for Prestressed Concrete
 - 2. ASTM D4439 - Standard Terminology for Geosynthetics
 - 3. ASTM A572 - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
 - 4. ASTM A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength
- C. American Welding Society:
 - 5. AWS D1.1 - Structural Welding Code - Steel.

- D. NCDOT Standard Specifications: Standard Specifications for Roads and Structures, January 2018, published by the North Carolina Department of Transportation.

1.4 DEFINITIONS

- A. Temporary Shoring - Temporary shoring includes cantilever, braced and anchored shoring and temporary mechanically stabilized earth (MSE) walls. Temporary shoring does not include trench boxes.
- B. Positive Protection - Positive protection includes concrete barrier and temporary guardrail.
- C. Cantilever and Braced Shoring - Cantilever shoring consists of steel sheet piles or H-piles with timber lagging. Braced shoring consists of sheet piles or H-piles with timber lagging and bracing such as beams, plates, walers, struts, rakers, etc.
- D. Anchored Shoring - Anchored shoring consists of sheet piles with walers or H-piles with timber lagging anchored with ground or helical anchors.
- E. Ground Anchor - Consists of a grouted steel bar or multi-strand tendon with an anchorage.
- F. Helical Anchor - Consists of a lead section with a central steel shaft and at least one helix steel plate followed by extensions with only central shafts (no helixes) and an anchorage.
- G. Anchorages - Consist of steel bearing plates with washers and hex nuts for bars or steel wedge plates and wedges for strands.
- E. Temporary MSE Walls - Includes temporary geosynthetic and wire walls.
- F. Temporary Geosynthetic Walls - Consists of geotextile or geogrid reinforcement wrapped behind welded wire facing.
- G. Temporary Wire Walls - Consists of welded wire grid or metallic strip reinforcement connected to welded wire facing.
- H. Embedment - The pile depth below the grade in front of shoring or the wall height below the grade in front of walls.
- I. Positive Protection - Portable concrete barriers or temporary steel beam guardrail that meets NCDOT standards.

1.5 TEMPORARY SHORING DESIGN REQUIREMENTS

- A. Utilities shall be installed outside the theoretical 1:1 slope from the edge of pavement to the bottom of the nearest excavation wall. When this is not possible, excavations inside the theoretical 1:1 slope from the existing edge of pavement to the bottom of the nearest excavation shall be made with the installation of positive excavation shoring.

- B. Design of positive excavation shoring systems shall be the responsibility of the Contractor.
- C. At the Contractor's option, use any type of temporary shoring unless noted otherwise in the plans or as directed. Design and construct temporary shoring based on actual elevations and shoring dimensions in accordance with the contract and accepted submittals. Construct temporary shoring at locations shown in the plans and as directed.
- D. Before beginning temporary shoring design, survey existing ground elevations in the vicinity of shoring locations to determine actual design heights (H). Submit 8 copies of working drawings and 3 copies of design calculations and a PDF copy of each for temporary shoring designs in accordance with Article 105-2 of the NCDOT 2018 Standard Specifications. Submit working drawings showing plan views, shoring profiles, typical sections and details of temporary shoring design and construction sequence. Do not begin shoring construction until a design submittal is accepted. Submittals shall be sent to the NCDOT Division 10 District 1 Office at 615 Concord Road; Albemarle, NC 28001.
- E. Have cantilever and braced shoring designed, detailed and sealed by an engineer licensed in the state of North Carolina. Use a prequalified Anchored Wall Design Consultant to design anchored shoring. Provide anchored shoring designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for an Anchored Wall Design Consultant. Include details in anchored shoring working drawings of anchor locations and lock-off loads, unit grout/ground bond strengths for ground anchors or minimum installation torque and torsional strength rating for helical anchors and if necessary, obstructions extending through shoring or interfering with anchors. Include details in the anchored shoring construction sequence of pile and anchor installation, excavation and anchor testing.
- F. Use a prequalified MSE Wall Design Consultant to design temporary walls. Provide temporary wall designs sealed by a Design Engineer approved as a Geotechnical Engineer (key person) for the MSE Wall Design Consultant. Include details in temporary wall working drawings of geotextile and reinforcement types, locations and directions and obstructions extending through walls or interfering with reinforcement.
- G. Soil Parameters:
Design temporary shoring for the assumed soil parameters and groundwater elevations shown in the plans. Assume the following soil parameters for shoring backfill:
1. Unit weight (γ) = 120 lb/cf;
 2.

<u>Friction Angle (ϕ)</u>	<u>Shoring Backfill</u>
30°	A-2-4 Soil
34°	Class II, Type 1 or Class III Select Material
38°	Class V or VI Select Material
 3. Cohesion (c) = 0 lb/sf.
- H. Traffic Surcharge
1. Design temporary shoring for a traffic surcharge of 250 lb/sf if traffic will be above and within H of shoring. This traffic surcharge does not apply to construction traffic. Design temporary shoring for any construction surcharge if construction traffic will be above and within H of shoring. For LRFD shoring designs, apply

traffic (live load) surcharge in accordance with Figure C11.5.5-3 of the AASHTO LRFD Bridge Design Specifications.

I. Cantilever, Braced and Anchored Shoring Designs

1. Use shoring backfill for fill sections and voids between cantilever, braced and anchored shoring and the critical failure surface. Use concrete or grout for embedded portions of drilled-in H-piles. Do not use drilled-in sheet piles.
2. Define "top of shoring" for cantilever, braced and anchored shoring as where the grade intersects the back of sheet piles or H-piles and timber lagging. Design cantilever, braced and anchored shoring for a traffic impact load of 2,000 lb/ft applied 18" above top of shoring if concrete barrier is above and next to shoring or temporary guardrail is above and attached to shoring. For anchored shoring designs, apply traffic impact load as horizontal load (PH1) in accordance with Figure 3.11.6.3-2(a) of the AASHTO LRFD specifications.
3. Extend cantilever, braced and anchored shoring at least 32" above top of shoring if shoring is designed for traffic impact. Otherwise, extend shoring at least 6" above top of shoring.
4. Design cantilever, braced and anchored shoring for a maximum deflection of 3" if the horizontal distance to the closest edge of pavement or structure is less than H. Otherwise, design shoring for a maximum deflection of 6". Design cantilever and braced shoring in accordance with the plans and AASHTO Guide Design Specifications for Bridge Temporary Works.
5. Design anchored shoring in accordance with the plans and Article 11.9 of the AASHTO LRFD Bridge Design Specifications. Use a resistance factor of 0.80 for tensile resistance of anchors with bars, strands or shafts. Extend the unbonded length for ground anchors and the shallowest helix for helical anchors at least 5 ft behind the critical failure surface. Do not extend anchors beyond right-of-way or easement limits. If existing or future obstructions such as foundations, guardrail posts, pavements, pipes, inlets or utilities will interfere with anchors, maintain a clearance of at least 6" between obstructions and anchors.

J. Temporary Wall Designs

1. Use shoring backfill in the reinforced zone of temporary walls. Separation geotextiles are required between shoring backfill and backfill, natural ground or culverts along the sides of the reinforced zone perpendicular to the wall face. For Class V or VI select material in the reinforced zone, separation geotextiles are also required between shoring backfill and backfill or natural ground on top of and at the back of the reinforced zone.
2. Design temporary walls in accordance with the plans and Article 11.10 of the AASHTO LRFD Bridge Design Specifications. Embed temporary walls at least 18" except for walls on structures or rock as determined by the Engineer. Use a uniform reinforcement length throughout the wall height of at least 0.7H or 6 ft, whichever is greater. Extend the reinforced zone at least 6" beyond end of reinforcement. Do not locate the reinforced zone outside right-of-way or easement limits.
3. Use the simplified method for determining maximum reinforcement loads in accordance with the AASHTO LRFD specifications. For geotextile reinforcement, use geotextile properties approved by the Department or default values in accordance with the AASHTO LRFD specifications. For geogrid reinforcement, use

approved geogrid properties available from the website shown elsewhere in this provision. If the website does not list a short-term design strength for an approved geogrid, use a short-term design strength equal to the ultimate tensile strength divided by 3.5 for the geogrid reinforcement. Use geosynthetic properties for the direction reinforcement will be installed, a 3-year design life and shoring backfill to be used in the reinforced zone.

4. Do not use more than 4 different reinforcement strengths for each temporary geosynthetic wall. Design temporary geotextile walls for a reinforcement coverage ratio (Rc) of 1.0 and temporary geogrid walls for an Rc of at least 0.8. For geogrid reinforcement with an Rc of less than 1.0, use a maximum horizontal clearance between geogrids of 3 ft and stagger reinforcement so geogrids are centered over gaps in the reinforcement layer below.
5. For temporary geosynthetic walls, use "L" shaped welded wire facing with 18" to 24" long legs. Locate geotextile or geogrid reinforcement so reinforcement layers are at the same level as the horizontal legs of welded wire facing. Use vertical reinforcement spacing equal to facing height. Wrap geotextile or geogrid reinforcement behind welded wire facing and extend reinforcement at least 3 ft back behind facing into shoring backfill.
6. For temporary wire walls with separate reinforcement and facing components, attach welded wire grid or metallic strip reinforcement to welded wire facing with a connection approved by the Department. For temporary geogrid and wire walls, retain shoring backfill at welded wire facing with retention geotextiles and extend geotextiles at least 3 ft back behind facing into backfill.

1.6 SUBMITTALS

- A. Shoring systems shall be designed and sealed by a licensed North Carolina Professional Engineer. Shoring plans and design calculations shall be submitted to the NCDOT Division Engineer for review and approval prior to construction. A copy of the submittal shall also be provided to the Engineer.
- B. Trench boxes shall not be accepted as positive shoring.

1.8 QUALITY ASSURANCE

- A. Perform welding in accordance with AWS D1.1 and AWS D1.5.
- B. Furnish each type sheet piling from a single source.

1.9 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.
- B. Installer: Company specializing in performing work of this section with minimum five years experience.
- C. Welders and Welding Procedures: AWS D1.1 qualified within previous 12 months.

- D. Design temporary shoring systems under direct supervision of Professional Engineer experienced in design of this Work and licensed in the State of North Carolina.

1.10 PRE-INSTALLATION MEETING

- A. The Engineer may require a shoring preconstruction meeting to discuss the construction, inspection and testing of the temporary shoring. If required, schedule this meeting after all shoring submittals have been accepted. The Resident, District or Bridge Maintenance Engineer, Bridge or Roadway Construction Engineer, Geotechnical Operations Engineer, Contractor and Shoring Contractor Superintendent will attend this preconstruction meeting.

PART 2 PRODUCTS

2.1 STEEL SHEET PILING

- B. Furnish materials in accordance with NCDOT standards.

2.2 SHORING BACKFILL

- A. Use Class II, Type 1, Class III, Class V or Class VI select material or material that meets AASHTO M 145 for soil classification A-2-4 with a maximum PI of 6 for shoring backfill except do not use A-2-4 soil for backfill around culverts.

2.3 ANCHORS

- A. Store anchor materials on blocking a minimum of 12" above the ground and protect it at all times from damage; and when placing in the work make sure it is free from dirt, dust, loose mill scale, loose rust, paint, oil or other foreign materials. Load, transport, unload and store anchor materials so materials are kept clean and free of damage. Bent, damaged or defective materials will be rejected.
- B. Ground Anchors: Use high-strength deformed steel bars that meet AASHTO M 275 or seven-wire strands that meet ASTM A886 or Article 1070-4 of the NCDOT 2018 Standard Specifications. Splice bars in accordance with Article 1070-9 of the NCDOT 2018 Standard Specifications. Do not splice strands. Use bondbreakers, spacers and centralizers that meet Article 6.3.5 of the AASHTO LRFD Bridge Construction Specifications.
- C. Helical Anchors: Use helical anchors with an ICC Evaluation Service, Inc. (ICC-ES) report. Helical anchors without an ICC-ES report may be approved at the discretion of the Engineer. Provide couplers, thread bar adapters and bolts recommended by the Anchor Manufacturer to connect helical anchors together and to piles.
- D. Anchorages: Provide steel plates for bearing plates and steel washers, hex nuts, wedge plates and wedges recommended by the Anchor Manufacturer.

2.4 TEMPORARY WALLS

- A. Welded Wire Facing:
 1. Use welded wire reinforcement for welded wire facing, struts and wires. For temporary wire walls, provide welded wire facing supplied by the Wire Wall Vendor or a manufacturer approved or licensed by the vendor. For temporary wire walls with separate reinforcement and facing components, provide connectors (e.g., bars, clamps, plates, etc.) and fasteners (e.g., bolts, nuts, washers, etc.) required by the Wire Wall Vendor.
- B. Geotextiles:
 1. Provide Type 2 geotextile for separation and retention geotextiles. Provide Type 5 geotextile for geotextile reinforcement with ultimate tensile strengths in accordance with the accepted submittals.
- C. Geogrid Reinforcement:
 1. Handle and store geogrids in accordance with Article 1056-2 of the NCDOT 2018 Standard Specifications. Define “machine direction” (MD) and “cross-machine direction” (CD) for geogrids in accordance with ASTM D4439.
 2. Use geogrids with a roll width of at least 4 ft and an “approved” or “approved for provisional use” status code. The list of approved geogrids is available from: connect.ncdot.gov/resources/Materials/Pages/SoilsLaboratory.aspx
 3. Provide geogrids for geogrid reinforcement with design strengths in accordance with the accepted submittals. Geogrids are typically approved for ultimate tensile strengths in the MD and CD or short-term design strengths for a 3-year design life in the MD based on material type. Define material type from the website above for shoring backfill as follows:

Material Type	Shoring Backfill
Borrow	A-2-4 Soil
Fine Aggregate	Class II, Type 1 or Class III Select Material
Coarse Aggregate	Class V or VI Select Material
- D. Welded Wire Grid and Metallic Strip Reinforcement:
 1. Provide welded wire grid and metallic strip reinforcement supplied by the Wire Wall Vendor or a manufacturer approved or licensed by the vendor. Use welded wire grid reinforcement (“mesh”, “mats” and “ladders”) that meet Article 1070 of the NCDOT 2018 Standard Specifications and metallic strip reinforcement (“straps”) that meet ASTM A572 or A1011.

PART 3 EXECUTION

3.1 PREPARATION

- A. Establish temporary traffic control and detours where shoring is indicated and necessary in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.
 1. Concrete Barrier:

Define “clear distance” behind concrete barrier as the horizontal distance between the barrier and edge of pavement. The minimum required clear distance for concrete barrier is shown in the plans. At the Contractor’s option or if the minimum required clear distance is not available, set concrete barrier next to and up against traffic side of temporary shoring except for barrier above temporary walls. Concrete barrier with the minimum required clear distance is required above temporary walls.

- B. Control drainage during construction in the vicinity of shoring. Direct run off away from shoring and shoring backfill. Contain and maintain backfill and protect material from erosion.
- C. Install positive protection in accordance with the contract and accepted submittals. Use PCB in accordance with Section 1170 of the NCDOT 2018 Standard Specifications and Standard Drawing No. 1170.01 of the NCDOT 2018 Roadway Standard Drawings.

3.2 TOLERANCES

- A. Construct shoring with the following tolerances:
 - 1. Horizontal wires of welded wire facing are level in all directions,
 - 2. Shoring location is within 6" of horizontal and vertical alignment shown in the accepted submittals, and
 - 3. Shoring plumbness (batter) is not negative and within 2° of vertical.

3.3 EXCAVATION

- A. All trench excavation inside the limits of the theoretical one-to-one slope, as defined by the policy, shall be completely backfilled and compacted at the end of each construction day.

3.4 CANTILEVER, BRACED AND ANCHORED SHORING INSTALLATION

- A. If over excavation behind cantilever, braced or anchored shoring is shown in the accepted submittals, excavate before installing piles. Otherwise, install piles before excavating for shoring. Install cantilever, braced or anchored shoring in accordance with the construction sequence shown in the accepted submittals. Remove piles and if applicable, timber lagging when shoring is no longer needed.
- B. Pile Installation
 - 1. Install piles with the minimum required embedment and extension in accordance with Section 450 of the NCDOT 2018 Standard Specifications except that a pile driving equipment data form is not required. Piles may be installed with a vibratory hammer as approved by the Engineer.
 - 2. Do not splice sheet piles. Use pile excavation to install drilled-in H-piles. After filling holes with concrete or grout to the elevations shown in the accepted submittals, remove any fluids and fill remaining portions of holes with flowable fill. Cure concrete or grout at least 7 days before excavating.
 - 3. Notify the Engineer if refusal is reached before pile excavation or driven piles attain the minimum required embedment. When this occurs, a revised design submittal may be required.

- C. Excavation
1. Excavate in front of piles from the top down in accordance with the accepted submittals. For H-piles with timber lagging and braced and anchored shoring, excavate in staged horizontal lifts with a maximum height of 5 ft. Remove flowable fill and material in between H-piles as needed to install timber lagging. Position lagging with at least 3" of contact in the horizontal direction between the lagging and pile flanges. Do not excavate the next lift until timber lagging for the current lift is installed and if applicable, bracing and anchors for the current lift are accepted. Backfill behind cantilever, braced or anchored shoring with shoring backfill.
- D. Anchor Installation
1. If applicable, install foundations located behind anchored shoring before installing anchors. Fabricate and install ground anchors in accordance with the accepted submittals, Articles 6.4 and 6.5 of the AASHTO LRFD Bridge Construction Specifications and the following unless otherwise approved:
 - a. Materials in accordance with this provision are required instead of materials conforming to Articles 6.4 and 6.5.3 of the AASHTO LRFD Specifications,
 - b. Encapsulation-protected ground anchors in accordance with Article 6.4.1.2 of the AASHTO LRFD specifications are not required, and
 - c. Corrosion protection for unbonded lengths of ground anchors and anchorage covers are not required.
 - d. Install helical anchors in accordance with the accepted submittals and Anchor Manufacturer's instructions. Measure torque during installation and do not exceed the torsional strength rating of the helical anchor. Attain the minimum required installation torque and penetration before terminating anchor installation. When replacing a helical anchor, embed last helix of the replacement anchor at least 3 helix plate diameters past the location of the first helix of the previous anchor.
- E. Anchor Testing
1. Proof test and lock-off anchors in accordance with the accepted submittals and Article 6.5.5 of the AASHTO LRFD Bridge Construction Specifications except for the acceptance criteria in Article 6.5.5.5. For the AASHTO LRFD specifications, "ground anchor" refers to a ground or helical anchor and "tendon" refers to a bar, strand or shaft.
 2. Anchor Acceptance
 - a. Anchor acceptance is based in part on the following criteria.
 - i. For ground and helical anchors, total movement is less than 0.04" between the 1 and 10 minute readings or less than 0.08" between the 6 and 60 minute readings.
 - ii. For ground anchors, total movement at maximum test load exceeds 80% of the theoretical elastic elongation of the unbonded length.
 - b. Anchor Test Results
 - i. Submit 2 copies of anchor test records including movement versus load plots for each load increment within 24 hours of completing each row of anchors. The Engineer will review the test records to determine if the anchors are acceptable.

- ii. If the Engineer determines an anchor is unacceptable, revise the anchor design or installation methods. Submit a revised anchored shoring design for acceptance and provide an acceptable anchor with the revised design or installation methods. If required, replace the anchor or provide additional anchors with the revised design or installation methods.

3.5 TEMPORARY WALL INSTALLATION

- A. Excavate as necessary for temporary walls in accordance with the plans and accepted submittals. If applicable, install foundations located in the reinforced zone before placing shoring backfill or reinforcement unless otherwise approved. Notify the Engineer when foundation excavation is complete. Do not place shoring backfill or reinforcement until excavation dimensions and foundation material are approved.
- B. Erect welded wire facing so the wall position is as shown in the plans and accepted submittals. Set welded wire facing adjacent to each other in the horizontal and vertical direction to completely cover the wall face with facing. Stagger welded wire facing to create a running bond by centering facing over joints in the row below.
- C. Wrap geotextile reinforcement and retention geotextiles behind welded wire facing as shown in the plans and accepted submittals and cover geotextiles with at least 3" of shoring backfill. Overlap adjacent geotextile reinforcement and retention and separation geotextiles at least 18" with seams oriented perpendicular to the wall face. Hold geotextiles in place with wire staples or anchor pins as needed.
- D. Place reinforcement within 3" of locations shown in the plans and accepted submittals and in slight tension free of kinks, folds, wrinkles or creases. Install reinforcement with the direction shown in the plans and accepted submittals. For temporary wire walls with separate reinforcement and facing components, attach welded wire grid or metallic strip reinforcement to welded wire facing as shown in the accepted submittals. Do not splice or overlap reinforcement so seams are parallel to the wall face. Contact the Engineer when unanticipated existing or future obstructions such as foundations, pavements, pipes, inlets or utilities will interfere with reinforcement.
- E. Place shoring backfill in the reinforced zone in 8" to 10" thick lifts. Compact A-2-4 soil and Class II, Type 1 and Class III select material in accordance with Section 235 of the NCDOT 2018 Standard Specifications. Use only hand operated compaction equipment to compact backfill within 3 ft of welded wire facing. At a distance greater than 3 ft, compact shoring backfill with at least 4 passes of an 8 ton to 10 ton vibratory roller in a direction parallel to the wall face. Smooth wheeled or rubber tired rollers are also acceptable for compacting backfill. Do not use sheepsfoot, grid rollers or other types of compaction equipment with feet. Do not displace or damage reinforcement when placing and compacting shoring backfill. End dumping directly on geotextile or geogrid reinforcement is not permitted. Do not operate heavy equipment on reinforcement until it is covered with at least 8" of shoring backfill. Replace any damaged reinforcement to the satisfaction of the Engineer.

- F. Backfill for temporary walls outside the reinforced zone in accordance with Article 410-8 of the NCDOT 2018 Standard Specifications. Bench temporary walls into the sides of excavations where applicable. For temporary geosynthetic walls with top of wall within 5 ft of finished grade, remove top facing and incorporate top reinforcement layer into fill when placing fill in front of wall. Temporary walls remain in place permanently unless otherwise required.

END OF SECTION

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SECTION 32 11 23
AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Aggregate base course on a prepared subgrade.
- B. Related Sections:
 - 1. Section 31 23 16.13 - Trenching.
 - 2. Section 32 12 16 - Asphalt Paving: Binder and finish asphalt courses.
 - 3. Section 32 13 13 - Concrete Paving: Finish concrete surface course.

1.2 MEASUREMENT AND PAYMENT

- A. General
 - 1. Work of this Section will not be measured for payment but is included in the unit cost for the various paving installed.
- B. Gravel Driveway Repair
 - 1. Basis of Measurement: By linear foot based on a width of 5 feet.
 - 2. Basis of Payment: Includes preparing base, placing, compacting and rolling, and testing for the repair of gravel driveways in accordance with the details and location shown on the drawings or as determined by the Engineer.

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-pound) rammer and a 457-mm (18-inch) drop.
- B. ASTM International:
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
 - 2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
 - 3. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (6,000 ft-lbf/ft³ (2,700 kN-m/m³)).
 - 4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 5. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- C. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Samples: Submit to testing laboratory 10-pound sample of each type of aggregate in airtight containers.
- C. Materials Source: Submit name of imported materials suppliers.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with Section 520 of NCDOT Standard Specifications.
- B. Maintain one copy of document on site.
- C. Furnish each aggregate material from single source throughout the Work.
- D. Use sources participating in NCDOT Aggregate Quality Assurance/Quality Control Program.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Aggregate Base Course: Coarse aggregate Type A or B with a gradation of ABC conforming to Sections 1005, 1006, and 1010 of NCDOT Standard Specifications.
- B. Fine Aggregate: Sand gradation 1S or 2S conforming to Sections 1005 and 1006 of NCDOT standard Specifications.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verify existing conditions before starting work.
- B. Verify substrate has been inspected and gradients and elevations are correct and dry.

3.2 PREPARATION

- A. Do not place fill on soft, muddy, or frozen surfaces.

3.3 AGGREGATE PLACEMENT

- A. Place aggregate in minimum 4-inch and maximum 10-inch layers and roller compact to specified density. When total thickness is 10 inches or less, place in one layer. When total thickness is greater than 10 inches, place in two equal layers.
- B. Have each layer of material compacted and approved prior to placing succeeding layers.
- C. Level and contour surfaces to elevations and gradients indicated on Drawings.
- D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Use mechanical tamping equipment in areas inaccessible to roller compaction equipment.

3.4 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Variation from Thickness: 1/2 inch.
- C. Maximum Variation from Elevation: 1/2 inch.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Independent laboratory, field inspecting, testing, adjusting, and balancing.
- B. Laboratory Material Tests: Conform to Modified Proctor ASTM D1557 or AASHTO T180.
- C. In-place Compaction Tests: Conform to:
 - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D6938.
 - 2. Moisture Tests: ASTM D6938.
- D. Compaction:
 - 1. 100 percent of maximum when measured in-place by standard methods.
 - 2. 98 percent of maximum when measured in-place by nuclear methods.
- E. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- F. Frequency of Compaction Tests: Two tests per layer for every 5,000 tons of aggregate base course.

END OF SECTION

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SECTION 32 12 16
ASPHALT PAVING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Asphaltic Concrete Paving: Surface, binder, and base courses.
 - 2. Prime Coat and Tack Coat.
 - 3. Surface Sealer.
 - 4. Quality Control and Testing.
- B. Related Sections:
 - 1. Section 31 23 16.13 - Trenching.
 - 2. Section 32 11 23 - Aggregate Base Courses: Compacted base for paving.
 - 3. Section 32 13 13 - Concrete Paving: Concrete curbs.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Asphalt Roadway Trench Repair (Non-NCDOT Roadway):
 - 1. Basis of Measurement: By linear foot based on a trench width of 5 feet.
 - 2. Basis of Payment: Includes preparing base, prime coat, placing, compacting and rolling, and testing asphalt. This line item also includes the placement of compacted pipe embedment and trench backfill, Compacted Aggregate Base Course (CABC), traffic control, Asphalt Binder, and Asphalt Surface Course in the water line trench where the water line is installed under existing pavement in accordance with the details or as otherwise directed by the Engineer.
- B. Asphalt Driveway Repair:
 - 1. Basis of Measurement: By square foot. Asphalt driveway replacement will be measured from the roadway edge of pavement, including the driveway apron, to the furthest edge of the water line trench.
 - 2. Basis of Payment: Includes preparing base, prime coat, placing, compacting and rolling, and testing asphalt for the repair of driveways in accordance with the details and location shown on the drawings or as determined by the Engineer.

1.3 REFERENCES

- A. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit product information and mix design.

- C. Manufacturer's Certification: Certify products are produced at a plant approved by NCDOT and that products meet or exceed specified requirements.
- D. Installer Certification: Certify installer is on list of NCDOT approved contractors with an approved Quality Control Plan.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with Division 6 of NCDOT Standard Specifications.
- B. Maintain on site one copy of each document.
- C. Obtain materials from same source throughout.
- D. Installer Qualification: Company specializing in performing work of this Section with minimum 5 years experience.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt base course or intermediate course when ambient air or road surface temperature is less than 35 degrees F. or surface is wet or frozen.
- B. Do not place asphalt surface course when ambient air or road surface temperature is less than 50 degrees F. or wet.
- C. Place bitumen mixture when temperature is not more than 15 degrees F. below temperature at when initially mixed and not more than maximum specified temperature.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Asphalt Plant Mix Materials: Conform to Sections 1012 and 1020 of NCDOT Standard Specifications.
- B. Prime Coat and Tack Coat: Conform to Section 1020 of NCDOT Standard Specifications.
- C. Sand: Fine aggregate, gradation S1 or S2 conforming to Sections 1005 and 1006 of NCDOT Standard Specifications.
- D. Flowable Fill: See Section 31 23 16.13 - Trenching

2.2 ASPHALT PAVING MIX

- A. General: Use Superpave mix design conforming to Section 610 of NCDOT Standard Specifications.
- B. Base Course: Type I-19.0B.

- C. Surface Course: Type S9.5B.
- D. Asphalt Wearing Course or Wedging or Leveling Mix: Conform to surface course.

2.3 SOURCE QUALITY CONTROL AND TESTS

- A. Section 01 40 00 - Quality Requirements: Testing, inspection, and analysis requirements.
- B. Submit proposed mix design of each class of mix for review prior to beginning Work.
- C. Obtain materials from plant approved by NCDOT.
- D. Test plant samples in accordance with Section 609 of NCDOT Standard Specifications.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify compacted subgrade and aggregate base is dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.
- C. Verify utility structure frames and lids are installed in correct position and elevation.

3.2 PRIME COAT

- A. Apply primer on aggregate base course at uniform rate of 0.2 to 0.5 gal/sq. yd. in accordance with Section 600 of NCDOT Standard Specifications.
- B. Apply primer to contact surfaces of curbs and gutters.
- C. Use clean sand to blot excess primer.

3.3 TACK COAT

- A. Apply tack coat on asphalt or concrete surfaces at uniform rate of 0.04 to 0.08 gallons/square yard in accordance with Section 605 of NCDOT Standard Specifications.
- B. Apply tack coat to contact surfaces of curbs and gutters.
- C. Coat surfaces of utility structures with oil to prevent bond with asphalt pavement. Do not tack-coat these surfaces.

3.4 PLACING ASPHALT PAVEMENT

- A. Install Work in accordance with Section 610 and 620 of NCDOT Standard Specifications.
- B. Place asphalt within 24 hours of applying prime coat or tack coat.
- C. Place asphalt in courses to the thicknesses and dimensions shown on the Drawings.
- D. Place binder and intermediate courses.
- E. Place surface course within 2 hours of placing and compacting binder course. When binder course is placed more than 24 hours before placing wearing course, clean surface and apply tack coat before placing wearing course.
- F. Place surface course to thicknesses and dimensions shown on the Drawings.
- G. Compact each course by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- H. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.5 JOINTS

- A. Traverse Joints:
 - 1. When Work is suspended long enough to allow mixture to chill, construct transverse joint.
 - 2. Use butt joint when traffic will not pass over pavement.
 - 3. Use sloped wedge ahead of the end of pavement when traffic will pass over pavement. Place paper parting strip to removal of wedge.
 - 4. Tack coat edge of pavement prior to placing adjoining pavement.
- B. Longitudinal Joints:
 - 1. Tack the edge of longitudinal joints prior to placing adjoining pavement.
 - 2. Pinch joint by rolling immediately behind the paver.
 - 3. Offset longitudinal joints in each layer by approximately 6 inches.

3.6 TOLERANCES

- A. Density Compaction: Minimum of 92 percent of Maximum Specific Gravity (G_{mm}).
- B. Flatness: Maximum variation of 1/8-inch measured with 10-foot straight edge.
- C. Compacted Thickness: Within 1/4-inch.
- D. Variation From Indicated Elevation: Within 1/2-inch.

3.7 FIELD QUALITY CONTROL

- A. Section 0 1 40 00 - Quality Requirements: Independent testing firm, field testing, and inspecting.

- B. Perform Contractor Quality Control Program in accordance with Section 609 on NCDOT Standard Specifications.
- C. Take compaction tests every 2,000 linear feet or fraction thereof per day on pavement placed at the paver lay down width.
- D. Take 6-inch diameter full depth pavement cores every 2,000 linear feet or fraction thereof per day on pavement placed at the paver lay down width.
- E. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

3.8 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.
- B. Immediately after placement, protect pavement from mechanical injury for seven days or until surface temperature is less than 140 degrees F.

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SECTION 32 13 13
CONCRETE PAVING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete sidewalks.
 - 2. Concrete integral curbs and gutters.
 - 3. Concrete median barriers.
 - 4. Concrete base and surface for parking areas and roads.
 - 5. Small miscellaneous slabs.
 - 6. Dry boring concrete driveways
- B. Related Sections:
 - 1. Section 31 23 17 - Trenching.
 - 2. Section 32 11 23 - Aggregate Base Courses: Compacted base for paving.
 - 3. Section 32 12 16 - Asphalt Paving: Asphalt wearing course.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Concrete Driveway/Sidewalk Replacement:
 - 1. Basis of Measurement: By square foot. Concrete driveway replacement will be measured from the roadway edge of pavement, including the driveway apron, to the first existing concrete control joint beyond the proposed water line. Concrete sidewalk replacement will be measured from the first existing concrete control joint on each side of the removed section.
 - 2. Basis of Payment: Includes forms, reinforcement and concrete, accessories, placing, finishing, curing, and testing.
- B. Dry Boring Concrete Driveways:
 - 1. Basis of Measurement: By the unit. May be used in-lieu of Concrete Driveway/Sidewalk Replacement at the Owner's discretion.
 - 2. Basis of Payment: Includes excavation, grout, accessories, tests, backfill, and disposal of excess materials. If subsurface conditions prevent successful completion of bore, the bore shall be abandoned, and the water line crossing shall be made by open cut methods at no additional cost to the Owner.

1.3 REFERENCES

- A. American Association of State Highway Transportation Officials (AASHTO)
 - 1. AASHTO M 31 - Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
 - 2. AASHTO M 32 - Steel Wire, Plain for Concrete Reinforcement.
 - 3. AASHTO M 282 - Joint Sealants, Hot Poured, Elastomeric-Type, for Portland Cement Concrete Pavements.

- B. American Concrete Institute:
 - 1. ACI 301 - Specifications for Structural Concrete.
 - 2. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.
- C. ASTM International:
 - 1. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - 2. ASTM A 497 - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
 - 3. ASTM A 615 - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 - 4. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
 - 5. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
 - 6. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
- D. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Concrete Mix Design: Submit concrete mix design 30 days prior to use of concrete.
- C. Product Data: Submit data on joint materials, admixtures, and curing compounds.
- D. Manufacturer's Certification: Certify products are produced at a plant approved by NCDOT and that products meet or exceed specified requirements.
- E. Installer Certification: Certify installer is on list of NCDOT prequalified contractors with an approved Quality Control Plan.
- F. Process Control Plan: Submit process control plan for delivering and placing concrete.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with Division 7 (Roadway Pavement) and Sections 846 (Curbs and Gutters), 848 (Sidewalks and Driveways), 850 (Paved Ditch), and 852 (Traffic Islands) of NCDOT Standard Specifications, except as modified herein.
- B. Maintain one copy of document on site.
- C. Obtain cementitious materials from same source throughout.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section and prequalified by NCDOT.
- B. Installer: Company specializing in performing Work of this Section and prequalified by NCDOT.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when base surface temperature or air temperature in the shade is 40 degrees F and falling or surface is wet or frozen.
- B. Do not place concrete when air temperature in the shade is 95 degrees F and rising or when concrete temperature is greater than 95 degrees F.

PART 2 PRODUCTS

2.1 FORM MATERIALS

- A. Slip Form Methods: Use slip form methods wherever possible.
- B. Fixed Form Materials: Metal conforming to Section 700 of NCDOT Standard Specifications.

2.2 JOINT MATERIALS

- A. General: Conform to Section 1028 of NCDOT Standard Specifications.
- B. Joint Filler: Sponge rubber or cork type conforming to ASTM D1751 (AASHTO M213) or bituminous, non-extruding, resilient type conforming to ASTM D1752 (AASHTO M153), Type 1; thickness as indicated on Drawings.
- C. Silicone Sealant: Low modulus, cold applied, single component, chemically curing silicone material.
 - 1. Type NS: Non-sag silicone, toolable.
 - 2. Type SL: Self-leveling silicone, tooling not required.
- D. Rubber Asphalt Sealant: Hot poured rubber asphalt joint sealer conforming to AASHTO M282 (ASTM D3406).
- E. Bond Breaker:
 - 1. General: Product that does not stain or adhere to the sealant and is chemically inert and resistant to oils, gasoline, solvents, and primer.
 - 2. For On-Grade Pavements: Circular backer rod, diameter 25 percent larger than joint width.
 - a. Type L, For Cold Pour Sealants Only: Closed cell expanded polyethylene foam. Use with Type NS silicone only.

- b. Type M, For Cold or Hot Pour Sealants: Closed cell polyolefin with closed skin over an open cell core.
- 3. For Bridge Decks Only: Bond breaking tape, extruded polyethylene with pressure sensitive adhesive on one side, minimum 0.005 inches thick.

2.3 REINFORCEMENT

- A. General: Conform to Section 1070 of NCDOT Standard Specifications.
- B. Reinforcing Steel: ASTM A615 (AASHTO M 31); 60 ksi yield grade; deformed billet steel bars; epoxy coated finish.
- C. Dowels and Tie Bars: ASTM A615 (AASHTO M 31); 60 ksi yield grade, plain steel, epoxy coated finish.
- D. Welded Wire Fabric Steel: Deformed type, ASTM A497; unfinished.

2.4 CONCRETE MATERIALS

- A. Concrete Materials: Provide fine aggregate, coarse aggregate, Portland Cement, fly ash, ground granulated blast furnace slag, water, air entraining agent, and chemical admixtures in accordance with Section 1000 of NCDOT Standard Specifications.

2.5 ACCESSORIES

- A. Curing Compound: ASTM C309 (AASHTO M-148), Type 1 clear or translucent or Type 2 white pigmented.

2.6 CONCRETE MIX

- A. Mix and deliver concrete in accordance with Section 1000 of NCDOT Standard Specifications.
- B. Roadway and Area Pavement concrete: Air entrained conforming to the following criteria:
 - 1. Flexural Strength: 650 psi at 28 days.
 - 2. Slump: 1.5 inch maximum for slip form method, 3 inches maximum for fixed form hand methods.
 - 3. Minimum Cement Content: 526 pounds/cubic yard.
 - 4. Maximum Water/Cement Ratio: 0.559.
 - 5. Air Entrainment: Between 4.5 and 5.5 percent.
- C. Class A Concrete for sidewalk, curb, curb and gutter, and other incidental site concrete: Air entrained, vibrated conforming to the following criteria:
 - 1. Compressive Strength: 3,600 psi at 28 days.
 - 2. Maximum Slump Vibrated: 3.5 inches.
 - 3. Minimum Cement Content: 564 pounds/cubic yard.
 - 4. Maximum Water/Cement Ratio for Angular Aggregate: 0.532.
 - 5. Maximum Water/Cement Ratio for Rounded Aggregate: 0.488.
 - 6. Air Entrainment: 6.0 percent plus or minus 1.5 percent.

- D. Use accelerating admixtures in cold weather only when approved by the Engineer in writing. Use of admixtures will not relax cold weather placement requirements.
- E. Use calcium chloride only when approved by the Engineer in writing.
- F. Use set retarding admixtures during hot weather only when approved by the Engineer in writing.

2.7 SOURCE QUALITY CONTROL AND TESTS

- A. Section 01 40 00 - Quality Requirements: Testing and Inspection Services.
- B. Submit proposed mix design of each class of concrete to independent firm for review prior to commencement of Work.
- C. Tests on cement, aggregates, and mixes will be performed to ensure conformance with specified requirements.
- D. Test samples in accordance with ACI 301 for compressive strength (cylinders) and flexural strength (beams.)

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify compacted base course is acceptable and ready to support paving and imposed loads.
- C. Verify gradients and elevations of base are correct.
- D. Verify utility structure frames and lids are installed in correct position and elevation.

3.2 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Coat surfaces of manhole, catch basin, and other utility structure frames with oil to prevent bond with concrete pavement.
- C. Notify Engineer minimum 24 hours prior to commencement of concreting operations.

3.3 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.

- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.4 REINFORCEMENT

- A. Place reinforcement as indicated on Drawings.
- B. Interrupt reinforcement at contraction and expansion joints.
- C. Place dowels to achieve pavement and curb alignment as detailed.
- D. Provide doweled joints 18 inches on center at transverse joints with one end of dowel set in capped sleeve to allow longitudinal movement.

3.5 PLACING CONCRETE

- A. Place concrete in accordance with Section 700 of NCDOT Standard Specifications.
- B. Place concrete using the slip form technique wherever possible.
- C. Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.
- D. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
- E. Place concrete to pattern indicated on Drawings.

3.6 PAVEMENT JOINTS

- A. Provide expansion, contraction, and construction joints as indicated on Drawings.
- B. Place expansion joints at 60 foot maximum intervals. Place contraction joints at 20-foot maximum intervals. Align pavement joints with curb, gutter, and sidewalk joints.
- C. Place joint filler between paving components and building or other appurtenances. Recess top of filler 1/2 inch for backer rod and sealant placement.
- D. Saw cut contraction joints 3/16 inch wide or as indicated at an optimum time after finishing. Cut 1/3 into depth of slab.

3.7 SIDEWALK, CURB, AND CURB AND GUTTER JOINTS

- A. Provide sawn joints at 5-foot intervals. Provide 3/4 inch expansion joint at 30 feet maximum and between sidewalks and curbs and structures.
- B. Align sidewalk, curb and gutter joints with pavement joints.

3.8 FINISHING

- A. Area Paving: Heavy broom.
- B. Sidewalk Paving: Light broom. Brush to 6 inch radius with smooth trowel joint edges.
- C. Median Barrier: Light broom and trowel joint edges.
- D. Curbs and Gutters: Light broom.
- E. Inclined Vehicular Ramps: V-grooves with mechanical equipment and spring tines, perpendicular to slope.

3.9 EXPOSED AGGREGATE

- A. Apply surface retarder where exposed aggregate finish is indicated.
- B. Wash exposed aggregate surface with clean water and scrub with stiff bristle brush exposing aggregate to match sample panel.
- C. Sand blast concrete surfaces to achieve aggregate exposure surface to match sample panel.

3.10 CURING

- A. Place curing compound on concrete surfaces immediately after finishing.
- B. Cover with burlap or polyethylene film to protect from cold weather and rain.

3.11 JOINT SEALING

- A. Separate pavement from vertical surfaces with 1/2 inch thick joint filler.
- B. Place joint filler in pavement pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- C. Extend joint filler from bottom of pavement to within 1/2 inch of finished surface.

3.12 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 feet.
- B. Maximum Variation From True Position: 1/2 inch.
- C. Maximum Variation in thickness: 1/2 inch.

3.13 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Prepare three concrete test beams for every 1,333 or less square yards of pavement for each class of concrete placed each day.
- C. Prepare one additional test beam during cold weather and cured on site under same conditions as concrete it represents.
- D. One slump test will be taken for each set of test cylinders taken.
- E. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.
- F. Take one 4-inch diameter core for every 1,333 square yards or less of pavement for each class of concrete placed each day.

3.14 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian or vehicular traffic over pavement for 7 days minimum after finishing.

3.15 SCHEDULES

- A. Concrete Sidewalks and Curb: Class A Concrete, compressive strength of 3,600 psi at 28 days, in accordance with NCDOT requirements.
- B. Roadway Pavement Concrete: Non-reinforced, flexural strength of 650 psi at 28 days, 8 inches thick, in accordance with NCDOT requirements.

END OF SECTION

SECTION 32 92 19
SEEDING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fertilizing.
 - 2. Seeding.
 - 3. Hydroseeding.
 - 4. Mulching.
 - 5. Maintenance.

1.2 MEASUREMENT AND PAYMENT

- A. Restoration of Disturbed Areas:
 - 1. Basis of Measurement: Per Acre.
 - 2. Basis of Payment: Includes all materials, equipment and labor for restoring disturbed areas and seeding as specified.

1.3 REFERENCES

- A. ASTM International:
 - 1. ASTM C602 - Standard Specification for Agricultural Liming Materials.
- B. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 DEFINITIONS

- A. Weeds: Vegetative species other than specified species to be established in given area.

1.5 QUALITY ASSURANCE

- A. Perform Work in accordance with Section 1660 of NCDOT Standard Specifications.
- B. Maintain copy of document on site.

1.6 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing products specified in this Section with minimum 3 years documented experience.
- B. Installer: Company specializing in performing work of this Section with minimum 5 years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers showing percentage of seed mix, germination, inert matter and weeds; year of production; net weight; date of packaging; and location of packaging. Seed in damaged packaging is not acceptable.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.8 MAINTENANCE SERVICE

- A. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition for minimum of three cuttings.

PART 2 PRODUCTS

2.1 TOPSOIL MATERIALS

- A. Original surface soil typical of the area, which is capable of supporting native plant growth; free of large stones, roots, waste, debris, contamination, or other unsuitable material, which may be detrimental to plant growth; pH value of 5.4 to 7.0.

2.2 SEED MIXTURE

- A. Furnish materials in accordance with North Carolina Board of Agriculture rules and regulations as specified in Section 1660 of NCDOT Standard Specifications.
- B. Seed Mixture and Rate: As noted on project drawings.

2.3 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- B. Fertilizer: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis. When test is not available, use 10-10-10 mixture of Nitrogen, phosphoric acid, and soluble potash.
- C. Lime: ASTM C602, Class T or Class O agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.
- D. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- E. Erosion Fabric: Jute matting, open weave.
- F. Herbicide: As required to combat type of weeds encountered.
- G. Stakes: Softwood lumber, chisel pointed.

- H. String: Inorganic fiber.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting Work.
- B. Verify prepared soil base and topsoil are ready to receive the Work of this Section.

3.2 FERTILIZING

- A. Apply lime at application rate recommended by soil analysis. Work lime into top 6 inches of soil.
- B. Apply fertilizer at application rate recommended by soil analysis.
- C. Apply after smooth raking of topsoil and prior to roller compaction.
- D. Do not apply fertilizer at same time or with same machine used to apply seed.
- E. Mix fertilizer thoroughly into upper 2 inches of topsoil.
- F. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.3 SEEDING

- A. Apply seed evenly in two intersecting directions at the rates shown above. Rake in lightly.
- B. Do not seed areas in excess of that which can be mulched on same day.
- C. Planting Season:
 - 1. Piedmont Region:
 - a. Fall: August 15 – September 15.
 - b. Late Winter: February 15 – March 21.
- D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.
- E. Roll seeded area with roller not exceeding 112 lbs/linear foot.
- F. Immediately following seeding and rolling, apply mulch to thickness of 1/8 inch. Maintain clear of shrubs and trees.
- G. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

3.4 HYDROSEEDING

- A. Apply fertilizer, mulch and seeded slurry with hydraulic seeder at rate of 6 lbs per 1,000 square feet evenly in one pass.
- B. Apply water with fine spray immediately after each area has been hydroseeded. Saturate to 4 inches of soil and maintain moisture levels two to four inches.

3.5 SEED PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 12 inches. Space stakes at 5 feet on center.
- B. Cover seeded slopes where grade is greater than 3 H:1 V with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- C. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.
- D. Secure outside edges and overlaps at 36 inch intervals with stakes.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.6 MAINTENANCE

- A. Mow grass at regular intervals to maintain at maximum height of 6 inches. Do not cut more than 1/3 of grass blade at each mowing. Perform first mowing when seedlings are 40 percent higher than desired height.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming. Do not let clippings lay in clumps.
- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove minor depressions or irregularities.
- F. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.
- G. Immediately reseed areas showing bare spots.
- H. Repair washouts or gullies.
- I. Protect seeded areas with warning signs during maintenance period.

3.7 SCHEDULE

- A. Lawn Area: Piedmont Mix Type (substitute Kentucky bluegrass for lespedeza), 4-inch top soil.
- B. Road Shoulders: Per temporary or permanent seed mixture detailed on drawings.

END OF SECTION

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SECTION 33 01 10.58
DISINFECTION OF WATER UTILITY PIPING SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes disinfection of potable water distribution and transmission systems; and testing and reporting results.
- B. Related Sections:
 - 1. Section 33 11 00 - Water Utility Distribution Piping: Piping Product and Execution requirements for installation, testing, of water distribution piping.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. General: Work of this Section will not be measured for payment but is included in the unit cost for the length of pipe installed.

1.3 REFERENCES

- A. American Water Works Association:
 - 1. AWWA B300 - Hypochlorites.
 - 2. AWWA B301 - Liquid Chlorine.
 - 3. AWWA B302 - Ammonium Sulfate.
 - 4. AWWA B303 - Sodium Chlorite.
 - 5. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
 - 6. AWWA C651 - Disinfecting Water Mains.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit procedures, proposed chemicals, and treatment levels for review.
- C. Test Reports: Indicate results comparative to specified requirements.
- D. Certificate: Certify cleanliness of water distribution system meets or exceeds specified requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Disinfection Report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.

3. Test locations.
 4. Name of person collecting samples.
 5. Initial and 24 hour disinfectant residuals in treated water in ppm for each outlet tested.
 6. Date and time of flushing start and completion.
 7. Disinfectant residual after flushing in ppm for each outlet tested.
- C. Bacteriological Report:
1. Date issued, project name, and testing laboratory name, address, and telephone number.
 2. Time and date of water sample collection.
 3. Name of person collecting samples.
 4. Test locations.
 5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
 6. Coliform bacteria test results for each outlet tested.
 7. Certify water conforms, or fails to conform, to bacterial standards of authority having jurisdiction.
- D. Water Quality Certificate: Certify water conforms to quality standards of authority having jurisdiction, suitable for human consumption.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with AWWA C651 and the requirements of the North Carolina Department of Environment, Health, and Natural Resources; maintain one copy of document on site.

PART 2 PRODUCTS

2.1 DISINFECTION CHEMICALS

- A. Chemicals: AWWA B300, Sodium Hypochlorite, and Calcium Hypochlorite

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify piping system has been cleaned, inspected, and pressure tested.
- C. Perform scheduling and disinfecting activity with start-up, water pressure testing, adjusting and balancing, and demonstration procedures, including coordination with related systems.

3.2 INSTALLATION

- A. Installed and test Temporary Jumper Assembly in accordance with Section 33 11 00. Chlorination of the new water main shall be performed through a tap on the new main side of the RP Backflow Preventer.
- B. Provide and attach required equipment to perform the Work of this Section. Booster pumps shall be used if required to obtain the necessary volume or velocity of water for flushing.
- C. Perform disinfection of water distribution system. Disinfection shall be performed such that any previously disinfected sections do not become stagnant prior to the main being placed into service.
- D. Introduce treatment into piping system.
- E. Maintain disinfectant in system for 24 hours minimum.
- F. Flush, circulate, and clean until required cleanliness is achieved; use municipal domestic water. Water will be provided free of charge for three times the volume of the line (one filling and two flushing cycles). Additional or excessive water usage will be billed to the Contractor at the providing utilities applicable bulk rate per 1,000 gallons including any meter rental/usage charges.
- G. Flushing of mains will be accomplished in such a manner as to minimize erosion and siltation to adjoining properties. Water velocity from drainage and/or blow-off will be dissipated as necessary to prevent erosion.
- H. Replace permanent system devices removed for disinfection.

3.3 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Disinfection, Flushing, and Sampling:
 - 1. Notify Engineer, utility company and Owner 72 hours in advance of test and have witness test. A testing schedule and test procedure shall be submitted to the Engineer for review and acceptance not less than 21 days prior to commencement of testing work. The schedule shall indicate the proposed time and sequence of testing of each pipeline. The testing procedure shall establish the limits of each pipeline to be tested, the position of all valves during testing, the location of temporary bulkheads, and all other procedures to be followed in performing the required testing work.
 - 2. Disinfect pipeline installation in accordance with AWWA C651 and Section .1003 - Disinfection of Storage Tanks and Distribution Systems of the Rules Governing Public Water Systems, North Carolina Administrative Code Title 15A Subchapter 18C. Use of liquid chlorine (gas) is not permitted.

3. Water line shall be disinfected by the addition and thorough dispersion of a chlorine solution in concentrations sufficient to produce a chlorine residual of at least 50 milligrams per liter (mg/L) (or ppm) in the water throughout the distribution system.
4. The chlorine solution shall remain in contact with the interior surfaces of the water system for a period of 24 hours. At the end of this 24-hour period, the treated water in all portions of the main shall have a residual of not less than 10 mg/L of free chlorine.
5. Upon completion of retention period required for disinfection, flush pipeline until chlorine concentration in water leaving pipeline is no higher than that generally prevailing in existing system or is acceptable for domestic use.
6. Legally dispose of chlorinated water with either of the following options:
 - a. Apply neutralizing chemical to chlorinated water to neutralize chlorine residual remaining in water. The acceptable level of residual chlorine is less than 0.2 parts per million. The discharge shall be tested at 15 minute intervals to confirm the discharge is less than the acceptable level. Discharge shall be immediately stopped if any elevated chlorine readings are observed. The Contractor shall provide erosion control measures at no additional cost. The dichlorination agent and process shall be approved by the Engineer and Owner.
 - b. The Contractor shall arrange to dispose of it in the Owner's sanitary sewer system. The maximum chlorine residual discharged to the sanitary sewer system shall be 100 parts per million or less, or as dictated by the Owner. The maximum discharge rate into a manhole shall be limited to 200 GPM, unless specifically approved by the Engineer in writing. A metering device (direct reading in gallons or GPM) will be used to measure the discharge rate and a control valve shall be used to regulate the flow rate. The Contractor will monitor the flow levels in the next three (3) downstream manholes to verify that the sewer pipes are not surcharged and the sewer capacity has not been exceeded. The Engineer may monitor additional downstream manholes at critical flow locations. At the time of construction, the Engineer may reduce the approved discharge rate, based on site conditions in the downstream sewer mains.
7. Bacteriological Tests: After final flushing and before pipeline is connected to existing system or placed in service, employ a state approved independent testing laboratory to sample, test, and certify water quality suitable for human consumption. Follow procedure outlined by AWWA C651; Section 5.1.
 - a. At least two samples shall be taken from each test location.
 - b. For new mains, sets of samples shall be collected every 1,200 ft of the new water main (or practical based fire hydrant, water service, or blow-off locations), plus one set from the end of the line and at least one set from each branch greater than one pipe length (approximately 20 ft.)
8. Re-disinfection. If the initial disinfection fails to produce satisfactory bacteriological results, or if other results indicate unacceptable water quality, the main may be re-flushed and shall be resampled. If check samples fail to produce acceptable results, the main shall be re-chlorinated.
9. Final Connection: Water mains and appurtenances must be completely installed, flushed, disinfected, and satisfactory bacteriological sample results received prior to permanent connections being made to active distribution systems.

- a. Connections equal to or less than one pipe length (≤ 20 ft): The new pipe, fittings, and valve(s) required for the connection may be spray disinfected or swabbed with a minimum 1 percent solution of chlorine just before being installed.
- b. Connections greater than one pipe length (> 20 ft): The pipe required for the connection must be set up aboveground, disinfected, and bacteriological samples taken, as described herein. After satisfactory bacteriological sample results have been received for the pre-disinfected pipe, the pipe can be used in connecting the new main to the active distribution system. Between the time the satisfactory bacteriological sample results are received and the time that the connection piping is installed, the ends of the piping must be sealed with plastic wraps, watertight plugs, or caps.

END OF SECTION

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SECTION 33 05 07
TRENCHLESS INSTALLATION OF UTILITY PIPING (JACKING)

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavation and backfill for approach trenches and pits.
 - 2. Excavation for Casing pipe.
 - 3. Carrier pipe.
 - 4. Disposal of excess materials.
- B. Related Sections:
 - 1. Section 31 23 16.13 – Trenching: Excavating and backfilling access pits.
 - 2. Section 31 40 00 – Temporary Shoring
 - 3. Section 33 01 10.58 – Disinfection of Water Utility Piping Systems.
 - 4. Section 33 11 00 – Water Utility Distribution Piping.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Bore and Jacked Pipe:
 - 1. Basis of Measurement: By linear foot of the specified casing diameter measured on invert of jacked casing pipe from face to face of jacked pipe.
 - 2. Basis of Payment: Includes excavation, jacked casing pipe, grout, accessories, tests, backfill, and disposal of excess materials. Jacked casing pipe shall be considered guaranteed regardless of subsurface conditions encountered.

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO M133 - Standard Specification for Preservatives and Pressure Treatment Processes for Timber.
- B. American Railway Engineering and Maintenance-of-Way Association:
 - 1. AREMA - Manual for Railway Engineering.
- C. ASTM International:
 - 1. ASTM A36 - Standard Specification for Carbon Structural Steel.
 - 2. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
 - 3. ASTM A139 - Standard Specification for Electric fusion (Arc) Welded steel Pipe (NPS 4-inch and over).
 - 4. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - 5. ASTM A449 - Standard Specification for Quenched and Tempered Steel Bolts and Studs.

6. ASTM A1011- Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
- D. American Welding Society:
 1. AWS D1.1 - Structural Welding Code - Steel.
- E. National Utility Contractors Association:
 1. NUCA - Pipe Jacking & Microtunneling Design Guide.
 2. NUCA - Trenchless Excavation Construction Equipment & Methods Manual.
- F. NCDOT Standard Specifications:
 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 DESIGN REQUIREMENTS

- A. Design casing pipe liner joints of leakproof construction. Design for earth and/or other pressures present.
 1. Highway Crossings: Design tunnel for earth and/or other pressure loads present, plus AASHTO H20 live loading.
 2. Railroad Crossings: Design tunnel for earth and/or other pressure loads present, plus railroad E80 live loading with 50 percent added for impact.
- B. Design bracing, backstops, and use jacks of sufficient rating for continuous jacking without stoppage, except for adding pipe sections and as conditions permit, to minimize tendency of ground material to "freeze" around casing pipe.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Prepare scaled shop Drawings to supplement Drawings, signed and sealed by Professional Engineer for installations requiring positive shoring or support for adjacent structures or as required by the NCDOT or Railroad authority.
 1. Include details of casing, jacking head, sheeting, and other falsework for trenches and pits and support for adjacent facilities, field sketches, and other details to complete the Work.
 2. Show relation of proposed installation to adjacent facilities and natural features over installation, angle of installation, right-of-way lines, and general layout of built facilities.
 3. Show cross-section or sections from field survey showing installation in relation to actual profile of ground.
- C. Submit history of previous work completed of equivalent nature and scope. Include qualification and experience of key personnel.
- D. Installation Plan: Submit description of proposed construction plan, dewatering plan, and plan to establish and maintain vertical and horizontal alignment.

- E. Submit emergency response procedures to handle situations when conduit is compromised and jeopardizes integrity of installation or safety.
- F. Submit written report results of visual check prior to installation of carrier pipe of entire length of casing or liner, to verify there are no voids or defective joints.
- G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of casing or tunnel liner, carrier pipe, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.7 QUALITY ASSURANCE

- A. Perform work in accordance with Sections 1540 and 1550 of NCDOT Standard Specifications, NUCA Trenchless Excavation Construction Equipment and Methods Manual, NUCA Pipe Jacking & Microtunneling Design Guide, and AREMA when jacking under railroads.
- B. Maintain one copy of each document on site.

1.8 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum five years documented experience.
 - 1. Work Experience: Include projects of similar magnitude and conditions.
 - 2. Furnish list of references upon request.

1.9 PRE-INSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Pre-installation meeting.
- B. Convene minimum one week prior to commencing work of this Section.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
- B. Protect piping and jacking systems from entry of foreign materials and water by temporary covers, completing sections of work, and isolating parts of completed system.
- C. Accept system components on site in manufacturer's original containers or configuration. Inspect for damage.

- D. Use wooden shipping braces between layers of stacked pipe. Stack piping lengths no more than three layers high.
- E. Store field joint materials indoors in dry area in original shipping containers. Maintain storage temperature of 60 to 85 degrees F.
- F. Support casing and carrier pipes with nylon slings during handling.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Conduct operations so as not to interfere with, interrupt, damage, destroy, or endanger integrity of surface or subsurface structures or utilities, and landscape in immediate or adjacent areas.

1.12 FIELD MEASUREMENTS

- A. Verify invert elevations of existing work prior to excavation and installation of casing or tunnel.

PART 2 PRODUCTS

2.1 CASING AND JACKING PIPE MATERIALS

Steel Casing Pipe: ASTM A139 or ASTM A283, 35,000 psi minimum yield strength, full circumference welded joints in accordance with AWS D1.1 to withstand excavation forces, with a minimum wall thickness as defined below:

CARRIER PIPE	Casing Pipe	Thickness		Recommended* Min. Tunnel
		D.O.T.	R.R	
6-Inch Ductile Iron	16"	.250"	.281"	48"
8-Inch Ductile Iron	20"	.250"	.344"	48"
10-Inch Ductile Iron	20"	.250"	.344"	48"
12-Inch Ductile Iron	24"	.250"	.406"	48"
16-Inch Ductile Iron	30"	.312"	.500"	48"
18-Inch Ductile Iron	30"	.312"	.500"	48"

CARRIER PIPE	Casing Pipe	Thickness		Recommended* Min. Tunnel
		D.O.T.	R.R.	
20-Inch Ductile Iron	36"	.375"	.532"	48"
24-Inch Ductile Iron	36"	.375"	.562"	48"
30-Inch Ductile Iron	48"	.500"	.688"	48"

2.2 CARRIER PIPE MATERIALS

- A. Water Utility Distribution Piping: As specified in Section 33 11 00.

2.3 GROUT AND COVER MATERIALS

- A. Soil Backfill for Trench Approaches and Pits to Finish Grade: As specified in Section 31 23 16.13.
- B. Fill and Seal Grout at Pipe Ends: Mortar conforming to Section 1040 of NCDOT Standard Specifications proportioned as described below. Do not add more water than is necessary to make a workable mixture.
1. Mix No. 1: 1 part Portland cement, 1/4 part hydrated lime, 3-3/4 parts mortar sand (maximum).
 2. Mix No. 2: 1 part Portland cement, 1 part masonry cement, 6 parts mortar sand (maximum).
- C. Pressure Grout Mix: One part Portland cement and six parts mortar sand mixed with water to consistency applicable for pressure grouting.

2.4 ACCESSORIES

- A. Supports and Insulators:
1. Steel and Plastic: 14 gage stainless steel band, 5/16 inch stainless steel flange bolts, heavy duty PVC liner, polyethylene or phenolic skids.
 2. Plastic: Polyethylene casing insulator band and skids with stainless steel bolts.
- B. Steel Strapping: ASTM A36.
- C. Concrete: Class A Concrete conforming to Section 1000 of the NCDOT Standard Specifications.
1. Compressive strength of 3,000 psi at 28 days.
 2. Air entrained.
 3. Water cement ratio of 0.488 with rounded aggregate and 0.532 with angular aggregate.
 4. Maximum slump of 3.5 inch for vibrated concrete and 4 inch for non-vibrated concrete.
 5. Minimum cement content of 564 pounds per cubic yard for vibrated concrete and 602 pounds per cubic yard for non-vibrated concrete.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify connection to existing piping system size, location, and invert elevations are in accordance with Drawings.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Locate, identify, and protect utilities indicated to remain from damage.
- C. Notify utility company to remove and relocate utilities.
- D. Protect plant life, lawns, rock outcroppings] and other features remaining as portion of final landscaping.
- E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Establish minimum separation of from other utility piping in accordance with local code.
- G. All work on boring and jacking under highways shall be under the supervision of the District Engineer of the Department of Transportation or his authorized representative who shall be notified at least five (5) days before actual work or installation begins and in accordance with the encroachment agreement.
- H. All work on railroad right-of-way including any necessary supporting of tracks shall be under the supervision of the Chief Engineer of the railroad or his authorized representative, who shall be notified at least 5 days before actual work or installation is begun and in accordance with the encroachment agreement. This work shall be done only in the presence of the authorized representative of the Chief Engineer, and no work shall be done or methods used which will in his opinion, be hazardous in any way to the railway.

3.3 EXCAVATION AND BACKFILL

- A. Excavate and backfill in accordance with Section 31 23 16.13.

3.4 DEWATERING

- A. Intercept and divert surface drainage precipitation and groundwater away from excavation through use of dikes, curb walls, ditches, pipes, sumps, or other means.
- B. Develop substantially dry subgrade for prosecution of subsequent operations.

- C. Comply with State of North Carolina requirements for dewatering to any watercourse, prevention of stream degradation, and erosion and sediment control.

3.5 EXISTING WORK

- A. Maintain access to existing facilities and other remaining active installations requiring access. Modify installation as necessary to maintain access.

3.6 PITS OR APPROACH TRENCHES

- A. Excavate approach trenches or pits in accordance with shop drawings and as site conditions require.
- B. Ensure casing entrance face as near perpendicular to alignment as conditions permit.
- C. Establish vertical entrance face at least 1 foot above top of casing.
- D. Install dewatering measures and excavation supports as specified in Section 31 23 16.13.

3.7 CASING PIPE INSTALLATION

- A. Boring:
 - 1. Push pipe into ground with boring auger rotating within pipe to remove spoil. Do not advance cutting head ahead of casing pipe except for distance necessary to permit cutting teeth to cut clearance for pipe. Arrange machine bore and cutting head to be removable from within pipe. Arrange face of cutting head to provide barrier to free flow of soft material.
 - 2. When unstable soil is encountered during boring retract cutting head into casing to permit balance between pushing pressure and ratio of pipe advancement to quantity of soil.
 - 3. When voids develop greater than outside diameter of pipe by approximately one inch, grout to fill voids.
 - 4. When boring is obstructed, abandon boring, relocate jack or tunnel as directed by Engineer.
- B. Jacking
 - 1. Construct adequate thrust wall normal to proposed line of thrust.
 - 2. Impart thrust load to pipe through suitable thrust ring sufficiently rigid to ensure uniform distribution of thrust load on full pipe circumference.
- C. Drilling and Jacking
 - 1. Use oil field type rock roller bit or plate bit made up of individual roller cutter units solidly welded to pipe which is turned and pushed for its entire length by drilling machine to give bit necessary cutting action.
 - 2. Inject high density slurry (oil field drilling mud) to head as cutter lubricant. Inject slurry at rear of cutter units to prevent jetting action ahead of pipe.
- D. Mining and Jacking: Utilize manual handmining excavation from within casing pipe as casing is advanced with jacks, allowing minimum ground standup time ahead of casing pipe.

3.8 PRESSURE GROUTING

- A. Pressure grout annular space between casing pipe and surrounding earth.

3.9 CARRIER PIPE INSTALLATION

- A. Clean, inspect, and handle pipe in accordance with applicable Section for carrier pipe.
- B. Exercise care to prevent damage to pipe joints when carrier pipe is placed in casing.
- C. Support pipeline within casing so no external loads are transmitted to carrier pipe. Attach supports to barrel of carrier pipe; do not rest carrier pipe on bells.
 - 1. Use minimum 2 supports per joint of carrier pipe.
- D. Grout ends of casing to seal.

3.10 TOLERANCES

- A. Do not over cut excavation by more than 1 inch greater than outside diameter of casing pipe.
- B. Install casing pipe to vertical and horizontal alignment on Drawings within plus or minus 3 inches prior to installation of carrier pipe.
- C. Install pipe bells with minimum 1/2 inch clearance to casing.

3.11 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting and testing.
- B. Compaction Testing: As specified in Section 31 23 16.13.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.12 REMOVAL OF FACILITIES AND CONTROLS

- A. Remove temporary facilities for casing installation and jacking operations in accordance with Section 01 50 00 - Temporary Facilities and Controls.

END OF SECTION

SECTION 33 11 00
WATER UTILITY DISTRIBUTION PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings for potable water line and fire water line.
 - 2. Valves and Valve Boxes.
 - 3. Fire Hydrants.
 - 4. Tapping Sleeves and Valves.
 - 5. Dry Boring Concrete Driveways
 - 6. Connection to Existing Water Lines
 - 7. Abandonment of Existing Water Lines, Valves, and Fire Hydrants.
 - 8. Polyethylene Encasement.
 - 9. Underground pipe markers and tracer wire.
 - 10. Thrust Blocking.
 - 11. Temporary Jumper Assembly
 - 12. Pressure Testing
- B. Related Sections:
 - 1. Section 31 23 16.13 – Trenching: Excavation and backfill requirements.
 - 2. Section 32 13 13 – Concrete Paving
 - 3. Section 33 01 10.58 - Disinfection of Water Utility Piping Systems: Disinfection of water piping.
 - 4. Section 33 05 07 - Trenchless Installation of Utility Piping (Jacking): Waterline installation under roadways and other obstructions.
 - 5. Section 33 05 09.33 – Thrust Restraint for Utility Piping.
 - 6. Section 33 14 17 – Site Water Service Utility Laterals.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. General: Each unit price includes excavation, bedding, backfill, stockpiling, and disposal of excess material in accordance with Section 31 23 16.13 - Trenching. No payment will be made for over excavated Work or for replacement materials. Each unit price includes testing for leakage and disinfection.
- B. Pipe and Fittings:
 - 1. Basis of Measurement: By the linear foot from center to center of fittings.
 - 2. Basis of Payment for pipe: Includes pipe, fittings, concrete thrust restraints, boltless restrained joints, tied joint restraints, metal bars and bolts used in thrust restraint, clearing and grubbing, excavation and trench, backfilling and compacting.
 - 3. Basis of Payment for fittings: Work of this Section will not be measured for payment but is included in the unit cost for the pipe installed.
- C. Gate Valve and box:
 - 1. Basis of Measurement: By the unit.

2. Basis of Payment: Includes valve, valve box, fittings, support, and accessories.
- D. Hydrant and valve assembly:
1. Basis of Measurement: By the unit.
 2. Basis of Payment: Includes aggregate, concrete thrust restraint and support, tied joints restraint, hydrant, valve, valve box, fittings, accessories, and pipe from main to valve and pipe from valve to hydrant, including the necessary vertical extension to raise the hydrant. If hydrant is located at end of a line, payment will be made for installation from valve to hydrant.
- E. Tapping Sleeve and Valve:
1. Basis of Measurement: By the unit.
 2. Basis of Payment: Includes sleeve, valve, valve box, fittings, support, accessories, and witness by authority having jurisdiction.
- F. Dry Boring Concrete Driveways: See Section 32 13 13 – Concrete Paving
- G. Connection to Existing Water Line:
1. Basis of Measurement: By the unit
 2. Basis of Payment: Includes equipment, materials, and labor required for connecting new water lines to existing water lines at the locations shown on the drawings or as determined by the Engineer. Work shall include, but not limited to, locating existing water lines, excavation; including pavement cuts where required, exposure of the existing water line, sleeves, appurtenances, backfill and compaction.
- H. Abandon Existing Water Lines
1. Basis of Measurement: By the unit.
 2. Basis of Payment: Includes the cost of equipment, materials and labor required for the abandonment of existing water lines at the locations shown on the drawings or as determined by the Engineer. Work shall include, but not limited to, locating existing water lines, excavation; including pavement cuts where required, exposure of existing water line, cut, plug or cap the existing mains in place, backfill and compaction. Limits of water line abandonment are from water line intersection to water line intersection or from water line intersection to water line dead end.
- I. Abandon Existing Valves:
1. Basis of Measurement: By the unit.
 2. Basis of Payment: Includes the cost of equipment, materials, and labor required for the abandonment of existing valves at the locations shown on the drawings, found otherwise in the field during construction, or as determined by the engineer. Work shall include, but not limited to, excavation, including pavement cuts where required, removal of valve box, backfill hole, compaction and restore surfaces are specified.
- J. Abandon Existing Fire Hydrants:
1. Basis of Measurement: By the unit.
 2. Basis of Payment: Includes equipment, materials, and labor required for the abandonment of existing fire hydrants and guard valves at the locations shown on

the drawings or as determined by the Engineer. Work shall include, but not limited to, location of existing utilities, excavation; including pavement cuts where required, removal of existing fire hydrant, including the portion that is above ground (the base flange), cutting the vertical pipe section and plugging or capping in place, abandoning the guard valve, backfill and compaction. Existing fire hydrants assemblies that are removed for abandonment shall be retained by the Owner.

- K. Polyethylene Encasement:
 - 1. Will not be measured for payment but is included in the unit cost for the pipe installed.
- L. Underground Pipe Markers and Tracer Wire:
 - 1. Will not be measured for payment but is included in the unit cost for the pipe installed.
- M. Temporary Jumper Assembly:
 - 1. Will not be measured for payment but is included in the unit cost of the pipe installed.
- N. Pressure testing:
 - 1. Will not be measured for payment but is included in the unit cost for the pipe installed.
- O. Disinfection of Potable Water System Piping:
 - 1. Will not be measured for payment but is included in the unit cost for the pipe installed.

1.3 REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings.
- B. American Water Works Association:
 - 1. AWWA C104 - ANSI Standard for Cement Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
 - 2. AWWA C105 - Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems.
 - 3. AWWA C110 - Standard for Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. (76 mm Through 1,219 mm), for Water.
 - 4. AWWA C111 - Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - 5. AWWA C115 - Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
 - 6. AWWA C151 - Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids.
 - 7. AWWA C153 - Standard for Ductile-Iron Compact Fittings for Water Service.
 - 8. AWWA C208 - Dimensions for Fabricated Steel Water Pipe Fittings.
 - 9. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service.
 - 10. AWWA C509 - Resilient-Seated Gate Valves for Water-Supply Service.

11. AWWA C550 - Protecting Epoxy Interior Coating for Valves and Hydrants.
12. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
13. AWWA C605 - Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings.
14. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, and Fabricated Fittings, 4 In. Through 12 In. (100 mm Through 300 mm), for Water Distribution.
15. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. through 3 in. for Water Service.
16. AWWA C905 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 36 In. (350 mm Through 1,200 mm), for Water Transmission and Distribution.

C. ASTM International:

1. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
2. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
3. ASTM D1784 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
4. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
5. ASTM D3035 - Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter.
6. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
7. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

D. National Sanitation Foundation:

1. NSF 61 - Drinking Water System Components - Health Effects

E. NCDOT Standard Specifications:

1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 DEFINITIONS

- A. Utility Company: Town of Harrisburg

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate piping layout, including piping specialties.
- C. Product Data: Submit data on pipe materials, pipe fittings, valves, hydrants, and accessories.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

- E. Project Record Documents: Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.
- F. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with Section 1510 of NCDOT Standard Specifications except as modified herein.
- B. Perform work in accordance with utility company standards.
- C. Maintain one copy of each document on site.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store valves in shipping containers with manufacturer's name and pressure rating labeling in place.
- B. Block individual and stockpiled pipe lengths to prevent moving.
- C. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.
- D. Store polyethylene materials out of sunlight.

PART 2 PRODUCTS

2.1 WATER PIPING

- A. Ductile Iron Pipe (DIP): AWWA C151. Bituminous outside coating: AWWA C151. Cement Mortar Lining: AWWA C104.
 - 1. Pipe Pressure Class: 3" to 12" diameter – ANSI/AWWA 350
 - 2. Fittings: Ductile iron, AWWA C110. Compact fittings, Ductile Iron, AWWA C153.
 - a. Pressure Rating: 250 psi minimum.
 - b. Coating: Bituminous Coating, AWWA C110.
 - c. Lining: Cement Mortar Lining, AWWA C104
 - 3. Joints:
 - a. Mechanical Joints: AWWA C111.
 - b. Push-On Joints: AWWA C111.
 - c. Flanged Joints: AWWA C115.
 - d. Boltless Restrained Joints: Boltless, push-on type, joint restraint independent of joint seal. Conform to pipe manufacturers specifications.
- B. Polyvinyl Chloride (PVC): AWWA C900 and AWWA C905, marked with NSF 61 designation for potable water use.

1. Pipe Class: DR 14, 305 psi.
2. Fittings:
 - a. PVC, AWWA C900 and AWWA C905.
 - b. Ductile Iron, Mechanical Joint, AWWA C110.
3. Joints:
 - a. PVC, ASTM D3139 with ASTM F477 flexible elastomeric seals.
 - b. Ductile Iron, Mechanical Joint, AWWA C111.
 - c. Boltless Restrained Joints: Boltless, push-on type, joint restraint independent of joint seal. Conform to pipe manufacturers specifications.

2.2 RETAINER GLANDS

- A. Retainer Glands: Wedge action glands with torque limiting twist off nuts or glands with wedge type gripping gaskets.
- B. Manufacturers:
 1. Megalug Series 1100 by EBBA Iron Sales, Inc.
 2. MJ Field Lok® Gaskets by U.S. Pipe.
 3. Stargrip® Series 3000 by Star Pipe Products.
 4. Fast Grip Gaskets by American Ductile Iron Pipe.
 5. Substitutions: Equal per Section 00 21 13 – Instructions to Bidders.

2.3 RESTRAINED JOINT PIPE

- A. All restrained joint pipe shall have flexible push-on joints designed to deflect a minimum of 3° per joint. Field welding will not be allowed. Approved restrained retainer glands shall be used to connect pipe to mechanical joint fittings.
- B. Manufacturers:
 1. Field Lok 350® Gaskets
 2. TR Flex by U.S. Pipe
 3. Snap-Lok by Griffin
 4. Super-Lok by Clow
 5. Flex-Ring, Lok-Fast, Lok-Ring by American
 6. Substitutions: Equal per Section 00 21 13 – Instructions to Bidders.

2.4 TAPPING SLEEVES AND VALVES

- A. Manufacturers:
 1. American Flow Control.
 2. Clow Valve Company
 3. Mueller Company.
 4. Substitutions: Equal per Section 00 21 13 – Instructions to Bidders.
- B. Tapping Sleeves:
 1. Ductile iron or cast-iron dual compression type.
 2. Outlet Flange Dimensions and Drilling: MSS SP-60.
 3. Pressure Rating:
 - a. Working Pressure of 200 psi and tested at 400 psi for sizes 2-inch through 12-inch

- C. Tapping Valves:
 - 1. AWWA C500, resilient wedge with non-rising stem. Inlet flanges shall conform to ANSI B16.1, Class 125 and MSS SP-60. Mechanical joint outlets shall conform to AWWA C111.

2.5 RESILIENT WEDGE GATE VALVES

- A. Manufacturers:
 - 1. American Flow Control (Series 2500)
 - 2. Clow Valve Company (C 509)
 - 3. Mueller Company
 - 4. Substitutions: Equal per Section 00 21 13 – Instructions to Bidders.
- B. Furnish materials in accordance with utility company or governing agency requirements.
- C. Resilient Wedge Gate Valves: AWWA C509; iron body, bronze or ductile iron.
 - 1. Resilient wedge seats with durable opaque end shields to prevent ultraviolet damage to the rubber discs.
 - 2. Stem: Non-rising bronze stem.
 - 3. Operating Nut: Square; open counterclockwise unless otherwise indicated.
 - 4. Ends: Flanged or mechanical joint. All valves shall be restrained utilizing flanges, tie rods, or restrained push-on joints as specified in the ductile iron pipe section.
 - 5. Coating: AWWA C550; interior/exterior.
 - 6. Sizes 12-Inch Diameter and Smaller: 200 psig.
 - 7. Sizes 16-Inch Diameter and Larger: 150 psig.
 - 8. Sizes 16-Inch Diameter and Larger: Provide spur or bevel gear operator conforming to AWWA C500.
 - 9. Sizes 2-Inch through 12-Inch: Valves used for buried service shall be mechanical joint and shall have two (2) “O” ring seals above the stem thrust collar that can be replaced with the valve under pressure.
 - 10. Sizes 14-Inch through 30-Inch: Valves used for buried service shall be mechanical joint and shall have three (3) “O” ring seals, two (2) above the stem thrust collar that can be replaced with the valve under pressure and one (1) below.

2.6 FIRE HYDRANTS

- A. Manufacturers:
 - 1. American Flow Control.
 - 2. Clow Valve Company.
 - 3. Mueller Company.
 - 4. Substitutions: Equal per Section 00 21 13 – Instructions to Bidders.
- B. Furnish materials in accordance with utility company or governing agency requirements.
- C. Dry-barrel Break-away Type: AWWA C502; cast-iron body, compression type valve.
 - 1. Bury Depth: As indicated on the Drawings.
 - 2. Inlet Connection: 6 inches.
 - 3. Valve Opening: 5-1/4 inch diameter.

4. Ends: Mechanical Joint or Bell End.
 5. Bolts and Nuts: Corrosion resistant.
 6. Coating: AWWA C550; interior.
 7. Direction of Opening: Counterclockwise unless otherwise indicated.
- D. One pumper, two hose nozzles.
1. 4-1/2" Storz Connection and cap factory installed.
 2. Obtain thread type and size from local fire department.
 3. Attach nozzle caps by separate chains.
- E. Finish: Primer and two coats of enamel, color in accordance with utility company, fire department, or NFPA 281 requirements.
- F. All fire hydrants are to have a blaze orange metal ring placed on the pumper nozzle (4-1/2") opening or "bagged" out of service at time the hydrant is set in place. Only Town of Harrisburg Public Works personnel shall remove the ring or bag after the hydrant is accepted.

2.7 VALVE BOXES

- A. Valves 12-Inch Diameter and Smaller: Cast iron, two-piece, screw type.
- B. Valves Larger Than 12-Inch Diameter: Cast iron, three-piece, screw type; round base.
- C. Cast iron lid marked "WATER".

2.8 POLYETHYLENE ENCASEMENT

- A. Polyethylene Encasement: AWWA C105 polyethylene encasement for ductile iron pipe. Shall consist of three layers of co-extruded linear low density polyethylene (LLDPE), fused into a single thickness of not less than eight mils.
- B. Inside surface of the polyethylene wrap to be in contact with the pipe exterior shall be infused with a blend of anti-microbial biocide to mitigate microbiologically influenced corrosion and a volatile corrosion inhibitor to control galvanic corrosion.
- C. Installation: Conform to AWWA C600 and ANSI/AWWA C105/A21.5 and also in accordance with all recommendations and practices of the AWWA M41. The wrap shall be overlapped one foot in each direction at the joints and secured in place around the pipe, and any wrap at tap locations shall be taped tightly prior to tapping and inspected for any needed repairs following the tap.
- D. Tape: Secured with 12 mil thick and 1-1/2" wide polyethylene tape. Tape capable of bonding to metal, bituminous coating and polyethylene at a temperature range of 32 to 120 degree F.

2.9 UNDERGROUND PIPE MARKERS AND TRACER WIRE

- A. Plastic Ribbon Tape: Non-Metallic brightly colored blue continuously printed with "WATER SERVICE" in large letters, minimum 6 inch wide by 4 mils thick, manufactured for direct burial service.
- B. Tracer Wire: Water blocking reinforced tracer wire used for direct burial locating purposes of water utilities. Wire shall be looped into valve boxes for detector connection. Tracer wire shall consist of:
 - 1. 19 AWG tin coated solid copper conductor.
 - 2. Inner HDPE jacket over copper conductor.
 - 3. Outer HDPE jacket.
 - 4. Woven polyester and water blocking polyester yarns between inner and outer HDPE jackets.

2.10 CONCRETE FOR THRUST RESTRAINT, ENCASEMENT AND CRADLES

- A. Concrete: Class A Concrete conforming to Section 1000 of the NCDOT Standard Specifications.
 - 1. Compressive strength of 3,000 psi at 28 days.
 - 2. Air entrained.
 - 3. Water cement ratio of 0.488 with rounded aggregate and 0.532 with angular aggregate.
 - 4. Maximum slump of 3.5 inch for vibrated concrete and 4 inch for non-vibrated concrete.
 - 5. Minimum cement content of 564 pounds per cubic yard for vibrated concrete and 602 pounds per cubic yard for non-vibrated concrete.

2.11 TEMPORARY JUMPER ASSEMBLY

- A. Reduced Pressure (RP) Principle Backflow Preventor Assembly: An approved, properly functioning assembly containing two, independently acting check valves with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The assembly must include properly located test cocks and tightly closing shut-off valves at each end of the assembly.
 - 1. 2-inch minimum for proposed water mains 12-inch and smaller
 - 2. Manufacturer (2-inch)
 - a. Conbraco; Model 40-208-02, AZ
 - b. Febco; Model 825-Y-BV, 825YA-BV
 - c. Watts; 909 M1QT, 009 M1QT
 - 3. Larger diameter assemblies or multiple 2-inch assemblies installed in parallel may be approved for pipe diameters larger than 12-inch.
- B. All backflow prevention assemblies shall be approved by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USCFCCHR), The American Society of Sanitary Engineering (ASSE), conform to AWWA C506, and adhere to applicable ANSI and ASTM standards.

2.12 BEDDING AND COVER MATERIALS

- A. General: Conform to Section 31 23 16.13 – Trenching and Drawings for bedding and backfill around and on top of pipe.

2.13 ACCESSORIES

- A. Steel rods, bolt, lugs and brackets: ASTM A36 or ASTM A307 carbon steel.
- B. Coal tar coating for accessories: Thixotropic coal tar meeting specification MIL-C-18480.

2.14 MECHANICAL COUPLINGS

- A. Mechanical couplings shall be carefully installed in accordance with the manufacturer's recommendations. A space of at least 1/4 inch and not more than 1 inch shall be left between the pipe ends. Pipe and coupling surfaces which contact gaskets shall be clean and free from dirt and other foreign matter during assembly. All assembly bolts shall be uniformly tightened so that the coupling is free from leaks and all parts of the coupling are square and symmetrical with the pipe. Following installation of the coupling, damaged areas of shop coatings on the pipe and coupling shall be repaired to the satisfaction of the Engineer. The interior surfaces of the middle rings shall be prepared for painting in accordance with instructions of the paint manufacturer and shall then be coated with liquid epoxy in accordance with ANSI/AWWA C210. The remaining components shall be cleaned and shop primed with the manufacturer's standard rust-inhibitive primer.

PART 3 EXECUTION

3.1 PREPARATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify existing utility water main size, location, and inverts are as indicated on Drawings.

3.2 EXCAVATION

- A. Excavate pipe trench in accordance with Section 31 23 16.13 for Work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated on Drawings.
- B. Dewater excavations to maintain dry conditions and preserve final grades at bottom of excavation.
- C. Provide sheeting and shoring as required.

- D. Place bedding and backfill material per Section 31 23 16.13 – Trenching and Drawings.

3.3 INSTALLATION – PIPE

- A. Install ductile iron pipe and fittings in accordance with AWWA C600 and manufactures' instructions.
- B. Install PVC pipe in accordance with AWWA C605 and manufactures' instructions.
- C. Handle and assemble pipe in accordance with manufacturer's instructions and as indicated on Drawings.
- D. Steel Rods, Bolt, Lugs, and Brackets: All ferrous metal clamps, rods, bolts, and other components of tapping saddles, reaction anchorages, or joint harness, subject to submergence or contact with earth or other fill material and not encased in concrete, shall be protected from corrosion by two coats of thixotropic coal tar applied in the field to clean, dry metal surfaces. The first coat shall be dry and hard before the second coat is applied.
- E. Water mains shall be buried to a depth below the frost line or to a depth sufficient to provide a minimum of 30 inches of cover, whichever is greater.
- F. Minimum distance of 12 inches shall be maintained between the outside of the water main and the outside of other utilities.
- G. If engineer demonstrates that is impractical to maintain the separation distances, a deviation may be approved on a case-by-case basis if supported by data and alternative construction criteria submitted by the design engineer.
- H. Water Mains and Reclaimed Water Distribution Lines: Water lines shall be located at least 10 feet horizontally from or at least 18 inches above water pipe carrying treated and disinfected wastewater in reclaimed water distribution lines.
- I. Crossings: A water main that crosses a sewer shall be laid a minimum vertical distance of 18 inches from the outside of the water main and the outside of the sewer, either above or below the sewer but, if practicable, the water main shall be located above the sewer. One full length of water pipe shall be located so that both joints will be as far from the sewer as possible.
- J. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs. Use only equipment specifically designed for pipe cutting. The use of chisels or hand saws will not be permitted. Grind edges smooth with beveled end for push-on connections.
- K. Remove scale and dirt on inside and outside before assembly.
- L. Flanged Joints: Not to be used in underground installations except within structures.
- M. Route pipe in straight line. Relay pipe that is out of alignment or grade. Deflections from a straight line or grade shall not exceed the values stipulated in Table 4 or Table 5 of AWWA C600, unless specially designed bells and spigots are provided.

- N. Install pipe with no high points. If unforeseen field conditions arise which necessitate high points, install air release valves as directed by Engineer.
- O. Install pipe to have bearing along entire length of pipe. Excavate bell holes to permit proper joint installation. Do not lay pipe in wet or frozen trench.
- P. Prevent foreign material from entering pipe during placement.
- Q. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- R. Close pipe openings with watertight plugs at the end of each day and during work stoppages.
- S. Install access fittings to permit disinfection of water system performed under Section 33 01 10.58 – Disinfection of Water Utility Piping Systems.
- T. Install underground marking tape continuously 12 inches above pipe line. Prior to final acceptance, Contractor shall perform continuity tests on the conductive tracer to ensure proper installation. All defective areas shall be repaired and the conductive tracer retested.
- U. Establish elevations of buried piping with not less than 3 feet of cover. Measure depth of cover from final surface grade to top of pipe barrel.

3.4 INSTALLATION - VALVES

- A. Install valves in conjunction with pipe installation; set valves plumb.
- B. Provide buried valves with valve boxes installed flush with finished grade.

3.5 INSTALLATION – FIRE HYDRANTS

- A. Install fire hydrants; provide support blocking and drainage gravel; do not block drain hole.
- B. Set hydrants plumb with pumper nozzle facing roadway; set hydrants with centerline of pumper nozzle 18 inches above finished grade and safety flange not more than 6 inches or less than 2 inches above grade.
- C. Paint hydrants in accordance with local color scheme.
- D. After hydrostatic testing, flush hydrants and check for proper drainage.

3.6 INSTALLATION – TAPPING SLEEVES AND VALVES

- A. Install tapping sleeves and valves in accordance with utility company requirements, as indicated on Drawings, and in accordance with manufacturer's instructions.
- B. Tap must be witnessed by Owner's representative.

3.7 CONCRETE THRUST RESTRAINT

- A. Provide valves, tees, bends, caps, plugs, and dead ends with concrete thrust blocks as indicated on Drawings.
- B. Pour concrete thrust blocks against undisturbed earth. Locate thrust blocks at each elbow or change of pipe direction to resist resultant force and so pipe and fitting joints will be accessible for repair.
- C. Do not encase fitting joints and flanges.

3.8 TIED JOINT RESTRAINT

- A. Install tied joint restraint systems in accordance with manufacturer's requirements.

3.9 SERVICE CONNECTIONS

- A. Install service connections in accordance with Section 33 14 17 – Site Water Service Utility Laterals.

3.10 BACKFILLING

- A. Backfill and compact around sides and to top of pipe in accordance with Section 31 23 16.13.
- B. Maintain optimum moisture content of material to attain required compaction density.

3.11 TEMPORARY JUMPER ASSEMBLY

- A. Direction connections to the existing water system, of any size or type, will not be allowed until:
 - 1. Pressure testing is complete;
 - 2. Chlorination is complete in accordance with Section 33 01 10.58
 - 3. New water main has passed all lab tests; and,
 - 4. New water main has been approved for connections and activation by the Engineer and Owner.
- B. Only one temporary jumper assembly connection to the existing water system, of any size or type, will be allowed until after the chlorination is complete and the new water main has passed all lab tests and has been approved for connections by the Engineering and Owner. The temporary jumper connection, for the purposes of filling, flushing, testing, disinfections and sampling shall be installed at an approved location.
- C. The temporary jumper connection shall include a Reduce Pressure (RP) Principle Backflow Preventor as indicated on the Drawings and specified herein. Chlorination of the new water main shall be performed through a tap on the new main side of the RP Backflow Preventer. Temporary jumper connections will also be required where the only connection to the existing water system is with a tapping sleeve and valve. At these locations, the tap will be completed, and on short side extensions, the jumper will be

installed approximately 18-feet from the tapping sleeve and valve; and on long side extensions, the jumper will be installed after crossing the road. At the time of pipe installation, the Contractor will wash the inside of the new pipe, from the tapping sleeve and valve to the jumper, with a hot chlorine solution in accordance with Section 33 01 10.58. Only after the new main has passed all lab tests and has been approved for activation, the jumper can be removed, and a long pattern solid sleeve connection will be completed.

- D. A Certified Tester will test the RP backflow preventer after each installation and prior to each use. If an RP jumper assembly is set-up at a location, and removed and reinstalled at the same location, the RP backflow preventer shall be re-tested upon re-installation. Unless otherwise approved by the Engineer, the Resident Project Representative shall witness the test(s).
- E. All RP jumper assembly piping and fittings shall be flanged, threaded, restrained or quick connect joints. The Contractor will install adequate thrust restraint on the proposed main at the jumper location to resist all thrust caused by the testing and flushing procedures. The Contractor will verify and improve the thrust restraint on the existing main at the jumper location as needed to resist thrust caused by existing pressures and surges, and by the testing and flushing procedures.

3.12 DISINFECTION OF POTABLE WATER PIPING SYSTEM

- A. Flush and disinfect system in accordance with Section 33 01 10.58 – Disinfection of Water Utility Piping Systems.

3.13 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Compaction Testing: Perform soil compaction tests in accordance with Section 31 23 16.13.
- C. Pressure Tests: Perform pressure test on potable water distribution system in accordance with AWWA C600.
- D. Notification: Notify Engineer, utility company and testing agency 72 hours in advance of test and have witness test.
- E. Test Pressure: Not less than 200 psi or 50 psi in excess of maximum static pressure, whichever is greater.
- F. Pressure Test Procedure:
 - 1. After completion of pipeline installation, including backfill, but prior to final connection to existing system, conduct concurrent pressure and leakage tests.
 - 2. Provide 5/8-inch turbine meter and injector pump and associated equipment required to perform leakage and pressure tests.
 - 3. Conduct tests for at least two-hour duration.

4. No pipeline installation will be approved when pressure varies by more than 5 psi at completion of hydrostatic pressure test.
5. Before applying test pressure, completely expel air from section of piping under test. In addition to all air release valves shown on the Drawings, the Contractor shall install, at no additional cost to the Owner, temporary air release valves/corporation cocks at all high points. Provide corporation cocks so air can be expelled as pipeline is filled with water. After air has been expelled, close corporation cocks and apply test pressure. At conclusion of tests, remove corporation cocks and plug resulting piping openings.
6. Slowly bring piping to test pressure and allow system to stabilize prior to conducting leakage test. Do not open or close valves at differential pressures above rated pressure.
7. Examine exposed piping, fittings, valves, hydrants, and joints carefully during pressure test. Repair or replace damage or defective pipe, fittings, valves, hydrants, or joints discovered, following pressure test.
8. No pipeline installation will be approved when leakage is greater than that determined by the following formula:

$L = (SD\sqrt{P}) / 148,000$
L = allowable, in gallons per hour
S = length of pipe tested, in inches
D = nominal diameter of pipe, in inches
P = average test pressure during leakage test, in pounds per square inch (gauge)

9. When leakage exceeds specified acceptable rate, locate source and make repairs. Repeat test until specified leakage requirements are met.

END OF SECTION

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SECTION 33 14 17
SITE WATER SERVICE UTILITY LATERALS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe and fittings for domestic water service connections to buildings.
 - 2. Corporation stop assembly.
 - 3. Water meter setting equipment.
 - 4. Underground pipe markers.
 - 5. Bedding and cover materials.
- B. Related Sections:
 - 1. Section 31 23 16.13 - Trenching: Excavating backfilling and compacting for Work of this section.
 - 2. Section 33 01 10.58 – Disinfection of Water Utility Piping Systems.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. New Water Service at Same Meter Location:
 - 1. Basis of Measurement: By the unit.
 - 2. Basis of Payment: This line item shall include the cost of equipment, materials and labor required for furnishing and installing long side and short side water services at the locations shown on the drawings or as determined by the Engineer. Water service shall include tap, tap saddle, corporation stops, meter box, yoke, box ring and lid, automated meter reader, miscellaneous materials and fittings and reconnection to private service. The work also includes the installation, materials, and labor required for the complete installation of new $\frac{3}{4}$ " service line from the new main to the meter.

All short side services may be open cut if the activity does not require excavation within the road surface other than required by main line installation. All long side services shall be installed by bore; via horizontal directional drill or other method.

The work shall also involve abandonment of existing water service; including, but not limited to cut and plug existing service line, remove existing meter, box and cover and deliver to the Owner, backfill and compaction. Note the existing meter serving the property will be re-installed in the new water service.

1.3 REFERENCES

- A. American Society of Mechanical Engineers:
 - 1. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings.
 - 2. ASME B16.22 - Wrought Copper and Copper Alloy Solder Joint Pressure Fittings.

- B. ASTM International:
 - 1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
 - 2. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.
 - 3. ASTM B88 - Standard Specification for Seamless Copper Water Tube.
 - 4. ASTM C858 - Standard Specification for Underground Precast Concrete Utility Structures.
 - 5. ASTM D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
 - 6. ASTM D2241 - Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
 - 7. ASTM D2466 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
 - 8. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
- C. American Welding Society:
 - 1. AWS A5.8 - Specification for Filler Metals for Brazing and Braze Welding.
- D. American Water Works Association:
 - 1. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
 - 2. AWWA C800 - Underground Service Line Valves and Fittings.
 - 3. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, 1/2 in. through 3 in. for Water Service.
 - 4. AWWA M6 - Water Meters - Selection, Installation, Testing, and Maintenance.
- E. NCDOT Standard Specifications:
 - 1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 DEFINITIONS

- A. Utility Company: Town of Harrisburg

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Provide shop drawings for precast concrete vaults to include detail drawings showing the vault and accessories.
- C. Product Data: Submit data on pipe materials, pipe fittings, corporation stop assemblies, curb stop assemblies, meters, meter setting equipment, service saddles, backflow preventor, and accessories.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of piping mains, curb stops, connections, thrust restraints, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with utility company standards and Sections 1500, 1510, and 1515 of NCDOT Standard Specifications.
- B. Maintain one copy of document on site.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. During loading, transporting, and unloading of materials and products, exercise care to prevent any damage.
- B. Store products and materials off ground and under protective coverings and custody, away from walls and in manner to keep these clean and in good condition until used.
- C. Exercise care in handling precast concrete products to avoid chipping, cracking, and breakage.

PART 2 PRODUCTS

2.1 WATER PIPING AND FITTINGS

- A. Copper Tubing: ASTM B88, Type K, annealed:
 - 1. Fittings: ASME B16.18, cast copper, or ASME B16.22, wrought copper.
 - 2. Joints: Compression connection or AWS A5.8, BCuP silver braze.
- B. Crosslinked Polyethylene Pipe: AWWA C904, ASTM F876, SDR9 copper tube sizes, for 200 psig pressure rating, co-extrude, blue colored ultraviolet shield on exterior with 1-year warranty:
 - 1. Fittings: AWWA C901 molded or fabricated.
 - 2. Joints: Compression
 - 3. Manufactures: Rehau Municipex or approved equal.

2.2 CORPORATION STOP ASSEMBLY

- A. Manufacturers:
 - 1. Ford Meter Box Company.
 - 2. Mueller Company.
 - 3. McDonald Company. Model 4701T.

4. Substitutions: Equal per Section 00 21 13 - Instructions to Bidders.
- B. Corporation Stops:
1. Brass or red brass alloy body conforming to ASTM B62.
 2. Inlet end threaded for tapping according to AWWA C800.
 3. Outlet end suitable for service pipe specified.
- C. Service Saddles: Double strap type, designed to hold pressures in excess pipe working pressure. Manufactures:
1. Rockwell.
 2. McDonald Company.
 3. Mueller Company. Model 262-N-10.
 4. Substitutions: Equal per Section 00 21 13 - Instructions to Bidders.

2.3 METER SETTING EQUIPMENT

- A. Manufacturers:
1. Ford Meter Box Company.
 2. Mueller Company.
 3. McDonald Company. Yoke Bar Model 14-2. Yoke Valve Model 4642-BYT.
 4. Substitutions: Equal per Section 00 21 13 - Instructions to Bidders.
- B. Outside Meter Setting:
1. Meter Yokes: Copper or iron, inlet and outlet horizontal or vertical setting with matching couplings, fittings, and stops.

2.4 WATER METERS

- A. Shall be provided by the Owner.

2.5 METER BOX

- A. See drawings for meter box requirements.

2.6 UNDERGROUND PIPE MARKERS

- A. Plastic Ribbon and Trace Wire Tape: Brightly colored blue continuously printed with "WATER SERVICE" in large letters, minimum 6 inches wide by 4 mils thick, with magnetic detectable conductor manufactured for direct burial service.

2.7 BEDDING AND COVER MATERIALS

- A. Bedding: Clean course aggregate Gradation No. 57 conforming to Sections 1005 and 1006 of the NCDOT Standard Specifications.
- B. Backfill around pipe and above pipe: As specified in Section 31 23 16.13 -Trenching.

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify building service connection and municipal utility water main size, location, and invert are as indicated on Drawings.
- B. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.
- C. Remove scale and dirt on inside and outside before assembly.
- D. Prepare pipe connections to equipment with flanges or unions.

3.2 INSTALLATION - CORPORATION STOP ASSEMBLY

- A. Make connection for each different kind of water main using suitable materials, equipment and methods approved by the Engineer.
- B. Provide service clamps for mains other than of cast iron or ductile iron mains.
- C. Screw corporation stops directly into tapped and threaded iron main at 10 and 2 o'clock position on main's circumference; locate corporation stops at least 12 inches apart longitudinally and staggered.
- D. For plastic pipe water mains, provide full support for service clamp for full circumference of pipe, with minimum 2-inch width of bearing area; exercise care against crushing or causing other damage to water mains at time of tapping or installing service clamp or corporation stop.
- E. Use proper seals or other devices so no leaks are left in water mains at points of tapping; do not backfill and cover service connection until approved by the Engineer.

3.3 EXCAVATION, BEDDING AND BACKFILL

- A. Excavate pipe trench in accordance with Section 31 23 16.13 for Work of this Section.
- B. Place bedding material at trench bottom, level in one continuous layer not exceeding 6-inch loose thickness; compact to 95 percent in accordance with Section 31 23 16.13.
- C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact to 95 percent in accordance with Section 31 23 16.13.
- D. Maintain optimum moisture content of fill material to attain required compaction density.

3.4 INSTALLATION - PIPE AND FITTINGS

- A. Maintain separation of water main from sewer piping in accordance with local code or a minimum of 10 feet horizontal and 18 inches vertical distance.

- B. Group piping with other site piping work whenever practical.
- C. Install pipe to indicated elevation to within tolerance of 5/8 inch.
- D. Route pipe in straight line.
- E. Install pipe to allow for expansion and contraction without stressing pipe or joints.
- F. Install access fittings to permit disinfection of water system performed under Section 33 01 10.58.
- G. Form and place concrete for thrust restraints at each elbow or change of direction of pipe main.
- H. Establish elevations of buried piping with not less than 3 feet of cover.
- I. Install plastic ribbon with trace wire continuous over top of pipe buried 6 inches below subgrade above pipe line; coordinate with Section 31 23 16.13.
- J. Backfill trench in accordance with Section 31 23 16.13.

3.5 INSTALLATION - WATER METERS

- A. Comply with local water company requirements and plumbing codes regarding testing and installation requirements.

3.6 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- A. Flush and disinfect system in accordance with Section 33 01 10.58.

3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Compaction testing for bedding and backfill: Conform to Section 31 23 16.13.
- C. Pressure testing: Perform pressure test on water service connections in accordance with AWWA C600.
- D. Notification: Notify Engineer 72 hours in advance of test and have them witness test.
- E. Test Pressure: Not less than 200 psi or 50 psi in excess of maximum static pressure, whichever is greater.
- F. Procedure:
 - 1. After completion of pipeline installation, but prior to backfill and final connection to existing system, conduct concurrent pressure and leakage tests in accordance with AWWA C600.
 - 2. Provide equipment required to perform leakage and pressure tests.

3. Conduct tests for at least two-hour duration.
4. No pipeline installation will be approved when pressure varies by more than 5 psi at completion of pressure test.
5. Before applying test pressure, completely expel air from section of piping under test. Provide corporation cocks so air can be expelled as pipeline is filled with water. After air has been expelled, close corporation cocks and apply test pressure. At conclusion of tests, remove corporation cocks and plug resulting piping openings.
6. Slowly bring piping to test pressure and allow system to stabilize prior to conducting leakage test. Do not open or close valves at differential pressures above rated pressure.
7. Examine exposed piping, fittings, valves, and joints carefully during pressure test. Repair or replace damage or defective pipe, fittings, valves, hydrants, or joints discovered, following pressure test.
8. No pipeline installation will be approved when leakage is greater than that determined by the following formula:

$L = (SD\sqrt{P})/C$
L = allowable, in gallons per hour
S = length of pipe tested, in feet
D = nominal diameter of pipe, in inches
P = average test pressure during leakage test, in pounds per square inch gauge
C = 148,000

9. When leakage exceeds specified acceptable rate, locate source and make repairs. Repeat test until specified leakage requirements are met.

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SECTION 33 42 13
STORMWATER CULVERTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe culverts.
 - 2. Joints and accessories.
 - 3. Bedding.
 - 4. Slope protection at pipe end.
- B. Related Sections:
 - 1. Section 31 23 16.13 – Trenching: Excavating and backfilling for culvert piping.
 - 2. Section 31 37 00 – Riprap: Erosion protection at culvert ends.

1.2 UNIT PRICE – MEASUREMENT AND PAYMENT

- A. General: Work of this Section will not be measured for payment but is included in the unit cost for various utilities and structures installed. Pipe culverts damaged during construction shall be replaced in-kind at no additional cost to the Owner.

1.3 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO M36 – Corrugated Steel Pipe, Metallic Coated, for Sewers and Drains.
 - 2. AASHTO M190 – Bituminous-Coated Corrugated Metal Culvert Pipe and Pipe Arches.
 - 3. AASHTO M196 – Corrugated Aluminum Pipe for Sewers and Drains.
 - 4. AASHTO M294 - Specification for Corrugated Polyethylene Pipe, 305- to 915-mm (12- to 36-In.) Diameter.
 - 5. AASHTO M294 - Corrugated Polyethylene Pipe
- B. ASTM International:
 - 1. ASTM A929 - Standard Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe.
 - 2. ASTM C14 - Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
 - 3. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
 - 4. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
 - 5. ASTM C506 - Standard Specification for Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe.
 - 6. ASTM C507 - Standard Specification for Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe.
 - 7. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

8. ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 9. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- C. NCDOT Standard Specifications:
1. Standard Specifications for Roads and Structures, latest edition, published by the North Carolina Department of Transportation.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on pipe, fittings and accessories.
- C. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents:
1. Accurately record actual locations of pipe runs, connections, and invert elevations.
 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.
- C. Operation and Maintenance Data: Procedures for submittals.

PART 2 PRODUCTS

2.1 STORM DRAINAGE PIPING

- A. Reinforced Concrete Pipe (RCP): ASTM C76, bell and spigot or tongue and groove ends.
1. Pipe Class: Class III with Wall Type C.
 2. Fittings: Reinforced concrete.
 3. Joints: ASTM C443, rubber compression gasket.
- B. HDPE Corrugated Polyethylene Pipe: AASHTO M294, Type S or Type D.
1. Fittings: PVC conforming to pipe specifications.
 2. Joints: ASTM F477, elastomeric gaskets.
- C. Corrugated Metal Pipe (CMP):
1. Steel Pipe: ASSHTO M36, Gage 16
 2. Aluminum Pipe: AASHTO M196.
 3. Fittings: Corrugated Steel or Aluminum to match pipe.

4. Joints: Corrugated coupling bands, galvanized steel or aluminum to match pipe, minimum 10 inches wide; connected with two neoprene "O" ring gaskets per and two galvanized steel bolts.

2.2 BEDDING AND COVER MATERIALS

- A. General: Conform to Section 31 23 16.13 – Trenching and Drawings for bedding and backfill around and on top of pipe.

2.3 ACCESSORIES

- A. Geotextile Fabric: Non-woven, non-biodegradable conforming to Section 1056 of the NCDOT Standard Specifications for Type 1 Engineering Fabric.
- B. Concrete: Class A Concrete conforming to Section 1000 of the NCDOT Standard Specifications.
 1. Compressive strength of 3,000 psi at 28 days.
 2. Air entrained.
 3. Water cement ratio of 0.488 with rounded aggregate and 0.532 with angular aggregate.
 4. Maximum slump of 3.5 inch for vibrated concrete and 4 inch for non-vibrated concrete.
 5. Minimum cement content of 564 pounds per cubic yard for vibrated concrete and 602 pounds per cubic yard for non-vibrated concrete.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

- A. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.3 EXCAVATION AND BEDDING

- A. Excavate pipe trench in accordance with Section 31 23 16.13.
- B. Excavate to lines and grades shown on Drawings or required to accommodate installation of encasement.
- C. Dewater excavations to maintain dry conditions and preserve final grades at bottom of excavation.

- D. Provide sheeting and shoring in accordance with Section 31 23 16.13.
- E. Place bedding material at trench bottom, level continuous layer not exceeding 8-inch compacted depth; compact to 95 percent per Section 31 23 16.13.
- F. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION – PIPE

- A. Install in accordance with manufactures instructions and as indicated on Drawings.
- B. Install plastic pipe, fittings, and accessories in accordance with ASTM D2321.
- C. Seal joints watertight.
- D. Begin at downstream end and progress upstream.
- E. Keep pipe and fittings clean until work is completed and accepted by Engineer.
- F. Lay bell and spigot pipe with bells upstream.
- G. Repair surface damage to pipe with protective coating with two coats of compatible bituminous paint coating.
- H. Install cover at sides and over top of pipe

3.5 PIPE ENDS

- A. Place fill at pipe ends to match embankment slopes, concrete aprons, adjacent construction, end sections, or end walls as indicated on Drawings.

3.6 ERECTION TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Lay pipe to alignment and slope gradients noted on Drawings; with maximum variation from indicated slope of 1/8 inch in 10 feet.
- C. Maximum Variation from Intended Elevation of Culvert Invert: 1/2 inch.
- D. Maximum Offset of Pipe From Indicated Alignment: 1 inch.
- E. Maximum Variation in Profile of Structure from Intended Position: 1 percent.

3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Request inspection prior to and immediately after placing bedding.
- C. Soil Compaction Testing: In accordance with Section 31 23 16.13.
- D. When tests indicate Work does not meet specified requirements, remove work, replace, and retest.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting installed construction.
- B. Protect pipe and bedding from damage or displacement until backfilling operation is in progress.

END OF SECTION

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TOWN OF HARRISBURG

Agenda Item Details

Title:

To set a public hearing for December 14, 2020 to consider the refunding of up to six of the Town's existing installment loans, the related financing agreement, per N.C.G.S. 160A-20 and adopt a resolution authorizing the filing of an application for approval of a financing agreement authorized by N.C.G.S. 160A-20.

Presenting Personnel:

Brian Lee, Finance Director

Suggested Motion or Action:

Motion to set a public hearing for December 14, 2020 to consider the refunding of six of the Town's existing installment loans, the related financing agreement, per N.C.G.S. 160A-20 and adopt a resolution authorizing the filing of an application for approval of a financing agreement authorized by N.C.G.S. 160A-20.

Description/Background:

Town Council has recently authorized using Revenue bonds as another form of capital financing in the Water and Sewer Fund for its current and projected capital project funding needs.

The Revenue bonds allow the Town to be able to pledge the future net revenues of the water and sewer system as a whole instead of physical water and sewer assets, which are often undesirable pieces of collateral that banks and other lenders are not overly interested in having as security on their debt.

Lenders are typically agreeable to these loans as long as there are other assets, specifically buildings in most cases, that can be pledged alongside the water or sewer lines to help collateralize the loan with more attractive assets.

The Water and Sewer Fund currently has the following debt being considered for refunding:

1. Public Works Facility
2. Pharr Mill Waterlines
3. 2012 Wells
4. Rocky River Waterlines
5. Water/Sewer portion of Town Hall Debt (50%)

The General Fund currently has the following debt being considered for refunding and, most importantly, being used as the extra collateral needed to cover items #2, 3, and 4 above:

1. General Fund portion of Town Hall (50%)
2. Fire Station #3

The analysis of the potential refunding using expected rates shows that the Town will have some interest savings as a result of the refunding, given the current interest rate market, so the refunding is expected to make financial sense alone. The main objective, however, is to deleverage the water and sewer system infrastructure to setup the Town for the most attractive revenue bond position in Spring 2021, without the need to disclose multiple pledged assets throughout the system.

It is important to note that each respective department is still responsible for its debt being refunded as it is merely the collateral supporting the loan that is changing.

With approval tonight to set the public hearing in December, 2020, we will quickly issue an RFP for bank rates on this refunding and bring the actual financial analysis of the refunding back for Council and public consideration during the public hearing.

Recommendation:

Staff recommends approval of this agenda item.

Fiscal Impact:

Financial impacts will be discussed during the public hearing at the December Council meeting.

Attachments:

None