FRANKLIN STREET IMPROVEMENT (CIP T-138)

CITY OF HILLIARD, OHIO

CITY OF HILLIARD
DEPARTMENT OF PUBLIC SERVICE
3800 MUNICIPAL WAY
HILLIARD, OHIO 43026

ALBERT J. IOSUE, PE
DIRECTOR OF PUBLIC SERVICE

BID SUBMITTED BY: _____
(Print or Type Legibly) **COMPANY**

_____
ADDRESS

_____
CITY **STATE** **ZIP**

Phone:_____

Fax:_____

Email:_____

Date of Submission: _____

BIDDING DOCUMENTS SHALL BE SUBMITTED IN THEIR ENTIRETY

Table of Contents
CITY OF HILLIARD, OHIO

Franklin Street Improvement (CIP T-138)

BIDDER'S CHECKLIST

If this checklist is not completed and attached to a bid package, the bid will be disqualified.

This checklist is provided in order to ensure that all bids submitted include required signatures and information. This checklist **must** be copied from the bid book and attached as the cover sheet to the bid book prior to sealing and submitting bid.

BID SUBMITTED BY: _____

ADDRESS: _____

PHONE: _____ **FAX:**_____ **EMAIL:** _____
(e-mail of contact person for bid)

PROJECT NAME: _____ **CIP NUMBER:** _____

DATE OF BID SUBMISSION: _____

Bid documents **must** be submitted in their entirety. Bidders **must** submit the entire bid book to the office of the Director of Public Service, or to the City staff person as identified in the bid notice. **Do not unbind bid book and submit individual pages.** Documents that you must sign or include cannot be submitted separately – they must all be included in a bid book.

The bid submission **must** be clearly marked and submitted in a sealed envelope to the office and person identified in the bid notice. The following items **must** be completed and included in the bid submission in order to qualify as bid. Please respond to each item below with a checkmark in the appropriate column.

1. Addenda received and included with this bid: ____ Yes ____ No

   Indicate number of addenda received: _____

   Addenda(s) are signed by bidder to acknowledge receipt: ____ Yes ____ No

2. Current Certificate of Workers' Compensation is attached to Section 4 of this bid book.

____ Yes ____ No

3. Bid Guaranty and Contract Bond in Section 8 of Contract, Proposal and Standard Documents Section of this bid book, is completed and enclosed: ____ Yes _____ No

   Form of Bid Bond: ____ Surety Company ____ Cashier's Check

   ____ Certified Check ____ Letter of Credit

4. Non-Collusion Affidavit in Section 9(a) of Contract, Proposal and Standard Documents Section of this bid book is signed by bidder and notarized: ____ Yes _____ No

5. Unresolved Finding for Recovery Affidavit in Section 9(b) of Contract, Proposal and Standard Documents Section of this bid book is signed and notarized: ____ Yes _____ No

6. Resources and Experience of Bidder in Section 10 of Contract, Proposal and Standard Documents Section of this bid book is completed and enclosed: _____ Yes _____ No

7. List of Substitutions in Section 11 of Contract, Proposal and Standard Documents Section of this bid book is completed and enclosed: _____ Yes _____ No

8. List of Subcontractors in Section 12 of Contract, Proposal and Standard Documents Section of this bid book is completed and enclosed: _____ Yes _____ No

9. Non-Delinquent Tax Affidavit in Section 13 of Contract, Proposal and Standard Documents Section of this bid book is signed by bidder and notarized: _____ Yes _____ No

10. Bid proposal in Appendix A of this bid book is complete (whether electronic or handwritten), signed, and Federal Tax ID is provided: _____ Yes _____ No

11. I understand that if my company is notified that the City intends to award the contract to it, I <u>will</u> have the following provision, and no other language, included in the Certificate of Liability Insurance that must be provided to the City:

"Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will mail written notice to the certificate holder named to the left according to the policy's requirements."

_____ Yes

12. Section 129.03 of the City's Codified Ordinances establishes a local preference program for the purchase of materials, supplies, equipment and services. If a qualified local company's bid is within five percent of the non-local lowest and best bid, the local company may be awarded the contract if it agrees to match the non-local company's bid. If your business is located within the City's corporate boundaries, you agree to provide the City with permission to view your tax returns filed with the City of Hilliard. Viewing of these records is necessary in order to determine that the business qualifies for the preference under Section 129.03. Only the law department will view the tax returns for these purposes. Check one of the responses below:

_____ Yes, the City of Hilliard's law department has permission to view our company's tax returns filed with the City of Hilliard for the purpose of determining our eligibility for a local preference under Section 129.03 of the City's Codified Ordinances.

_____ Our business is not located in the corporate boundaries of Hilliard and the local preference program does not apply.

13. Documentation is attached to the bid indicating that Bidder is enrolled and is in good standing in the drug-free workplace program of the Bureau of Workers' compensation or a comparable program approved by the Bureau of Workers' Compensation.

_____ Yes _____ No

I certify that the above items were included in the bid package at the time our bid was submitted to the City.

_____
Title of Authorized representative of Company/Bidder

_____
Signature

_____
Print Name Title

_____
Date

NOTICE TO CONTRACTORS

Sealed bids addressed to the Director of Public Service, City of Hilliard, 3800 Municipal Way, Hilliard, Ohio 43026 and endorsed **"Franklin Street Improvement (CIP T-138)"** will be received by the City of Hilliard, Franklin County, until **2:00 P.M**. (Local Time), **Thursday, June 20, 2019,** at which time and place all bids will be publicly opened and read aloud for the following:

Franklin Street Improvement (CIP T-138)

All prospective bidders **must register** with Key Blue Prints, Inc., 195 East Livingston Avenue, Columbus, Ohio 43215 in order to place a bid on this Project. Registration is required to assure all bidders receive any clarification or addenda.

Copies of the Contract Documents, Specifications, and Plans are on file with Key Blue Prints, Inc., 195 East Livingston Avenue, Columbus, Ohio 43215 (plankey@keycompanies.com), where they are available for inspection by prospective bidders. Full Size plans and bid books may be obtained from Key Blue Prints for a non-refundable fee of $75.00. Electronic only plans and bid books may be obtained for a non-refundable fee of $55.00.

The **Franklin Street Improvement (CIP T-138)** (hereinafter referred to as "the Project") consists of full depth replacement of approximately 900 feet of Franklin Street and 425 feet of Columbia Street. Work includes pervious parking bays, sidewalks, curb ramps, curbed roadway, street lighting, and street trees. Utility improvements include storm sewer and water main replacements and sanitary sewer lining.

This project includes one alternate bid that provides for a material substitution for the sanitary sewer lining. Bidders may, but are not required, to bid on the Alternate.

The Engineer's estimated construction cost for the Project is **Two Million Three Hundred Eighty Thousand ($2,380,000).** Award of the contract will be made to the lowest and best bidder.

Final Completion date is September 30, 2020.

Failure to fully and accurately complete the bid documents shall be considered grounds for rejecting the bid. Prices for labor and materials shall be quoted separately. Bids may be withdrawn at any time before the scheduled closing time for receipt of bids, but may not be modified and resubmitted. No bid will be accepted if it exceeds the City Engineer's estimate on the base bid by more than ten percent (10%).

Contractual questions about the project should be submitted in writing to Letty Schamp, P.E., Deputy City Engineer, at lschamp@hilliardohio.gov. Technical questions about the project should be submitted in writing to Jay Boltz, P.E., Woolpert, Inc. at Jay.Boltz@Woolpert.com.

Bidders must comply with the prevailing wage rates on Public Improvements in Franklin County and the City of Hilliard, Ohio as determined by the Ohio Bureau of Employment Services, Wage and Hour Division, (614) 644-2239. Bid security in the amount of 10% of the total bid submitted must be furnished with all bids. If the bid is accepted, a contract must be executed, and a satisfactory contract bond or security furnished, conditioned according to law, in the amount of one hundred percent (100%) of the contract price, within ten (10) days after Notice of Award. Sureties on all bonds must be satisfactory to the City.

Section 129.03 of the City's Codified Ordinances establishes a local preference program for the purchase of materials, supplies, equipment and services. The full ordinance can be found on the City's website www.hilliardohio.gov under City Code.

The City reserves the right to reject any or all bids. An award will be made to the lowest and best bidder on the base bid, taking into consideration such factors as the qualifications, past performance and efficiency of the bidder along with the price of the bid. Informalities in making out the bid may be waived at the option of the City.

Albert J. Iosue, P.E.
Director of Public Service
Hilliard, Ohio

Advertisement Dates – Hilliard Northwest News

Thursday, June 6, 2019
Thursday, June 13, 2019

Bid Opening Date/Time: Thursday, June 20, 2019 at 2:00 p.m. local time
3800 Municipal Way, Hilliard, Ohio 43026

DESCRIPTION OF PROJECT

The **Franklin Street Improvement (CIP T-138)** (hereinafter referred to as "the Project") consists of full depth replacement of approximately 900 feet of Franklin Street and 425 feet of Columbia Street. Work includes pervious parking bays, sidewalks, curb ramps, curbed roadway, street lighting, and street trees. Utility improvements include storm sewer and water main replacements and sanitary sewer lining.

This project includes one alternate bid that provides for a material substitution for the sanitary sewer lining. Bidders may, but are not required, to bid on the Alternate.

The Engineer's estimated construction cost for the Project is **Two Million Three Hundred Eighty Thousand ($2,380,000).** Award of the contract will be made to the lowest and best bidder.

Final Completion date is September 30, 2020.

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The City of Hilliard (hereinafter called the "Owner") invites bids on the forms provided. Bids will be received by the Owner at the office of the Department of Public Service until **2:00 p.m.** local time **Thursday, June 20, 2019**, at which time and place all bids will be publicly opened and read aloud. The envelope containing the bid must be sealed, addressed to the Director of Public Service of the City of Hilliard, 3800 Municipal Way, Hilliard, Ohio 43026 and designated as **Franklin Street Improvement (CIP T-138)**.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid received after the time and date specified shall not be considered. Bids may be withdrawn at any time before the scheduled closing time for receipt of bids, but may not be modified and resubmitted. Modification of bids without withdrawal is addressed in Section 5.

Each bidder, by submission of a bid, waives the requirement under Section 153.12(A) of the Ohio Revised Code that the award and execution of the contract be made within sixty days after the date on which the bids are opened, and alternatively, agrees, by submission of a bid, to extend the time for awarding and executing a contract, and to keep their bid open and unchanged, for a period of ninety days.

2. PREPARATION OF BID

Each bid must be submitted on the forms provided. Bidder shall consult page 56, Appendix A, of the bid book for directions regarding the submission of the bid schedule. The **entire bid book must be submitted**.

Each bid must contain the full name, address, email address, and telephone number of each bidder interested in the same.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, its address and phone number, and the name of the Project for which the bid is submitted. When forwarded by mail, the sealed envelope containing the bid must be in another envelope addressed as specified in Section 1.

All supplementary bid documents included within these Bid Documents must be completed and submitted with the bid, as stated in the Bidder's Checklist that must be completed and submitted with the bid package.

No bid will be accepted if it exceeds the Engineer's cost estimate on the base bid by more than ten percent (10%).

3. SUBSTITUTION OF MATERIALS

Equivalent materials may be substituted for those referred to by brand name in the detailed specifications. The substitutions are to be listed by brand name on the substitution sheet in the proposal. The bidder shall furnish the Owner complete literature and specifications for each proposed equivalent substitution with the bid. Equivalent materials approved for use by the Owner shall be applied per manufacturer's recommendations. It shall be the sole judgment of the Owner as to the acceptability of the proposed substitution.

4. SUBCONTRACTS

The bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must be acceptable to the Owner, and must abide by applicable terms and conditions contained herein. The attached List of Subcontractors must be completed and submitted with the bid. If no subcontractors are contemplated to be used by the bidder, then the form should state "None."

5. BID MODIFICATIONS

Any bidder may modify his bid by written communication at any time prior to the scheduled closing time for receipt of bids, providing such written communication is received by the Owner prior to closing time. The written communication shall not reveal the bid price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened.

6. QUALIFICATION OF BIDDER

The Owner may make such investigations as it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request, including without limitation completion and submission of the attached Resources & Experience of Bidder form. The Owner reserves the right to reject any bid if the information submitted by, or investigation of such bidder, fails to satisfy the Owner that the contractor will be able to timely, satisfactorily and professionally complete the work contemplated therein. Conditional bids will not be accepted.

7. BID SECURITY

Bidders are required to comply with current Ohio Law which provides that bid security shall be in the form of a bond for the ten percent (10%) bid, with a corporate Surety approved by the Owner, or a certified check, cashier's check, or irrevocable letter of credit equal to ten percent (10%) of the amount of the bid. The Bid Guaranty form attached to these Bid Documents should be used.

All certified checks, bonds, etc., shall be made payable to the City of Hilliard, Ohio.

Such cashier's check, certified check or bid bond shall be returned to all except the three lowest bidders within three (3) days after the opening of bids, and the remaining cashier's check, certified check, or bid bond will be returned within ten (10) days after the Owner and

the accepted bidder have executed the Contract, or if no award has been made within 90 (ninety) days of the opening of the bid, upon demand of the bidder at any time thereafter, so long as it has not been notified of the acceptance of its bid.

8. CONTRACT AWARD AND EXECUTION

After the bids are opened and read aloud, they will be compared on the basis of the Bid Amount. The Bid Amount shall be the summation of the products of the approximate quantities shown in the Bid Proposal by the total (sum of labor and material) price. In the event of a discrepancy between the total (sum of labor and material) price and the extensions, the total (sum of labor and material) price shall govern. **Bidders shall complete the extensions and write in the bid amounts in words for each line item.** Failure to write in and complete an extension may result in the bid being rejected. Owner shall also determine any alternate items as stipulated in the Bid Proposal to be performed and they will be included in the above summation. The right is reserved to reject any or all bids, to waive technicalities or to advertise for new bids, if in the judgment of the Owner, its best interests will be served thereby.

The award of the work, if it is awarded, will be made as soon as is reasonably possible after the opening of the bids, to the lowest and best bidder whose proposal complies with all the requirements prescribed. In no case will an award be made until all necessary investigations are made as to the qualification of the bidder to whom it is proposed to award the contract.

The Owner reserves the right to rescind the award of the work at any time before the execution of the Contract by all parties without incurring any liability. If the Contractor changes its position, economically or otherwise, after receiving a verbal or written notice of award and in reliance upon the Owner executing the Contract, the Contractor shall do so solely at its own risk and the Owner will not incur any liability from the Contractor's change of position.

The bidder to whom the work is awarded will be required to execute the Contract and to furnish the required Contract Bond and Certificates of Insurance within ten (10) calendar days from the date when the Notice of Award is communicated in writing to the successful bidder.

A Contract Bond in the amount of 100 percent (100%) of the Contract Price, with a corporate Surety approved by the Owner, will be required for the faithful performance of the Contract. The Contract Bond included herein should be used. The Contract Bond shall remain in effect until the expiration of the one-year guarantee period as assurance of the guarantee herein stipulated.

A bid guaranty, contract bond, payment bond, maintenance bond or any combination thereof executed by a surety not licensed, or a surplus lines company not approved, by the Superintendent of Insurance to execute such a bond in the State of Ohio shall be considered non-responsive and the bid shall be rejected.

9. INSURANCE

(a) Contractor's Liability Insurance. The Contractor shall purchase and maintain:

(i) Such liability and other insurance on an occurrence basis as will protect it and the Owner from claims set forth below which arise out of or result from the Contractor's execution of the work, whether such execution be by itself or by a Subcontractor or by

anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

(A) Claims under Workers' Compensation, occupational sickness or disease, disability benefit and other similar employee benefit acts;

(B) Claims for damages because of bodily injury, disease, illness, death or personal injury, and other claims usually covered by bodily injury liability insurance; and

(C) Claims for damages because of injury to or destruction of property and other claims usually covered by property damage liability insurance.

In order to comply with this requirement, the Contractor shall furnish and attach to each executed set of the Contract Documents, a copy of the Workers' Compensation Certificate showing that the Contractor has paid its Workers' Compensation insurance premium. Renewal certificates shall be furnished as necessary during the life of the Contract.

(ii) A Commercial General Liability policy and Business Automobile Liability policy, separately or combined, issued to the Contractor and protecting it from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any operations under the Contract Documents, whether such operations be by the Contractor or by any Subcontractor under it, in the limits as set forth below. The policies shall be endorsed to provide that the General Aggregate Limit applies separately to each of the insured Contractor's projects.

(A) Contracts in the amounts of $100,000 or less shall require coverage in the amount of not less than $1 million general aggregate and $500,000 per occurrence.

(B) Contracts in excess of $100,000 shall require coverage in the amount of not less than $2 million general aggregate and $1 million per occurrence.

(C) The Business Automobile Liability policy shall cover owned, non-owned and hired vehicles and carry a $1 million coverage amount.

(b) Builder's Risk

Unless otherwise specified in the Contract Documents, the Contractor shall provide and maintain, during the progress of the Work and until the execution of the certificate of completion, a Builder's Risk insurance policy in the amount equal to 100% (one hundred percent) to cover all Work in the course of construction including without limitation falsework, temporary buildings, and structures and materials used in the construction process, stored on or off site, or while in transit. Such insurance shall insure against perils of fire and extended coverage and physical loss or damage including, without limitation, theft, vandalism, malicious mischief, earthquake, tornado, lightning, explosion, breakage of glass, flood, collapse and water damage. It shall also include debris removal, demolition occasioned by enforcement of any applicable legal requirement, and shall cover reasonable compensation for the Owner's services and expenses required to limit further loss and shall include provision to pay the reasonable extra costs of expediting temporary and/or permanent repairs to, or permanent replacement of, damaged property. The policy shall specifically permit and allow for partial occupancy by the Owner prior to acceptance of the Work.

If the Contractor is involved solely in the installation of materials and equipment and not in new building construction, the Contractor shall purchase and maintain sufficient builder's risk insurance coverage in the amount equal to 100% (one hundred percent) of the cost of the materials and equipment.

(c) Umbrella Excess Liability Insurance to extend existing policies to the required limits will be accepted.

(d) Certificates of Insurance acceptable to the Owner and naming the Owner as an additional insured shall be filed with the Owner prior to execution of the Contract. In no event shall any failure of the Owner to demand a copy of the required Certificate of Insurance be construed as a waiver of the obligation of the Contractor to obtain insurance required to be purchased or maintained and naming the City as an additional insured. These certificates shall contain the following provision in the cancellation section by itself, without any other language or limitation: "Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will provide written notice to the certificate holder named to the left according to the policy's requirements."

(e) The Contractor shall maintain all insurance in the required amounts, without interruption, from the date of the execution of the Contract until the date of full completion. Failure to maintain the required insurance during the time specified shall be cause for termination of the Contract.

(f) Insurance policies required to be purchased and maintained by the Contractor may include a reasonable loss deductible, which shall be the responsibility of the Contractor to pay in the event of a loss, regardless whether the Contractor or the Owner, as the additional insured, files a claim.

(g) The prompt repair or reconstruction of the work as a result of an insured loss or damage shall be the Contractor's responsibility and shall be accomplished at no additional cost to the Owner.

10. POWER OF ATTORNEY

Attorneys-in-fact who sign bid bonds and/or contract bonds must file with each bond a certified and effectively dated copy of the power of attorney granting the authority for their signatures.

11. NOTICE TO PROCEED/TIME OF COMPLETION

After award of the Contract, the City will issue to the successful bidder a Notice to Proceed, which notice shall provide written direction to the Contractor as to what work shall be performed. The Bidder must agree to commence work within ten (10) calendar days after the date of the Contract (Date of the Contract is the date of execution by the Owner) and be **and fully complete by September 30, 2020**. The Owner reserves the right to issue a "Limited Notice to Proceed", which notice shall provide written direction to the Contractor as to a portion of the work that may or shall be commenced.

12. CONDITIONS OF WORK

Each bidder must be knowledgeable about the conditions relating to the construction of the Project and the employment of labor therefor. Failure to do so will not relieve a successful bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the contract. Insofar as possible, the Contractor, in carrying out its work, must employ such methods or means as will not cause any interruption of, or interference with, the work of any other contractor.

13. ADDENDA AND INTERPRETATIONS

No oral interpretations of the meaning of the plans, specifications or other bid documents will be made to any bidder.

If any person contemplating submitting a bid for the proposed Project is in doubt as to the true meaning of any part of the Contract Documents, they may submit a written request for an interpretation thereof. Requests regarding technical questions may be submitted to Jay Boltz, P.E., Woolpert, Inc. at Jay.Boltz@Woolpert.com**.** Requests regarding contractual issues and documents may be submitted to Letty Schamp, P.E., Deputy City Engineer, at lschamp@hilliardohio.gov**.** The person submitting the request will be responsible for its prompt delivery. Any interpretation of the Contract Documents will be made only by Addendum duly issued and a copy of such Addendum will be mailed, faxed, emailed, or delivered to each person receiving a set of such Contract Documents. Any such Addenda shall become part of the Contract Documents. The time for opening the bids shall be extended for one week if, within seventy-two (72) hours before the date set for the opening of bids, the Owner mails or otherwise furnishes to prospective bidders a modification of its plans, specifications, or cost estimate for the project. Requests for contract interpretation received within 72 hours prior to the time and date bids are due may be addressed by the City in an addendum at its sole discretion. The Owner will not be responsible for any other explanation or interpretation of the Contract Documents. Documents received after 2:00 PM on Friday will be marked received on the following Monday. Failure of any bidder to receive any such addenda or interpretation shall not relieve such bidder from any obligation under its bid as submitted.

14. LAWS AND REGULATIONS

The bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and shall be deemed to be included in the Contract the same as though actually reproduced herein.

15. OBLIGATION OF BIDDER

At the time of the opening of bids, each bidder will be presumed to have inspected the site and to have become thoroughly familiar with the plans and Contract documents (including all addenda). The failure or omission of any bidder to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to its bid.

16. INCOME TAX

Pursuant to the laws of the City of Hilliard, there will be a tax collected by the City on all salaries, wages, commissions and other compensation earned by residents and non-residents of the City for work done or services performed or rendered in the City; and on the net profits earned on all businesses, professions, corporations or other activities, both resident and non-resident, as the result of work done or services performed or rendered in the City.

The current provisions for this tax are contained in Ordinance No. 18-04 of the City of Hilliard, Ohio and contained in Chapter 183 of the City's Codified Ordinances

Bidders are advised to become knowledgeable of their responsibilities under the aforementioned tax provisions. Information is available by contacting the Hilliard Tax Administrator, Hilliard Municipal Building, and by accessing the City's website at **www.hilliardohio.gov** under the City Code.

If this Project is being undertaken with another municipality, Contractor shall also pay tax to the respective City for work performed in that municipality. Taxes will be collected based upon location of work.

17. CONFLICTS OF INTEREST

No officer, member or employee of the Owner and no member of its governing body, and no other public official of the governing body of the localities in which the Project is situated or being carried out who exercises any functions or responsibility in the review or approval of the undertaking or carrying out of this Project, shall participate in any decision relating to this Contract which affects a personal interest, or have any personal or pecuniary interest, directly or indirectly, in this Contract or the proceeds thereof.

18. OCCUPATIONAL SAFETY AND HEALTH ACT

Special attention of Bidders is also directed to the requirements of O.S.H.A. The successful Contractor will be required to observe all provisions of that Act, which are by reference included in the provisions of these specifications as if actually reproduced herein and shall be responsible for their enforcement.

19. ESTIMATE OF QUANTITIES

The quantities, if so listed in the Bid Schedule, Appendix A, are to be considered as approximate and are to be used for comparison of bids only. Quantities used for final payment will be based on actual used or calculated measurements, whichever is less. All field measurements of quantities used for payment shall be made by the Contractor in the presence of the Engineer or his authorized representative.

20. PAYROLL

The Contractor shall submit, on standard payroll forms, with original signature, a payroll for each week of the work. Before final payment will be made, these forms together with a letter certifying all payrolls have been submitted must be on file with the City.

21. RELEASE OF FINAL PAYMENT

The attention of the Contractor is directed to Section 19.6 and 20.1 of the following section titled “General Conditions.”

Before the final payment will be released, the Contractor shall submit to the City of Hilliard an affidavit attesting under oath that all claims and obligations arising from performance of the work under this Contract have been paid, discharged or waived.

GENERAL CONDITIONS

1. DEFINITIONS

1.1 Wherever used in the Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof.

1.2 ADDENDA – Written or graphic instruments issued prior to the execution of the Contract which modify or interpret the Contract Documents by additions, deletions, clarifications or corrections.

1.3 BID – The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the work to be performed.

1.4 BIDDER – Any person, firm or corporation submitting a bid for the work.

1.5 BONDS – Bid Guaranty and Contract and other instruments of security, furnished by the Contractor and its surety in accordance with the Contract Documents.

1.6 CHANGE ORDER – A written order to the Contractor authorizing an addition, deletion or revision in the work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract price or Contract time based upon the addition, deletion or revision in the work to be performed.

1.7 CONTRACT DOCUMENTS – The Contract, including Notice to Contractors, Information for Bidders, description of Project, bid schedule, bid proposal, Bid Bond, Contract Bond, general conditions, special and detail specifications, plans, and addenda.

1.8 CONTRACT PRICE – The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

1.9 CONTRACT TIME – The number of calendar days stated in the Contract Documents for the completion of work.

1.10 CONTRACTOR – The person, firm, partnership, association or corporation with whom the owner has executed the Contract.

1.11 PLANS – The part of the Contract Documents which show the characteristics and scope of the work to be performed and which have been prepared or approved by the Engineer.

1.12 ENGINEER – The City Engineer of Hilliard, Ohio or its designated Project representative.

1.13 FIELD ORDER – A written order affecting a change in the work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the Engineer to the Contractor during the construction.

1.14 NOTICE OF AWARD – The written notice of the acceptance of the bid from the Owner to the bidder.

1.15 NOTICE TO PROCEED – Written communication issued by the Owner to the Contractor authorizing it to proceed with the work and establishing the date of commencement of the work.

1.16 OWNER – The City of Hilliard, Ohio.

1.17 PROJECT – The subject of the Contract Documents which the Owner has hired Contractor to perform and complete.

1.18 SHOP DRAWINGS – All drawings, diagrams, illustrations, brochures, schedules and other data prepared by the Contractor, a sub-contractor, manufacturer, supplier or distributor, which illustrate how specific portions of the work shall be fabricated or installed.

1.19 SPECIFICATIONS – A part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

1.20 SUB-CONTRACTOR – An individual, firm or corporation having a direct contract with the Contractor or with any other sub-contractor for the performance of a part of the work at the site.

1.21 SPECIAL SPECIFICATION – Modifications to general conditions and supplemental detail specifications.

1.22 SUPPLIERS – Any person, supplier or organization who supplies materials or equipment for the work, including that fabricated to a special design, but who does not perform labor, other than delivery, at the site.

1.23 WORK – All labor necessary to complete the Project and produce the construction required by the contract documents, and all materials and equipment incorporated or to be incorporated in the Project.

1.24 WRITTEN NOTICE – Any notice to any party of the Contract relative to any part of the Contract, in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to such party at its last given address, delivered in person to such party or its authorized representative, faxed to such party or its authorized representative with receipt confirmation; or e-mailed to such party or its authorized representative with receipt confirmation.

2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

2.1 The Contractor may be furnished additional instructions and detail drawings, by the Engineer, as necessary to carry out the work required by the Contract Documents.

2.2 The additional drawings and instruction thus applied will become a part of the Contract Documents. The Contractor shall carry out the work in accordance with the additional detail drawings and instructions.

3. SCHEDULES, REPORTS AND RECORDS

3.1 The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable, as are required by the Contract Documents for the work to be performed.

3.2 Prior to the pre-construction meeting, the Contractor shall submit construction progress schedules showing the order in which the Contractor proposes to carry on the work, including dates at which the Contractor will start the various parts of the work, estimated date of completion of each part and, as applicable, the following:

3.2.1 The dates at which special detail drawings will be required; and

3.2.2 Respective dates for submission of shop drawings, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

3.3 The Contractor shall also submit a schedule of payments that it anticipates to invoice during the course of completing the Project.

4. PLANS AND SPECIFICATIONS

4.1 The intent of the plans and specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the work in accordance with the Contract Documents and all incidental work necessary to complete the Project in an acceptable manner, ready for use, occupancy or operation by the Owner.

4.2 In the event of a conflict between the plans and specifications, the plans shall govern. Figure dimensions on plans shall govern over scale dimensions, and detailed plans shall govern over general plans.

4.3 Discrepancies discovered by Contractor between the plans and specifications and site conditions or any inconsistencies or ambiguities in the plans or specifications shall be immediately reported to the Engineer, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. Work done by the contractor after discovering such discrepancies, inconsistencies or ambiguities and prior to the Engineer's approval or corrections, shall be done at the Contractor's risk and Contractor may have to redo the work at its own expense and without compensation by Owner.

4.4 The plans and specifications prepared for this Project are intended to be complete. Anything called for in the specifications and not shown on the plans or shown on the plans and not called for in the specifications, must be furnished by the Contractor as part of the Project as though appearing in both.

5. SHOP DRAWINGS

5.1 The Contractor shall provide shop drawings as may be necessary for the prosecution of the work as required by the Contract Documents. The Engineer shall promptly review all shop drawings. The Engineer's approval of any shop drawing shall not release the Contractor from responsibility for deviations from the Contract Documents. The approval of any shop drawing which substantially deviates from requirements in the Contract Documents shall be evidenced by a written change order.

5.2 When submitted for the Engineer's review, shop drawings shall bear the Contractor's certification that the Contractor has reviewed, checked and approved the shop drawings and that they are in conformance with the requirements of the Contract Documents.

5.3 Portions of the work requiring a shop drawing or sample submission shall not begin until the shop drawing or submission has been approved by the Engineer. A copy of each approved shop drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

6. MATERIALS, EQUIPMENT, SERVICES, AND FACILITIES

6.1 It is understood that, except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the work within the specified time.

6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for work. Stored materials and equipment to be incorporated in the work shall be located so as to facilitate prompt inspection.

6.3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer. Unless specifically stated otherwise, all materials and equipment incorporated in the work shall be new, unused, and undamaged.

6.4 Materials, supplies and equipment shall be in accordance with samples submitted by the Contractor and approved by the Engineer.

6.5 Materials, supplies or equipment to be incorporated into the work shall not be purchased by the Contractor or the sub-contractor subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

7. INSPECTION AND TESTING

7.1 All materials and equipment used in the construction of the Project shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the Contract Documents.

7.2 The Owner shall provide all inspection and testing services not included as a part of the work and services to be provided by Contractor.

7.3 The Contractor shall provide, at its expense, the necessary testing and inspection services required by the Contract Documents.

7.4 If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any work to specifically be inspected, tested, or approved by someone other than the Contractor, the Contractor will give the Engineer timely notice of readiness. The Contractor will then furnish the Engineer the required certificates of inspection, testing or approval.

7.5 Inspections, tests or approvals by the Engineer or others shall not relieve the Contractor from its obligations to perform the work in accordance with the requirements of the Contract Documents.

7.6 The Owner and its representatives and agents will at all times have access to the work. In addition, authorized representatives and agents of any participating Federal or State agency shall be permitted to inspect all work, materials and other relevant data and records. The

Contractor will provide proper facilities for such access and observation of the work and also for any inspection, or testing thereof.

7.7 No work shall be covered prior to inspection, and approval to do so is required beforehand by the Engineer or its authorized representative. If any work is covered without inspection and without permission to do so, the Contractor, upon request of the Engineer or its authorized representative, shall uncover the work for inspection, at its own expense.

7.8 If the Engineer considers it necessary or advisable that covered work be inspected or tested by others, the Contractor at the Engineer's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Engineer may require, that portion of the work in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such work is defective, the Contractor will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction.

8. SUBSTITUTIONS

8.1 Whenever a material, article or piece of equipment is identified on the plans or specifications by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function may be considered. The Contractor may recommend the substitution of a material, article, or piece of equipment of equal substance and function, for those referred to in the Contract Documents by reference to brand name or catalogue number, and if, in the sole discretion of the Engineer, such material, article, or piece of equipment is of equal substance and function to that specified, the Engineer may approve its substitution and use by the Contractor. Any cost differential shall be deductible from the Contract Price and Contract Documents shall be appropriately modified by change order. The Contractor warrants that if substitutes are approved, no major changes in the function or general design of the Project will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the Contractor without a change in the Contract Price or Contract Time.

8.2 In considering the suitability of substitutes, in addition to equality of substance and function, economy of maintenance and operation, availability of repair parts and duration of life shall be considered. In those instances in which a particular brand or make of material, device or equipment is required to be stated by the Contractor in the bid, the Contractor will be required to provide the item so indicated unless approved by the Engineer, by field order or change order.

9. PATENTS

9.1 The Contractor shall pay all applicable royalties and license fees. The Contractor shall defend all suits or claims for infringement of any patent rights and shall hold and save the Owner harmless from loss on account thereof. If the Contractor has reason to believe that the design, process or product specified is an infringement of a patent, the Contractor shall be responsible for such loss unless the Contractor promptly gives such information to the Engineer.

10. SURVEYS, PERMITS, REGULATIONS

10.1 The Owner shall furnish all boundary surveys and establish all baselines for locating the principal component parts of the work together with a suitable number of bench marks adjacent to the work as shown in the Contract Documents. From the information provided by the Owner, unless otherwise specified in the Contract Documents, the Contractor shall develop and make all detail surveys needed for construction, such as slope stakes, batter boards, stakes for pole locations and other working points, lines, elevations and cut sheets.

10.2 The Contractor shall carefully preserve bench marks, reference points and stakes and, in the case of willful or careless destruction, the Contractor shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

10.3 Permits and licenses of a temporary nature necessary for the prosecution of the work shall be secured and paid for by the Contractor unless otherwise stated in the special specifications. Permits, licenses, and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified. The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, the Contractor shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in section 13, Changes in the Work.

11. PROTECTION OF WORK, PROPERTY, AND PERSONS

11.1 The Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Contractor will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury, or loss to all employees, and other persons who may be affected thereby, all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

11.2 The Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction. The Contractor will erect and maintain, as required by the conditions and progress of the work, all necessary safeguards for safety and protection. The Contractor will notify owners of adjacent utilities when prosecution of the work may affect them. The Contractor will remedy all damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any subcontractor or anyone directly or indirectly employed by them or anyone for whose acts any of them may be liable.

11.3 In emergencies affecting the safety of persons or the work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the engineer or owner, shall act to prevent threatened damage, injury or loss. The Contractor will give the engineer prompt written notice of any significant changes in the work or deviations from the Contract Documents caused thereby, and request that a change order be issued covering the changes and deviations involved, which may be issued upon just determination by the Owner.

11.4 The locations of utilities and structures, both surface and subsurface, are shown on the plans from data available at the time of survey and are not certified by the Owner to be complete or correct. *The exact location and protection of utilities and structures is the responsibility of the Contractor.* During construction, the Contractor shall use diligence in protecting from damage, all existing utilities and structures whether shown on the plans or not. If damage is caused, the Contractor shall be responsible for the repair or restoration of same in accordance with the directions of the Engineer and for any resulting contingent damage, including financial claims

11.5 The Contractor will be held responsible for any and all materials or work to the full amount of payments made thereon, and will be required to make good, at its own cost, any injury or damage which said materials or work may sustain from any source or cause whatsoever, before final acceptance thereof. During periods of wet, freezing or severe winter weather, the Contractor shall provide the necessary drainage, heating facilities and other protection for the work.

If upon notification, the Contractor fails to take positive action to correct the drainage, heating or protection deficiencies within 24 hours, the Owner will do so at the Contractor's expense. The cost of correcting the deficiencies will be deducted from the Contract Price.

12. SUPERVISION BY CONTRACTOR

12.1 The Contractor will supervise and direct the work and will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor will employ

and maintain a qualified supervisor or superintendent who shall have been designated in writing by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present and on the site at all times as required to perform adequate supervision and coordination of the work.

13. CHANGES IN THE WORK

13.1 The Owner may at any time, as the need arises, order changes within the scope of the work without invalidating the Contract. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the work, an equitable adjustment shall be authorized by Change Order.

13.2 The Engineer also may, at any time, by issuing a Field Order, make changes in the details of the work. The Contractor shall proceed with the performance of any changes in the work so ordered by the Engineer unless the Contractor believes that such field order entitles him to change a Contract Price or Contract Time, or both, in which event the Contractor shall give the Engineer written notice thereof within seven (7) days after the receipt of the ordered change. Thereafter, the Contractor shall document the basis for the change in Contract Price or Contract Time within fourteen days (14) days. However, the Contractor shall not execute such changes pending the receipt of an executed Change Order or further written instructions from the Owner.

14. CHANGES IN CONTRACT PRICE

14.1 The Contract Price may be changed only by a Change Order. The value of any work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be determined by one or more of the following methods in the order of precedence listed below:

(a) Unit prices previously approved.

(b) An agreed lump sum.

(c) The actual cost for labor, direct overhead, materials, supplies, equipment and other services necessary to complete the work. In addition, there shall be added an amount to be agreed upon, but not to exceed 15 percent of the actual cost of the work to cover the cost of general overhead and profit.

15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

15.1 The date of beginning and time for completion of the work are essential conditions of the Contract Documents and the work shall be commenced on a date specified in the notice to proceed.

15.2 The Contractor will proceed with the work at a rate of progress which will insure full completion within the Contract Time. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time stated in the Contract for the completion of the work described herein is a reasonable time, taking into consideration the nature of the work, its level of complexity, the average climatic and economic conditions and other factors prevailing in the locality of the work.

15.3 If the Contractor fails to complete the work within the Contract Time, or extension of time granted by the Owner, then the Contractor shall pay to the Owner the amount of liquidated damages as specified in paragraph 15.5 for each calendar day that the Contractor shall be in default after the time stipulated above and for all expenses of engineering and inspection after the date set for completion. The Owner shall have the right to deduct all or any unpaid balance of said liquidated damages and engineering and inspection expenses from any money due the Contractor. The amount still owing, if any, after such deduction, shall be paid on demand by the Contractor or his Surety. Such payment shall not relieve the Contractor or the Surety from any other obligations under the Contract.

15.4 The Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to the following and the Contractor has promptly given written notice of such delay to the Owner or Engineer:

15.4.1 Any preference, priority or allocation order authorized and issued by the Owner which differs from the Contractor's bid.

15.4.2 Unforeseeable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God, or the public enemy, fires, floods, medical epidemics, quarantine restrictions, freight embargoes, and extreme, unforeseeable weather; and

15.4.3 Any delays of sub-contractors occasioned by any of the acts specified in paragraphs 15.4.1 and 15.4.2.

15.5 SCHEDULE OF LIQUIDATED DAMAGES

The Contractor shall complete the work within the time of completion stated in the Information for Bidders and on or before the calendar date specified in the Notice to Proceed, or on or before a later date determined and agreed to in writing by the Owner.

If the Contractor fails to complete the work within the time allowed in the Notice to Proceed or within an extended time granted by the Owner, there shall be for each calendar day that any work shall remain uncompleted after the completion date or extended completion date the sum specified hereinafter deducted from any money due the Contractor, not as a penalty but as liquidated damages.

Original Contract Amount (Total Amount of the Bid)		Amount of Liquidated Damages To Be Deducted for Each Calendar Day Past Date Project Was to be Completed
From More Than	To and Including	Amount
$0	$25,000	$50.00
$25,000	$50,000	$75.00
$50,000	$100,000	$100.00
$100,000	$500,000	$300.00
$500,000	$1,000,000	$400.00
$1,000,000	$2,000,000	$500.00
$2,000,000	$5,000,000	$600.00
$5,000,000	$10,000,000	$800.00
Over $10,000,000……..		$1000.00

Nothing contained in this Paragraph 15.5 shall preclude the Owner's recovery from Contractor of actual damages.

16. **CORRECTION OF WORK**

16.1 The Contractor shall promptly remove from the premises all work rejected by the Engineer for failure to comply with the Contract Documents, whether incorporated in the construction or not, and the Contractor shall promptly replace and re-execute the work in accordance with the Contract Documents and without expense to the Owner and shall bear the expense of making good all work of other contractors destroyed or damaged by such removal and replacement.

16.2 All removal and replacement work shall be done at the Contractor's expense. If the Contractor does not take action to remove such rejected work within ten (10) days after receipt of written notice, the Owner may remove such work and store the materials at the expense of the Contractor.

17. SUBSURFACE CONDITIONS

17.1 The Contractor shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the owner by written notice of:

17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the contract documents; or

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.

17.2 The Owner shall promptly investigate the conditions, and if it is found that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the work, the Owner may agree to an equitable adjustment which would then be reflected in the Contract Documents by a Change Order. Any claim of the Contractor for adjustment hereunder shall only be considered if the Contractor has given the required written notice; provided that the Owner may, if the Contractor determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

18. SUSPENSION OF WORK, TERMINATION, AND DELAY

18.1 The Owner may suspend the work or any portion thereof for a period of not more than ninety (90) days or such further time as agreed upon by the Contractor, by written notice to the Contractor and the Engineer. The notice shall fix the date on which work shall be resumed. The Contractor will resume that work on the date so fixed. The Owner will adjust the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension.

18.2 Without prejudice to any other right or remedy and after giving the Contractor and the surety a minimum of seven (7) calendar days from delivery of written notice, the Owner may terminate the services of the Contractor for any of the following: (a) the Contractor is adjudged bankrupt or insolvent or a general assignment is made for the benefit of the creditors or a trustee or receiver is appointed for the contractor or for any of its property; (b) the Contractor files a petition to take advantage of any debtor's act or to reorganize under the bankruptcy or applicable laws; (c) the Contractor repeatedly fails to supply sufficient skilled workers or suitable materials or equipment; (d) the Contractor fails to make prompt payments to sub-contractors for labor, materials or equipment; (e) the Contractor disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the work; or (f) the Contractor disregards the authority of the Engineer, or otherwise violates any provision of the Contract Documents. In the event that the Owner terminates the services of the Contractor pursuant to this paragraph 18.2, the Owner may thereupon take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon, owned by the Contractor, and finish the work by whatever method the owner deems expedient. In such case the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional services, such excess shall be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor will pay the difference to the Owner. Such costs incurred by the owner will be determined by the Engineer and incorporated in a Change Order.

18.3 Where the Contractor's services have been so terminated by the Owner, said termination shall not affect any right of the Owner against the Contractor then existing or which may thereafter accrue. Any retention of payment of monies by the Owner due the Contractor will not release the Contractor from compliance with the Contract Documents.

18.4 After seven (7) calendar days from delivery of a written notice to the Contractor, the Owner may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Contract. In such case, the Contractor shall be paid for all work executed.

18.5 If, through no act or fault of the Contractor, the work is suspended for a period of more than ninety (90) days by the Owner or under an order of court or other public authority, or the Engineer fails to act on any request for payment within thirty (30) days after it is submitted, or the Owner fails to pay the Contractor substantially the sum approved by the Engineer within thirty (30) days of its approval and presentation, then the Contractor may, after ten (10) calendar days from delivery of a written notice to the Owner and Engineer, terminate the Contract and recover from the Owner payment for all work executed and all expenses sustained. In addition and in lieu of terminating the Contract, if the Engineer has failed to act on a request for payment or if the Owner has failed to make any payment as aforesaid, the Contractor may, upon ten (10) calendar days written notice to the Owner and the Engineer, stop the work until the Contractor has been paid all amounts then due, in which event and upon resumption of the work, written Change Orders shall be issued for adjusting the Contract Price or extending the Contract Time or both to compensate for the costs and delays attributable to the stoppage of the work.

18.6 If the performance of all or any portion of the work is suspended, delayed, or interrupted as a result of a failure of the Owner or Engineer to act within the time specified in the Contract Documents, or if no time is specified, within a reasonable time, an adjustment in the Contract Price or an extension of the Contract Time, or both, shall be made by Change Order to compensate the Contractor for the costs and delays necessarily caused by the failure of the Owner or Engineer.

19. PAYMENTS TO CONTRACTOR

19.1 At least ten (10) days before each progress payment falls due (but not more often than once a month), the Contractor shall submit to the Engineer a partial payment estimate filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by such data as the Engineer may reasonably require. All pay requests shall be submitted along with the completed form for payment located in the bidding documents. If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the Owner as will establish the Owner's title to the material and equipment and protect its interest therein, including applicable insurance. The Engineer will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing to the Contractor that payment is approved and shall present the partial payment estimate to the Owner, or the Engineer will return the partial payment estimate to the Contractor as disapproved, indicating in writing the reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. The Owner will, within thirty (30) days of presentation of an approved partial payment, pay the Contractor a progress payment on the basis of the approved partial payment estimate. The Owner shall retain eight percent (8%) of the amount of each payment until fifty percent (50%) of the work is completed. All labor performed and material incorporated in the work after the job is fifty percent (50%) completed shall be paid for at the rate of one hundred percent (100%) of the amount of additional labor and material furnished and approved and the amount previously retained shall be deposited in an escrow account. The funds in the escrow account are to be paid the Contractor at the same time and in the same manner as specified for payment of the retained amount in paragraph 19.5 of these General Conditions. Payment for material and equipment delivered and not incorporated shall be at the rate of ninety-two percent (92%) of invoice value of such material and equipment. Partial payment to the Contractor for work performed under a lump sum price shall be based on the schedule of quantities and cost submitted as required by paragraph 3.1 of these General Conditions.

19.2 The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.

19.3 Prior to substantial completion, the Owner, with the approval of the Engineer and with the concurrence of the Contractor, may use any completed portions of the work. Such use shall not constitute an acceptance of such portions of the work.

19.4 The Owner shall have the right to enter the premises for the purpose of doing work not covered by the Contract Documents. This provision shall not be construed as relieving the Contractor of the sole responsibility for the care and protection of the work, or the restoration of any damaged work except such as may be caused by agents or employees of the Owner.

19.5 Upon completion and acceptance of the work, the Engineer shall issue a certificate attached to the final payment request that the work has been accepted under the conditions of the Contract Documents. The entire balance found to be due the Contractor, including the retained percentages, but except such sums as may be lawfully retained by the Owner, shall be paid to the Contractor within thirty (30) days of completion and acceptance of the work.

19.6 The Contractor shall indemnify and save the Owner and the Owner's agents harmless from any and all claims growing out of the lawful demands of sub-contractors, laborers, workers, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools and all supplies incurred in the performance of the work. The Contractor shall, at the Owner's request, furnish satisfactory evidence that all obligations and claims of the nature designated above have been paid, discharged, or waived. If the Contractor fails to do so the owner may, after having notified the Contractor, either pay unpaid bills or withhold from the Contractor's unpaid compensation, a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payment to the Contractor shall be resumed, in accordance with the terms of the Contract Documents. In no event shall the provisions of this sentence be construed to impose any obligation upon the Owner to any of the Contractor, its surety, or any third party. In paying any unpaid bills of the Contractor, any payment so made by the Owner shall be considered as a payment made under the Contract Documents by the Owner to the Contractor and the Owner shall not be liable to the Contractor for any such payments made in good faith.

20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

20.1 The acceptance by the Contractor of final payment shall operate as a release to the Owner of all claims and all liability to the Contractor other than claims in stated amounts as may be specifically excepted by the Contractor for all things done or furnished in connection with this work and of others relating to or arising out of this work. Any payment, however, final or otherwise, shall not release the Contractor or his sureties from any obligations under the Contract Documents or the Bonds.

21. CONTRACT SECURITY

21.1 The Contractor shall within ten (10) days after the receipt of the notice of award furnish the Owner with a Contract in a penal sum equal to the amount of the Contract Price, conditioned upon the performance by the Contractor of all undertakings, covenants, terms, conditions and agreements of the Contract Documents, and upon the prompt payment by the Contractor to all persons supplying labor and materials in the prosecution of the work provided by the Contract Documents. Such bond shall be executed by the Contractor and a corporate bonding company licensed to transact such business in the State of Ohio, and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of the Contract Bond shall be borne by the Contractor and not reimbursable under this Contract. If at any time a surety on any such bond is declared bankrupt or loses its right to do business in Ohio or is removed from the list of Surety Companies accepted on Federal Bonds, the Contractor shall, within ten (10) days after notice from the Owner to do so, substitute an acceptable bond(s) in such form and sum and signed by such other surety or sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable bond to the owner.

22. **ASSIGNMENTS**

22.1 Neither the Contractor nor the Owner shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of their right, title or interest therein, or obligations thereunder, without written consent of the other party.

23. **INDEMNIFICATION**

23.1 The Contractor will indemnify and hold harmless the Owner and the Owner's Engineer and their agents and employees, and the City's elected officials and officers, from and against all claims, damages, losses and expenses including attorneys' fees arising out of, or resulting from the performance or non-performance of the work, caused in whole or in part by any act or omission of the Contractor, any sub-contractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable.

23.2 In any and all claims against the Owner or the Engineer, or any of their agents or employees, by any employee of the Contractor, any sub-contractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any sub-contractor under workers compensation acts, disability benefit acts or other employee benefits acts.

24. **SEPARATE CONTRACTS**

24.1 The Owner reserves the right to let other contracts in connection with this Project. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate all work with theirs. If the proper execution or results of any part of the Contractor's work depends upon the work of any other contractor, the Contractor shall inspect and promptly report to the Engineer any defects in such work that render it unsuitable for such proper execution and results.

24.2 The Owner may perform additional work related to the Project, or may let other contracts containing provisions substantially similar to these. The Contractor will afford the other contractors who are parties to such contracts (or the Owner, if performing the additional work), reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate all work with theirs.

24.3 If the performance of additional work by other contractors or the Owner is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to the Contractor prior to starting any such additional work. If the Contractor believes that the performance of such additional work by the work of others involves additional expense or an extension of the Contract Time, a claim may be made through a request for a change order pursuant to paragraph 14 "Changes in Contract Price" in the General Standards.

25. **SUBCONTRACTING**

25.1 The Contractor may utilize the services of specialty sub-contractors on those parts of the work which, under normal contracting practices, are performed by specialty sub-contractors. All sub-contractors must be listed with the bid submitted by the Contractor on the form provided with a description of the type of work they will be performing. The Owner reserves the right to reject any or all proposed sub-contractors listed thereon before the bid is awarded. However, the Owner will give the bidder an opportunity to either (a) withdraw the bid or (b) substitute sub-contractors who are acceptable to the Owner, provided such substitution of sub-contractors does not change the amount of the bid. The Owner will not reject any listed sub-contractor after the Contract award has been made by the Owner.

25.2 The Contractor shall not award work to sub-contractor(s) in excess of forty-nine (49%) percent of the Contract Price.

25.3 The Contractor shall be fully responsible to the Owner for the acts and omissions of its sub-contractor(s), and of persons either directly or indirectly employed by it, as it is for the acts and omissions of persons directly employed by it.

25.4 The Contractor shall cause appropriate provisions to be inserted in all sub-contracts relative to the work to bind sub-contractors to the Contractor by the terms of the Contract documents insofar as applicable to the work of sub-contractors and to give the Contractor the same power as regards to terminating any subcontract that the owner may exercise over the Contractor under any provisions of the Contract Documents.

25.5 Nothing contained in this Contract shall create any contractual relation between any sub-contractor and the Owner.

26. ENGINEER'S AUTHORITY

26.1 The Engineer shall act as the Owner's representative during the construction period. The Engineer shall answer questions which may arise as to quality and acceptability of materials furnished and work performed and shall interpret the intent of the Contract Documents in a fair and unbiased manner. The Engineer will make visits to the site and determine if the work is proceeding in accordance with the Contract Documents.

26.2 The Contractor will be held strictly to the intent of the Contract Documents in regard to the quality of materials, workmanship and execution of the work. Inspections may be made at the factory or fabrication plant of the source of material supply.

26.3 The Engineer will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

26.4 The Engineer shall promptly make decisions relative to interpretation of the Contract Documents.

27. LAND AND RIGHTS-OF-WAY

27.1 Unless stated otherwise in the Contract or Bid Documents, the Owner shall obtain all land and rights-of-way that are necessary for carrying out and for completing the work pursuant to the Contract Documents, unless otherwise mutually agreed.

27.2 The Owner shall provide to the Contractor information which delineates and describes the lands owned and rights-of-way acquired.

27.3 The Contractor shall provide without expense and without liability to the Owner any additional land and access thereto that the Contractor may desire for temporary construction facilities or for storage of materials.

28. MAINTENANCE GUARANTEE

28.1 The Contractor shall guarantee all materials and equipment furnished, and work performed, for a period of one year from the date of final completion. The Contractor warrants and guarantees for a period of one year that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the work resulting from such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments, or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Contract Bond shall remain in full force and effect through the guarantee period.

29. **TAXES**

29.1 The Contractor will pay all sales, consumer, use, income and other similar taxes required by the law of the place where the work is performed.

30. **NIGHT, HOLIDAY, OR SUNDAY WORK**

30.1 No work shall be done on Sundays, national Holidays or before 7:30 a.m. or after 7:30 p.m. on any workday, except in case of emergencies, or when written permission or order is given because work items are of such a nature that they must be performed during these hours. The Director of Public Service shall authorize any work to be undertaken on Sundays, national Holidays or after 7:30 p.m.

31. **CLEANING UP AFTER COMPLETION**

31.1 When the work is completed, all areas disturbed by the contractor's operations shall be cleaned and restored as directed by the Engineer, to a neat and presentable condition.

32. **SANITARY REGULATIONS**

32.1 Suitable sanitary conveniences for the use of persons employed at the Project site, properly screened from the public observation, shall be provided and maintained by the Contractor.

33. **NON-DISCRIMINATION IN EMPLOYMENT**

33.1 During the performance of this Agreement, CONTRACTOR agrees that CONTRACTOR, its sub-consultants, employees and agents, will not discriminate against any employee or applicant for employment because of race, color, creed, sex, disability or military status as defined in Section 4112.01 of the Ohio Revised Code, which employee or applicant for employment is qualified and available to perform the Work to which the employment relates. CONTRACTOR will take affirmative action to ensure that applicants and employees are treated during employment without regard to their race, color, religion, sex, national origin, age, ancestry, disability or military status (as defined in Section 4112.01 of the Ohio Revised Code). Such action will include, but not be limited to the following: employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination, rates of pay or other forms of compensation; and selection for training, including apprenticeship. CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this non-discrimination clause.

34. **REFERENCE STANDARDS**

34.1 Reference to the standards or specifications of any technical society, organization or association, shall mean the latest standard or specification adopted and published sixty (60) days prior to the date of taking bids, unless specifically stated otherwise.

35. **ESTIMATE OF QUANTITIES**

35.1 The quantities listed in the Bid Schedule form are to be considered as approximate and are to be used only for the comparison of bids and used as the basis for computing amounts of security of penal sums of bonds to be furnished. The unit prices are to be tendered expressly for the scheduled quantities as they may be increased or decreased. Payments, except for lump sum contracts and except for lump sum items in unit price contracts, will be made to the Contractor for the actual quantities only of work performed or materials furnished in accordance with the plans and specifications, and it is understood that the scheduled quantities of work to be done

and materials to be furnished may each be increased or decreased without in any way invalidating the unit bid prices.

36. AS-BUILTS

36.1 Unless otherwise specified in the Contract Documents, the Contractor shall submit two (2) sets of “As-Built” plans upon completion of the work. “As-Built” plans shall show any changes to the plans in carefully drawn and lettered details, plans, notes, sketches, and/or dimensions as required to provide a complete and accurate record of the work.

37. DRUG-FREE WORKPLACE

In accordance with Ohio Revised Code Section 153.03, Contractor shall be enrolled and in good standing with the Drug-Free Workplace Program (DFWP) or a similar program approved by the Ohio Bureau of Workers’ Compensation and require the same of any of its subcontractors, and shall provide the Owner with proof thereof.

CONTRACT, PROPOSAL AND STANDARD DOCUMENTS

1. CONTRACT
2. CERTIFICATE OF LAW DIRECTOR
3. CERTIFICATE OF CITY FINANCE DIRECTOR
4 INSURANCES
5. NOTICE OF AWARD
6A. "LIMITED" NOTICE TO PROCEED
6B. "FULL" NOTICE TO PROCEED
7. BID PROPOSAL
8. BID GUARANTY & CONTRACT BOND
8(a) NOTICE OF COMMENCEMENT
8(b) NOTICE TO UTILITIES
9(a). NON-COLLUSION AFFIDAVIT
9(b). UNRESOLVED FINDING FOR RECOVERY AFFIDAVIT
10. RESOURCES AND EXPERIENCE OF BIDDER
11. LIST OF SUBSTITUTIONS
12. LIST OF SUBCONTRACTORS
13. DRUG-FREE WORKPLACE
14. NON-DELINQUENT TAX AFFIDAVIT
15. AFFIDAVIT OF CONTRACTOR PREVAILING WAGE (SAMPLE)
16. APPLICATION FOR PAYMENT
17. APPLICATION FOR SUBSTANTIAL COMPLETION

1. CONTRACT

This contract is made and entered into this _____ day of _____ 2019, by and between the City of Hilliard, Ohio (the "City") and _____ (the "Contractor")

WITNESSETH: That the parties to these presents, each in consideration of the undertakings, promises and agreements on the part of the other herein contained, have undertaken, promised and agreed and do hereby undertake, promise and agree as follows:

ARTICLE 1. The Contractor, in consideration of the sums of money herein specified to be paid by the City to the Contractor, shall and will at its own cost and expense, furnish all labor, materials, tools, equipment, transportation and all other things that may be necessary to furnish and construct the **Franklin Street Improvement (CIP T-138)** (the "Project") in accordance with the specifications and drawings with the Notice to Contractors, Information for Bidders, Special Specifications, Special Provisions (if any), General Conditions, Detailed Drawings and Bonds (collectively, "Bid Documents") attached hereto and made a part of this Contract. All work for the Project is to be fully completed to the satisfaction of the Engineer and to the acceptance of the City on or before the date for completion set forth in the Notice to Proceed and at the prices listed in the Bid Proposal and Bid Schedule, Appendix A of the Bid Documents.

***NOTE:** The date of this agreement will be the date of the signing of the contract by the City. The date will not be filled in by the Contractor when contractor signs the Contract.

Said _____ (Contractor) hereby further agrees to withhold City of Hilliard income taxes due or payable under the provisions of Ordinance No. 18-04 of the City of Hilliard, Ohio, for wages, salaries and commissions paid to its employees and further agrees that any of its subcontractors shall be required to agree to withhold any such City of Hilliard income taxes due under said Ordinance for services performed under this contract located in the City of Hilliard.

ARTICLE II. The City, in consideration of the full and faithful performance by Contractor, agrees that it will pay to said Contractor an amount not to exceed _____ Dollars ($_____) for the prices and sums written into the Bid Schedule, Appendix A of the Bid Documents. Payments are to be made pursuant to the procedure outlined in sections 19 and 20 of the General Standards.

ARTICLE III. All requirements of the Bid Documents are incorporated herein by reference.

IN TESTIMONY WHEREOF, the said parties, each by a duly authorized representative, have hereunto set their hands the day and year first above written.

CITY OF HILLIARD

By:_____
Albert J. Iosue, PE
Director of Public Service

CONTRACTOR:

_____

By:_____

Print _____

Title: _____

2. CERTIFICATE OF CITY LAW DIRECTOR

I hereby approve the form and correctness of the above agreement.

Date: _____, 20_____.

_____
Director of Law

3. CERTIFICATE OF CITY FINANCE DIRECTOR

It is hereby certified that the amount of $_____ required to meet the agreement, obligation, payment or expenditure, for the above, has been lawfully appropriated or authorized or directed for such purpose and is in the Treasury or in the process of collection to the credit of the proper fund and is free from any obligation or certificates now outstanding.

Date: _____, 20_____.

_____
Dave Delande
Director of Finance

Authorizing Appropriation Legislation: Ordinance No. 18-24
Passed: January 28, 2019
Effective: January 28, 2019

Purchase Order No.:

Authorizing Contract Legislation: Resolution No.
Passed:
Effective:

4. ATTACH ALL INSURANCES TO THIS SHEET

Required attachments include Certificate of Liability Insurance (required within ten (10) days of receiving a Notice of Award) and Certificate of Workers' Compensation coverage (due with bid submission).

5. NOTICE OF AWARD

TO: _____

_____

_____

PROJECT: **Franklin Street Improvement (CIP T-138)**

The Owner has considered the bid submitted by you for the above-described Project in response to its Advertisement for Bids dated June 6, 2019, and June 13, 2019, and Information for Bidders.

You are hereby notified that your bid has been accepted.

You are required by the Information for Bidders to execute the Contract and to furnish the required Contract Bond and Certificate of Liability Insurance coverage within ten (10) calendar days from the date of this notice to you.

If you fail to execute the Contract within ten (10) calendar days from the date of this notice, the Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your bid as abandoned. The Owner will be entitled to such other rights as may be allowed by law. You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____, 2019
City of Hilliard, Owner

By_____
Albert J. Iosue, PE
Director of Public Service

ACCEPTANCE OF NOTICE
Receipt of the above Notice of Award is hereby acknowledged:

Company/Contractor Name: _____

By_____
(Name) (Title)

Date: _____, 20___

6A. "LIMITED" NOTICE TO PROCEED

TO: _____

_____

_____

PROJECT: **Franklin Street Improvement (CIP T-138)**

You are hereby notified to commence work in accordance with the Contract dated _____ on or before _____ and you are to complete the work within _____ consecutive calendar days thereafter. The date of completion of all work is therefore _____, 20_____.

This "Limited" Notice to Proceed does not grant permission to Contractor to _____.

City of Hilliard, Owner

By_____

Albert J. Iosue, PE

Director of Public Service

ACCEPTANCE OF NOTICE

Receipt of the above "Limited" Notice to Proceed is hereby acknowledged:

Company/Contractor Name: _____

By_____

(Name) (Title)

Date: _____, 20___

6B. "FULL" NOTICE TO PROCEED

TO: _____

_____

_____

PROJECT: **Franklin Street Improvement (CIP T-138)**

You are hereby notified to commence work in accordance with the Contract dated _____ on or before _____ and you are to complete the work within _____ consecutive calendar days thereafter. The date of completion of all work is therefore _____, 20_____.

City of Hilliard, Owner

By_____

Albert J. Iosue, PE

Director of Public Service

ACCEPTANCE OF NOTICE

Receipt of the above "Full" Notice to Proceed is hereby acknowledged:

Company/Contractor Name: _____

By_____

(Name) (Title)

Date: _____, 20___

7. BID PROPOSAL

To the Director of Public Service of the City of Hilliard, Franklin County, Ohio.

After a careful examination of the Notice to Contractors, Specifications, Plans and Details and all other Contract Documents for the construction of:

PROJECT: Franklin Street Improvement (CIP T-138)

(said specifications, plans and details the same as are on file with the City) and after a careful examination of the site of the proposed work, together with such investigations as are necessary to determine the character and extent of the work, the undersigned does hereby propose and agree to furnish all labor, materials, tools, equipment, transportation and all other things that may be necessary to furnish and construct the said work in full and in strict accordance with the said specifications, plans and details at the following prices, to wit:

Total Dollars in Numbers: $_____ (Base Bid)

Total Dollars in Words:_____ (Base Bid)

Total Dollars in Numbers: $_____ (Alternate Bid)

Total Dollars in Words:_____ (Alternate Bid)

In case a discrepancy exists between the above amount as written in numbers and in words, the amount as written in words shall govern. Reference has been made to the attached Bid Schedule, Appendix A, and this Bid Proposal is made in conformance therewith.

If this proposal is accepted by the City and the undersigned shall fail, within a period of ten (10) days from the Notice of Award, to execute the attached Contract, then the City may, at its option, determine that the undersigned has abandoned its bid, and thereupon this Proposal shall be null and void.

The full names and residences of all persons, parties or corporation interested in the foregoing bid as principals are as follows:

NAME	ADDRESS
_____	_____
_____	_____

Name of Company _____

Signature of Bidder_____

Title _____

Business Address of Bidder _____

_____

_____

Dated at _____ this _____ day of _____

8. BID GUARANTY & CONTRACT BOND

(SECTION 153.571 Ohio Revised Code)
(Not to be filled out if a certified check, cashier's check or letter of credit is submitted)

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

_____,
(Name and Address)

as Principal and _____,
(Name of Surety)

as Surety, are hereby held and firmly bound unto the City of Hilliard, Ohio, as the Owner and Obligee, in the penal sum of the dollar amount of the bid submitted by the Principal to undertake the Project known as**:** **Franklin Street Improvement (CIP T-138)**

The penal sum referred to herein shall be the dollar amount of the Principal's bid to the Obligee, incorporating any additive or deductive alternate proposals made by the Principal on the date referred to above to the Obligee, which are accepted by the Obligee. In no case shall the penal sum exceed the amount of one hundred percent (100%) of the bid, including any alternates which may be accepted. For the payment of the penal sum well and truly be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

Signed this _____ day of _____, 20__, THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that, whereas the above named Principal has submitted a bid for the above referred to Project.

NOW, THEREFORE, if the Obligee accepts the bid of the Principal, and the Principal fails to enter into a proper Contract in accordance with the bid, plans, details, specifications and bills of material; and in the event the Principal pays to the Obligee the difference not to exceed ten percent (10%) of the penalty hereof between the amount specified in the bid and such larger amount for which the Obligee may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the Obligee does not award the Contract to the next lowest bidder and resubmits the Project for bidding, the Principal pays to the Obligee the difference not to exceed ten percent (10%) of the penalty hereof between the amount specified in the bid, or the costs, in connection with the resubmission, of printing new contract documents, required advertising and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect; if the Obligee accepts the bid of the Principal and the Principal, within ten (10) days after the awarding of the Contract, enters into a proper Contract in accordance with the bid, plans, details, specifications, and bills of material, which said Contract is made a part of this Bid Guaranty the same as though set forth herein;

NOW ALSO, if the said _____ shall well and faithfully do and perform the things agreed by _____ to be done and performed according to the terms of said Contract; and shall pay all lawful claims of subcontractors, materialmen and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said

Contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the Obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being understood and agreed that the liability of the Surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said Surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of the said Contract or in or to the plans and specifications therefore shall in any wise affect the obligations of said Surety or its bond, and it does hereby waive notice of any such modifications, omissions or additions to the terms of the Contract or in or to the plans or specifications thereto.

FURTHER, it is expressly understood and agreed that this bond shall remain in full force and effect and continue as a guarantee of workmanship and materials for a period of one (1) year after completion of the Contract and final acceptance of the completed work by the Obligee.

(continues on next page)

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and such of them as are officers of corporations have signed under proper authority from the corporation, the day and year first set forth above.

PRINCIPAL:

By_____

Its_____

SURETY:

By_____

Its_____

The foregoing is approved by:

CITY OF HILLIARD

By_____
Director of Public Service

By_____
Director of Finance

Approved as to form:

_____
Director of Law

IMPORTANT: Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and must not exceed the underwriting limitation. Surety companies and their agents or attorneys-in-fact must be authorized to transact business in the State of Ohio and shall furnish proof of such authorization in the Bid.

8(a) NOTICE OF COMMENCEMENT

NOTICE OF COMMENCEMENT FOR PUBLIC IMPROVEMENT

O.R.C. 1311.252

State of Ohio }
}ss:
County of Franklin }

Notice is hereby given by Clyde R. Seidle, P.E., being first duly cautioned and sworn, the Director of Public Service of the City of Hilliard, of the commencement of a public improvement as follows:

(1) The project name, location, and a number used by the City of Hilliard to identify the public improvement is:

Franklin Street Improvement (CIP T-138)

(2) The name and address of the public authority is:

City of Hilliard
3800 Municipal Way
Hilliard, Ohio 43026

(3) The name, address, and trade of the principal contractor on the public improvement is as follows:

_____
_____
_____
_____

(4) The date the public authority first executed a contract with a principal contractor for the public improvement was _____, 20____.

(5) The name and address of the surety for the principal contractor is:

_____
_____
_____
_____

(continues on following page)

(6) The name and address of the representative of the City of Hilliard upon whom service shall be made for the purposes of serving an affidavit pursuant to Section 1311.26 of the Ohio Revised Code is:

City of Hilliard
Director of Law
3800 Municipal Way
Hilliard, Ohio 43026
(614) 876-7361, ext. 739

Signed:

_____
Albert J. Iosue, P.E.
Director of Public Service
City of Hilliard

Approved as to form:

_____
Director of Law
City of Hilliard

State of Ohio }
}ss:
County of Franklin }

The foregoing instrument was acknowledged before me this _____ day of _____, 20____ by _____, Director of Public Service for the City of Hilliard, Ohio.

_____
Notary Public

8(B) NOTICE TO UTILITIES

_____, 20_____

_____ (Utility)
_____
_____

Re: Notification of Public Improvement Project

To Whom it May Concern:

This letter serves as the 10 day notice to utilities, as required per Ohio Revised Code (ORC 153.64). You are hereby notified of the following public improvement project:

Franklin Street Improvement (CIP T-138)

This project was awarded to _____ (Contractor). Contact information for Contractor is as follows:

Contractor_____
Contact Name _____
Address/Street _____
City, State ZIP _____
Phone _____
Fax _____
Mobile _____
Email _____

Construction is expected to begin on _____, 20____. There is a pre-construction conference scheduled for the above-mentioned project on _____, 20____ at _____ (time) at _____ (location). If any of your installations or facilities are affected by this improvement, a representative of your division or organization is invited to attend. Your cooperation in this matter is greatly appreciated.

Sincerely,

_____
City Project Manager
City of Hilliard

Cc: Albert J. Iosue, PE, Director of Public Service, City of Hilliard
Contractor
File

9(a) NON-COLLUSION AFFIDAVIT

STATE OF OHIO

COUNTY OF FRANKLIN

_____, being first duly sworn, deposes and says that he/she is the

_____
(Sole Owner, Partner, President, Secretary, etc.)

of _____ (Bidder)

the party making the foregoing Proposal or Bid, that such Bid is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that such Bid is genuine and not collusive or sham; that said Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that said Bidder has not in any manner, directly or indirectly, sought by agreement, communication or conference with anyone to fix the Bid price of said Bidder or of any other bidder, or to fix any overhead, profit, or cost element of such Bid price, or of that of any other Bidder, or to secure any advantage against the Owner awarding the Contract or anyone interested in the proposed contract; that all statements contained in such Bid are true; and, further, that said Bidder has not, directly or indirectly, submitted its Bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid and will not pay any fee in connection therewith, to any corporation, partnership, company, association, organization, Bid depository or to any member or agent thereof, or to any other individual except to such person or persons as have a partnership or the financial interest with said Bidder in its general business.

Signed:

By_____

Its_____

Sworn to and subscribed before me this _____ day of_____, 20____.

_____
Notary Public

9(b). UNRESOLVED FINDING FOR RECOVERY AFFIDAVIT

One of the affidavits below must be completed and included in the bid documents.
One.

STATE OF _____
) ss
COUNTY OF _____

The undersigned, being first duly sworn, is the _____ (title and office) of _____ (company), and states that, upon inspection of all pertinent records, that the Auditor of the State of Ohio has not issued a finding for recovery against said company and which recovery is unresolved, pursuant to Section 9.24 of the Ohio Revised Code.

_____
Affiant

Sworn to and subscribed before me this ____ day of _____, 20___.

_____
Notary Public

Two.

STATE OF _____
) ss
COUNTY OF _____

The undersigned, being first duly sworn, is the _____ (title and office) of _____ (company), and states that the Auditor of the State of Ohio has issued a finding of recovery against the company, but, that under Section 9.24, said recovery is not unresolved pursuant to one or more of the following factors (initial those that apply):

_____ The money identified in the finding for recovery is paid in full to the state agency or political subdivision to whom the money was owed;
_____ The debtor has entered into a repayment plan that is approved by the attorney general and the state agency or political subdivision to whom the money identified in the finding for recovery is owed.
_____ The attorney general has waived a repayment plan for good cause shown.
_____ The debtor and state agency or political subdivision to whom the money identified in the finding for recovery is owed have agreed to a payment plan established through an enforceable settlement agreement.
_____ The state agency or political subdivision desiring to enter into the contract with a debtor certifies, and the attorney general concurs, that all of the following are true:

1. Essential services the state agency or political subdivision is seeking to obtain from the debtor cannot be provided by any other person besides the debtor;
2. Awarding a contract to the debtor for the essential services described in (1) above is in the best interest of the state;
3. Good faith efforts have been made to collect the money identified in the finding of recovery.

_____ The debtor has commenced an action to contest the finding for recovery and a final determination on the action has not yet been reached.

_____
Affiant

Sworn to and subscribed before me this ____ day of _____, 20___.

_____
Notary Public

10. RESOURCES & EXPERIENCE OF BIDDER

This form must be completed and be responsive to the information requested.

The Bidder, in order to secure consideration of this proposal, will hereby submit a statement detailing work performed similar to the Project proposed hereunder.

Bidder will further mention the larger items of its equipment and organization that are available to complete the Project.

Bidder shall submit evidence of its financial ability to handle the work.

Attach additional pages as needed.

11. LIST OF SUBSTITUTIONS

In the space below, the Bidder **shall** list all proposed Substitutions and additional information as required for approval by the Owner.

12. LIST OF SUBCONTRACTORS

In the space below, the Bidder **shall** list all proposed Subcontractors and their addresses for approval by the Owner. The Bidder shall also describe that portion of the work they propose to subcontract to each Subcontractor listed.

Attach additional sheets as required.

NAME	ADDRESS	DESCRIPTION OF WORK TO BE PERFORMED

13. DRUG-FREE WORKPLACE DOCUMENTS

Attach all documentation indicating that Contractor is enrolled and in good standing with the Drug-Free Workplace Program or a similar program approved by the Ohio Bureau of Workers' Compensation.

14. NON-DELINQUENT TAX AFFIDAVIT

State of)
) ss
County of)

The undersigned being first duly sworn does say that to the best of his/her knowledge_____ has not been charged at the time this bid was submitted with any delinquent personal or real property tax on the general tax list of personal and real property of any county within this state nor to the best of his/her knowledge has _____ been charged with delinquent personal or real property taxes on any such tax list except as indicated below (if none so state).

Further, Affiant sayth naught.

_____

Sworn to before me and subscribed in my presence this ____ day of _____, 20____.

_____
Notary Public

_____
My Commission Expires

15. AFFIDAVIT OF CONTRACTOR OR SUB-CONTRACTOR

PREVAILING WAGES

I, _____,

(Name of person signing affidavit) (Title)

of the _____ do hereby certify that the wages paid to all employees for the full number of hours worked in connection with the Contract for the _____ **(Project)** during the following period from _____ to _____ is in accordance with the prevailing wage prescribed by the Contract Documents.

I further certify that no rebates or deductions for any wages due any person have been directly or indirectly made other than those provided by law.

_____
(Signature of Officer or Agent)

Sworn to and subscribed in my presence this _____ day of _____, 20___.

_____
(Notary Public)

The above affidavit must be executed and sworn to by the officer or agent or the Contractor of Subcontractor who supervises the payment of employees, before the owner will release the surety and/or make final payment due under the terms of the Contract.

16. City of Hilliard
Application for Payment

Franklin Street Improvement (CIP T-138)

Contractor _____

Pay Request No. _____ Date_____

Partial ( ) Final ( )

Total Original Contract	$
Total Change Orders	$
TOTAL CONTRACT TO DATE	**$**
WORK Value Completed to Date (per attached schedule of values)	$
Retainage (8% of value until 4% total contract value)	$
Total Due to date	$
Less Previous Payments	$
TOTAL DUE THIS ESTIMATE	**$**

Contractor's Certification

The undersigned contractor certifies that to the best of their knowledge, information, and belief the WORK covered by this APPLICATION FOR PAYMENT has been completed in accordance with the CONTRACT DOCUMENTS.

BY_____DATE_____

TITLE_____

Sworn and subscribed before me this _____ day of _____.

Notary Public_____

My Commission Expires _____

City of Hilliard Approvals

_____ _____

Construction Project Manager Date

_____ _____

City Project Manager Date

_____ _____

Finance Department Date

Purchase Order No: _____

17. City of Hilliard Application for Substantial Completion

PROJECT: Franklin Street Improvement (CIP T-138)

Contractor:_____

Date: _____

Substantial Completion has been achieved for: ____ Entire Project ____ The following:

_____.

Approved By City of Hilliard Engineer ___ YES ____ NO Date:_____

The Date of Substantial Completion of the WORK covered by this certificate is _____.

"Substantial Completion" refers to designated work being sufficiently complete, in accordance with the contract documents, such that the owner may occupy and utilize the work for its intended purpose without disruption of significant interference by the Contractor in completing or correcting any remaining portions of the work.

Any items in the work not completed by the date of this document shall be officially accepted as complete at the time of final payment. A one-year warranty on those items shall be in effect from the date of final payment.

Owner will provide the contractor with a Punch List of items to be completed or corrected prior to the Owner's issuing of the final payment. The Punch List does not alter the Contractor's responsibility to complete or correct all work in full compliance with the contract documents.

APPENDIX A
BID SCHEDULE

The Bid Schedule consists of 169 items and one alternate material substitution. The Contractor shall submit a fully completed bid schedule in one of two ways as described below.

Option A: Traditional (Paper) Bid Schedule

The traditional bid schedule attached herein is 30 pages and is required to be filled out in its entirety, either typed or handwritten, including the total unit cost for each bid item in words. The bidder shall sign pages 29 & 30 (if bidding on the alternate bid).

Option B: Electronic Bid Schedule

The electronic bid schedule is a six-page Excel spreadsheet and available for download. **Bidders are permitted and encouraged to submit the bid schedule electronically (as an Excel spreadsheet), via USB or CD with submission of the bid documents**. If provided electronically, bidders **do not** have to fill out pages 1-28 of the traditional bid schedule by hand. Rather, the bidder shall print out the completed 6-page electronic bid schedule form for official record of unit costs and attach to this appendix. The bidder shall sign pages 29 & 30 (if bidding on alternate bid) and include those with their submission. Bidders will note that the Excel spreadsheet is unprotected and contains formulas to sum all values entered to assist the bidders in preparation of their bid; bidders are responsible for accuracy of bid items, quantities, and formulas in their bid submittal.

Whether provided electronically or by hand, prices for labor and materials shall be quoted separately.

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
		ROADWAY						
1	201	CLEARING AND GRUBBING	1	LUMP				
			TOTAL UNIT PRICE IN WORDS					
2	201	TREE REMOVED, 18" SIZE	8	EA				
			TOTAL UNIT PRICE IN WORDS					
3	201	TREE REMOVED, 30" SIZE	5	EA				
			TOTAL UNIT PRICE IN WORDS					
4	201	TREE REMOVED, 48" SIZE	3	EA				
			TOTAL UNIT PRICE IN WORDS					
5	202	PAVEMENT REMOVED	5,286	SY				
			TOTAL UNIT PRICE IN WORDS					
6	202	WALK REMOVED	2,631	SF				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
7	202	BRICK WALK REMOVED	197	SF				
			TOTAL UNIT PRICE IN WORDS					
8	202	CURB REMOVED	379	FT				
			TOTAL UNIT PRICE IN WORDS					
9	202	FENCE REMOVED	41	FT				
			TOTAL UNIT PRICE IN WORDS					
10	202	RAILROAD TIMBERS REMOVED, AS PER PLAN	37	FT				
			TOTAL UNIT PRICE IN WORDS					
11	202	PIPE REMOVED	2,137	FT				
			TOTAL UNIT PRICE IN WORDS					
12	202	CATCH BASIN OR INLET REMOVED	1	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
13	202	STEP REMOVED	4	LUMP				
			TOTAL UNIT PRICE IN WORDS					
14	202	BRICK PAVERS TO BE REMOVED AND RELOCATED	109	SF				
			TOTAL UNIT PRICE IN WORDS					
15	202	REMOVAL MISC: LANDSCAPE TIMBERS	2	EA				
			TOTAL UNIT PRICE IN WORDS					
16	202	MANHOLE/INLET, ADJUSTED TO GRADE (STORM)	5	EA				
			TOTAL UNIT PRICE IN WORDS					
17	202	MANHOLE REMOVED	6	EA				
			TOTAL UNIT PRICE IN WORDS					
18	202	MANHOLE ABANDONED	1	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
19	202	CATCH BASIN OR INLET ABANDONED	1	EA				
			TOTAL UNIT PRICE IN WORDS					
20	203	EXCAVATION	4,097	CY				
			TOTAL UNIT PRICE IN WORDS					
21	203	EMBANKMENT	63	CY				
			TOTAL UNIT PRICE IN WORDS					
22	204	EXCAVATION OF SUBGRADE	1,169	CY				
			TOTAL UNIT PRICE IN WORDS					
23	204	GRANULAR MATERIAL, TYPE B OR C	1,169	CY				
			TOTAL UNIT PRICE IN WORDS					
24	204	GEOTEXTILE FABRIC, 712.09, TYPE D	3,745	SY				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
25	204	PROOF ROLLING	2	HR				
			TOTAL UNIT PRICE IN WORDS					
26	204	SUBGRADE COMPACTION	7,144	SY				
			TOTAL UNIT PRICE IN WORDS					
27	608	4" CONCRETE WALK	11,186	SF				
			TOTAL UNIT PRICE IN WORDS					
28	608	CURB RAMP, TYPE D	16	EA				
			TOTAL UNIT PRICE IN WORDS					
29	204	CURB RAMP, TYPE C MODIFIED	1	EA				
			TOTAL UNIT PRICE IN WORDS					
30	204	CURB RAMP, TYPE C	2	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
31	204	DETECTABLE WARNING, TYPE E	187	SF				
			TOTAL UNIT PRICE IN WORDS					
32	604	CONCRETE STEPS	65	FT				
			TOTAL UNIT PRICE IN WORDS					
33	SPECIAL	MAILBOX, REMOVE AND RESET, AS PER PLAN	1	EA				
			TOTAL UNIT PRICE IN WORDS					
34	SPECIAL	CURB WALL, TYPE A	159	FT				
			TOTAL UNIT PRICE IN WORDS					
EROSION CONTROL								
35	207	PERIMETER FILTER FABRIC FENCE	491	FT				
			TOTAL UNIT PRICE IN WORDS					
36	207	INLET PROTECTION	24	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
37	659	SEEDING AND MULCHING, AS PER PLAN	2,293	SY				
			TOTAL UNIT PRICE IN WORDS					
38	659	TOPSOIL	255	CY				
			TOTAL UNIT PRICE IN WORDS					
39	659	SOIL ANALYSIS TEST	2	EA				
			TOTAL UNIT PRICE IN WORDS					
40	659	COMMERCIAL FERTILIZER, AS PER PLAN	0.32	TON				
			TOTAL UNIT PRICE IN WORDS					
41	659	WATER	13	MGAL				
			TOTAL UNIT PRICE IN WORDS					
42	659	INTER SEEDING	115	SY				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
43	659	LIME	0.47	ACRE				
			TOTAL UNIT PRICE IN WORDS					
44	659	REPAIR SEEDING AND MULCHING	115	SY				
			TOTAL UNIT PRICE IN WORDS					
		DRAINAGE						
45	901	8" SANITARY PIPE, WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR MATERIAL	10	FT				
			TOTAL UNIT PRICE IN WORDS					
46	901	10" STORM PIPE, 720.08, WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR MATERIAL	50	FT				
			TOTAL UNIT PRICE IN WORDS					
47	901	12" STORM PIPE, WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR MATERIAL	376	FT				
			TOTAL UNIT PRICE IN WORDS					
48	901	15" STORM PIPE, WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR MATERIAL	38	FT				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
49	901	18" STORM PIPE, WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR MATERIAL	392	FT				
			TOTAL UNIT PRICE IN WORDS					
50	901	24" STORM PIPE, WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR MATERIAL	478	FT				
			TOTAL UNIT PRICE IN WORDS					
51	901	36" STORM PIPE, WITH TYPE 1 BEDDING, WITH ITEM 912 COMPACTED GRANULAR MATERIAL	50	FT				
			TOTAL UNIT PRICE IN WORDS					
52	603	3" CONDUIT, TYPE E, 720.08 (PVC)	507	FT				
			TOTAL UNIT PRICE IN WORDS					
53	604	CURB INLET, AS PER PLAN	14	EA				
			TOTAL UNIT PRICE IN WORDS					
54	604	CATCH BASIN (AA-S133A)	2	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
55	604	MANHOLE, TYPE C (AA-S102) W/ AA-S112	14	EA				
			TOTAL UNIT PRICE IN WORDS					
56	604	DOUBLE CURB INLET (AA-S125B) W/ AA-S128	1	EA				
			TOTAL UNIT PRICE IN WORDS					
57	604	VALVE BOX, ADJUSTED TO GRADE	1	EA				
			TOTAL UNIT PRICE IN WORDS					
58	604	CATCH BASIN, ADJUSTED TO GRADE	1	EA				
			TOTAL UNIT PRICE IN WORDS					
59	604	MANHOLE, ADJUSTED TO GRADE, AS PER PLAN	6	EA				
			TOTAL UNIT PRICE IN WORDS					
60	604	INLET (AA-S130)	1	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
61	604	INLET (AA-S121) W/ AA-S142	1	EA				
			TOTAL UNIT PRICE IN WORDS					
62	604	MANHOLE, RECONSTRUCTED TO GRADE	1	EA				
			TOTAL UNIT PRICE IN WORDS					
63	605	4" PIPE UNDERDRAINS	962	FT				
			TOTAL UNIT PRICE IN WORDS					
64	605	4" PIPE UNDERDRAINS, 720.07	1,493	FT				
			TOTAL UNIT PRICE IN WORDS					
PAVEMENT								
65	254	1.5" PAVEMENT PLANING, ASPHALT CONCRETE	124	SY				
			TOTAL UNIT PRICE IN WORDS					
66	259	PERMANENT PAVEMENT, TYPE I	10	CY				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
67	301	4" ASPHALT CONCRETE BASE	373	CY				
			TOTAL UNIT PRICE IN WORDS					
68	304	6" AGGREGATE BASE	584	CY				
			TOTAL UNIT PRICE IN WORDS					
69	304	8" AGGREGATE BASE	18	CY				
			TOTAL UNIT PRICE IN WORDS					
70	407	TACK COAT, AS PER PLAN	431	GAL				
			TOTAL UNIT PRICE IN WORDS					
71	423	CRACK SEALING, TYPE 1	6	SY				
			TOTAL UNIT PRICE IN WORDS					
72	441	1.25" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	3	CY				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
73	441	2" ASPHALT CONCRETE SURFACE COURSE, TYPE 1, (448), PG64-22	8	CY				
			TOTAL UNIT PRICE IN WORDS					
74	441	1.75" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2, (448)	4	CY				
			TOTAL UNIT PRICE IN WORDS					
75	448	1.5" ASPHALT CONCRETE SURFACE COURSE, (MEDIUM TRAFFIC), PG 64-22	152	CY				
			TOTAL UNIT PRICE IN WORDS					
76	448	2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, (MEDIUM TRAFFIC), PG64-22	233	CY				
			TOTAL UNIT PRICE IN WORDS					
77	448	VAR. ASPHALT CONCRETE, INTERMEDIATE COURSE (MEDIUM TRAFFIC), PG64-22	76	CY				
			TOTAL UNIT PRICE IN WORDS					
78	452	6" NON-REINFORCED CONCRETE PAVEMENT	323	SY				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
79	452	7" NON-REINFORCED CONCRETE PAVEMENT	116	SY				
			TOTAL UNIT PRICE IN WORDS					
80	452	8" NON-REINFORCED CONCRETE PAVEMENT	172	SY				
			TOTAL UNIT PRICE IN WORDS					
81	452	12" NON-REINFORCED CONCRETE BAND	393	SY				
			TOTAL UNIT PRICE IN WORDS					
82	609	CURB, STRAIGHT 18"	2,837	FT				
			TOTAL UNIT PRICE IN WORDS					
83	1525	PERMEABLE PAVEMENT CONCRETE EDGE RESTRAINT	1,475	LF				
			TOTAL UNIT PRICE IN WORDS					
84	1525	PERMEABLE PAVER ROADWAY, AS PER PLAN	1,107	SY				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
85	1525	AGGREGATE BASE, #57 STONE (T=4")	317	CY				
			TOTAL UNIT PRICE IN WORDS					
86	SPECIAL	AGGREGATE BASE, NO. 2 OR 4 STONE	1,772	CY				
			TOTAL UNIT PRICE IN WORDS					
87	SPECIAL	BRICK PAVERS	90	SF				
			TOTAL UNIT PRICE IN WORDS					
88	SPECIAL	BRICK PAVERS INCLUDING CONCRETE BASE	117	SF				
			TOTAL UNIT PRICE IN WORDS					
89	SPECIAL	1" SAND/CEMENT LEVELING COURSE	1	CY				
			TOTAL UNIT PRICE IN WORDS					
WATER								
90	625	CONDUIT 2", 725.051 SCHEDULE 80, AS PER PLAN	144	LF				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
91	801	2" WATER PIPE AND FITTINGS	60	LF				
			TOTAL UNIT PRICE IN WORDS					
92	801	3" WATER PIPE AND FITTINGS	5	LF				
			TOTAL UNIT PRICE IN WORDS					
93	801	4" WATER PIPE AND FITTINGS	60	LF				
			TOTAL UNIT PRICE IN WORDS					
94	801	6" WATER PIPE AND FITTINGS	434	LF				
			TOTAL UNIT PRICE IN WORDS					
95	801	8" WATER PIPE AND FITTINGS	990	LF				
			TOTAL UNIT PRICE IN WORDS					
96	801	DUCTILE IRON FITTINGS, INCREASE OR DECREASE	500	LB				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
97	801	CONCRETE BLOCKING CLASS C, INCREASE OR DECREASE	8	CY				
			TOTAL UNIT PRICE IN WORDS					
98	802	2" VALVE AND APPURTENANCES	1	EA				
			TOTAL UNIT PRICE IN WORDS					
99	802	3" VALVE AND APPURTENANCES	1	EA				
			TOTAL UNIT PRICE IN WORDS					
100	802	4" VALVE AND APPURTENANCES	1	EA				
			TOTAL UNIT PRICE IN WORDS					
101	802	6" VALVE AND APPURTENANCES	9	EA				
			TOTAL UNIT PRICE IN WORDS					
102	802	8" VALVE AND APPURTENANCES	2	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
103	803	12"X8" TAPPING SLEEVE AND VALVE AND APPURTENANCES	1	EA				
			TOTAL UNIT PRICE IN WORDS					
104	805	CURB BOX	16	EA				
			TOTAL UNIT PRICE IN WORDS					
105	805	3/4" WATER SERVICE TAP, TRANSFERRED, LONG	8	EA				
			TOTAL UNIT PRICE IN WORDS					
106	805	3/4" WATER SERVICE TAP, TRANSFERRED, SHORT	7	EA				
			TOTAL UNIT PRICE IN WORDS					
107	805	3/4" WATER SERVICE TAP, TRANSFERRED	1	EA				
			TOTAL UNIT PRICE IN WORDS					
108	807	C.I. FERRULE VALVE BOX AND COVER	5	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
109	807	VALVE BOX, ADJUSTED TO GRADE	2	EA				
			TOTAL UNIT PRICE IN WORDS					
110	809	FIRE HYDRANT	5	EA				
			TOTAL UNIT PRICE IN WORDS					
111	810	6 INCH HYDRANT EXTENSIONS	2	EA				
			TOTAL UNIT PRICE IN WORDS					
112	810	12 INCH HYDRANT EXTENSIONS	4	EA				
			TOTAL UNIT PRICE IN WORDS					
113	810	18 INCH HYDRANT EXTENSIONS	1	EA				
			TOTAL UNIT PRICE IN WORDS					
114	810	24 INCH HYDRANT EXTENSIONS	1	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
115	811	INCREASE OR DECREASE IN EXCAVATION AND BACKFILL	36	CY				
			TOTAL UNIT PRICE IN WORDS					
116	SPECIAL	SURVEY COORDINATES	1	LUMP				
			TOTAL UNIT PRICE IN WORDS					
LIGHTING								
117	625	CONNECTION, FUSED PULL APART	15	EA				
			TOTAL UNIT PRICE IN WORDS					
118	625	CONNECTION, UNFUSED PULL APART	15	EA				
			TOTAL UNIT PRICE IN WORDS					
119	625	LIGHT POLE, DECORATIVE, AS PER PLAN	15	EA				
			TOTAL UNIT PRICE IN WORDS					
120	625	LIGHT POLE, FOUNDATION, AS PER PLAN (MATERIAL ONLY)	2	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
121	625	LIGHT POLE, FOUNDATION, AS PER PLAN	16	EA				
			TOTAL UNIT PRICE IN WORDS					
122	625	LIGHT POLE, MISC.: EXISTING LIGHT POLE AND LUMINAIRE TO BE REMOVED AND REERECTED	1	EA				
			TOTAL UNIT PRICE IN WORDS					
123	625	NO. 8 AWG 600 VOLT DISTRIBUTION CABLE	5,661	FT				
			TOTAL UNIT PRICE IN WORDS					
124	625	NO. 10 AWG POLE AND BRACKET CABLE	1,080	FT				
			TOTAL UNIT PRICE IN WORDS					
125	625	CONDUIT, 3", 725.051	1,711	FT				
			TOTAL UNIT PRICE IN WORDS					
126	625	CONDUIT, MISC.: CONDUIT, 4", SCHEDULE 80 PVC	353	FT				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
127	625	LUMINAIRE, DECORATIVE, AS PER PLAN	15	EA				
			TOTAL UNIT PRICE IN WORDS					
128	625	LUMINAIRE, DECORATIVE, AS PER PLAN (MATERIAL ONLY)	2	EA				
			TOTAL UNIT PRICE IN WORDS					
129	625	TRENCH, 30" DEEP, AS PER PLAN	1,498	FT				
			TOTAL UNIT PRICE IN WORDS					
130	625	TRENCH IN PAVED AREA, TYPE B, AS PER PLAN	213	EA				
			TOTAL UNIT PRICE IN WORDS					
131	625	PULL BOX, 725.08, 18"	7	EA				
			TOTAL UNIT PRICE IN WORDS					
132	625	PULL BOX REMOVED	1	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
133	625	PULL BOX, ADJUSTED TO GRADE	2	EA				
			TOTAL UNIT PRICE IN WORDS					
134	625	GROUND ROD	15	EA				
			TOTAL UNIT PRICE IN WORDS					
135	625	POWER SERVICE, AS PER PLAN	1	EA				
			TOTAL UNIT PRICE IN WORDS					
136	625	PLASTIC CAUTION TAPE	1,711	FT				
			TOTAL UNIT PRICE IN WORDS					
TRAFFIC CONTROL								
137	630	SIGN, FLAT SHEET	31	SF				
			TOTAL UNIT PRICE IN WORDS					
138	630	STREET NAME SIGN, DOUBLE SIDED, TYPE E, AS PER PLAN	2	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
139	630	STREET NAME SIGN, DOUBLE SIDED, TYPE F, AS PER PLAN	2	EA				
			TOTAL UNIT PRICE IN WORDS					
140	630	STREET NAME SIGN SUPPORT AND ANCHOR (TYPE E/F), AS PER PLAN	2	EA				
			TOTAL UNIT PRICE IN WORDS					
141	630	REMOVAL OF GROUND MOUNTED SIGN AND DISPOSAL	6	EA				
			TOTAL UNIT PRICE IN WORDS					
142	630	GROUND MOUNTED SIGN SUPPORT, AS PER PLAN	128.5	FT				
			TOTAL UNIT PRICE IN WORDS					
143	644	CENTERLINE, 5" SOLID DOUBLE	0.15	MILE				
			TOTAL UNIT PRICE IN WORDS					
144	644	STOP LINE, 20" WHITE	36	FT				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
145	644	CROSSWALK LINE, 10" WHITE	156	FT				
			TOTAL UNIT PRICE IN WORDS					
146	644	TRANSVERSE/DIAGONAL LINE	108	FT				
			TOTAL UNIT PRICE IN WORDS					
147	646	SPEED HUMP MARKING	8	EA				
			TOTAL UNIT PRICE IN WORDS					
LANDSCAPE								
148	661	DECIDUOUS TREE, 2.5", OSTRYA VIRGINIANA	10	EA				
			TOTAL UNIT PRICE IN WORDS					
149	661	DECIDUOUS TREE, 2.5", ULMUS X 'PATRIOT'	3	EA				
			TOTAL UNIT PRICE IN WORDS					
150	661	DECIDUOUS TREE, 1.5", AESCULUS PAVIA	27	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
151	661	DECIDUOUS TREE, 1.5", CARPINUS CAROLINIANA	8	EA				
			TOTAL UNIT PRICE IN WORDS					
152	662	LANDSCAPE WATERING	850	GAL				
			TOTAL UNIT PRICE IN WORDS					
153	666	PRUNING EX TREES, 3 TO 8-INCH DIAMETER	2	EA				
			TOTAL UNIT PRICE IN WORDS					
154	666	PRUNING EX TREES, 24 TO 36-INCH	1	EA				
			TOTAL UNIT PRICE IN WORDS					
155	666	PRUNING EX TREES, 36 INCH AND OVER	1	EA				
			TOTAL UNIT PRICE IN WORDS					
SANITARY								
156	604	MANHOLE, ADJUSTED TO GRADE (SANITARY)	5	EA				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
157	604	MANHOLE RECONSTRUCTED TO GRADE	1	EA				
			TOTAL UNIT PRICE IN WORDS					
158	604	MANHOLE, TYPE C (AA-S102) W/ AA-S111	1	EA				
			TOTAL UNIT PRICE IN WORDS					
159	SPECIAL	8" CIPP SANITARY SEWER LINING	1,442	FT				
			TOTAL UNIT PRICE IN WORDS					
160	SPECIAL	SITE RESTORATION	1	LUMP				
			TOTAL UNIT PRICE IN WORDS					
161	SPECIAL	DIVERSION PUMPING	1	LUMP				
			TOTAL UNIT PRICE IN WORDS					
MAINTENANCE OF TRAFFIC								
162	410	TRAFFIC COMPACTED SURFACE, TYPE A OR B	600	CY				
			TOTAL UNIT PRICE IN WORDS					

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
163	614	MAINTENANCE OF TRAFFIC	1	LUMP				
			TOTAL UNIT PRICE IN WORDS					
164	614	DETOUR SIGNING	1	LUMP				
			TOTAL UNIT PRICE IN WORDS					
165	614	LAW ENFORCEMENT OFFICER WITH PATROL CAR FOR ASSISTANCE	20	HR				
			TOTAL UNIT PRICE IN WORDS					
166	615	PAVEMENT FOR MAINTAINING TRAFFIC, CLASS B	1,470	SY				
			TOTAL UNIT PRICE IN WORDS					
167	616	WATER	9	MGAL				
			TOTAL UNIT PRICE IN WORDS					
INCIDENTALS								
168	623	CONSTRUCTION LAYOUT STAKES	1	LUMP				
			TOTAL UNIT PRICE IN WORDS					
169	624	MOBILIZATION	1	LUMP				
			TOTAL UNIT PRICE IN WORDS					

CIP T-138 Franklin Street Improvement
City of Hilliard

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
			TOTAL BASE BID					
			Bidder's Base Bid Total in Figures - Items 1 - 169					
			Bidder's Base Bid Total in Words - Items 1 - 169					

CONTRACTOR: _____

ADDRESS: _____

_____

TELEPHONE: _____

EMAIL: _____

SIGNED BY: _____

TITLE: _____

FEDERAL I.D. NUMBER _____

THE BIDDERS TOTAL IS FOR INFORMATION ONLY AT THE TIME OF OPENING BIDS. THE CITY WILL MAKE THE EXTENSION AND IF THERE IS ANY DIFFERENCE IN THE TOTALS, THE TOTAL PRICE AS INDICATED IN THE CITY'S OFFICIAL BID TABULATION SHALL GOVERN.

Note: The BID SCHEDULE shall become part of the contract if proposal is accepted by the City of Hilliard.

APPENDIX A - BID SCHEDULE

Bidder agrees to perform all work described herein for the following unit prices or lump sums

LINE	ITEM	DESCRIPTION	ESTIMATED QUANTITY	UNIT	MATERIAL	LABOR	TOTAL UNIT PRICE OF MATERIAL AND LABOR	TOTAL IN FIGURES
ALTERNATE BID 1 - MATERIAL SUBSTITUTION FOR SANITARY SEWER LINING								
159A	SPECIAL	8" UV CIPP SANITARY SEWER LINING **(ALTERNATE 1 ADD)**	1,442	FT				
			TOTAL UNIT PRICE IN WORDS					
159	SPECIAL	8" CIPP SANITARY SEWER LINING **(DEDUCT BASE BID - VALUE SHALL MATCH LINE 159 IN BASE BID)**	1,442	FT				
			TOTAL UNIT PRICE IN WORDS					

ALTERNATE BID 1: TOTAL NET DIFFERENCE (ITEM 159A MINUS LINE 159)

Bidder's Alternate Bid 1 (Net Difference) Total in Figures (Item159A - Item 159)

Bidder's Alternate Bid 1 (Net Difference) Total in Words (Item159A - Item 159)

CONTRACTOR: _____

ADDRESS: _____

_____

TELEPHONE: _____

EMAIL: _____

SIGNED BY: _____

TITLE: _____

FEDERAL I.D. NUMBER _____

THE BIDDERS TOTAL IS FOR INFORMATION ONLY AT THE TIME OF OPENING BIDS. THE CITY WILL MAKE THE EXTENSION AND IF THERE IS ANY DIFFERENCE IN THE TOTALS, THE TOTAL PRICE AS INDICATED IN THE CITY'S OFFICIAL BID TABULATION SHALL GOVERN.

Note: The BID SCHEDULE shall become part of the contract if proposal is accepted by the City of Hilliard.

APPENDIX B
PREVAILING WAGE RATE INFORMATION

Current prevailing wage information can be viewed at the Ohio Department of Commerce website listed below:

http://www.com.ohio.gov/laws/

- Click on 'View Wage Rates' on the left-hand side of the web page under 'Online Services'

You will need to register on-line for an account to view the current wage rates

- Once you've logged into the site:
  - Step 1: Select 'Hilliard City of' from the pull-down menu
  - Step 2: Choose the project name from the pull-down menu
  - Step 3: Click 'I Agree' button

- You will then be taken to a page where you can narrow down your search for a particular county, union, or Classification

Prevailing Wage Determination Cover Letter

County: FRANKLIN
Determination Date: 05/16/2019
Expiration Date: 08/16/2019

THE FOLLOWING PAGES ARE PREVAILING RATES OF WAGES ON PUBLIC IMPROVEMENTS FAIRLY ESTIMATED TO BE MORE THAN THE AMOUNT IN O.R.C. SEC. 4115.03 (b) (1) or (2), AS APPLICABLE.

Section 4115.05 provides, in part: “Where contracts are not awarded or construction undertaken within ninety days from the date of the establishment of the prevailing wages, there shall be a redetermination of the prevailing rate of wages before the contract is awarded.” The expiration date of this wage schedule is listed above for your convenience only. This wage determination is not intended as a blanket determination to be used for all projects during this period without prior approval of this Department.

Section 4115.04, Ohio Revised Code provides, in part: “Such schedule of wages shall be attached to and made a part of the specifications for the work, and shall be printed on the bidding blanks where the work is done by contract...”

The contract between the letting authority and the successful bidder shall contain a statement requiring that mechanics and laborers be paid a prevailing rate of wage as required in Section 4115.06, Ohio Revised Code.

The contractor or subcontractor is required to file with the contracting public authority upon completion of the project and prior to final payment therefore an affidavit stating that he has fully complied with Chapter 4115 of the Ohio Revised Code.

The wage rates contained in this schedule are the “Prevailing Wages” as defined by Section 4115.03, Ohio Revised Code (the basic hourly rates plus certain fringe benefits). These rates and fringes shall be a minimum to be paid under a contract regulated by Chapter 4115 of the Ohio Revised Code by contractors and subcontractors. The prevailing wage rates contained in this schedule include the effective dates and wage rates currently on file. In cases where future effective dates are not included in this schedule, modifications to the wage schedule will be furnished to the Prevailing Wage Coordinator appointed by the public authority as soon as prevailing wage rates increases are received by this office.

“There shall be posted in a prominent and accessible place on the site of work a legible statement of the Schedule of Wage Rates specified in the contract to the various classifications of laborers, workmen, and mechanics employed, said statement to remain posted during the life of such contract.” Section 4115.07, Ohio Revised Code.

Apprentices will be permitted to work only under a bona fide apprenticeship program if such program exists and if such program is registered with the Ohio Apprenticeship Council.

Section 4115.071 provides that no later than ten days before the first payment of wages is due to any employee of any contractor or subcontractor working on a contract regulated by Chapter 4115, Ohio Revised Code, the contracting public authority shall appoint one of his own employees to act as the prevailing wage coordinator for said contract. The duties of the prevailing wage coordinator are outlined in Section 4115.071 of the Ohio Revised Code.

Section 4115.05 provides for an escalator in the prevailing wage rate. Each time a new rate is established, that rate is required to be paid on all ongoing public improvement projects.

A further requirement of Section 4115.05 of the Ohio Revised Code is: “On the occasion of the first pay date under a contract, the contractor shall furnish each employee not covered by a collective bargaining agreement or understanding between employers and bona fide organizations of Labor with individual written notification of the job classification to which the employee is assigned, the prevailing wage determined to be applicable to that classification, separated into the hourly rate of pay and the fringe payments, and the identity of the prevailing wage Coordinator appointed by the public authority. The contractor or subcontractor shall furnish the same notification to each affected employee every time the job classification of the employee is changed.”

Work performed in connection with the installation of modular furniture may be subject to prevailing wage.

THIS PACKET IS NOT TO BE SEPARATED BUT IS TO REMAIN COMPLETE AS IT IS SUBMITTED TO YOU.
(Reference guidelines and forms are included in this packet to be helpful in the compliance of the Prevailing Wage law.)
wh1500

PREVAILING WAGE THRESHOLD LEVELS
IMPORTANT NOTICE

Before advertising for bids, contracting, or undertaking construction with its own forces, to construct a public improvement, the Public Authority shall have the Ohio Department of Commerce-Division of Industrial Compliance, Bureau of Wage and Hour Administration determine the prevailing rates of wages for workers employed on the public improvement. The wage determination must be included in the project specifications and printed on the bidding blanks where work is done by contract.

"New" construction threshold for *Building* Construction:	**$250,000**
"Reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting" threshold level for *Building* Construction:	**$75,000**

As of January 1, 2018:

"New" construction that involves *roads, streets, alleys, sewers, ditches and other works connected to road or bridge construction* threshold level has been adjusted to:	**$91,150**
"Reconstruction, enlargement, alteration, repair, remodeling, renovation, or painting" that involves *roads, streets, alleys, sewers, ditches and other works connected to road or bridge construction* threshold level has been adjusted to:	**$27,309**

A) Thresholds are to be adjusted biennially by the Director of the Ohio Department of Commerce.
B) Biennial adjustments to threshold levels are made according to the Building Cost for Skilled Labor Index published by McGraw-Hill's Engineering News-Record, but may not increase or decrease more than 3% for any year.

If there are questions concerning this notification, please contact:

Ohio Department of Commerce
Division of Industrial Compliance
Bureau of Wage and Hour Administration
6606 Tussing Road, PO Box 4009
Reynoldsburg, Ohio 43068-9009
Phone: 614-644-2239
Fax: 614-728-8639
www.com.ohio.gov

PLEASE NOTE: The Ohio Department of Commerce web services will be intermittently unavailable from March 15, 2019 @ 5 PM until March 18, 2019 @ 8 AM

INSTRUCTIONS FOR PREPARING CERTIFIED PAYROLL REPORTS

General

Contractors and subcontractors are required by law to submit certified payroll reports for work on projects covered by Ohio's Prevailing Wage Law. This form meets the reporting requirements established by Ohio Revised Code Chapter 4115. The use of this form is not mandatory, employers may submit their own forms provided that all of the required information is included. This form may be reproduced, or additional copies obtained from:

Ohio Department of Commerce Division of Industrial Compliance and Labor Bureau of Wage & Hour Administration 6606 Tussing Rd. P. O. Box 4009 Reynoldsburg, OH 43068-9009 Phone: (614) 644-2239

Certified Payroll Heading

Employer name and address: Company's full name and address. Indicate if the company is a subcontractor, if so list the name of the General or Prime. Project: Name and location of the project, including county. Contracting Public Authority: Name and address of the contracting public authority. Week Ending: Month, day, and year for last day of reporting period. Payroll # : Indicates first, second, third, etc. payroll filed by the company for the project. Page indicator: number of pages included in the report. Project Number: Determined by the public authority. If there is no number leave blank.

Information by Column

- 1. Employee Name, Address and Social Security number: This information must be provided for all employees that perform physical labor on the project. Corporate officers, partners, and salaried employees are considered employees and must be paid the prevailing rate. Individual sole proprietors do not have to pay themselves prevailing rate but must report their hours on the project.
- 2. Work Class: List classification of work actually performed by employee. If unsure of work classification, consult the Ohio department of Commerce, Wage and Hour Bureau. Employees working more than one classification should have separate line entries for each classification. Indicate what year/level for Apprentices. Be specific when using laborer and operator classifications; for example, Backhoe Operator or Asphalt Laborer.
- 3. Hours Worked, Day & Date: In the first row of column 3 enter days of pay period example; M T W TH F S S. The second row is for the date that corresponds with each day for the pay period. In the employee information section enter the number of hours worked on the prevailing wage project and which day the hours were worked. Separate rows are labeled for (ST) straight time hours and (OT) overtime hours. All hours worked after 40, must be paid at the appropriate overtime rate.
- 4. Project Total Hours : Total the hours entered for pay period.
- 5. Base Rate: Enter actual rate per hour paid to the employee. The overtime hourly rate is time and one-half the base rate listed in the prevailing wage schedule plus fringe benefits at straight time rate. The prevailing wage schedule lists the base rate plus fringe benefit amounts. These amounts added together equal the total prevailing wage rate. Employers must pay this total amount in one of three ways.
  - Total rate may be paid in entirety in the base rate to the employee; in which case, the cash designation will be checked for fringe benefits.
  - Total rate may be paid as listed in prevailing wage rate schedule with total fringe amounts paid approved plans.
  - Total rate may be paid with a combination of base rate and fringe payments to approved plans in amounts other than those listed in schedule.
- 6. Project Gross: Enter total gross wages earned on the project for straight time and overtime. Project hours X base rate should equal project gross.
- 7. Fringes: If fringe benefits are paid in the hourly base rate, indicate this by marking the cash space. If fringe benefits are paid to approved plans as listed in the prevailing wage rate schedule, mark the space Approved Plans. If fringe benefits are paid partially in the base rate and partially to approved plans, mark the space Cash & Approved plans. List the hourly amount paid to approved plans for each fringe. If payments are not made on a per hour basis, calculate the hourly fringe credit by dividing the yearly employer contribution by the lesser of: hours actually worked in the year (these must be documented) or 2080. Fringe benefits include: Employer's share of health insurance, life insurance, retirement plan, bonus/profit sharing, sick pay, holiday pay, personal leave, vacation, and education/training programs.
- 8. Total Hours All Jobs: Total all hours worked during the pay period including non-prevailing wage jobs.
- 9. Total Gross All Jobs: Gross amount earned in the pay period for all hours worked.
- 10. Self explanatory.
- 11. Self explanatory.
- 12. Self explanatory.

Ohio | Department of Commerce

Division of Industrial Compliance

Affidavit of Compliance

Prevailing Wages

I, _____
(Name of person signing affidavit) (Title)

do hereby certify that the wages paid to all employees of

_____
(Company Name)

for all hours worked on the

_____
(Project name and location)

project, during the period from _____ to _____ are in
(Project Dates)

compliance with prevailing wage requirements of Chapter 4115 of the Ohio Revised Code. I further certify that no rebates or deductions have been or will be made, directly or indirectly, from any wages paid in connection with this project, other than those provided by law.

_____
(Signature of Officer or Agent)

Sworn to and subscribed in my presence this _____ day of _____, 20_____.

_____ (Notary Public)

The above affidavit must be executed and sworn to by the officer or agent of the contractor or subcontractor who supervises the payment of employees. This affidavit must be submitted to the owner (public authority) before the surety is released or final payment due under the terms of the contract is made.

Bureau of Wage and Hour Administration
6606 Tussing Road
Reynoldsburg, OH 43068-9009
LAW1003
3/2019

614-644-2239
Fax 614-728-8639
TTY/TDD 800-750-0750
com.ohio.gov

PREVAILING WAGE NOTIFICATION TO EMPLOYEE

Project Name:	Job Number:
Contractor:	
Project Location:	
Jobsite posting of prevailing wage rates located:	

Prevailing Wage Coordinator	Employee
Name:	Name:
Street:	Street:
City:	City:
State / Zip:	State / Zip:
Phone:	Phone:

You will be performing work on this project that falls under these classifications. You will be paid the appropriate rate for the type of work you are performing.

Classification	Prevailing Wage Rate Total Package	Minus Your Fringe Benefits	Your Hourly Base Rate

Hourly fringe benefits paid on your behalf by this company.

Fringe	Amount	Fringe	Amount
Health Insurance		Health Insurance	
Life Insurance		Holiday	
Pension		Sick Pay	
Bonus		Training	
Other		**TOTAL HOURLY FRINGES**	

Contractor's Signature:	Date:
Employee's Signature:	Date:

whpw1512

CERTIFIED PAYROLL REPORT

Employer Name & Address	Name of General / Prime Contractor	Project Name & Location	Contracting Public Authority
Check if subcontractor ☐	Week Ending	Payroll # Page_____Of_____	Project Number

1. Employee Name, Address and Social Security Number	2. Work Class		3. Hours Worked - Day & Date							4. Project Total Hrs.	5. Base Rate	6. Project Gross	7. Fringes: Cash ☐ Approved Plans ☐ Cash & Approved Plans ☐					8. Total Hours All Jobs	9. Total Gross All Jobs	10. Taxes Withheld	11. Other Deducts	12. NET Paid
													H&W	Pens	Vac	App	Other					
		OT																				
		ST																				
		OT																				
		ST																				
		OT																				
		ST																				
		OT																				
		ST																				
		OT																				
		ST																				
		OT																				
		ST																				
		OT																				
		ST																				
		OT																				
		ST																				

Date_____My signature on this form signifies that I pay, or supervise the payment of the employees shown above. I am certifying: 1) That during the pay period reported on this form, all hours worked on this project have been paid at the appropriate prevailing wage rate for the class of work done. 2) That the fringe benefits have been paid as indicated above. 3) That no rebates or deductions have been or will be made, directly or indirectly from the total wages earned, other than permissable deductions as defined in the Ohio Revised Code Chapter 4115. 4) That apprentices are registered with the U.S. Department of Labor, Bureau of Apprenticeship and Training. The willful falsification of any of the above statements may subject the contractor or subcontractor to civil or criminal prosecution.

Name and Title _____ Signature _____

APPENDIX C
SPECIAL SPECIFICATIONS

The Special Specifications for the project consist of 88 pages and include the following:

1. Provisions for maintenance of parking during construction for residents & businesses
2. Specifications for the CIPP sanitary sewer lining (base bid)
3. Specifications for the UV CIPP sanitary sewer lining (alternate bid)

Parking During Construction

Parking During Construction

Parking will be impacted throughout construction, but it is imperative that parking be maintained in the most convenient manner possible to minimize disruption to residents and patrons. A list of exhibits is provided showing where possible parking could be provided during construction. It should be noted that parking should be provided within 100' to 150' of all properties during construction. Driveways and access will be maintained until driveway reconstruction is being performed, but due to the expansion of the roadway footprint, parking in many of the driveways will no longer be possible.

Utilities are slated to be installed first which will employ trenching and could impact parking. It will be the responsibility to provide parking during these phases in the form of plating/backfilling, phased construction and additional areas provided within the 100'-150' threshold. The City may also explore the possibility of providing temporary lots or spaces along the roadways or work with business owners to provide parking in existing parking lots.

Due to the nature of the project the contractor will likely construct the project in a phased approach. This means that upon completion of a section or phase, parking can be shifted onto the newly completed sections in the constructed parking bays. This will inevitably lead to construction dirt and debris being carried into the new parking bays. Since the bays are to be used as a BMP and are pervious, it is imperative that following construction the contractor be responsible for vacuuming the parking bays and replacing sand, so that the BMP functions at a proper level.

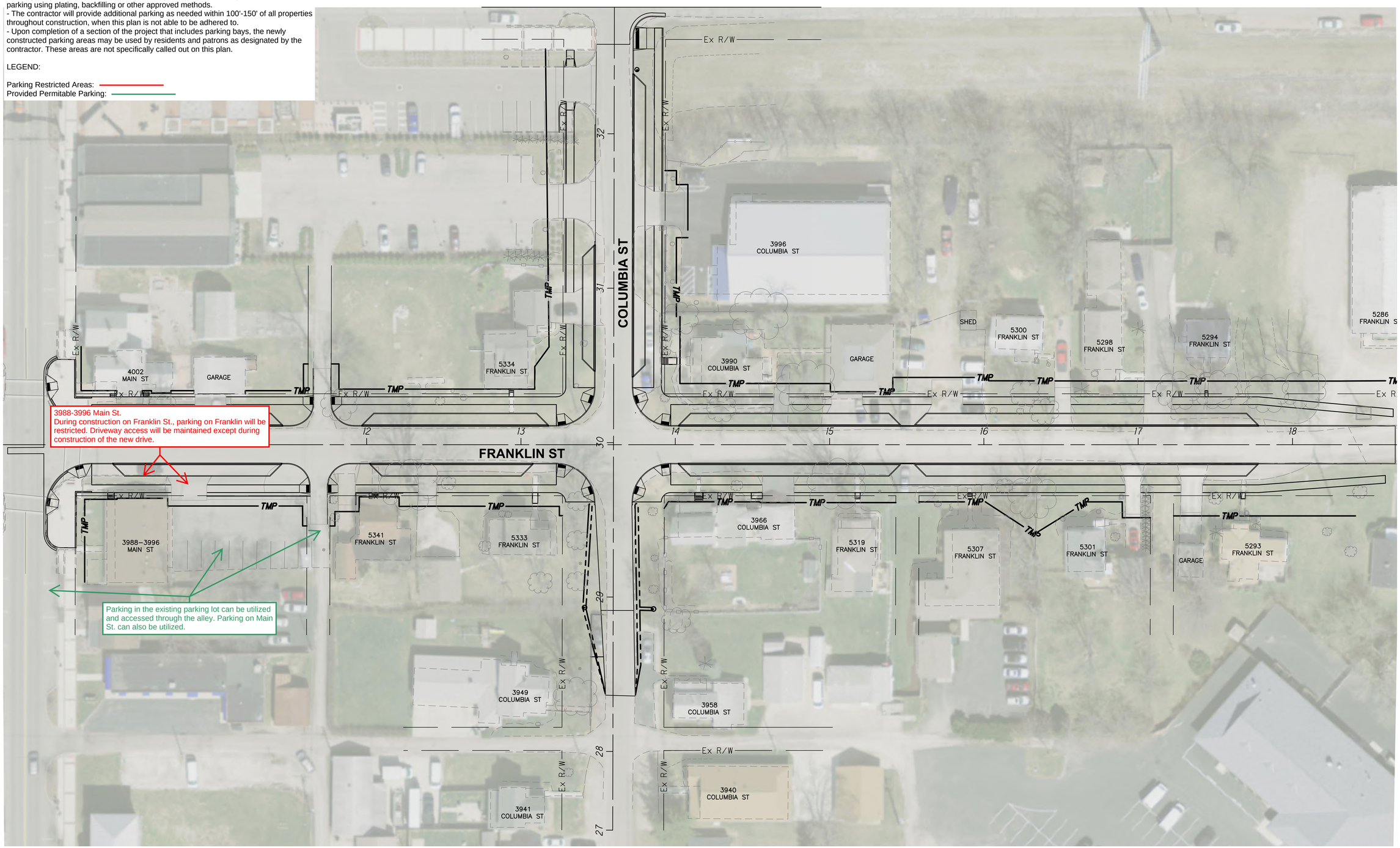
As mentioned above, several drives had to be shortened to accommodate the sidewalk to the point where parking in them is no longer feasible. Per Ohio Revised Code Section 4511.68 – A1, no vehicles are permitted to park on/block the sidewalk. Parking will now be provided to those properties in the parking bays located on Franklin and Columbia in front of the houses.

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

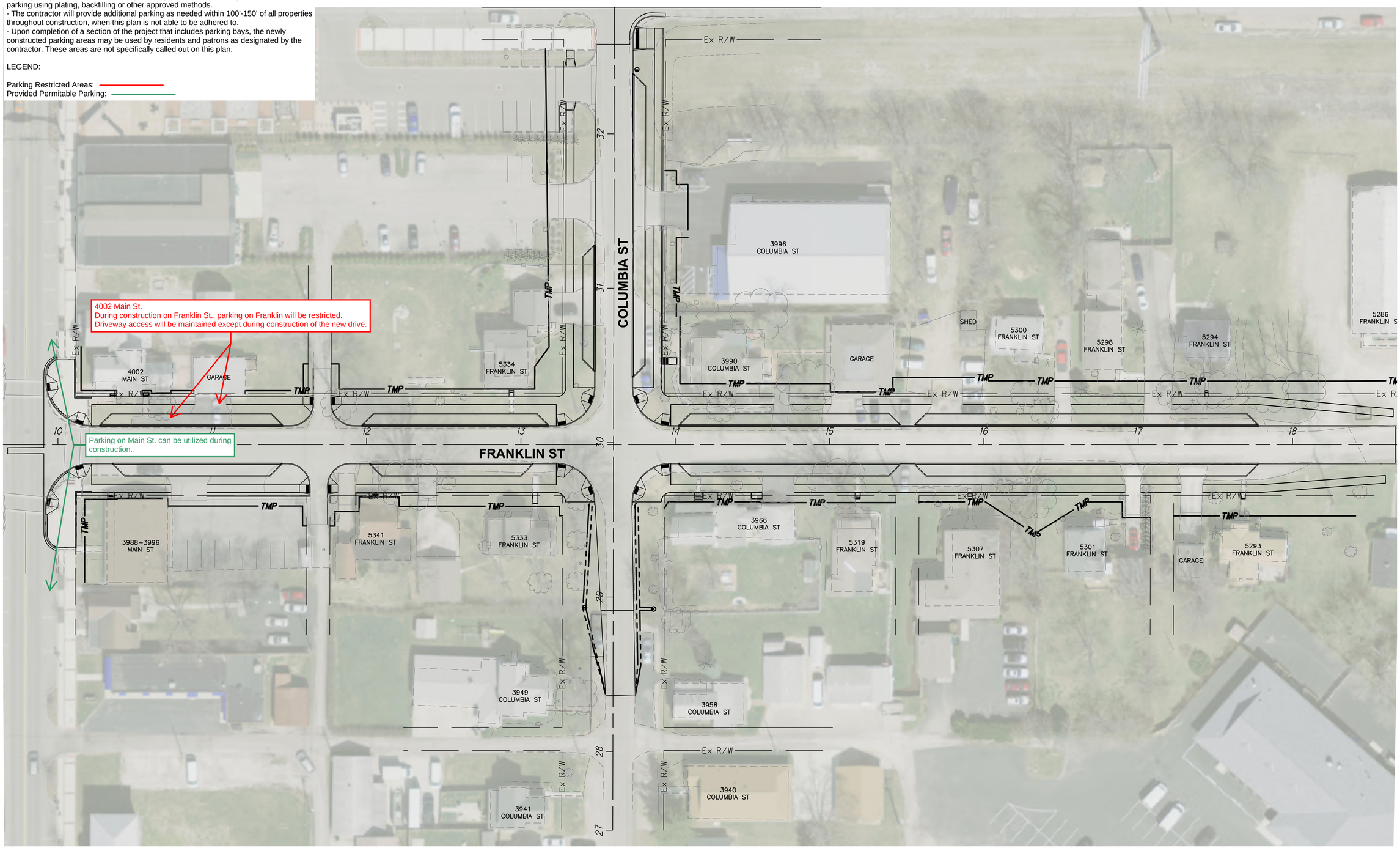
- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:

4002 Main St.
During construction on Franklin St., parking on Franklin will be restricted.
Driveway access will be maintained except during construction of the new drive.

Parking on Main St. can be utilized during construction.



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

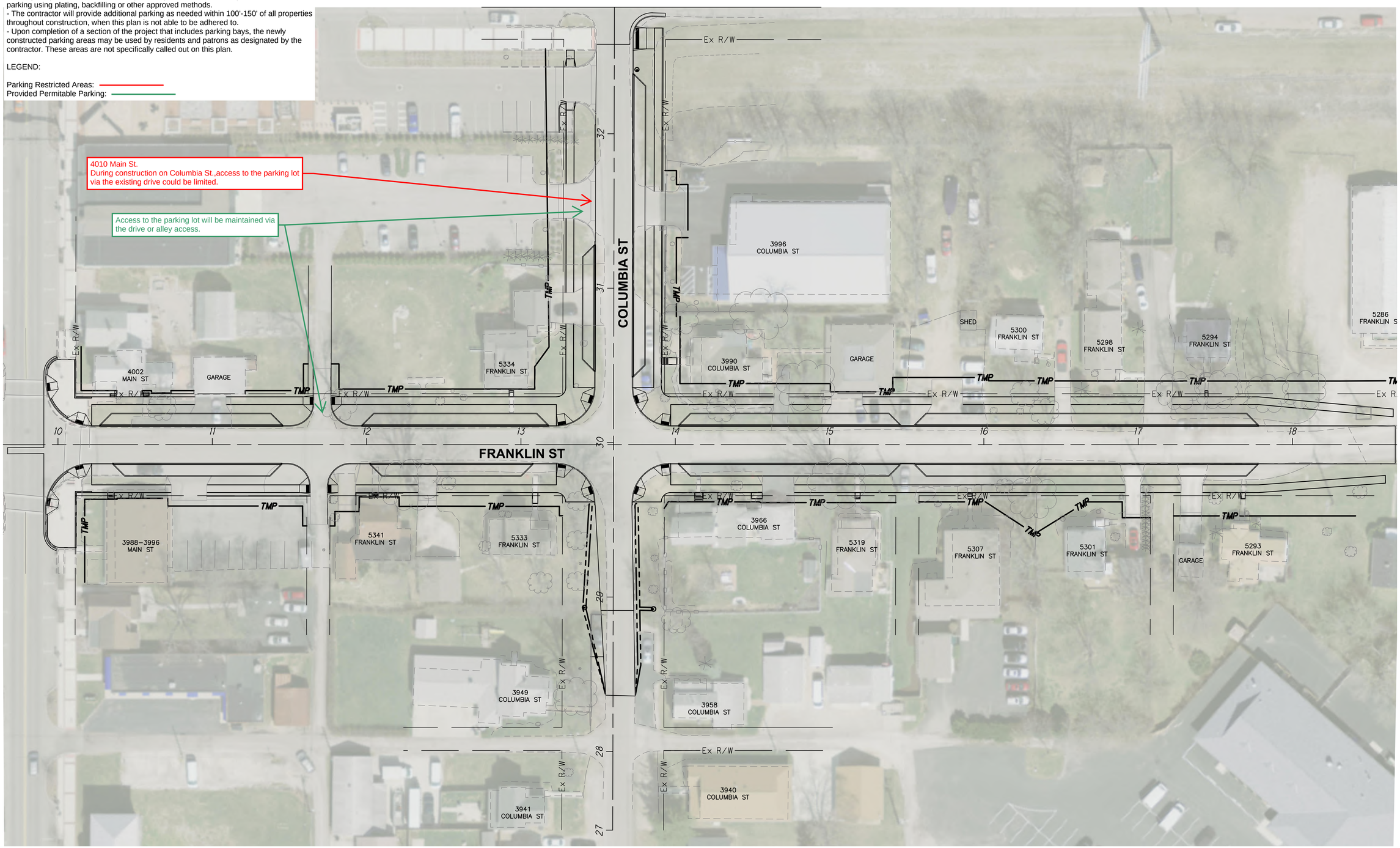
- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:

4010 Main St.
During construction on Columbia St.,access to the parking lot via the existing drive could be limited.

Access to the parking lot will be maintained via the drive or alley access.



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

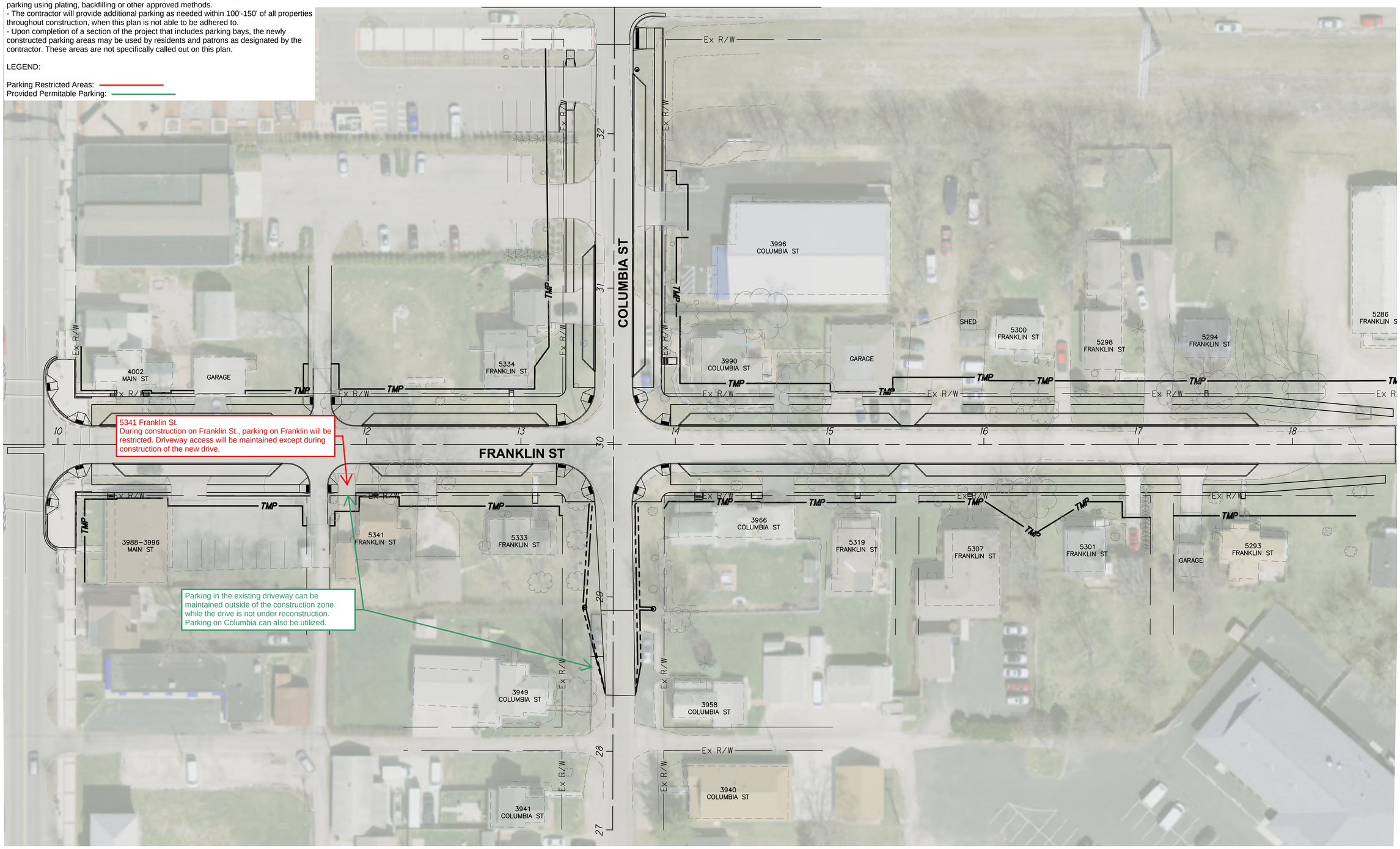
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

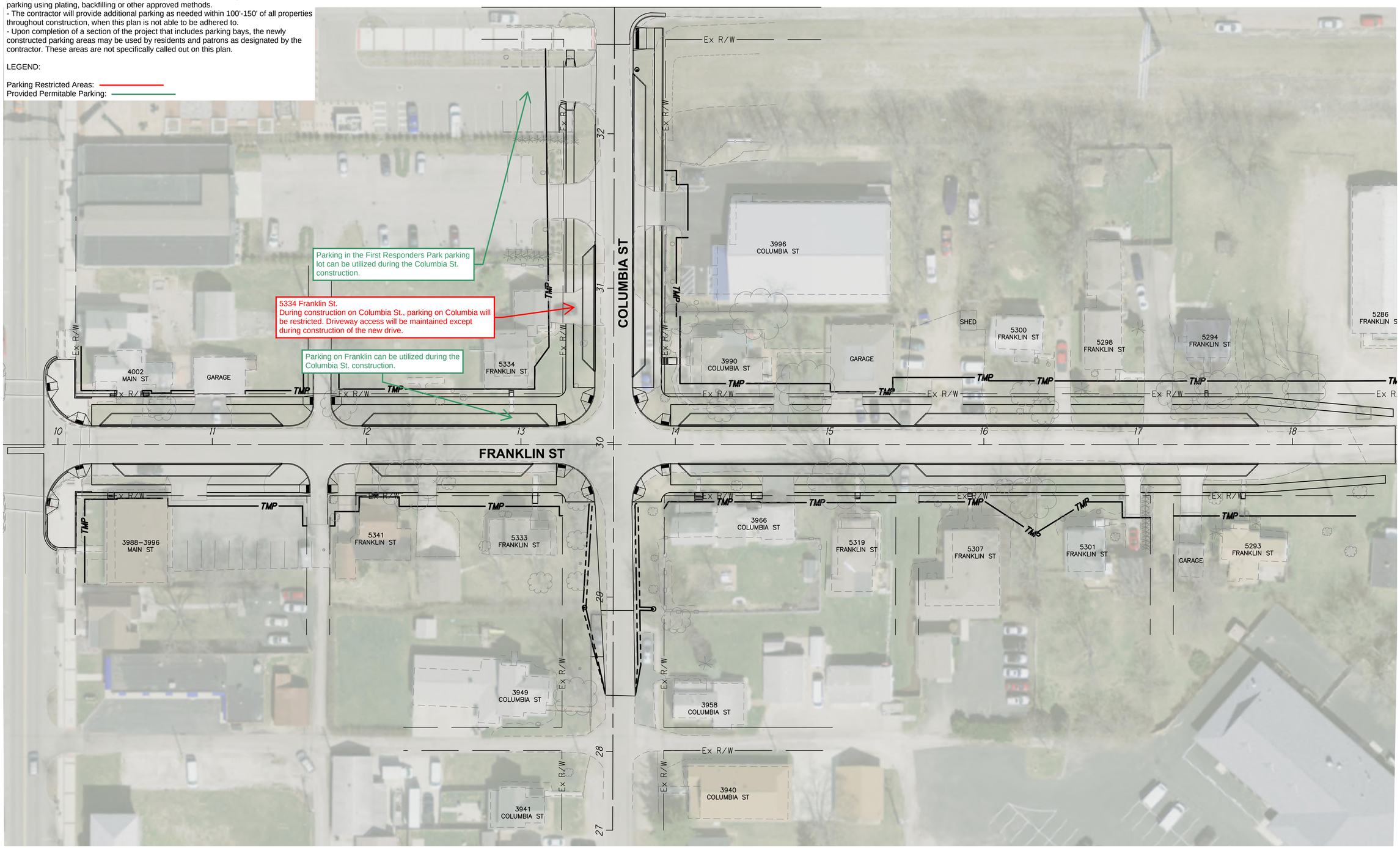
LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:

Parking in the First Responders Park parking lot can be utilized during the Columbia St. construction.

5334 Franklin St.
During construction on Columbia St., parking on Columbia will be restricted. Driveway access will be maintained except during construction of the new drive.

Parking on Franklin can be utilized during the Columbia St. construction.



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

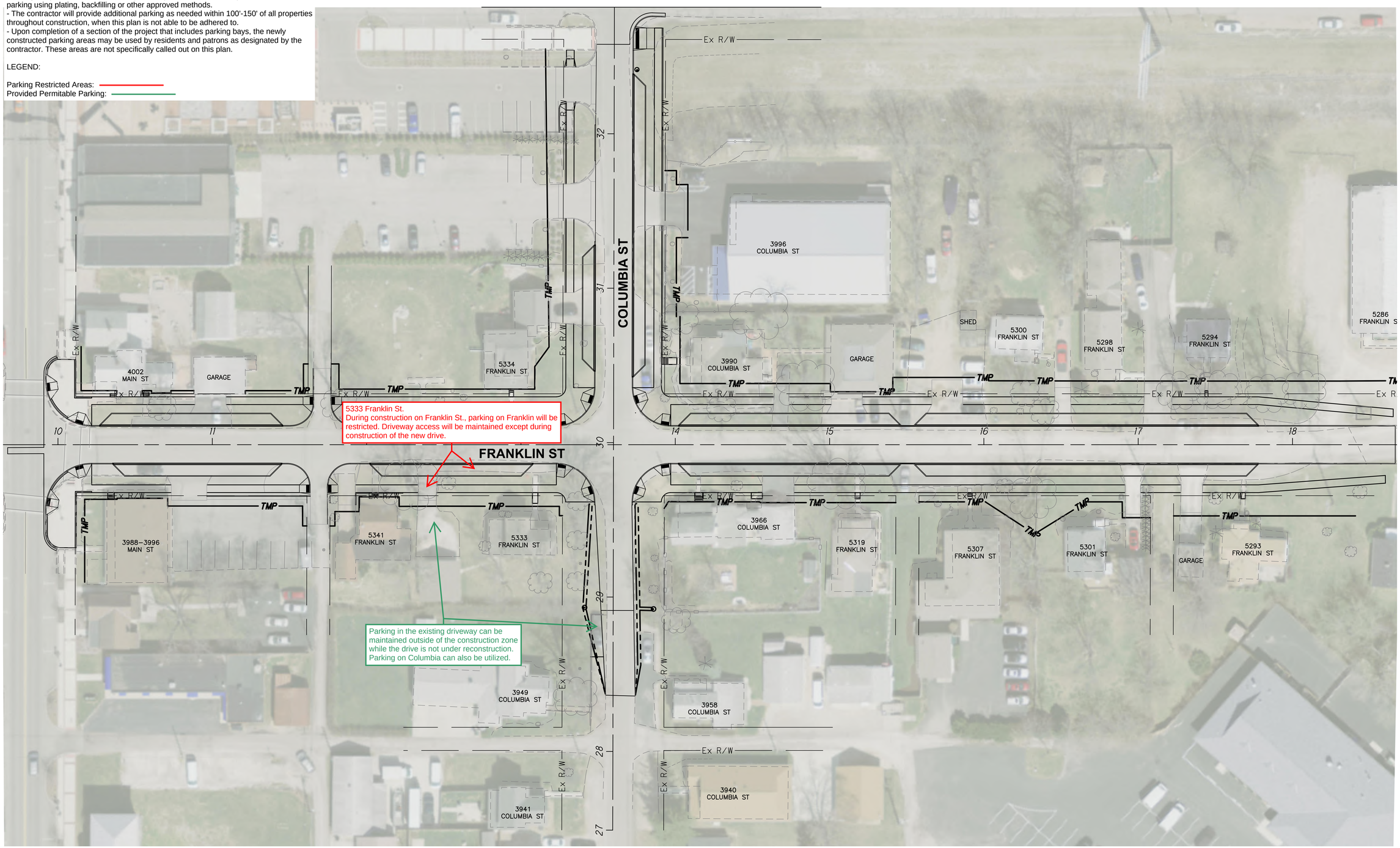
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

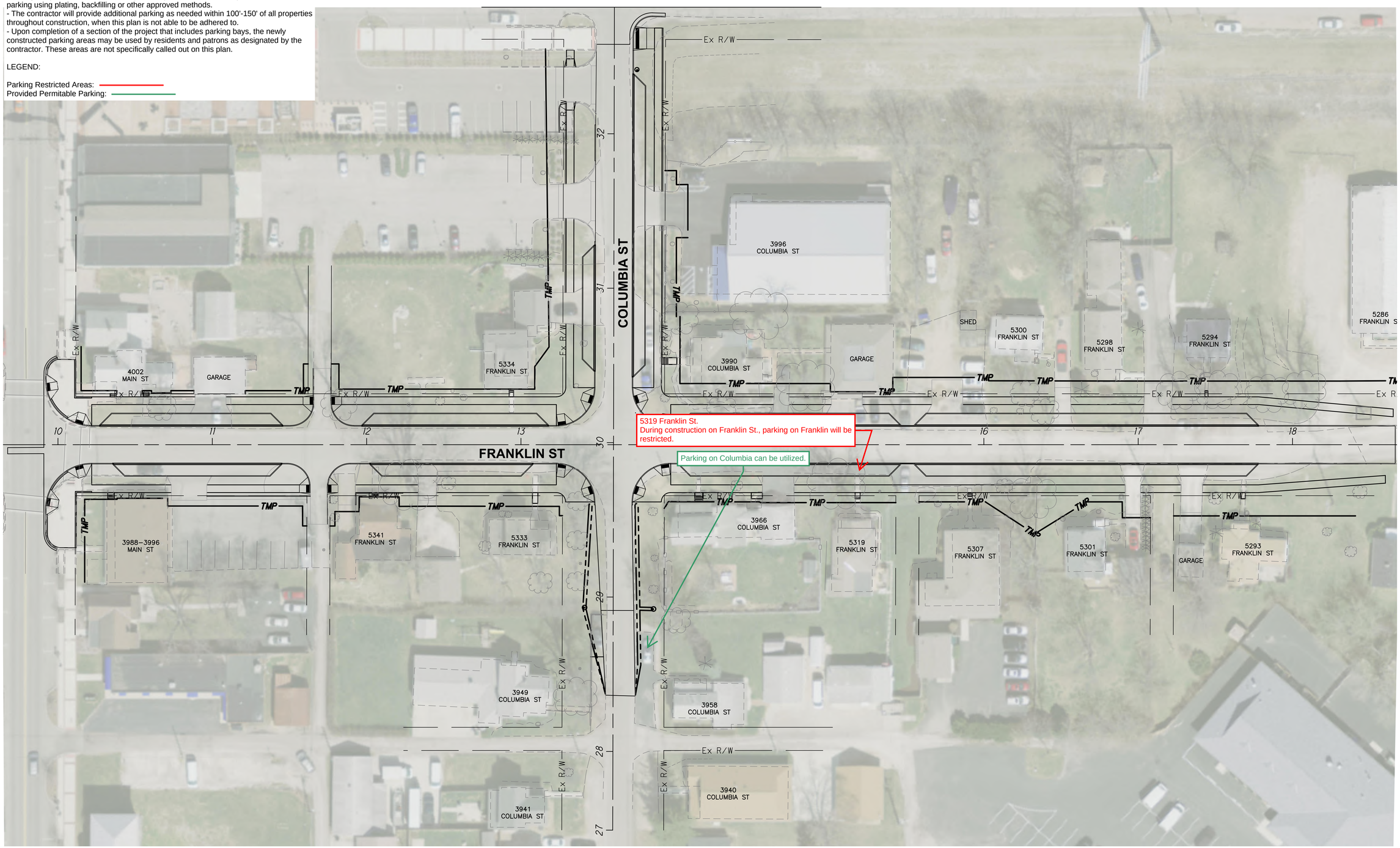
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

HORIZONTAL SCALE IN FEET
0 15 30 60

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

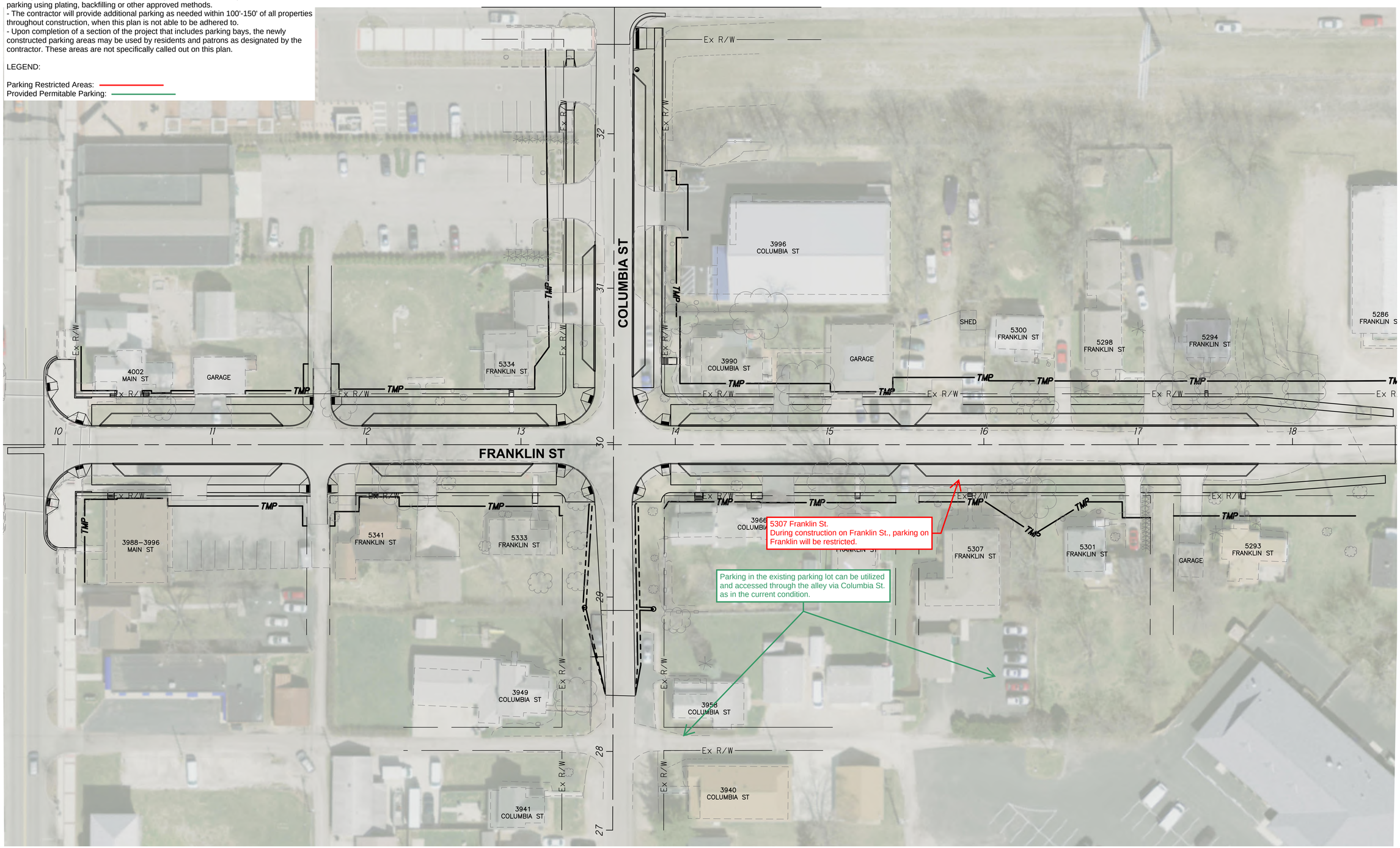
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

HORIZONTAL SCALE IN FEET
0 15 30 60

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

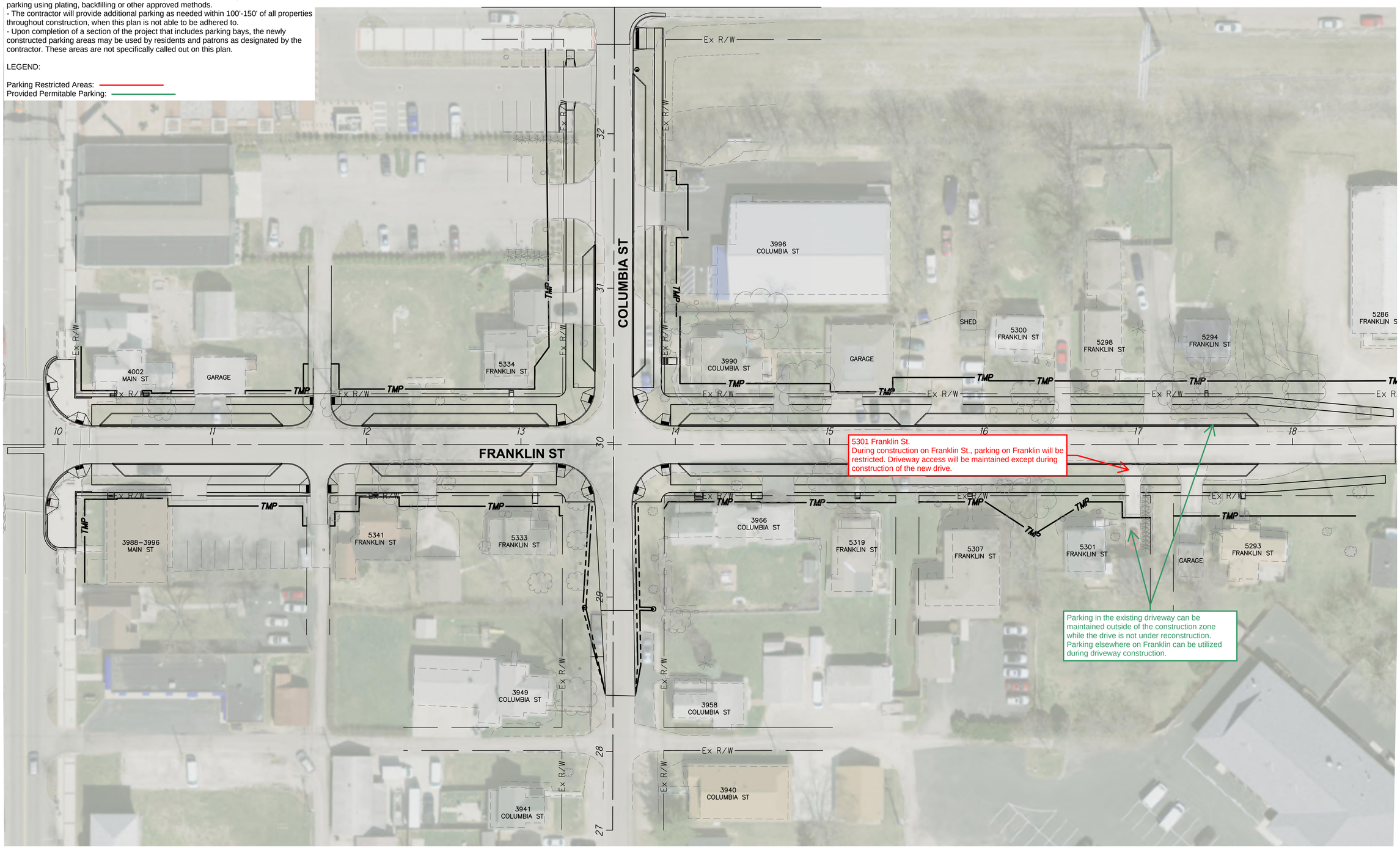
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

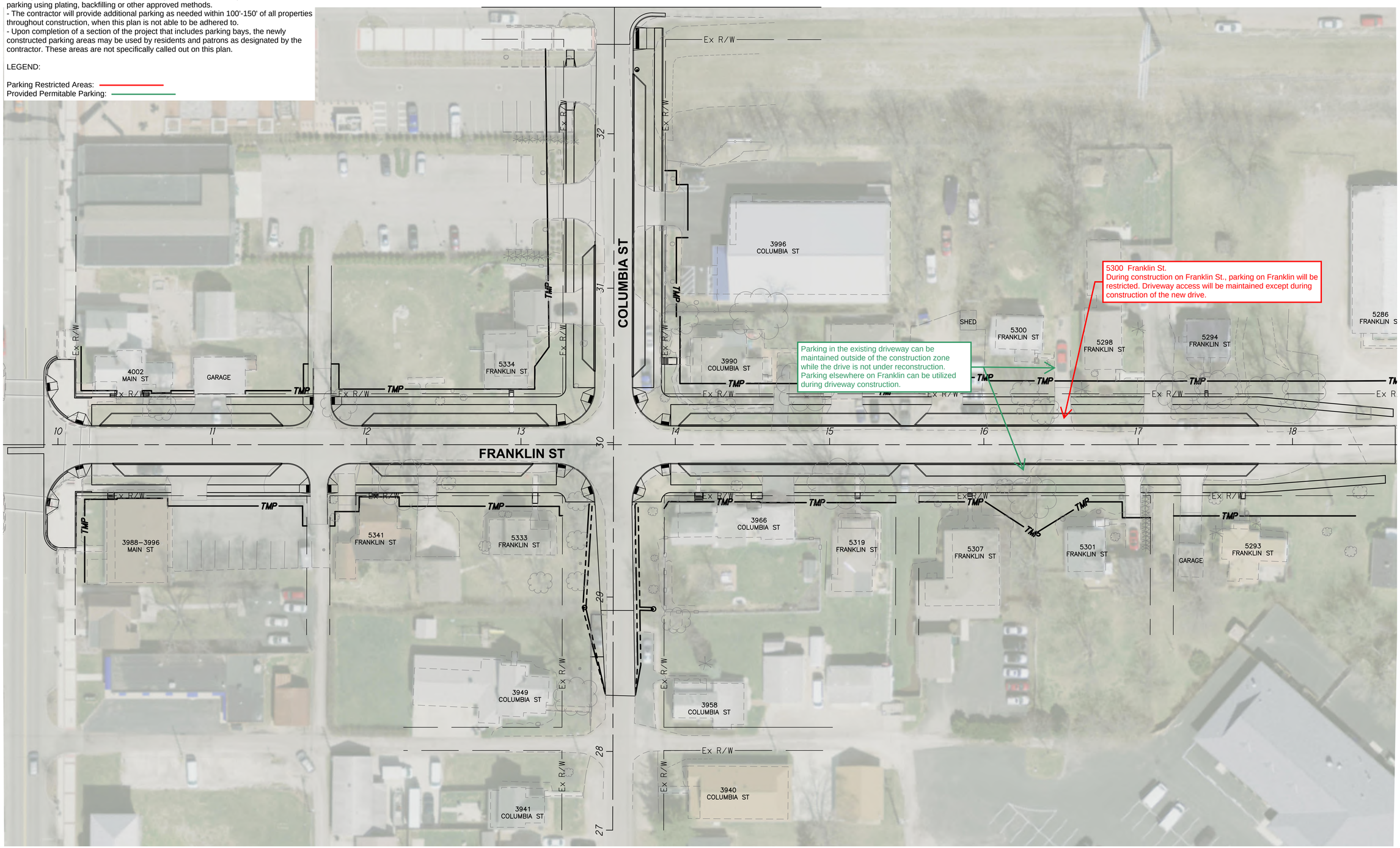
W:\Srvin\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

HORIZONTAL SCALE IN FEET
0 15 30 60

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

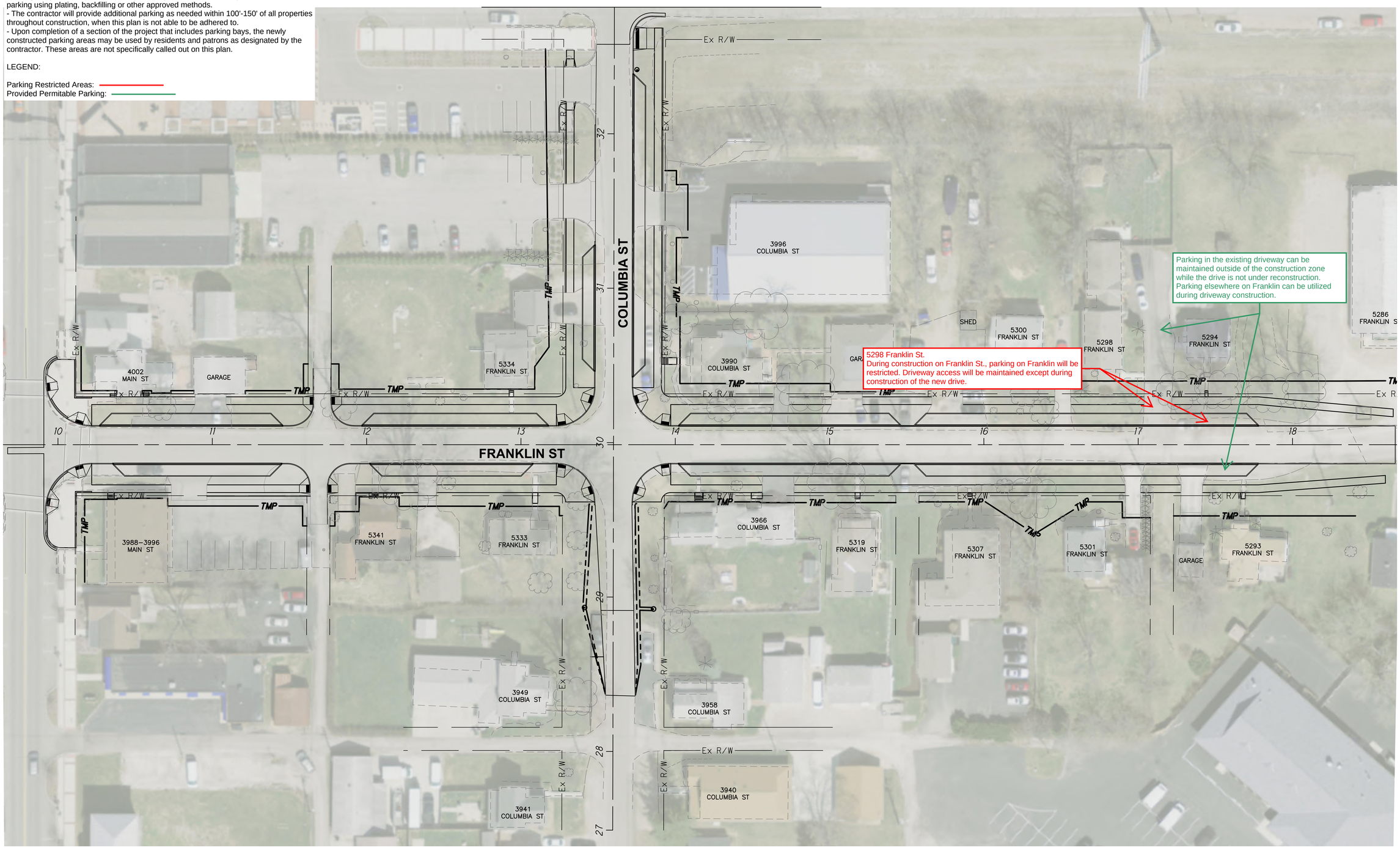
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

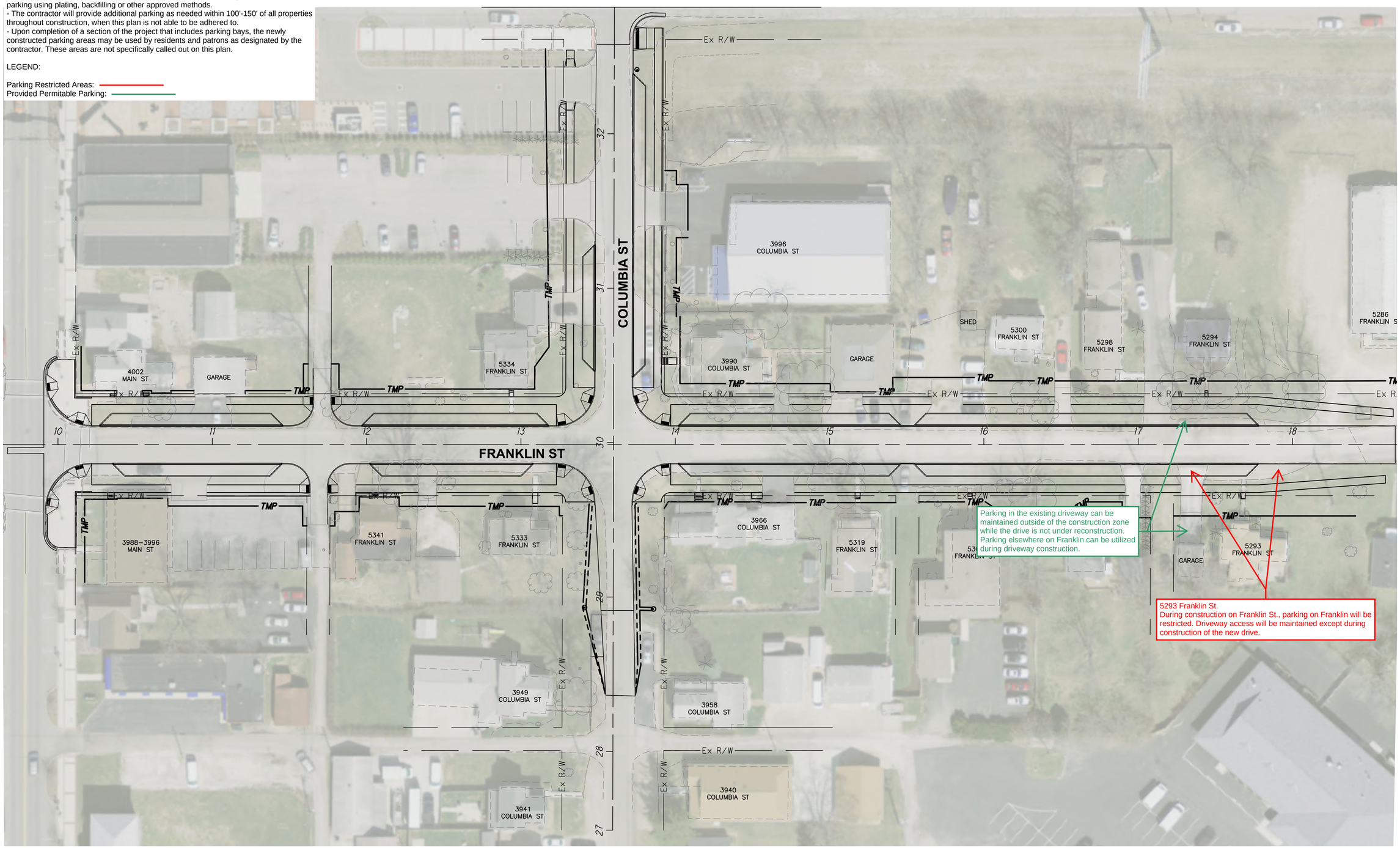
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

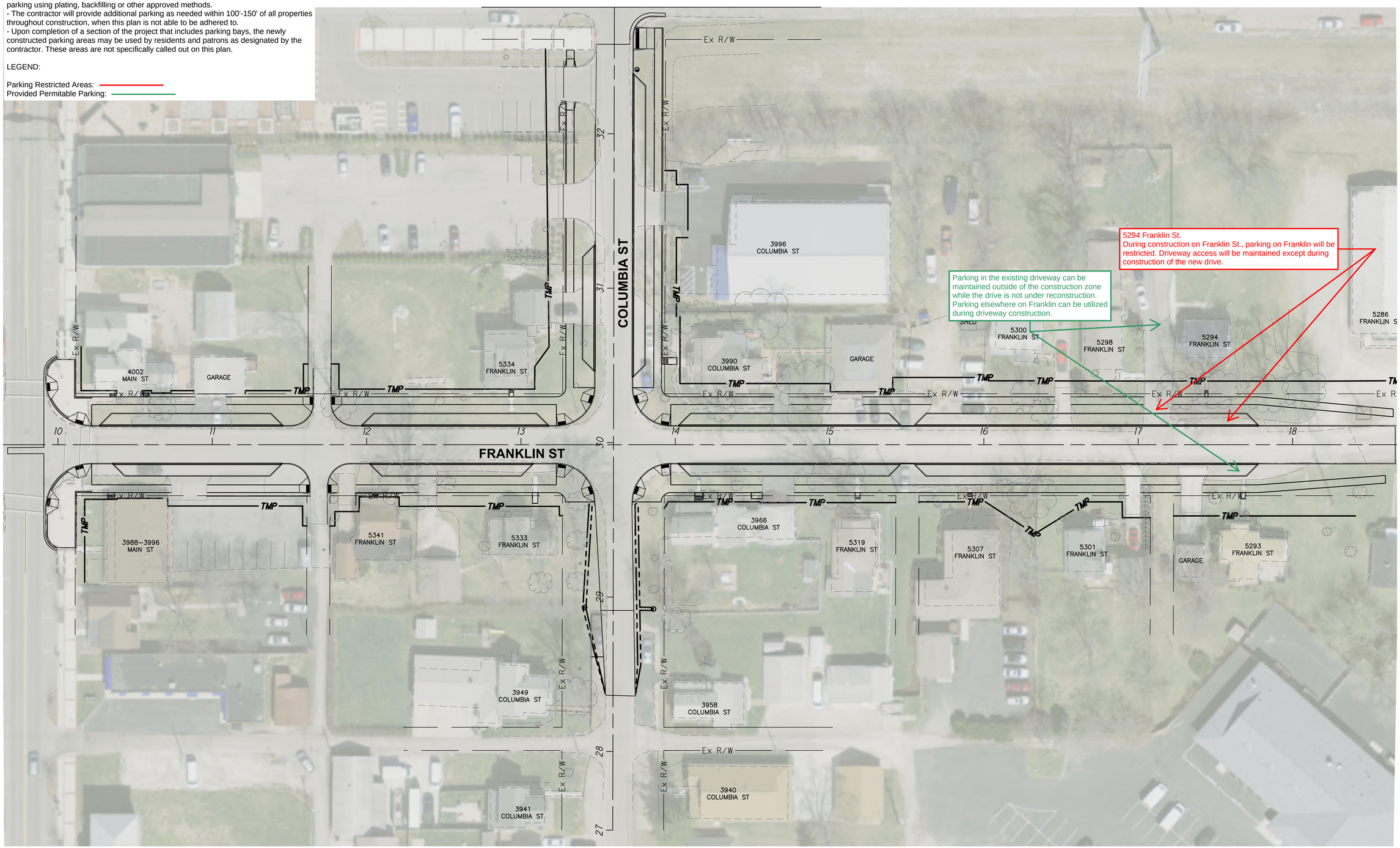
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

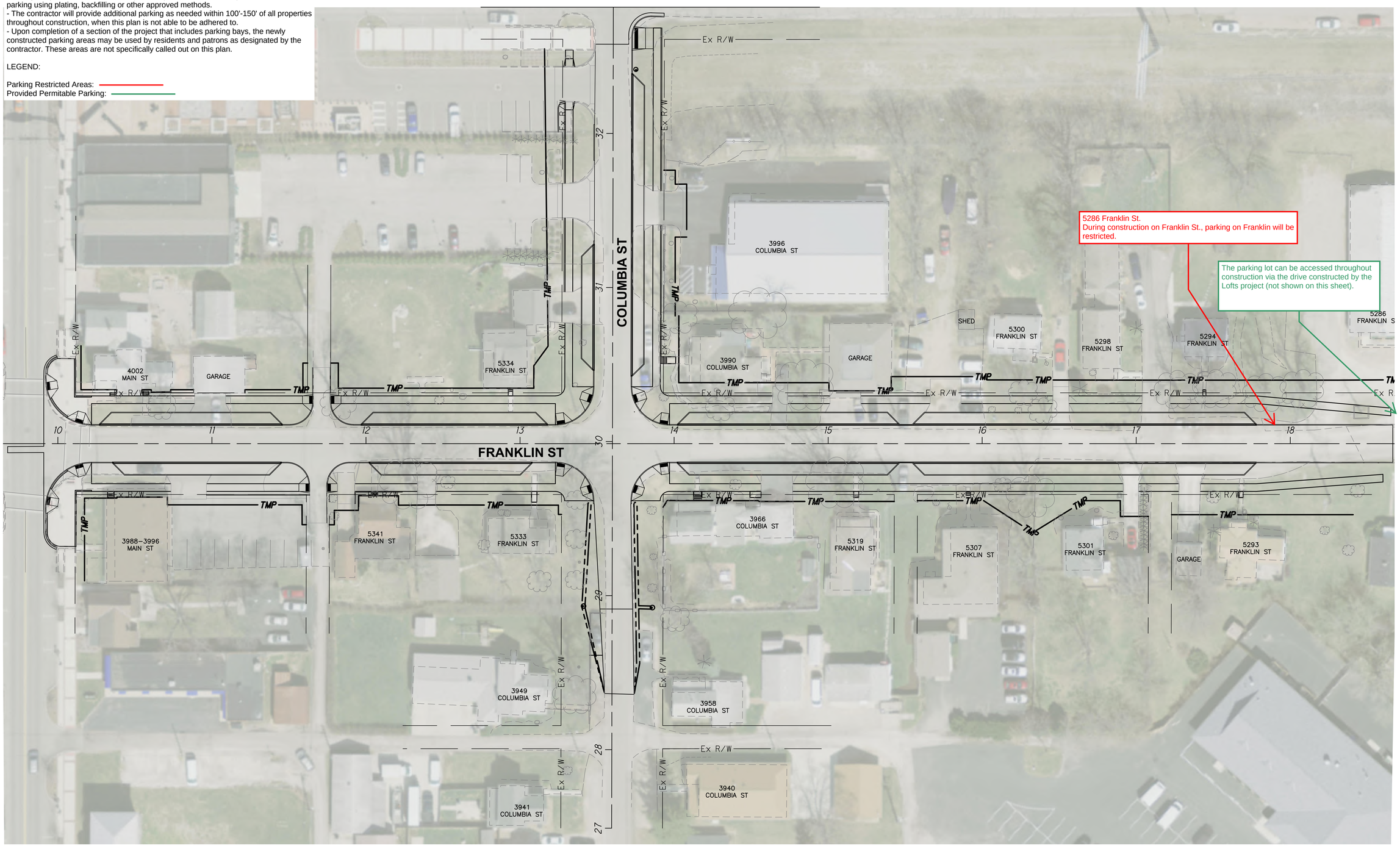
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

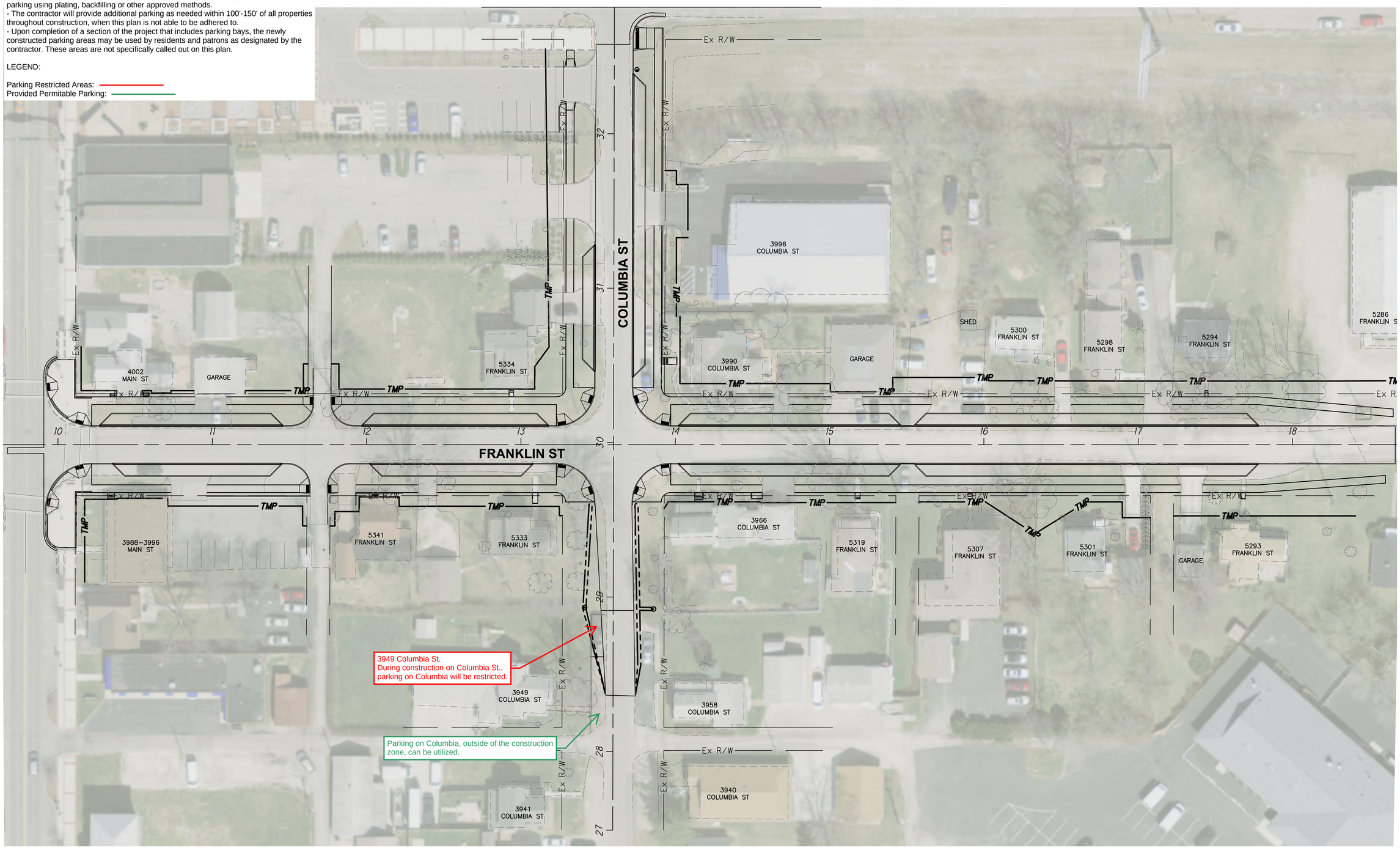
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

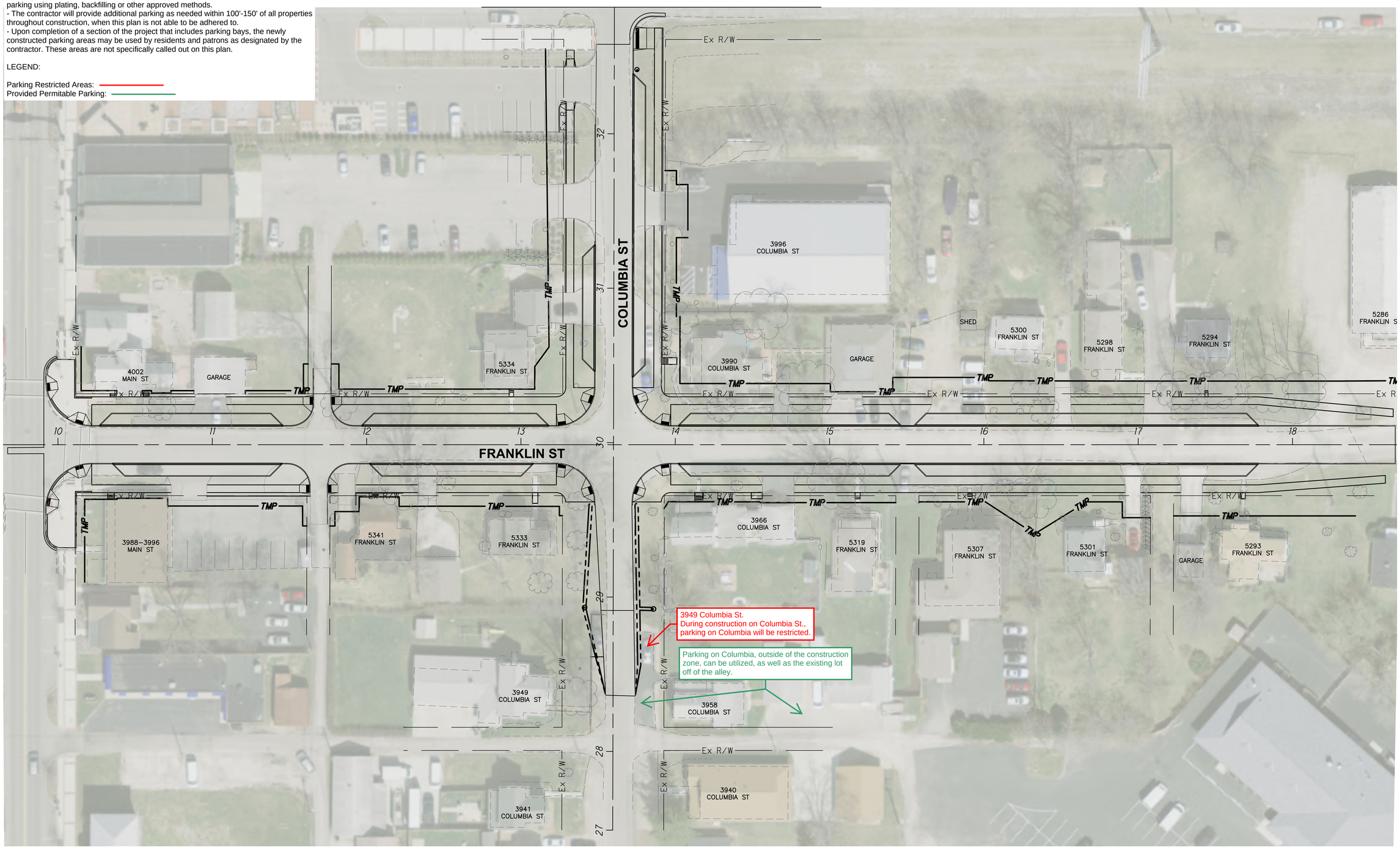
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

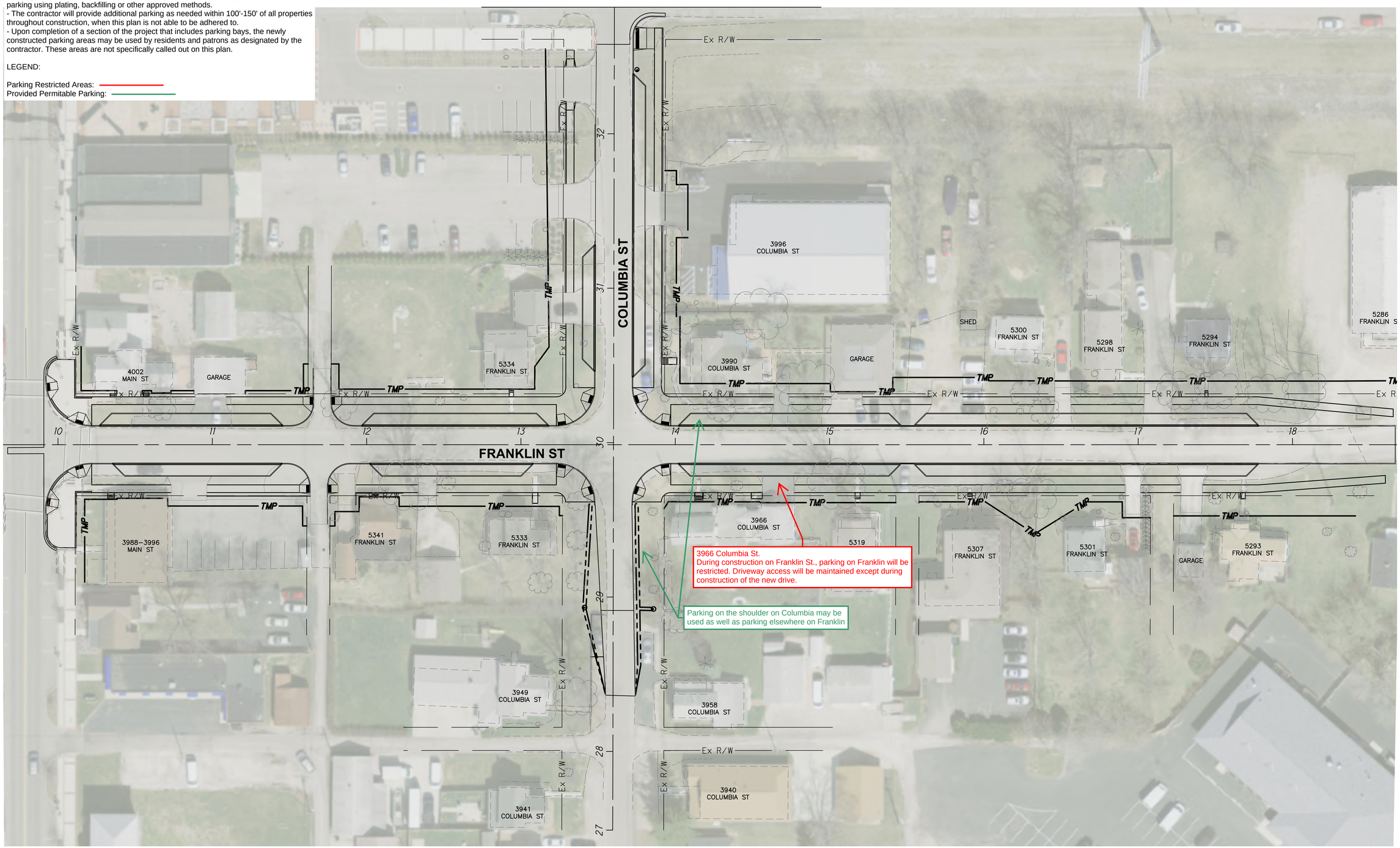
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

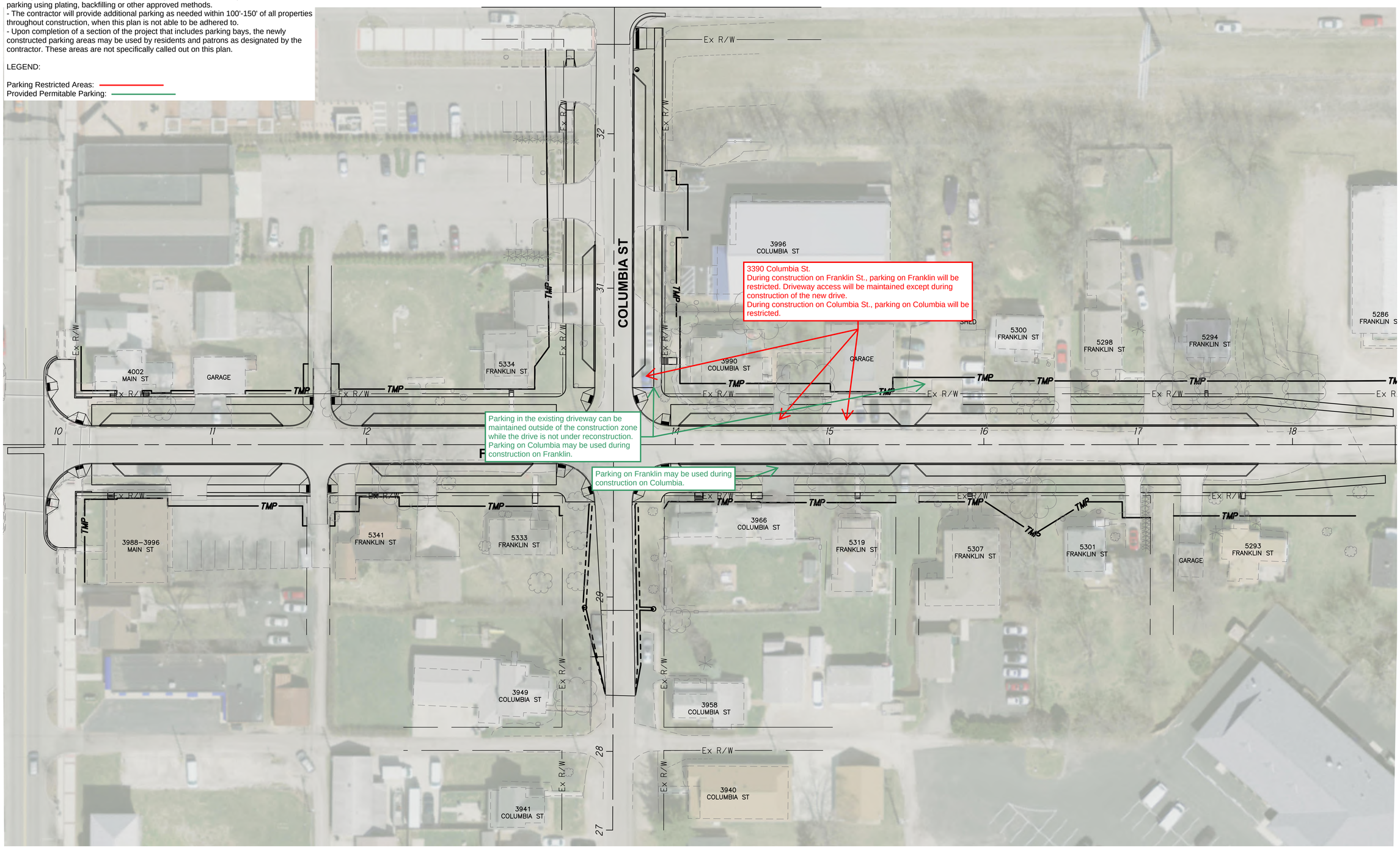
W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

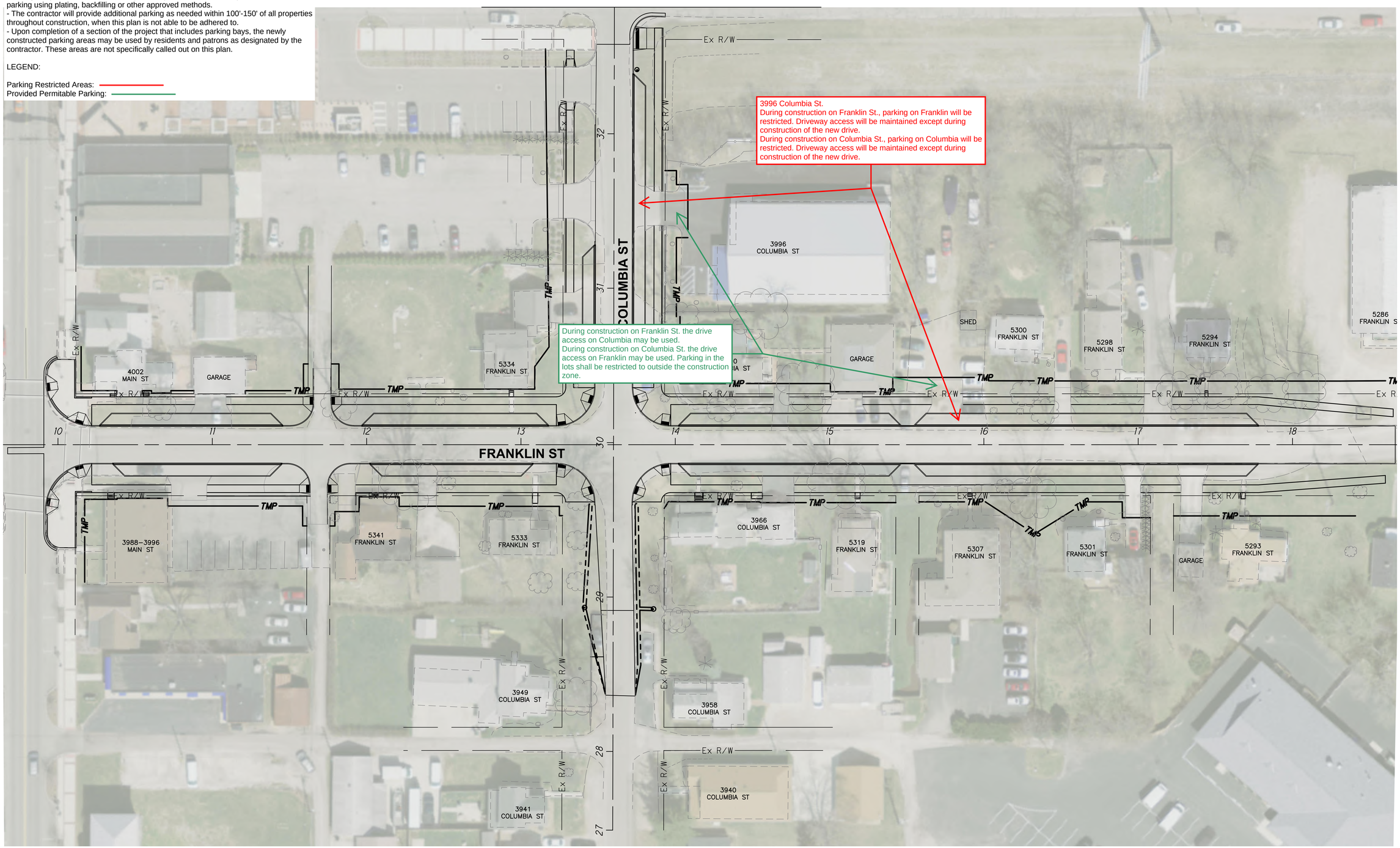
- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:

3996 Columbia St.
During construction on Franklin St., parking on Franklin will be restricted. Driveway access will be maintained except during construction of the new drive.
During construction on Columbia St., parking on Columbia will be restricted. Driveway access will be maintained except during construction of the new drive.

During construction on Franklin St. the drive access on Columbia may be used.
During construction on Columbia St. the drive access on Franklin may be used. Parking in the lots shall be restricted to outside the construction zone.



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

PARKING NOTES:

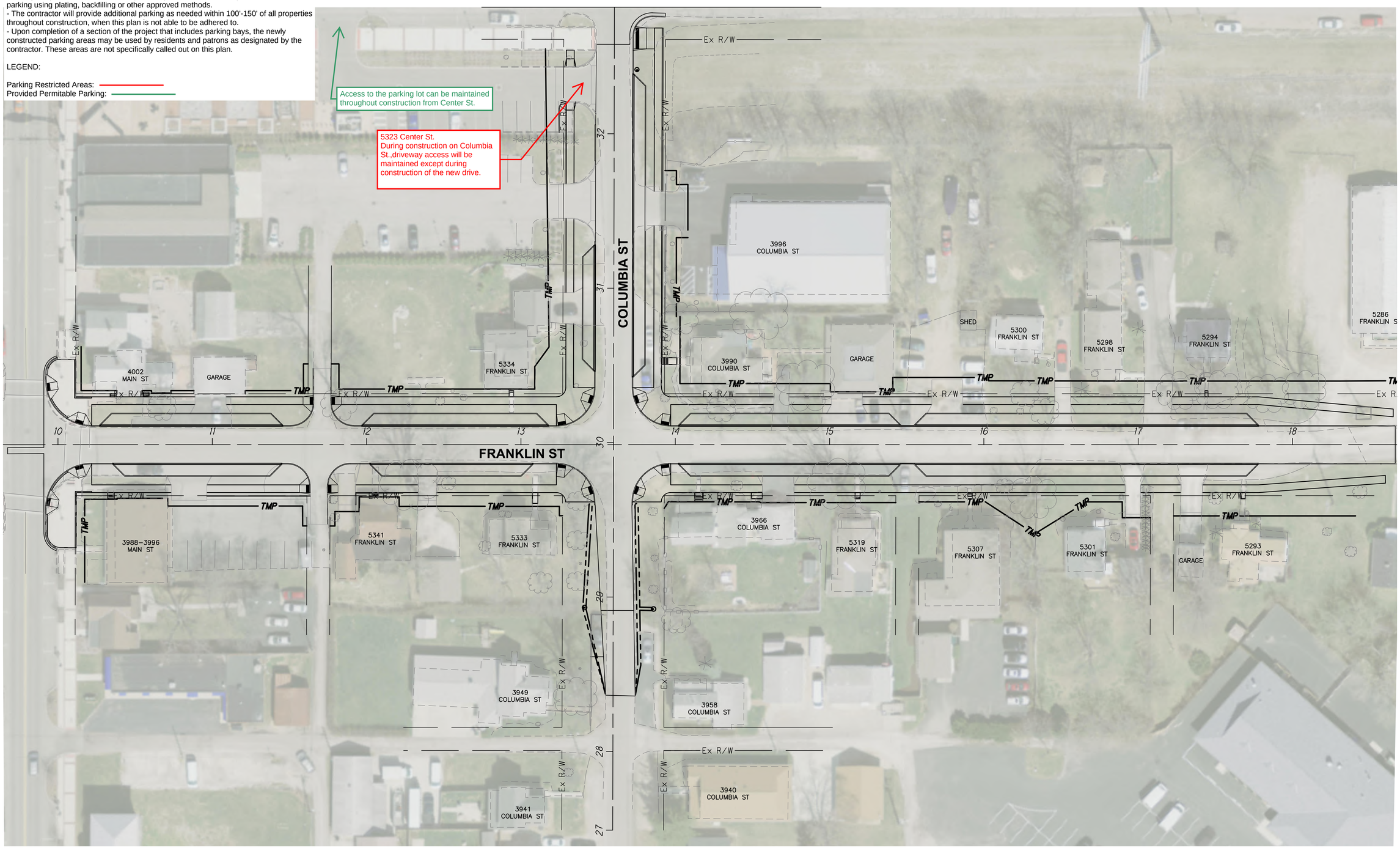
- Drives and access will be maintained throughout construction, until reconstruction of the drive takes place. Parking in driveways will be permitted until the drive is to be removed and reconstructed.
- During utility installation, it is the responsibility of the contractor to provide access to parking using plating, backfilling or other approved methods.
- The contractor will provide additional parking as needed within 100'-150' of all properties throughout construction, when this plan is not able to be adhered to.
- Upon completion of a section of the project that includes parking bays, the newly constructed parking areas may be used by residents and patrons as designated by the contractor. These areas are not specifically called out on this plan.

LEGEND:

Parking Restricted Areas:
Provided Permitable Parking:

Access to the parking lot can be maintained throughout construction from Center St.

5323 Center St.
During construction on Columbia St.,driveway access will be maintained except during construction of the new drive.



NORTH

0 15 30 60
HORIZONTAL SCALE IN FEET

PLAN VIEW

CITY OF HILLIARD, OHIO
FRANKLIN STREET IMPROVEMENT (CIP T-138)

1
1

W:\Srvln\DE\Columbus\Clients\OH_City_of_Hilliard\076347_FranklinSt\00138_FRANKLIN_ST\Design\Roadway\Basemaps\PARKING.dwg 27-Jul-18 3:39 PM

CIPP Sanitary Sewer Lining

Note to bidder: The CIPP Sanitary Sewer Lining ONLY is to be included in the base bid.

UV CIPP Sanitary Sewer Lining is to be included as Bid Alternate 1 along with the deduction of CIPP Sanitary Sewer Lining.

SECTION 33 01 30.16

TELEVISION INSPECTION OF SEWERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide all labor, materials, tools, equipment and incidentals as shown, specified, and required to perform television (TV) inspection of existing and rehabilitated piping including sewer mains connections.

B. The CONTRACTOR shall be aware that this Contract requires work in active sewers and shall follow all federal, state and local requirements for safety in confined spaces.

C. Inspection shall be performed by a National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP) certified operator and shall meet the coding and reporting standards and guidelines as set by PACP. All report annotations, pipe conditions and pipe defects shall be identified properly using PACP codes as defined by PACP, and severity ratings shall be calculated according to PACP.

D. Pre-construction Inspection shall be used to determine which laterals are “Active” or “Inactive”.

E. Quality of inspection recording shall be acceptable to ENGINEER IN THE FIELD when viewed on a standard computer monitor.

F. CONTRACTOR shall expect to perform manned entry of manholes and pipes in order to deploy and operate inspection and cleaning equipment.

1.02 RELATED SECTIONS

A. Section 33 01 30.17, Cleaning of Sewers

B. Section 33 01 30.71, Sanitary Sewer Rehabilitation By The Cured In Place Pipe (CIPP) Process

C. Section 33 01 48, Flow Control of Sewer Lines

1.03 QUALITY ASSURANCE

A. CONTRACTOR’s Qualifications: The CONTRACTOR shall have a minimum of five (5) years of experience in such work necessary to successfully meet this specification and provide references for five (5) sewer inspection projects involving Sonar/CCTV combined inspection in accordance with NASSCO-PACP Standards. Provide list and references for all PACP projects within the last 5 years. Provide sample video/Sonar and database submittal files for 3 projects for review by the ENGINEER and OWNER prior to performing such work. Provide copies of operator certificates that will be on the project. Operators must have a minimum of 3 years’ PACP experience.

B. Reference Standards: NASSCO prepared *Pipeline Assessment and Certification Program*, Version 6.0.1, November 2010. This manual includes a standard TV inspection form and condition codes.

C. Pre-Construction TV inspection of sewers to determine the location of construction, structural and O&M features and to ascertain that the condition of the pipe meets acceptable standards for the proposed rehabilitation.

D. Post-Construction TV Inspection of repaired or rehabilitated sewer mains and lateral connections to determine the location of construction, structural and O&M features and to verify that all repairs have been performed.

E. Final TV inspection of repaired or rehabilitated sewer mains and lateral connections to determine the location of construction, structural and O&M features, performed following a specified waiting period after completion of rehabilitation. Inspection shall be completed prior to final acceptance.

1.04 SUBMITTALS

A. CONTRACTOR's Qualifications: CCTV equipment, including make, model, age of video systems and tractors, and documentation that CCTV software is PACP v6.0-certified. PACP-compliant software will not be accepted. Copies of PACP certificate for inspectors completing the Work.

B. Use the OWNER's "Asset ID's" provided in the Contract Drawings when referencing "Start Manhole", "End Manhole", and "Pipe Segment" in the inspection database and filenames. If Asset ID's are not shown in the Contract Drawings, contact the CITY.

C. A sample video/sonar/database submittal of all files must be received and approved by the ENGINEER/OWNER before Contractor will be permitted to perform work, in order to ensure compatibility with the OWNER's sewer database program, and reduce coordination efforts in delivering the data to the ENGINEER during the project. The CONTRACTOR may be required to coordinate directly with the OWNER to ensure that submittals are in a compatible format.

D. First submittal is due immediately after the first week of pre-construction inspection. Should the first submittal not be compatible, a subsequent (second) submittal is due within 5 working days from notification by the ENGINEER. Should the second submittal not be compatible, all work by the CONTRACTOR will be stopped until a compatible submittal is received and approved by the ENGINEER/OWNER. Such a work stoppage will not be grounds for a change order and/or extension of contract time.

E. Provide location records to clearly identify the location of each defect, or lateral connection, in relation to adjacent manholes, using a standard stationing system zeroed on the upstream manhole. Record all information requested using proper NASSCO PACP defect codes. The reports shall include at least the minimum amount of information required by PACP, including required PACP header information. Color still shot images of all defects encountered shall be included with each pipe segment. Reports shall be provided in Adobe Acrobat (.pdf) format, one per pipe inspection.

F. Provide a Microsoft Access (.mdb) NASSCO PACP v6.0 certified database listing all PACP required data fields for each pipe segment.

G. Provide one inspection per sewer main. If the conditions of the main do not permit inspection of the entire asset from one direction, provide a second inspection from the opposite end to the point the initial inspection was abandoned.

H. Each inspection record shall contain the video file associated with the inspection in the "Tape/ media number" PACP Header field. Provide only the video file name and extension in this field. Do not provide file paths or drive letters.

I. Provide digital inspection recordings for all recordings. Video files shall be MPEG (.mpg) or Window Media File (.wmv). The inspection video file should be named by the OWNER's Sewer Segment Asset ID Number.

J. Recording shall be of a quality sufficient for ENGINEER IN THE FIELD to evaluate the condition of the sewer, locate the sewer service connections, and verify cleaning and joint testing. If ENGINEER IN THE FIELD determines that the quality is not sufficient, re-televise the sewer segment and provide a new recording and report at no additional compensation. Payment for televised inspection will not be made until ENGINEER IN THE FIELD approves the recordings and reports.

K. Camera distortions, inadequate lighting, dirty lens, or blurred/hazy picture will be cause for rejection. Pipe stationing not shown on the video or in a font style or color that is unreadable will be cause for rejection. TV inspection recordings shall not be edited.

L. Electronic recording file must allow snap scrolling to allow easy and quick access of the entire recording. Provide one electronic video file of each inspection. Multiple inspections per video file and multiple video files per inspection will be cause for rejection. Maintain a master copy of all recordings and inspection reports for two years after delivery of reports and recordings.

M. During CCTV inspections, screen capture snapshots will be taken from the monitor images and saved electronically by the in-sewer inspection crew of typical conditions every 200 feet and at all defects, manholes (plan on taking at least 2 pictures per manhole), bends, and service lateral connections. The screen capture shall have the reach (identified by the sewer segment Asset ID or manhole asset ID), survey direction, footage, and date when photograph was taken. The annotation shall be clearly visible and in contrast to its background, shall have a figure size no greater than 1/4-inch, and shall be type-printed. The annotation shall be positioned on the front of the photograph so as to not interfere with the subject of the photograph.

N. The image of the sewer shall fill the photographic image. Photographs must clearly and accurately show what is displayed on the monitor, which shall be in proper adjustment. Where significant features exist within 6-feet of each other, one photograph shall be made to record these features. Where there is a continuous feature, photographs shall not be taken at intervals of less than 6-feet unless absolutely necessary to show a change in the feature.

O. Proper lighting shall be provided and ensured for different conditions (pipe interior, manhole interior, etc.). Failure to provide the proper amount of light (insufficient or excessive) which results in poor picture quality will be grounds for the CONTRACTOR to remobilize and reacquire the pictures in question at no additional cost to the OWNER/ENGINEER.

P. The images shall be kept electronically and submitted with the inspection videos and logs.

Q. Draft copies of the inspection reports in .pdf format described herein shall be provided to the ENGINEER for review within twenty-one (21) days of completion of all inspection work. Comments will be provided by the ENGINEER to the Contractor for incorporation into the final reports. Final electronic copies of the final reports shall be provided to the ENGINEER within one (1) week of receipt of comments from the ENGINEER.

R. One copy on a USB 3.0 external hard drive, or multiple CD/DVD's, of the PACP formatted database including, but not limited to: digital inspection recordings, defect call-out tables, defect snapshots, notes fields and inspection reports; shall be provided to the ENGINEER for each of the following: Pre-Construction Inspection, Post-Construction Inspection, and Final Inspection.

S. Label each deliverable with the following information:
   1. CONTRACTOR's Name
   2. Project Name
   3. Contract Number
   4. Inspection Type: Pre-Construction, Post-Construction, Final
   5. Date(s) Televised

PART 2 - EXECUTION

2.01 GENERAL REQUIREMENTS

A. The camera(s) shall be operative in 100 percent humidity/submerged conditions. The CCTV camera equipment will provide a view of the pipe ahead of the equipment and of features to the side and rear of the equipment through turning and rotation of the lens or through turning and rotation via viewing software. The camera or viewing software shall be capable of tilting at right angles along the axis of the pipe while panning through a full circle about the circumference of the pipe. The lights on the camera shall also be capable of panning 90-degrees to the axis of the pipe. If the equipment proves to be unsatisfactory, it shall be replaced with adequate equipment.

B. The television camera, electronic systems and monitor shall provide an image that meets the following specifications.
   1. With the monitor control correctly adjusted, the six colors - Yellow, Cyan, Green, Magenta, Red, and Blue, plus black and white shall be clearly resolved with the primary colors in order of decreasing luminance.
   2. The picture shall show no convergence or divergence over the whole of the picture. The monitor shall be at least 13 inches diagonally across the picture tube.
   3. The live picture on the CCTV monitor shall be capable of registering a minimum of 600 lines horizontal resolution and be a clear, stable image with no interference.

C. Lighting intensity shall be remote controlled and shall be adjusted to minimize reflective glare. Lighting and camera quality shall provide a clear, in-focus picture of the entire inside periphery of the sewers and laterals for all conditions except submergence. Under ideal conditions (no fog in the sewer) the camera lighting shall allow a clear picture up to five pipe diameter lengths away for the entire periphery of the sewer. The lighting shall provide uniform light free from shadows or hot spots.

D. Inadequate lighting, sewer gas, fog, mist, spray, wet or submerged camera lens, high flow levels, fast flow velocities, excessive camera movement, small window of viewable area, bypassing defects and connections without stopping/panning, poor video quality, or poor audio quality will be just cause for the OWNER to require the sewer to be re-televised by the Contractor at no additional cost to the OWNER.

E. Camera focal distance shall be remotely adjustable through a range of 6 inches to infinity.

F. The monitor and software shall also be able to capture and save screen images of typical sewer details and all defects.

G. All recordings are to be in digital format.

H. Digitized picture images shall be stored and be exportable as JPEG formats.

I. Full time live video and audio files shall be captured for each pipe segment inspected. The files shall be stored in industry standard Windows Media File or MPEG format and viewable on a personal computer that utilizes Microsoft Media Player, version 9.0. Alternate digital formats will not be accepted unless approved by the ENGINEER IN THE FIELD in advance of submittal. The video shall have a minimum resolution of 640 pixels (x) by 480 pixels (y) and an encoded frame rate of 29.97 frames per second. System shall perform an automatic disk image/file naming structure to allow saved video/data sections to be “Burned” to digital format. It shall have the capability of “burning” a minimum of 120 minutes of recording to the DVDR media. The video recording shall be free of electrical interference and shall produce a clear and stable image. The audio recording shall be sufficiently free of background and electrical noise as to produce an oral report that is clear and discernable. The digital recordings and

inspection data shall be cross-referenced to allow instant access to any point of interest within the digital recording.

J. The audio portion of the composite video shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of the oral report. Audio shall be recorded by the operating technician on the inspection video as the sewer is inspected and shall include the sewer location, identification of beginning and terminating manholes including location (address or cross streets), inspection direction, length of inspection, side sewer identification, flow information, complete descriptions of the sewer line conditions as they are encountered, description of the rehabilitation work, reason for termination, and other relevant commentary to the inspections. In addition, the audio reports shall include the distance traveled on the specific run, a description of abnormal conditions in the sewer and side sewer connections as they are encountered, explanations for pausing, backing up, or stopping the survey, and the final measured center to center distances between consecutive manholes. Audio dubbing after the inspection is prohibited.

K. Sonar Equipment consists of the following basic elements: Sonar Surface Equipment and In-sewer Sonar Scanner. The equipment must be specifically engineered to meet the challenges of extended operations in the harsh environment encountered inside sewer pipes, while always providing images of the highest definition. Also, it must be capable of inspecting pipelines whose sizes range from 18 inches to 144 inches in diameter with a track record in excess of 2 years or 100,000 feet in the field. The transducer and drive motor contained within the sewer sonar scanner must be totally enclosed in an oil-filled housing which is hermetically sealed from the electronics pod resulting in no exposed moving parts. The sewer sonar scanner must be streamlined in shape to minimize the collection of rags and debris inside the sewer. Sonar unit must have a minimum of 2.4-degree angular resolution with at least 150 sectors per revolution. Full revolution scans will be recorded with a density of 2 complete sonar scans per every inspection foot.

L. The Sonar Equipment must have a selectable full scale and must support a return range of at least 8 inches to 144 inches. The digitally generated graphics display must use a minimum of 256 shades to represent the signal amplitude for each of these cells making at least 100,000 cells per image. If the sonar system produces analog data then a half size ISA Interface card must be fitted into the PC and must have a flash A/D converter clocked by a programmable sample rate up to a maximum of 5 MHz ensuring that the finest detail can be captured. An on board FIFO buffer must be fitted to insure that the data remains in perfect synchronization with the transmit pulse to produce continuous smooth images. If the sonar system produces digital data then the digital data must be recorded in a manner that allows for the data to be related to pipe position during post processing.

M. The Sonar Equipment must have at least a 600 kHz operating frequency and an acoustic beam width of less than 2.4 degrees in order to produce accurate clear cross sections of the pipe being scanned. Analog sonar equipment must have a variable velocity of sound calibration allowing the system to be calibrated such that the measurements taken with the on-screen cursors are accurate to the pixel spacing, which must be at least 0.5mm on the shortest range. The sonar surface equipment to support analog sonar must be able to provide a continuous NTSC composite video output so that the entire survey will be recorded and remote video monitors can be connected.

N. When using an analog sonar system the distance moved through the pipe must be able to be displayed on the monitor screen and be logged along with the saved images for accurate determination of where flaws exist in the pipe relative to the deployment manhole.

O. The Sonar Scanner must have pitch and roll tilt sensors with 0.3-degree resolution showing the attitude of the scanner on the screen both pictorially and numerically. The tilt sensors must be able to be set-up so that an alarm is generated if a preset tilt angle is exceeded.

P. The contractor may use a video camera crawler driven at a uniform speed along the pipe bottom or a float may be tethered to allow travel downstream at a controlled speed. The contractor shall use the method that will obtain the best image and will negotiate anticipated obstructions. The sonar unit should make 2 complete scans per foot of travel.

Q. The ENGINEER's field representative must authorize the type of inspection (CCTV only or CCTV/sonar combination) for each sewer segment based on actual field conditions. Payment will be based upon the actual length and type of inspection completed in accordance with the contract documents and specifications. Some sewers will not have flow levels which will allow for sonar, and for these sewers only CCTV inspection will be required. For sewer pipes with adequate flow depths for sonar implementation, the contractor will be required to perform both the CCTV and sonar inspection at the same time/day, with a combination unit. The CONTRACTOR will not be permitted to perform CCTV and sonar individually at different times/days. CCTV and sonar work performed separately will not be accepted or paid for, and the CONTRACTOR will be required to remobilize and re-perform the inspections concurrently at no additional cost to the City or ENGINEER. The CONTRACTOR not having the necessary equipment on-site will not be grounds for the ENGINEER and City to waive this requirement, and allow separate inspections.

R. The CCTV and/or Sonar unit shall include a locating device/sonde at all times for the purpose of field locating and marking buried manholes.

S. The CCTV images shall include an initial data display that identifies the sewer reach being surveyed and a survey status display that provides continuously updated information on the location of the survey unit as the survey is being performed. These data displays shall be in alphanumeric form. The size and position of the data shall not interfere with the main subject of the monitor picture.

T. The on-screen display should be white during inspections where the background behind the display is dark and, conversely, black where the background is light.

U. At the beginning of each reach of sewer being inspected, the following information shall be electronically generated and displayed on the CCTV monitors as well as included in the audio track:
   1. Date of survey
   2. Location
   3. Sewer segment Asset ID
   4. Manhole number to manhole number Asset IDs (in order of inspection)
   5. Direction of survey (upstream or downstream)
   6. Time of start of survey.
   7. Inspection type (pre-construction, post-construction, or final)

V. During inspections, the following information shall be electronically generated, automatically updated, and displayed on the CCTV monitors:
   1. Survey unit location in the sewer line in feet and tenths of feet from adjusted zero
   2. Sewer diameter
   3. Sewer segment Asset ID

2.02 INSPECTION

A. Prior to TV inspection, clean sewer lines and manholes in accordance with Section 33 01 30.17 – Cleaning of Sewers. Re-clean any sewer line or manhole found to be insufficiently cleaned during the TV inspection process.

B. Remove protruding laterals identified during the Pre-Construction Inspection.

C. Perform Post-Construction Inspections of rehabilitated pipe segments after the waiting period specified in applicable specification for the rehabilitation materials.

D. Televise the sewer line to document the condition of the line. Notify the ENGINEER IN THE FIELD 48 hours in advance of any TV inspection so that the ENGINEER IN THE FIELD may observe inspection operations. Provide a color recording showing the completed work.

E. Center camera in manhole invert to the extent allowed by the channel geometry. For inspections from manholes, pan and record the entire circumference of the pipe penetration/manhole wall.

F. With camera rolling, perform the distance counter preset. If a preset point on the CCTV cable is used to set the counter, CONTRACTOR shall back up the camera after setting the preset and record the entry to the pipe.

G. Pipeline inspection shall be from center of the starting manhole to the center of the ending manhole. Measure distances along the pipe from the inside of manhole wall of the starting manhole to inside of manhole wall of the downstream manhole.

H. Prior to recording the location of defects, construction features and service connections, remove slack in the cable of the television inspection camera to ensure metering device is designating proper footage. Check accuracy of the measurement meters daily by use of a walking meter, roll-a-tape, or other suitable device.

I. Center the camera in the middle of the pipe.

J. Move the camera through the line (in the downstream direction whenever possible) at a uniform rate not to exceed 30 feet per minute.

K. When infiltration or other defects are evident, use pan and tilt to document pipe condition. Stop elsewhere when necessary to ensure proper documentation of the sewer's condition.

L. Stop at every lateral connection. Center the camera so that the lighting and the pan and tilt view can be used to inspect as far into the lateral connection as possible. Pan the circumference of the tap, recording all defects found in the service connection. Where lateral flow is observed, observe flows from service connections for approximately two minutes to ascertain if the flow is sanitary or extraneous flow. The video recording may be paused during observation. Record results of the flow observed on video recording and inspection logs.

M. Capture color still photograph snapshots of video recordings for all defects encountered.

N. Use manual winches, power winches, TV cable, and powered rewinds or other devices that do not obstruct the camera view or interfere with proper documentation of the sewer conditions to move the camera through the sewer line.

O. TV inspection recordings shall be continuous for each pipe segment.

P. Adjust light levels, clean fouled or fogged lens, and allow vapor to dissipate from camera lights in order to produce acceptable recordings. All TV inspection recordings that do not meet the specified requirements shall be re-televised at no additional cost to the CITY.

Q. During Pre-Construction Inspection, adequately control the flow in the section being televised. Plugging or bypassing, in accordance with Section 33 01 48 – Flow Control of Sewer Lines, of the flows may be used to accomplish this. Recordings made where the depths of wastewater flow shown below are exceeded will be rejected:

Pipe Diameter (Inches)	Depth of Flow (% of Pipe Diameter)
6-10	10
12-24	15
Over 24	20

R. Whenever flows in a sewer line are blocked, plugged, pumped, or bypassed, take sufficient precautions to protect the sewer lines from damage that might be inflicted by excess sewer surcharging. Further, take precautions to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved. No overflows are permitted. The CONTRACTOR is responsible for all damages.

S. CONTRACTOR is responsible for all damages to CONTRACTOR owned and operated equipment, CITY facilities, and privately owned facilities caused by malfunction of plugs, pumps or other CONTRACTOR equipment. In the event of a failure or malfunction of CONTRACTOR equipment, CONTRACTOR is responsible for all work necessary to restore facilities to pre-construction condition including but not limited to excavation and restoration of sewer lines and roadways required to retrieve malfunctioning or stuck cameras, plugs and hoses.

T. It is anticipated that portions of the sanitary sewer are bowed or bellied and as a result the camera will be submerged. Wherever the camera encounters a submerged condition, or where the wastewater flow depth exceeds the maximum allowable, reduce the flow depth to an acceptable level by performing the survey TV inspection during minimum flow hours, or by pulling a camera with swab, high-velocity jet nozzle or other acceptable dewatering device. Recordings made while floating the camera are not acceptable unless approved by ENGINEER IN THE FIELD.

U. The Post-Construction Inspection shall be made during periods of No Flow. Perform bypass pumping, in accordance with Section 33 01 48 – Flow Control of Sewer Lines, if necessary to complete inspections.

V. The Final Inspection shall be made following a specified waiting period after sewer reinstatement and completion of sewer rehabilitation.

W. If during TV inspection of a pipe segment the camera is unable to pass an obstruction even though flow is unobstructed, televise the pipe segment from the opposite direction in order to obtain a complete recording of the line. Measure the distance between the entry points (centerline to centerline) with a tape or wheel to accurately determine the total length of the pipe segment.

END OF SECTION

SECTION 33 01 30.17

CLEANING OF SEWERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide all labor, materials, tools, equipment and incidentals as shown, specified, and required to clean mainline sewers, as needed. The cleaning work may include, but is not limited to, the following:
   1. Cleaning of mainline sewer; manholes; racks
   2. Removal of waste/sediment/debris (materials)
   3. Dewatering; hauling; testing; disposal of materials
   4. Cleaning up as Work progresses and after completion of all Work activities.
   5. All other Work required for the complete and satisfactory cleaning of the mainline sewer and laterals.

B. The CONTRACTOR shall clean the sewers, manholes, racks, and related underground structures, in order to remove all waste/sediment/debris (material) accumulations to an acceptable level. The CONTRACTOR should anticipate encountering all materials discussed in this specification.

C. Acceptable cleaning is defined as either 1) removing all materials to restore the internal pipe opening to a minimum of 95% of the original internal cross sectional area of the pipe in a manner such that 100% of loose material is removed and hard materials attached to the pipe walls are removed to within 1/2-inch or less of the pipe wall or 2) removing all materials to a degree which enables the specified rehabilitation method to be successfully executed in accordance with the rehabilitation specifications and the manufacturer's recommendations.

D. Acceptance of the cleaning will be verified by CCTV and/or sonar inspection (where flow depth permits) as described in Section 33 01 30.16 – Television Inspection of Sewers. Sewers not cleaned to an acceptable degree shall be re-cleaned and have post video confirmation performed at no additional cost to the OWNER or ENGINEER.

E. The CONTRACTOR is responsible for identifying sources of water (hydrant locations) and coordinating access, which includes submitting 48-hour requests for specific hydrants prior to performing work for approval by both the CITY and the ENGINEER.

F. The CONTRACTOR may perform pre-cleaning inspection and exploration, at his own expense, in order to inspect the sewer to view current line conditions. The CONTRACTOR shall provide the OWNER and ENGINEER with advance notice of such exploration.

G. This Contract requires work in active sewers. Adhere to all federal, state and local requirements for safety in confined spaces.

H. Take precautions to protect sewer mains, laterals and manholes from damage that might be inflicted by the improper selection of the cleaning process or improper use of the equipment.

I. When using hydraulically propelled devices, take precautions to ensure that the water pressure created does not cause damage or flooding to public or private property.

J. Do not surcharge the sewer beyond the elevation that could cause overflow of sewage into area waterways, homes, or buildings or onto the ground.

K. Some of the manholes accessing sections of the sewer included in this work are on private property where either specific easements and/or trespass agreements with individual property owners have or have not been negotiated. All easements are typically shown on the Drawings, and copies of the pertinent trespass agreements are available for review by contacting the ENGINEER. Do not enter private property for which access agreements with the CITY have not been executed. Limit operations to those specifically approved in said trespass agreements.

L. Restore or repair any facility, public or private, which is damaged by CONTRACTOR actions at no cost to CITY.

M. The CONTRACTOR shall provide all safeguards, safety devices and protective equipment and take any other needed actions, on his own responsibility, reasonably necessary to protect the life and the health of employees on the job, the safety of the public, and to protect property in connection with the performance of the work covered by this Contract.

1.02 RELATED SECTIONS

A. Section 33 01 30.16, Television Inspection of Sewers

B. Section 33 01 30.71, Sanitary Sewer Rehabilitation By The Cured In Place Pipe (CIPP) Process

C. Section 33 01 48, Flow Control of Sewer Lines

1.03 SUBMITTALS

A. Submit the specifications of the sewer cleaning equipment, including performance data on pump, hose diameter and length, tank capacity, and intended nozzles and root cutters, to be used on the job. Provide a chart that shows hose length and diameter versus volume and pressure.

B. Specifications on the equipment to be used to remove sediment and debris at the downstream manhole of each reach to be cleaned.

C. Valid waste disposal facility acceptance verification.

D. Work Plan for disposal of debris and sediment removed from the mainline sewer, manholes, and laterals.

E. Confined space entry and NASSCO PACP certifications for workers.

F. Daily work logs documenting personnel, equipment, production, and site location(s).

1.04 QUALITY ASSURANCE

A. CONTRACTOR's Qualifications: The CONTRACTOR shall have a minimum of five (5) years of experience in such work necessary to successfully meet this specification and provide references for five (5) sewer cleaning projects involving in accordance with NASSCO-PACP Standards. Provide list and references for all PACP projects within the last 5 years. Provide copies of operator certificates that will be on the project. Operators must have a minimum of 3 year's PACP experience.

B. CONTRACTOR shall have experience in the cleaning of sewers. Documentation of experience shall be furnished to the ENGINEER upon request.

PART 2 – PRODUCTS

2.01 MATERIALS TO BE CLEANED

A. The terms waste/sediment/debris shall cover and refer to all “materials”, regardless of size/shape/weight/material/hardness/density/chemical composition, encountered inside sewer pipes and are which therefore required to be cleaned, dislodged, removed, and disposed. The CONTRACTOR should anticipate encountering all materials discussed herein, including, but not limited to: sanitary waste, sludge, grease, hard encrustations, mineral deposits, densely packed materials, roots, plastics, concrete, grout, asphalt, pavement sections, clay, bricks, rock, stones, gravel, cinders, sand, dirt, soil, boulders, metal, rebar, construction debris, pipe sections, manhole lids/castings/grade rings, sealing rings, joint gaskets, metal flap gates, garbage, toys, firearms, railroad ties, wood, dimensional lumber, tree branches, rag balls, rope, automobile parts, bike parts, metal sewer snakes, protruding laterals/taps/pipe, and all other materials encountered in the sewer systems.

B. All materials, regardless of size/shape/weight/material/hardness/density/chemical composition, which are encountered inside sewer pipes, whether specifically mentioned or not, are required to be cleaned, dislodged, removed, and disposed as described herein. Materials encountered may be larger than existing manhole openings and therefore may need to be cut and/or broken up inside the manhole in order to be removed. Should the CONTRACTOR need larger openings to accommodate cleaning equipment and/or material removal, such manhole modifications and replacements shall be submitted to the OWNER/ENGINEER for review and approval on an individual basis.

2.02 MATERIALS AND TECHNICAL REQUIREMENTS

A. Sewer cleaning equipment shall consist of truck-mounted, high velocity hydro-cleaning equipment. The equipment shall be provided with a minimum of 500 feet of one-inch inner diameter high-pressure hose with a selection of high velocity nozzles, as required for the cleaning operation. The various nozzles shall produce a scouring action in all size sewers to be cleaned. Use nozzles matched to the pumps and the site-specific cleaning requirements. Mount all nozzles with skids where existing sewer materials warrant concern over possible damage prior to rehabilitation. A tiger tail or boot or downhole roller is required. A pressure gauge shall show operating pressure and a flow meter shall show flow rate. A table to translate shown pressures to delivery pressure shall accompany each cleaner unit.

B. The pumps shall be capable of delivering a minimum 80 gpm at 2,000 psi at the nozzle head, and a maximum of 160 gpm. A relief valve shall regulate pressure to the nozzle. The unit shall carry its own water tank, minimum of 1,000 gallons, auxiliary engines and pumps, and a hydraulically-driven hose reel.

C. All vacuum/pump trucks and combination jet/vacuum/pump trucks shall be equipped with an inspection port or sight glass to observe water levels during cleaning.

D. All controls shall be located so that the equipment can be operated above ground.

E. The CONTRACTOR shall have available, employ, and have ready on-site, a variety of equipment to clean/break-up/dislodge/cut/remove all materials, obstructions, and blockages encountered.

F. All equipment utilized by the CONTRACTOR shall be in good working condition and manufactured or fabricated to withstand the severity of the work covered. If the equipment is found to be defective, it shall be replaced by the CONTRACTOR at the ENGINEER/OWNER’S request.

G. Provide equipment capable of removing all materials from the sewer and manhole from depths up to 50 feet.

H. Provide screens to prevent scoured debris from migrating downstream of the limits of the Work.

I. The CONTRACTOR may be required to utilize special cleaning tools in order to clean the sewers to an acceptable degree. Special tools are defined as any type of tool, equipment, head, or attachment which is not of the water jet/nozzle and/or vacuum/pump type system (regardless of size/capacity/configuration). Special tools may include, but not be limited to root cutters; cutting heads; lumberjack; chain cutter; impact auger; porcupine; tap cutter. Special tools would also include manned entry required to remove unusually large or heavy materials from the pipe and manhole that cannot be removed by a water jet/nozzle and/or vacuum/pump type systems. CONTRACTOR shall inform the OWNER and ENGINEER of the intent to use special tools on a case-by-case basis prior to beginning said work. Dates, times, and durations of use shall be documented in detail.

J. Provide equipment capable of mechanically removing roots, grease, and intruding seal material. Devices shall include a root saw, spring blade root cutter chuck, chain cutter, or approved equal.

K. Remove intruding service connections with an internal, remote-controlled intruding pipe remover. Excavation and replacement of the intruding service connection will not be allowed unless specifically indicated on the Drawings.

L. The CONTRACTOR will only address taps which protrude in length such that cleaning and/or CCTV/sonar equipment cannot pass or are not allowed to continue to exist protruding in order to successfully execute the specified rehabilitation method.

M. The equipment shall be capable of cutting concrete, poly-vinyl chloride pipe, vitrified clay pipe, or other materials commonly used for pipe construction with the exception of cast iron or steel.

N. Pull tap removal equipment through the sewer using winches and a cable set up between adjacent manholes. If necessary, position the equipment using a CCTV camera in conjunction with the cutter assembly.

O. Provide all flushing water required for the cleaning of the mainline sewer. Provide proof that all flushing water was acquired lawfully.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Thoroughly clean all pipeline reaches in order to permit an unrestricted inspection by closed circuit television and the successful execution of rehabilitation of the sewer pipes, where applicable. Particular emphasis shall be afforded to the removal of materials so that the video inspection will show clearly all portions of the pipe being inspected. Pressure at the nozzle shall be between 1500 psi and 2000 psi and flow rate shall be between 80 gpm and 160 gpm during cleaning operations in the sewer, unless otherwise approved by the ENGINEER.

B. Insert cleaning equipment into the downstream manhole of a given reach and pull the debris downstream. Reverse setups may be used if all debris is removed (i.e. no material is passed to the adjacent pipe segment).

C. Rig winching equipment so as not to damage the existing pipeline or manholes.

D. During cleaning, restrict the flow level in the pipe to a maximum of 30 percent of the pipe diameter. Take particular care to avoid flooding house connections during cleaning operations.

E. Refer to Section 33 01 48 – Flow Control of Sewer Lines for additional specifications related to bypass pumping.

F. Remove any blockages of lateral building connections resulting from the cleaning or other items of Work by cleaning of the building connection at no additional cost to the CITY.

G. The CONTRACTOR shall take care in cleaning older brick, segmental block and vitrified clay sewers and sewers with pre-existing damage, and shall protect existing sewers from damage caused by improper use and selection of cleaning methods and equipment.

H. The CONTRACTOR shall immediately stop work and notify the ENGINEER should any cleaning or inspection yield evidence of, or cause, damage to the existing sewer. It is the responsibility of the CONTRACTOR to select a cleaning method, and conduct operations in a manner, which will not cause damage to different material types and conditions of existing sewers. The ENGINEER may direct the CONTRACTOR to cease cleaning operations should there be evidence that the operation may be damaging the existing sewer. At such direction, the CONTRACTOR shall perform a television inspection of the sewer in accordance with Section 33 01 30.16 – Television Inspection of Sewers. Such direction by the ENGINEER shall not be cause for additional payment to the CONTRACTOR, if the television inspection shows evidence of new damage caused by cleaning operations. If no evidence of new damage caused by cleaning operations is found the television inspection shall be paid. Any damage to existing sewer due to cleaning operations shall be the responsibility of the CONTRACTOR and shall be corrected at the CONTRACTOR's expense. Any corrective actions are subject to the approval and acceptance of the ENGINEER and OWNER.

I. The CONTRACTOR shall at all times conduct the WORK so as to prevent any blockage and surcharging in the sewer manholes and connecting sewer pipelines. The CONTRACTOR shall perform all WORK during periods of weather conducive to their methods and also be able to continue WORK during differing weather and temperature conditions. No interruption to service shall be allowed unless authorized by the OWNER. Damage to existing facilities as a result of the CONTRACTOR's WORK shall be promptly repaired in kind at the CONTRACTOR's expense.

J. If there is a complaint about sewage overflow in the area served by the reaches being cleaned, the CONTRACTOR shall immediately investigate the report and immediately remedy the situation at no additional cost to the OWNER. This may include performing any cleanup work necessary or hiring professional cleaning company to assist homeowners with cleanup required.

K. Should the CONTRACTOR or his employees cause any damage to public or private property, the CONTRACTOR will be required to make repairs immediately. The OWNER may, however, elect to make repairs or replacements of damaged property and deduct the cost of such from monies due or to become due the CONTRACTOR under this contract with the OWNER.

L. The CONTRACTOR shall coordinate cleaning activities with the ENGINEER, the CITY and other trades. The CONTRACTOR shall take all steps necessary and appropriate to prevent adverse effects on wastewater treatment plant processes during the cleaning WORK. In the event that the WPCS experiences any reduction in operating efficiency during the execution of the contract, the CONTRACTOR shall immediately suspend all applications, at the direction of the OWNER/ENGINEER. The CONTRACTOR shall continue operations only after problems at the wastewater treatment plant have been corrected, satisfactory to the WPCS operator. The OWNER/ENGINEER reserves the right to suspend or terminate the contract at any time for any reason. The CONTRACTOR must maintain contact with OWNER/ENGINEER on a daily basis.

M. CONTRACTOR shall expect to perform manned entry of manholes and pipes in order to deploy and operate inspection and cleaning equipment.

N. The selection of cleaning methods will be at the CONTRACTOR'S discretion, based on existing pipe and manhole conditions, being able to ensure no damage to existing pipes and manholes, the amount and type of debris at the time WORK commences, and site conditions. The CONTRACTOR's selection of cleaning methods shall also consider effectiveness, efficiency, and the ability to meet the project schedule. Sewer cleaning methods may include, but not be limited to, water jetting, rodding, pigging, bucketing, or manual removal. Flushing the pipe reaches to facilitate cleaning is not permitted. The decision to utilize confined space entry to assist with operations and/or to perform manual cleaning will be the responsibility of the CONTRACTOR.

O. Where possible, sewer cleaning shall proceed from upstream sewers to downstream sewers, specifically on pipe segments which have service connections. No cleaning shall take place in a particular sewer segment until the upstream pipe segments (included in the Contract) have been cleaned. If cleaning is done in a downstream pipe segment in order to facilitate overall cleaning operations, the downstream segment shall be re-cleaned or verified to be cleaned at no additional cost, after all pipes upstream of that segment has been cleaned.

P. For sewers which exhibit little or no sediment and debris, the CONTRACTOR must provide at a minimum, one pass with cleaning equipment to ensure that no sediment or debris exists. The completion of cleaning in this manner under these conditions does not relieve the CONTRACTOR of meeting the acceptable degree of cleaning specified herein.

Q. During cleaning operations, the CONTRACTOR shall provide a means of catching and removing the dislodged sediment & debris material conveyed downstream with the sewer flow. The method chosen shall not allow the transport of materials to downstream sewer reaches. Passing of material from the sewer segment to be cleaned to downstream segments shall not be permitted. In the event that any sediment & debris from the cleaning operation are observed and/or detected by the ENGINEER as passing to the downstream sewer segment, the CONTRACTOR shall be responsible for cleaning the affected downstream sewer segments in their entirety at no additional cost to the OWNER. If materials are passed downstream, the reaches shall be cleaned by the CONTRACTOR at no additional cost to the OWNER. Pre-construction CCTV/Sonar inspection will require the inspection of the next downstream sewer (including its manholes) from the segment of the last cleaned segment.

3.02 ADDITIONAL REQUIREMENTS

A. Remove all roots that could prevent the sealing of a packer, the proper application of chemical sealants or installation of a cured-in-place liner. Remove roots by suitable mechanical cutting devices or by hydraulic procedures such as with high-pressure jet cleaners. No roots of length greater than one and a half inches (1½-inch) shall remain following root removal procedures.

B. Remove all grease which could prevent the sealing of a packer, the proper application of chemical sealants, or the installation of a cured-in-place liner. Use suitable mechanical cutting devices to remove grease.

C. Remove objects wedged in pipe joints and intruding sealing ring material that interferes with the rehabilitation of sewer lines.

D. Removal of materials may require mechanical and/or manual methods.

E. Remove intruding service connection pipe taps to the point where it is flush and smooth with the inside wall of the sewer main.

F. Remove intruding service laterals prior to the Pre-Construction CCTV Inspection.

G. Protect existing sewer lines and service connections from damage caused by improper use of the equipment.

H. As directed by the ENGINEER, immediately repair damage to a sewer or service connection caused by removal of an intruding service at no additional compensation.

I. Remove all materials from the sewer following completion of intruding service connection removal in that reach.

J. If cleaning of the entire sewer section cannot be successfully performed from one manhole, equipment shall be set up on the opposite manhole and cleaning again attempted. No additional payment shall be made for the reversed set-ups or changes in equipment. If a reverse set-up, cleaning, equipment fails to traverse the entire sewer line section due to a major blockage or defect; the cleaning effort shall be temporarily halted.

K. The CONTRACTOR shall determine the location of the major blockage(s) by measuring the length of hose or rod inserted from manholes at each end. CONTRACTOR shall immediately report the location of blockage(s) to the ENGINEER.

L. The CONTRACTOR shall recognize that there are some conditions such as broken pipes and collapsed pipes that will prevent cleaning from being accomplished or where damage could result if cleaning were attempted or continued. The OWNER shall be immediately notified by the CONTRACTOR of any and all conditions that warrant termination of the cleaning activities.

M. If the CONTRACTOR's cleaning equipment becomes lodged in the sewer, it shall be removed from the sewer solely at the CONTRACTOR's expense. This shall include excavation and repair of the sewer pipe, underground utilities, backfilling and surface restoration. The OWNER shall be immediately notified by the CONTRACTOR of any lodged equipment.

N. Subcontractors proposed by the CONTRACTOR to perform this work shall be submitted to the OWNER/ENGINEER for review and approval.

O. Remove all materials from the sewer and manhole and collect and remove the resulting debris from the downstream manholes of the sewer sections being cleaned. Utilize control measures in downstream manholes as necessary to prevent materials from passing through manholes to a downstream sewer section not scheduled for cleaning by CONTRACTOR that same day.

P. When removing materials from manholes, return the discharge and drainage liquid stream to the downstream mainline sewer and discharge downstream for disposal. Under no circumstances shall sewage or solids be dumped onto the ground surface, street, stream, ditches, catch basins, or storm drains. All solids and semi-solids shall be placed in a watertight container so that no spillage or leakage will occur, covered to minimize odors, and disposed by the CONTRACTOR. The CONTRACTOR is responsible for all operations and costs associated with removal, transportation, and disposal of debris collected during the cleaning operations.

Q. CONTRACTOR shall record the approximate volume, in cubic yards, of debris removed from each pipe segment and provide the information to the ENGINEER.

R. After cleaning and televising a reach or reaches in an area, the WORK site shall be cleaned and restored to pre-Work conditions. Refer to Section 31 10 00 – Site Clearing for specifications of restoration items, including, but not limited to, grading and seeding and pavements. Any damage to existing utilities and/or facilities shall be paid at the CONTRACTOR's expense.

3.03 MATERIAL HANDLING AND DISPOSAL

A. CONTRACTOR shall record the approximate volume, in cubic yards, of debris removed from each pipe segment and provide the information to the ENGINEER.

B. All material cleaned and dislodged shall be promptly removed from the sewer from the nearest manhole and be dewatered with the removed water discharged back into the sanitary or combined sewer. The CONTRACTOR is required to decant water from removed materials at the cleaning site.

C. The CONTRACTOR shall be responsible for transporting and disposing, including all disposal fees, of all materials removed from the sewer. All haul routes shall be kept clean and the CONTRACTOR shall bear the responsibility of immediately cleaning any spills. If the CONTRACTOR does not clean up a spill, the OWNER will clean and charge the CONTRACTOR for all associated costs and fines.

D. All materials removed from the sewer shall be disposed of off-site in a lawful manner, no less than once a day, at a licensed off-site solid waste disposal facility. Materials shall be transported to a facility licensed and permitted for that purpose. All materials shall be properly manifested with the final destination documented. Haul containers shall be watertight, and cleaned as necessary to maintain clean haul roads. All debris to be disposed of shall be decanted prior to leaving the cleaning site.

E. The CONTRACTOR shall be responsible for the testing and dewatering (as required by the disposal facility), handling, hauling and disposal of all materials removed from the sewer. All materials removed by the CONTRACTOR shall be disposed dry/dewatered (pass paint filter test) at a solid waste disposal facility licensed for the handling and disposal of such materials in accordance with all appropriate codes, rules and regulations for the handling and disposal of such materials.

F. The CONTRACTOR is responsible for obtaining all necessary permits, fees, and approval from all regulatory agencies required to perform the WORK, including transport of materials to be disposed. The CONTRACTOR is also responsible for obtaining material samples and performing any laboratory analysis required by the disposal facility.

G. Under no circumstances shall the removed materials be dumped at unlicensed facilities or transfer stations onto streets or into ditches, catch basins, storm drains, sanitary, or combined sewer manholes, or otherwise improperly disposed.

H. If sewage is spilled, discharged, leaked, or otherwise deposited in the open environment, the CONTRACTOR shall be responsible for any clean-up and disinfection of the affected area. The CONTRACTOR shall comply with all local, state and federal regulatory requirements regarding spills and illegal dumping. Improper disposal of sewage or solids removed from the sewers may subject the CONTRACTOR to fines imposed by the OWNER or other regulatory entities. In addition, the CONTRACTOR may be subject to civil and/or criminal penalties for improper handling or disposal of removed materials under the law.

I. All materials removed shall be weighed and documentation shall be submitted to the ENGINEER. At a minimum, the CONTRACTOR shall provide copies of all material manifests, weight tickets from the solid waste disposal facility or transfer station along with disposal receipts from the disposal facility for all material removed from the sewers and manholes, with indication of the material passing the Paint Filter Test. All manifests, tickets, and other documents shall be dated. Names, addresses, license information, and handling capabilities of the disposal sites and any intermediate handlers shall also be included.

3.04 ACCEPTANCE

A. Acceptance of mainline sewer cleaning shall be made upon the successful completion of the television inspection documenting that all required materials are removed to the satisfaction of the ENGINEER or upon review of pre-construction inspection video submittals. The CONTRACTOR shall provide facilities and equipment in the field to allow for the live real time viewing of cleaning operations and pre-construction inspection videos. If after cleaning the mainline sewer the video inspection shows materials remaining in the line, the CONTRACTOR shall re-clean and re-inspect the pipeline at no additional cost to the OWNER or ENGINEER.

END OF SECTION

SECTION 33 31 00

SANITARY SEWER REHABILITATION BY THE CURED IN PLACE PIPE (CIPP) PROCESS

PART 1 - GENERAL

1.01 DESCRIPTION

A. The work shall consist of all design, materials, transportation, equipment, and labor necessary to rehabilitate sanitary sewers identified in the Contract Documents by means of the Cured in Place Pipe (CIPP) process.

B. The work required by this contract includes, but is not limited to:
   1. Cleaning and television inspection of existing sewers.
   2. Rehabilitation of the existing sewers without excavation.
   3. Reinstatement of all lateral connections without excavation.
   4. Televising and recording the sewer sections after rehabilitation has been completed.
   5. Make any and all corrections to the finished product, per this specification (this will continue until product meets this specification, wholly).
   6. Televising and recording the sewer sections that needed corrective actions (this will continue until product meets this specification, wholly).

C. When complete, the rehabilitated section(s) shall:
   1. Extend from one manhole to the next manhole in a monolithic, continuous length.
   2. Provide a minimum flow capacity equal to or greater than that of the existing pipe.
   3. Yield three-dimensional, cross-linking strength in tension, compression, and flexural modulus which is structurally sound.
   4. Provide a service life of 50 years which is supported by documented, independent test analysis.

D. The sewer pipe shall be rehabilitated using the method and materials as described by ASTM D5813 (Current Active Standard), “Standard Specification for Cured-In-Place Thermosetting Resin Sewer Piping Systems”, ASTM F1216 (Current Active Standard), “Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube,” and NASSCO.

1.02 RELATED SECTIONS

A. Section 01 33 00, Submittals

B. Section 01 43 00, Quality Requirements

C. Section 01 77 00, Contract Closeout

D. Section 33 01 30.16, Television Inspection of Sewers

E. Section 33 01 30.17, Cleaning of Sewers

F. Section 33 01 48, Flow Control of Sewer Lines

1.03 QUALITY ASSURANCE

A. The following documentation shall be supplied to the CITY 30 days prior to the commencement of the work:

1. Documentation of a minimum of five years of experience rehabilitating existing sewer using the CIPP process, and at least ten (10) references of projects of a similar size and complexity as this project.
2. All applicable installation data as it relates to the method of installation and number of years' experience of the installation crew.
3. A project installation list of ten (10) projects installed in the State of Ohio.
4. Third party technical test results covering all aspects of the proposed lining product to include, but not be limited to, structural integrity and product life cycle.
5. Proposed tube thickness for each manhole to manhole section, including all design calculations indicating how the tube thickness dimensions were obtained.

1.04 SUBMITTALS

A. Furnish manufacturer's product data, test reports, progress schedules, and material certifications as required. Receive, check, approve as required, and submit all items listed herein by the time indicated, accompanied by a transmittal letter. Keep an accurate record of the date of submittal and the date received on the project.

B. Submit copy of certificate of installer qualifications with a material list prior to contract signing. Installation of the sewer pipe lining system shall be performed by an experienced contractor fully licensed and approved by the lining process manufacturer. The CONTRACTOR shall have a minimum of five (5) years of experience in such work and shall have satisfactorily completed ten (10) projects of similar size and type for at least three (3) different utilities or agencies. Submit copy of manufacturer's licensee certificate. Submit list of ten (10) similar regional jobs within the past five (5) years as well. Provide project information such as length of project, pipe diameter, date complete, and project cost.

C. Written certification is required from the manufacturer that all materials used in the work were manufactured and tested in accordance with the appropriate ASTM specification, and is being used or installed in conformance with the manufacturer's recommendations.

D. Prior to the start of work, submit a graphic progress schedule showing the proposed critical dates for starting and finishing the work of each trade, which will enable meeting the established completion dates. Prepare the schedule in the form of a bar chart as approved. Keep the schedule current and submit a revised copy with the application and certificate for payment. Modification or updating of the schedule shall not constitute the basis for a claim for extra payment if portions of the work do not become available at the established dates.

E. Following televising of the sewer segment, furnish to the ENGINEER the liner thickness and computations for each manhole to manhole section, and the liner manufacturer's detailed installation procedures. Each tube shall be designed to withstand internal and/or external loads as dictated by the site and pipe conditions.

F. The resin manufacturer shall provide the CONTRACTOR with their recommended curing conditions and the CONTRACTOR shall submit the same to the ENGINEER for approval.

G. When so directed and prior to the use of any materials, at CONTRACTOR'S expense, the results of testing of the proposed materials by an approved laboratory in conformance with these specifications. Remove any material not meeting the requirements of these specifications. Substitute acceptable materials for rejected items at own expense. Testing by an independent laboratory shall verify that the products to be used meet all minimum strength standards as set forth in ASTM F-1216, Table 1. Testing shall also verify that any product to be used on the project meets the minimum chemical resistance requirements as established in ASTM F-1743, Table 2, where the testing is in accordance with Section 7.2.1 of ASTM F-1743.

H. Submit a copy of the pre-construction video recordings and logs to the ENGINEER that document existing conditions after the CONTRACTOR has cleaned the sewer line but before CIPP lining.

I. Submit a lateral status determination report for each manhole to manhole section for approval by the ENGINEER. No CIPP liner installation shall be performed until written approval of this report is issued by the ENGINEER.

J. Submit the CIPP liner manufacturer's detailed installation procedures.

K. Submit the resin manufacturer's recommended curing cycle as well as the recommended cooling rate.

L. Submit a copy of the cure logs for each manhole to manhole installation. Each cure log shall clearly indicate the project name, project number, and the manhole section that was lined.

M. Submit a copy of the post-construction video recordings and logs to the ENGINEER that show the rehabilitated sewer along with reinstated service connections.

1.05 JOB CONDITIONS

A. Coordinate with other trades to prevent delays, omissions, or errors.

B. Do not work in rain, snow, or in presence of water. Do not work in temperatures below the manufacturer's recommended temperature to obtain proper curing. The liner shall be installed during weather conditions deemed acceptable to the liner manufacturer.

C. Complete sewer cleaning, television inspection, and point repair prior to delivery of the material for the liner.

D. CONTRACTOR may be required to monitor styrene odors as necessary in businesses and residences to ensure that concentration levels are under recommended limits.

E. CONTRACTOR shall have the CITY's approval prior to connection of his water supply lines to any fire hydrant. Provide the necessary gate valves, backflow preventers, and flow meter for each hydrant connection as required by the CITY. All equipment, fittings, and valves shall be in accordance with the CITY's standards.

PART 2 – PRODUCTS

2.01 DELIVERY

A. Deliver materials in a sufficient quantity to effectively span the distance from the inlet to the outlet of the respective manholes in one continuous run.

B. Deliver material to job site in a covered truck to minimize exposure to sunlight and to maintain the temperature of the product within manufacturer's recommendation to avoid curing.

C. Coordinate delivery of material with other trades to avoid delays.

2.02 STORAGE

A. Material shall be stored in the delivery truck in order to minimize exposure to sunlight and to minimize the temperature of the product to within manufacturer's recommendation to avoid curing.

B. No material shall be stored in the open or in contact with the ground.

C. Temperature logs of liner from time of wet-out to installation shall be given to the ENGINEER IN THE FIELD at the time of installation.

2.03 HANDLING

A. Handle all products with care. Only sound, undamaged products shall be used.

B. Tube installation forces or pressures shall be limited so as not to stretch the tube longitudinally by more than 5 percent of the original length.

2.04 MATERIALS AND TECHNICAL REQUIREMENTS

A. Documentation of the CONTRACTOR's experience shall be submitted to the ENGINEER 30 days prior to the commencement of work.

B. The CIPP installation process shall be an inversion type method and shall be installed in strict accordance with manufacturer's instructions.

C. All materials used in the rehabilitation process shall be of the best quality in accordance with ASTM F1216 (Current Active Standard) and to the satisfaction of the Engineer. Any materials not approved by the ENGINEER shall be rejected prior to the rehabilitation of the sewer. The rejected materials shall be replaced with approved materials at the CONTRACTOR's expense.

2.05 TUBE

A. The tube shall be fabricated from a flexible felt or fiber materials which, when cured, are chemically resistant to internal exposure of sewage containing normal levels of hydrogen sulfide, carbon monoxide, carbon dioxide, methane, traces of mercatans and dilute sulfuric acid and meet the requirements of ASTM F1216 (Current Active Standard), Section 5.1. The materials must also withstand saturation with moisture and external exposure to soil bacteria. Projected changes in ground water level, temperature, and other loading factors shall cause no significant changes in the service characteristics or service life of the rehabilitated pipe.

B. The tube shall be manufactured and fabricated under quality controlled conditions set by the manufacturer to a size that, when installed will fit tightly against the internal circumference and length of the original conduit and provide the required thickness when cured. Allowance for longitude and circumferential stretching of the tube during inversion, bends, and changes in pipe size shall be made by the CONTRACTOR. The wall thickness of the finished product shall not be less than the minimum required by ASTM F 1216, Appendix XI. Determine the length of the tube to effectively carry out the insertion and seal the tube at the inlet and outlet of the respective manholes. Verify the lengths in the field before cutting the tube to length. Individual tube runs can be made over one or more manhole to manhole sections as determined in the field and approved.

C. The tubes shall be designed to withstand negotiation of offsets, pieces of gaps, angles (no more than 45 degrees) and grades without damage to the tube during the inversion process.

D. Seams in the tube shall be stronger than the non-seamed felt material.

E. The CONTRACTOR shall design the length of the tube to effectively carry out inversion and sealing at end points. The tube shall continuously span from manhole to manhole with no intermediate seams. The grade and length of pipe segments are given on the plan, based on existing record information. The CONTRACTOR shall verify these measurements before designing and rehabilitating the pipe.

F. The CONTRACTOR shall submit the proposed tube thickness for each manhole to manhole section 30 days prior to the commencement of work, including all design calculations indicating how the tube thickness dimensions were obtained.

G. The color of the interior pipe wall of the CIPP after installation shall be a relatively light reflective color that allows a clear detailed examination with closed circuit televising equipment to be made.

2.06 RESIN/CATALYST

A. Unless otherwise specified, the CONTRACTOR shall furnish a polyester resin and compatible catalyst system as specified by the resin manufacturer; that is compatible with the approved liner and inversion process. The resin shall not contain fillers or additives, except those required for viscosity control, fire retardance, modulus enhancement, chemical resistance, or extension of pot life. Thixotropil agents that will not interfere with visual inspection may be added for viscosity control. Resins may contain pigments, dyes, or colors that do not interfere with the required cured-in-place pipe (CIPP) structural properties.

2.07 STRUCTURAL PROPERTIES

A. 50-Year Flexural Strength (ASTM D 790): 4,500 PSI minimum

B. 50-Year Flexural Modulus (ASTM D 790): 250,000 PSI minimum

2.08 DESIGN CRITERIA

A. The liner thickness shall be calculated and designed based upon the physical condition of the existing pipe to be lined in accordance with ASTM F-1216, Appendix XI and the following:

B. All pipes shall be subjected to a soil load of 120 pounds per cubic foot (lb/cf) and based on the maximum sewer depth at each section to be lined. See plans for the maximum sewer depths. Assume the groundwater table to be at the surface. All pipelines shall be designed to carry HS-20 loads at the maximum sewer depth at each section.

C. Assume a fully deteriorated gravity pipe condition and factor of safety of 2.0.

2.09 EQUIPMENT

A. All equipment required for the installation and curing of the resin impregnated flexible tube, including cables, sleeves, rollers, compressors, generators, pumps, valves, gauges, and accessories required for complete installation shall be in accordance with manufacturer's recommendations.

PART 3 – EXECUTION

3.01 CIPP PROCESS

A. The CONTRACTOR shall adhere to the following procedures and conduct the CIPP installation process in accordance with ASTM F1216 (Current Active Standard), unless modified or alternate procedures are otherwise approved by the ENGINEER prior to tube inversion. The CONTRACTOR shall verify existing pipe sizes prior to ordering materials and shall make allowances in determining the felt tube length and circumference for stretch during installation and shrinkage during curing and cool down. The CONTRACTOR shall verify the lengths in the field before the felt tube is cut and impregnated. Individual installation runs may include one or more manhole-to-manhole sections as approved by the ENGINEER.

3.02 OWNER AND RESIDENT NOTIFICATIONS

A. The CONTRACTOR shall be responsible for resident notification which shall include three (3) separate notices. The initial notification shall contain general information about the project and the cured-in-place pipe process using graphics as necessary to illustrate the procedure. Other information to be included shall the project name, description of the work to be performed, time frames for the work, and precautions to take during the course of the project (keeping water in the trap, keeping toilet lids down, etc.) The CONTRACTOR shall list the superintendent on the job

along with its mobile telephone number as the primary contact. Secondary contact information shall be the company name, address, and telephone number. This initial resident notification shall be submitted at the pre-construction meeting for approval by the ENGINEER. Upon approval, the CONTRACTOR shall immediately distribute this information to all residents affected by the work.

B. The second resident notification shall alert residents to any utility disruptions and to advise minimal water usage. This notification shall provide the beginning date and time of the disruption, the length of the disruption, and the ending date and time of the disruption. Contact information shall be repeated on this notification. The second resident notification shall be distributed by the CONTRACTOR two (2) working days prior to commencement of the work.

C. The third resident notification shall inform residents that work on their portion of the sewer is complete and they may resume normal water usage. The CONTRACTOR shall distribute this notice immediately upon completion of the work.

3.03 ROOT CUTTING AND CLEANING OF SEWER LINE

A. The sewer must be properly cleaned of debris and roots prior to lining to permit proper installation of the liner. The term “clean” shall mean the removal of sand, gravel, dirt, roots, grease, and all other solids or semisolid material from the interior face of the sewer line. The performance and results of the sewer cleaning and root cutting operations must be acceptable to the ENGINEER before lining is performed.

B. The CONTRACTOR may be required to utilize special cleaning tools in order to clean the sewers. Special tools are defined as any type of tool, equipment, head, or attachment which is not of the water jet/nozzle and/or vacuum/pump type system (regardless of size/capacity/configuration). Special tools may include, but are not limited to root cutter; lumberjack; chain cutter; impact auger; porcupine; tap cutter. Special tools would also include manned entry required to remove unusually large or heavy materials from the pipe and manhole that cannot be removed by a water jet/nozzle and/or vacuum/pump type systems. CONTRACTOR shall inform the ENGINEER of the intent to use special tools on a case-by-case basis prior to beginning said work. Dates, times, and durations of used shall be documented in detail.

C. It shall be the responsibility of the CONTRACTOR to cut and remove roots and clean and remove debris out of the sewer line in accordance with National Association of Sewer Service Companies (NASSCO) and ASTM Specifications for Sewer Collection System Rehabilitation prior to rehabilitation. The CONTRACTOR is responsible for hauling and disposing of the debris removed from the sewer.

3.04 TELEVISION INSPECTION (PRE-CONSTRUCTION)

A. The CONTRACTOR shall inspect by closed circuit TV the section of pipe to be rehabilitated and shall record the locations of all obstructions and service taps. The CONTRACTOR shall supply one copy on a USB 3.0 external hard drive, or multiple CD/DVD’s, of the pre-rehabilitated sewer with measured increments on the tape to the ENGINEER after the televising is complete and before lining is performed. If the inspection indicates that root cutting, cleaning, and/or repair of the sewer are required prior to lining, the CONTRACTOR shall perform additional televised inspection of the sewer after all cleaning and/or repair is completed and before lining is performed. If the root cutting, cleaning, and/or repair cycle must be repeated multiple times prior to lining, the CONTRACTOR shall televise the sewer after each root cutting, cleaning, and/or repair cycle is completed.

3.05 SEWER OBSTRUCTIONS

A. It shall be the responsibility of the CONTRACTOR to clear the line of obstructions, solids, dropped joints, protruding services, infiltration, or collapsed pipe that will prevent the inversion of the tube without excavation. Protruding services shall be trimmed without excavation by approved mechanical methods, such as robotical equipment.

3.06 BYPASSING SEWAGE

A. The CONTRACTOR shall bypass the sewage around the sections of sewer that are to be rehabilitated. The bypass shall be made by plugging an existing upstream manhole, if necessary, and pumping the sewage into a downstream manhole, or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. The CONTRACTOR shall submit a bypass plan with a backup contingency to the ENGINEER for approval prior to starting construction. During the bypass operation, the CONTRACTOR must have a representative on site 24 hours a day to maintain the pumps. Additional bypass requirements are outlined in Section 33 01 48 – Flow Control of Sewer Lines. Wastewater flow between the uncured liner and host pipe will not be permitted. No separate payment will be made for the bypassing of sewage.

3.07 STAGING

A. The CONTRACTOR shall deliver the uncured resin impregnated tube to the site, provide all equipment required to place and invert the tube into the conduit, and cure it once in place. The tube shall be impregnated with resin not more than 24 hours before the proposed time of installation and stored out of direct sunlight at a temperature per the manufacturer's recommendations. The impregnated tube shall be transported to the site in a suitable light-proof container with the temperature maintained per the manufacturer's recommendations. Any material not properly prepared shall be rejected and replaced with acceptable material at the CONTRACTOR's expense.

3.08 TUBE INVERSION

A. The tube shall be inverted into the host pipe from a suitable platform located above the manhole or any other access point by methods approved by the manufacturer and proven through previous successful installations. For tubes 24-inches and greater, the contractor will be required to remove and replace (once lining operations are completed), the entire top manhole sections (cone, corbel, grade rings, and casting). CONTRACTOR may leave the top manhole section intact for installation of tubes 24-inches through 30-inches with the OWNER's approval. Invert the tube (turned inside-out) with water. Hydrostatic pressure shall be used to inflate the tube, molding it against the walls of the host pipe with adequate pressure to produce dimples at service lateral connections and flared ends at the manholes. The use of air pressure to invert the tube shall be subject to the approval of the ENGINEER. Installation methods involving pulling the liner into the sewers will not be accepted. A polyethylene pre-liner shall be utilized on all sewers.

B. Clean potable water at an ambient temperature shall be provided by the CONTRACTOR.

C. The tube shall be inverted at a rate sufficient to cause controlled inversion of the tube into the conduit. The inversion rate shall not exceed 32 feet per minute (10 meters/minute). The tube or the tag rope shall be suitably restrained to prevent inversion rates in excess of that stipulated above. The inversion head shall be such that, allowing for minor impact, at no time the hoop tension in the felt shall exceed 500 psi or the hoop stress in the polyurethane membrane exceed 8,000 psi. The tube shall be inverted in such a manner that no damage (cuts, scrapes, or gouges) is done to the tube.

D. The inversion equipment shall require only the temporary closing (18 hours or less) of no more than one lane of traffic. The entire inversion process shall not cause any disruption in service of any adjacent utilities.

3.09 INITIAL CURING

A. Before beginning the curing process, the CONTRACTOR shall visually inspect and verify that the tube is of sufficient length and extends into the downstream manhole or structure. The CONTRACTOR shall supply suitable heat source and water recirculation equipment capable of delivering hot water to the far end of the tube to quickly and uniformly raise the water temperature in

the entire tube above the temperature required to commence the exothermic reaction of the resin. The duration of the curing period, and the water temperature necessary during the curing period, shall be as stated in the manufacture's recommendations. Temperature gauges shall be installed at all manholes within the sections being lined. These temperature gauges shall be placed between the tube and the host pipe.

B. The heat source shall be fitted with suitable gauges to monitor the temperature of the incoming and outgoing water supply to ensure uniform temperature is achieved throughout the length of the tube. Another such gauge shall be placed between the tube and the host pipe in the downstream manhole at or near the bottom to determine the temperature during cure. The water temperature in the pipe during the cure period shall be as recommended by the resin manufacturer.

C. The initial cure period shall be deemed complete when the manufacturer's recommended temperature is uniform, as determined by the water temperature monitors, is achieved throughout the length of the tube and the exposed portions of the tube appear to be hard and sound by visual inspection. The cure period shall be of a duration recommended by the resin manufacturer and may require continuous recirculation of the water to maintain the temperature.

3.10 FINAL CURING/COOL DOWN

A. The post cure period shall commence with the heat source shut down, but continued recirculation of the water is required to maintain a temperature in the tube recommended by the manufacturer during the initial exothermic reaction period. Hot water may be bled out of the system and replaced by clean water at an ambient temperature to control post cure water temperature. A minimum period of post cure (recommended by the manufacturer) shall be maintained under an inversion head to provide a minimum hoop tension in the tube felt. The ends of the heat source are less than 110 degrees F (43 degrees C). Care shall be taken in the release of the static head so that a vacuum will not be developed that could damage the newly rehabilitated pipe.

3.11 TEMPERATURE MONITORING

A. For pipes greater than 18-inches, the CONTRACTOR shall utilize a full liner run length temperature monitoring system which will monitor the liner cure incrementally every 18-inches or less to verify that an exothermic reaction has occurred and that a full cure has taken place. CONTRACTOR shall monitor the entire cure cycle (heat-up/cool-down). The cure information must be taken from the bottom third of the pipe line. Cure parameter information shall be provided by the resin manufacture. CONTRACTOR shall provide to the ENGINEER a graphic representation of the entire cure process as it relates to time, temperature and footage. The temperature monitoring system shall have the ability to be remotely viewed "live" in the field. Temperature monitory system shall be Vericure by Pipeline Renewal Technologies, or equal.

3.12 FINISH

A. The new pipe shall be cut off in the manhole at a suitable location. At intermediate manholes (between the liner insertion and termination manholes), the upper one-half of the liner shall be neatly cut and removed to provide a smooth, continuous and accessible channel within these manholes, unless otherwise directed by the ENGINEER. The finished product shall be continuous over the length of pipe reconstructed and be free from dry spots, delamination, and lifts.

3.13 SEALING PIPE IN MANHOLES (INCLUDING INTERMEDIATE MANHOLES)

A. The cured-in-place liner shall make a tight seal at the manhole opening with no annular gaps. End seals shall be utilized at the ends of all pipe runs and shall be Insignia type by LMK, or equal. This procedure shall be completed before proceeding to the next section.

B. The cured-in-place liner shall be cut smooth to the top of bench and at all pipe openings of all intermediate manholes. CONTRACTOR shall verify that the liner makes a tight seal with no annular gaps.

3.14 LATERAL STATUS DETERMINATION

A. The exact location, activity, and number of service connections or side sewers shall be verified during the initial television inspection(s). The CONTRACTOR shall physically ascertain whether a lateral sewer is active or inactive by positively identifying flow from a connection or positively confirming inactivity from a connection. The activity of the laterals shall be verified by means including but not limited to dye testing, smoke testing, and CCTV inspection. The contractor shall not proceed with pipeline rehabilitation unless work has been completed on all lateral status determinations.

B. At the preconstruction meeting, the CONTRACTOR shall submit a written testing program which will outline the proposed approach to the investigation, describing how the laterals will be tested, and provide information on the equipment to be used. No lateral status investigation work may be performed until the concept and methods of this testing are approved.

C. After completing field testing, submit a written report of the findings for review and final determination of the status of each service. Where lateral status is unable to be confirmed, the City will make the final lateral status determination based on the gathered information. The report shall contain the following information as a minimum:
   1. Location of the lateral (footage, clock position, street address of structure served by lateral).
   2. Status of lateral (active, inactive, bulkheaded, filled with debris, inconclusive).
   3. Recommended action (reinstate, do not reinstate).
   4. If dye testing is performed, indicate where the dye was introduced into the system and how much water was used to flush the dye (address of structure and location within structure) and the location where the dye was confirmed, even if it flows into an adjacent sewer. Indicate which buildings that have unconfirmed discharge locations.
   5. Weather conditions at the time of lateral status determination.

D. Submit any video recordings and logs that provide evidence to accompany the lateral status determination testing along with the written report.

3.15 SERVICE CONNECTIONS

A. The CONTRACTOR shall reconnect or reestablish only those laterals or side sewers that are active or for which inactivity cannot be confirmed. It shall be the CONTRACTOR's responsibility to accurately field locate all existing service connections or side sewers and establish means for access for flow control.

B. After the pipe has been rehabilitated, all existing service connections shall be reconnected, as approved by the ENGINEER. The CONTRACTOR shall be responsible for confirming the locations of all branch service connections prior to installing the CIPP. Location of all the service connections shall be made by thorough inspection of the pre-construction recording. The reconstruction of services shall be performed, unless otherwise specified by the ENGINEER, without excavation. The CONTRACTOR shall have two complete working cutting units plus spare key components on-site before installation of each section of liner begins. The reconstruction shall be performed from the interior of the pipeline by means of a television camera directed coring device. All recut service connections shall be free of burrs, frayed edges, or any obstruction preventing free wastewater flow. All connections shall be coated with an approved sealer to ensure water tightness. The seal shall be made by a resin mixture compatible with the CIPP material.

3.16 TELEVISION INSPECTION (POST-CONSTRUCTION)

A. After the rehabilitation is complete, the CONTRACTOR shall supply one copy on a USB 3.0 external hard drive, or multiple CD/DVD's, of the rehabilitated sections of the sewer, including service lateral connections, with measured increments on the tape to the ENGINEER. Utilize a radial view camera to allow proper inspection of service lateral reconnections. Post-construction CCTV inspection shall be per the General Notes on the Drawings and Section 33 01 30.16 - Television Inspection of Sewers.

3.17 CORRECTIVE ACTIONS

A. If after the post-construction television inspection, and before substantial completion, it is determined that the finished product does not meet the requirements of this specification, the CONTRACTOR will make repairs to the newly rehabilitated pipe in a manner mutually agreed upon by the ENGINEER, liner manufacturer, and the CONTRACTOR, at the CONTRACTOR's own expense. Upon completion of these corrective measures, in accordance with this specification, the CONTRACTOR will complete the post-construction television inspection of the entire section of rehabilitated pipe. This will continue until the finish product meets the entire requirements of this specification.

3.18 FIELD QUALITY CONTROL

A. The rehabilitated pipe shall be continuous (without joints) over the entire length of an insertion run between two manholes. The liner shall be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes, and delamination. The liner surface shall be free of leaks, cracks, and crazing with a smooth finish. Some minor waviness that, in the OWNER's opinion, will not appreciably decrease the flow cross section or affect the flow characteristics shall be permissible.

B. Any defects in the product shall be repaired at the CONTRACTOR'S expense in a manner mutually agreed upon by the OWNER and CONTRACTOR. The CONTRACTOR shall re-inspect these repairs before the warranty period expires. During the warranty period, any defects that are discovered that will affect the integrity or strength of the product shall be repaired at the Contractor's expense in a manner mutually agreed upon by the OWNER and the CONTRACTOR. These repairs shall be granted a three (3) year extended warranty period by the CONTRACTOR from the date of repair. The CONTRACTOR shall re-inspect these repairs prior to the expiration of the three (3) year extended warranty period.

3.19 TESTING

A. Sampling and testing for each installed CIPP length shall be in accordance with ASTM F-1216 and/or F-1743. The CONTRACTOR shall provide two (2) test samples to the CITY for each installed CIPP length. All samples shall be labeled before shipment for testing. The OWNER also retains the right to test coupons retrieved from the sewer and turned over to the CITY. If the CONTRACTOR performs independent tests for their purposes, additional samples shall be provided by the CONTRACTOR for that use.

3.20 FINAL INSTALLED LINER THICKNESS

A. The final installed liner thickness shall not be less than, nor more than ten (10) percent greater than, the required thickness specified in the Contract Documents. The final installed liner thickness measurement shall be determined from pipe samples, coupons retrieved from the sewer, or as deemed necessary by the ENGINEER. It shall be the CONTRACTOR's responsibility to consider site conditions and their installation process to determine the liner thickness to install.

3.21 NON-COMPLIANCE

A. In the event that the flat plate samples do not meet the required Flexural Strength of 4,500 psi and Flexural Modulus of Elasticity of 250,000 psi as outlined in this specification, actual installed

samples must be taken. The installed samples shall be taken as directed by the CITY and in accordance with all applicable ASTM requirements. From these samples, the installed thickness shall be determined by taking an average of at least 10 thickness measurements. Installed samples shall then be prepared for re-testing in accordance with this specification.

B. Any liner installation not meeting specified strengths shall have the defective sections of liner removed and replaced with a product acceptable to the CITY at the total expense of the CONTRACTOR. The re-inspection requirements, as listed above, shall apply to this re-installed section of line.

3.22 WARRANTY AND ACCEPTANCE

A. The CONTRACTOR shall warrant all work to be free of defects in workmanship or materials for a period of one year from the date of subfinal acceptance of the rehabilitated sewer. Any repairs made due to defects in the product shall be granted a three (3) year extended warranty period by the CONTRACTOR from the date of repair. The CONTRACTOR shall re-inspect these repairs prior to the expiration of the three (3) year extended warranty period.

3.23 CLOSEOUT ACTIVITIES

A. Provide in accordance with section 01 77 00, Contract Closeout.

END OF SECTION

SECTION 33 01 48

FLOW CONTROL OF SEWER LINES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide temporary flow control system, as required, within the Work Limits identified on the Contract Drawings.

B. Furnish all labor, materials, maintenance, etc. to implement a temporary flow control system for the purpose of diverting the existing flow around the Work area. Maintenance of sewer flow is required throughout the construction duration.

C. The design, installation, and operation of the temporary flow control system. Demonstrate or employ the services of a vendor who can demonstrate to the CITY specialization in the design and operation of flow control systems.

1.02 RELATED SECTIONS

A. Section 01 33 00, Submittals

B. Section 01 43 00, Quality Requirements

C. Section 01 77 00, Contract Closeout

D. Section 33 01 30.16 Television Inspection of Sewers

E. Section 33 01 30.71, Sanitary Sewer Rehabilitation By The Cured In Place Pipe (CIPP) Process

1.03 SUBMITTALS

A. Submit the following shop drawings in accordance with Section 01 33 00, Submittals.

B. Prepare the temporary flow control plan for approval. No work shall be performed prior to obtaining approval of this submitted plan. The plan shall include but not be limited to the details of the following:

1. Staging areas for flow control equipment;
2. Sewer plugging method and types of plugs;
3. Size and location of manholes or access points for suction and discharge hose or piping;
4. Size of pipeline or conveyance system to be controlled;
5. Number, size, material, location and method of installation of suction piping;
6. Number, size, material, location and method of installation and location of installation of discharge piping;
7. Bypass pump sizes, capacity, number of each size to be on site and power requirements;
8. Pump calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted);
9. Calculations for selection of bypass pumping pipe size;
10. Standby power generator size and location;
11. Downstream discharge plan;
12. Method of protecting discharge manholes or structures from erosion and damage;
13. Thrust and restraint block sizes and locations;
14. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill;
15. Method of noise control for each pump and/or generator;
16. Temporary pipe supports and anchoring requirements;

17. Design plans and computation for access to flow control device locations;
18. Schedule for installation of and maintenance of flow control devices;
19. Plan that shows location of flow control lines;
20. Maintenance of traffic details for traffic crossings of flow control piping located within roadways and driveways;
21. Proof of permission for use of private property for any part of the flow control system.

1.04 QUALITY ASSURANCE

A. Comply with quality assurance standards outlined in Section 01 43 00, Quality Requirements.

B. Provide at least three references of projects of a similar size and complexity as this Project performed by firm within the past three years, upon request.

PART 2 - PRODUCTS

2.01 FLOW CONTROL EQUIPMENT

A. All equipment utilized for flow control shall be specifically designed for intended purpose. All piping, pumps, etc. in contact with sanitary sewage shall be manufactured with materials designed for use in a sewage environment.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

A. Provide all necessary means to safely provide sewage flow control, as required, through or around the section in which the Work is to be performed. The CONTRACTOR will not be permitted to stop or impede the main flows under any circumstances. This section generally refers to pumps and pumping as flow control measures. However, this reference does not preclude the use of sandbagging and/or fluming provided that the proposed system is submitted to and subsequently approved by the CITY.

B. Flow control shall be the full responsibility of the CONTRACTOR.

C. Suction and discharge points shall be located at manholes only.

D. Discharge of sewage to the ground, creeks, and/or storm sewers shall be prohibited. Any violation shall be corrected immediately at no additional cost. CONTRACTOR is responsible for any fines that may result from prohibited discharge.

E. Controlling all the sewage flow in the existing line under all weather and seasonal conditions. All equipment to be used shall be submitted to the CITY for review and approval.

F. Divert the flow around the work area in a manner that will not cause damage to, or surcharge the sewer system, and will protect public and private property from damage and flooding. The CONTRACTOR shall be responsible for any physical damage and/or flooding to the sewer system and public and private property caused by human or mechanical failure. Provide a backup pump on site at all times for all pumps included in the flow control system. Provide backup power system in place and operational at all times during flow control system operation.

G. The temporary flow control system shall be located within the right-of-way and easements, unless otherwise approved by the CITY in writing. Lay piping out of traveled way in manner to protect the piping from damage. Where bypass piping is approved to cross streets and street intersections, lay in trench and place temporary pavement over bypass except as permitted

otherwise in writing by the City. Where bypass piping crosses driveways and similar access ways to properties, construct suitable ramp to allow driving and passing over pipe except where the City requires bypass be laid in trench with temporary pavement over bypass.

H. The flow control system design and installation shall meet the requirements of all codes and regulatory agencies having jurisdiction. Protect water resources, wetlands, and other natural resources.

I. Notify affected property owners surrounding the Project limits of the noise associated with the flow control operation at least 72 hours prior to the start of flow control system operation.

J. All pumps shall be equipped with sound attenuation measures which reduce noise levels to maximum of 70 decibels at a distance of 30 feet from the equipment during all periods of operation. If equipment is operated between the hours of 5:00 PM and 7:00 AM, this equipment shall also be provided with sound attenuation enclosure consisting of a three-sided enclosure with roof constructed of two-by-four lumber frame with ½-inch plywood sheathing and two-inch Styrofoam panels attached to the inside of the entire enclosure. The enclosure shall be portable to allow the enclosure to be moved when bypass pumping equipment is moved.

3.02 TESTING, INSPECTION, AND MAINTENANCE

A. Perform leakage and pressure tests of the flow control system piping using clean water observed by the CITY prior to bringing flow control system on line. The CITY shall be given 24-hour notice prior to testing.

B. Inspect the flow control system on a continuous basis to ensure the system is working correctly.

C. Ensure the temporary flow control system is properly maintained and a responsible operator shall be on site at all times when pumps are operating. Monitor pump fuel levels, if required, and make arrangements for timely refueling if necessary.

D. Spare parts for pumps and piping shall be kept on site as required. Adequate equipment for hoisting for each pump and accessories shall be maintained on the Site.

E. Remove manhole sections or make connections to the existing conveyance system and construct temporary flow control structures as specified in the temporary flow control plan approved by the CITY.

F. Plugging or blocking of flows shall incorporate a primary or secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance or work, it is to be removed in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

G. When working inside a manhole or sanitary sewer, exercise caution and comply with Occupational Safety and Health Administration (OSHA) requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.

3.03 PRECAUTIONS

A. Locate any existing utilities in the area required for use by the flow control system. Minimize any disturbance to existing utilities and obtain approval of the pipeline locations from the CITY.

B. During all flow control operations, Protect the CITY's sewer system (manholes, conveyance system, etc.) as applicable from damage inflicted by any equipment. The CONTRACTOR shall be responsible for any physical damage to the CITY's sewer system caused by human or mechanical failure.

3.04 CLEAN-UP

A. Videotape the existing conditions in the area of the flow control system prior to installation, including inside of the suction and discharge manholes, as directed by the CITY. The video shall be reviewed with the inspector for accuracy, completeness, and visibility prior to disturbance or installation of the system. The video will remain in the CITY's possession until the disturbed areas are restored accordingly.

3.05 CLOSEOUT ACTIVITIES

A. Provide in accordance with Section 01 77 00, Contract Closeout.

END OF SECTION

Bid Alt – UV CIPP Sanitary Sewer Lining

Note to bidder: The CIPP Sanitary Sewer Lining ONLY is to be included in the base bid.

UV CIPP Sanitary Sewer Lining is to be included as Bid Alternate 1 along with the deduction of CIPP Sanitary Sewer Lining.

SECTION 02765

CURED-IN-PLACE PIPE LINING FOR UV CURE

PART 1 – GENERAL

1.1 DESCRIPTION

A. Provide all materials, equipment, labor and incidentals for the installation and testing of cured-in-place pipe lining (CIPPL) within the sewer main.

B. The sewer main CIPPL process shall consist of inserting a resin-impregnated flexible tube into an existing sewer, expanding the tube out against the sewer pipe, and curing the tube to form a pipe liner. Curing shall be accomplished by applying ultraviolet light to obtain the desired cure throughout the tube extending the full length from manhole to manhole.

C. The CIPPL shall cure into a hard, impermeable liner of the specified thickness and form a structurally sound liner pipe with a uniformly smooth interior.

1.2 REFERENCE STANDARDS

A. Comply with applicable provisions and recommendations of the following:

1. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
2. ISO 178 - Determination of Flexural Properties
3. ASTM D2990 - Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics
4. DIN 761- Glass Reinforced thermosetting plastics (GRP) pipes
5. ASTM D3567 - Standard Practice for Determining Dimensions of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fittings
6. DIN EN 13566-4 - Plastics piping systems for renovation of underground
7. non-pressure drainage and sewerage networks
8. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
9. ASTM F2019 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP)
10. ASTM D543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents
11. WRc Sewerage Rehabilitation Manual, Type II Design, 4th Edition, 2001

1.3 QUALIFICATIONS

A. For each method of installation and curing used on this project, manufacturer of the CIPPL system shall have a history of at least 350,000 linear feet of CIPPL work in sewers using a similar resin and flexible tube and using the specific method of installation and curing being used.

B. For each method of installation and curing used on this project, the CIPPL Work shall be supervised by a foreman having previously supervised a minimum of 50,000 linear feet of CIPPL using a similar resin and flexible tube and using the specific method of installation and curing method proposed.

C. The entity performing the wet-out of the CIPPL shall have been performing this type of work for a minimum of three years and previously wet-out at least 350,000 linear feet of CIPPL. If the Contractor does not have 350,000 linear feet of CIPPL experience with the UV curing system being used, then a manufacturer's onsite representative must be present during all installations of the CIPPL system. The Contractor is to provide the Engineer with the manufacturer representative's work experience for approval. Work shall not begin prior to the Engineer's approval of the manufacturer's onsite representative.

D. The Contractor shall provide five (5) references of completed projects of similar installations.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Care shall be taken in shipping, handling and storage to avoid damaging the liner. Any liner damaged in shipment shall be replaced as directed by the OWNER at no additional cost to OWNER.

B. While stored, the CIPPL shall be adequately supported and protected. The CIPPL shall be stored in a manner as recommended by the manufacturer and as approved by the ENGINEER.

1.5 QUALITY CONTROL

A. No change of material, design values, or procedures as developed before bidding the contract may be made during the course of the Work without the prior written approval of the ENGINEER.

B. All liner to be installed under this Work may be inspected at the manufacturer plant(s) and wet-out facility for compliance with these Specifications by OWNER or ENGINEER. The CONTRACTOR shall require the wet-out facility's cooperation in these inspections. The cost of inspection will be the responsibility of the OWNER.

C. At the time of manufacture, inspect each lot of liner for defects. At the time of delivery, the liner shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters, or deleterious faults.

D. The liner manufacturer shall have a Quality Management System registered with ISO 9001:2008.

1.6 WARRANTY

A. All lining work shall be fully guaranteed by the CONTRACTOR for a period of 1 years from the date of Final Acceptance unless otherwise stipulated in writing by the OWNER prior to the date of Conditional Acceptance. During this period, all serious defects discovered by the OWNER or ENGINEER shall be removed and replaced by the CONTRACTOR in a satisfactory manner at no cost to the OWNER. In addition to the Warranty Inspection specified under Section 3.9, the OWNER may conduct independent television inspections, at its own expense, of the lining Work at any time prior to the completion of the guarantee period.

1.7 SUBMITTALS

A. Cured-In-Place Pipe:

1. Summary table of CIPP material properties, including short-term flexural modulus of elasticity, 50-year flexural modulus of elasticity, short-term flexural strength (bending stress), 50-year flexural strength (bending stress), and chemical resistance. Certified test reports shall be submitted verifying each value as described below.

2. Independent third party certified laboratory test reports demonstrating that the exact resin and liner to be used for this project has been tested for long-term flexural modulus of elasticity and long-term flexural strength (i.e. 10,000 hour creep testing performed in accordance with ASTM 2990 or DIN 761 for design conditions applicable to this project). When filled resins are proposed, complementary data of the same data for unfilled resin shall also be provided. If the data submitted is not for the exact liner to be used on this project, submit a detailed description of the physical properties of both the liner used in the test and the liner to be used for this project to demonstrate that the two liners are comparable in terms of physical properties.

    a. Test will be performed for 10,000 hours under test conditions and loadings described below. The data points from 1,000 hours to 10,000 hours, or such other time period as determined by the ENGINEER based on the curve or slope of the plotted data, of the Long-term Flexural Modulus shall be extrapolated using a Microsoft Excel log-log scale linear regression analysis to determine the minimum service life performance of the resin-tube.

b. Testing will be conducted at:

i. Temperature 21°C to 25°C
ii. Relative humidity: 50% minimum
iii. Load: Load will be calculated at 0.25% of the short term E-modulus as tested per ASTM D790 or ISO 178, or as approved by ENGINEER.

3. The name of the liner and resin manufacturer, the location of the facility where each was manufactured, and a list of appurtenant materials and accessories to be furnished.

4. Structural design calculations and specification data sheets listing all parameters used in the liner design and thickness calculations based on Appendix X1 of ASTM F2019 for each pipe segment with less than 10% ovality or based on the WRc Sewerage Rehabilitation Manual, Type II Design, Section 5.3.2.iii for non-round pipe or circular pipes with greater than 10% ovality. All calculations shall be prepared under and stamped by a Professional Engineer. Submit P.E. Certification Form for all CIPPL design data.

5. The quality management system for the wet-out facility must be registered in accordance with ISO 9001:2008. It must ensure that proper materials and amounts are used in the resin saturation process and in liner shipping and storage. At a minimum, the quality control documentation should include resin lot numbers, volumes of resin, catalyst, enhancers, date of wet-out, storage / transportation controls, and quality assurance procedures. A checklist should be included documenting that each critical step in the resin impregnation process is checked off and initialed.

6. Installation quality control plan, including bypass pumping plans, mainline sewer cleaning plans, cleanliness requirements, liner shot plan and sequence, liner installation standard procedures (including, but not limited to, minimum / maximum allowable installation pressures and speeds certified by the liner manufacturer), intermediate manhole exposed liner restraining method, light train sizing, temperature monitoring plan, odor control procedure, and plan to manage flow to/from laterals during lining.

B. Hydrophilic end seals and pre-liners to be used and method of installation.

C. Contingency plan, including methods and equipment to be used to repair unacceptable liner defects and for removing failed liners. Plan for availability and accessibility of backup equipment such as two lateral reinstatement cutters per truck.

PART 2 – PRODUCT

2.1 DESIGN REQUIREMENTS

A. The CIPPL system shall be Saertex multiCom, or equal.

B. The CIPPL lining shall be a resin-impregnated flexible tube which is inserted into the sewer to be rehabilitated and cured-in-place by an acceptable curing method. The tube may have a suitable polyurethane membrane coating for protection of the interior surface and to provide a uniform, smooth flow surface and may be removed after installation and curing is completed. The resin shall be a liquid thermosetting resin and shall be suitable for the design conditions as well as the curing process.

C. Short Term Flexural Modulus: 1,500,000 psi

D. 50-Year Flexural Modulus (ASTM D2990 or DIN 761): 1,125,000 psi minimum.

E. CIPPL Thickness
   1. The required structural CIPPL wall thickness shall be based, as a minimum:
      a. In accordance with ASTM F2019, Appendix X1, Design Considerations for a fully deteriorated or partially deteriorated host pipe, for a circular host pipe with 10% ovality or less
      b. In accordance with WRc Sewerage Rehabilitation Manual, Type II Design, Section 5.3.2.iii for non-round pipe or circular pipes with greater than 10% ovality
      c. A safety factor of 2
      d. A minimum service life of 50 years under continuous service
      e. A modulus of soil reaction of 1,000 psi
      f. A soil density of 120 lbs/in^3
      g. A Poisson's ratio of 0.3
      h. An enhancement factor of 7
      i. A groundwater elevation over the pipe equivalent to surface grade
      j. Ovality for each segment as applicable
      k. Live loads for each segment as applicable
      l. Soil depth for each segment as applicable

   2. The flexural modulus and flexural strength used in the design shall be the values as rated for the specified service life and as submitted in Section 1.7. When filled resins are proposed, complementary data of the same data for unfilled resin shall be provided.

   3. The liner thickness of each pipe segment shall be determined by the CONTRACTOR and submitted per Section 1.7.

F. Installed thickness of the CIPPL shall be as calculated in Section 2.1 and evaluated per Section 3.8.

G. When cured, the liner shall form a continuous, tight fitting, hard, impermeable liner that is chemically resistant to chemicals found in domestic sewage/storm water.

H. The liner shall be fabricated to a size that when cured will tightly fit the sewer being rehabilitated. Allowance for longitudinal and circumferential expansion shall be taken into account when sizing and installing the liner. Field verify all dimensions prior to delivery of the liner. The allowable contact tolerance between the liner and host pipe is 1.0 mm. In cases where any space or gap between the outside surface of the liner and the inside surface of the existing pipe exceeds 1.0mm, the liner will be deemed deficient and corrective action will be required as determined by the ENGINEER. Where irregularities of the existing pipe exist such as offset joints, protrusions, bumps, fluctuating pipe diameter, and deformations the irregularities remain after the sewer has been prepared in accordance with the Contract Documents, exception to the contact tolerance will be allowed in the irregularity zone. The exception shall not present an obstruction to sewage flow, unless directed by owner.

I. The length of the liner shall be that deemed necessary by the CONTRACTOR to effectively carry out installation and seal the liner at the inlet and outlet of each manhole/structure as specified herein. The CONTRACTOR will field verify all lengths prior to construction.

2.2 FLEXIBLE TUBE

A. The tube shall consist of one or more layers of fiberglass laminate that meets the requirements of ASTM F2019.

B. The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the CIPPL. No dry or unsaturated layers shall be present.

C. The wall color of the interior pipe surface of CIPPL after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.

2.3 RESIN

A. The liquid thermosetting resin shall saturate the tube and produce a properly cured liner which is resistant to abrasion due to solids, grit, and sand.

B. Polyester, vinyl ester, or epoxy resin and catalyst system shall comply with the following requirements and that when properly cured meets the requirements of ASTM F1216. Resins created from recycled materials are not allowed.

2.4 HYDROPHILIC SEALS

A. The hydrophilic waterstop end seals shall be continuous bands that are 3" wide, $^{1}/_{8}$" high.

B. Hydrophilic Seal Manufacturer: LMK (only available for sizes 6-48"), or approved equal.

PART 3 – EXECUTION

3.1 PREPARATION

A. Review OWNER's television inspection logs and/or conduct additional inspection of the pipes as deemed necessary by CONTRACTOR to plan rehabilitation work. Determine the location of all active service connections prior to lining. Dye test to verify all active service connections, if necessary, or otherwise required by the Contract Documents. The CONTRACTOR shall not reopen taps that are not active.

B. Clean pipes prior to Pre-Construction Inspection, such that the pipes are free of roots, grease, sand, rocks, sludge, tuberculation (to a tolerance of 0.25 inches projection) and other debris.

C. Remove protruding taps prior to Pre-Construction Inspection.

D. Conduct Pre-Construction Inspection. Submit and obtain ENGINEER'S approval of Pre-Construction Inspect. Inspect and confirm the inside diameter, alignment and condition of each segment to be lined. Use the data and information collected from this inspection to verify the size of the liner and refine the installation techniques. If unknown physical conditions in the work area are uncovered during the investigation that materially differ from those ordinarily encountered, notify the ENGINEER.

E. As required, provide for continuous flow around the section of pipe that is to be lined. The pump and bypass lines shall be of adequate capacity and size to handle the flow of the sewers. The proposed bypassing system shall be reviewed in advance by the ENGINEER. The review of the bypassing system by the ENGINEER shall in no way relieve the CONTRACTOR of his responsibility and liability.

F. Clear the line of obstructions such as solids or broken pipe that will prevent the insertion of the liner. If inspection reveals an obstruction that cannot be removed by the conventional cleaning equipment, make an excavation and repair the obstruction. Excavation work shall be approved by the ENGINEER prior to commencement of the work and shall be paid under a Change Order.

G. For pipe segments found to have any actively leaking defects that would be categorized as Runners or Gushers by the PACP Defect Rating Codes, grout may be bypassed if light train pre-inspection video shows that there is no trapped water per the instruction of the ENGINEER.

H. In presence of ENGINEER, perform a pre-lining CCTV inspection immediately prior to CIPPL lining to demonstrate that the pipe is clean and free of roots, grease, sand, rocks, sludge, PACP Runners or Gushers, pockets of water, or structural impediments that would affect long-term viability of the pipe liner. Obtain ENGINEER's verbal approval of the acceptability of the existing pipe condition prior to installation of the CIPPL.

3.2 BYPASS PUMPING

A. Maintain commercial and residential sewer service during the installation process, if necessary to properly complete the work, the CONTRACTOR may interrupt flow from services. The CONTRACTOR has the sole responsibility of notifying the public of the work to be done. Each home or business connected to the sewer must be informed via written notice a day prior (24 hours) to work being commenced. The CONTRACTOR must also leave contact information so the public may call with questions or concerns about the project. Upon completion of the work, immediately reinstate all services and notify the property owner(s) that service is again available. The CONTRACTOR also assumes all responsibility for blockages, back-ups or damages caused to public or private property as a result of the interruption of service caused by the CONTRACTOR'S actions.

B. Bypass pumping systems shall be used and operated in accordance with NASSCO Specifications. The bypass pumping system capacity must be sized to meet all potential flows. The CONTRACTOR will be held solely responsible for any damage caused by flooding and will take care to avoid this occurrence. The system must be kept in service for each section until that section is completed and ready to return to service. The CONTRACTOR is responsible for all installation, operation, and maintenance of the system. Manpower, fuel, and necessary utilities required by the systems must be provided and paid for by the CONTRACTOR. Standby pumping must be available and achieved by backing up pumps size for size. This will allow for one hundred percent (100%) backup capacity in case of emergency situations or equipment malfunction. Bypass sewage from individual laterals if needed.

3.3 CIPPL INSTALLATION PROCEDURES

A. Cutters: Maintain two working lateral reinstatement cutters at the job site at all times. Lining work shall not commence if the CONTRACTOR does not have the required number of working cutters on site. No additional time or compensation shall be awarded to the CONTRACTOR in the event that work is stopped due to the CONTRACTOR'S failure to comply with this requirement. If the lateral reinstatement is not properly completed, as determined by the Engineer, the contractor will not be paid for the unsuccessful lateral reinstatement.

B. Material Saturation: The liner manufacturer must be registered in accordance with ISO 9001:2008 for its Quality Management System.

C. Insertion: Insert flexible tube through an existing access way. The liner material shall be inserted through a manhole by means and method required by the manufacturer, and shall be fully extended to the lower manhole. Use only lubricants approved by the tube manufacturer. Make allowance for circumferential stretching during insertion. Make allowances for longitudinal stretching during pull-in. Do not utilize overlapped layers of material in longitudinal seams that cause lumps in the final product.

D. Hydrophilic Waterstops: Insert continuous hydrophilic waterstops at each manhole opening, centered within the intersection of the host pipe and the manhole wall. If defects in the host pipe near the manhole are such that the end seal will not form a watertight seal between the liner and host pipe, apply hydraulic cement to the defects in the host pipe to provide a smooth surface to receive the end seal.

E. Pressure: The CONTRACTOR shall maintain pressure requirements as defined by the manufacturer. The pressure used during the installation process shall be sufficient to hold the liner tight to the pipe wall and prevent wrinkles in the cured liner. The same pressure shall be great enough to prevent infiltration from entering the pipeline during the curing process. The pressure shall be maintained sufficiently long enough to allow pockets of water to exfiltrate through the host pipe and prevent lifts in the liner and resin washout.

F. Curing:

1. Follow submitted cure schedule in curing of liner.
2. Provide inner and outer film materials that inhibits steam, styrene, or other odors from entering downstream buildings.

G. Finished Pipe: Provide a finished CIPPL that is continuous and free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes, delamination, and wrinkles at any location totaling more than 5% of host pipe inside diameter.

H. Service Connections: Reopen all of the existing active service connections in each length of sewer immediately following installation of the liner. Reopen active service connections from inside the sewer by means of a remote controlled, CCTV assisted cutting device appropriate for the liner material and the rehabilitated sewer pipe. Each active service connection shall be cut completely open and shall have smooth edges with no protruding material capable of hindering flow or catching and holding solids contained in the flow stream. If the service connection cannot be fully reopened due to time constraints, open each service connection to a minimum of 75% before the end of each working day.

I. Inactive Service Connections: Do not reopen capped or inactive lateral connections. The OWNER or ENGINEER will determine locations of inactive service connections.

3.4 TRIMMING AT MANHOLES

A. Neatly and smoothly trim the finished ends of the liner to within two inches of host pipe end. Do not leave any rough edges that may catch debris. Do not leave any portion of CIPPL within the manhole channel.

B. Provide a smooth transition between the existing manhole channel invert and the effluent liner using cement grout or other approved material to prevent settling of sediments or debris from catching on the liner.

3.5 POST-INSTALLATION INSPECTION OF COMPLETED WORK

A. Provide Post-construction Inspection video documentation showing completed work. Perform post-construction inspection 12 months after the completion of lining work.

B. Correct all defects discovered during the television inspection before Conditional Acceptance. After the defects are corrected, repeat the post-construction Inspection for that sewer line.

3.6 FINAL CLEANUP

A. Upon completion of rehabilitation work and testing, clean and restore project area affected by the Work.

3.7 QUALITY CONTROL TESTS

A. For each manufacturing lot of CIPPL less than 21-inches diameter or equivalent, collect a restrained pipe sample.

Ultraviolet cured liners: Cut a section of liner from the same portion of liner to be installed in the ground. Take a sample from the liner in front of the can and before the pipe begins. Take 2 samples provide 1 to the OWNER and a second for testing (if required by OWNER)

B. In waterproof, indelible ink, label the sample in the manhole with "Do not remove before (specify date)". The date specified shall be two years after the date of liner installation unless otherwise directed be the ENGINEER. If there is no rung available in the manhole, hang sample in an upstream or downstream manhole and inform ENGINEER of sample storage location. CONTRACTOR may elect to take additional samples at no additional cost to the OWNER. The CONTRACTOR is responsible for the cost of all shipping and testing.

C. The following tests at the following minimum frequencies will be performed by the OWNER on CIPPL liners installed. The OWNER may elect to perform additional testing. The CONTRACTOR may, at his discretion and cost, conduct additional testing to improve the resolution of performance test characterization. Any testing CONTRACTOR elects to perform shall be performed by an independent, certified ISO 17025 testing facility or ENGINEER approved equal.

1. Short-term Flexural (Bending) Properties - The initial tangent flexural modulus of elasticity and flexural yield strength measured in accordance with ISO 178 and wall thickness in accordance with DIN EN 13566-4.

2. Wall thickness shall be measured in accordance with DIN EN 13566-4.

3.8 CIPPL ACCEPTANCE

A. Acceptance of the CIPPL shall be based on the ENGINEER's evaluation of the resin impregnation quality control reports, curing logs, post-construction inspection video, and laboratory test results for the installed pipe samples, which shall demonstrate:

1. Compliance with the required CIPPL physical properties and thickness.
2. Observed groundwater infiltration of the liner is zero.
3. All active service connections are open and clear.
4. There is no evidence of excessive wrinkles, splits, cracks, breaks, lifts, kinks, scalds, blisters, delaminations, crazing or other defects in the liner.

B. If any defective liner is discovered after it has been installed, it shall be removed and replaced with either a sound liner or a new pipe at no additional cost to the OWNER. The CONTRACTOR shall be responsible for costs of additional testing required to confirm compliance with these requirements. Obtain approval of the ENGINEER for method of repair, which may require field or workshop demonstration.

C. For liners with defects, if the CONTRACTOR elects to excavate and repair defects in the liner, cut and remove the defective section of liner plus the host pipe to a minimum of two feet beyond each end of the defective liner. Use SDR 26 PVC to replace the removed liner and host pipe. Align invert of point repair with invert of CIPPL. On either side of the proposed repair, carefully remove the host pipe from around the existing sound liner to expose a minimum of five inches of sound liner or as needed for repair coupling. Use stainless steel shielded flexible repair couplings to connect the new PVC directly to the sound liner. Provide repair couplings custom-fabricated specifically to fit the outside diameter of the host pipe and CIPPL to assure a watertight connection. Haunch all exposed liner and new PVC pipe to the springline with pipe bedding material. Cover with concrete all exposed liner and repair couplings a minimum of six inches on either side of the pipe from the springline to six inches above the pipe. Place AASHTO #57 bedding, as approved by the ENGINEER a minimum of eight inches on either side of the pipe from springline of new PVC pipe to eight inches above the pipe.

D. If the CONTRACTOR elects to repair defects in the liner using trenchless methods, remove the defective sections of liner for the full circumference to a minimum of six inches beyond each end of the defective liner or as approved by the ENGINEER. Install a cured-in-place point repair that matches or exceeds the short and long-term material properties of the existing liner and must have the appropriate thickness to withstand the criteria for that particular liner. A minimum of twelve inches of overlap is required on either end of the repair.

3.9 WARRANTY INSPECTION

A. Owner provided CCTV inspection 12 months after completion of CIPPL work showing all completed work. Actual period for inspection shall be determined by the ENGINEER and will ideally be conducted during high groundwater conditions. CONTRACTOR will be provided with 60 days' notice prior to period of inspection. Conduct all inspections in the presence of the ENGINEER.

B. Correct all defects discovered during the warranty period at no additional compensation. After the defects are corrected, inspect the sewer again at no additional compensation.

C. For CIPPL liners that did not meet specification and a negotiated reduction in price was agreed upon by the CONTRACTOR and the OWNER prior to Conditional Acceptance, this out-of-specification condition becomes the basis upon which future corrective actions during the bonding and warranty periods is based. The physical record of said condition will be the post-rehabilitation inspection submitted by the CONTRACTOR and accepted by the ENGINEER. Only defects beyond those in place at the time of the negotiated price reduction will be considered the CONTRACTOR's responsibility.

D. If additional defects are discovered during the bonding and warranty, the OWNER will request the CONTRACTOR to correct these additional defects or request an additional price reduction. If, in correcting these defects, the CONTRACTOR corrects the previous defects (for which the negotiated reduction was incurred), the OWNER shall pay the CONTRACTOR the difference between the originally negotiated reduced value of the liner and the new, improved/corrected value of the liner, the value of which will be solely determined by the ENGINEER. No payment over 100% of the bid price of the liner will be made.

E. The OWNER retains the right to either demand corrective action to address the additional defects or to offer the CONTRACTOR a further negotiated reduction in the lue of the liner. The CONTRACTOR retains the right to correct the defective liner at any point during the bond and warranty period and receive full payment for the liner. The acceptability of all repairs and the finished value of liner after said repairs continue to be solely the ENGINEER's determination.

- END OF SECTION -

CITY OF COLUMBUS
DEPARTMENT OF PUBLIC SERVICE
DIVISION OF DESIGN AND CONSTRUCTION
SUPPLEMENTAL SPECIFICATION 1525
PERMEABLE PAVER PAVEMENT
April 1, 2019

1525.00 **<u>Purpose of the Specification</u>**: The purpose of the Supplemental Specification 1525 – Permeable Paver Pavement (SS-1525) for roadways, parking lots, parking stalls, and sidewalks subject to vehicular traffic. SS-1525 provides the designer a standard by which to specify the complete aggregate and paver section.

Instructions to Designers:

A. Follow SS-1525 for all of the following:
   1. Permeable Paver Plan Notes
   2. Permeable Paver Detailed Drawings
   3. Permeable Paver Cross Sections
   4. Reference/cite SS-1525 in general summary item descriptions and within all notes and drawings mentioned above as well as any reference to permeable paver design in the project plans and specifications.

B. NOT USED

1525.01 GENERAL

1525.01.1 **Description of Work**: This specification covers the installation of geotextile fabrics, aggregate base, and concrete or clay permeable pavers when used in public roadways, parking lots, parking stalls, and sidewalks.

1525.01.2 **Work in this Section**: This work includes furnishing and installation of subgrade stabilization geotextile, aggregate bases, permeable concrete pavers, and impermeable geomembrane liners if necessary. Excavation is paid separately.

1525.02 SUBMITTAL REQUIREMENTS

1525.02.1 Manufacturers' Information: Shall include product information, test results within the last two years, installation instructions and MSDS data for the following:

A. Subgrade Stabilization Geotextile
B. Aggregate Sub-base, No. 2 or 4 stone
C. Aggregate Base, No. 57 stone
D. Aggregate Setting Bed
E. Cellular Confinement System (If Required)
F. Concrete or Clay Pavers

The contractor shall not start work until manufacturers' information and samples have been approved by the Engineer. Quality control tests as applicable shall be submitted to the Engineer within 5 days of the undertaking the respective test.

1525.02.2 Samples:

A. At the request of the Engineer, Contractor shall submit for approval up to 20 full size samples of each Paver type/size/thickness/color/finish specified on the plans; the samples shall represent the range of shape, texture and color of the respective type for Engineer selection.

B. Minimum 40 lb. sample of each aggregate material for independent testing.

1525.02.3 Test Reports for Quality Control: Prior to delivery of the associated material to the site, the Contractor shall submit the following product specific documentation for approval:

A. Subgrade Stabilization Geotextiles:

1. Certification: The contractor shall provide to the Engineer a certificate stating the name of the manufacturer, product name, style number, and chemical composition of the filaments or yarns and other pertinent information to fully describe the geotextile. The Certification shall state that the furnished geotextile meets minimum average roll value (MARV) requirements of the specification as evaluated under the Manufacturer's quality control program. The Certification shall be attested to by a person having legal authority to bind the Manufacturer. Certifications from Private Label distributors will not be accepted.

2. Manufacturing Quality Control: Testing shall be performed at an on-site laboratory accredited by GAI-LAP for tests required for the geotextile, at frequency meeting or exceeding ASTM D4354.

3. Manufacturer's certifications and testing of quality assurance samples obtained using Procedure B of ASTM D4354. A lot size for conformance or quality assurance sampling shall be the shipment quantity of the given product or a truckload of the given product, whichever is smaller.

B. Aggregates:

1. Sieve analysis per ASTM C-136 with aggregates clean, washed, and free of fines with <2% passing the No. 200 sieve.

2. Resistance to Degradation of Small-Sized and Large-Sized Coarse Aggregates by Abrasion and Impact in the Los Angeles Machine per ASTM C-131 and ASTM C-535. Aggregates should be crushed with minimum 90% fractured faces and minimum Los Angeles abrasion loss of <40.

3. Percentage of angular and sub-angular particles per ASTM D-2488 greater than 90%.

C. Cellular Confinement System (If Required)

1. Manufacturer's product data sheets.

2. Manufacturer's Certificate of Analysis: Manufacturer shall supply certificate of analysis containing the following test results for the cellular confinement material used for project: Base Resin Lot Number(s), Resin Density per ASTM 1505, Production Lot Number(s), Material Thickness, Short Term Seam Peel Strength, and percentage of Carbon Black.

Note: Concrete or clay pavers on the City of Columbus' Approved Producers and Products list (APPL) are not required to submit quality control test reports.

1525.03 Materials

1525.03.1 Subgrade Stabilization Geotextile: The subgrade stabilization geotextile is placed on the bottom and sides of the excavated trench to prevent aggregate from pushing into the native subgrade causing rutting or other structural failures of the pavement system over time. The geotextile provides soil separation to prevent the migration of soil particles. The geotextile also provides sufficient permeability at an order of magnitude (10x) greater than the native infiltration rate of the soil. This can be achieved with a single woven fabric or a combination of geotextiles and geogrid.

Approved products fall into one of two categories:

1. A single woven geotextile meeting or exceeding the performance of Tencate Mirafi RS-380i.

2. CMSC Item 712.09 Geotextile Fabric Type B overlain with a geogrid per ODOT SS 861 - Supplemental Specification 861 GEOGRID FOR SUBGRADE STABILIZATION

Note: Per SS 861, the minimum opening size of the geogrid must be $\geq D_{50}$ of aggregate above geogrid to provide interlock. The maximum opening size must be $\leq 2 \times D_{85}$ to prevent aggregate from penetrating into the subgrade.

1525.03.2 Aggregate Sub-base, No. 2 or 4 stone:

A. Clean, non-plastic aggregate, free from deleterious or foreign matter, manufactured from crushed rock.

B. Percent of angular and sub-angular particles greater than 90%, do not use rounded river gravel.

C. LA Abrasion loss <40 as per ASTM C-131

D. CBR >80%

E. Gradation of subbase aggregate to conform to CMSC Table 703.01-1.

1525.03.3 Aggregate base No. 57 stone:

A. Clean, washed, non-plastic aggregate, and free from deleterious or foreign matter, manufactured from crushed rock.

B. Percent of angular and sub-angular particles greater than 90%, do not use rounded river gravel.

C. LA Abrasion loss <40 as per ASTM C-131

D. CBR >80%

E. Gradation of base aggregate course to conform to CMSC Table 703.01-1.

1525.03.4 Aggregate Setting Bed, No. 8 stone:

A. Clean, non-plastic aggregate, free from deleterious or foreign matter, manufactured from crushed rock.

B. Percent of angular and sub-angular particles greater than 90%, do not use rounded river gravel.

C. LA Abrasion loss <40 as per ASTM C-131

D. CBR >80%

E. Gradation of setting bed aggregate to conform to CMSC Table 703.01-1.

1525.03.5 Cellular Confinement System (If Required)

A. Manufacturing Certification

1. The manufacturer shall have earned a certificate of registration, which demonstrates that its quality-management system for its cellular confinement system (GEOWEB) is currently registered to the ISO 9001:2008 and CE quality standards.

B. Base Materials

1. Polyethylene Stabilized with Carbon Black
2. Density shall be 58.4 to 60.2 lbs/ft^3 (0.935 to 0.965 g/cm^3) in accordance with ASTM D 1505.
3. Environmental Stress Crack Resistance (ESCR) shall be 5000 hours in accordance with ASTM D 1693.
4. Ultra-Violet light stabilization with carbon black.
5. Carbon Black content shall be 1.5 to 2 percent by weight, through addition of a carrier with certified carbon black content.
6. Carbon black shall be homogeneously distributed throughout material.
7. The manufacturer must have an in-place quality control to prevent irregularities in strip material.

C. Cell Properties

1. Individual cells shall be uniform in shape and size when expanded.
2. Individual cell dimensions (nominal) shall be plus or minus 10%.
   a. Length shall be 8.8 inches (224 mm).
   b. Width shall be 10.2 inches (259 mm).
   c. Nominal area shall be 44.8 in^2 (289 cm^2) plus or minus 1%.

3. Nominal cell depth shall be 3 inches (75 mm) unless otherwise specified on the plans.

D. Strip properties and Assembly

1. Perforated Textured Strip/Cell

a. Strip sheet thickness shall be 50 mils (1.27 mm), minus 5 percent, plus 10 percent in accordance with ASTM D 5199. Determine thickness flat, before surface disruption.

b. Polyethylene strips shall be textured surface with a multitude of rhomboidal (diamond shape) indentations.

c. Textured sheet thickness shall be 60 mils, plus or minus 6 mils (1.52 mm plus or minus 0.15 mm).

d. Indentation surface density shall be 140 to 200 per in^2 (22 to 31 per cm^2).

e. Perforated with horizontal rows of 0.4 inch (10 mm) diameter holes.

f. Perforations within each row shall be 0.75 inches (19 mm) on-center.

g. Horizontal rows shall be staggered and separated 0.50 inches (12 mm) relative to hole centers.

h. Edge of strip to nearest edge of perforation shall be a minimum of 0.3 inches (8 mm).

i. Centerline of spot weld to nearest edge of perforation shall be a minimum of 0.7 inches (18 mm).

j. A slot with a dimension of 3/8 inch x 1-3/8 inch (10 mm x 35 mm) is standard in the center of the non-perforated areas and at the center of each weld.

E. Cell Seam Strength Tests

1. Minimum seam strengths are required by design and shall be reported in test results. Materials submitted with average or typical values will not be accepted. Written certification of minimum strengths must be supplied to the Engineer at the time of submittals.

2. Short-Term Seam Peel-Strength Test
   a. Cell seam strength shall be uniform over full depth of cell.

4. Minimum seam peel strength shall be 240 lbf (1060 N) for 3 inch (75 mm) depth.

5. Long-Term Seam Peel-Strength Test

6. Conditions: Minimum of 7 days in a temperature-controlled environment that undergoes change on a 1 hour cycle from room temperature to 130 degrees F (54 degrees C).
7. Room temperature shall be in accordance with ASTM E41.
8. Test samples shall consist of two, 4 inch (100 mm) wide strips welded together.
9. Test sample consisting of 2 carbon black stabilized strips shall support a 160 pound (72.5 kg) load for test period.

F. ATRA® Key

1 ATRA keys shall be constructed of polyethylene and provide a high strength connection with minimum pull-through of 275 lbs (125 kg).

2. ATRA keys shall be used to connect Geoweb panels together at each interleaf and end to end connection.

G. CELL INFILL MATERIALS

1. Cell infill material may be crushed No. 57 aggregate depending on cell height and vertical location. Opening size to be based on manufacturer recommendation for the size of the infill material
2. Infill material shall be free of any foreign material.
3. Clays, silts and organics are not acceptable infill material.
4. Infill material shall be free-flowing and not frozen when placed in the Geoweb sections.

1525.03.6 Concrete Pavers: The City has an APPL list for concrete pavers. Only products on that list shall be permitted on City projects.

1525.03.7 Clay Pavers: The City has an APPL list for clay pavers. Only products on that list shall be permitted on City projects.

1525.03.8 Geomembrane PVC Liners: PVC Geomembrane liners may be used to prevent migration of runoff into native soils to protect existing structures, utilities, or other items of concern. It can also be used to optimize water storage in the stone subgrade in sloped subgrade applications.

A. Meets the requirements of ASTM D-7176, which is the standard specification for Non-reinforced Polyvinyl Chloride (PVC) Geomembranes Used in Buried Applications

B. Minimum thickness 30 mil

1525.04 EXECUTION – CONSTRUCTION REQUIREMENTS

1525.04.1 Inspection:

A. Prior to commencement of any work, the Contractor shall conduct a pre-installation meeting. This pre-installation meeting should, at a minimum, include:

1. Field walk of the proposed improvements with the Engineer.

2. Review of underground utility markings, trees, and any tree trimming necessary to complete the project.

3. The details of the site's Erosion and Sediment Control Plan.

4. Traffic control plan including pedestrian pathways and measures needed to address any residents with special needs impacted by the construction. Detail planned access to property, phasing, and duration.

5. Review of the City's quality control plan.

B. Although the Engineer may provide soil testing and quality assurance inspection during earthwork, aggregate placement, and Subgrade preparation, the Engineer's quality assurance program does not relieve the Contractor of responsibility for quality control and system performance.

C. Where deficiencies or inconsistencies are identified, the Contractor shall notify the Engineer in writing. The Contractor will not proceed with the work until the Engineer has verified that the deficiencies or inconsistencies have been addressed.

1525.04.2 Subgrade Preparation

A. Construct or fine grade the subgrade to within 1/2 inch of the plan grade as measured with a 10-foot straightedge applied to the surface parallel to the centerline of pavement.

B. For cohesive soils, proof roll per CMSC 204.06. Where proof rolling is not achievable due to inaccessible locations, acceptance of subgrade associated with cohesive soils shall pass the 1-point compaction test per SS 1501.

1525.04.3 Subgrade Stabilization Geotextile & Geomembrane PVC Liner:

A. Place the Geotextile directly on prepared surface and on the sides as shown on the typical section. The Geotextile should be deployed flat and tight with no wrinkles or folds. The rolls should be oriented in the direction of traffic to ensure the principle strength direction of the material is placed in the correct orientation. Adjacent rolls should be overlapped by 18-inches. Prior to fill

placement, the geotextile should be held in place using suitable means such as pins, soil, staples and sandbags to limit movement during fill placement.

B. The surface of the subgrade should be relatively smooth and level, and depressions or humps greater than 6-inch should be graded out.

C. Sudden braking, sudden starting and sharp turning should be avoided. Tracked construction equipment must not be operated directly upon the exposed Geotextile. A minimum aggregate fill thickness of 6 inches is required prior to operation of tracked equipment on the Geotextile.

D. In some cases, an impermeable PVC membrane liner is required as shown on the road profiles. Install liner per manufacturer recommendations. A liner installed on the bottom and sides of the trench shall be installed between the subgrade stabilization geotextile and native subgrade material to help protect it from being damaged during aggregate placement. PVC liners not installed along the bottom or sides of the trench shall be protected by covering any side exposed to aggregate with a subgrade stabilization geotextile.

1525.04.4 Installation of Aggregate Sub-base and Base

A. General

1. Any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities shall be removed before application of the geotextile and subbase materials.

2. Keep area where pavement is to be constructed free from sediment during entire job. Base and bedding materials contaminated with sediment shall be removed and replaced with clean materials.

3. Do not damage drain pipes, overflow pipes, observation wells, or any inlets and other drainage appurtenances during installation. Report any damage immediately to the project engineer.

B. At the specified elevation(s), install the underdrain pipes and storm sewer and associated backfill in accordance with the construction drawings. Care must be taken not to damage the drain tiles and storm sewer during subsequent aggregate installation.

C. Open-graded subbase and base

1. Moisten, spread and compact the No. 2, or 4 subbase in maximum 12 inch lifts [without wrinkling or folding the geotextile. Place subbase to protect geotextile from wrinkling under equipment tires and tracks.] Do not place subbase aggregate on a subgrade or geotextile with water ponded on it unless directed by the Engineer

2. For each lift, make at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 t (8 T) vibratory roller until there is no visible movement of the No. 2 or 4 stone. Do not crush aggregate with the roller.

3. Use a minimum 13,500 lbf (60 kN) plate compactor with a compaction indicator to compact areas that cannot be reached by the vibratory roller. Do not crush the aggregate with the plate compactor. When using this plate compactor, maximum lift height is 12-inch.

4. The final surface tolerance of the compacted subbase shall be ±2 inches (±25mm) over a 10 foot (3 m) straight edge.

5. Where cellular confinement is specified, install as per 1525.04.5 with the top of the cellular confinement being 1-inch below the finish grade of the No. 57 stone layer. Moisten spread and over fill the cellular confinement material with No. 57 aggregate then compact with roller

and test for deflection. DO NOT roll the No. 57 aggregate in vibratory mode as it may damage the cellular confinement system, only roll in static mode.

6. Moisten, spread and compact the No. 57 base layer in one lift no less than four and no more than 12 inches. Make at least two passes in the vibratory mode, only if not using a cellular confinement system in the No. 57 layer, then at least two in the static mode with a minimum 10-ton vibratory roller until there is no visible movement of the No. 57 stone. Do not crush aggregate with the roller.

7. The surface tolerance of the compacted No. 57 base should not deviate more than. ±1/2 inch over a 10 foot straight edge.

8. Use a Light Weight Deflectometer (LWD) to measure deflection on all lifts of stone aggregates except the aggregate setting bed layer.

    a. The LWD test method should comply with ASTM E-2835.
    b. Conduct tests on a +/- 20-foot grid throughout the area being constructed
    c. After three preloading drops, the maximum average deflection from three additional drops should be no greater than 1.0 mm for the No. 2, or 4 subbase layer. Areas with greater than 1.0 mm deflection should be rolled again and re-rested. If after subsequent rolling the deflection is still over 1.0 mm but has not changed by more than 5% from the previous test, the material may be approved by the Engineer at their discretion.
    d. Deflection values of less than 0.50 mm are required for the No. 57 aggregate base layer.
    e. For all tests, record the average deflection, location of the test, the approximate total depth of aggregate below the plate and the type of aggregate tested.

Note: Testing performed on the first lift of the No. 2 and 4 aggregate layer may show higher deflection results than 1.0 mm due to the interaction of the natural subgrade. This is acceptable and the contractor may proceed to the next lift of stone if the testing values remain above 1.0 mm after subsequent passes with the roller or plate compactor.

Note: This test method describes the use of a lightweight deflectometer (LWD) that can be used for in-situ deflection testing of open graded aggregates. This test method can assist contractors in reaching adequate job site compaction and offer an additional level of confidence for the project Engineer. This test method is appropriate for pavement subject to consistent vehicular traffic such as parking lots and roads. This test protocol is not

needed for pedestrian areas and residential driveways. The LWD test method should comply with ASTM E2835.

Note: The LWD can only test aggregate to a depth that is equal to the diameter of the load plate. It cannot verify the quality of the consolidation of material that exceeds the diameter of the plate. A 10-12 ton roller can generally do a good job of compacting and consolidating material up to 18-inch in thickness, however, it is recommended that lift thickness not exceed the diameter of the LWD load plate to confirm consolidation of material.

8. Aggregate Setting Bed

    a. Moisten, spread, and screed the No. 8 stone bedding material using an approved mechanical spreader, screed rails, or board the No. 8 stone bedding material to a nominal 1 1/2 in. thickness.
    b. Fill and level voids left by removed screed rails with No. 8 stone.
    c. The surface tolerance of the screeded No. 8 bedding layer shall be ±3/8 in. over a 10 foot straightedge.
    d. Do not subject screeded bedding material to any pedestrian or vehicular traffic before paving unit installation begins.

1525.04.5 Installation of Cellular Confinement System

A. Prepare subgrade and install the cellular confinement load support system in accordance with Manufacturer's instructions.

B. Subgrade Preparation

1. Excavate and shape foundation aggregate as indicated on the drawings.
2. Ensure foundation aggregate is approved by the Engineer.

C. Cellular Confinement Section Placement and Connection

1. Place cellular confinement sections and verify all sections are expanded uniformly to required dimensions and that outer cells of each section are correctly aligned. Interleaf or overlap edges of adjacent sections. Ensure upper surfaces of adjoining cellular confinement sections are flush at joint and adjoining cells are fully aligned at the cell wall slot.
2. Connect the cellular confinement sections with ATRA keys at each interleaf and end to end connection. Insert the ATRA key through the cell wall slot before inserting through the adjacent cell. Turn the ATRA key 90 degrees to lock the panels together. Cellular confinement sections may also be connected with pneumatic staplers either side-to-side or end-to-end.

D. Aggregate Base No. 57 Placement

1. Place the No. 57 aggregate infill with suitable material handling equipment.
2. The aggregate shall be free-flowing and not frozen when placed in the cellular confinement sections.
3. Overfill cells with aggregate infill material. Limit the drop height of infill material to 3 feet (1 meter) to avoid damage or displacement of the cell wall.
4. Level surface approximately 1 1/2 inches above cell walls. Maintain the 1-inch wear surface over the cell sections to prevent damage to the cell walls.
5. Compact infill material per 1525.04.4 and shape surface to required elevation and grade shown on plan but do not roll in vibratory mode, only use static mode.

1525.04.6 Installation of Edge Restraints

A. Edge restraints made of concrete or other acceptable rigid materials shall be provided along the perimeter of all permeable pavers as shown on the construction plans. Typical edge restraints are for transitioning from permeable paver roadway to concrete or asphalt roadways.

B. All concrete edge restraints shall be constructed to dimensions and level specified and shall be supported on a compacted aggregate base not less than 6 inch thick.

C. Concrete used for the construction of edge restraints shall at a minimum conform to the City of Columbus CMSC Item 511, Class COC6.

D. All roadway castings where pavers abut, shall have a minimum 8-inch concrete collar boxed out (square or rectangular) around the casting to include, but not limited to storm inlets, manholes, water valves, etc., per details as shown in the plans.

1525.04.7 Installation of Pavers

A. Install pavers in accordance with the plan specified shape, color, pattern, and treatments along edge restraints, manholes, catch basins, and other obstructions.

B. Ensure that pavers are free of foreign material before installation. Pavers shall be inspected for color distribution and all chipped, damaged or discolored pavers shall be replaced. Initiation of paver placement shall be deemed to represent acceptance of the pavers.

C. Lay the pavers in a 90(degree) herringbone pattern if not installing an “L” shaped paver according to manufacturer's recommendations with soldier or sailor course along edge restraints. Maintain straight pattern lines. For mechanical installations, follow the stitching details submittal (reference Article 1.05) as accepted during the Mock Up.

D. Paving units shall be installed from a minimum of three bundles for hand installations, 6 bundles for mechanical installations, simultaneously to ensure color blending.

E. Joints between the individual pavers shall be maintained according to the spacer bars.

F. Fill gaps at the edges of the paved area with cut pavers or edge units. Do not install cut pavers smaller than one-third of a whole paver along edges subject to vehicular traffic - trim two pavers to fit.

G. Cut pavers using masonry saw with dust collection equipment. Upon completion of cutting, the area must be swept clean of all debris to facilitate inspection and to ensure the pavers are not damaged during compaction.

H. Using a low amplitude plate compactor capable of at least 5,000 lbs. (22 kN) compaction at a frequency of 75 hz -90 hz, compact and seat the pavers into the bedding course. For face-mix concrete pavers such as the EnduraColor finish by Unilock, a urethane cover is recommended over the steel plate to reduce the damage to the surface of the pavers during this process.

I. The pavers shall be compacted to achieve consolidation of the bedding course and brought to level and profile by not less than three passes. Initial compaction should proceed as closely as possible following the installation of the paving units and prior to the acceptance of any traffic or application of permeable joint material.

J. All pavers shall be sound and free of defects that would interfere with the proper placing of the units or impair the strength or performance of the construction. Minor cracks incidental to the usual methods of manufacturing or minor chipping resulting from customary methods of handling in shipment and delivery shall not be deemed grounds for rejection. Any units that are structurally damaged during compaction shall be immediately removed and replaced consistent with the requirements of ASTM C1272. The paver shall be free of cracks or other imperfections when viewed from a distance of 15-feet. Corners that are chipped off shall have the paver removed and replaced when the size of the chippage is approximately the size of a dime, which is roughly the smallest chippage that is noticeable from 15-feet away. The cumulative length of chips on the exposed face of a single unit shall not

exceed 10% of the perimeter of the exposed face of the paver. Pavers that have the top surface crumble during compaction shall also be replaced.

K. Apply the paver manufacturer recommended joint aggregate material to the surface and sweep into the joints and voids. Fill joints and voids, and then sweep off excess material before vibrating the material down into the joints using a plate compactor. This will require at least two or three passes with the compactor.

L. Do not compact within 6 feet of the unrestrained edges of the paving units.

M. All work to within 6 feet of the laying face must be left fully compacted at the end of each day. Cover the laying face with plastic sheets overnight if not closed with cut and compacted pavers.

N. Sweep off excess aggregate when the job is complete. After being swept clean, the completed surface shall be swept clean and washed down with water to provide a finished workmanlike installation.

O. The final surface tolerance of compacted pavers shall not deviate more than ±3/8 under a 10 feet (3 m) long straightedge.

P. The surface elevation of the pavers shall be 1/8 to 1/4 inch (3 to 6 mm) above adjacent drainage inlets, concrete collars or channels.

Q. Bond lines for paver courses: ±½ inch (±15 mm) over a 50 feet (15 m) string line.

R. Verify the surface infiltration at a minimum of 100 in/hour using ASTM test method C 1781.

Note: The surface of the pavers may be 1/8-inch to ¼-inch above the final elevations after compaction. This helps compensate for possible minor settling normal to pavements.

1525.04.08 M**aintenance and Protection**

A. After completion of the work, the Contractor and Engineer shall inspect the paver area(s) and determine if a partial restoration is required due to contamination of the voids during construction. Paver contractor will be responsible for executing this work should it be deemed necessary at their own cost.

B. All completed pervious pavement areas shall be protected from damage and contamination throughout the life of the project. All costs associated with

protecting completed areas shall be included in the Permeable Pavement Roadway Pay Item.

1525.05 QUALITY CONTROL AND ASSURANCE

A. Compaction testing for the aggregate test sections to be performed by the Engineer.

B. Quality control should include at a minimum daily verification with the Engineer that the Contractor's quality control plan is adequate and meets the City of Columbus CMS specifications. Quality control shall also include observation of construction for general compliance with design drawings and project specifications.

C. Final paver inspection shall be conducted to verify conformance to the drawings after removal of excess aggregate. All pavements shall be finished to lines and levels to ensure positive drainage at all drainage outlets and channels.

D. The final paver surface elevations shall not deviate more than +/- 3/8 inch under a 10-foot long straight edge.

E. Paver lippage shall be no greater than 1/8 inch difference in height between adjacent pavers

F. Bond lines for the pavers shall be +/- ½ inch over a 50-foot string line.

G. The top surface of the pavers may be 1/8 to 1/4 inch above adjacent inlets, concrete collars, or other features, this difference is to compensate for possible minor settling.

1525.06 METHOD OF MEASUREMENT

A. The permeable pavers will be measured by the number of Square Yards completed and accepted in place. Square yardage will be measured at the surface of the pavement. This shall include all labor, equipment, materials, and incidentals necessary for the described work including, but not limited to, pavers, joint aggregate, aggregate setting bed, and concrete collars around roadway castings.

B. The Subbase and Base aggregate will be measured by the number of cubic yards completed and accepted in place. The width equals the pavement width shown on the typical cross-section and the height based on the profile plus any additional widening as directed by the Engineer. The City will field measure the length along the centerline of each installation. The City will determine the volume based on the above width, height and length. The City will measure the elevation at which the materials change from subbase to base aggregate and note any changes based on the typical section.

C. The subgrade stabilization geotextile will be measured by the width of the pavement shown on the typical cross-section and the height based on the profile plus any additional widening as directed by the Engineer. No additional compensation is given for the required overlapping of the material. No additional compensation is given for waste product.

D. The cellular confinement system will be measured by the square yard of product completed and accepted in place.

E. The geomembrane PVC liner will be measured by the number of square yards shown on the plans plus any additional area as directed by the Engineer. No additional compensation is given for the required overlapping of the material and geotextiles installed to protect the fabric when not installed along the bottom or sides of the installation trench.

F. Concrete edge restraints, other than standard concrete curbs meeting CMSC 609, will be measured by the linear feet completed and accepted in place.

1525.07 BASIS OF PAYMENT

The City will pay for all work as described in 1525.

The City will pay for accepted quantities at contract price as follows:

Item	Unit	Description
1525	**Square Yard**	**Subgrade Stabilization Geotextile**
1525	**Cubic Yard**	**Aggregate Sub-base No. 2 or 4 stone**
1525	**Cubic Yard**	**Aggregate Base, No. 57 Stone**
1525	**Square Yard**	**Cellular Confinement System (T=__")**
1525	**Square Yard**	**Permeable Paver Roadway, As Per Plan**
1525	**Square Yard**	**Geomembrane PVC Liner (___mil)**
1525	**Linear Feet**	**Permeable Pavement Concrete Edge Restraint**

1525.08 WARRANTY

A. Contractor shall warrant the finished paver pavement for a period of two years from the date of City acceptance of the pavement system.

B. Joint Material Loss: The pavement shall be inspected at the 1st year anniversary and 18 months after acceptance by the City; if required, Contractor shall reinstall joint material in areas of joint material loss as directed by the City.

C. Creep: The pavement shall be inspected for paver creep at the 1st year anniversary after acceptance by the City; if required, Contractor shall replace pavers that are affected and re-apply jointing material as directed by the City. The maximum allowable horizontal creep is 0.4".

D. Rutting, Settling or Cracking: The pavement shall be inspected for rutting, settling or cracking at the 1st year anniversary after acceptance by the City; if required, Contractor shall replace full depth of paver installation to initial elevations in affected areas as directed by the City. The maximum allowable vertical rutting is 0.5".

APPENDIX D
DETAILED CONSTRUCTION DRAWINGS

The plan for the Project is entitled “Franklin Street Improvement (CIP T-138), is designated as Hilliard Record Plan P-928, and consists of 75 sheets.

Applicable standard construction drawings/specifications for the City of Hilliard, the City of Columbus, and the Ohio Department of Transportation are listed on the title sheet, consist of 284 pages, and are available for download only as part of this bid package.

APPENDIX E
GEOTECHNICAL REPORT

To assist contractors in preparation of their bid, the geotechnical report dated May 3, 2017, which consists of 29 pages, is available for download only.