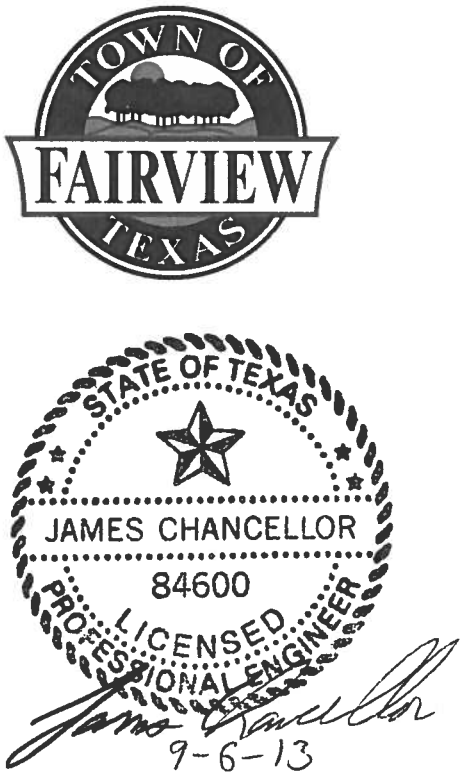
TOWN OF FAIRVIEW

RESIDENTIAL STREET PAVING IMPROVEMENTS

OCTOBER 2013



372 TOWN PLACE FAIRVIEW, TX. 75069

PREPARED BY: JAMES CHANCELLOR, PE TOWN ENGINEER

CONTACT INFO: 972-886-4235 jchancellor@fairviewtexas.org

TOWN OF FAIRVIEW

2013 RESIDENTIAL STREETS PROJECT

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TOWN OF FAIRVIEW

NOTICE TO CONTRACTORS

1. Sealed bids (proposals) addressed to the Town of Fairview (Town), 372 Town Place, Fairview, Texas 75069, will be received at Town Hall until 2:00 p.m. September 26 2013 for

2013 RESIDENTIAL STREETS IMPROVEMENTS

At such time bids will be publicly opened and read aloud.

2. The work consists of furnishing all labor, equipment and materials (except as otherwise specified), and performing all work necessary for asphalt pavement resurfacing of various residential streets which includes the installation of 5,960 tons of HMAC TYPE 'B', 12,449 tons of HMAC TYPE 'D', 37,052 SY cement treated base (6" full depth asphalt pavement recycling and cement slurry) and approximately 9,325 tons of asphalt milling and removal. (For all CTB; A third party will be installing a fiberglass mesh and special tack coat between your first and second asphalt surface courses, separate contract).

3. Plans and Specifications for the work may be downloaded at www.fairviewtexas.org

TOWN OF FAIRVIEW, TEXAS

James Chancellor, PE
Town Engineer

INSTRUCTIONS TO BIDDERS

1. Each proposal shall be legibly written or printed in ink, on the proposal form provided in this bound copy of proposed Contract Documents. No alterations in proposal, or in the printed forms thereof, by erasures, interpolations, or otherwise will be acceptable unless each such alteration is signed or initialed by the bidder; if initialed, the Town may require the bidder to identify any alterations so initialed. No alteration in any proposal, or in the proposal form on which it is submitted, shall be made by the person after the proposal has been submitted by the bidder. Any and all addenda to the Contract Documents on which a proposal is based, properly signed by the bidder, shall accompany the proposal when submitted. The bidder may withdraw his proposal any time prior to the bid opening date and time stipulated in the Notice to Contractors.

Each proposal submitted shall be enclosed in a sealed envelope, addressed to the Town of Fairview, 372 Town Place, Fairview, Texas 75069, identified on the outside with the words "Proposal for 2013 Residential Streets Project" and identifying the bidder. Proposals shall be delivered to the Town Engineer by 2:00 p.m., September 26, 2013 at such time bids will be publicly opened and read aloud. **Facsimile Transmittals Will Not Be Accepted.**

All bids will be tabulated for the Town Council by the Town Engineer. The Town Council will determine the lowest responsible bid, after considering the recommendations of the Town Engineer, determine whether such bid is that of a responsible bidder, and award a contract to the Contractor determined to be the lowest responsible bidder. The Fairview Town Council will authorize the Town Manager to enter into a contract with said Contractor.

2. Each Proposal shall be accompanied by either a cashier's check, a certified check, or an acceptable bid bond in an amount of not less than five percent (5%) of the proposed bid price, made payable without conditions to "Town of Fairview, Texas", and the amount of the said proposal Guarantee may be retained by and forfeited to the Town as liquidated damages if the proposal covered thereby is accepted and a contract based thereon is awarded and the bidder should fail to enter into a contract in the form prescribed, with legally responsible sureties, within the ten (10) days after such award is made by the Town.

The proposal guarantee deposit of the unsuccessful bidders will be returned if and when their proposals are rejected. The proposal guarantee deposit of the bidder to whom a contract is awarded will be returned provided, and when, said successful bidder executes a contract and files satisfactory bonds as hereinafter stipulated. The proposal guarantee deposit of the second and third lowest responsible bidders may be retained for a period of not to exceed sixty (60) days pending the execution of the contract and bonds by the successful bidder.

3. Accompanying his proposal, each bidder shall furnish an experience list of similar work along with such other information as will tend to show the bidder's ability to prosecute the required

work. The Bidder shall have a minimum of three years experience and successful history in the performance of similar work. The Town may make such investigations as they deem necessary to determine the ability of the Bidder to perform the work. The experience list is not required for those bidders who have performed similar work for the Town of Fairview within the past 5 years.

4. Each bidder shall carefully examine the Specifications, and other Contract Documents, shall visit the site and fully inform himself of all conditions affecting the work or the cost thereof, and shall be presumed to have done so and his bid shall be based upon his own conclusions from such examination. Each bidder shall inform himself concerning all Federal, State, and local laws, ordinances or regulations which may in any manner affect his proposed construction operations, or those engaged or employed on the work or the material or equipment. Should a bidder find discrepancies in, or omissions from, the Plans, Specifications or other Contract Documents, he should at once notify the Town Engineer and obtain clarification or interpretation prior to submitting any bid.

Any interpretation of the proposed Contract Documents will be made only by addendum duly issued and a copy of such addendum will be mailed or delivered to each person obtaining a set of such documents from the Town Engineer. The Town will not be responsible for any other explanations or interpretations of the proposed Contract Documents.

5. Each bidder to whom a contract for the work is awarded will be required to furnish surety as follows:

Performance Bond: A contract bond to the Town, in an amount equal to 100 percent (100%) of the not to exceed contract price.

Payment Bond: A payment bond to the Town, in an amount equal to 100 percent (100%) of the not to exceed contract Price.

The bonds shall be executed in three (3) counterparts on the forms bound herein, signed by an acceptable surety company authorized to do business in the State of Texas as required by Article 5160 V.A.T.C.S.

Attorneys-in-fact who sign the bonds must file with each bond a certified and effective dated copy of their power of attorney.

Certificates of Insurance: Satisfactory certificates of insurance shall be filed with the Town in accordance with the GENERAL CONDITIONS and SUPPLEMENTARY CONDITIONS in the Contract Documents.

6. The Bidder's attention is directed to Texas House Bill 11 (72nd Legislature, 1st C.S.) which amended the Texas Tax Code Section 151.311. This amendment provides that by the CONTRACTOR entering into a separated contract, The CONTRACTOR will become a seller of materials purchased for the project, which will obviate paying taxes, on materials incorporated into the project.

7. No bidder may submit more that one proposal. Two proposals under different names will not be received from one firm or association.

8. No bidder may withdraw his proposal for a period of sixty (60) days after the date and hour set for the opening herewith. A bidder may modify or withdraw his proposal at any time prior to the expiration of the period during which proposals may be submitted, by written request of the same persons or person who signed the Proposal.

9. The Town reserves the right to accept the bid which, in its judgment is the lowest responsible bid; to reject any or all bids; and to waive irregularities or informalities in any bid submitted. Bids received after the specified time of closing will be returned unopened. Conditional or qualified bids will not be accepted.

10. None of the Instructions to Bidders, Proposal, Performance Bond, Payment Bond, Contract Agreement, General Conditions, Special Conditions or Specifications shall be removed from the bound copy of the Contract Documents prior to filing the proposal contained therein.

11. Each bidder shall sign his proposal, using his usual signature and giving his full business address. Bids by partnerships shall be signed with the partnership name followed by the signature of one of the members of the partnership or by an authorized representative and designation of the person signing. Bids by corporations shall be signed with the name of the corporation, followed by the signature and designation of the president, secretary, or other person authorized to bind it in the matter. The names of all persons signing should also be printed below the signature. a bid by a person who affixes to his signature the word "President", "Secretary", "Agent", or other designation, without disclosing his principal, may be held to be the individual signing. When requested by the Town, satisfactory evidence of the authority of the officer signing in behalf of a corporation shall be furnished.

12. The Notice of Award shall be accompanied by the necessary Contract Agreement and Bond forms. The Bidder to whom the Contract is awarded will be required to execute the Contract Agreement and obtain the Performance and Payment Bonds and Certificates of Insurance within ten (10) calendar days from the date when notice of Award is delivered to the bidder. In case of failure of the bidder to execute the Contract Agreement, the Town may at its option consider the bidder in default, in which case, the bid security accompanying the Proposal shall become the property of the Town.

13. The Town, within ten (10) days of receipt of acceptable Performance Bond, Payment Bond, Certificates of Insurance and Contract Agreement signed by the bidder to whom the contract was awarded, shall sign the Contract Agreement and return to the bidder two (2) executed copies of the Contract Agreement. The Bidder may withdraw his signed Agreement should the Town not execute the Agreement within the stated period by written notice to the Town.

14. The Notice to Proceed shall be issued within ten (10) days of the execution of the Contract Agreement by the Town. The time may be extended by mutual agreement between the Town and Contractor. If the Notice to Proceed has not been issued within the specified time or mutually

agreed upon extension, the Contractor may terminate the Contract Agreement without further liability on the part of either party.

15. Attention is called to the fact that not less than the federally determined prevailing wage rate, as issued by the U.S. Department of Labor, must be paid on this project.

16. The Town intends to award the Contract to a bidder that will be doing a substantial portion of the work rather than through subcontracts. The bidder must complete the item in the Proposal regarding the amount of work to be done by the Prime Contractor. The Town reserves the right to consider this breakdown in awarding the Contract.

17. Each Bidder shall list all subcontractors they propose to use on this project for which the amount of the subcontract is in excess of $10,000. The list shall include the name and address of the subcontractor, the work they will be performing and the amount of the subcontract. The Bidder shall also complete a Statement of Qualifications and Experience for each subcontractor. The Contractor shall not change subcontractors or enter into contract with subcontractors not listed without prior approval by the Town. The Town reserves the right to refuse any or all requests for changes.

2013 RESIDENTIAL STREETS PROJECT

PROPOSAL

THIS BID IS SUBMITTED TO:

Honorable Mayor and Town Council
Town of Fairview
372 Town Place
Fairview, Texas 75069

The Undersigned Bidder proposes to complete the generally described work as shown in these Specifications for the following unit prices and total price. The bidder understands that units may change in the field and that the unit prices shown here will be honored and that the final price will be based on the actual measured or approved field quantities.

DESCRIPTION	QUANTITY	UNITS	UNIT PRICE	TOTAL
1" HMAC TYPE 'D' LEVELING COURSE (OVER CTB)	3021	TONS	_____	_____
2" HMAC TYPE 'B' BASE COURSE	5961	TONS	_____	_____
2" HMAC TYPE 'D' OVERLAY	1669	TONS	_____	_____
1 1/2" HMAC TYPE 'D' OVERLAY (SECOND COURSE)	7654	TONS	_____	_____
1 1/2" HMAC TYPE 'D' OVERLAY DRIVE APPROACHES	105	TONS	_____	_____
PRIME COAT (CSS-1h)	104461	SY	_____	_____
TACK COAT (SS-1) (SECOND COURSE, CTB 3RD PARTY)	60739	SY	_____	_____
6" CEMENT TREATED BASE 28 LBS/SY (SLURRY MIX)	37052	SY	_____	_____
MICROFRACTURING OF CTB	37052	SY	_____	_____
4" MILLING AND REMOVAL OF EXISTING ASPHALT	1715	SY	_____	_____
3" MILLING AND REMOVAL OF EXISTING ASPHALT	35411	SY	_____	_____
2" MILLING AND REMOVAL OF EXISTING ASPHALT	29205	SY	_____	_____
SUBGRADE PREPARATION	1	LS	_____	_____
REMOVE EXISTING CONCRETE (217 S.Y.)	1	LS	_____	_____
TRAFFIC BARRICADES & SIGNAGE	1	LS	_____	_____
SAWCUT EXISTING PVMT	1100	LF	_____	_____
MOBILIZATION	1	LS	_____	_____

TOTAL BASE BID $ _____

1. The Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with the Town in the form included in the Contract Documents to complete the 2013 Residential

Streets Project as specified or indicated in the Contract Documents for the Contract Price in this Bid and in accordance with the Contract Documents.

2. Bidder accepts all of the terms and conditions of the notice to Contractors, including without limitation those dealing with the disposition of Bid Security. This Bid will remain open for sixty (60) days after the day of Bid opening. Bidder will sign the Agreement and submit the Contract Security, Certificate of Insurance and other documents required by the Contract Documents within ten (10) days after the date of Town's Notice of Award.

3. In submitting this Bid, Bidder represents, as more fully set forth in the Agreement, that:

(a) Bidder has examined, and hereby acknowledges receipt of, copies of all the Contract Documents and the following addenda:

ADDENDUM NO:	DATE
_____	_____
_____	_____
_____	_____

(b) Bidder has examined the site and locality where the Work is to be performed, the legal requirements (Federal, State and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as Bidder deems necessary.

(c) Bidder intends to perform a substantial portion of the work himself in accordance with the following approximate breakdown based on percentage of Base Bid:

Portion of Work by Bidder _____ %

Portion to be Sub-Contracted _____ %

Subcontractor Information

Name	Type of Work	Amount
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

5. The following documents are attached to and made a condition of this Bid:

(a) Required Proposal Guarantee (cashier's check, certified check, or bid bond).

(b) Statement of Bidder's Qualifications and Experience.

(c) Statement of Subcontractors' Qualifications and Experience.

6. The terms used in this Bid which are defined in the General Conditions of Agreement included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

Submitted on _____, 20___.

Individual
Partnership
_____Corporation
Firm Name

By:_____
Typed or Printed

SIGNATURE_____

TITLE_____

ADDRESS_____

_____

TELEPHONE_____

TOWN OF FAIRVIEW
2013 RESIDENTIAL STREETS PROJECT

CONTRACTOR _____

STATEMENT OF QUALIFICATIONS AND EXPERIENCE

Note: Demonstrate a minimum of three years experience. Bidders who have performed similar work for the Town of Fairview within the past 5 years are not required to complete this information.

NAME OF PROJECT:

OWNER:

TOTAL CONTRACT COST: COMPLETION DATE:

DESCRIPTION:

NAME OF PROJECT:

OWNER:

TOTAL CONTRACT COST COMPLETION DATE:

DESCRIPTION:

NAME OF PROJECT:

OWNER:

TOTAL CONTRACT COST: COMPLETION DATE:

DESCRIPTION:

NAME OF PROJECT:

OWNER:

TOTAL CONTRACT COST: COMPLETION DATE:

DESCRIPTION:

DUPLICATE THIS FORM IF THERE IS MORE THAN ONE SUBCONTRACTOR

TOWN OF FAIRVIEW
2013 RESIDENTIAL STREETS PROJECT

SUBCONTRACTOR _____

STATEMENT OF QUALIFICATIONS AND EXPERIENCE

Note: Demonstrate a minimum of three years experience. Subcontractors who have performed similar work for the Town of Fairview within the past 5 years are not required to complete this information.

NAME OF PROJECT:

OWNER:

TOTAL CONTRACT COST: COMPLETION DATE:

DESCRIPTION:

NAME OF PROJECT:

OWNER:

TOTAL CONTRACT COST COMPLETION DATE:

DESCRIPTION:

NAME OF PROJECT:

OWNER:

TOTAL CONTRACT COST: COMPLETION DATE:

DESCRIPTION:

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned,_____ _____as Principal, and _____ _____ as Surety, are hereby held and firmly bound unto the Town of Fairview, Texas as Owner in the penal sum of_____ . _____(5% of the proposal as submitted) for payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 2013.

The Condition of the above obligation is such that whereas the Principal has submitted to the Town of Fairview, Texas a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing, for the construction of 2013 Residential Street improvements in the Town of Fairview.

NOW THEREFORE,

(a) If said Bid shall be rejected, or

(b) If said Bid shall be accepted and the principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for his faithful performance of said contract, and Certificates of Insurance and shall in all other respects perform the agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise the same shall remain in force and effect: it being expressly 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 Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____L.S.
Principal

_____
Surety

By: _____

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended and be authorized to transact business in the State of Texas.

TOWN OF FAIRVIEW

2013 RESIDENTIAL STREETS IMPROVEMENTS

CONTRACT AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 2013, by and between the Town of Fairview, Collin County, Texas, Party of the First Part, hereinafter referred to as the "Town", and _____ Party of the Second Part, hereinafter referred to as the "Contractor" for Construction of various drainage improvements including furnishing all labor, equipment and materials (except as otherwise specified) and performing all work necessary for the construction.

ARTICLE 1. It is hereby mutually agreed that for and in consideration of the payments as provided for herein to the Contractor by the Town, the said Contractor shall furnish all labor, equipment, and material (except as otherwise specified above) and shall perform all work necessary to complete the improvements in a good and substantial manner, ready for use, before the contract time expiration. The work shall be in strict accordance with this Contract, a copy of which is filed pursuant to law in the office of the legal representative of the Town.

ARTICLE 2. It is hereby further agreed that in consideration of the faithful performance of the work by the Contractor, the Town shall pay the Contractor the compensation due him by reason of said faithful performance of the work at stated intervals and in the amount certified by the Town Engineer, in accordance with the provisions of this Contract.

ARTICLE 3. It is hereby further agreed that, at the completion of the work and its acceptance by the Town, all sums due the Contractor by reason of alterations or modifications of the original Contract or by reason of "Extra Work" authorized under this Contract, will be paid the Contractor by the Town after said completion and acceptance.

ARTICLE 4. It is hereby further agreed that any reference herein to the "Contract" shall include all "Contract Documents" as the same are listed and described in Paragraph 1.9 of SECTION: GENERAL CONDITIONS bound herein, and said "Contract Documents" are hereby made a part of this Agreement as fully as if set out at length herein, and that this Contract is limited to the items in the Proposal as signed by the "Contractor" and included in the "Contract Documents".

ARTICLE 5. The Contractor agrees to perform all of the work described in the Contract Documents for the unit prices and total contract price as submitted in the Bid, in the total amount of _____ taking into consideration additions to or deductions from the Total Bid by reason of alterations or modifications of the original quantities or by reason of "Extra Work" authorized under this Agreement in accordance with the provisions of the Contract Documents.

Contractor agrees to a substantial completion time of 60 days and final completion of 90 days from the date of the Notice to Proceed.

ARTICLE 6. The Contractor agrees that the sum of Three Hundred Dollars ($300.00) in Liquidated Damages will be deducted from the Contract price by the Town for each calendar day that the work remains incomplete beyond the Contract time for completion, or within such extra time as may have been allowed by an extension approved by the Town.

ARTICLE 7. The Contractor agrees to submit a Maintenance Bond prior to the release of final retainage for 100% of the value of the Contract Amount for a period of two years from the date of final acceptance.

IN WITNESS WHEREOF, the Party of the First Part and the Party of the Second Part, respectively, have caused this Agreement to be duly executed in day and year first herein written in three (3) copies, all of which to all intents and purposes shall be considered as the original.

ARBITRATION PROVISION:

THIS CONTRACT CONTAINS A BINDING ARBITRATION PROVISION WHICH MAY BE ENFORCED BY THE PARTIES.

CONTRACTOR, PARTY OF THE SECOND PART

By:_____

_____
(Office or Position of Signer)

OWNER, PARTY OF THE FIRST PART
TOWN OF FAIRVIEW, TEXAS

By:_____
Julie Couch, Town Manager

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENT THAT WE, _____ of _____, hereinafter referred to as the "Contractor" and _____ _____, a Corporation organized and existing under the laws of the State of Texas, and duly authorized to transact business in the State of Texas, as "Surety" are held and firmly bound unto the Town of Fairview, Texas (Owner), their successors and assigns, hereinafter called the "Owner", in the penal sum of _____ in lawful money of the United States of America, for the payment of which well and truly to be made to said Owner with the understanding that such designation shall be held and taken to apply to them or to their successors, lessees and assigns, as the circumstances not or to any time in the future under the terms hereof shall require, we, said Contractor and Surety, do hereby bind ourselves and our respective successors, lessees and assignees, jointly and severally, forever firmly by these present.

THE CONDITION OF THE ABOVE OBLIGATION, HOWEVER IS SUCH THAT:

WHEREAS, said Contractor has entered into a certain Contract in writing bearing date of the _____ day of _____, 2013, and designated as construction of 2013 Residential Streets improvements in Fairview including furnishing all labor, equipment and materials (except as otherwise specified), and performing all work necessary for the construction.

WHEREAS, it is provided in said Contract that said Contractor shall furnish a bond in the sum hereinabove stated condition for the faithful performance of said Contract as well as any supplement or supplements in writing thereto covering additional or other work to be performed by the contractor pursuant to the terms and conditions of said Contract.

NOW, THEREFORE, if said Contractor shall in all respect faithfully and fully perform each and all of the terms, provisions, conditions, and undertakings of said Contract in writing to be by it performed, together with like performance of any an all supplements in writing thereto covering additional or other work to be performed by the Contractor, notice of any such supplement or supplements being hereby waived, then this obligation shall be null and void; otherwise it shall remain in full force, virtue and effect.

PROVIDED FURTHER, that it is expressly understood and agreed that notice of any default in or non-performance of any duty of obligation on the part of the Contractor under the terms of said Contract in writing, or any supplement in writing thereto covering additional or other work to be performed by the Contractor, is hereby expressly waived by the Surety, and that any such default or non-performance of any duty or obligation shall not absolve or release the Surety from its joint and several absolute and unconditional undertaking or indemnity, irrespective of whether Owner shall or shall not call upon the Contractor for compliance therewith or performance thereof, and that these present shall remain in full force, virtue and effect during the existence of said Contractor of any supplement in writing thereto covering additional or other work to be performed by the Contractor, and thereafter for the purpose of adjusting rights and obligations which shall have accrued during

the life of said written Contract, or any supplement in writing thereto covering additional or other work to be performed by the Contractor.

IN TESTIMONY WHEREOF, the Contractor has hereunto set his hand, and said Surety has caused these present to be executed in its name, and its corporate seal to be hereunto affixed, by its attorney-in-fact duly authorized to do so at_____, on this _____ day, of _____,20___.

SURETY COMPANY	CONTRACTOR
_____	_____
Name of Company	Name of Company
By:_____	By:_____
Attorney-in-Fact	
By:_____	_____
Title of Person Signing	Title of Person Signing
(Seal)	(Seal)

(Accompany this bond with attorney-in-fact's authority from the Surety company certified to include the date of the bond.)

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENT, that _____ as "Contractor", and _____ a corporation organized under the laws of the State of _____, with general offices in _____, and authorized to transact business in the State of TEXAS as "Surety", are held and firmly bound unto the Town of Fairview, in the penal sum of _____ for the payment of which sum will and truly to be made, we bind ourselves, and our heirs, executors, administrators, successors, and assigns, jointly and severally, be these presents:

THE CONDITIONS OF THE FOREGOING OBLIGATIONS IS SUCH THAT:

WHEREAS, the Contractor has on the _____ day of _____, 2013, entered into a written contract with the Town for 2013 Residential Street Improvements in Fairview including furnishing all labor, equipment and materials (except as otherwise specified), and performing all work necessary for the construction.

NOW, THEREFORE, if the Contractor and his subcontractors shall pay all indebtedness incurred for supplies, materials, or labor furnished, used or consumed in connection with the prosecution of the work provided for in said contract, this obligation shall be void; otherwise it shall remain in full force and effect.

PROVIDED FURTHER, that the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder, or the specifications accompanying the same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Contract or to the specifications.

PROVIDED FURTHER, that the surety agrees that any person to whom there is due any sum for supplies, materials, or labor, hereinbefore stated, or his assigns, may bring an action on his bond for the recovery of the indebtedness; **PROVIDED,** that no action shall be brought on the bond after six months from the completion of the public improvements.

SURETY COMPANY: CONTRACTOR:

_____	_____
Name of Company	Name of Company
By:_____	_____
By:_____	_____
Title of Person Signing	Title of Person Signing
(Seal)	(Seal)

(Accompany this bond with attorney-in-fact's authority from the Surety Company certified to include the date of the bond.)

NOTICE OF AWARD

TO: _____

_____

_____

_____

Project Description: _____

_____

_____

The Fairview Town Council has considered the Proposal submitted by you on _____ for the above described work in response to its Notice to Contractors and Instructions to Bidders and on _____ voted to award you the Contract in the amount of _____. You are required by the Instructions to Bidders to execute the Contract Agreement and furnish the required Performance and Payment Bonds and Certificates of Insurance within ten (10) calendar days from the date of this Notice to you.

If you fail to execute said Contract Agreement and to furnish said Bonds and Certificates within ten (10) days from the date of this Notice, the Town of Fairview will be entitled to consider all your rights arising out of the Town's acceptance of your Proposal as abandoned and as a forfeiture of your Bid Security. The Town will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this NOTICE OF AWARD to the Town.

Dated this _____ day of _____, 2013.

TOWN OF FAIRVIEW

By_____

James Chancellor, Town Engineer

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE OF AWARD is hereby acknowledged by _____ _____, this the _____ day of _____ _____, 2013.

By _____

Title _____

GENERAL CONDITIONS

1. DEFINITIONS: 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:

1.1 Acceptance, Final Acceptance: The formal action by the town in accepting the Work as being complete.

1.2 Addenda: Written or graphic supplemental documents issued prior to the opening of bids 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 individual, partnership, corporation, or combination thereof submitting a proposal for the Work contemplated, acting directly or through and authorized representative.

1.5 Bonds: Bid, performance, and payment bonds and other instruments or security, furnished by the Contractor and his surety in accordance with the Contract Documents.

1.6 Change Order: A document recommended by the Engineer which is signed by the Contractor and Town and authorizes an addition, deletion, or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Contract.

1.7 Contract: The written agreement between the town and Contractor covering the work to be performed; other Contract Documents are attached to the Contract and made a part thereof as provided therein.

1.8 Contractor: The individual, partnership, corporation, or combination thereof who has entered into the Contract (or agreement) with the town for the performance of the Work called for in the Contract Documents.

1.9 Contract Documents: The Notice to Contractors, Instructions to Bidders, Proposal, Contract Agreement, Performance Bond, Payment Bond, General Conditions, Supplementary Conditions, Technical Specifications, Plans, Addenda, Notice of Award, and Notice to Proceed are each and all included in this Contract and the Work shall be done in accordance therewith.

1.10 Contract Price: The total monies payable to the Contractor under the terms and conditions of the Contract Documents.

1.11 Contract Time: The number of calendar days stated in the Proposal for the completion of the Work. The term day as used in the Contract Documents shall mean calendar day unless specifically designated otherwise.

1.12 Effective Date of the Contract: The date indicated in the Notice to Proceed as the date of commencement of the Work, the date from which Contract Time is measured.

1.13 Engineer: The individual or firm designated, appointed, or otherwise employed or delegated by the town for this Work, or their duly authorized agents, such agents acting within the scope of the particular duties entrusted to them in each case. The Engineer on this Project is the town Engineer.

1.14 Field Order: A written order issued by the Engineer which orders minor changes in the Work but which do not involve a change in the Contract Price or the Contract Time.

1.15 Notice of Award: The written notice of the acceptance of the bid from the town to the successful Bidder.

1.16 Notice to Proceed: Written communication issued by the town to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work, also referred to as the Effective Date of the Contract.

1.17 Town: The Town of Fairview, Texas with whom the Contractor has entered into the Contract and for whom the Work is to be provided.

1.18 Plans: The part of the Contract Documents which shows the locations, characteristics, dimensions, and details of the Work to be performed and which have been prepared or approved by the Engineer.

1.19 Project: The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.20 Proposal: The offer or proposal of the Bidder submitted on the prescribed form bound herein, setting forth the prices for the Work to be performed.

1.21 Resident Project Representative or Inspector: The authorized representative of the Engineer who is assigned to the site or any part thereof.

1.22 Samples: Physical examples which illustrate materials, equipment or workmanship, and establish standards by which the Work will be judged

1.23 Shop Drawings: All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the Contractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by the Contractor to illustrate material or equipment for some portion of the Work.

1.24 Specifications: Those portions of the Contract Documents consisting of written technical descriptions of material, equipment, construction systems, standards and workmanship

as applied to the Work and certain administrative details applicable thereto, including these General Conditions and the Supplementary Conditions.

1.25 Subcontractor: An individual, firm or corporation having direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

1.26 Substantial Completion: The Work (or a specified part thereof has progressed to the point where, in the opinion of Engineer as evidenced by Engineer's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended.

1.27 Superintendent: The employee of the Contractor at the project site who shall have sole responsibility an authority for supervision of the Contractor's forces and construction operations.

1.28 Supplementary Conditions: The part of the Contract Documents which amends or supplements these General Conditions.

1.29 Supplier: A manufacturer, fabricator, supplier, distributor, materialman or vendor.

1.30 Underground Facilities: All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasement containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.31 Work: The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

2. TERMS:

2.1 Whenever in these Contract Documents the works "as ordered", "as directed", "as required", "as permitted", "as allowed", or words or phrases of like import are used, it shall be understood that the order, directions, requirement, permission or allowance of the town and Engineer is intended.

2.2 Similarly the works "approved", "reasonable", "suitable" acceptable", "properly", "satisfactory", or words of like effect an import, unless otherwise particularly specified herein, shall mean approved, reasonable, suitable, acceptable, proper or satisfactory in the judgement of the town and Engineer.

2.3 Whenever any statement is made in the Contract Documents containing the expression "it is understood and agreed", or an expression of like import, such expression means the mutual

understanding and agreement of the parties executing the Contract of which these General Conditions are a part.

3. ABBREVIATIONS:

When references are made to the following abbreviations, they refer to the specifications, standards, or methods of the respective national association. All references to the above specifications, standards, or methods shall, in each instance, be understood to refer to the latest issue in effect (including all amendments).

ASSHTO	American Association of the State Highway and Transportation Officials
ACI	American Concrete Institute
AI	The Asphalt Institute
IA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute (Succeeding ASA)
APWA	American Public Works Association, Inc.
AREA	American Railway Engineering Association
ASTM	American Society for Testing Materials
AWS	American Welding Society
AWWA	American Water Works Association, Inc.
CRSI	Concrete Reinforcing Steel Institute
FED SPEC	Federal Specifications
NBFU	National Board of Fire Underwriters
NEC	National Electric Code
NEMA	National Electrical Manufacturers' Association
NESC	National Electric Safety Code
NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Act of 1970
PCA	Portland Cement Association
SSPC	Steel Structures Painting Council
UBC	Uniform Building Code
U/L	Underwriter's Laboratories, Inc.

4. VERBAL STATEMENTS NOT BINDING: It is understood and agreed that the written items and provisions of this Contract shall supersede all prior verbal statements of any and every official and/or other representative of the town, and such statements shall not be effective or be construed as entering into, or forming part of, or altering in any way whatsoever, the written Contract.

5. INTENT OF CONTRACT DOCUMENTS: The intent of the Contract Documents 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 are complementary, and what is called for by one shall be as binding as if called for by all.

6. INTENT OF PLANS AND SPECIFICATIONS: Certain Plans prepared by the Engineer on behalf of the town and elsewhere described and named accompany and supplement these Specifications and constitute a part of the Contract Documents. Such Plans are agreed to be constructively attached to these Specifications although convenience may prevent physical attachment.

6.1 Modifications or Additions to Plans: The town shall have the right to modify minor details of these Plans, to provide final or checked plans in lieu of any preliminary or unchecked plans, to supplement these Plans with additional plans or with additional information as the work proceeds, all of which
shall be considered as Plans accompanying these Specifications.

6.2 Organization of Specifications: The organization of the Specifications into divisions, sections, and articles, and the arrangement of Plans shall not control the Contractor in dividing the Work among subcontractors or in establishing the extent of Work to be performed by any trade.

7. PRECEDENCE OF CONTRACT DOCUMENTS: In case of conflict between the Contract Documents, the following order of precedence shall govern:

First:	Supplemental Agreements (Change Orders and Field Orders), the last in time being first in precedence
Second:	Contract
Third:	Notice to Contractors, Instructions to Bidders
Fourth:	Plans and Specifications, the order to precedence in these documents shall be Supplementary Conditions, General Conditions, Technical Specifications and Plans
Fifth:	Contractor Proposal

Figure dimensions of Plans shall govern over scale dimensions, and detailed drawings shall govern over general drawings. In all cases, where a conflict is cited, the Engineer shall be duly informed. The Engineer will notify the Contractor in writing should the above procedure be deviated from in any particular instance.

8. DISCREPANCIES, ERRORS, AND OMISSIONS: Any discrepancies, errors, omissions, or ambiguities found in the contract Documents shall be promptly reported to the Engineer. The Engineer shall clarify such discrepancies or omissions, in writing, within a reasonable amount of time. Work done by the Contractor after his discovery of such discrepancies, inconsistencies, or ambiguities shall be at his own risk in that subsequent corrective measures will be required.

9. REUSE OF DOCUMENTS: Neither the Contractor nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with the town shall have or acquire any title to or ownership rights in any of the Plans, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of the Engineer; and they shall not reuse any of them on extensions of the Project or any other project without written consent of the town.

10. PRECONSTRUCTION CONFERENCE: Before the Contractor starts work at the site, a conference attended by the Contractor, Engineer and others as appropriate will be held to discuss the procedures for handling Shop Drawings and other submittal and for processing Payment Estimates, and to establish a working understanding among the parties as to the Work.

11. SHOP DRAWINGS: Where called for in the Contract Documents, the Contractor shall submit to the Engineer for review, six (6) prints of each Shop Drawing. Shop Drawings shall be understood to include detail calculations, reinforcement bar bending diagrams, fabrication, erection and installation drawings, parts lists, graphs, wiring diagrams, operating instructions, etc. Drawings shall be submitted in sufficient time to allow the Engineer not less than ten (10) working days for review of such drawings, and to accommodate the rate of construction progress required under the Contract.

The review of Shop Drawings by the Engineer will be limited to checking for general agreement with the Contract Documents, and shall in no way relieve the Contractor of responsibility for errors or omissions contained in the Contract Documents. Fabricating dimensions, quantities of material, applicable code requirements, and other Contract requirements shall be the Contractor's responsibility. When the Shop Drawings have been reviewed by the Engineer, four (4) sets of submittals will be returned to the Contractor appropriately stamped. If major changes or corrections are necessary, the Shop Drawings may be rejected and one (1) set will be returned to the Contractor with the required changes or corrections indicated, and the Contractor shall promptly make the required changes or corrections. The Contractor shall make a complete and acceptable second submittal to the Engineer. Revisions to the Shop Drawings shall be limited to changes necessary to meet the requirements of the Contract Documents and shall not be taken as the basis of claims for extra work. The Contractor shall have no claims for extra work. The Contractor shall have no claims for damages or extension of time due to any delay resulting from the
Contractor's having to make the required revisions.

Portions of the Work requiring a Shop Drawing or sample submission shall not begin until the Shop Drawing or sample has been reviewed.

13. WORK DONE WITHOUT LINES OR GRADES: Any work done without being properly located and work established by base lines, offset stakes, bench marks, or other basic reference points not located, established, or checked by the Engineer, may be ordered removed and replaced at the Contractor's cost and expense.

14. PRESERVATION OF MONUMENTS AND STAKES: The Contractor shall carefully preserve all monuments, bench marks, reference points and stakes, and in case of willful or careless destruction of the same will be charged with the resulting expense of replacement, and shall be responsible for any mistake or loss of time that may be caused by their unnecessary loss or disturbance. In the event that the stakes and marks placed by the Engineer are destroyed through carelessness on the part of the Contractor, and that the destruction of those stakes and marks cause a delay in the Work, the Contractor shall have no claim for damages or extensions of time. In the case of any permanent monuments or bench marks which must of necessity be

removed or disturbed in the construction of the Work, the Contractor shall carefully protect and preserve the same until they can be properly referenced for relocation. The Contractor shall furnish at his own expense such materials and assistance as are necessary for the proper replacement of monuments or bench marks that have been removed or destroyed.

15. UNDERGROUND FACILITIES:

15.1 Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on the information and data furnished to the town by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

(a) The town shall not be responsible for the accuracy or completeness of any such information or data; and,

(b) The Contractor shall have full responsibility for reviewing and checking all such information and data, for locating all Underground Facilities shown or indicated in the Contract Documents, for coordination of the Work with the owners of such Underground Facilities during construction, for the safety and protection thereof and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price. This shall include any utilities owned by the town.

15.2 Not Shown or Indicated: If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which the Contractor could not reasonably have been expected to be aware of, the Contractor shall, promptly after becoming aware thereof and before performing any work affected thereby (except in an emergency) identify the owner of such Underground Facility and give written notice thereof to that owner and to the Engineer. The Engineer will promptly review the Underground Facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, the Contractor shall be responsible for the safety and protection of such Underground Facility. The Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and of which the Contractor could not reasonably have been expected to be aware. If the parties are unable to agree as to the amount of length thereof, the Contractor may make a claim therefor.

16. TOWN'S RESPONSIBILITIES:

16.1 Communications: The town shall issue all communications to the Contractor through the Engineer.

16.2 Information and Payments: The town shall promptly furnish the data required of the town under the Contract Documents and shall make payments to the Contractor promptly after they are due.

16.3 Land and Rights-of-Way: Prior to issuance of Notice to Proceed, the town will obtain all land and rights-of-way necessary for carrying out and for the completion of the work to be performed pursuant to the Contract Documents, unless otherwise mutually agreed. Nothing contained in the Plans or Specifications shall be interpreted as giving the Contractor exclusive occupancy of the land or rights-of-way provided. Land owned and rights-of-way acquired by the town are as shown on the Plans.

16.4 Encroachments: The town will secure, from the agencies having jurisdiction, the necessary permits to create obstructions, to make excavations if required under the Contract, and to otherwise encroach upon rights-of-way.

16.5 Town's Right to Retain Imperfect Work: If any part or porion of the Work done or material furnished under this contract shall prove defective and not in accordance with the Contract Documents, and if the imperfection in the same, in the opinion of the Engineer, shall not be of sufficient magnitude or importanceas to make the Work dangerous or undesirable, the town shall have the right and authority to retain such Work but shall make such deductions in the final payment therefor as may be just and reasonable.

16.6 Temporary Suspension of Work: The town may suspend the Work or any portion thereof by written notice to the Contractor for a period of not more than sixty (60) days or such further time as agreed upon by the Contractor due to financing delays, unsuitable weather and/or other unfavorable conditions for prosecution of the Work, delay in delivery of Town-furnished equipment or materials, or failure of the Contractor to carry out provisions of the Contract or to provide materials and workmanship meeting the requirements of the Specifications. Suspended work shall be resumed by the Contractor within ten (10) days of receipt of written notice from the town to resume the Work.

16.6.1 The Contractor shall have no claim for damages alleged to have been suffered by reason of any suspension of the Work without termination of the Contract, and he shall receive no additional compensation because of any such suspension.

16.6.2 If the performance of all or any portion of the Work is suspended, delayed, or interrupted as a result of a failure of the town to act within the time specified above, 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 town to notify the Contractor to resume Work.

16.7 Termination of Contract (Contractor Not at Fault) : The town may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the

Contract provided that such termination is in the best interest of the town. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which termination becomes effective.

16.8 Termination of Contract (Contractor at Fault: The town may, without prejudice to any other right or remedy, terminate the Contract after ten (10) days from delivery of a written notice to the Contractor and his surety in the event of breach of theContract or of any default by the Contractor. It shall be considered a default by the Contractor whenever he shall:

(a) declare bankruptcy, become insolvent, or assign his assets for the benefit of his creditors, or if a trustee or receiver is appointed for the Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws;

(b) repeatedly fail to provide a qualified superintendent, sufficient skilled workmen, suitable materials or equipment;

(c) repeatedly fail to make prompt payments to Subcontractors or for labor, materials, or equipment delivered;

(d) disregard laws, ordinances rules, regulations, or orders of any public body having jurisdiction over the Work or if he disregards the authority of the Engineer;

(e) violates any important provisions of the Contract Documents; or

(f) repeatedly fail to prosecute work according to the approved progress schedule.

16.8.1 In the event the Contract is terminated due to defaults described above, the town may 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 he may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished.

16.8.2 If the unpaid balance of the Contract Price exceeds the direct and indirect cost of completing the Project, including compensation for additional professional services, such excess will be paid to the Contractor. If such costs exceed such unpaid balance, the Contractor shall pay the difference to the town. Such costs incurred by the town will be determined by the Engineer and incorporated in a Change Order.

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

17. ENGINEER'S AUTHORITY: The Engineer will be the town's representative during the construction period. The duties and responsibilities and the limitations of authority of the Engineer as the town's representative during construction are set forth herein and shall not be extended without written consent of the town Council.

17.1 Project Representation: The town, at its option, may furnish a Resident Project Representative and Inspector to assist the Engineer in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and Inspectors will be as provided in the Supplementary Conditions.

17.2 Clarifications and Interpretations: The Engineer will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of drawings or otherwise) as the Engineer may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If the Contractor believes that a written clarification or interpretation justifies an increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree to the amount or extent thereof, the Contractor may make a claim therefor.

17.3 Authorized Variations in Work: The Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and will be binding on the town, and also on the Contractor who shall perform the Work involved promptly. If the Contractor believes that a Field Order justifies and increase in the Contract Price or an extension of the Contract Time and the parties are unable to agree as to the amount or extent thereof, the Contractor may make a claim therefor.

17.4 Rejecting Defective Work: The Engineer will have authority to disapprove or reject Work which the Engineer believes to be defective, and will also have the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed or completed.

17.5 Determinations for Payment: The Engineer will determine the actual quantities and classifications of Work performed by the Contractor. The Engineer will review with the Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of a Payment Estimate or otherwise). The Engineer's written decisions thereon will be final and binding upon the town and Contractor, unless, within ten (10) days after the date of any such decision, the Contractor delivers to the town written notice of intention to appeal from such a decision. The Engineer will not be responsible for the Contractor's means, methods, techniques, sequences or procedures of construction, or the safety precautions and program incident hereto, and the Engineer will not be responsible for the Contractor's failure to perform or furnish the Work in accordance with the Contract Documents. The Engineer will not be responsible for the acts or omissions of the Contractor, of any Subcontractor, of any Supplier, or of any other person or organization performing or furnishing any of the Work.

18. CONTRACTOR'S RESPONSIBILITY: By executing the Contract, the Contractor represents that he has visited the site, familiarized himself with the local conditions under which the Work is to be performed, and correlated his observations with the requirements of the Contract Documents.

18.1 Insurance Requirements: Before any work at the site is started, the Contractor shall deliver to the town certificates of insurance which the Contractor is required to purchase and maintain in accordance with the Contract Documents.

18.2 Supervision: The contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of Construction, but the Contractor shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. The Contractor shall be responsible to see that the finished Work complies accurately with the Contract Documents.

18.3 Superintendence of Work: The Contractor shall provide and maintain, continually on the site of the Work during its progress, adequate and competent superintendence of all operations for and in connection with the Work being performed under this Contract, either personal or by a duly authorized superintendent or representative.

18.3.1 The superintendent or other representative of the Contractor on the Work, and who has charge thereof, shall be fully authorized to act for the Contractor and to receive whatever orders as may be given by the Engineer for the proper prosecution of the Work, or notices in connection therewith.

18.3.2 The superintendent shall be a person having considerable experience on similar projects. The Contractor shall submit the name of the proposed superintendent to the town together with a list of projects on which the proposed individual has served as superintendent. Such list shall detail the size and complexity of projects and shall include references for each engagement. The Engineer shall review the submitted qualifications. No person shall serve as superintendent without approval of the town.

18.4 Labor, Materials and Equipment: The Contractor shall provide competent, suitably qualified personnel to lay out the Work and perform construction as required by the Contract Documents. The Contractor shall at all times maintain good discipline and order at the site. Except in connection with the safety or protection of persons or the Work, or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and the Contractor will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without the town's prior written consent.

18.4.1 The Contractor shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

18.4.2 All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by the Engineer, the Contractor shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used cleaned and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to the Engineer, or any of the town's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work.

18.5 Sunday, Holiday and Night Work: Except in connection with the care, maintenance or protection of equipment, or of work already done, no work shall be done between the hours of 7 P.M. and 7 A.M., or on Sundays or legal holidays, without the written consent of the town.

18.6 Prosecution and Progress: The Contractor shall, within ten (10) days after being instructed to do so in a written notice from the town, commence the Work to be done under this Contract; and the rate of progress shall be such that the Work shall have been completed in accordance with the terms of the Contract on or before the termination of the Contract Time stated in the Proposal, subject to any extension or extensions of such time made as hereinafter provided.

18.6.1 Promptly after the award of the Contract, the Contractor shall submit to the Engineer for approval an estimated progress schedule and a written program of construction outlining the proposed operations and the order of completion of the various parts in sufficient detail to demonstrate to the Engineer the adequacy of the progress to complete the construction within the time provided. No payment shall be made to the Contractor on any Payment Estimate until such progress schedule and program have been submitted and approved.

18.6.2 Should it become evident at any time during construction that construction operations will or may fall behind the schedule of this first program of construction the Contractor shall, upon request, promptly submit revised written schedules setting out operations, methods and equipment, added amount labor, or of working shifts, night work, etc., by which lost time shall be made up and shall confer with the Engineer until an approved modification of the original program and schedule have been provided by the Contractor. Execution of the Work according to the accepted program of construction, or approved modifications thereof, shall be an obligation of the Contract.

18.6.3 Should the Contractor fail to complete the Work within the Contract Time as stipulated in the Proposal or within such extra time as may have been allowed by extension, the town will deduct from any moneys due or coming due to the Contractor, the amount indicated in

the Proposal for each calendar day the Work shall remain uncompleted. This sum shall be considered and treated not as a penalty but as fixed, agreed and liquidated damages due the town from the Contractor by reason of interference with business, inconvenience to the public, added cost of engineering, administration, inspection, maintenance of detours and temporary facilities, and other items which have caused an expenditure of funds resulting from his failure to complete the Work within the Contract Time.

18.6.4 Permitting the Contractor to continue and finish the Work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, shall in no way operate as a waiver on the part of the town of any of its rights under the Contract.

18.6.5 Neither by the act of taking over the Work nor by the annulment of the Contract nor by requiring the surety to complete the Contract shall the town forfeit the right to recover liquidated damages from the Contractor or his surety for failure to complete the Contract within the specified Contract Time.

18.7 Extensions of Time: The Contractor shall place orders for all principal materials to be needed in the Work within ten (10) days after award of the Contract and delivery dates shall be obtained, in writing, from the suppliers of each of these materials. One copy of each order for the primary materials in the Contract together with one copy of the suppliers reply stating the date of delivery shall be furnished to the Engineer prior to the payment of the first partial monthly Payment Estimate. Payment of partial monthly Payment Estimates shall not be commenced until these provisions have been complied with to the full satisfaction of the Engineer.

18.7.1 Should special conditions arise from war, strikes or other national emergencies wherein restrictions may prevent or delay the acquirement, delivery or use of materials and be the direct cause of specific delays, extensions of time will be granted. In such event, the Contractor shall file with the Engineer, copies of documentary evidence to substantiate the causes and extent of resultant delays at the time they are in occurrence. This evidence together with the original orders and written delivery dates will be used by the Engineer to determine the amount of extension of time to be made on account of such delays. In determining extensions of time, revised delivery dates for primary materials will be computed by extending the original Contract Time by the actual number of days which elapses during any emergency.

18.7.2 The Contractor is requested to bring to the attention of the Engineer, by letter, during the progress of the Work, the occurrence of events which the Contractor considers may warrant extensions of time under the conditions of the Contract. If the Contract is not completed within the Contract Time, the Contractor shall, at the conclusion of the Work, present to the Engineer a written statement presenting his view upon all matters of time extensions.

18.7.3 The amount of all extensions of time, for whatever reason granted, shall be determined by the Engineer with due consideration given to working seasons and working conditions.

In general, only actual and not constructive or hypothetical days of delay will be considered. The town shall have the authority to grant additional extensions of time as the town may deem advisable and justifiable.

18.8 Substitutes or "Or-Equal" Items: Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by the Engineer to determine that the material or equipment proposed is equivalent or equal to that named. Requests for review of substitute items of material and equipment will not be accepted by the Contractor. If the Contractor wishes to furnish or use a substitute item of material or equipment, the Contractor shall make written application to the Engineer for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not be prejudice the Contractor's achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with the town for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the Engineer in evaluating the proposed substitute. The Engineer may require the Contractor to furnish, at the Contractor's expense, additional data about the proposed substitute.

18.8.1 If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, the Contractor may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the Engineer, if the Contractor submits sufficient information to allow the Engineer to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents.

18.8.2 The Engineer will be allowed a reasonable time within which to evaluate each proposed substitute. The Engineer will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without the Engineer's prior written acceptance, which will be evidenced by a Change Order or an approved Shop Drawing. The town may require the Contractor to furnish , at the Contractor's expense, a special performance guarantee or other surety with respect to any substitute.

18.9 Subcontractors and Suppliers: The Contractor shall not employ any Subcontractor, Supplier or other person or organization, whether initially or as a substitute, against whom the town may have reasonable objection. The Contractor shall not be required to employ any

Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom the Contractor has reasonable objection.

18.9.1 If the Supplementary Conditions require and identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to the town for acceptance by the town and if the Contractor has submitted a list thereof in accordance with the Supplementary Conditions, the town's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case the Contractor shall submit an acceptable substitute. The Contract Price will be increased by the difference in the cost occasioned by such substitution and an appropriate Change Order will be issued. No acceptance by the town of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of the town to reject defective Work.

18.9.2 The Contractor shall be fully responsible to the town for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Contractor just as the Contractor is responsible for the Contractor's own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between the town and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of the town to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

18.9.3 The division and sections of the Specifications and the identifications of any Plans shall not control the Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

18.9.4 All Work performed for the Contractor by a Subcontractor will be pursuant to an appropriate agreement between the Contractor and the Subcontractor, which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the town. The Contractor shall pay each Subcontractor a just share of any insurance moneys received by the Contractor on account of losses under policies issued.

18.10 Patent Fees and Royalties: The Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and, if to the actual knowledge of the town its use in subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by the town in the Contract Documents. The Contractor shall indemnify and hold harmless the town and anyone directly or indirectly employed by the town from and against all claims, damages, losses and expenses (including attorney's fees and court and arbitration costs) arising out of any infringement of patent rights or copyrights incident to the use in the performance of the Work or

resulting from the incorporation in the Work of any invention, design, process, produce or device not specified in the Contract Documents, and shall defend all such claims in connection with any alleged infringement of such rights.

18.11 Permits: Unless otherwise provided in the Supplementary Conditions, the Contractor shall obtain and pay for all construction permits and licenses. The town shall assist the Contractor, when necessary, in obtaining such permits and licenses. The Contractor shall pay all charges of utility owners for connections to the Work, and the town shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

18.12 Laws and Regulations: The Contractor shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, the town shall not be responsible for monitoring the Contractor's compliance with any Laws or regulations. If the Contractor observes that the Plans and Specifications are at variance with any Laws or Regulations, the Contractor shall give the Engineer prompt written notice thereof, and nay necessary changes will be authorized. If the Contractor performs any Work knowing or having reason to know that it is contrary to such Laws or Regulations, and without such notice to the Engineer, the Contractor shall bear all costs arising therefrom; however, it shall not be the Contractor's primary responsibility to make certain that the Plans and Specifications are in accordance with such Laws and Regulations.

18.13 Use of Premises: The Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project site and land and areas identified in and permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. The Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas Contiguous thereto, resulting from the performance of the Work. Should any claim be made against the town by any such owner or occupant because of the performance of the Work, the Contractor shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. The Contractor shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold the town harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against the town to the extent based on a claim arising out of the Contractor's performance of the Work.

18.13.1 Where the space within the project site, right-of-way or easements is not available for construction plant, the Contractor shall provide at his own expense any work area he requires, shall construct and maintain any roadway or other facilities required for this purpose and the cost thereof shall be included in the prices bid for the various items scheduled in the Proposal.

18.13.2 During the progress of the Work, the Contractor shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. at the

completion of the Work, the Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by the town. The Contractor shall restore to original condition all property not designated for alteration by the Contract Documents.

18.13.3 The Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

18.14 Record Documents: The Contractor shall maintain in a safe place at the site one record copy of all Plans, Specifications, Addenda, Written Amendments, Change Orders, Work Directive Changes, Field Orders and written interpretations and clarifications in good order annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to the Engineer for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to the town.

18.15 Safety and Protection: The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

18.15.1 The Contractor shall comply with all applicable Laws and Regulations of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The Contractor shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in these paragraphs caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by the Contractor. The Contractor's duties and responsibilities for the safety and protection of the Work shall continue until such time as all the Work is completed and the Engineer has issued a notice to the Contractor that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

18.15.2 The Contractor shall designate a responsible representative at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the town.

18.16 Emergencies: In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Engineer, is obligated to act to prevent threatened damage, injury or loss. The Contractor shall give the Engineer prompt written notice if the Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the Engineer determines that a change in the Contract Documents is required because

of the action taken in response to an emergency, a Change Order will be issued to document the consequences of the changes or variations.

18.17 Loses From Natural Causes: All loss or damage arising out of the nature of the Work, to be done, or from the action of the elements, or from floods or overflows, or from groundwater, or from any unusual obstruction or difficulty, or any other natural or existing circumstances either known or unforeseen, which may be encountered in the prosecution of the Work shall be sustained and borne by the Contractor at his own cost and expense.

18.18 Continuing the Work: The Contractor shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the town. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as the Contractor and Town may otherwise agree in writing.

18.19 Indemnification: To the fullest extent permitted by Laws and Regulations, the Contractor shall indemnify and hold harmless the town and its consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expenses:

(a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom, and

(b) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder or arises by or is imposed by Law and Regulations regardless of the negligence of any such party.

18.19.1 In any and all claims against the town or any of its consultants, agents or employees by any employee of the Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work 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 such Subcontractor or other person or organization under workers or workmen's compensation or benefits payable by or for the contractor or any such Subcontractor or other person or organization under workers or workmen's compensation acts, disability benefit acts or other employee benefit acts.

18.20 Contractor's Responsibility in Case of Termination: After receipt of a Notice of Termination, and except as otherwise directed by the town, the Contractor shall:

(a) stop work under the Contract on the date and to the extent specified in the Notice of Termination,

(b) place no further orders or subcontractors for materials, services or facilities, except as may be necessary for completion of such portion of the Work under the Contract that is not terminated;

(c) terminate all orders and subcontracts to the extent that they relate to the performance of the Work terminated by the Notice of Termination;

(d) assign to the town, in the manner, at the times, and to the extent directed by the town, all of the right, title, and interest of the Contractor under the orders and subcontracts;

(e) settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, with the approval or ratification of the town, to the extent he may require, which approval or ratification shall be final for all the purposes of this clause;

(f) transfer title and deliver to the town, in the manner, at the times, and to the extent, if any, directed by the town, the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced as a performance of, and the work terminated by the Notice of Termination; and the completed or partially completed plans, drawings information, and other property which, if the Contract had been completed, would have been required to be furnished to the town.

(g) complete performance of such part of the Work as shall not have been terminated by the Notice of Termination; and

(h) take such actions as may be necessary, or as the town may direct, for the protection and preservation of the property related to this Contract which is in the possession of the Contractor and in which the town has or may acquire an interest.

18.20.1 After receipt of a Notice of Termination, the Contractor shall submit to the town his termination claim, in the form and with certification prescribed by the town. Such claim shall be submitted promptly but in no event later than one year from the effective date of termination, unless extensions in writing are granted by the town, upon request of the Contractor made in writing within such one year period or authorized extension thereof. However, if the town determines that the facts justify such actions, he may receive and act upon any such termination claim at any time after such one year period or any extension thereof. Upon failure of the Contractor to submit his termination claim within the time allowed the town may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

18.20.2 Upon termination of the Contract, the Contractor shall have no claims against the town except for:

(a) the value of work performed plus profit up to the date the Contract is terminated; and

(b) the cost of materials and equipment on hand, in transit, or on definite commitment, as of the date the Contract is terminated, which would be needed in the Work and which meets the requirements of the Contract Documents.

18.20.3 The value of work performed and the cost of materials and equipment delivered to the site, as mentioned above, shall be determined in accordance with the procedure prescribed for the making of the final estimate and payment.

19. OTHER WORK: The town may perform other work related to the Project at the site by the town's own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to the Contractor prior to starting any such other work; and, if the Contractor believes that such performance will involve additional expense to the Contractor or requires additional time and the parties are unable to agree as to the extent thereof, the Contractor may make a claim therefor.

19.1 The Contractor shall afford each utility owner and other contractor who is a party to such a direct contract (or the town, if the town is performing the additional work with the town's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. The Contractor shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. The Contractor shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of the Engineer and the others whose work will be affected. The duties and responsibilities of the Contractor under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of the Contractor in said direct contracts between the town and such utility owners and other contractors.

19.2 If any part of the Contractor's Work depends for proper execution or results upon the work of any such other contractor or utility owner (or the town), the Contractor shall inspect and promptly report to the Engineer, in writing, any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. The Contractor's failure so to report will constitute and acceptance of the other work as fit and proper for integration with the Contractor's Work except for latent or nonapparent defects or deficiencies in the other work.

19.3 Coordination: If the town contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of he activities among the various prime contractors will be identified in the

Supplementary Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Supplementary Conditions. unless otherwise provided in the Supplementary Conditions, the town shall have no authority or responsibility in respect of such coordination.

20. MISCELLANEOUS PROVISIONS:

20.1 Legal Address: The business address of the Contractor given in the Proposal upon which this Contract is founded is hereby designated as the place to which all notices, letters and other communications to the Contractor may be mailed or delivered. The business address of the town appearing in the Contract, is hereby designated as the place to which all notices, letters and other communications to the town may be mailed or delivered. The delivery by one party to the other party at an address so designated, or the depositing in any mail box regularly maintained by the post office, of any notice, letter or other communication addressed to such address, postage prepaid, registered or certified mail, with return receipt requested, shall be deemed sufficient service thereof, and the date of said service shall be the date of such delivery of mailing. Either party may change the said address or addresses at any time by an instrument in writing delivered to the other party. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter or communication upon either party personally.

20.2 Independent Contractor: The right of general supervision by the town shall not make the Contractor an agent of the town, and the liability of the Contractor for all damages to persons, firms and corporations, arising from the Contractor's execution of the work, shall not be lessened because of such general supervision; but as to all such persons, firms and corporations and the damages, if any, to them or their property, the contractor herein is an independent contractor in respect to the Work.

20.3 Suggestions to Contractor Adopted at his Own Risk: Any plan or method of work suggested by the town, the Engineer, or their representatives, to the Contractor, but not specified, or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor, and the town will assume no responsibility therefor.

20.4 Hindrances and Delays: In executing the Contract, the Contractor expressly covenants and agrees that, in undertaking to complete the Work within the time therein fixed, he has taken into consideration and made allowances for all hindrances and delays incident to such work, whether growing out of delays in securing materials or workmen or otherwise. No charge shall be made by the Contractor for hindrances or delays from any cause during the progress of the work, or any portion thereof, embraced in this Contract, except as provided by the town's right to suspend the Work.

20.5 Provision for Emergencies: Whenever, in the opinion of the Engineer, the Contractor has not taken sufficient precaution for the safety of the public or the protection of the Work to be constructed under this Contract or of adjacent structures or property which may be injured by processes of construction on account of such neglect, and whenever, in the opinion of

the Engineer, an emergency shall arise and immediate action shall be considered necessary in order to protect public or private personal property interests, then the Engineer, with or without notice to the Contractor, may provide (but does not have the duty to do so) suitable protection to the said interests by causing such work to be done and material to be furnished and placed as the Engineer may consider necessary and adequate. The cost and expense of such work and material so furnished shall be borne by the Contractor, and , if the same shall not be paid on presentation of the bills therefor, such costs shall be deducted from any amounts due or to become due the Contractor. The performance of such emergency work under the direction of the Engineer shall in no way relieve the Contractor of responsibility for damages which may occur during or after such precaution has been duly taken by the Engineer.

20.6 Assignment of Contract: The Contractor shall not assign the work, or any part thereof, without the previous written consent of the town, nor shall he assign, by power of attorney or otherwise, any of the money payable under this Contract unless by and with the like consent of the town to be signified in like manner. No right under this Contract, nor to any money due or to become due hereunder, shall be asserted in any manner against said Town, or persons acting for the town, by reason of any so-called assignment of this Contract or any part thereof, unless such assignment shall have been authorized by the written consent of the town. In case the Contractor assigns all, or any part of, any moneys due or to become due under this Contract, the instrument of assignment shall contain a right of the assignee in and to any moneys due or to become due or to become due under this Contract, the instrument of assignment shall contain a right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to all prior liens of all persons, firms and corporations for services rendered or materials supplied for the performance of the Work called for in this Contract.

20.7 Protests: If the Contractor considers any work demanded of him to be outside the requirements of the Contract, or if he considers any order, instruction, or decision of the Engineer or of any Inspector to be unfair, he shall, immediately upon receipt of such order, instruction, or decision, ask for a written confirmation of the same, whereupon he shall proceed without delay to perform the Work or to conform to the order, instruction, or decision; but if the Contractor finds such written order, instruction, or decision unsatisfactory, he shall, within ten (10) calendar days after receipt of same, file a written protest with the town, stating clearly and in detail his objections and the reasons therefor. Except for such protests or objections to the orders, instructions, or decisions of the Engineer and hereby agrees that as to all matters not included in such protest, the orders, instructions, and decisions of the Engineer shall be considered final and binding. All orders, instructions, and decisions of the Engineer will be limited to matters properly falling within the Engineer's authority.

20.8 Arbitration; All claims, disputes, or other questions that may arise between the town and the Contractor concerning any provision or provisions of this Contract which cannot otherwise be settled and which have not been waived by the making and acceptance of final payment or any progress payment may be submitted to and be determined and settled by arbitration in the manner set forth in this paragraph if both parties agree to arbitration prior to entering into arbitration. Either party, by written notice to the other received before litigation is commenced, may demand arbitration and may appoint an arbitrator. If litigation has been commenced prior to receipt of a demand to arbitrate, arbitration shall not be held. Within five

(5) days after receipt of such notice, the other party shall, by written notice to the former, appoint another arbitrator, and in default of said second appointment, the arbitrator first appointed shall be sole arbitrator and shall proceed in the same manner as hereinafter provided for three (3) arbitrators. When two (2) arbitrators have been appointed as aforesaid, they shall, if possible, agree upon a third arbitrator and shall appoint him by notice in writing, signed by both of them given to the town and the Contractor. If fifteen (15) days shall elapse after the appointment of the second arbitrator without notice of appointment of the third arbitrator being given as aforesaid, then either party may, in writing, request that the American Arbitration Association appoint the third arbitrator. Upon appointment of the third arbitrator, the three (3) arbitrators shall meet without delay and shall proceed with determination of the dispute in accordance with the Construction Industry Rules of the American Arbitration Association. If the award sustains the position of the contractor or if the award does not sustain the position of either party, the fees and expenses of the arbitration proceedings shall be assessed equally against both parties and shall be paid one-half by the town and one-half by the Contractor. The decision of the arbitrators shall be final. The Contractor shall carry on the Work and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed upon in writing.

21. BONDS AND INSURANCE

21.1 Insurance: The Contractor shall secure, and maintain throughout the duration of this Contract, insurance of such types and in such amounts as may be necessary to protect himself against all hazards or risks of loss as hereinafter designated and specified. The form and limits of such insurance, together with the underwriter thereof in each case, shall be the responsibility of the Contractor to maintain such coverage shall not relieve him of any contractual responsibility or obligation. If a part of the Contract is to be sublet, the Contractor shall:

(a) Cover any and all Subcontractors in his insurance policies, or

(b) Require each Subcontractor not so covered to secure insurance which will protect said Subcontractor against all applicable hazards or risks or loss designated herein.

21.2.1 Workmen's Compensation and Employer's Liability Insurance: This insurance shall protect the Contractor against any and all claims brought under the Workmen's Compensation law for the State of Texas. It shall also protect the Contractor against claims for injury to, disease or death of workmen engaged in the Work under this Contract which, for any reason, may not fall within the provisions of the Workmen's Compensation Act. Liability limits for this insurance on this Project shall be as specified in the SECTION: SUPPLEMENTARY CONDITIONS.

21.2.3 Comprehensive General Liability Insurance: This insurance, to be on the comprehensive form, shall protect the Contractor against any and all claims arising from injuries to members of the public or damage to property or others arising out of any act or omission of the Contractor, his agents, employees, or subcontractors, in connection with the operation or performance of the Work for and in connections with this Contract.

In addition, this general liability insurance policy shall specifically insure the contractual liability of the Contractor assumed under the provisions for indemnifying the town.

21.2.4 Bodily Injury and Property Damage Insurance: The property damage liability coverage under the comprehensive general liability policy shall contain no exclusion relative to blasting, explosion, collapse of buildings, or damage to underground property. Liability limits for general liability insurance coverage under this policy on this Project shall be as specified in SECTION: SUPPLEMENTARY CONDITIONS.

21.2.5 Comprehensive Automobile Liability Insurance: This insurance, to be on the comprehensive form, shall protect the Contractor against any and all claims or injuries to members of the public and damage to property of others arising from the use of automobiles and trucks in connection with the performance of the Work under this Contract, and shall cover operation on or off the site of the Work of all motor vehicles licensed for highway use, whether they are owned, non-owned, or hired by the Contractor. The policy shall include an "all states" endorsement. Liability limits for automobile liability insurance coverage on this Project shall be as specified in the SECTION: SUPPLEMENTARY CONDITIONS.

21.2.6 Property Insurance: The Contractor shall effect and maintain Builder's Risk Insurance to the full insurable value of the Work, with extended coverage for fire, vandalism, hail, wind, storm, etc., naming the town as co-insured. The Contractor shall provide insurance certificates to the town attesting to the coverage. insurance shall not be modified or cancelled without written notification to the town of such change or cancellation at least fifteen (15) days in advance of such change or cancellation.

22. TESTS AND INSPECTIONS; DEFECTIVE WORK:

22.1 Warranty and Guarantee: The Contractor warrants and guarantees to the town that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to the Contractor. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article.

22.2 Access to Work: The Engineer or other representatives of the town, testing agencies and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. The Contractor shall provide proper and safe conditions for such access.

22.3 Tests and Inspections: The Contractor shall give the Engineer timely notice of readiness of the Work for all required inspections, tests or approvals. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, the Contractor shall assume full responsibility therefor, pay all costs in connection therewith and furnish the Engineer the required certificates of inspection, testing or approval, the Contractor shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with the town's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or

equipment submitted for approval prior to the Contractor's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by the town (unless otherwise specified).

22.3.1 All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by organizations acceptable to the town.

22.3.2 If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of the Engineer, it must, if requested by the Engineer, be uncovered for observation. Such uncovering shall be at the Contractor's expense unless the Contractor has given the Engineer timely notice of the Contractor's intention to cover the same, and the Engineer has not acted with reasonable promptness in response to such notice.

22.3.3 Neither observations by the Engineer nor inspections, tests or approvals by others shall relieve the Contractor form the Contractor's obligations to perform the Work in accordance with the Contract Documents.

22.4 Uncovering Work: If any portion of the Work is covered contrary to the written request of the Engineer, it must, if requested by the Engineer, be covered for the Engineer's observation and replaced at the Contractor's expense. if the Engineer considers it necessary or advisable that covered Work not contrary to Engineer's request or previously approved must be observed by the Engineer or inspected or tested by others, the Contractor, at the Engineer's request, shall 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, material and equipment. If it is found that such Work is defective, the Contractor shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals), and the town shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, they amy make a claim therefor. If, however, such Work is not found to be defective, the Contractor shall be allowed and increase in the Contract price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, the Contractor may make a claim therefor.

22.5 Town May Stop the Work: If the Work is defective, or the Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the town to stop the Work shall not give rise to any duty on the part of the town to exercise this right for the benefit of the Contractor or any other party.

22.6 Correction or Removal of Defective Work: If required by the Engineer, the Contractor shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by the Engineer, remove it from the site and replace it with nondefective Work. The Contractor shall bear all direct, indirect and

consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

22.7 One Year Correction Period: If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, the Contractor shall promptly, without cost to the town and in accordance with the town's written instructions, either correct such defective Work, or, if it has been rejected by the town, remove it form the site and replace it with nondefective Work. If the Contractor does not promptly comply with the terms of such instructions, or in any emergency where delay could cause serious risk of loss or damage, the town may have the defective Work (such costs to include, but not be limited to, fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to the Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the town shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, the town may make a claim therefor. If the acceptance occurs after such recommendation, an appropriate amount will be paid by the Contractor to the town.

22.9 Town May Correct Defective Work: If the contractor fails within a reasonable time, after written notice of the Engineer, to correct defective Work or to remove and replace rejected Work as required by the Engineer, or if the Contractor fails to perform the Work in accordance with the Contract Documents, or if the Contractor fails to comply with any other provisions of the Contract Documents, the town may, after seven (7) days written notice to the Contractor, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph, the town shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, the town may exclude the Contractor from all or part of the site, take possession of all or part of the Work, and suspend the Contractor's services related thereto, take possession of the Contractor's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which the town has paid the Contractor but which are stored elsewhere. The Contractor shall allow the town, the town's representatives, agents and employees such access to the site as may be necessary to enable the town to exercise the rights and remedies under this paragraph. All direct, indirect and consequential cost to the town in exercising such rights and remedies will be charged against the Contractor in an amount determined by the engineer, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the town shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, the town may make a claim therefor. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work destroyed or damaged by correction, removal or replacement of the Contractor's defective Work. The Contractor shall not be allowed an extension of the Contract Time because of any delay in performance of the Work attributable to the exercise by the town of the town's rights and remedies hereunder.

23. CHANGES IN THE WORK:

23.1 Modifications and Alterations: The Contractor agrees that the town shall have the right to make modifications, changes and alterations in the arrangement or extent of the work, without affecting the validity of the Contract and the Bonds thereunder.

23.1.1 If the modification or alteration increases the amount of work to be done, and the added work or any part thereof is of a type and character which can be properly and fairly classified under one or more unit price items of the Proposal, then such added work or part thereof shall be paid for according to the amount actually done and at the applicable unit price or prices therefor. Otherwise, such work shall be paid for as herein provided under "Extra Work".

23.1.2 If the modification or alteration decreases the amount of work to be done, such decrease shall not constitute the basis for a claim for damages or anticipated profits on work affected by such decrease. Where the value of omitted work is not covered by applicable unit prices, the Engineer shall determine, on an equitable basis, the amount of :

(a) credit due the town for contract work not done as a result of an authorized change;

(b) allowance to the Contractor for any actual loss incurred in connection with the purchase, delivery and subsequent disposal of materials or equipment required for use on the Work as planned and which could not be used in any part of the work as actually built; and

(c) any other adjustment of the contract Price where the method to be used in making such adjustment is not clearly defined in the Contract Documents.

23.1.3 Except for minor changes or adjustments which involve no adjustment in the Contract Price or other monetary consideration, and with the exception of adjustments of estimated quantities for unit price work or materials to conform to actual pay quantities therefor as hereinafter provided under "Estimated Quantities", all changes and alterations in the terms or scope of the Contract shall be made under the authority of duly executed Change Orders issued and signed by the town and accepted and signed by the contractor.

23.2 Extra Work: The term "Extra Work", as used in this Contract, shall be understood to mean and include all work that may be required by the town to be done by the Contractor to accomplish any change or alteration in or addition to the Work shown by the Plans or reasonably implied by the Specifications and not covered by items, and which is not otherwise provided under "Modifications and Alterations".

23.2.1 It is agreed that the Contractor shall perform all extra work under the direction of the Engineer when and as so ordered in writing by the town. It is further agreed that the compensation to be paid the Contractor for performing extra work shall be determined by one or more of the following methods:

Method A: By agreed unit prices; or

Method B: By agreed lump sum; or

Method C: If neither Method A nor Method B can be agreed upon before the extra work is started, the Contractor shall be paid his actual field cost of the work plus fifteen percent (15%) for the work which he performs with his own forces and/or the Contractor shall be paid the subcontractor's actual field cost of the work plus twenty percent (20%) for work which is performed by his subcontractor or subcontractors.

23.2.2 Where extra work is performed under Method C, the actual field cost of such extra work is hereby defined to be and shall include:

(a) the payroll cost for all workmen, such as foremen, mechanics, craftsmen, laborers;

(b) the cost of all materials and supplies not furnished by the town;

(c) rental for all power-driven equipment at agreed-upon rates for the time actually employed or used in the performance of extra work;

(d) transportation charges necessarily incurred in connection with any equipment authorized by the Engineer for use on said extra work and which is not already on the job;

(e) all power, fuel, lubricants, water, and similar operating expenses;

(f) all incidental expenses incurred as a direct result of such extra work, including sales or use taxes on materials, payroll taxes, and the additional premiums for construction bonds, workmen's compensation, public liability and property damages, and other insurance required by the Contract where the premiums therefor are based on payroll and materials costs.

23.2.3 The Engineer may direct the form in which the actual field cost shall be kept, and may also specify in writing before the work commences, the method of doing the work and the type and kind of machinery and equipment, if required, which shall be used in the performance of extra work under Method C. If machinery or heavy construction equipment is required for extra work, the authorization and basis for the use thereof shall be stipulated in the written extra work order. The applicable "plus" percentage (15% or 20%) of the actual field cost to be allowed and paid to the Contractor shall constitute full compensation for profit, overhead, superintendence, field office expense, and all other elements of cost not embraced within the actual field cost as herein defined.

23.2.4 No claim for extra work of any kind will be allowed unless ordered in writing by the town prior to commencement of said extra work. In case any orders or instructions, either oral

or written, appear to the Contractor to involve extra work for which he should receive compensation, he shall make a written request to the town for a written order authorizing such extra work. Should a difference of opinion arise as to what does or does not constitute extra work, or concerning the payment thereof, and the Engineer insists on its performance, the Contractor shall proceed with the Work after making a written request for a written extra work order and shall keep an accurate account of the actual field cost thereof as provided for Method C in the foregoing paragraph.

23.3 Extra Work a Part of Contract: If extra work is performed in accordance with the provisions of this Contract, such extra work shall be considered a part hereof and subject to each and all terms and conditions of said Contract.

24. PAYMENTS TO CONTRACTOR AND COMPLETION:

24.1 Estimated Quantities: Any and all estimated quantities stipulated in the Proposal under unit price items are approximate and are to be used only:

(a) as a basis for estimating the probable cost of the Work, and

(b) for the purpose of comparing the proposals submitted for the Work.

It is understood and agreed that the actual amounts of work done and materials furnished under unit price items may differ from such estimated quantities and that the basis of payment for such work and materials shall be the actual amount of work done and materials furnished in each case. The Contractor agrees that he will make no claim for damages, anticipated profits, or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the amounts estimated therefor in the Proposal or other Contract Documents.

24.2 Monthly Estimates and Payments: On or about the first day of each month, the Contractor will make an approximate estimate of the value of work done in conformity with the Plans and Specifications during the previous calendar month and of unused materials delivered for, and stored on the site of, the Work. The Contractor shall submit the estimate to the Engineer and furnish such detailed information as he may request to aid him in the review and recommendation for approval of monthly estimates. After each such estimate has been approved by the town (and any Federal or State funding agency), the town shall pay to the Contractor ninety percent (90%) of the amount of such estimated sum. For Contract amounts equal to or greater than $400,000, the town will either place the entire retainage in an interest bearing account, or reduce the amount of retainage to five percent (5%).

24.2.1 It shall be understood that payments made by the town for materials stored on the site shall be based only upon the actual cost of materials to the Contractor, and shall not include any overhead or profit to the Contractor.

24.2.2 Partial payment shall in general include only completed units or lump sum items. If the Contractor desires payment for partially completed lump sum items, he shall submit an

appropriate cost breakdown of such items prior to commencing Work on the Project. The Engineer will review the itemized breakdown and if he agrees with the breakdown, partial payments will be made accordingly. If the Engineer does not agree with the breakdown for any reason whatsoever, no partial payment will be make for such lump sum items.

24.3 Placing Work in Service: If desired by the town, portions of the Work may be placed in service when completed and the Contractor shall give proper access to the Work for this purpose; but such use and operation shall not constitute an acceptance of the Work, and the Contractor shall be liable for defects due to faulty construction until the entire Work under this Contract is finally accepted and for one year thereafter as stipulated under the Paragraphs hereinbefore which address defective work.

24.4 Completion and Acceptance of Work: On completion of the Work, the Engineer shall:

(a) satisfy himself, by examination and tests, that the Work has been fully and finally completed in accordance with the Plans, Specifications and Contract, and

(b) report such completion to the town Council.

24.4.1 Before final acceptance by the town of the Work, the Contractor shall submit to the town a notarized affidavit, in duplicate, stating under oath that all subcontractors, vendors and other persons or firms who have furnished or performed labor or furnished or performed labor or furnished materials for the Work have been fully paid or satisfactorily secured. Such affidavit shall bear or be accompanied by a statement, signed by the surety company who provided the Performance and Payment bonds for the Work, to the effect that said surety company consents to final payment to the Contractor being made by the town.

24.5 No Waiver of Rights: Neither the inspection by any of the town's officials, employees, or agents, nor any order by the town for payment of money, or any payment for, or acceptance of, the whole or any part of the Work by the town, nor any extension of time, nor any possession taken by the town or its employees, shall operate as a waiver of any provisions of this Contract, or of any power herein reserved to the town or any right to damages herein provided, nor shall any waiver of any breach in this Contract be held to be a waiver of any other or subsequent breach.

24.6 Final Estimate and Payment: After official approval and acceptance of the Work by the town the Contractor shall prepare a final estimate of the Work done under this Contract and the value thereof. Such final estimate shall be submitted to the town after its preparation has been approved and authorized as aforesaid; and the town shall, after said final estimate is made and certified, pay the entire sum so found to be due hereunder, after deducting all amounts to be kept and retained under any provision of this Contract. All prior estimates and payments shall be subject to correction in the final estimate and payment; but in the absence of error or manifest mistake, it is agreed that all estimates, when approved by the town, shall be conclusive evidence of the work done and materials furnished.

24.7 Release of Liability: The acceptance by the Contractor of the last payment shall operate as, and shall be, a release to the town and every officer and agent thereof, from all claims and liability hereunder for anything done or furnished for, or relating to the Work, or for any act or neglect of the town or of any person relating to or affecting the Work.

SUPPLEMENTARY CONDITIONS OF AGREEMENT

1. GENERAL DESCRIPTION OF WORK: The work to be performed under this Contract includes the furnishing of all supplies and appurtenances; providing all construction plant, equipment and tools; performing all work necessary for construction of various drainage improvements in Fairview.

2. CONTRACT SPECIFICATIONS: The Specifications which are bound herewith and which shall govern the materials furnished and the work to be performed in the construction of the work under this Contract and based thereon, are identified and indexed in the Table of Contents at the beginning of this volume of the Contract Documents.

3. COPIES OF SPECIFICATIONS: The Contractor will be furnished, without cost to him, five (5) copies of all Specifications enumerated in the foregoing paragraphs 2 and 3, together with any and all addenda thereto. The Contractor shall keep one copy of all such Specifications constantly accessible on the work site.

4. LIQUIDATED DAMAGES: Should the Contractor fail to complete the work within the required annual contract time, or within such extra time as may have been allowed by extension, the Town will deduct from any moneys due or coming due the Contractor, the sum of One Hundred Dollars ($300.00) for each calendar day that the work shall remain uncompleted. This sum shall be considered and treated not as a penalty but as fixed, agreed and liquidated damages due the Town from the Contractor for reasons of inconvenience to the public, added cost of engineering, administration, supervision, inspection and other items which have caused an expenditure of public funds resulting from his failure to complete the work within the time specified in the Contract.

6. INSURANCE: The Contractor shall provide Certificates of Insurance in accordance with Paragraph 21.2 of the GENERAL CONDITIONS. Insurance coverage shall be in the amounts specified below:

6.1 Workmen's Compensation

A. Definitions:

Certificate of cover ("certificate"). A copy of a certificate of insurance, a certificate of authority to self insure issued by the commission, or a coverage agreement (TWCC - 81, TWCC - 82, TWCC -83, or TWCC - 84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on a project, for the duration of the project.

Duration of the project - includes the time from the beginning of the work on the project until the contractor's/person's work on the project has been completed and accepted by Town.

Persons providing services on the project ("subcontractor" in Texas Labor Code § 406.096) - includes all persons or entities performing all or part of the services the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with contractor and regardless of whether that person has employees. This includes, without limitation, independent contractors, subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other services related to a project. "Services" does not included activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

B. The Contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011 (44) for all employees of the contractor providing services on the project, for the duration of the project.

C. The Contractor must provide a certificate of coverage to the Town prior to being awarded the Contract.

D. If the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the project, the Contractor must, prior to the end of the coverage period, file a new certificate of coverage with the Town showing that coverage has been extended.

E. The contractor shall obtain from each person providing a service on a project, and provide to the Town:

(1) a certificate of coverage, prior to that person beginning work on the project, so the Town will have on file certificates of coverage showing coverage for all persons providing services on the project; and

(2) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.

F. The Contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.

G. The Contractor shall notify the Town in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any changes that materially affects the provision of coverage of any person providing services on the project.

H. The Contractor shall post on each project site a notice, in the text form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered and stating how a person may verify coverage and report lack of coverage.

I. The Contractor shall contractually require each person with whom it contracts to provide services on a project, to:

(1) provide coverage, based on proper reporting of classification codes, and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011 (44) for all of its employees providing services on the project, for the duration of the project;
(2) provide to the Contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;

(3) provide the Contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(4) obtain from each other person with whom it contracts, and provide to the Contractor:

(a.) a certificate of coverage, prior to the other person beginning work on the project; and

(b.) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

(6) notify the Town entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

(7) contractually require each person with whom it contracts, to perform as required by paragraphs (1) - (7), with the certificate of coverage to be provided to the person for whom they are providing services.

J. By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Town that all employees of the

Contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all coverage agreement will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance regulation. Providing false or misleading information may subject the Contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

K. The Contractor's failure to comply with any of these provisions is a breach of Contract by the Contractor which entitles the Town to declare the contract void if the Contractor does not remedy the breach within ten days after receipt of notice of breach from the Town.

L. A Contractor Shall:

(1) provide coverage for its employees providing services on a project, for the duration of the project based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements;

(2) provide a certificate of coverage showing workers' compensation coverage to the Town prior to beginning work on the project;

(3) provide the Town, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the Contractor's current certificate of coverage ends during the duration of the project;

(4) obtain from each person providing services on a project, and provide to the Town:

(a) a certificate of coverage, prior to that person beginning work on the project, so the Town will have on file certificates of coverage showing coverage for all person providing services on the project; and

(b) no later than seven days after receipt by the Contractor, a new certificate of coverage showing extension of coverage, if the coverage ends during the duration of the project;

(5) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

(6) notify the Town in writing by certified mail or personal delivery, within 10 days after the Contractor knew or should have known, of any change

that materially affects the provision of coverage of any person providing serviced on the project;

(7) post a notice on each project site informing all persons providing services on the project that they are required to be covered, and stating how a person may verify current coverage and report failure to provide coverage. This notice does not satisfy other posting requirements imposed by the Act or other commission rules. This notice must be printed with a title in at least 30 point bold type and text in at least 19 point normal type, and shall be in both English and Spanish and any other language common to the worker population. The text for the notices shall be the following text in Figure 2 provided by the commission on the sample notice, without any additional works or changes:

REQUIRED WORKERS' COMPENSATION COVERAGE

"The law requires that each person working on this site or providing services related to this construction project must be covered by workers' compensation insurance. This includes persons providing, hauling, or delivering equipment or materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee "
"Call the Texas Workers' Compensation Commission at 512-440-3789 to receive information on the legal requirement for coverage, to verify whether your employer has provided the required coverage, or to report an employer's failure to provide coverage"

(8) contractually require each person with whom it contracts to provide services on a project, to:

(a) provide coverage based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements for all of its employees providing services on the project, for the duration of the project.

(b) provide a certificate of coverage to the Contractor prior to that person beginning work on the project;

(c) include in all Contracts to provide services on the project the language in subsection (e) (3) of this rule;

(d) provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(e) obtain from each other person with whom it contracts, and provide to the contractor:

(i) a certificate of coverage, prior to the other person beginning work on the project; and

(ii) prior to the end of the coverage showing extension of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;

(f) retain all required certificates of coverage on file for the duration of the project and for one year thereafter;

(g) notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and

((h) contractually require each other person with whom it contracts, to perform as required by paragraphs (a) - (h), with the certificate of coverage to be provided to the person for whom they are providing services.

6.2 Employer's Liability Insurance: Liability limits for this insurance shall be not less than the following:

Employer's Liability	$1,000,000 each person

6.3 Bodily Injury and Property Damage Insurance: Liability limits for general liability insurance coverage under this policy shall be not less than the following:

Bodily	$1,000,000 each person $1,000,000 each accident
Property Damage	$1,000,000 each accident $1,000,000 aggregate

6.4 Comprehensive Automobile Liability Insurance: Liability limits for automobile liability insurance coverage under this policy shall be not less than the following:

Bodily	$1,000,000 each person $1,000,000 each person
Property Damage	$1,000,000 each accident

7. LICENSES, PERMITS AND CERTIFICATES: All licenses, permits, certificates, etc., required for and in connection with the work to be performed under the provisions of these Contract Documents shall be secured by the Contractor entirely at his own expense except for any permits required for work to be performed within State Rights-of-Way. These permits will be obtained by the Town from the Texas Department of Transportation.

8. WATER: All water required for and in connection with the work to be performed may be obtained from the Town at no expense. The Town will provide a meter for measuring any water obtained from the Town for execution of the work. Upon completion of the work, the Contractor shall remove all of his temporary service installations. The Contractor shall inform the Utility Superintendent prior to taking water.

9. POWER: All power for lighting, operation of Contractor's plant or equipment, or for any other use as may be required in the execution of the work to be performed under the provision of these Contract Documents shall be provided by the Contractor at his expense.

10. RIGHT-OF-WAY: The Contractor shall confine his construction operations to the street right-of-way as shown on the Plans, and shall use due care in placing construction tools, equipment, excavated materials, pipe materials and supplies, so as to cause the least possible damage to property and interference with traffic. The placing of such tools, equipment and materials shall be subject to the approval of the Engineer.

Where space within the right-of-way is not available for construction plant, the Contractor shall provide, at his own expense, any working area he requires, shall construct and maintain any roadway or other facilities required for this purpose and the cost thereof shall be included in the prices bid for the various items in the Proposal.

11. DAMAGE TO EXISTING STRUCTURES, MATERIALS OR EQUIPMENT: The Contractor will be held responsible for any damage to existing structures, work, materials or equipment because of his operations and shall repair or replace any such damaged structures, work, materials or equipment to the satisfaction of the Town Engineer at no additional cost to the Town.

12. PROTECTION AND MAINTENANCE OF PUBLIC AND PRIVATE PROPERTY: The Contractor shall protect, shore, brace, support and maintain all underground construction uncovered or otherwise affected by the construction work performed by him. All surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, and other surface structures affected by construction operations in connection with the performance of the Contract, together with all sod and shrubs in areas crossed by or adjacent to the right-of-way, shall be maintained and, if removed or otherwise damaged, shall be restored to the original condition thereof as determined and approved by the Town Engineer. All replacements of such underground construction and surface structures or parts thereof shall be made with new materials conforming to the requirements of these Specifications or, if not specified, as approved by the Engineer. The Contractor shall be responsible for all damage to roads, railroads, shoulders, ditches, embankments, culverts, bridges, or other public or private property or facilities, regardless of location or character, which may be caused by moving, hauling, or otherwise transporting equipment, materials or men to or from the work or any part of site thereof, whether by him or his subcontractor or subcontractors. The Contractor shall make satisfactory and acceptable

arrangements with the Town, or with the agency or authority having jurisdiction over, the damaged property or facility concerning its repair or replacement or payment of costs incurred in connection with said damage.

13. RESPONSIBILITY OF CONTRACTOR FOR EMBANKMENT AND BACKFILL SETTLEMENT: The Contractor shall be responsible, financially and otherwise, for (a) any and all settlement of trench and other backfill and embankment which may occur from the time of original placement until the expiration of a period of one year from and after the date of final acceptance of the entire Contract under which the backfilling or embankment work was performed, (b) the refilling and repair of all backfill settlement and the repair or replacement to the original or a better condition of all tracks, pavement, top surfacings, driveways, walks, surface structures, utilities, drainage facilities, sod and shrubbery which have been damaged as a result of said settlement or which have been removed or destroyed in connection with replacement operations, and (c) any and all damage claims filed with or court actions brought against the Town for and on account of any damage or damages directly or indirectly caused by said settlement. The Contractor shall make or cause to be made, all necessary backfill or embankment replacements, and repairs or replacements appurtenant thereto, within thirty (30) days from and after due notification by the Town of settlement and resulting damage at any designated locations.

14. GUARANTY: The Contractor shall insure and guarantee the satisfactory operation of all the installation, the workmanship and restoration of the project area, including backfilll settlement. The project shall be guaranteed to be complete and to function correctly for a period of one year from the date of its acceptance and the Contractor hereby agrees to repair or replace any defective items occurring within that year, free of expense to the Town.

15. BARRICADES AND LIGHTS: All open trench and other excavations shall be provided with suitable barriers, signs, and lights to the extent that adequate protection is provided to the public against accident by reason of such open construction. Obstructions, such as material piles and equipment, shall be provided with similar warning signs and lights.

16. DIVISION OF WORK: Items for this contract shall be bid as either lump sum or unit price as shown on the summary of quantities in the Proposal. Whenever two or more items abut each other, the division of work shall be as defined in the Specifications and as shown on the Plans. If the Specifications do not define the division of work, the Contractor shall make such divisions at his own discretion. It is the intent of these Specifications that the completion of all bid items shall result in the completion of all work shown on the Plans.

17. MANUFACTURER'S RECOMMENDATION: When an item of work is stated to be in accordance with or conform to manufacturer's recommendations, that item shall be submitted to the Engineer in writing for approval and shall be done in accordance with the approved method.

18. QUALITY ASSURANCE: When manufacturer's names are specified herein, they are used to establish a specific minimum requirement for materials used in construction, performance, and dimensional compatibility. The naming of one manufacture is not intended to show preference, eliminate competition or prohibit other manufacturers from offering equipment conforming to the

requirements of the Contract Documents. The use of "or equal" items shall be done in accordance with Paragraph 18.8 of the GENERAL CONDITIONS.

19. PRE-CONSTRUCTION CONFERENCE: As stated in Paragraph 10 of the GENERAL CONDITIONS, a pre-construction conference will be set to discuss scheduling and coordination of the work under this Contract.

20. EXISTING UTILITIES: Certain pipe lines, sewers, culverts, drains, cables, and other existing subsurface structures in the vicinity of the work to be done are indicated on the Plans according to the best information available to the Town. However, the town does not guarantee the accuracy of the information. Any delay to the Contractor due to encountering pipe lines or structures shall not constitute a claim for payment or an extension of time. The Contractor shall be responsible for contacting the utility companies and arranging for an on-site inspection so that the company representatives may locate all facilities endangered by construction:

The Contractor shall be responsible for protecting such existing utilities and for repairs to such facilities in case of damage to same. Should there be relocations or adjustments of utilities necessary to accommodate construction activities, the Contractor shall cooperate with the Company(s) involved and will coordinate such relocations with the schedule of work herein.

21. PARTIAL USE OF IMPROVEMENTS: The Town, at its election, may give notice to the Contractor and place in use those sections of the improvements which have been completed, inspected and can be accepted as complying with the Technical Specifications, and if in its opinion, each such section is reasonably safe, fit and convenient, for the use and accommodation for which it was intended, provided:

a. The use of such sections of the Improvements shall in no way impede the completion of the remainder of the work by the Contractor.

b. The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.

c. The use of such sections shall in no way relieve the Contractor of his liability due to having used defective materials or poor workmanship.

d. The period of guarantee stipulated in the Paragraph "Guaranty" of this Section, shall not begin to run until the date of the final acceptance of all work which the Contractor is required to construct under this Contract.

22. PROTECTION OF TREES AND SHRUBBERY: No trees shall be removed on the right-of-way except where their removal is authorized in writing by the Engineer.

Main tree roots shall not be cut except where they fall within the area to be occupied by the improvements. Excavation shall be done by and where necessary to prevent injury to roots or protected from permanent damage by reason of construction operations. Trimming of standing trees where required shall be as directed by the Engineer. All shrubbery outside of the right-of-way

which is damaged or removed by the Contractor shall be replaced under the directions of and to the satisfaction of the Town Engineer and property owner, by and at the expense of the Contractor.

23. REMOVAL AND REINSTALLATION OF ITEMS: Street signs, street stop signs, mail boxes and other existing items found within construction limits shall without damage be removed, stored and reinstalled in a condition comparable to pre-existing condition. Unless approved by the town, no extra pay shall be given if existing items are damaged by the Contractor and have to be replaced.

24. MAINTENANCE OF LOCAL TRAFFIC: The Contractor shall notify the Town Engineer at least 72 hours in advance of closure to provide ample time for notifying the public and providing detours. When notice of intended closure is given, the Contractor shall give the Town Engineer an estimate of the period of time that closure of the street will be necessary. Detour signs shall be installed at the locations shown on the Plans.

25. DUST CONTROL: Adequate precaution should be taken to insure excessive dust does not become airborne during construction. No separate payment will be made for performing dust control or for the water used for this purpose. The cost of these items shall be subsidiary to other items.

26. JOB SITE CONDITION: During the construction of the work, the Contractor shall, at all times, keep the site of the work and adjacent premises as free from material, debris, and rubbish as is practicable and shall remove same from any portion of the site, if in the opinion of the Town Engineer, such material, debris, or rubbish constitutes a nuisance or is objectionable.

The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need thereof develops.

27. DISPOSAL OF WASTE: All trees, stumps, existing surface, waste concrete and reinforcing and other debris, which result from the Contractor's excavation and operations, shall be removed from the property. All waste or excess earth shall be either removed from the site or neatly spread on the job site in a manner satisfactory to the Town Engineer. The disposal site for all such waste shall be the responsibility of the Contractor unless otherwise instructed by the Town Engineer.

28. FAILURE OF MATERIALS TO MEET TESTING REQUIREMENTS: Should any materials test specified herein fail to meet the minimum requirements specified, the Contractor shall furnish additional testing, by an independent laboratory approved by the Town Engineer, as necessary to satisfy the Town Engineer that the failed condition or material has been corrected.

29. CONSTRUCTION SEQUENCE: The Contractor shall submit to the Engineer for approval his proposed sequence of construction. The Construction Sequence shall be approved by the Engineer prior to starting the work, and shall be in accordance with the above sequence for placement of new facilities into service.

30. RESIDENT PROJECT REPRESENTATIVE: The Town intends to have a Project Inspector to inspect the Work. All pipe bedding will be inspected prior to backfilling, and any

backfill over pipe not inspected shall be removed for inspection. The Project Inspector will observe the construction activities and note its conformance with the Plans and Specifications as well as the progress of the Work. The Inspector will notify the Contractor and Engineer of any discrepancies. He shall not authorize any deviations from the Contract Documents or interrupt the Contractor's progression of the Work without specific instructions from the Engineer.

31. STATE AND TOWN SALES TAX: The CONTRACTOR'S attention is directed to Texas House Bill 11 (72nd Legislature, 1st C.S.) which amended the Texas Tax Code Section 151.311 This amendment provides that by the CONTRACTOR entering into a separated contract, the CONTRACTOR will become a seller of materials purchased for the project, which will obviate paying taxes on materials incorporated into the project.
As a seller, the CONTRACTOR purchases materials and issues a resale certificate in lieu of paying the sales tax at the time of purchase. The Town, as an exempt entity, will at the time of the "sale" of the materials to the Town, thereby preclude the Town, and CONTRACTOR, from paying the sales tax on the materials. Execution of the Contract Agreement by the Town shall serve as the CONTRACTOR'S authorization to issue a resale certificate.
Services are not tax exempt. The CONTRACTOR will be required to pay all appropriate taxes for all services as set forth herein.

For purposes of these Contract Documents, the following definitions are provided for Materials and Services:

> Materials: Materials are those items which are tax exempt and are items physically incorporated into the facility constructed for the Town. Materials include, but are not limited to, purchased items such as pipe, embedment, the storage tank, concrete, manhole rings and covers and barrel sections, riprap, asphalt, roadbase and subbase, etc.
>
> Services: Services are those items that are not tax exempt and are items used by the CONTRACTOR but which are not physically incorporated into the Town's facility and/or are items which are consumed by construction. Services include, but are not limited to, items such as supplies, tools, concrete forms, scaffolding, temporary storage buildings, the purchase or rental or lease of equipment, skill and labor, etc.

For further information concerning taxes as they relate to materials and services, the CONTRACTOR shall refer to House Bill 11 and/or contact the Texas Comptroller of Public Accounts, Austin, Texas at (800) 252-5555.

32. WAGE RATES: The Contractor and any subcontractors shall pay not less than the current prevailing wage rates for the Fairview area to all laborers, workmen and mechanics employed by them in the execution of this Contract. The Town will not provide wage rates for this project and will not require submission of documentation of wages.

33. CONSTRUCTION STAKING: The Engineer has established a base line on the project, which is shown on the plans. Immediately prior to beginning of construction, the Town's Surveyor shall traverse the project with the Contractor to determine location of control points and bench marks. The Surveyor shall replace any of these controls and bench marks which may have been

disturbed. By using these control points and bench marks the Contractor shall provide all additional construction staking to establish proper line and grade for this project. It shall be the Contractor's responsibility to set any offset control points and bench marks deemed desirable such that, when construction activities disturb the base line, there will remain adequate horizontal and vertical control.

During this offset control staking procedure, the Contractor shall keep the Engineer informed regarding the controls being set. The Engineer may require additional control points if, in his opinion, those being set by the Contractor are not adequate to properly establish line and grade.

DIVISION 300 ROADWAY CONSTRUCTION

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ITEM 301. SUBGRADE, SUBBASE, AND BASE PREPARATION

301.1. GENERAL

Subgrade is that portion of the roadbed upon which the subbase, base or the pavement is to be placed. It includes 12-in. (30cm) beyond the back of the curb for streets, which are to be paved with concrete. Subbase is that layer of specified material of plan thickness between a base and a subgrade. Base is that layer of specified material of plan thickness placed immediately below the pavement course surfacing.

301.1.1. Subgrade Preparation.

301.1.1.1. Description. These specifications shall govern for the preparation of the subgrade except as otherwise provided or specified.

301.1.1.2. Equipment. All equipment necessary for the construction of this item shall be on the project and shall be approved by the OWNER as to condition before the CONTRACTOR shall be permitted to begin construction operations on which the equipment is to be used. Any equipment that achieves the desired results in the time frame allowed is acceptable.

301.1.1.3. Construction Methods. After the excavation of embankment has been substantially completed, the subgrade shall be shaped so that after rolling as specified in Item 301.1.2. Rolling of Embankment, Subgrade or Flexible Base and subsequent finishing operations, it shall conform to the correct alignment, cross section and elevation. Rolling and sprinkling, as needed, shall be performed when and to the extent directed and the roadbed shall be completed to or above the plane of the typical section shown on the plans and the lines and grades established by the OWNER.

After completion of the compaction and immediately before the application of subbase, base or pavement, the subgrade preparation equipment shall be operated using approved methods in a manner to finish the subgrade to the required section. The subgrade shall then be tested with the approved template, operated and maintained by the CONTRACTOR. All irregularities which develop in excess of ½-in. in a length of 16-ft. (13mm in 5m) measured longitudinally shall be corrected by loosening, adding or removing material; reshaping; and recompacting by sprinkling and rolling. The completed subgrade shall have a uniform density of not less than 95-percent of the maximum density determined by ASTM D698 Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)). Moisture content shall be within minus-2- to plus-4-of-optimum.

The subgrade shall be maintained in a smooth, compacted condition, in conformity with the required section and established grade, until the subbase, base or pavement is placed, and shall be kept wetted down sufficiently in advance of placing any subbase, base or pavement to insure its being in a firm and moist condition for at least 2-in. (5cm) below surface of the prepared subgrade. Only such subgrade as is necessary for the satisfactory execution of the work shall be completed ahead of the placement of base or pavement. Hauling or operating of unnecessary equipment on the completed subgrade shall be kept to a minimum. If equipment is operated on recent work, the OWNER may inspect and require subgrade replacement for such defects as fractures, rutting, or any other failure. Complete drainage of the subgrade shall be provided at all times.

Finishing of the subgrade by other methods shall be permitted on pavement widening projects, on sections where the pavement width is not uniform, at intersections and elsewhere where the operation of certain equipment would not be practical. Subgrade finished by hand or other methods shall conform to the requirements above specified.

301.1.1.4. Measurement and Payment. Preparation of subgrade shall not be measured for payment as a separate contract pay item. Preparation of the subgrade or fine grading shall not be paid for as a separate contract pay item; and cost thereof shall be included in such contract items as are provided, which pay items shall be the total compensation for the furnishing of all labor, tools, materials, equipment and incidentals necessary to complete the work, including disposal or surplus material, all in accordance with the plans and these specifications.

301.1.2. Rolling of Embankment, Subgrade or Flexible Base

301.1.2.1. Description. Rolling shall consist of the compaction of embankment, subgrade or flexible base by the operation of approved power rollers, as herein specified and as directed by the OWNER.

301.1.2.2. Roller Requirements. All equipment necessary for the construction of this item shall be on the project and shall be approved by the OWNER as to condition before the CONTRACTOR shall be permitted to begin construction operations on which the equipment is to be used. Any equipment that achieves the desired results in the time frame allowed is acceptable. If equipment fails to produce the desired result within the required time frame, its use shall be discontinued and the CONTRACTOR will be required to furnish equipment, as determined by the Engineer, at no additional cost to the OWNER.

Sufficient rollers shall be provided to compact the material in a manner satisfactory to the OWNER. When operations are so isolated from one another that one roller unit cannot perform the required compaction satisfactorily, the CONTRACTOR shall provide additional roller units.

301.1.2.3. Rolling Methods. The embankment, subgrade or base course shall be sprinkled as directed by the OWNER. Rolling patterns and speeds shall be established per project and indicated on the plans.

301.1.2.4. Measurement and Payment. Rolling provided in the proposal and contract, as a separate contract pay item, shall be measured for payment by the actual hours the roller is in operation, as ordered by the OWNER. Rolling provided in the proposal and the contract, as a separate pay item, shall be paid for in accordance with the contract unit price. When rolling is not classified separate for payment, then such rolling shall be considered as incidental work and shall not be paid for as a separate item. The cost thereof shall be included in such contract pay items as are provided. In either case, such pay items shall be the total compensation for all labor, materials, tools, machinery, equipment and incidentals necessary to complete the work in accordance with the plans and this specification.

301.2. LIME TREATMENT

This item shall consist of treating subgrade, subbase, and base courses by the pulverization, addition of lime, mixing and compacting the mixed material to the required density. This item applies to natural ground, embankment, or pulverized recycled asphalt pavement base or subbase courses placed under this contract, which shall be constructed as specified herein and in conformity with the typical section, lines and grades as shown on the plans.

301.2.1. Materials.

301.2.1.1. Hydrated Lime (Slurry).

301.2.1.1.1. General. Hydrated lime slurry shall be a pumpable suspension of solids in water. The solids portion of the mixture, when considered on the basis of "solids content," shall consist principally of hydrated lime of a quality and fineness sufficient to meet the following requirements as to chemical composition and residue.

301.2.1.1.2. Chemical Composition. The "solids content" of the lime slurry shall have a hydrate alkalinity $Ca(OH)_2$ of not less than 90-percent by weight.

301.2.1.1.3. Residue. The percent by weight of residue retained in the "solid content" of lime slurry shall conform to the requirements in Table 301.2.1.1.3.(a) Hydrated Lime.

Table 301.2.1.1.3.(a) Hydrated Lime

Sieve Size	Residue Retained, Percent by Weight
No. 6 (3360 micron)	None
No. 10 (2000 micron)	Max. 1.0%
No. 30 (590 micron)	Max. 2.5%

301.2.1.1.4. Slurry Grades. Type B, commercial lime slurry, shall conform to one of the following three grades:

(1) Grade 1: The "dry solids contents" shall be at least 31-percent by weight of the slurry.
(2) Grade 2: The "dry solids contents" shall be at least 35-percent by weight of the slurry.
(3) Grade 3: The "dry solids contents" shall be at least 46-percent by weight of the slurry.

When Type B, commercial lime slurry, is specified, the CONTRACTOR shall select, prior to construction, the grade to be used and shall notify the OWNER in writing before changing from one grade to another.

301.2.1.2. Quicklime.

301.2.1.2.1. General.

CAUTION: HANDLING AND USE OF QUICKLIME CAN BE DANGEROUS. QUICKLIME SHOULD BE PRESCRIBED BY A REGISTERED PROFESSIONAL ENGINEER FAMILIAR WITH ITS USE.

Quicklime is a dry material consisting essentially of calcium oxide. It shall be furnished either in "pebble" gradation suitable for dry placing and slurry placing, or as a dry powder suitable only for slurry placing. Powdered quicklime is restricted to slurry placing, as the possibility of appreciable amounts of finely divided powdered quicklime makes it unsuitable for dry placing.

301.2.1.2.2. Chemical Composition. Quicklime shall conform to the chemical requirements of ASTM C977 Quicklime and Hydrated Lime for Soil Stabilization.

301.2.1.3. Tests. If the minimum design strength or percent lime to be used for the treated subgrade, existing base, new subbase or new base is specified, it shall be determined by preliminary laboratory tests at the OWNER'S expense. Optimum lime addition percentage shall be determined by Tex-112-E Admixing Lime to Reduce Plasticity Index of Soils (Atterberg Limits Soil-Lime Series) and/or by ASTM D6276 Test Method for Using pH to Estimate the Soil-Lime Proportion Requirement for Soil Stabilization (pH Soil-Lime Series.)

301.2.1.4. Lime Delivery and Storage. If hydrated lime is furnished in bags, each bag shall bear the manufacturer's certified weight. Bags varying more than 5-percent by weight may be rejected, and the average weight of the bags in any shipment, as shown by weighing 50 bags taken at random, shall not be less than the manufacturer's certified weight. If lime is furnished in trucks, each truck shall bear the weight of lime measured on certified scales, or the CONTRACTOR shall place a set of standard platform truck scales or hopper scales at a location approved by the OWNER.

Hydrated lime and quicklime shall be stored and handled in closed, weatherproof containers until immediately before distribution on the road. If storage bins are used, they shall be completely enclosed. Hydrated lime bags shall be stored in weatherproof buildings with adequate protection from ground dampness. Quicklime, when permitted, shall be shipped only in bulk; bagged material shall not be acceptable.

301.2.1.5. Water. Water shall conform to the requirements of Item 303.2.7. Water.

301.2.1.6. Soil. The soil shall consist of the in-situ soil or approved soil, free from vegetation, roots, or other objectionable matter. It may be either the material encountered in the existing section, material secured from approved sources shown on the plans or as designated by the OWNER, or a combination of existing and additional soil from approved sources, as shown on the plans, or as directed by the OWNER.

301.2.1.7. Recycled/Reclaimed Asphalt Pavement. Recycled/Reclaimed asphalt pavement is defined as a salvaged, milled, pulverized, broken or crushed asphaltic pavement uncontaminated by dirt or other objectionable materials.

301.2.1.8. Rejection. Any materials that do not conform to the requirements of this specification shall be rejected.

301.2.2. Equipment. Machinery, tools and equipment necessary for proper performance of the work shall be on the project and approved by the OWNER prior to the beginning of construction operations.

When permitted, quicklime shall be slurried in agitated slurry tanks. The distributor truck used for slurry placing need not necessarily be equipped with an agitator. However, the slurry at the time of distribution must meet the consistency requirements specified.

All machinery, tools and equipment used shall be maintained in a satisfactory and workmanlike manner.

301.2.3. Lime Treatment Construction Methods.

301.2.3.1. General. It is a primary requirement of this specification to secure a completed course of treated material containing a uniform lime mixture, free from loose or segregated areas, or uniform density and moisture content, well bound for its full depth, and with a smooth surface and suitable for placing subsequent courses. It shall be the responsibility of the CONTRACTOR to regulate the sequence of work, to use the proper amount of lime, maintain the work and rework the courses as necessary to meet the above requirements.

Prior to beginning any lime treatment, the roadbed shall be constructed and shaped to conform to the typical sections, lines and grades as shown on the plans or as established by the OWNER.

In cases where groundwater is present, application of lime for stabilization shall be evaluated by the OWNER.

301.2.3.3. General Construction.

301.2.3.3.1. Treatment for Materials in Place. Materials to be treated shall be excavated to the secondary grade (proposed bottom of lime treatment) and removed or windrowed to expose the secondary grade. Any wet or unstable material below the secondary grade shall be corrected by scarifying, adding lime and compacting until it is of uniform stability. The excavated material shall then be spread to the desired cross section.

If the CONTRACTOR elects to use a cutting or pulverizing machine that shall remove the subgrade material accurately to the secondary grade and to pulverize the material at the same time, CONTRACTOR shall not be required to expose the secondary grade or windrow the material. However, the CONTRACTOR shall be required to roll the subgrade before using the pulverizing machine and correct any soft areas that this rolling may reveal. This method shall be permitted only where a machine is provided which shall insure that the material is cut uniformly to the proper depth and which has cutters that shall place the secondary grade to a smooth surface over the entire width of the cut. The machine shall be of such design that a visible indication is given at all times that the machine is cutting to the proper depth.

301.2.3.3.2. Treatment for New Materials. The base and subbase materials, as provided in the governing specifications, shall be delivered, placed and spread in the required amount per station. The material shall be manipulated as specified and thoroughly mixed prior to the addition of the lime.

301.2.3.4. Lime Application. Lime shall be spread only on that area where the first mixing operation can be completed in the same working day, except that quicklime shall be mixed at the time of application. The application and mixing of lime with the materials shall be accomplished by the methods hereinafter described unless otherwise approved by the OWNER.

301.2.3.4.1. Dry Placing Quicklime. Quicklime may be placed dry if it is in pebble form. A spreader or motor grader shall be used to spread pebble Quicklime.

301.2.3.4.2. Slurry Placing.

Hydrated Lime or Commercial Lime Slurry. Lime shall be mixed with water and applied as a thin water suspension or slurry. Type B, commercial lime slurry, shall be applied with a lime percentage not less than that applicable for the grade used. The distribution of lime at the rate shown on the plans shall be attained by successive passes over a measured surface of roadway until the proper moisture and lime content have been achieved.

Quicklime. When Quicklime is applied as a slurry, the amount of dry quicklime shall be 80-percent of the amount shown on the plans. The residue from the Quicklime slurrying procedure shall be spread uniformly over the length of the roadway currently being processed unless otherwise approved by the OWNER. This residue is primarily inert material with little stabilizing value, but may contain a small amount of Quicklime particles that slake slowly. A concentration of these particles could cause the compacted stabilized material to swell during slaking.

301.2.3.5. Mixing. Mixing procedure shall be the same for "dry placing" or "slurry placing" as hereinafter described.

301.2.3.5.1. Treatment for Materials-In-Place. Material and lime shall be thoroughly mixed by approved road mixers or other approved equipment and the mixing continued until a homogeneous, friable mixture of material and lime is obtained, free from all clods or lumps. Materials containing plastic clay or other materials which shall not readily mix with lime shall be mixed as thoroughly as possible at the time of the lime application, brought to the proper moisture content, sealed with a pneumatic roller, and left to cure 1- to 4-days as directed by the OWNER. During the curing period, the material shall be kept moist. After the required curing time, the material shall be uniformly mixed by approved methods. If the soil binder lime mixture contains clods, they shall be reduced in size by raking, blading, discing, harrowing, scarifying or the use of other approved pulverization methods so that when all nonslaking aggregates obtained on the No. 4 sieve are removed, the remainder of the material shall meet the requirements of Table 301.2.3.5.1.(a) Lime Treated Materials-In-Place when tested dry by laboratory sieves.

Table 301.2.3.5.1.(a) Lime Treated Materials-In-Place

Sieve Size	Minimum Passing
1¾-in. (45mm)	100%
No. 4 (4.75mm)	60%

1. Recycled asphalt pavement shall be pulverized so that 100-percent shall pass a 2-in. (50mm) sieve.

During the interval of time between application and mixing, hydrated lime that has been exposed to the open air for a period of 6-hours or more, or to excessive loss due to washing or blowing, shall not be accepted for payment.

In addition to the above, when pebble quicklime is used, the material and lime shall be mixed as thoroughly as possible at the time of application. Sufficient moisture shall be added during the mixing to hydrate the quicklime. After mixing, and prior to compaction, the mixture of material, quicklime and water shall be moist cured for 2- to 7-days, as approved by the OWNER. After curing, mixing shall continue until the pulverization requirements are met.

301.2.3.5.2. Treatment of New Material. The base or subbase material, lime and required water shall be thoroughly mixed and blended by approved road mixers or other approved equipment and the mixing continued until a homogeneous, friable mixture is obtained. When lime is placed as a slurry and mixed by the use of blades, the material shall be bladed as the lime water mixture is applied; after the total amount has been placed, the mixture shall be thoroughly blended to the satisfaction of the OWNER.

During the interval of time between application and mixing, hydrated lime that has been exposed to the open air for a period of 6-hours or more, or to excessive loss due to washing or blowing, shall not be accepted for payment.

301.2.3.6. Compaction. Compaction of the mixture shall begin immediately after final mixing and in no case later than 3-days after final mixing. The material shall be aerated or sprinkled as necessary to provide optimum moisture. Compaction shall begin at the bottom and shall continue until the entire depth of the mixture is uniformly compacted as shown on the plans or specified by the OWNER. The compacted mixture shall have a uniform density of not less than 95-percent of the maximum density as determined by ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)). Moisture content shall be within minus-2- to plus-4-of-optimum. After each section is completed, such tests as are necessary shall be made by the OWNER. If any portion fails to meet the density specified, it shall be reworked as necessary to obtain the specified density. After the mixture has been compacted, the surface shall be shaped to the required line, grades and cross sections and then thoroughly rolled sufficiently lightly to prevent hairline cracking.

301.2.3.7. Maintenance. The CONTRACTOR shall be required to maintain the completed soil lime base within the limits of its contract in good condition, satisfactory to the OWNER as to grade, crown and cross section until such time as the surface course is constructed. The surface of the compacted layer shall be kept moist until covered by other base or paving material or application of a curing seal of emulsified asphalt conforming to requirements of Item 302.3.5. Emulsions for Priming, Curing and Erosion Control (PCE). If a curing seal is used, it should be applied as soon as possible after completion of final rolling, at a rate of between 0.10- and 0.20-gallons-per-square-yard (0.5- to 1.0-liters-per-m^2), the exact rate to be determined by the OWNER. No equipment or traffic shall be permitted on lime treated material for 72-hours after curing seal is applied, unless otherwise permitted by the OWNER. In cases where subgrade treatment or subbase sets up sufficiently to prevent objectionable damage from traffic, such layers may be opened to traffic 2-days after compaction. The CONTRACTOR shall immediately repair all irregularities or other defects that may occur at the CONTRACTOR'S expense. Repairs are to be made as directed by the OWNER and in a manner to insure restoration of a uniform surface and durability of the portion repaired.

301.2.4. Measurement and Payment. Lime treatment shall be measured for payment in square-yards (m^2) for the thickness shown in the plans for the surface area of completed and accepted work. The measurement for lime shall be by the ton of 2000-pounds (900-kg) dry weight. The measured tonnage of (dry) quicklime shall be multiplied by the conversation factor 1.25 to give the equivalent quantity of hydrated lime (dry) which shall be the basis of payment.

Lime treatment shall be paid for at the contract unit price per square-yard (m^2), as provided in the proposal and contract. The contract unit price shall be the total compensation for preparing the roadbed; for loosening, pulverizing, application of lime, water content in the slurry mixture and the mixing water; mixing, shaping, sprinkling, compacting, finishing, curing and maintaining; for manipulations required; and for all labor, equipment, fuels, tools and incidentals necessary to complete the work, all in accordance with the plans and specifications.

Lime material measured as provided in the this item shall be paid for at the unit price bid for "lime material" which price shall be full compensation for furnishing the material; for all freight involved; for all unloading, storing and handling; and for all labor, equipment, fuels, tools and incidentals necessary to complete the work.

301.3. PORTLAND CEMENT TREATMENT

This item shall consist of the treatment of the subgrade, subbase or base course which is to be composed of a compacted mixture of soil, and/or pulverized recycled asphalt pavement, Portland cement and water and shall be constructed as herein specified and in conformity to the cross sections, lines and grades as established by the OWNER. In the event new materials are placed, rather than using in-situ soils, the subbase or base shall be constructed as herein specified and in conformity with the items governing the base or subbase courses.

301.3.1. Materials.

301.3.1.1. Portland Cement. Cement shall be ASTM C150 Type I, II or IP and conform to the requirements of Item 303.2.2. Portland Cement.

301.3.1.2. Water. Water shall conform to the requirements of Item 303.2.7. Water.

301.3.1.3. Soil. The soil shall consist of the in-situ soil or approved soil, free from vegetation, roots, or other objectionable matter. It may be either the material encountered in the existing section, material secured from approved sources shown on the plans or as designated by the OWNER, or a combination of existing and additional soil from approved sources, as shown on the plans, or as directed by the OWNER.

301.3.1.4. Recycled/Reclaimed Asphalt Pavement. Recycled/Reclaimed asphalt pavement is defined as a salvaged, milled, pulverized, broken or crushed asphaltic pavement uncontaminated by dirt or other objectionable materials.

301.3.2. Equipment. All equipment necessary to properly prosecute, perform and complete the work within the contract time shall be on the project and shall be approved by the OWNER as to type and condition before the CONTRACTOR shall be permitted to begin construction operations on which the equipment is to be used.

The cement-modified soil layer may be constructed with any machine or combination of machines and auxiliary equipment that shall produce the results meeting the requirements for soil pulverization, cement application, water application, mixing, incorporation of materials, compaction, finishing and curing as specified herein. The CONTRACTOR shall at all times provide sufficient equipment to enable continuous performance of the work and its completion in the required number of working days.

301.3.3. Portland Cement Treatment Construction Methods.

301.3.3.1. General. The primary requirement of this specification is to secure a complete course of treated material containing a uniform Portland cement mixture, free from loose or segregated areas, of uniform density and moisture content, well bound and compacted for its full depth with a smooth surface suitable for placing additional subbase, base or surface courses. It shall be the responsibility of the CONTRACTOR to regulate the sequence of work, to process a sufficient quantity of material so as to provide full depth as shown on plans, to use the proper amount of Portland cement, maintain the work and to rework the courses as necessary to meet the foregoing requirements.

Cement stabilized base shall not be mixed or placed when the air temperature is below 40°F (5°C) and falling, but may be mixed or placed with the air temperature is above 35°F (2°C) and rising, the temperature being taken in the shade and away from artificial heat, and with the further provisions that cement stabilized base shall be mixed or placed only when weather conditions, in the opinion of the OWNER, are suitable.

301.3.3.2. Treatment for Materials-In-Place. Before other construction operations are begun, the roadbed shall be graded and shaped as required to construct the Portland cement treatment for material in place in conformance with the lines, grades, thickness and typical cross sections shown on the plans. Unsuitable soil or material shall be removed and replaced with acceptable soil. The subgrade shall be firm and able to support without displacement the construction equipment and achieve the compaction herein specified. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.

The soil and/or recycled asphalt pavement shall be so pulverized that at the completion of moist-mixing, it meets the gradation in Table 301.3.3.2.(a) Cement Treated Materials-In-Place.

Table 301.3.3.2.(a) Cement Treated Materials-In-Place

Sieve Size	Minimum Passing by Dry Weight[1,2]
1-in. (25mm)	100%
No. 4 (4.75mm)	80%

1. Exclusive of gravel or stone retained on these sieves.
2. Recycled asphalt pavement shall be pulverized so that 100-percent shall pass a 2-in. (50mm) sieve.

301.3.3.2.1. Application of Cement to Materials-In-Place. Portland cement shall be spread by an approved dry or slurry method uniformly on the soil at the rate specified on the plans or as determined by preliminary laboratory tests. If a bulk cement spreader is used, it shall be positioned by string lines or other approved method during spreading to insure a uniform distribution of cement. Cement shall be applied only to such an area that all the operations can be continuous and completed in daylight within 6-hours of such application.

The percentage of moisture in the soil at the time of cement application shall not exceed the quantity that shall permit uniform and intimate mixture of soil and cement during dry-mixing operations, and it shall not exceed the specified optimum moisture content for the soil and cement mixture. In the event of high soil-moisture contents, cement may be applied at one-half the specified rate when approved by the Engineer. The remainder of the application rate of cement shall be applied the following day(s), not to exceed 48-hours. The usual construction sequence shall then be resumed.

No equipment, except that used in the spreading and mixing, shall be allowed to pass over the freshly spread cement until it is mixed with the soil.

301.3.3.2.2. Mixing and Processing of Stabilized Materials-In-Place. Any method used to achieve the specified results is acceptable. Mixing shall continue until a homogeneous, friable mixture of the material and cement is obtained, free from all clods or lumps. The mixture shall be kept within moisture tolerances throughout the operation.

301.3.3.2.3. Compaction and Finishing of Stabilized Materials-In-Place. Compaction shall begin after mixing and after gradation and moisture requirements have been met. The material shall be compacted to

at least 95-percent of the maximum density as determined by ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)). At the start of compaction, the percentage of moisture in the mixture and in unpulverized soil lumps, based on oven-dry weights, shall be within 2-percentage-points of the specified optimum moisture content and shall be less than the quantity which shall cause the soil-cement mixture to become unstable during compaction and finishing. When the uncompacted soil-cement mixture is wetted by rain so that the average moisture content exceeds the tolerance given at the time of final compaction, the entire section shall be reconstructed in accordance with this specification at the sole expense of the CONTRACTOR. The specified optimum moisture content and density shall be determined in the field on the representative samples of soil-cement mixture obtained from the area being processed. Final moisture content shall be within minus-2- to plus-4-of-optimum.

Prior to the beginning of compaction, the mixture shall be in a loose condition for its full depth. Compaction shall begin at the bottom and shall continue until the entire depth of the mixture is uniformly compacted. The loose mixture shall then be uniformly compacted to the specified density within 2-hours. After the soil and cement mixture, except the top mulch, is compacted, water shall be uniformly applied as needed and thoroughly mixed in. The surface shall then be reshaped to the required lines, grades and cross section and then lightly scarified to loosen any imprint left by the compacting or shaping equipment.

The resulting surface shall be thoroughly rolled with a pneumatic tire roller and "clipped," "skinned," and "tight-bladed" by a power grader to a depth of approximately ¼-in. (6mm), moving all loosened soil and cement from the section. The surface shall then be thoroughly compacted with the pneumatic roller, adding small increments of moisture as needed during rolling. When directed by the OWNER, surface finishing methods may be varied from this procedure, provided a dense, uniform surface, free of surface material, is maintained at its specified optimum during all finishing operations. Surface compaction and finishing shall proceed in such a manner as to produce, in not more than 2-hours, a smooth, closely knit surface, free of cracks, ridges or loose material, conforming to the drawn grade and line shown on the plans.

OWNER shall conduct In-place density tests shall as outlined in ASTM D2922 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth). In-place density tests shall be performed at the rate of one-per-300-linear-ft. (1-per-91m) of paving for two (2) lanes. The suitability of the modification shall be confirmed by Atterberg Limit testing at the rate of one-test-per-2,500-cubic-yards (one-per-1,910-m^3) of processed material.

In addition to the requirements specified for density, the full depth of the material shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each section is completed, tests as necessary will be made by the OWNER. If the material fails to meet the density requirements, it shall be reworked as necessary to meet these requirements. Throughout this entire operation the shape of the course shall be maintained by blading, and the surface upon completion shall be smooth and in conformity with the typical section shown on the plans and to the established lines and grades. Should the material, due to any reason or cause, lose the stability, density and finish before the next course is placed or the work is accepted, it shall be recompacted and refinished at the sole expense of the CONTRACTOR.

301.3.3.3. Plant-Mixed Cement Treated Base.

301.3.3.3.1. Subgrade Preparation. Before other construction operations are begun, the area to be paved shall be graded and shaped as required to receive the cement treated base in conformance with the grades, lines, thicknesses and typical cross-section shown on the plans. Unsuitable subgrade soil or material shall be removed and replaced with acceptable soil. The subgrade shall be firm and able to support without displacement of the construction equipment and compaction. Soft or yielding subgrade shall be corrected and made stable before construction proceeds.

301.3.3.3.2. Mixing and Processing for Plant-Mixed Cement Treated Base. The aggregate, cement and water shall be mixed in a pug mill as approved by the Engineer. The plant shall be equipped with feeding and metering devices that add the aggregate, cement and water into the mixer in the specified quantities to produce a mixture that meets or exceeds the mix design criteria. Aggregate and cement shall be mixed sufficiently to prevent cement balls from forming when the mix water is added. Mixing time shall be sufficient to assure an intimate, uniform mixture of aggregate, cement and water. The percentage of moisture in the aggregate, at the time of cement application shall be the amount that assures a uniform and intimate mixture of aggregate and cement during mixing operations. It shall not exceed the specified moisture content required for adequate compaction.

Free access to the plant shall be provided to the OWNER for construction quality control. The mixture shall be hauled to the paving area in trucks having beds cleaned of deleterious material.

301.3.3.3.3. Placement of Plant-Mixed Cement Treated Base. The mixture shall be placed on a moistened subgrade in a uniform layer by any approved method of spreading that will deposit the required

quantity per lineal foot, without segregation, to produce a uniformly compacted base conforming to the grade and cross-section. Not more than 30-minutes shall elapse between placement of cement treated base in adjacent lanes at any location except at longitudinal and transverse construction joints. Compaction shall start as soon as possible after spreading. Elapsed time between the addition of water to the cement treated base mixture and the start of compaction shall not exceed 60-minutes under normal conditions. The Engineer may alter this time if environmental conditions, such as temperature, humidity or wind conditions would justify such a change. Laboratory tests may be required to verify changes in compaction time limits.

301.3.3.3.4. Compaction and Finishing of Plant-Mixed Cement Treated Base. At the start of compaction, the percentage of moisture in the mixture shall not be more than one-percentage-point-below or two-percentage-points-above the specified optimum moisture content, and shall be less than that quantity which will cause the cement treated base mixture to become unstable during compaction and finishing. The specified optimum moisture content and density shall be determined in the field by a Moisture-Density Test AASHTO T134 or ASTM D558 Test Methods for Moisture-Density Relations of Soil-Cement Mixtures, on representative samples of cement treated base mixture obtained from the area prior to compaction. Prior to compaction, the mixture shall be in a loose condition for its full depth. The loose mixture shall then be compacted uniformly to the specified density. During compaction operations, initial shaping may be required to obtain uniform compaction and required grade and cross-section.

When initial compaction is completed, the surface of the cement treated base shall be shaped to the required lines, grades and cross-section. The moisture content of the surface material shall be maintained at not less than its specified optimum moisture content during finishing operations. If any reshaping of the surface is necessary, it shall be lightly scarified to remove any compaction planes, scales or smooth surfaces left by equipment. Final compaction shall then be continued until uniform and adequate density is obtained. Cement treated base shall be uniformly compacted to a minimum of 95-percent of maximum density. Compaction and finishing shall be done in such a manner as to produce, in not longer than two-hours, a smooth, dense surface free of compaction planes, cracks, ridges, or loose material.

301.3.3.4. Finishing and Preparation for Surfacing. After the final layer or course of the cement-modified soil has been compacted, it shall be brought to the required lines and grades in accordance with the typical sections. The completed section shall then be finished by rolling as directed with a pneumatic tire or other suitable roller sufficiently light to prevent hair cracking. Preparation for final surfacing may begin immediately.

301.3.3.5. Protection and Cover. After the roadway has been finished as specified herein, it shall be immediately protected against rapid drying by applying a curing seal of emulsified asphalt at the rate of 0.2-gallon-per-square-yard (0.7-L-per-m^2). The curing seal shall consist of emulsified asphalt conforming to requirements of Item 302.3.5. Emulsions for Priming, Curing and Erosion Control (PCE). Immediately prior to application of the curing seal, the section shall be wetted by the use of pressure water distributors so that all voids in the soil-cement surface are filled with water, but without free water standing on the surface. The curing seal shall be applied while this moisture condition exists so that undue asphalt penetration of the soil-cement surface shall be prevented; and at the same time aided in complete coverage by the curing seal.

Should it be necessary for construction equipment or other traffic vehicles to pass over the section before the curing seal has dried sufficiently to prevent pickup, if shall be the responsibility of the CONTRACTOR to dust or sand the surface before such use. The CONTRACTOR shall also maintain the curing cover for 7-days so that all of the soil-cement base course shall be covered effectively with curing seal during this period. The curing seal shall remain in place for the additional asphalt-wearing surface.

301.3.3.6. Opening to Traffic. The CONTRACTOR shall not be permitted to drive heavy equipment over completed portions. Pneumatic-tired equipment required for hauling cement and water may be permitted to drive over after the surface has hardened sufficiently to prevent the equipment from marring the surface, provided that protection and cover are not impaired. The soil-cement course may be opened to local traffic as soon as the curing seal has been applied and dusted or sanded as necessary to prevent it from being picked up by traffic. Completed portions may be opened to all traffic after 7-days.

301.3.3.7. Maintenance. The CONTRACTOR shall be required within the limits of its contract to maintain the soil-cement treatment in good condition from the time it first starts work until all work shall have been completed. Maintenance shall include immediate repairs of any defect that may occur after the cement is applied. Such maintenance work shall be done by the CONTRACTOR at the CONTRACTOR'S expense and repeated as often as necessary to keep the area continuously intact. Repairs are to be made in such a manner as to insure restoration of a uniform surface for the full depth of treatment. Any low area of treated subgrade shall be remedied by scarifying the surface to a depth of at least 2-in. (5cm), filling the area with treated material and compacting. Any low area of subbase or base shall be remedied by replacing the material for the full depth of subbase or base treatment rather than adding a thin layer of stabilized material to the completed work.

301.3.4. Measurement and Payment. Portland cement treatment shall be measured by the square-yard (m^2) of completed and accepted cement treated course. Measurement for cement shall be by the ton of 2000-pounds (900-kg) of dry weight, as determined by certified weight tickets. No allowance shall be made for any materials used or work done outside the limits as established by the OWNER.

The work performed and material furnished as prescribed by this item and measured as provided in this item shall be paid for at the unit price bid for soil-cement treated subgrade, subbase, or base course, which price shall be full compensation for pulverizing or providing the soil material; handling, hauling and spreading dry or slurry cement, mixing the cement with the soil either in-place or in a mixing plant; furnishing, hauling and mixing water with the soil-cement mixture; spreading and shaping the mixture; compacting the mixture, including all rolling required for this compaction; surface finishing; curing; and for all manipulation, labor, equipment, appliances, tools and incidentals necessary to complete the work and carry out the maintenance provisions in this specification.

Cement material measured as provided in this item shall be paid for at the unit price bid for cement material, which price shall be compensation for furnishing the material, for all freight involved, for all unloading and storing, and for all labor, equipment, fuels, tools and incidentals necessary to complete the work, all in accordance with the plans and these specifications.

301.4. ASPHALT EMULSION TREATMENT

This item shall consist of treating subgrade, subbase, and base courses by the pulverization, addition of asphalt base stabilization agent, mixing and compacting the mixed material to the required density. This item applies to natural ground, embankment, base or subbase courses placed under this contract, which shall be constructed as specified herein and in conformity with the typical section, lines and grades as shown on the plans.

Asphalt stabilization of recycled material such as crushed concrete or other non-hazardous recycled materials, processed recycled asphalt pavements, bottom ash, foundry slag, glass, recycled crumb rubber to create subgrade, subbase or base courses shall conform to TxDOT Special Specification 3157 Cold Processed - Recycled Paving Material (RPM) for Use as Aggregate Base Course. Asphalt emulsion for such recycling shall conform to Item 302.3.6. Specialty Emulsions or Item 302.3.7. Emulsion for In-Place Asphalt Recycling, as specified by the OWNER.

301.4.1. Materials.

301.4.1.1. Asphalt Soil (Base) Stabilization Agent. The product shall be composed of petroleum of resin oil base with selective hardening and drying agents to form a stable subgrade, subbase, or base. Independent laboratory tests shall certify compliance with requirements of Table 301.4.1.1.(a) Asphalt Soil Stabilization Agent Requirements, as specified on the plans.

If the minimum design strength or percent asphalt base stabilization agent to be used for the treated subgrade, existing base, new subbase or new base is specified, it shall be determined by preliminary laboratory tests at the OWNER'S expense.

301.4.1.2. Base and Subbase Materials. Base and subbase materials shall meet the requirements shown on the plans or in the pertinent specifications.

301.4.1.3. Delivery and Storage. If asphalt base stabilization agent is furnished in trucks, each truck shall bear the weight of asphalt base stabilization agent measured on certified scales, or the CONTRACTOR shall place a set of standard platform truck scales or hopper scales at a location approved by the OWNER.

Asphalt base stabilization agent shall be stored and handled in tank, tanker or distributor truck until immediately before distribution on the road. Asphalt base stabilization agent shall be stored in freeze-proof containers.

301.4.2. Equipment. Machinery, tools and equipment necessary for proper performance of the work shall be on the project and approved by the OWNER prior to the beginning of construction operations. All machinery, tools and equipment used shall be maintained in a satisfactory and workmanlike manner.

301.4.3. Asphalt Emulsion Treatment Construction Methods.

301.4.3.1. General. It is a primary requirement of this specification to secure a completed course of treated material containing a uniform asphalt base stabilization agent mixture, free from loose or segregated areas, of uniform density and moisture content, well bound for its full depth, and with a smooth surface and suitable for placing subsequent courses. It shall be the responsibility of the CONTRACTOR to regulate the sequence of work, to use the proper amount of asphalt base stabilization agent, maintain the work and rework the courses as necessary to meet the above requirements.

Prior to beginning any asphalt base stabilization agent treatments, the roadbed shall be constructed and shaped to conform to the typical sections, lines and grades as shown on the plans or as established by the OWNER.

Table 301.4.1.1.(a) Asphalt Soil Stabilization Agent Requirements

Property	Test Method, Test Parameters	Required Value	
		Minimum	Maximum
Appearance	Visual Inspection	Brown Liquid	
Viscosity S.F. at 77°F Sec	ASTM D244 Emulsified Asphalts	5	175
Residue, % min	ASTM D244, modified[1]	55	65
Penetration 77°F, Sec		5	40
Miscibility Test	ASTM D244, modified[2]	No coagulation	
Moisture, wt %		-	45
Volatile %		25	-
% Non-Volatile Soluble in Trichloroethylene	AASHTO T 45-56	-	8
Accelerated Weathering (2-year exposure)	Federal Spec TT C-555 B, 40 ml	No material deterioration after exposure	
Resistance To wind and Driven Rain (@ 98 mph)	Federal Spec TT C-555 B, As 4ml sealer after cure	Passes/no wt. gain	
Ash, % wt.		-	8
Polymer, % wt.		-	4
Particle Charge	ASTM D244	Positive	
Flash Point	TCC	275°F	
Shaker Test 2- to 4-hrs.	Mix Burrell Wrist Action Shaker Model 75 set on Level 7, diluted 1 part water to 4 parts soil stabilizer, Sieve #40	-	1%

1. ASTM D244 Modified Evaporation Test for percent of residue is made by heating 50-gram sample to 300°F until foaming ceases, then cool immediately and calculate results.
2. Test procedure identical with ASTM D244, except that 0.02 Normal Calcium Chloride solution shall be used in place of distilled water.

301.4.3.2. General Construction.

301.4.3.2.1. Treatment for Materials-In-Place. Materials to be treated shall be excavated to the secondary grade (proposed bottom of asphalt base stabilization agent) and removed or windrowed to expose the secondary grade. Any wet or unstable material below the secondary grade shall be corrected by scarifying,adding asphalt base stabilization agent and compacting until it is of uniform stability. The excavated material shall then be spread to the desired cross section.

If the CONTRACTOR elects to use a cutting or pulverizing machine that shall remove the subgrade material accurately to the secondary grade and to pulverize the material at the same time, CONTRACTOR shall notbe required to expose the secondary grade or windrow the material. However, the CONTRACTOR shall be required to roll the subgrade before using the pulverizing machine and correct any soft areas that this rolling may reveal. This method shall be permitted only where a machine is provided which shall insure that the material is cut uniformly to the proper depth and which has cutters that shall place the secondary grade to a smooth surface over the entire width of the cut. The machine shall be of such design that a visible indication is given at all times that the machine is cutting to the proper depth.

301.4.3.2.2. Treatment for New Materials. The base and subbase material, as provided in the governing specifications, shall be delivered, placed and spread in the required amount per station. The material shall be manipulated as specified and thoroughly mixed prior to the addition of the asphalt base stabilization agent.

301.4.3.3. Asphalt Base Stabilization Agent Application. Asphalt base stabilization agent shall be spread only on that area where the mixing can be completed in the same working day. Asphalt base stabilization agent shall be mixed with water and applied as a thin water suspension. The distribution of asphalt stabilization agent at the rate shown on the plans shall be attained by successive passes over a measured surface of roadway until the proper moisture content and asphalt base stabilization agent content has been achieved.

The asphalt base stabilization agent shall be distributed at a uniform rate and in such a manner as to reduce heavy or light areas to a minimum. A motor grade can be used to cover the exposed asphalt base stabilization agent. If necessary, the material shall be sprinkled until a proper moisture content has been achieved.

301.4.3.4. Mixing. The application and mixing of asphalt base stabilization agent with the material shall be thorough. During the interval of time between application and mixing, asphalt base stabilization agent that has been exposed to the open air for a maximum time of 2-hours, or a shorter period when the breaking of the emulsion has occurred, shall not be accepted for payment. (*Breaking of the emulsion is when the emulsion is over exposed on the surface without mixing, thus turning it from a brown color to black. The color change is due to the evaporation of the water from the emulsion, thus rendering it ineffective in mixing in the soil, base or subbase material*). The CONTRACTOR is responsible for monitoring the application and the mix time of the asphalt stabilization agent with the soil, base or subbase material. The overexposed area shall be retreated with another application of asphalt base stabilization agent and mixed.

301.4.3.4.1. Treatment for Materials-In-Place. Material and asphalt base stabilization agent shall be thoroughly mixed by approved road mixers or other approved equipment and the mixing continued until a homogeneous, friable mixture of material and asphalt base stabilization agent is obtained, free from all clods or lumps. Materials containing plastic clay or other materials which shall not readily mix with asphalt base stabilization agent shall be mixed as thoroughly as possible, and meet the requirements of Table 301.4.3.4.1.(a) Asphalt Emulsion Treated Materials-In-Place when tested dry by laboratory sieve at the time of the asphalt base stabilization agent application, brought to the proper moisture content, sealed with a pneumatic roller, and left to cure 1 to 2 days as directed by the OWNER. During the curing period, the material shall be kept moist.

Table 301.4.3.4.1.(a) Asphalt Emulsion Treated Materials-In-Place

Sieve Size	Minimum Passing by Dry Weight[1,2]
1¾-in. (45mm)	100%
No. 4 (4.75mm)	60%

301.4.3.4.2. Treatment of New Material. The base or subbase material, asphalt base stabilization agent and required water shall be thoroughly mixed and blended by approved road mixers or other approved equipment and the mixing continued until a homogeneous, friable mixture is obtained. When the asphalt base stabilization agent is placed and mixed by the use of blades, the material shall be bladed as the asphalt base stabilization agent water mixture is applied; after the total amount has been placed, the mixture shall be thoroughly blended to the satisfaction of the OWNER.

301.4.3.4.3. Central Mixing Plant. The soil, asphalt base stabilization agent and water shall be mixed in a pugmill either of the batch or continuous-flow type. The plant shall be equipped with feeding and metering devices which shall add the soil, asphalt base stabilization agent and water into the mixer in the specified quantities. Soil and asphalt base stabilization agent shall be mixed sufficiently to prevent asphalt base stabilization agent balls from forming when water is added. Mixing shall continue until a uniform and intimate mixture of soil, asphalt base stabilization agent and water is obtained. The mixture shall be placed on the moistened subgrade in a uniform layer by an approved spreader or spreaders.

After mixing asphalt stabilization agent with the base or subbase material the following conditions shall be met:

(1) Not more than 3-hours shall elapse between the placement of soil-asphalt emulsion mixture in adjacent lanes and placement at any location except at longitudinal construction joints.
(2) Not more than 3-hours shall elapse between the start of spreading the soil-asphalt emulsion mixture and start of compaction.
(3) Not more than 4-hours shall elapse between the start of mixing and the start of compaction.

The layer of soil-asphalt base stabilization agent shall be uniform in thickness and surface contour, and in such quantity that the completed base shall conform to the required grade and cross section. Dumping of the mixture in piles or windrows upon the subgrade shall be permitted.

301.4.3.5. Compaction. Compaction of the mixture shall begin immediately after final mixing and in no case later than 2-days after final mixing. The material shall be aerated or sprinkled as necessary to provide optimum moisture content. At the start of compaction, the moisture in the mixture and in unpulverized soil lumps, based on oven-dry weights, shall be within minus-2- to plus-2-percent-of-optimum. The specified optimum moisture content and density shall be determined in the field on the representative samples of soil-asphalt base stabilization agent mixture obtained from the area being processed. Prior to the beginning of compaction, the mixture shall be in a loose condition for its full depth. The loose mixture shall be uniformly compacted to the specified density within 4-hours. Compaction shall begin at the bottom and shall continue until the entire depth of the mixture is uniformly compacted as shown on the plans or specified by the OWNER.

The compacted mixture shall have a uniform density of not less than 95-percent of the maximum density as determined by ASTM D698 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3)). Final moisture content shall be within minus-2- to plus-4-percent-of-optimum. If the soil-asphalt base stabilization agent mixture is wetted by rain so that the average moisture content exceeds the tolerance given at the time of final compaction, the entire section shall be reconstructed in accordance with this specification at the sole expense of the CONTRACTOR. After the soil and asphalt base stabilization agent mixture, except the top layer, is compacted, water shall be uniformly applied as needed and thoroughly mixed in with a spike tooth harrow or equal. The surface shall then be reshaped to the required lines, grades and cross sections and then lightly scarified to loosen any imprint left by the compacting or shaping equipment. After each section is completed, such tests as are necessary shall be made by the OWNER. If any portion fails to meet the density specified, it shall be reworked as necessary to obtain the specified density at the sole expense of the CONTRACTOR.

301.4.3.6. Finishing, Curing and Preparation for Surfacing. The resulting surface shall be thoroughly rolled with a pneumatic tire roller and "clipped", "skinned", and "tight-bladed" by a power grader to a depth of approximately ¼-in. (6mm), moving all loosened soil and asphalt base stabilization agent from the section. The surface shall then be thoroughly compacted with the pneumatic roller, adding small increments of moisture as needed during rolling. When directed by the OWNER, surface finishing methods maybe varied from this procedure, provided a dense, uniform surface, free of surface material, is maintained at its specified optimum during all finishing operations. Surface compaction and finishing shall proceed in such a manner as to produce, in not more than 4-hours, a smooth, closely knit surface, free of cracks, ridges or loose material, conforming to the drawn grade and line shown on the plans.

The completed section shall then be moist-cured for a minimum of 2-days before further courses are added, unless otherwise directed by the OWNER. In cases where, in the opinion of the Engineer, subgrade treatment or subbase sets up sufficiently to prevent objectionable damage from traffic, such layers may be opened to traffic after compaction. The surface of the compacted layer shall be kept moist until covered by other base or paving material or application of a curing seal of emulsified asphalt. If a curing seal is used, it shall be applied as soon as possible after completion of final rolling, at a rate of between 0.10- and 0.20-gallons-per-square-yard (0.5- to 1.0-liters-per-m^2), the exact rate to be determined by the OWNER. No equipment or traffic shall be permitted on asphalt base stabilization agent treated material for 12-hours after curing seal is applied, unless otherwise permitted by the OWNER.

301.4.3.7. Maintenance. The CONTRACTOR shall be required to maintain the completed asphalt stabilized base within the limits of its contract in good condition, satisfactory to the OWNER as to grade, crown and cross section until such time as the surface course is constructed. The CONTRACTOR shall immediately repair all irregularities or other defects that may occur at the CONTRACTOR'S expense. Repairs are to be made as directed by the OWNER and in a manner to insure restoration of a uniform surface and durability of the portion repaired.

301.4.4. Measurement and Payment. Asphalt base stabilization agent treatment shall be measured for payment in square-yards (m^2) for the thickness shown in the plans for the surface area of completed and accepted work. The measurement for asphalt base stabilization agent shall be by the gallon (liter).

Asphalt base stabilization agent treatment shall be paid for at the contract unit price per square yard (m^2), as provided in the proposal and contract. The contract unit price shall be the total compensation for preparing the roadbed; for loosening, pulverizing, application of asphalt base stabilization agent, water content in the asphalt base stabilization agent mixture and the mixing water; mixing, shaping, sprinkling, compacting, finishing, curing and maintaining; for manipulations required; and for all labor, equipment, fuels, tools and incidental necessary to complete the work, all in accordance with the plans and specifications. Asphalt base stabilization agent material measured as provided in this item shall be paid for a the unit price bid for "asphalt emulsion base stabilizer" which price shall be full compensation for furnishing the material; for all freight involved; for all unloading, storing and handling; and for all labor, equipment, fuels, tools and incidentals necessary to complete the work.

301.5. FLEXIBLE SUBBASE OR BASE (CRUSHED STONE/CONCRETE)

This item shall consist of a foundation course for a surface course or for other subbase or base courses; shall be constructed as herein specified in one or more courses in conformity with the typical section shown on the plans and to the lines and grades as established by the OWNER.

301.5.1. Material.

301.5.1.1. General. Should the CONTRACTOR elect to produce the material from local pits, the material shall be secured from sources approved by the OWNER. The pits as utilized shall be opened up in such a manner as to immediately expose the vertical faces of all the strata of acceptable material in the depth mined. Unless

otherwise directed, the material shall be secured in successive vertical cuts extending through all of the exposed strata, in order that a uniform mixed material shall be secured.

301.5.1.2. Tests and Physical Requirements. Tests shall be performed in accordance with ASTM D4318 Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils. The preparation of samples for testing according to ASTM D4318 shall be in accordance with the requirements of ASTM D2217 Practice for Wet Preparation of Soil Samples for Particle-Size Analysis and Determination of Soil Constants. The material shall also be tested under TxDOT Test Method Tex-116-E The Wet Ball for Determining the Disintegration of Flexible Base Materials. When a magnesium soundness value is shown on the plans the material shall be tested in accordance with Test Method Tex-411-A Soundness of Aggregate Using Sodium Sulfate or Magnesium Sulfate. Physical properties shall meet the requirements in Table 301.5.1.2.(a) Flexible Base or Subbase Material Requirements, according to specified grade.

Table 301.5.1.2.(a) Flexible Base or Subbase Material Requirements

Property	Grade 1		Grade 2	
Triaxial Class	1		1 to 2.3	
Minimum Compressive Strength at lateral pressure 0-psi at lateral pressure 15-psi (1.1-kg/cm^2)	45-psi (3.2-kg/cm^2) 175-psi (12.3-kg/cm^2)		35-psi (2.5-kg/cm^2) 175-psi (12.3-kg/cm^2)	
Master Grading	Sieve	Percent Retained	Sieve	Percent Retained
	1¾" ⅞" ⅜" No. 4 No. 40	0 10-35 30-50 45-65 70-85	2½" 1¾" No. 4 No. 40	0 0-10 45-75 60-85
Maximum Liquid Limit	35		40	
Maximum Plasticity Index	10		12	
Maximum Wet Ball Mill[1]	40		45	
Maximum increase in passing No. 40	20%		20%	
Maximum foreign material allowed	1%		1%	

1. When lightweight aggregates are used, the wet ball mill requirements shall not apply; lightweight aggregate shall meet the Los Angeles Abrasion, Pressure Slaking and Freeze Thaw requirements of TxDOT Item 303 Aggregate for Surface Treatment (Lightweight).

301.5.1.3. Rejection. Aggregate that fails to meet the requirements of these specifications may be rejected by the OWNER. Such rejection shall incur no cost to the OWNER. Aggregate sources from which materials are delivered with properties not meeting these specifications may be rejected as further supply sources to the project by the OWNER.

301.5.2. Construction Methods.

301.5.2.1. Preparation of Subgrade. Preparation of the subgrade shall be in conformity with the requirements of Item 301.3.3.3.1. Subgrade Preparation.

301.5.2.2. Placing. Immediately before placing the subbase or base course material, the subgrade shall be checked as to conformity with grade and section.

The material shall be delivered in approved vehicles of a uniform capacity. It shall be the charge of the CONTRACTOR that the required amount of specified material shall be delivered to secure the proper thickness of the completed subbase or base course. Material deposited on the subgrade shall be spread and shaped the same day. All material shall be moved at least once from the original position in which it is deposited. In the event of inclement weather or other unforeseen circumstances which render impracticable the spreading of the material during the first 24-hour period, the material shall be scarified and spread as directed by the OWNER. The material shall be sprinkled, if directed, and shall then be bladed, dragged and shaped to conform to the typical section as shown on the plans.

All areas and "nests" of segregated coarse or fine material shall be corrected or removed and replaced with well-graded material as directed by the OWNER. If additional binder is considered desirable or necessary after the material is spread and shaped, it shall be furnished and fully incorporated with the material in place by scarifying, harrowing, brooming or by other approved methods. The course shall be sprinkled as required and

compacted to the extent necessary to provide not less than the percent density as specified in Item 301.5.2.3. Density. In addition to the requirements specified for density, the full depth of flexible subbase or base shown on the plans shall be compacted to the extent necessary to remain firm and stable under construction equipment. After each course is completed, tests as necessary shall be made by the OWNER unless otherwise specified in the special provisions or in the plans. If the material fails to meet the density requirements, it shall be reworked as necessary to meet these requirements.

Throughout the entire operation, the shape of the course shall be maintained by blading. The surface, upon completion, shall be smooth and in conformity with the typical sections shown on the plans to the established lines and grades. On the surface on which pavement is to be placed, any deviation in excess of ½-in. in cross section in a length of 16-ft. (13mm in 5m) measured longitudinally shall be corrected by loosening, adding or removing material, reshaping and recompacting by sprinkling and rolling. All fractures, settlement, or segregation that develops shall be corrected immediately by scarifying the areas affected, adding suitable material as required, reshaping and recompacting by sprinkling and rolling.

Should the subbase or base course, due to any reason or cause, lose the required stability, density and finish before the surfacing is complete, it shall be recompacted and refinished at the sole expense of the CONTRACTOR.

301.5.2.3. Density. The density required under this item shall not be less than 92-percent compaction as determined by ASTM D1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)). Moisture content shall be within minus-2- to plus-4-of-optimum.

301.5.2.4. Courses. Non full depth asphalt pavements, paving types with flexible base under the curb and gutter shall be placed and compacted at the same time and in the same operation as the flexible base under the pavement. Where the subbase or base course exceeds 6-in. (15cm) in thickness, it shall be constructed in two or more courses of equal thickness as indicated on the typical section. A minimum course depth of 3-inches is recommended. The first course shall be placed and compacted under the curb and gutter and under the pavement. The curb and gutter shall then be built upon the first course. The final course of the flexible base shall be placed following the curing time as specified in Item 305.1. Concrete Curb and Gutter.

301.5.3. Measurement and Payment. Work and accepted materials as specified for this item shall be measured by the square-yard (m^2) of the required depth from plans and specifications completed flexible base as follows:

(1) Where no curb and gutter is in place or is to be constructed in connection with the flexible base, measurement shall be made to the lines shown on the plans or established as the edge of the base to be constructed.

(2) Where curb and gutter is in place or is proposed to be constructed in connection with the placing of the flexible base, measurement shall be made to the lip of the gutter. Material placed under the curb and gutter or behind the curb shall not be measured as flexible base but shall be considered as foundation courses for the curb and gutter.

The work performed and material placed (including additional binder if required) as prescribed for this item, measured as provided in this item, shall be paid for at the unit price bid per square-yard (m^2) for flexible base, which price shall be full compensation for preparation of subgrade, furnishing of material, hauling, blading, sprinkling, compacting and furnishing all of labor and equipment necessary to complete the work.

301.6. GEOTEXTILES USED IN PAVING APPLICATIONS

301.6.1. Materials.

301.6.1.1. Physical Properties. The fabric properties shall conform to those shown in Table 301.6.1.(a) Geotextiles for Paving, as determined by the Federal Highway Administration Task Force 25 Guidelines using ASTM Test Methods, except where noted.

301.6.1.2. Certification. The manufacturer, if required by the OWNER, shall provide documents stating the name and manufacturer, the chemical composition of the filaments or yarns and test values of the properties of the geotextile. The manufacturer must certify that the material meets or exceeds these specifications.

301.6.1.3. Rejection. Geotextile may be rejected for failure to meet any of the requirements of this specification.

Table 301.6.1.(a) Geotextiles for Paving

Designation (Test Method)	Characteristic	Average Roll Minimum Value
ASTM D4632 Grab Breaking Load and Elongation of Geotextiles	Grab Strength	80-lbs. @ 12-in.-per-minute (36.3kg @ 30.5-cm/min)
ASTM D4632	Elongation @ Break	50% @ 12-in.-per-minute (30.5-cm/min)
Tex-616-J, Construction Fabrics	Asphalt Retention	0.5-oz.-per-sq.-ft. (0.15-kg/m^2)
ASTM D276 Identification of Fibers in Textiles	Melting Point	300°F (150°C)

301.6.2. Construction Methods. Construction methods for each type unit shall be provided by the manufacturer and approved by the OWNER based on the site-specific use.

301.6.3. Measurement and Payment. If provided as a separate contract item, geotextile shall be measured by the square-yard (m^2), complete in place.

Geotextile, when provided as a separate pay item, shall be paid for by the square-yard (m^2), complete in place, which price shall include materials, hauling, placing, anchoring, and all other work necessary to achieve a functional geotextile layer(s) in the subbase or base layer. If not provided as a separate contract item, geotextile shall be considered subsidiary to those items provided for subbase or base preparation.

ITEM 302. ASPHALT PAVEMENT

302.1. DESCRIPTION

This Item establishes the requirements for asphalt construction. This Item includes material requirements and construction methods for emulsified asphalts, hot-mix asphalt pavement, performance graded (PG) asphalts and other miscellaneous asphaltic materials and polymer additives.

302.2. AGGREGATES FOR HOT-MIX ASPHALT PAVEMENT

302.2.1. General Requirements. Aggregates shall conform to the requirements contained in this Item 302.2. Aggregates for Hot-Mix Asphalt Pavement and shall be approved by the OWNER prior to use. The integrity of the aggregate shall be such as to produce a workable material within the limits contained in this specification.

302.2.1.1. Deleterious Substances. Aggregates shall be free from loam, clay balls or other injurious foreign matter occurring either free or as a coating on the aggregates.

302.2.1.2. Storage. Prior to stockpiling of aggregates, the area shall be cleaned of trash, weeds and grass and be relatively smooth. Aggregates shall be stockpiled in such a manner as to prevent mixing of one aggregate with another. Coarse aggregates shall be separated into stockpiles of different gradation, such as a large coarse aggregate and a small coarse aggregate stockpile and such that the grading requirements of the specified type shall be met when the piles are combined in the asphaltic mixture. No coarse aggregate stockpile shall contain more than 15-percent by weight of material that shall pass a No. 10 (2.0mm) sieve except as noted on the plans. Fine aggregate stockpiles may contain coarse aggregate in the amount of up to 20-percent by weight; however, the coarse aggregate shall meet the quality tests specified in Item 302.2.2. Coarse Aggregates. Suitable equipment of acceptable size shall be furnished by the CONTRACTOR to work the stockpiles and prevent segregation of the aggregates.

302.2.1.3. Quality and Testing Requirements. Test of aggregates, when required, shall be made in accordance with applicable Texas Department of Transportation tests or ASTM Test Methods, as shown in the tables below or as required by OWNER.

Requirements for hot-mix asphalt pavement aggregates are shown in Table 302.2.2.(a) Aggregate Quality Requirements.

302.2.1.4. Aggregate Rejection. Aggregates that fail to meet the requirements of these specifications may be rejected by the OWNER. Such rejection shall incur no cost to the OWNER. The OWNER may reject sources from which materials are delivered with properties not meeting these specifications. Such rejection shall incur no cost to the OWNER.

302.2.2. Coarse Aggregates. Coarse aggregates shall be that portion of the total aggregates retained on the No. 10 sieve (2.0mm). Coarse aggregates shall consist of clean, tough, durable fragments of crushed stone, crushed gravel, or steel slag as specified herein, of uniform quality throughout.

All coarse aggregates shall meet the requirements listed in Table 302.2.2.(a) Coarse Aggregate Quality Requirements.

Table 302.2.2.(a) Coarse Aggregate Quality Requirements[1]

Characteristic	Test Method	Value
Deleterious Material	Tex-217-F, Part I, Determining Deleterious Material in Coarse Aggregates (Bituminous Mixtures)	1.5% Max.
Decantation	Tex-217-F, Part II, Decantation Test for Coarse Aggregate (Bituminous Mixtures)	1.5% Max.
Los Angeles Abrasion	Tex-410-A, Abrasion of Coarse Aggregate Using the Los Angeles Machine (ASTM C131)	35% Max.
Magnesium Sulfate Soundness Loss, 5 Cycle	Tex-411-A, Soundness of Aggregate Using Sodium Sulfate or Magnesium Sulfate	30% Max. (lower value may be shown on plans)
Coarse Aggregate Angularity Two Crushed Faces	Tex-460-A, Part I, Determining Crushed Face Count	90% Min.
Flat Elongated Particles	ASTM D4791 Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate	20% Max. @ 3:1

1. Sampled during delivery to the plant or from the stockpile, unless otherwise shown on the plans.

302.2.3. Fine Aggregate. Fine aggregate may consist of crushed stone, crushed gravel, sand, and/or limestone or steel slag screenings.

Fine aggregate shall meet the requirements listed in Table 302.2.3.(a) Fine Aggregate Quality Requirements.

Table 302.2.3.(a) Fine Aggregate Quality Requirements[1]

Characteristic	Test Method	Value
Linear Shrinkage	Tex-107-E, Determining the Bar Linear Shrinkage of Soils	3% Max.
Sand Equivalent Value	Tex-203-F, Sand Equivalent Test	45 Min.

1. Sampled during delivery to the plant or from the stockpile, unless otherwise shown on the plans.

302.2.3.1. Sand. Sand material may constitute a part of the fine aggregates for hot-mix asphalt pavement. The fine aggregate portion of the sand passing the No. 40 (425-um) sieve shall meet the Linear Shrinkage requirement listed in Table 302.2.3.(a) Fine Aggregate Quality Requirements.

302.2.3.1.1. Gradation. Fine aggregate sand shall be that portion of the sand in the total aggregate passing the No. 10 (2.0mm) sieve. It shall be well graded and composed of sound, durable sand particles.

302.2.3.2. Limestone or Steel Slag Screenings. Limestone or steel slag screenings may constitute part or all of the fine aggregates for hot-mix asphalt pavement. Screenings shall be of the same or similar material for coarse aggregates. Where limestone rock screenings are specified for use, they shall be screenings resulting from crushing operation.

The fine aggregate portion passing the No. 40 (425-um) sieve shall meet the Linear Shrinkage requirement listed in Table 302.2.3.(a) Fine Aggregate Quality Requirements. Fine aggregates from each source shall meet Linear Shrinkage requirements.

302.2.3.2.1. Gradation. The limestone or steel slag screening shall meet the grading requirements in Table 302.2.3.2.1.(a) Limestone or Steel Slag Screenings Gradation unless otherwise shown on the plans.

When authorized by the OWNER, stone or steel slag screenings containing particles larger than ⅜-in. (9.5-mm) may be used but only that portion of the material passing the ⅜-in. (9.5-mm) sieve shall be considered as fulfilling the requirements for screenings when a minimum percent of screenings is specified for a particular mixture.

Table 302.2.3.2.1.(a) Limestone or Steel Slag Screenings Gradation

Sieve Size	Percent Passing by Weight
⅜-in. (9.5-mm)	100
Passing No. 200 (75-um)	0 to 30

302.2.4. Mineral Filler. Mineral filler shall consist of a thoroughly dry stone dust Portland cement or other mineral dust approved by the OWNER. All mineral filler shall meet the requirements listed in Table 302.2.4.(a) Mineral Filler Quality Requirements.

Table 302.2.4.(a) Mineral Filler Quality Requirements[1]

Characteristic	Test Method	Value
Linear Shrinkage	Tex-107-E, Determining the Bar Linear Shrinkage of Soils	3% Max.

1. Sampled during delivery to the plant or from the stockpile, unless otherwise shown on the plans.

302.2.4.1. Gradation. When tested by the method outlined in TxDOT Test Method Tex-200-F Sieve Analysis of Fine and Coarse Aggregates (Part 1 Dry Sieve Analysis (Based on Weight) or Part 3 Volumetric Sieve Analysis, as applicable), it shall meet the requirements of Table 302.2.4.1.(a) Mineral Filler Gradation.

Table 302.2.4.1.(a) Mineral Filler Gradation

Sieve Size	Percent Passing by Weight
No. 30 sieve (600-um)	95 to 100
No. 80 sieve (180-um)	Not Less Than 75
No. 200 sieve (75 um)	Not Less Than 55

302.3. BITUMINOUS MATERIALS

302.3.1. General. This Item consists of bituminous material, including performance graded asphalts, modified performance graded asphalts, asphalt cement, emulsified asphalt, and other miscellaneous asphaltic materials. Asphalt for use in paving shall be a refined asphalt produced from crude petroleum. The base asphalt shall be homogeneous and free from water and residue from distillation of coal, coal tar or paraffin oil and shall not foam when heated to 347°F (175°C).

302.3.1.1. Tests and Certification of Bituminous Materials. When tested according to ASTM or AASHTO test methods, the various materials shall meet the applicable requirements of this specification. At the time of delivery of each shipment of asphalt, the vendor supplying the material shall deliver to the CONTRACTOR certified copies of the test report. Two copies of the test reports shall be furnished to the OWNER. Test reports shall indicate the name of the vendor, type and grade of bituminous material delivered, date and point of delivery, quantity delivered, delivery ticket number, purchase order number, and results of the specified tests. The test report, signed by an authorized representative of the vendor, shall certify that the product delivered conforms to the specifications for the type and grade indicated. The certified test reports and the testing required in connection with the reports shall be at no cost to the OWNER.

Until the certified test reports and samples of the material have been checked by the OWNER to determine their conformity with the prescribed requirements, the material to which such report relates and any work in which it may have been incorporated as an integral component, shall be only tentatively accepted by the OWNER. Final acceptance shall be dependent upon the determination by the OWNER that the material involved fulfills the prescribed requirements.

302.3.1.2. Rejection. Any material specified in this section may be rejected for failure to meet any of the provisions for this specification, or for any defect causing it to be unsuitable for its intended use.

302.3.2. Performance Graded (PG) Asphalt Binders. Performance graded asphalt binders shall be smooth and homogeneous, shall be free from water, shall not foam when heated to 347°F (175°C) and shall meet the requirements for performance graded asphalt binders shown in Table 302.3.2.(a) Performance Graded Asphalt Binders.

PG binders shall show no separation when tested according to Tex-540-C Measurement of Polymer Separation on Heating in Modified Asphalt Systems. Separation testing is not required if one of the following conditions is met:

(1) The modifier is introduced separately at the mix plant either by injection in the asphalt line or mixer; or
(2) The binder is blended on site in continuously agitated tanks; or
(3) Binder acceptance is based on field samples taken from an in-line sampling port at the hot-mix plant after the addition of modifiers.

302.3.2.1. Modified Performance Graded Asphalt Binders. In addition to meeting the requirements in Table 302.3.2.(a) Performance Graded Asphalt Binders, modified performance graded asphalt binders shall also meet the requirements listed herein according to grade.

302.3.2.1.1. SBR Latex Rubber Modified Performance Graded Binders. Available grades include PG 64-28L, PG 70-28L, PG 70-22L, PG 76-22L, AND PG 82-22L. The manufacturer shall provide certification that SBR latex rubber was used in production of the binder. Ductility tested according to AASHTO T51: 39.2°F, 1-cm/min, cm, 70-cm minimum.

302.3.2.1.2. SBS Rubber Modified Performance Graded Binders. Available grades include PG 64-28S, PG 70-28S, PG 70-22S, PG 76-22S, AND PG 82-22S. The manufacturer shall provide certification that SBS rubber was used in production of the binder. Elastic recovery tested according to Tex-539-C Measurement of Elastic Recovery of Tensile Deformation Using a Ductilometer: 50°F, 55% minimum.

302.3.2.1.3. Tire Rubber Modified Performance Graded Binders. Available grades include PG 64-28TR, PG 70-28TR, PG 70-22TR, PG 76-22TR, and PG 82-22TR. The manufacturer shall provide certification that tire rubber was used in production of the binder. Elastic recovery tested according to Tex-539-C Measurement of Elastic Recovery of Tensile Deformation Using a Ductilometer: 50°F, 40% minimum.

302.3.2.1.4. Multigrade Modified Performance Graded Binders. Available grades include PG 64-28MG, PG 70-28MG, PG 70-22MG, PG 76-22MG, and PG 82-22MG. The manufacturer shall provide certification that gelling agent was used in production of the binder. Float test made according to AASHTO T50: 140°F, seconds, 1200 minimum.

Table 302.3.2.(a) Performance Graded Asphalt Binders

Performance Grade	PG 58			PG 64				PG 70				PG 76				PG 82		
	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28
Average 7-day maximum Pavement Design Temperature, °C[1]	58			64				70				76				82		
Minimum Pavement Design Temperature, °C[1] (i.e. design temperature shall be greater than shown)	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28	-34	-16	-22	-28
Original Binder																		
Flash Point Temperature, AASHTO T48: Minimum °C	230																	
Viscosity, AASHTO TP48[2,3] Maximum, 3.0 Pa*s, Test Temp, °C	135																	
Dynamic Shear, AASHTO TP5:[4] G*/sinδ, Minimum, 1.00-kPa Test Temperature @ 10-rad/s, °C	58			64				70				76				82		
Rolling Thin Film Oven (Tex-541-C)																		
Maximum Loss, percent	1.0																	
Dynamic Shear, AASHTO TP5: G*/sinδ, Minimum, 2.20-kPa Test Temperature @ 10-rad/s, °C	58			64				70				76				82		
Pressure Aging Vessel Residue (AASHTO PP1)																		
PAV Aging Temperature, °C	100																	
Dynamic Shear, AASHTO TP5: G*/sinδ, Maximum, 5000-kPa Test Temperature @ 10-rad/s, °C	25	22	19	28	25	22	19	28	25	22	19	28	25	22	19	28	25	22
Creep Stiffness, AASHTO TP1:[5,6] *S*, Maximum, 300-Mpa *m*-value, Minimum, 0.300 Test Temp @60s, °C	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18
Direct Tension, AASHTO TP3:[6] Failure Strain, Minimum, 1.0% Test Temp @ 1.0-mm/min, °C	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18	-24	-6	-12	-18

1. Pavement temperatures are estimated from air temperatures using an algorithm contained in the PGEXCEL3.XLS software program, may be provided by the specifying agency, or by following the procedures as outlined in AASHTO MP2 and PP28.
2. This requirement may be waived at the discretion of the specifying agency if the supplier warrants that the asphalt binder can be adequately pumped, mixed and compacted at temperatures that meet all applicable safety, environmental and constructability requirements. At test temperatures where the binder is a Newtonian fluid, any suitable standard means of viscosity measurement may be used, including capillary (AASTHO T201 or T202) or rotational viscometry (AASHTO TP48).
3. Viscosity at 135°C is an indicator of mixing and compaction temperatures that can be expected in the lab and field. High values may indicate high mixing and compaction temperatures. Additionally, significant variation can occur from batch to batch. CONTRACTORS should be aware that variation could significantly impact mixing and compaction operations. CONTRACTORS are therefore responsible for addressing any constructability issues which may arise.
4. For quality control of unmodified asphalt cement production, measurement of the viscosity of the original asphalt cement may be substituted for dynamic shear measurements of G*/sin(δ) at test temperatures where the asphalt is a Newtonian fluid. Any suitable standard means of viscosity measurement may be used, including capillary (AASHTO T201 or T202) or rotational viscometry (AASHTO TP48).
5. Silicone beam molds as described in AASHTO TP1-93 are acceptable for use.
6. If the creep stiffness is below 300-Mpa, the direct tension test is not required. If the creep stiffness is between 300- and 600-Mpa, the direct tension failure strain requirement can be used in lieu of the creep stiffness requirement. The m-value requirement must be satisfied in both cases.

302.3.2.2. Acceptance of Performance Graded (PG) Asphalt Binders.

302.3.2.2.1. Location of Manufacture. Performance graded binder acceptance procedures are dependant on where the binder is manufactured. The requirements are as follows.

Manufactured at the Source. PG binders manufactured at the source are normally approved at the source according to the applicable requirements of the OWNER. The OWNER may acquire field samples at any time, particularly if material quality is suspect.

Manufactured at the Job Site. If PG binders are manufactured at the job site, for example where SBR latex is injected at the hot mix plant, the following quality measures are required. Antistrip agents are not considered asphalt modifiers.

(1) Preconstruction. The CONTRACTOR shall provide the OWNER with a 1-quart sample of the proposed binder and a test report showing compliance with the required performance grade. The sample and test report will be forwarded to OWNER for verification testing. If the OWNER chooses to verify that the sample meets specifications, the OWNER will complete verification testing within ten (10) working days after receipt of the sample. If the OWNER chooses to verify the sample, then the sample shall be verified before mixture production is allowed to begin.

(2) Construction. A sampling port is required which meets the requirements of AASHTO T40 Practice for Sampling Bituminous Materials, Section 9, "Sampling From Pipelines During Loading or Unloading". This sampling port shall be located on the asphalt line before introduction of the asphalt into the mix plant and shall be downstream from the addition of any modifiers and any dispersing or mixing equipment associated with their introduction.

Sample containers shall be provided by the CONTRACTOR and shall be clean, double friction top round 1-quart cans. All samples shall be taken by the CONTRACTOR, and witnessed by the Engineer.

All samples shall be taken from the sampling port after a sufficient amount of asphalt is run out and wasted, in order to clear any residual asphalt that builds up in the sampling port. All samples shall be taken in a clean, 1-gallon can, immediately stirred and used to fill three (3) 1-quart sample cans. The cans shall be delivered to the OWNER. The OWNER will choose one sample can for testing and the other cans are retained until testing is complete, in case the original sample is lost or damaged.

302.3.2.2.2. Sampling Frequency. A sample of the PG binder may be taken from each mixture production day, at a time determined by the OWNER. The sample from the first day's production may be subjected to verification testing. Additionally, throughout the duration of the project, the OWNER may randomly select binder samples for verification testing.

302.3.2.2.3. Verification Testing. OWNER may perform verification testing on all construction samples. The OWNER will complete verification testing within 10 working days after receipt of the sample. For verification testing which fails to confirm the required performance grade, the CONTRACTOR shall review the manufacturing process to locate the source of the problem. The OWNER may stop production until the CONTRACTOR can show that the next binder produced will meet the specifications. The OWNER may require materials not meeting the specification requirements to be removed and replaced at the CONTRACTOR's expense.

302.3.3. Asphalt Cement. Asphalt cement is bituminous liquid binder. The material for asphalt cement shall be homogeneous, shall be free from water, shall not foam when heated to 347°F (175°C) and shall meet the requirements of Table 302.3.3.(a) Requirements for Asphalt Cement.

Table 302.3.3.(a) Requirements for Asphalt Cement

Property, Test Parameters	Value According to Grade							
	AC-3		AC-5		AC-10		AC-20	
	Min	Max	Min	Max	Min	Max	Min.	Max
Viscosity, 140°F (60°C), Stokes	250	350	400	600	800	1200	1600	2400
Viscosity, 275°F (135°C), Stokes	1.1	—	1.4	—	1.9	—	2.5	—
Penetration, 77°F, (25°C) 100-g, 5-sec.	210	—	135	—	85	—	55	—
Flash point C.O.C., °F(°C)	425 (220)	—	425 (220)	—	450 (230)	—	450 (230)	—
Solubility in trichloroethylene (%)	99.0	—	99.0	—	99.0	—	99.0	—
Tests on residues from thin film oven test: Viscosity, 140°F (60°C), Stokes	—	900	—	1500	—	3000	—	6000
Ductility, 77°F (25°C) 5-cms-per-min, cms.	100	—	100	—	70	—	50	—
Spot Test	Negative for all grades							

302.3.3.1. Polymer Modified Asphalt Cement. For surface treatment applications, a polymer additive consisting of an anionic emulsion of styrene-butadiene low-temperature copolymer shall be added to the AC-5 or AC-10 asphalt when specified on the plans or in the specifications in the contract. The polymer additive shall consist of two-percent (by weight) polymer additive (solids basis) which has good storage stability. Polymer additive shall possess the properties specified in Item 302.3.3.1.1. Polymer Additive Properties. The manufacturer shall furnish the actual styrene-butadiene rubber (SBR) content for each batch of polymer emulsion. This information shall accompany all shipments to facilitate proper addition rates.

The finished polymer modified asphalt cement blend shall be smooth, homogeneous, and comply with the requirements in Table 302.3.3.1.(a) Polymer Modified Asphalt Requirements.

Table 302.3.3.1.(a) Polymer Modified Asphalt Requirements

Property	Test Method, Test Parameters	Value According to Grade	
		AC-5 + 2% Polymer Solids	AC-10 + 2% Polymer Solids
Minimum SBR Content	Tex-533-C Determining Polymer Additive Percentages in Polymer Modified Asphalt Cements, IR Determination[1]	2.0% Solids By Wt.	2.0% Solids By Wt.
Penetration	AASHTO T49, 100-G, 5-Sec, 77°F	120 Min	80 Min
Minimum Viscosity	AASHTO T202, 140°F	700-Poise	1300-Poise
Maximum Viscosity	AASHTO T202, 275°F	7.0-Poise	8.0-Poise
Ductility	AASHTO T51, 39.2°F, 5-cm/Min	70-cm, Min	60-cm, Min
Separation of Polymer	Tex-540-C Measurement of Polymer Separation on Heating in Modified Asphalt Systems, After 48-Hrs. at 325°F	None	None

1. The asphalt supplier shall furnish the OWNER samples of the asphalt cement and polymer emulsion used in making the finished product.

302.3.3.1.1. Polymer Additive Properties. The polymer additive shall be an emulsion of styrene-butadiene low-temperature copolymer in water. The emulsion shall have good storage stability and possess the properties in Table 302.3.3.1.1.(a) Polymer Additive Requirements.

Table 302.3.3.1.1.(a) Polymer Additive Requirements

Property	Value
Monomer Ratio of Polymer (butadiene to styrene)	$\frac{73 \pm 5}{27 \pm 5}$
Minimum Solids Content (percent by weight)	45
Viscosity of Emulsion at 77 ± 1°F, cps, max (No.3 spindle, 20-rpm, Brookfield RVT Viscometer)	2000

302.3.4. Emulsified Asphalt. Emulsified asphalt shall be composed of a paving asphalt base uniformly emulsified with water. It shall be homogeneous throughout and, when stored, shall show no separation within 30-days after delivery. Emulsified asphalt shall meet the requirements for the specified type and grade shown in Tables 302.3.4.(a) through (d).

302.3.4.1. Testing Requirements. Test reports and certification shall be made for emulsified asphalt in accordance with Item 302.3.1.1. Tests and Certification of Bituminous Materials.

302.3.4.2. Temperature. Emulsified asphalt may be reheated, but at no time after loading for transportation from refinery to the purchaser shall the temperature of the emulsion be raised above 160°F (70°C). During reheating, the emulsified asphalt shall be agitated to prevent localized overheating. Emulsified asphalt shall not be permitted to cool to a temperature of less than 40°F (4°C). Unless otherwise specified, emulsified asphalt shall be applied at a temperature within the limits specified in Table 302.5.(a) Requirements for Storage, Heating and Application Temperature. CONTRACTOR shall furnish and keep on the site an accurate thermometer suitable for determining the temperature of the emulsified asphalt.

Table 302.3.4.(a). Tests and Properties of Anionic Emulsions

Property	Rapid Setting				Medium Setting		Slow Setting			
	Type - Grade									
	RS-2		RS-2h		MS-2		SS-1		SS-1h	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol at 77°F, sec	-	-	-	-	-	-	20	100	20	100
at 122°F, sec	150	400	150	400	100	300	-	-	-	-
Sieve Test, %	-	0.10	-	0.10	-	0.10	-	0.10	-	0.10
Miscibility (Standard Test)	-	-	-	-	-	-	Passing		Passing	
Cement Mixing, %	-	-	-	-	-	-	-	2.0	-	2.0
Demulsibility, 35-ml of 0.02 N $CaCl_2$, %	60	-	60	-	-	30	-	-	-	-
Storage Stability, 1-day, %	-	1	-	1	-	1	-	1	-	1
Freezing Test, 3 cycles[1]	-	-	-	-	Passing		Passing		Passing	
Distillation Test:										
Residue by Distillation, % by weight	65	-	65	-	65	-	60	-	60	-
Oil Distillate, % by volume of emulsion	-	½	-	½	-	½	-	½	-	½
Tests on Residue from Distillation:										
Penetration at 77°F, 100 g, 5 sec	120	160	80	110	120	160	120	160	70	100
Solubility in Trichloroethylene, %	97.5	-	97.5	-	97.5	-	97.5	-	97.5	-
Ductility at 77°F, 5 cm/min, cm	100	-	80	-	100	--	100	-	80	-

1. Applies only when the Engineer designates material for winter use.

Table 302.3.4.(b). Tests and Properties of High Float Anionic Emulsions

Property	Rapid Setting		Medium Setting	
	Type - Grade			
	HFRS-2		AES-300	
	Min	Max	Min	Max
Viscosity, Saybolt Furol at 77°F, sec	-	-	75	400
at 122°F, sec	150	400	-	-
Sieve Test, %	-	0.10	-	0.10
Coating Ability and Water Resistance:				
Coating, dry aggregate	-	-	good	
Coating, after spraying	-	-	fair	
Coating, wet aggregate	-	-	fair	
Coating, after spraying	-	-	fair	
Demulsibility 35-ml of 0.02 N $CaCl_2$, %	50	-	-	-
Storage Stability Test, 1-day, %	-	1	-	1
Distillation Test:				
Residue by Distillation, % by weight	65	-	65	-
Oil Distillate, by volume of emulsion, %	-	1/2	-	5
Tests on Residue from Distillation:				
Penetration at 77°F, 100 g, 5 sec	100	140	300	-
Solubility in Trichloroethylene, %	97.5	-	97.5	-
Ductility at 77°F, 5 cm/min, cm	100	-	-	-
Float Test at 140°F, sec	1200	-	1200	-

Table 302.3.4.(c). Tests and Properties of Cationic Emulsions

Property	Rapid Setting				Medium Setting				Slow Setting			
	Type - Grade											
	CRS-2		CRS-2h		CMS-2		CMS-2s		CSS-1		CSS-1h	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Viscosity, Saybolt Furol												
at 77°F, sec	-	-	-	-	-	-	-	-	20	100	20	100
at 122°F, sec	150	400	150	400	100	300	100	300	-	-	-	-
Sieve Test, %	-	0.10	-	0.10	-	0.10	-	0.10	-	0.10	-	0.10
Cement Mixing, %	-	-	-	-	-	-	-	-	-	2.0	-	2.0
Demulsibility, 35 ml 0.8 percent												
sodium dioctyl sulfosuccinate, %	40	-	40	-	-	-	-	-	-	-	-	-
Storage Stability, 1 day, %	-	1	-	1	-	1	-	1	-	1	-	1
Coating Ability and Water												
Resistance:												
Coating, dry aggregate	-	-	-	-					-	-	-	-
Coating, after spraying	-	-	-	-	good		good		-	-	-	-
Coating, wet aggregate	-	-	-	-	fair		fair		-	-	-	-
Coating, after spraying	-	-	-	-	fair		fair		-	-	-	-
Particle Charge Test					fair		fair					
	positive		positive		positive		positive		positive		positive	
Distillation Test:												
Residue by Distillation, % by wt	65	-	65	-	65	-	65	-	60	-	60	-
Oil Distillate, % by volume of												
Emulsion	-	½	-	½	-	7	-	5	-	½	-	½
Tests on Residue from Distillation:												
Penetration at 77°F,100-g,5-sec	120	160	80	110	120	200	300	-	120	160	80	110
Solubility in Trichloroethylene, %	97.5	-	97.5	-	97.5	-	97.5	-	97.5	-	97.5	-
Ductility at 77° F, 5 cm/min, cm	100	-	80	-	100	-	-	-	100	-	80	-

Table 302.3.4.(d). Tests and Properties of Polymer Modified Emulsions

Property	High Float Anionic Rapid Setting		Cationic Rapid Setting	
	Type - Grade			
	HFRS-2P		CRS-2P	
	Min	Max	Min	Max
Polymer Content, percent by weight of the distillation residue [1]	3.0	-	3.0	-
Viscosity, Saybolt Furol at 122°F, sec	150	400	150	400
Storage Stability Test, 1-day, %	-	1	-	1
Demulsibility, 35-ml of 0.02 N $CaCl_2$, %	40	-	-	-
Demulsibility, 35-ml 0.8-percent sodium				
dioctyl sulfosuccinate, %	-	-	40	-
Sieve Test, %	-	0.10	-	0.10
Particle Charge Test	-		Positive	
Distillation Test:[2]				
Oil distillate, by volume of emulsion, %	-	½	-	½
Residue, % by wt	65	-	65	-
Tests on Residue from Distillation:				
Float Value at 140°F, sec	1200	-	-	-
Penetration, 77°F, 100-g, 5-sec	100	140	110	150
Ductility, 39.2°F, 5-cm/min, cm	50	-	50	-
Viscosity at 140°F, poises	1500	-	1300	-
Solubility in Trichloroethylene, %	97	-	97	-

1. The emulsion supplier shall furnish the OWNER samples of the asphalt cement and polymer used in making the finished emulsion.
2. The temperature on the lower thermometer shall be brought slowly to 350°F plus or minus 10°F and maintained at this temperature for 20-minutes. The total distillation shall be completed in 60-minutes plus or minus 5-minutes from the first application of heat.

302.3.5. Emulsions for Priming, Curing and Erosion Control (PCE).

302.3.5.1. General Use Emulsions. The emulsion shall be a slow curing anionic or cationic emulsion of a petroleum based material in water. The supplier must state whether the material supplied is cationic or anionic. Such emulsions may be used for priming of base materials, curing seal for stabilized base materials, and erosion control applications such as dust control, soil surface stabilization, or mulch binder.

Emulsion properties shall fall within the ranges as shown in Table 302.3.5.1.(a) Tests and Properties of PCE (General Use) Emulsions. The base emulsion material may be diluted with water to achieve the desired concentration of residual with maximum dilution rates as indicated in Table 302.3.5.1.(b) Maximum Dilution Rate.

Table 302.3.5.1.(a) Tests and Properties of PCE (General Use) Emulsions

Property	Test Methods, Test Parameters	Minimum	Maximum
Viscosity	Saybolt Furol, 25°C	10-seconds	100-seconds
Sieve Test	Sieve Test	-	0.1%
Miscibility	ASTM D244 Emulsified Asphalts, modified[1]	Passing	-
Residue by Evaporation	ASTM D244, modified[2]	60% by weight	-
Tests on Residue from Evaporation	Flash Point, C.O.C. Kinematic Viscosity, 60°C	200°C 100-cSt	- 350-cSt

1. Except the dilution shall use 350-ml of distilled or deionized water and a 100-ml beaker.
2. Except the sample shall remain in the oven until foaming ceases, then cooled and weighed.

Table 302.3.5.1.(b) Maximum Dilution Rate

Use	Maximum Dilution Rate
Priming of Base Materials	(1) part PCE to (3) parts water
Curing Seal	(1) part PCE to (3) parts water
Erosion Control	(1) part PCE to (7) parts water

302.3.5.2. Emulsions Specifically for Priming and Curing. Product shall be a water-based emulsion composed of petroleum of resin oil base with selective hardening and drying agents to form a road prime and sealer. Emulsions may be provided either concentrated or pre-diluted. Concentrated prime and/or road sealing emulsions specified in this Item 302.3.5.2. shall meet the requirements of Table 302.3.5.2.(a) Requirements for MCS-600-C – Concentrated. Diluted prime and/or road sealing emulsions specified in this Item 302.3.5.2. shall meet the requirements of Table 302.3.5.2.(b) Requirements for MCS-600-D – Dilute.

Table 302.3.5.2.(a) Requirements for MCS-600-C – Concentrated

Property	Test Methods, Test Parameters	Required Value	
		Minimum	Maximum
Appearance	Visual Inspection	Brown Liquid	
Viscosity S.F. at 77°F Sec	ASTM D244 Emulsified Asphalts	15	200
Residue, % min	ASTM D244, modified[1]	56	65
Miscibility Test	ASTM D244, modified[2]	No coagulation	
Moisture, wt %		-	48
Volatile %		35	-
% Non-Volatile Soluble in Trichloroethylene	AASHTO T 45-56	-	6
Accelerated Weathering (2-year exposure)	Federal Spec TT C-555 B, 40 ml	No material deterioration after exposure	
Resistance To wind and Driven Rain (@ 98 mph)	Federal Spec TT C-555 B, As 4ml sealer after cure	Passes/no wt. gain	
Ash, % wt.		-	8
Polymer, % wt.		-	4
Freeze Test (Concentrated Form)	3-cycle	Pass	
Particle Charge	ASTM D244	Positive	
Shaker Test 2- to 4-hrs.	Mix Burrell Wrist Action Shaker Model 75 set on Level 7, diluted 1 part water to 4 parts road prime, Sieve #40	-	1%

1. ASTM D244 Modified Evaporation Test for percent of residue is made by heating 50-gram sample to 300°F until foaming ceases, then cool immediately and calculate results.
2. Test procedure identical with ASTM D244, except that 0.02 Normal Calcium Chloride solution shall be used in place of distilled water.

Table 302.3.5.2.(b) Requirements for MCS-600-D – Dilute

Property	Test Methods, Test Parameters	Required Value	
		Minimum	Maximum
Appearance	Visual Inspection	Brown Liquid	
Viscosity S.F. at 77°F Sec	ASTM D244 Emulsified Asphalts	5	70
Residue, % min	ASTM D244, modified[1]	10	20
Miscibility Test	ASTM D244, modified[2]	No coagulation	
Moisture, wt %		-	90
Volatile %		90	-
% Non-Volatile Soluble in Trichloroethylene	AASHTO T 45-56	0	2
Accelerated Weathering (2-year exposure)	Federal Spec TT C-555 B, 40 ml	No material deterioration after exposure	
Resistance To wind and Driven Rain (@ 98 mph)	Federal Spec TT C-555 B, As 4ml sealer after cure	Passes/no wt. gain	
Ash, % wt.		-	2
Polymer, % wt.		-	1
Freeze Test (Concentrated Form)	3-cycle	Pass	
Particle Charge	ASTM D244	Positive	
Shaker Test 2- to 4-hrs. (non-diluted)	Mix Burrell Wrist Action Shaker Model 75 set on Level 7, Sieve #40	-	1%

1. ASTM D244 Modified Evaporation Test for percent of residue is made by heating 100-gram sample to 300°F until foaming ceases, then cool immediately and calculate results.
2. Test procedure identical with ASTM D244, except that 0.02 Normal Calcium Chloride solution shall be used in place of distilled water.

302.3.6. Specialty Emulsions. Specialty emulsions shall be slow setting emulsions of a petroleum-based material in water. Specialty emulsions may be used for purposes such as tack coat, fog seals, priming base materials, curing seal for stabilized base materials, recycled/reclaimed asphalt pavement (RAP) rejuvenator, repairing surface deficiencies, and erosion control applications. Specialty emulsions are classified as either Restorative Seal or Maltene Rejuvenator and shall meet the requirements for the specified type shown in Table 302.3.6.(a) Requirements for Restorative Seal or Table 302.3.6.(b) Requirement for Maltene Rejuvenator, respectively. Specialty emulsions shall be freeze stabilized and if freezing has occurred a homogeneous mixture shall be obtained when the material has thawed and been thoroughly mixed.

Table 302.3.6.(a) Requirements for Restorative Seal

Properties	Test Methods	Requirements
Test on Emulsion		
Viscosity @77°F (25°C), SES	ASTM D244 Emulsified Asphalts	25 - 150
Sieve Test, % by Wt.	ASTM D244, modified[1]	0.1 Max.
Particle Charge Test	ASTM D244	Positive
Cement Mixing Test, % by Wt.	ASTM D244	2.0 Max.
Pumping Stability	See Note 2.	Pass
5-day Settlement Test, % by Wt.	ASTM D244	5.0 Max.
Residue, % Wt.	ASTM D244, modified[3]	64 Min.
Test on Residue from Distillation		
Viscosity @ 140°F (60°C), cSt	ASTM D2170 Kinematic Viscosity of Asphalts (Bitumens)	1,000 – 4,000
Maltene Distribution Ratio[4]	ASTM D2006-70 Method of Test for Characteristic Groups in Rubber Extender and Processing Oils by the Precipitation Method (Discontinued 1975)	0.7 – 1.1
PC/S Ratio[4]	ASTM D2006-70	0.5 Min.
Asphaltenes, % Wt.	ASTM D2006-70	11.00 Max.

1. Test procedure identical with ASTM D244 except that distilled water shall be used in place of two-percent sodium oleate solution.
2. Pumping stability is determined by charging 15-ounces (450-ml) of emulsion into 30-ounce (one-liter) beaker and circulating the emulsion through a gear pump (Roper 29.B22621) having ¼" inlet and outlet. The emulsion passes if there is not significant oil separation after circulating ten-minutes.
3. ASTM D244 Evaporation Test for percent of residue is modified by heating 2-ounces (50-gram) sample to 300°F (149°C) until foaming ceases, then cooling immediately and calculating results.
4. In the Maltene Distribution Ratio Test by ASTM Method D2006-70:

$(PC + A_1) \div (S + A_2)$

PC=Polar Compounds A_1=First Acidaffins
A_2= Second Acidaffins S= Saturated Hydrocarbons

Table 302.3.6.(b) Requirement for Maltene Rejuvenator

Properties	Test Methods		Requirements	
	ASTM	AASHTO	Min.	Max.
Test on Emulsion				
Viscosity @77°F (25°C), SES	D244 Emulsified Asphalts	T-59	15	40
Residue, % Wt.	D244 (Mod)[1]	T-59 (Mod)	60	65
Miscibility Test	D244 (Mod)[2]	T-59 (Mod)	No Coagulation	
Sieve Test, % by Wt.	D244 (Mod)[3]	T-59 (Mod)	-	0.1
Particle Charge Test	D244	T-59	Positive	
Percent Light Transmittance	See Note 4.		-	30
Test on Residue from Distillation				
Flash Point, COC, °F	D92 Flash and Fire Points by Cleveland Open Cup	T-48	385	-
Viscosity @ 140°F (60°C), cSt	D445 Kinematic Viscosity of Transparent and Opaque Liquids (the Calculation of Dynamic Viscosity)	-	100	200
Asphaltenes, % Wt.	D2006-70 Method of Test for Characteristic Groups in Rubber Extender and Processing Oils by the Precipitation Method (Discontinued 1975)	-	-	1.0
Maltene Distribution Ratio[5]	D2006-70		0.3	0.6
PC/S Ratio[5]	D2006-70	-	0.5	-
Saturated Hydrocarbons, S[5]	D2006-70	-	21	28

1. ASTM D244 Modified Evaporation Test for percent of residue is made by heating 2-ounces (50-grams) sample to 300°F (149°C) until foaming ceases, then cool immediately and calculate results.
2. Test procedure identical with ASTM D244 except that 0.02 Normal Calcium Chloride solution shall be used in place of distilled water.
3. Test procedure identical with ASTM D244 except that distilled water shall be used in place of two-percent sodium oleate solution.
4. Test according to Attachment "Standard Procedure for Determining Percent Light Transmittance of Maltene Rejuvenator, Restorative Seal, and PCE Material" in TxDOT Special Provision to Item 300 for Maltene Rejuvenator (Waco District).
5. Chemical composition by ASTM Method D2006-70:
   $(PC + A_1) \div (S + A_2)$
   PC=Polar Compounds A_1=First Acidaffins
   A_2= Second Acidaffins S= Saturated Hydrocarbons

302.3.7. Emulsion for In-Place Asphalt Recycling. Emulsion shall be designed to be a recycling agent to be mixed at ambient temperature with existing in-place asphalt, native or selective material and or Recycled Asphalt Pavement (RAP) material. Product shall be a water miscible emulsion. Asphaltene, Resins, Cyclics, Saturates content must be specifically formulated based on laboratory data of existing material in relation to rejuvenation demand and any added RAP material. Product shall meet minimums and fall within the ranges specified in Table 302.3.7.(a) Emulsion Requirements for In-Place Asphalt Recycling.

Table 302.3.7.(a) Emulsion Requirements for In-Place Asphalt Recycling

Properties	Test Methods, Test Parameters	Requirements	
		Min.	Max.
Test on Emulsion			
Viscosity	Saybot Furol, 122°F	-	185
Sieve %		-	1.0
Particle Charge		Positive	
Specific Gravity @ 77°F		0.910	1.16
Cement Mixing Test	ASTM D244	Passing	
Distillation			
Residue; % from Distillation @ 325°F		60	68
Test on Residue from Distillation			
Penetration, 77°F Extrapolation function		1400	-
Asphaltene, %		3.1	10.1
Resins, % wt.		1.2	8.9
Cyclics		65.0	95.0
Saturates		2.8	18.3
Flash Point C.O.C.		400°F	-

302.4. FIBROUS REINFORCEMENT FOR ASPHALT

302.4.1. General. At the OWNER'S option, fibrous reinforcement may be used unless otherwise shown on the plans or in the contract documents. Fibrous reinforcement shall not be used as a replacement for any reinforcement required for structural purposes.

302.4.2. Material and Tests. Fibers for reinforcement of asphalt shall be cellulose tested by the methods and meeting the criteria in Table 302.4.2.(a) Cellulose Fiber Requirements.

Table 302.4.2.(a) Cellulose Fiber Requirements

Property	Test Methods	Requirements
Sieve Analysis		
Method A	Alpine Sieve Analysis[1]	
Fiber Length		0.25" (maximum)
Passing No. 100 sieve		70% (±10%)
Method B	Mesh Screen Analysis[2]	
Fiber Length		0.25" (maximum)
Passing No. 20 sieve		85% (± 10%)
Passing No. 40 sieve		65% (±10%)
Passing No. 140 sieve		30% (±10%)
Ash Content	See Note 3.	18% (± 5%) non-volatiles
pH	See Note 4.	7.5 (± 1.0%)
Oil Absorptions	See Note 5.	5.0 (± 1.0%) (times fiber weight)
Moisture Content	See Note 6.	< 5% (by weight)

1. Method A - Alpine Sieve Analysis. This test is performed using an Alpine Air Jet Sieve (Type 200 LS). A representative 5-gram sample of fiber is sieved for 14-minutes at a controlled vacuum of 11-psi. The portion remaining on the screen is weighed.
2. Method B - Mesh Screen Analysis. This test is performed using standard No. 20, 40, 60, 80, 100, 140 sieves, nylon brushes and a shaker. A representative 10-gram sample of fiber is sieved, using a shaker and 2 nylon brushes on each screen. The amount retained on each sieve is weighed and the percentage passing calculated. Repeatability of this method is suspect and needs to be verified.
3. Ash Content. A representative 2- to 3-gram sample of fiber is placed in a tared crucible and heated between 1100°F and 1200°F for not less than 2-hours. The crucible and ash are cooled in a desiccator and reweighed.
4. pH Test. 5-grams of fiber is added to 100-ml of distilled water, stirred and let sit for 30-minutes. The pH is determined with a probe calibrated with pH 7.0 buffer.
5. Oil Absorption Test. 5-grams of fiber is accurately weighed and suspended in an excess of mineral spirits for not less than 5-minutes to ensure total saturation. It is then placed in a screen mesh strainer (approximately 0.5-square-millimeter hole size) and shaken on a wrist action shaker for 10-minutes (approximately 1¼-inch motion at

240-shakes-per-minute). The shaken mass is then transferred without touching, to a tared container and weighed. Results are reported as the amount (number of times its own weight) the fibers are able to absorb.
6. Moisture Content. 10-grams of fiber is weighed and placed in a 250°F forced air oven for 2-hours. The sample is then reweighed immediately upon removal from the oven.

302.4.3. Rejection. Fibrous reinforcement for asphalt may be rejected for failure to meet any of the requirements of this specification.

302.5. STORAGE, HEATING AND APPLICATION TEMPERATURE OF BITUMINOUS MATERIALS

Asphalt materials should be applied at the temperature that provides proper and uniform distribution. Within practical limits, higher temperatures than necessary should be avoided. Satisfactory application should be obtained within the recommended ranges shown in Table 302.5.(a) Requirements for Storage, Heating and Application Temperature. No material shall be heated above the maximum temperature shown. Performance graded asphalt binders containing particulate or polymer modifiers may be susceptible to separation of the modifier. Appropriate circulation or agitation in storage shall be provided if separation of the modifier is expected or suspected, and in every case when the modified binder will be stored at elevated temperatures for more than one day before use.

WARNING TO CONTRACTOR: Attention is called to the fact that asphaltic materials are highly flammable. Heating of asphaltic materials constitutes a fire hazard to various degrees. The utmost care shall be taken to prevent open flames of any kind from coming in contact with the asphaltic material or the gases of same. Proper precautions should be used in all cases. The CONTRACTOR shall be responsible for any fires or accidents which may result from heating the asphaltic materials.

Binder or modifier supplier instructions regarding recommended application and storage temperatures shall supersede the guidelines below.

Table 302.5.(a) Requirements for Storage, Heating and Application Temperature

Material Type-Grade	Application and Mixing		Heating and Storage
	Recommended Range °F (°C)	Maximum Allowable °F (°C)	Maximum °F (°C)
All PG Binders	275-375 (135-191)	375 (191)	400 (204)
AC-3, 5, 10, 20	275-325 (135-163)	350 (177)	400 (204)
Emulsions			
SS-1, SS-1h, SS-1P, CSS-1h	50-130 (10-54)	140 (60)	140 (60)
RS-2, RS-2h, MS-2, CRS2h, CRS-2P, CMS-2, CMS-2s, HFRS-2, HFRS-2P, AES-300	110-160 (43-71)	170 (77)	170 (77)
PCE, Restorative Seal or Maltene Rejuvenator	Ambient = 72-130 (22-54)	140 (60)	140 (60)

302.6. EMULSIFIED ASPHALT TREATMENT

302.6.1. Description. Emulsified asphalt treatment shall consist of one or more applications of a mixture of emulsified asphalt of the proportion and type specified on the plans and water. The mixture shall be applied at the rate specified on the plans. It is to be used as a base treatment, earthwork seal, prime coat or dust preventative. This mixture may be applied to the base course, subgrade, shoulders or detours at the locations and to the extent shown on plans or as directed by the OWNER.

302.6.2. Materials. The amount of emulsified asphalt in the mixture, expressed as a percent by volume of the total mixture, shall be within the limits specified on the plans. When tested by approved laboratory methods, the emulsified asphalt used shall meet the requirements of Item 302.3.4. Emulsified Asphalt or Item 302.3.5. Emulsions for Priming, Curing, and Erosion Control (PCE) or Item 302.3.6. Specialty Emulsions.

The water used shall be clear, free from industrial wastes and other objectionable matter.

302.6.3 Construction Methods. Asphalt materials shall be handled in accordance with Item 302.5. Storage, Heating and Application Temperature of Bituminous Materials.

The emulsified asphalt and water mixture shall be applied by a self-propelled sprinkler meeting the requirements of Item 203.8. Dust Control so operated as to uniformly distribute the mixture in the quantity determined by the OWNER.

The emulsion and water may be mixed in the sprinkler tank. The CONTRACTOR shall make suitable provisions for agitating the two materials sufficiently to produce a uniform blend. The sprinkler tank shall have been recently calibrated, and the OWNER shall be furnished an accurate and satisfactory record of such calibration. After beginning the work, should the yield on the emulsion applied appear to be in error, the distributor shall be recalibrated in a manner satisfactory to the OWNER, before proceeding with the work.

302.6.4. Measurement and Payment. Emulsified asphalt shall be measured by the gallon (L) prior to mixing with water. The work performed and the emulsified asphalt furnished as prescribed by this Item and measured as provided in this Item shall be paid for at the unit price bid of the type specified, which price shall be full compensation for furnishing all required materials including mixing water for application; all freight involved; all hauling, mixing, and distributing the mixture as specified; and all manipulation, labor, tools, equipment and incidentals necessary to complete the work.

302.7. PRIME COAT

302.7.1. Description. This Item shall consist of application of asphaltic materials on the completed base course and/or other approved area, which shall be applied in accordance with these specifications and as shown of the plans.

302.7.2. Materials. The asphaltic material used for the prime coat shall be of the type and grade as stated in the contract and when tested by approved laboratory methods shall meet the requirements of Item 302.3.4. Emulsified Asphalt or Item 302.3.5. Emulsions for Priming, Curing, and Erosion Control (PCE) or Item 302.3.6. Specialty Emulsions.

302.7.3. Equipment. All storage tanks, piping, retorts, booster tanks and distributors used in storing and handling asphaltic material shall be kept clean and in good condition at all times. Equipment shall be operated in such a manner that there shall be no contamination of the asphaltic material with foreign material. It shall be the responsibility of the CONTRACTOR to provide and maintain in good working order a recording thermometer at the storage heating unit at all times. The distributor shall have been recently calibrated and the OWNER shall be furnished an accurate and satisfactory record of such calibration. After beginning the work, should the yield on the asphaltic material applied appear to be in error, the distributor shall be recalibrated in a manner satisfactory to the OWNER before proceeding with the work.

302.7.4. Construction Methods. Asphalt materials shall be handled in accordance with Item 302.5. Storage, Heating and Application Temperature of Bituminous Materials.

Prime coat shall not be applied when the air temperature is below 50°F (10°C) and falling, but it may be applied when the air temperature is above 40°F (5°C) and rising, the air temperature being taken in the shade and away from artificial heat. Asphaltic material shall not be placed when general weather conditions, in the opinion of the OWNER, are not suitable.

When, in the opinion of the OWNER, the base is thoroughly dry and is satisfactory to receive the prime coat, the surface shall be cleaned by sweeping or other approved methods. The asphaltic material shall be applied to the cleaned base at the approximate rate of 0.15- to 0.25-gallons-per-square-yard (0.75- to 1.25-L-per-m^2) of surface area. The application shall be made with an approved type of self-propelled pressure distributor so constructed and operated as to distribute the material evenly and smoothly in the quantity specified or directed. The CONTRACTOR shall provide all necessary facilities for determining the temperature of the asphaltic material in all of the heating equipment and in the distribution, for determining the rate at which it is applied, and for securing uniformity at the junction of two distributor loads.

The OWNER shall select the temperature of application within the limits recommended in Item 302.5. Storage, Heating and Application Temperature of Bituminous Materials based on the temperature-viscosity relationship that shall permit application of the asphalt. The CONTRACTOR shall apply the asphalt at a temperature within 15°F (3°C) of the temperature selected.

No traffic, hauling or placing of subsequent courses shall be permitted over the freshly applied prime coat until authorized by the OWNER.

The CONTRACTOR shall be responsible for the maintenance of the surface until the work is accepted by the OWNER.

302.7.5. Measurement and Payment. The asphaltic material for prime coat will be measured at the point of delivery on the road in gallons (L) at the applied temperature. The quantity to be measured for payment shall be the number of gallons (L) used, as directed, of the specified prime coat.

The work performed and materials furnished in accordance with this Item and measured as provided will be paid for at the unit prices bid for "Asphaltic Material," of the type and grade specified. Price shall be full compensation for cleaning the area to be primed; for furnishing, preparing, hauling and placing all required materials; for all freight and heating involved; for spreading, dragging, brooming, finishing and maintaining under

traffic until accepted; and for all manipulation, labor, tools, equipment and incidentals necessary to complete the work.

302.8. ASPHALT BASE COURSE

302.8.1. Description. Asphalt base course shall consist of a compact mixture of mineral aggregates and asphaltic material mixed hot in a mixing plant. It may be a base course, subbase course, or foundation course. It is made of larger aggregate than Hot-Mix Coarse Base (A) as shown in Table 302.9.3.(a) Dense Graded Hot Mix Master Grading.

302.8.2. Materials.

302.8.2.1. Asphaltic Cement. Asphalt for the mixture shall be of the types of asphalt cement as determined by the OWNER and shall meet the requirements of Item 302.3.2. Performance-Graded (PG) Asphalt Binders or Item 302.3.3. Asphalt Cement. The grade of asphalt to be used shall be determined by the OWNER after design tests have been made using the mineral aggregate approved for use in the construction. If more than one type of asphaltic cement mixture is specified for the project, only one grade of asphalt shall be required for all types of mixture unless otherwise shown on the plans. The CONTRACTOR shall notify the OWNER of the source of asphaltic material prior to production of the asphaltic mixture, and this source shall not be changed during the course of the project, except by written permission of the OWNER.

302.8.2.2. Tack Coat. The liquid asphalt material used for tack coat should be MS-2 or SS-1 in Item 302.3.4. Emulsified Asphalt, Restorative Seal in Item 302.3.6. Specialty Emulsions or one of the other various grades of materials (selected by the OWNER) listed under Item 302.3.4. Emulsified Asphalt.

302.8.2.3. Mineral Aggregate. The material shall be crushed and screened as necessary to meet the requirements hereinafter specified and shall consist of durable coarse aggregate particles mixed with approved binding materials.

Unless otherwise specified, the grading of the mineral aggregate shall conform to the limitations as shown in Table 302.8.2.3.(a). Asphalt Base Course Aggregate Grades.

Table 302.8.2.3.(a). Asphalt Base Course Aggregate Grades

Sieve Size	Grade			
	1	2	3	4
1 3/4-inch		100.0	100.0	As Shown on Plans
1 1/2-inch	100.0	90.0-100.0		
1-inch	90.0-100.0			
3/8-in.	45.0-70.0			
No. 4	30.0-55.0	25.0-55.0		
No. 40	15.0-30.0	15.0-40.0	15.0-40.0	

Testing of the mineral aggregate shall be in accordance with the test methods in Table 302.8.2.3.(b) Aggregate Tests.

Table 302.8.2.3.(b) Aggregate Tests

Property	Test
Preparation of Soil Constants	Tex-101-E Preparing Soil and Flexible Base Materials for Testing
Liquid Limit	ASTM D4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils
Plastic Limit	ASTM D4318 (same as above)
Plasticity Index	ASTM D4318 (same as above)
Sieve Analysis	ASTM C136 Sieve Analysis of Fine and Coarse Aggregates
Wet Ball Mill	Tex-116-E Ball Mill Method for Determining the Disintegration of Flexible Base Material
Sand Equivalent	ASTM D2419 Sand Equivalent Value of Soils and Fine Aggregate

Unless otherwise specified on the plans, the mineral aggregate for Grades 1, 2 and 3 shall meet the limits of Table 302.8.2.3.(c) Aggregate Physical Requirements. Mineral aggregate for Grade 4 shall meet the physical requirements shown on the plans.

Table 302.8.2.3.(c) Aggregate Physical Requirements

Property	Limit
Wet Ball Mill	50 Max.
Plasticity Index	15 Max.
Liquid Limit	40 Max.
Sand equivalent	≥40

302.8.3. Construction Methods. Asphalt materials shall be handled in accordance with Item 302.5. Storage, Heating and Application Temperature of Bituminous Materials.

Mixing plants may be either the weight-batching type plant, the continuous mixing type plant, or the drum mixing type plant as described in Item 302.9.5. Mixing Plants except that requirements for Type "B" and "D" mixtures of fine graded surface course are deleted.

Equipment for storage, weighing and heating of materials shall be as described in Item 302.9.4. Equipment.

The OWNER shall designate the asphalt content to be used in the mixture after design tests have been made with the aggregates to be used in the project. When tests as determined by the OWNER are made, samples of the mixture shall not vary from the asphalt content designated by the OWNER by more than 0.5-percent dry weight (based on total mixture). The asphaltic material will form typically 4- to 9-percent of the mixture by weight.

The mixture shall consist of a uniform mixture of mineral aggregates and asphaltic material.

The asphaltic mixtures for the weight-batching type plant and from the continuous mixing type plant, when tested in accordance with the current methods outlined in TxDOT Test Method Tex-208-F Test for Stabilometer Value of Bituminous Mixtures (Part I or Part III as applicable), shall have laboratory density and stability as indicated in Table 302.8.3.(a) Stability of Asphalt Base Course. If the mixture produced does not have the specified qualities, the mixture shall be changed until it conforms to the specified qualities.

Table 302.8.3.(a) Stability of Asphalt Base Course

Property	Value
Density (%)	96 ±2
Stability (%) Hveem Stabilometer	Not less than 40 except when otherwise shown on the plans

302.8.4. Measurement and Payment. Asphalt base course shall be measured and paid for in accordance with Item 302.10. Measurement and Payment.

302.9. HOT-MIX ASPHALT PAVEMENT

302.9.1. Description. This Item shall govern pavement consisting of a binder course, a leveling up course, a surface course or any combination of these courses as shown on the plans. Each course shall be composed of a compacted mixture of mineral aggregate and asphaltic material mixed hot in a mixing plant; and shall be constructed on the previously completed and approved subgrade, subbase course, base course, existing pavement, or in the case of a bridge, on the prepared floor slab, all in accordance with these specifications and in conformity with the lines, grades, quantities and typical sections as stated in the contract, plans and/or established in the field by the OWNER.

302.9.2. Materials. The materials proposed to be used may be inspected and tested at any time during the preparation of the work.

302.9.2.1. Aggregates. Mineral aggregates shall consist of a fine aggregate, coarse aggregate and, when required, a mineral filler all in accordance with Item 302.2. Aggregates for Hot-Mix Asphalt Pavement and approved by the OWNER. Representative samples of the materials proposed to be used in the mixture shall be submitted for tests in the quantities required by the OWNER. No material that has in any way become unfit for use after approval shall be used in the work. Approval of both the materials and sources of supply must be obtained from the OWNER prior to delivery of the material.

302.9.2.2. Asphaltic Materials. Material shall conform to the applicable paragraphs of Item 302.3. Bituminous Materials. Only one grade of asphalt shall be required for all the types of mixtures unless otherwise shown on the plans or required by the OWNER.

302.9.2.2.1. Paving Mixture. Asphaltic materials for the paving mixture shall be the type and grade specified, shown on the plans, or as designated by the OWNER after design tests have been made, using the mineral aggregates proposed to be used in the mixture, and shall meet the requirements of Item 302.3.2. Performance Graded (PG) Asphalt Binders or Item 302.3.3. Asphalt Cement. If more than one type of asphaltic pavement mixture is specified for the project, only one grade of asphalt shall be required for all types of mixtures, unless otherwise shown on the plans. The CONTRACTOR shall notify the OWNER of the source of asphaltic material prior to production of the asphaltic mixture and prior to the paving of this course of the project except on written permission of the OWNER.

302.9.2.2.2. Prime Coat. Prime coat shall conform to the provisions of Item 302.7. Prime Coat.

302.9.2.2.3. Tack Coat. The liquid asphalt material used for tack coat should be MS-2 or SS-1 in Item 302.3.4. Emulsified Asphalt, Restorative Seal in Item 302.3.6. Specialty Emulsions or one of the other various grades of materials (selected by the OWNER) listed under Item 302.3.4. Emulsified Asphalt.

302.9.2.3. Cellulose Fiber. Cellulose fiber may be used in the mixture to prevent excessive draindown. The cellulose fiber shall be of the type shown on the plans and shall meet the requirements of Item 302.4. Fibrous Reinforcement for Asphalt.

302.9.3. Paving Mixture. The paving mixture shall consist of a uniform mixture of coarse aggregate, fine aggregate, mineral filler, when required, and asphaltic material, accurately proportioned by weight. The grading of each constituent shall be such as to produce, when properly proportioned, a mixture conforming to the following limitations for grading the type specified. The exact proportions of each constituent producing the total aggregate within these limits shall be as directed by the OWNER, and when tested by standard laboratory methods, the mixture shall meet the requirements listed in Tables 302.9.3.(a) through (f). The OWNER shall specify or approve a mixture within the specified limits for all types of mixtures, which shall be suitable for the work in which the asphaltic pavement shall be used. The percentages of asphalt shall not vary more than 0.4-percent from the proportions established by the OWNER.

Table 302.9.3.(a) Dense Graded Hot Mix[1] Master Grading

Sieve Size	Type of Mixture						
	A Coarse Base	B Fine Base	C Coarse Surface	D Fine Surface	F Fine Mixture	CMHB – C Coarse Surface	CMHB – F Fine Surface
	Percent Passing by Weight						
1½"	100						
1¼"	95-100						
1"		100					
⅞"	70-90	95-100	100			98 –100	
⅝"		75-95	95-100			95 –100	
½"	50-70			100			98 –100
⅜"		60-80	70-85	85-100	100	50-70	85 - 100
¼"					95-100		
No. 4	30-50	40-60	43-63	50-70		30 - 45	40 - 60
No. 10	20-34	27-40	30-40	32-42	32-42	15 - 25	15 - 25
No. 40	5-20	10-25	10-25	11-26	9-24	6 – 20	6 – 20
No. 80	2-12	3-13	3-13	4-14	3-13	6 – 18	6 – 18
No. 200	2 - 8	2 - 8	2 - 8	2 - 8	2 - 8	5 - 8	5 - 8
VMA % minimum	11	12	13	14	15	14	15

1. These mixtures shall be designed using a Texas Gyratory Compactor (TGC) and in accordance with Test Method Tex-204-F Design of Bituminous Mixtures. Design must be researched and based on intended use.

Table 302.9.3.(b) Superpave Hot Mix[1] Master Grading

Sieve Size, inches (centimeters)	Nominal Maximum Aggregate Size, inches (centimeters)				
	1½ (3.81) Coarse Base	1 (2.54) Fine Base	¾ (1.90) Coarse Surface	½ (1.27) Fine Surface	⅜ (0.95) Fine Mixture
	Percent Passing By Weight				
2 (5.08)	100.0				
1½ (3.81)	90.0 – 100.0	100.0			
1 (2.54)		90.0 – 100.0	100.0		
¾ (1.90)			90.0 – 100.0	100.0	
½ (1.27)				90.0 – 100.0	100.0
⅜ (0.95)					90.0 – 100.0
No. 4					
No. 8	15.0 - 41.0	19.0 – 45.0	23.0 - 49.0	28.0 – 58.0	32.0 – 67.0
No. 16					
No. 30					
No. 50					
No. 100					
No. 200	0.0–6.0	1.0 – 7.0	2.8 - 8.0	2.0 - 10.0	2.0 – 10.0
VMA % minimum	11	12	13	14	15

1. These mixtures shall be designed using a Superpave Gyratory Compactor (SGC) and in accordance with the AASHTO Standard Practice for Designing Superpave Hot Mix Asphalt (PP28-99). Design must be researched and based on intended use.

Table 302.9.3.(c) Superpave – Plant Produced Mixture Requirements

VMA (MIN)	VFA	Dust/Asphalt Ratio
11.0%	64 – 77 %	0.6 – 1.8 %
12.0%	67 – 77 %	0.6 – 1.6 %
13.0%	69 – 80 %	0.6 – 1.6 %
14.0%	71 – 80 %	0.6 – 1.6 %
15.0%	73 – 80 %	0.6 – 1.6 %

Table 302.9.3.(d) Cellulose Modified Mixtures[1] Master Grading

Sieve Size	Stone Mastic Asphalt (SMA)		Permeable Friction Course (PFC)	
	¾"	½"	½"	½" Modified
	Coarse Surface	Fine Surface	Coarse Surface	Fine Surface
	Percent Passing By Weight			
¾"	100.0			
½"	99.0-100.0	100.0	90.0-100.0	85.0-100.0
⅜"	70.0-85.0	70.0-90.0	35.0-60.0	55.0-75.0
No. 4	30.0-42.0	30.0-50.0	10.0-25.0	15.0-25.0
No. 8	20.0-33.0	20.0-30.0	5.0-10.0	5.0-10.0
No. 16		21.0 max		
No. 30		18.0 max		
No. 50		15.0 max		
No. 100				
No. 200	8.0-11.0	8.0-12.0	1.0 - 4.0	2.0 - 4.0

1. These mixtures shall be designed using a Superpave Gyratory Compactor (SGC) and in accordance with the AASHTO Standard Practice for Designing Superpave Hot Mix Asphalt (PP28-99). Design must be researched and based on intended use.

Table 302.9.3.(e) Cellulose Modified Mixture Properties

Property	Requirements	
	Stone Mastic Asphalt (SMA)	Permeable Friction Course (PFC)
Air Voids, %	4.0 (Lab Molded)	20.0 Min. (Lab Molded)
Cellulose Fibers, %	0.4	0.4
VMA, Percent (Min.)	17.0 (Plant); 17.5 (Design)	
VCA[1] (Mix), Percent	Less Than VCA (DRC)	
TSR, Percent	80.0 Min. (Tex-531-C)	
Draindown @ Production Temp., %	0.30 Max. (T305)	0.30 Max. (T305)
Asphalt Content, Percent	6.0 Min.	6.0 Min.
N(Des)	100	20

1. See NCHRP Report 425 for definition and calculation of VCA (Voids in Coarse Aggregate).

302.9.3.1. Extraction Test. When required by the OWNER, samples of the asphaltic mixture may be taken from the plant, trucks or finished pavement for check tests. The minimum weight of the test specimen in grams shall be 3000 times the maximum size of aggregate in inches, and when tested in accordance with Recovery of Asphalt from Solution by Abson Method and Quantitative Extraction of Bitumen from Bituminous Paving Mixtures, ASTM Designations D1856 and D2172, respectively, it shall not vary from the grading proportions specified for the mixture being used by more than 5-percent.

302.9.3.2. Stability. The asphaltic mixture from the weight-batching plant and from the continuous mixing type plant, when tested in accordance with the current methods outlined in the TxDOT Test Method Tex-208-F Test for Stabilometer Value of Bituminous Mixtures, shall have the laboratory density and stability indicated in Table 302.9.3.(f) Asphalt Pavement Mixture Stability. If the mixture produced does not have the specified qualities, the mixture shall be changed until it conforms to the specified qualities.

Table 302.9.3.(f) Asphalt Pavement Mixture Stability

Property	Value
Density (%)	96 ±1
Stability (%) Hveem Stabilometer	Unless otherwise shown on the plans, Not less than 40 applied on arterials with truck traffic, and Not less than 35 for residential applications

302.9.4. Equipment. All equipment necessary for the construction of the hot-mix asphalt pavement shall be on the project and shall be approved by the OWNER as to condition before the CONTRACTOR shall be permitted to begin construction operations on which the equipment is to be used. All equipment shall be maintained in good repair and operating condition.

302.9.4.1. Bins. Bin storage shall be provided with tight cut-off gates to prevent leakage of aggregates or mineral filler into the weight box. The weight box for aggregates shall be of sufficient capacity to hold a complete batch of aggregates and mineral filler without wasting or leveling and shall be so designed that it shall quickly discharge the entire batch into the mixer. The weight box shall be provided with a close fitting and quick operating cut-off gate so that there shall be no leakage of the aggregates into the mixer and shall be satisfactorily attached to the batching scales.

302.9.4.2. Scales. Scales used for weighing different grades of mineral aggregates may be either the springless dial type or the multi-beam type. All scales must be a tare beam for balancing. The beam scales must also be equipped with a telltale indicator of the springless dial type indicating over-and-under loads of at least 50-pounds (23-kg). Scales shall be accurate within 4-pounds-per-1000-pounds (2-kg-per-454-kg). If plant vibration interferes with accurate weighing, the scales shall be insulated against shock or vibration.

302.9.4.3. Material Bucket. The asphaltic material bucket shall be of sufficient size to hold the necessary asphaltic material for one batch. If the material is measured by weight, the bucket shall be properly attached to the scales herein specified. If the proportioning is by volume based on weight, the measuring bucket used shall be of the overflow type and shall meet the requirements of the OWNER.

302.9.4.4. Asphalt Storage. Asphalt storage shall be sufficient to meet the requirements of the plant. Asphalt in storage shall be heated by steam coils, absolutely tight to prevent leakage of moisture into the asphalt; the steam for heating shall not be at a temperature in excess of 400°F (204°C); direct fire heating of the asphalt shall not be permitted. Agitating asphalt with steam or air shall not be permitted.

302.9.4.5. Steam Heating Systems. The steam heating system shall insure the maintaining of the asphalt at a uniform draw-off temperature at the asphalt bucket of between 275°F and 375°F (135°C - 190°C). The temperature shall be maintained with an efficient positive control of heat at all times as directed or approved by the OWNER. Asphalt heated beyond 375°F (190°C) either before or during mixing with the mineral aggregate shall be rejected. The draw-off at the asphalt bucket shall be of a quick cut-off type which shall not leak. The asphalt supply line shall be of circulating type, and equipped with a recording thermometer indicating the temperature of the asphalt at the draw-off valve. This thermometer may be combined with the one used in recording the temperature of the aggregate.

302.9.4.6. Weight Bucket. The asphalt weight bucket shall be of an approved type. The scales of weighing the asphalt shall be either the springless dial type or the multi-beam type. The dial type shall be arranged for rapid adjustment at zero and shall be provided with a pointer to indicate the weight of the asphalt required in one batch. The beam type shall have a tare beam for balancing and shall be equipped with a telltale indicator of the springless dial type. If plant vibration interferes with accurate weighing, the scales shall be insulated against shock or vibration. The asphalt shall be sprayed into the mixer through an approved spray bar that shall distribute the asphalt uniformly throughout the length of the mixer.

302.9.4.7. Mixer. The mixer shall be of the pugmill type and shall have a capacity of not less than 1,000-pounds (450-kg) in a single batch. The number of blades and their positions shall give a uniform and complete circulation of the batch. A mixer that segregates mineral aggregate or fails to secure a thorough and uniform mixing with the asphalt and mineral filler shall not be permitted to be used. The adequacy of the mixer to produce a successful mix shall be determined by mixing the standard batch for the required time, then dumping the batch, and taking samples from different parts of the batch; the samples shall be tested by the extraction test and shall show that the batch is uniform throughout.

All mixers shall be provided with an automatic time lock on the discharge gates of the mixer and the weigh box; and shall be locked for a period of 45-seconds after all the mineral aggregates have been introduced into the mixer. When discharged, the mixture shall have a temperature of 225°F to 350°F (107°C - 177°C). The dump doors of the mixer shall be tight to the dry mineral aggregate or dust so that there shall be no spilling from the pugmill or drum. In introducing the batch into the mixer, all mineral aggregates shall first be introduced. Aggregates shall be thoroughly mixed for a period of 5- to 10-seconds before the asphalt is added; then the total mixture shall be mixed for the time required to produce a homogeneous mixture, in which all particles of the aggregates are uniformly coated.

302.9.4.8. Spreading and Finishing Machine. The spreading and finishing machine shall be of a type approved by the OWNER and capable of producing a surface that shall meet the requirements of the typical cross section and surface test.

302.9.4.9. Rollers. Rollers shall meet the governing specifications for Item 301.1.2. Rolling of Embankment, Subgrade or Flexible Base.

302.9.4.10. Straightedges. The CONTRACTOR shall provide acceptable 16-ft. (5m) straightedges for the surface testing. Satisfactory templates shall be provided as required by the OWNER.

302.9.4.11. Vehicles for Transporting Mixture. Asphaltic concrete shall be transported from the plant to the site of the work in tight vehicles with metal bottoms previously cleaned of all foregoing substances. The OWNER may require that the vehicles be suitably insulated, and each load shall be covered with canvas or other suitable material of sufficient size to protect the asphaltic concrete from the weather and to prevent loss of material.

302.9.5. Mixing Plants. Mixing plants may be either the weight-batching plant, the continuous mixing type plant or the drum mixing type plant as hereinafter described. All types of plants shall be equipped with satisfactory conveyors, power units, aggregates handling equipment, hot-aggregates screens and bins and dust collectors.

Temporary storing or holding of the asphaltic mixture by a surge-storage system is permitted during the normal day's operation. Overnight storage shall not be permitted.

302.9.5.1. Weight Batching Plant. The proportioning of the various materials entering into the asphaltic mixture shall be as approved or directed by the OWNER. The OWNER shall have access at all times to all parts of the paving plant. The plant shall be of the batch type provided with separate storage bins and chambers for heating and mixing the materials.

The various sizes of mineral aggregates as received shall be stored or stockpiled separately, and the feeding of all sizes of mineral aggregates to the dryer shall be done by mechanical means that shall give a uniform and continuous feed to each of the sizes incorporated in order to give a control of the temperature and grading of the mineral aggregates.

The drying of the mineral aggregates shall be done in such a manner that the finer particles shall not escape with the furnace gases. If forced draft is used, a dust collector system shall be installed. If natural draft is used, the OWNER may require a dust collector system to prevent loss of the finer particles. The aggregate shall be heated in a suitable apparatus that continuously agitates the aggregate during the heating and in which the temperature can be efficiently and positively controlled so that the aggregates shall not be damaged and the mixture produced shall have a temperature between 225°F and 350°F (107°C and 177°C).

A recording thermometer shall be provided which shall record the temperature of the aggregates as they leave the dryer. The recording thermometer shall be provided with a 24-hour chart and may be so equipped that it shall record both the temperature of the aggregates and the temperature of the asphalt incorporated into the batch. The drying apparatus shall be of sufficient size to dry and heat the amount of aggregates required to maintain the plant in continuous operation.

The screening capacity and size of the bins shall be sufficient to screen and store the amount of aggregates required to properly operate the plant and keep the plant in continuous operation at full capacity. Provisions shall be made to enable inspection forces to have easy and safe access to the proper location on the mixing plant where representative samples may be taken from the hot bins for testing. The aggregates shall be separated into at least four bins when producing Type "B" mixtures and at least three bins when producing Type "D" mixtures. If mineral filler is needed, an additional bin shall be provided. These bins shall contain the sizes of aggregates as shown in Table 302.9.3.(a) Dense Graded Hot Mix Master Grading.

302.9.5.2. Continuous Mixing Plant. Cold-aggregates bin and proportioning devices, dryer, and screening and proportioning shall conform to the requirements hereinabove for the weight-batching type of plant. The hot-aggregates proportioning device shall be so designed that when properly operated, a uniform and continuous flow of aggregates into the mixer shall be maintained.

An accurate asphaltic material meter shall be installed in the asphalt line leading to the spray bar, so that the amount of asphalt being used can be accurately determined. The asphaltic material spray bar shall be so designed that the asphalt shall be uniformly and continuously sprayed into the mixture.

The mixer shall be of the pugmill continuous type and shall have a capacity of not less than 40-tons-per-hour (1,450-metric-tons-per-hour) of mixture. Any mixer that segregates the aggregates or fails to secure a through and uniform mixing of the aggregates or fails to secure a thorough and uniform mixing of the aggregates with the asphaltic material shall not be used. This shall be determined by taking samples from different parts of a truckload and testing by the extraction test. These tests must show that the load is uniform throughout.

The amount of aggregates and asphaltic material entering the mixer and the rate of travel through the mixer shall be so coordinated that a uniform mixture of the specified grading and asphalt content shall be produced. The mixture shall not vary from the specified mixture by more than the specified tolerances.

The asphaltic mixture shall be at a temperature of between 225°F and 350°F (107°C and 177°C) when dumped from the mixer. The OWNER shall determine the lowest temperature, within the above limitations, at which the material can be satisfactorily dried, mixed, transported, spread and compacted, and the mixture furnished by the CONTRACTOR shall be between this determined temperature and 30°F (17°C) higher.

302.9.5.3. Drum Mixing Plant. The plant shall be adequately designed and constructed for the process of mixing aggregates and asphalt in the drum mixer. The plant shall be equipped with satisfactory conveyors, power units, aggregates-handling equipment and feed controls and shall consist of the following essential pieces of equipment.

The number of compartments in the cold-aggregates bin shall be equal to or greater than the number of stockpiles of individual materials to be used. The bin shall be of sufficient size to store the amount of aggregates required to keep the plant in continuous operation and of proper design to prevent overflow of material from one compartment to another. The feed system shall provide a uniform and continuous flow of aggregates in the desired proportion to the drum mixer.

A surge-storage system shall be required. It shall be adequate to minimize the production interruptions during the normal day's operations and shall be constructed to minimize segregation. A device such as gob hopper or other similar device approved by the OWNER to prevent segregation in the surge-storage bin shall be required.

The system shall provide positive weight measurement of the combined cold-aggregates feed by use of belt scales or other approved devices. Provisions of a permanent nature shall be made for checking the accuracy of the measuring device as required by Item 302.9.4. Equipment. When a belt scale is used, mixture production shall be maintained so that the scale normally operates between 50-percent and 100-percent of its rated capacity. Belt scale operation below 50-percent of the rated capacity may be allowed by the OWNER if accuracy checks show the scale to meet the requirements of Item 302.9.4. Equipment at the selected rate, and it can be satisfactorily demonstrated to the OWNER that the mixture uniformity and quality have not been adversely affected.

An asphaltic material measuring device meeting the requirements of Item 302.9.4. Equipment shall be placed in the asphalt line leading to the drum mixer so that the cumulative amount of asphalt used can be accurately determined. Provisions of a permanent nature shall be made for checking the accuracy of measuring device output. The asphalt measuring device and line to the measuring device shall be protected with a jacket of hot oil or other approved means to maintain the temperature of the line and measuring device near the temperature specified for the asphaltic material. Unless otherwise shown on the plans, the temperature of the asphaltic material entering the measuring device shall be maintained at ±10°F (±5.5°C) of the temperature at which the asphalt measuring device was calibrated and set.

The asphaltic material feed-control shall be coupled with the total aggregate weight measuring device in such manner as to automatically vary the asphalt-feed rate as required to maintain the required proportion. A scalping screen shall be required, unless otherwise shown on the plans, and shall be located ahead of any weighing device.

The asphaltic mixture shall be at a temperature of between 225°F and 350°F (107°C and 177°C) when dumped from the mixer. The OWNER shall determine the lowest temperature, within the above limitations, at which the material can be satisfactorily dried, mixed, transported, spread and compacted, and the mixture furnished by the CONTRACTOR shall be between this lowest determined temperature and 30°F (17°C) higher. The drum mix system shall be of the type that continually agitates the aggregates and asphalt mixture during heating and in which the temperature can be so controlled that aggregates and asphalt shall not be damaged in the necessary drying and heating operations required to obtain a mixture of the specified temperature. A continuously recording thermometer shall be provided which shall indicate the temperature of the mixture as it leaves the drum mixer.

Scales may be standard platform truck scales, belt scales or other equipment such as weigh hopper (suspended) scales approved by the OWNER. All scales shall conform to Item 302.9.4. Equipment. If truck scales are used, they shall be placed at a location approved by the OWNER. If other weighing equipment is used, the OWNER may require weight checks by truck scales for the basis of approval of the equipment.

302.9.5.4. Special Instructions for Cellulose Fiber. A separate dry storage area or silo shall be required for cellulose fiber. All equipment used in the storage and handling of cellulose fibers shall be kept a clean condition at all times and shall be operated in such a manner that there will be no contamination with foreign matter.

Cellulose fibers shall be added at 0.3% ±0.1% by mass of the mixture. Drainage shall be tested according to Tex-235-F Determination of Draindown Characteristics in Bituminous Materials. Draindown shall not exceed 0.3%-per-hour.

The cellulose fiber feed system shall supply the proper amount of cellulose fiber to the weigh box. Feeding of the cellulose fiber shall be performed in a manner such that the fibers are not damaged during the feeding and mixing processes and in a manner such that a uniform and constant flow of materials in the required proportions is maintained. The cellulose fiber storage capacity shall be ample to meet the requirements of the plant. Cellulose fiber shall not be allowed in the hot bins.

Mixing system shall control temperature so that the cellulose fiber will not be damaged in drying, heating and mixing operations.

302.9.5.4.1. Weight Batching Plant. Cellulose fiber shall be introduced into the pugmill during the dry mixing of the aggregates, prior to injection of the asphalt.

In introducing the batch into the mixer, all aggregates and then all cellulose fiber shall be introduced first and shall be mixed thoroughly for a minimum period of 5-seconds to uniformly distribute the various sizes of the aggregate and cellulose fiber throughout the batch before asphaltic material is added. The asphaltic material shall then be added and the mixing continued for a wet mixing period of not less than 15-seconds. The mixing period shall be increased if, in the opinion of the Engineer, the mixture is not uniform or the aggregates are not properly coated.

302.9.5.4.2. Continuous Mixing Plant. The mixing requirements shall be the same as is required for a standard Weigh-Batch Plant.

302.9.5.4.3. Drum-Mix Plant. Cellulose fiber shall be added to the mixture during the dry mixing process, unless otherwise approved by the Engineer. Cellulose fiber shall be uniformly dispersed in the mixture. Engineer may require that fiber be introduced into the drum dryer at the recycle port by use of a vane feeder.

The amount of aggregate, cellulose fiber and asphaltic material entering the mixer and the rate of travel through the mixing unit shall be so coordinated that a uniform mixture of the specified grading, cellulose fiber content and asphalt content is produced.

302.9.6. Construction Methods. Asphalt materials shall be handled in accordance with Item 302.5. Storage, Heating and Application Temperature of Bituminous Materials.

The prime coat, tack coat or the asphaltic mixture shall not be placed when the air temperature is below 50°F (10°C) and is falling but may be placed when the air temperature is above 40°F (5°C) and is rising, the temperature being taken in the shade and away from artificial heat; with the provision that the asphaltic mixture shall be placed only when the humidity, general weather conditions and temperature and moisture condition of the base, in the opinion of the OWNER, are suitable.

302.9.6.1. Prime Coat. If required, a prime coat shall be applied to the completed subgrade, subbase or base, in accordance with Item 302.7. Prime Coat. The type and grade of asphaltic material and the application rate shall be as shown on the plans or as directed by the OWNER.

302.9.6.2. Tack Coat. A tack coat shall be applied when the surface to be paved is Portland cement concrete, brick or asphaltic pavement. When a tack coat is required, it shall consist of an application of the asphaltic material indicated and shall be at the rate specified on the plans or as directed by the OWNER, but not to exceed $^{1}/_{10}$ (0.10) gallons-per-square-yard (0.5-L-per-m^2) of surface area. The surfaces of curbs, gutters, vertical faces of existing pavements and all structures in actual contact with asphaltic mixes shall be painted with a thin, complete coating of asphaltic material to provide a closely bonded, watertight joint.

302.9.6.3. Compacted Thickness of Hot-Mix Asphalt Pavement Surface Courses and Base Courses.

302.9.6.3.1. Base Courses. The compacted thickness or depth of each base course shall be as shown on the plans. Where the plans require a depth or thickness of the course greater than 4-in. (10cm), same shall be accomplished by constructing multiple lifts of approximately equal depth, each of which shall not exceed 4-in. (10cm) compacted depth. If, in the opinion of the OWNER, an additional tack coat is considered necessary between any of the multiple lifts, it shall be applied as in Item 302.9.6.2. Tack Coat and at the rate as directed.

302.9.6.3.2. Surface Courses. The compacted thickness or depth of the asphalt pavement surface course shall be as shown on the plans. Where the plans require a depth or thickness of the surface course greater than 2-in. (5cm) compacted depth, same shall be placed in multiple courses of equal depth, each of which shall not exceed 2-in. (5cm) compacted depth. If, in the opinion of the OWNER, an additional tack coat is considered necessary between any of the multiple courses, it shall be applied as in Item 302.9.6.2. Tack Coat and at the rate as directed.

302.9.6.4. Transporting Hot-Mix Asphalt Pavement Material. The mixture shall be hauled to the job site in tight vehicles previously cleaned of all foreign material. The dispatching of vehicles shall be arranged so that all material delivered shall be placed and all rolling shall be completed during daylight hours. In cool weather, or for long hauls, canvas covers may be required. The inside of the truck body may be given a light coating of an approved release agent, if necessary, to prevent the mixture from adhering to the body.

302.9.6.5. Temperature. The hot-mix asphalt mixture shall be at a temperature between 275° and 350°F (135° to 177°C) when dumped from the mixer. The OWNER shall determine the temperature, within the above limitations. The mixture when dumped from the mixer shall not vary from this selected temperature more than 30°F (17°C). Restrictions on maximum mixture temperatures placed by environmental regulatory agencies supersede the maximum temperature listed above.

302.9.6.6. Placing. The hot-mix asphalt mixture shall be placed on the approved base course with the specified spreading and finishing machine in such manner that, when properly compacted, the finished course shall comply with the maximum thickness requirements, be smooth and of uniform density, and meet the requirements of the typical cross sections and the surface test. During the placing and spreading of the hot-mix asphalt material, care shall be taken to prevent the spilling of the material onto adjacent pavement, gutters or structures.

In small areas, which are inaccessible to the spreading and finishing machine, hand spreading may be authorized by the OWNER, provided an acceptable surface can be obtained.

302.9.6.7. Compaction. Rolling with the 3-wheel and tandem roller shall start longitudinally at the sides and proceed toward the center of the surface course, overlapping on successive trips by at least half the width of the rear wheels. Alternate trips of the roller shall be slightly different in length. Rolling with the pneumatic tire roller shall be done as directed by the OWNER. Rolling shall continue until no further compression can be obtained and all roller marks are eliminated. The motion of the rollers shall be slow enough at all times to avoid displacement of the asphaltic surface material. If displacement should occur, it shall be corrected at once by the use of rakes and fresh asphaltic mixtures where required. The roller shall not be allowed to stand on the surface course when it has not been fully compacted and allowed to cool. To prevent adhesion of the surface course to the roller, the wheels shall be kept thoroughly moistened with water, but an excess of water shall not be permitted. All rollers must be in good mechanical condition. All necessary precautions shall be taken to prevent the dripping of gasoline, oil, grease or other foreign matter on the surface course while the rollers are in motion or when standing. In areas where the surface course cannot be compacted with the rollers, hand tamps, lightly oiled, shall be used to secure the required compaction.

With approval by the OWNER, the vibratory steel wheel roller may be substituted for the 3-wheel roller and tandem roller. Each course, after final compaction, shall have a relative density of not less than 92-percent. The relative density will be determined using Tex-207-F Determining Density of Compacted Bituminous Mixtures and Tex-227-F Theoretical Maximum Specific Gravity of Bituminous Mixtures.

302.9.6.8. Surface Tests. The finished surface of the pavement after compression shall be smooth and true to the established line, grade and cross section. When tested with a 16-ft. (5m) straightedge placed parallel to the centerline of the roadway, the finished surface shall have no deviation in excess of $^{1}/_{16}$-in-per-foot (5-mm-per-m) from the nearest point of contact. The maximum ordinate measured from the face of the straightedge shall not exceed ¼-in. (6mm) at any point. Any point in the pavement surface not meeting these requirements shall be immediately corrected.

302.9.6.9. Pavement Thickness Test. Upon completion of the work and before final acceptance and final payment shall be made, pavement thickness test shall be made by the OWNER or its authorized representative unless otherwise specified in the special provisions or in the plans. The number and location of tests shall be at the discretion of the OWNER. The cost for the initial pavement thickness test shall be at the expense of the OWNER. In the event a deficiency in thickness of pavement is revealed during normal testing operations, subsequent tests necessary to isolate the deficiency shall be at the CONTRACTOR'S expense. The cost for the additional coring test shall be at the same rate charged by commercial laboratories.

302.10. MEASUREMENT AND PAYMENT

Prime coat and tack coat shall not be measured for direct payment but shall be considered as subsidiary work pertaining to the placing of hot-mix asphalt mixtures of the type specified.

Hot-mix asphalt pavement material shall be measured complete in place by the ton (2,000-lb. (900-kg)) computed at 110-lb. per S.Y. surface area per inch thickness of course, or by the S.Y. (m^2) of the type(s) and grade(s) used in the completed and accepted work. Weight shall be determined by a certified scale approved by the OWNER and recorded on serially numbered weight tickets, identifying the vehicle and presented to the OWNER'S representative on the job. Work performed and materials furnished as prescribed by this Item and measured as specified in this Item shall be paid for at the contract unit price bid for the type or types of courses and mixtures as shown in the proposal, which price shall be payment in full for quarrying, furnishing all materials, heating, mixing, hauling, cleaning existing base course or pavement, placing asphaltic mixtures, rolling and finishing, and all labor, tools, equipment and incidentals necessary to complete the work, including the work and materials involved in the application of prime coat and tack coat.

GENERAL NOTES

1. No street closures are allowed during the entire project unless otherwise scheduled with the town engineer or inspector.
2. No extra pay for any damage done to driveway approaches, sod, mailboxes or any other private or public items.
3. Contractor will be responsible for trash pickup if services are interrupted by construction (no extra pay).
4. Town staff will assist in resident notifications and communication. However, contractor will be responsible for direct notifications to adjacent residents when working in front of private drives. Temporary traffic delays will be allowed in lieu of complete closures.
5. No parking of equipment or vehicles on private drives without permission from residents.
6. Portable sewer facilities will be provided by contractor.
7. Working hours are from 7 am to 7 pm, Monday through Friday. Saturday work may be allowed if prescheduled and approved for reasons such as phasing, rain delay make-ups, weather conditions, etc.
8. Laboratory testing will be provided by the town.
9. The town reserves the right to refuse asphalt installation if temperatures fall below acceptable levels where specified density cannot be achieved. (No extra pay)
10. Since payment for HMAC is by the ton and cement slurry is specified as lbs/sq.yd., weight tickets for asphalt and cement slurry loads will be submitted to the town along with pay requests. The town reserves the right to refuse payment of quantities not accounted for in weight tickets. The town will pay for the actual quantities installed at the cost per unit weight submitted in the contract documents.
11. All roads not receiving cement treated base will be proof-rolled after asphalt removal and spot treated as necessary with excess millings (lump sum).
12. Contractor is responsible for any crack sealing at no extra pay for the first year after final acceptance.
13. If any private work is done for residents at their request, it will be separate from this job and will in no way affect contract time or final acceptance of public work.
14. A 2 year maintenance bond will be required prior to final acceptance to cover materials and/or workmanship defects.
15. A 3rd party contractor will be installing a fiberglass mesh with a high bonding strength tack coat immediately prior to a second course asphalt overlay. This will only be in areas designated for cement treated base treatment. The 3rd party contractor will coordinate with the primary contractor so as to not interrupt scheduled asphalt installation.

LOCATION MAP

Cement Treated Base

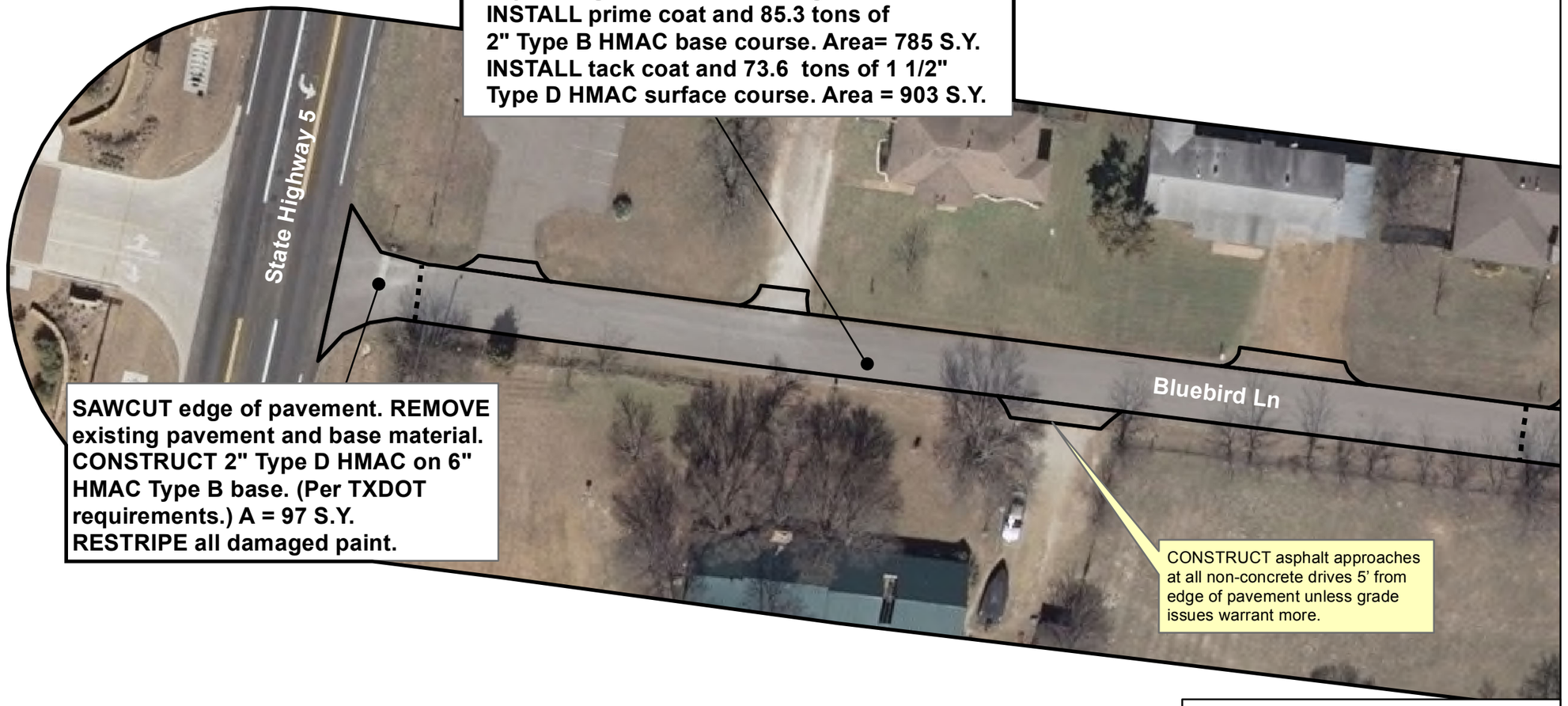
Spot Treat Base

Pond View Ln
Pond Crest Trl
Pond Bluff Way
Sloan Creek Pkwy
Meandering Way
Varnum Way
Braddock Dr
Rosemont Ln
Plumwood Way
Merlot Ct
Cabernet Ct
Cactus Ln
Jameson Crossing
State Highway 5
Countryside Dr
Lakeridge Dr
Stonebrook Dr
Summerfield Ct
Shady Brook Ln
Ambrym Dr
Bluebird Ln
Talia Cir
Broadwing Dr
Oak Ridge Dr
Glenwood Cir
Oak Glen
Oakdale Cir
Forest Oaks Dr
Timberwood Ln
Horseshoe Bend
Palomino Way
Creekwood Dr S
River Oaks Dr
Cedar Ln
Timberwood Cir
River Oaks Cir
Creekwood Dr N
Creekwood Cir
Stacy Rd
Stoddard Rd
Beechwood Ln
Briardale
Hart Rd.
Elmbrook Dr
Foxglove Trl
Bending Oak Trl
Dewberry Ln
Patrician Ct
Saint James Ct.
Saint James Dr.
Country Trl
Sloan Crossing
Parkdale Dr
Foxdale
Quail Rise
Elk Ridge
Oak Bluff
Oakwood Trl
Ashwood Ln
Willow Ct
Oakmont Ct
Dover Ct
Hampton Ct
Lakewood Dr
Collinwood Dr
Timber Ln
Young Trl
Old Stacy Rd
Pecan Dr
Hackberry Dr
Cottonwood Pl
Country Club Rd (FM1378)
Farmstead St
Rowley Mile
Hempton Park Ln
Sharon Rd
Hart Ct
Stallion Dr
Maverick Ct
Maplecreek Dr
Wynford Ct
Stonecreek Dr
Red Oak Trl
Alto Vista St
Arroyo Blanco St
Camino Real
Meandro Ria Ln
Kentucky Ln
Secretariat Ln
Man O War
Windsor Cir
Cambridge Dr
Wyndham Ct
SummerHill Ln
Pine Valley Ct
Pine Valley Dr
Heritage Blvd
Cabellero Ct
Branding Iron Way
Ranch House Dr
Sagebrook Dr
Saddleback Dr
Cheyenne Dr
Affirmed Ln
Seattle Slew Ln
Stacy Rd
Ashcroft Dr
Newchester Dr
Dumont Ct
Stonehinge Dr
Weston Dr
Elisabeth Way
Shoal Creek Dr
Winged Foot Dr
Scenic Ranch Circle
Shinnecock Ct
Cattlebaron Ct
Cattlebaron Rd
Bridle Ct
Inverness Dr
Pelican Hills Dr
Quarry Oaks Dr
Grand Cypress Ln
Sycamore Ct
Mustang Dr
Summit Ct
Fitzhugh Mill Rd

N

1 inch = 40 feet

**MILL and REMOVE 2" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 85.3 tons of 2" Type B HMAC base course. Area= 785 S.Y.
INSTALL tack coat and 73.6 tons of 1 1/2" Type D HMAC surface course. Area = 903 S.Y.**



**SAWCUT edge of pavement. REMOVE existing pavement and base material.
CONSTRUCT 2" Type D HMAC on 6" HMAC Type B base. (Per TXDOT requirements.) A = 97 S.Y.
RESTRIPE all damaged paint.**

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

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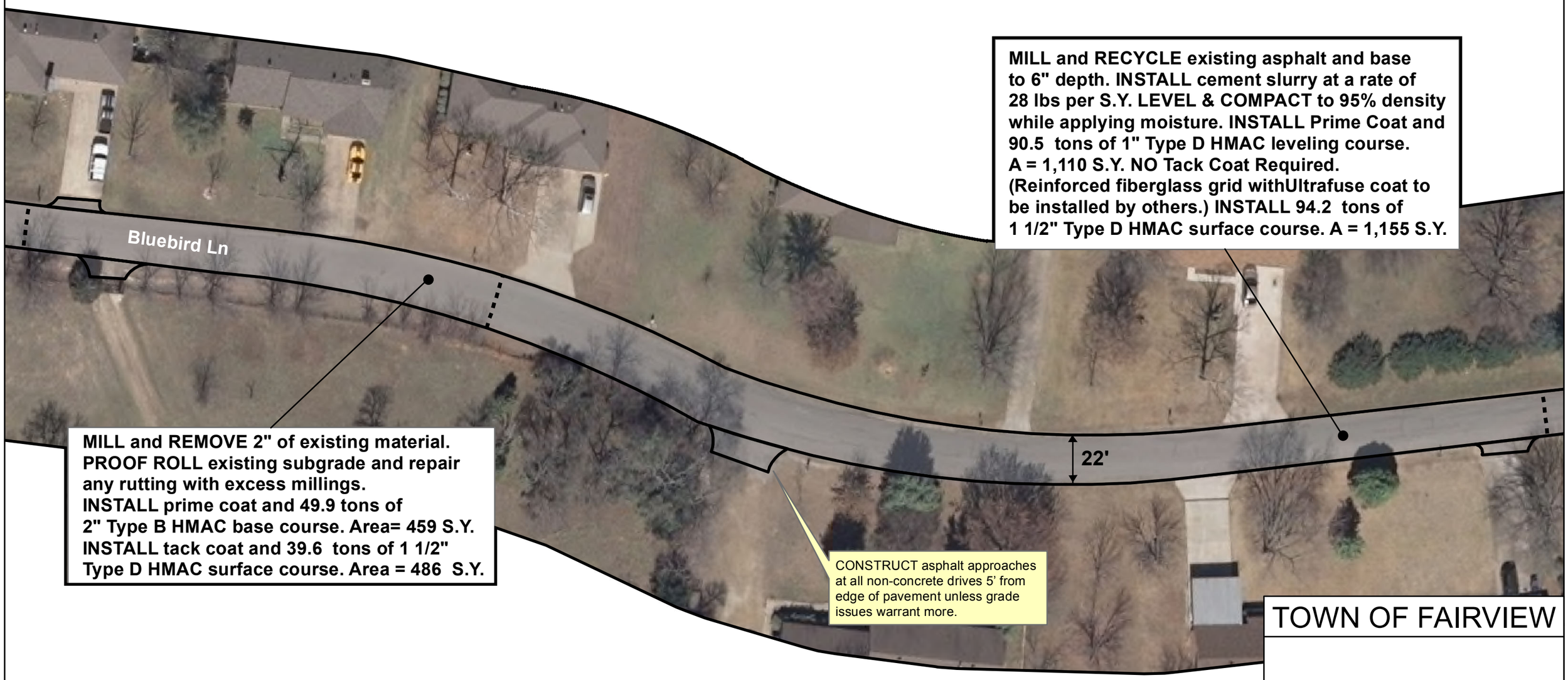
1 inch = 40 feet



MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 90.5 tons of 1" Type D HMAC leveling course. A = 1,110 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid withUltrafuse coat to be installed by others.) INSTALL 94.2 tons of 1 1/2" Type D HMAC surface course. A = 1,155 S.Y.

MILL and REMOVE 2" of existing material. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 49.9 tons of 2" Type B HMAC base course. Area= 459 S.Y. INSTALL tack coat and 39.6 tons of 1 1/2" Type D HMAC surface course. Area = 486 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

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N

1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 128.1 tons of 1" Type D HMAC leveling course. A = 1,572 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 135.1 tons of 1 1/2" Type D HMAC surface course. A = 1,657 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

22'

Bluebird Ln

REMOVE existing concrete patch. A = 110 S.Y.

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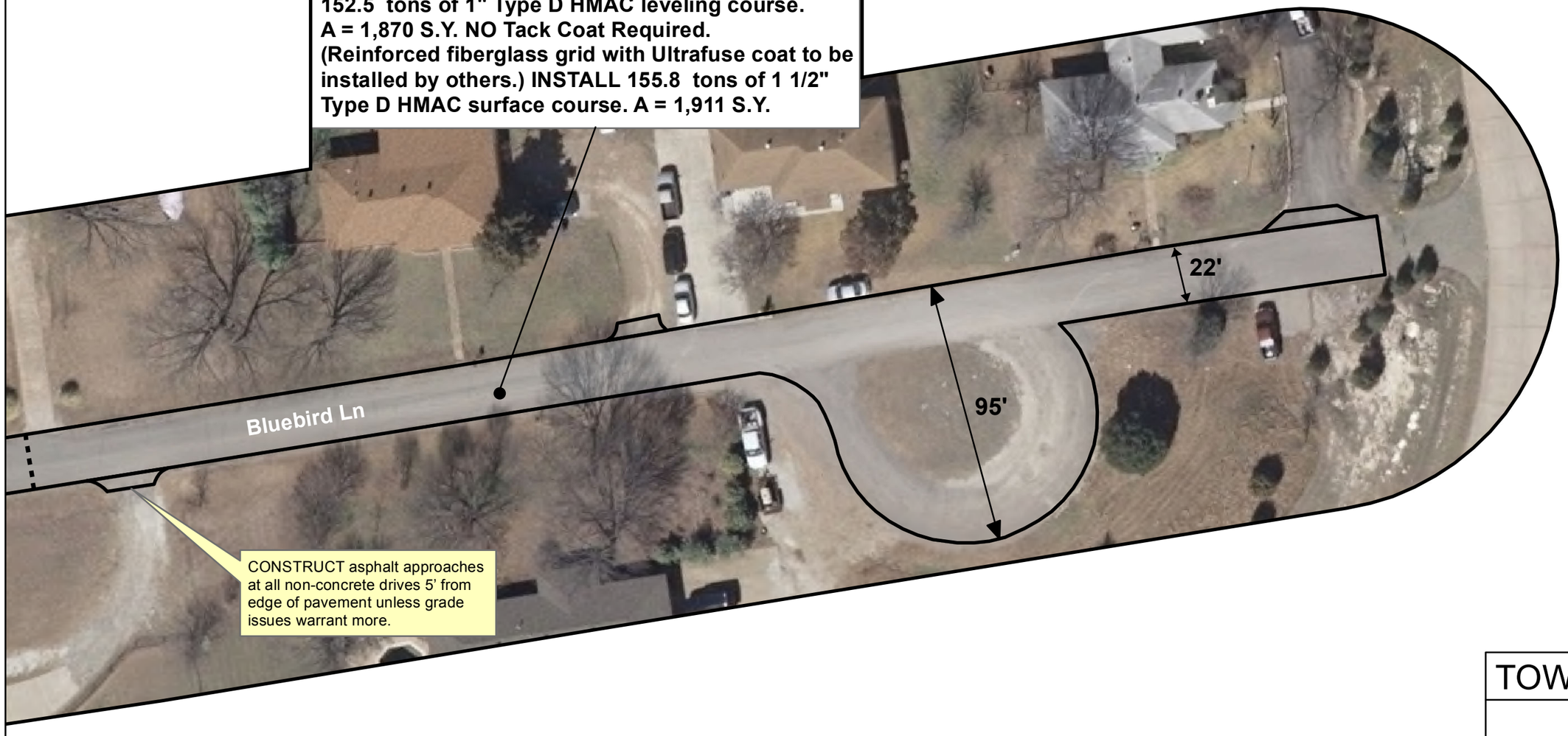
N

1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 152.5 tons of 1" Type D HMAC leveling course. A = 1,870 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 155.8 tons of 1 1/2" Type D HMAC surface course. A = 1,911 S.Y.



CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

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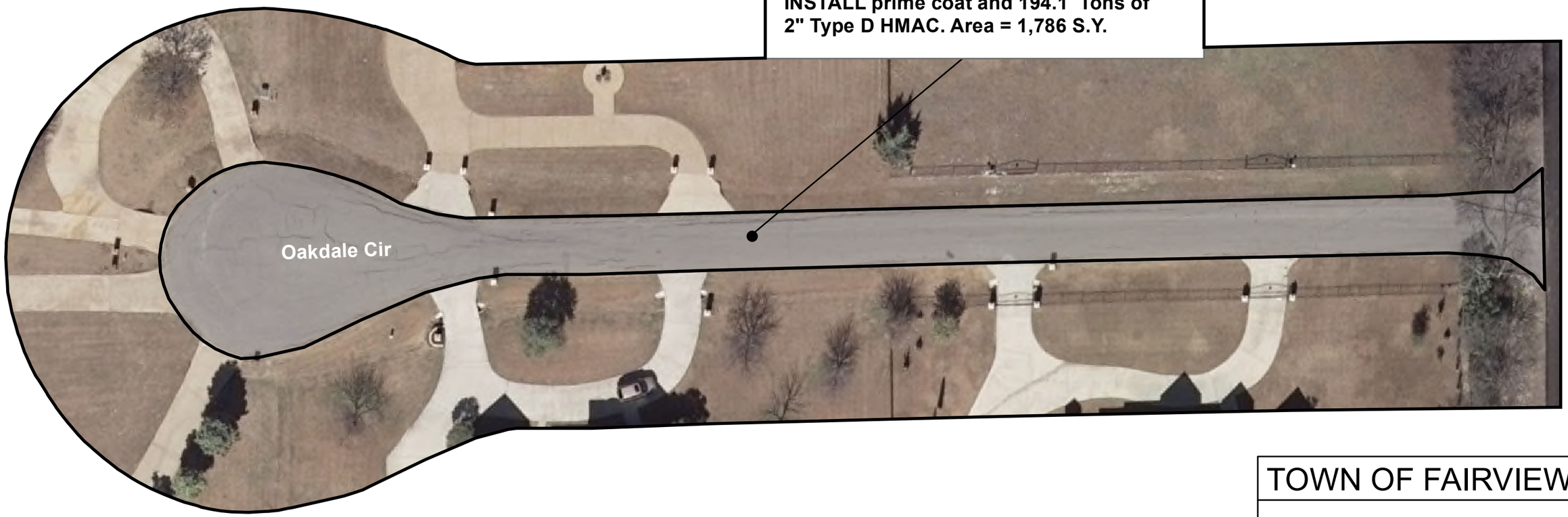
N

1 inch = 40 feet

**MILL and REMOVE 2" of existing asphalt.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 194.1 Tons of 2" Type D HMAC. Area = 1,786 S.Y.**



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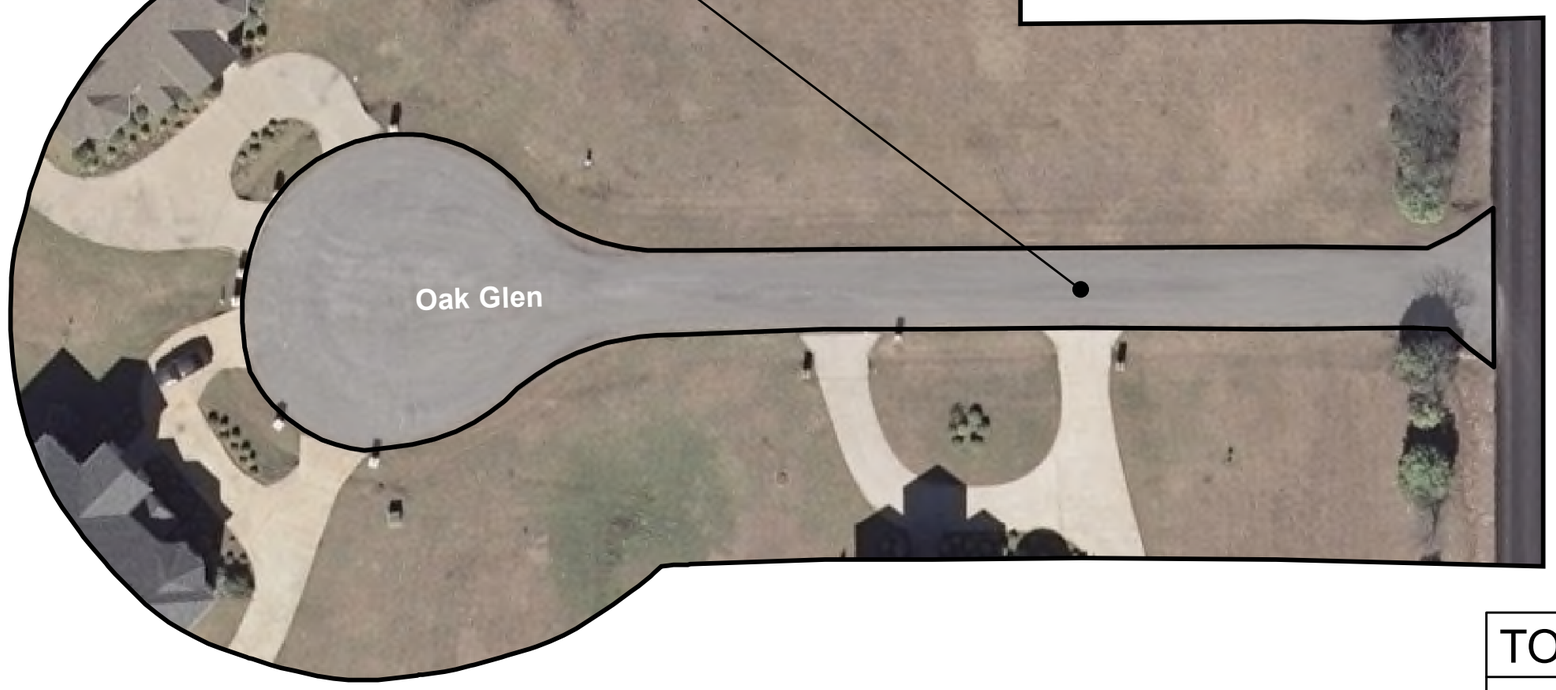
N

1 inch = 40 feet

**MILL and REMOVE 2" of existing asphalt.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 134.8 Tons of 2" Type D HMAC. Area = 1,240 S.Y.**



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N

1 inch = 40 feet

**MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair
any rutting with excess millings.
INSTALL prime coat and 209.4 tons of
2" Type B HMAC base course. Area= 1,926 S.Y.
INSTALL tack coat and 157.1 tons of 1 1/2" Type D
HMAC surface course. Area = 1,926 S.Y.**

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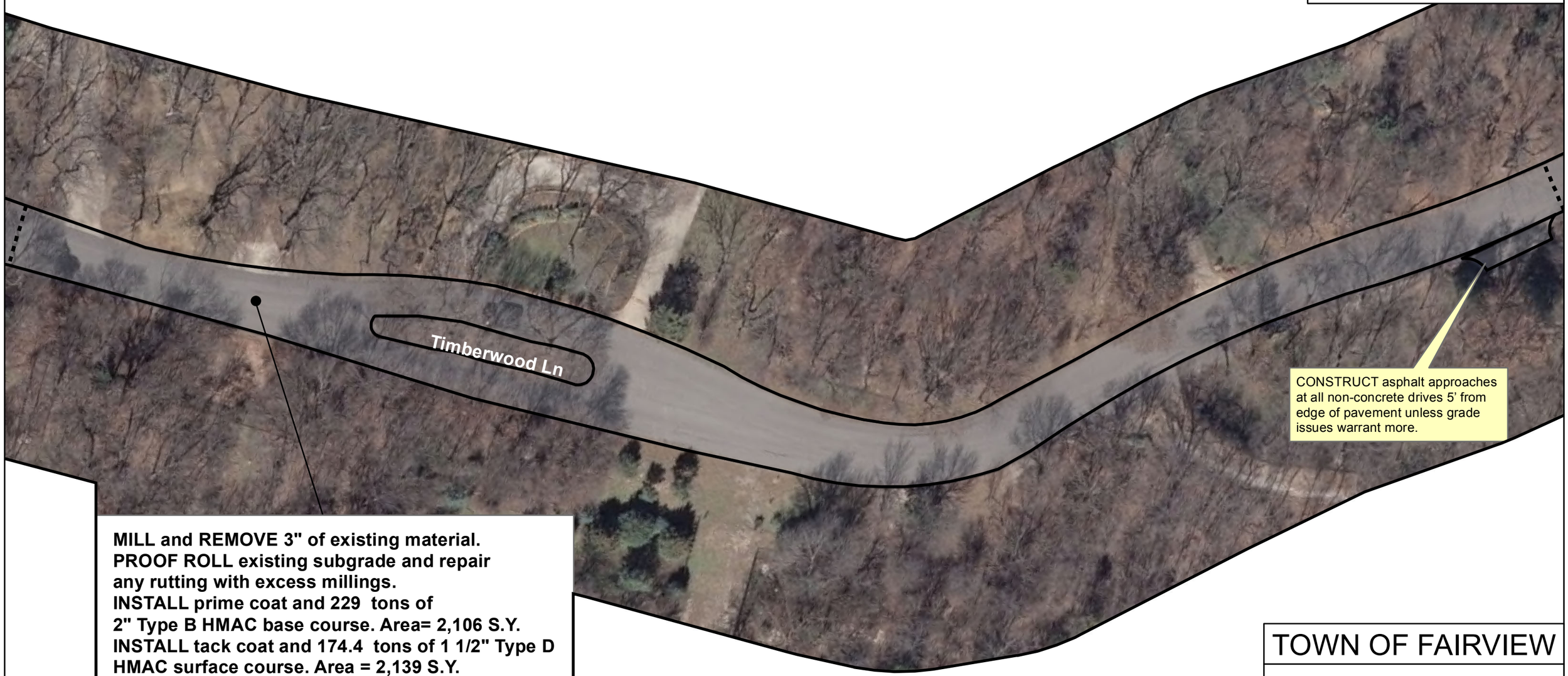
1 inch = 40 feet



CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

**MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 229 tons of 2" Type B HMAC base course. Area= 2,106 S.Y.
INSTALL tack coat and 174.4 tons of 1 1/2" Type D HMAC surface course. Area = 2,139 S.Y.**

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1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 33.6 tons of 1" Type D HMAC leveling course. A = 412 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 33.6 tons of 1 1/2" Type D HMAC surface course. A = 412 S.Y.

24'

Timberwood Ln

MILL and REMOVE 3" of existing material. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 155.3 tons of 2" Type B HMAC base course. Area= 1,428 S.Y. INSTALL tack coat and 116.5 tons of 1 1/2" Type D HMAC surface course. Area = 1,428 S.Y.

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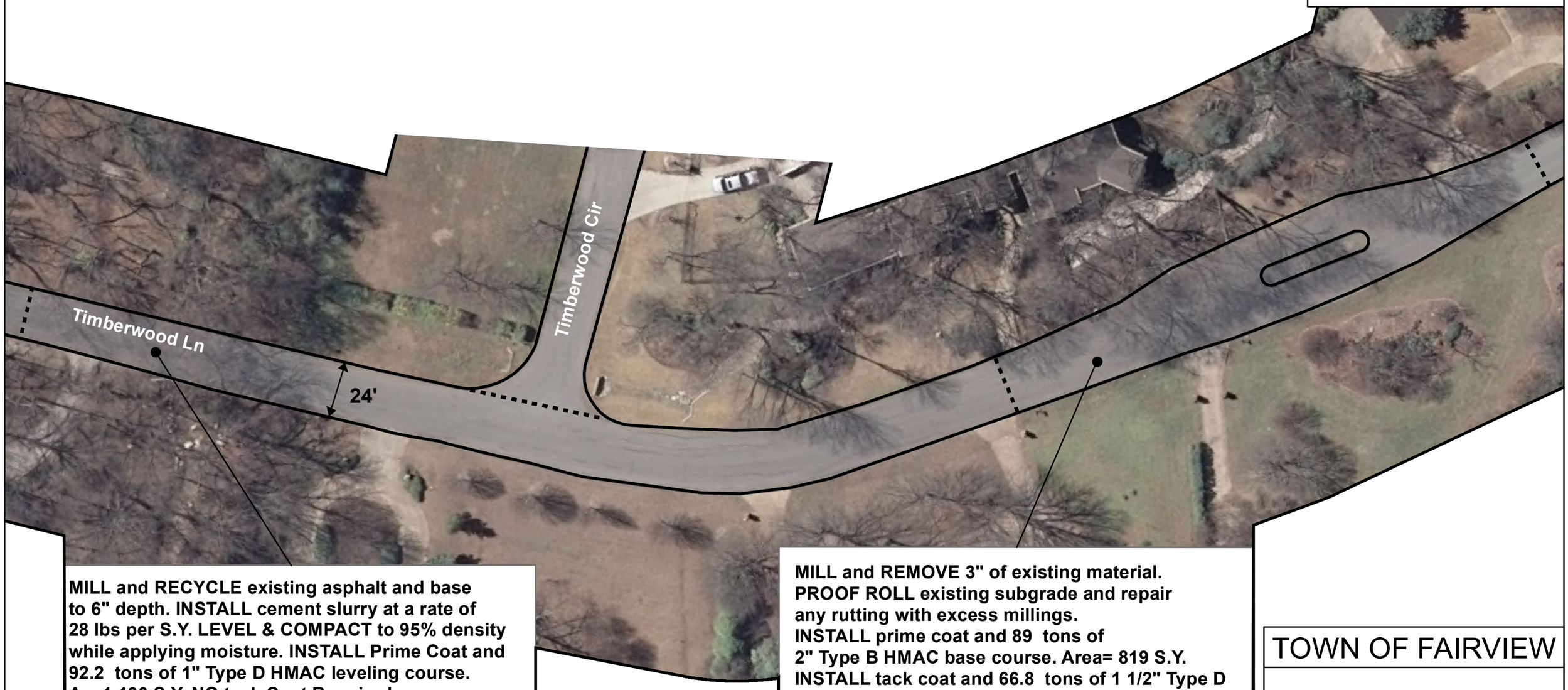
N

1 inch = 40 feet



MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 92.2 tons of 1" Type D HMAC leveling course. A = 1,130 S.Y. NO tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 92.2 tons of 1 1/2" Type D HMAC surface course. A = 1,130 S.Y.

MILL and REMOVE 3" of existing material. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 89 tons of 2" Type B HMAC base course. Area= 819 S.Y. INSTALL tack coat and 66.8 tons of 1 1/2" Type D HMAC surface course. Area = 819 S.Y.

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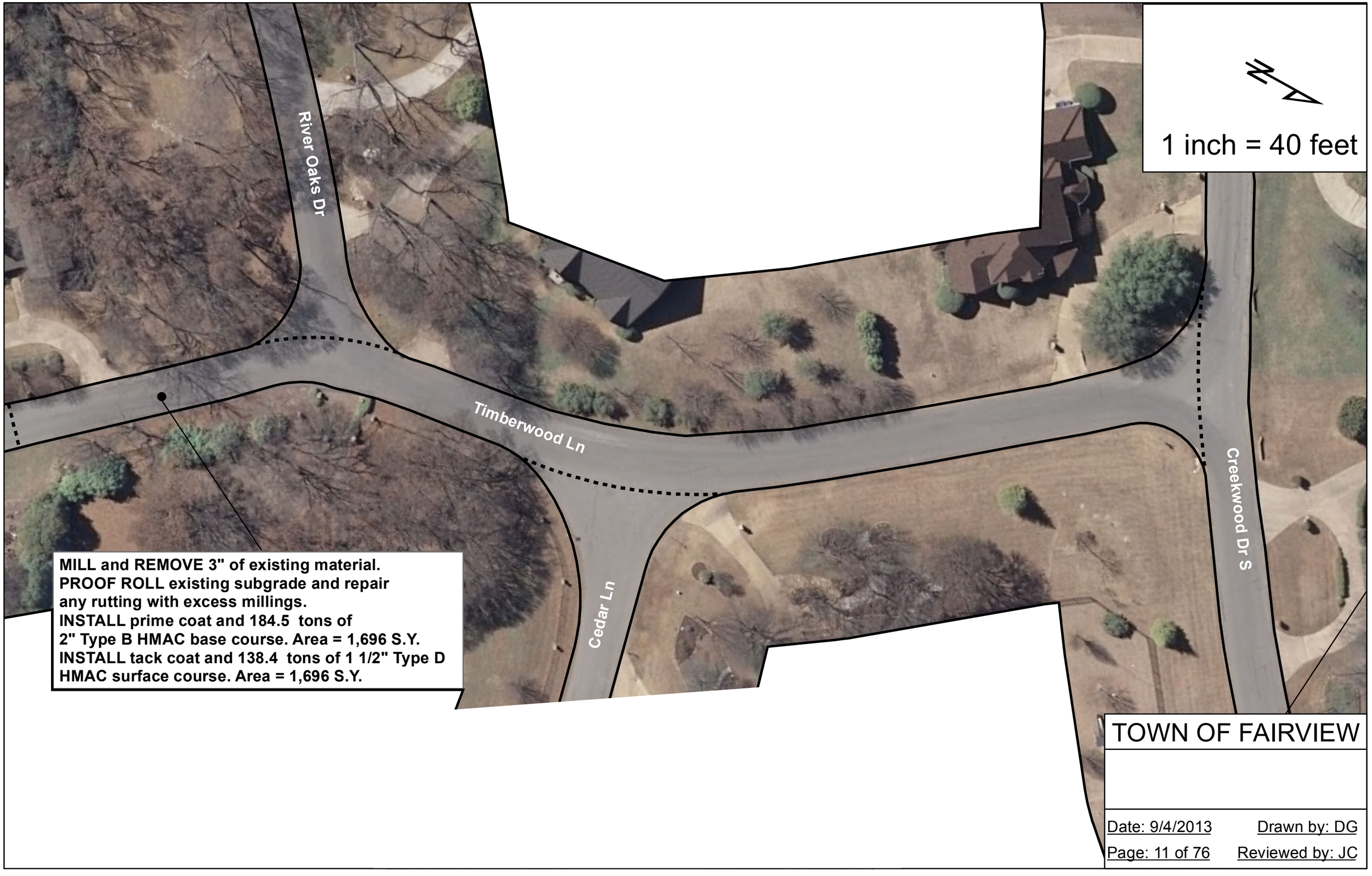

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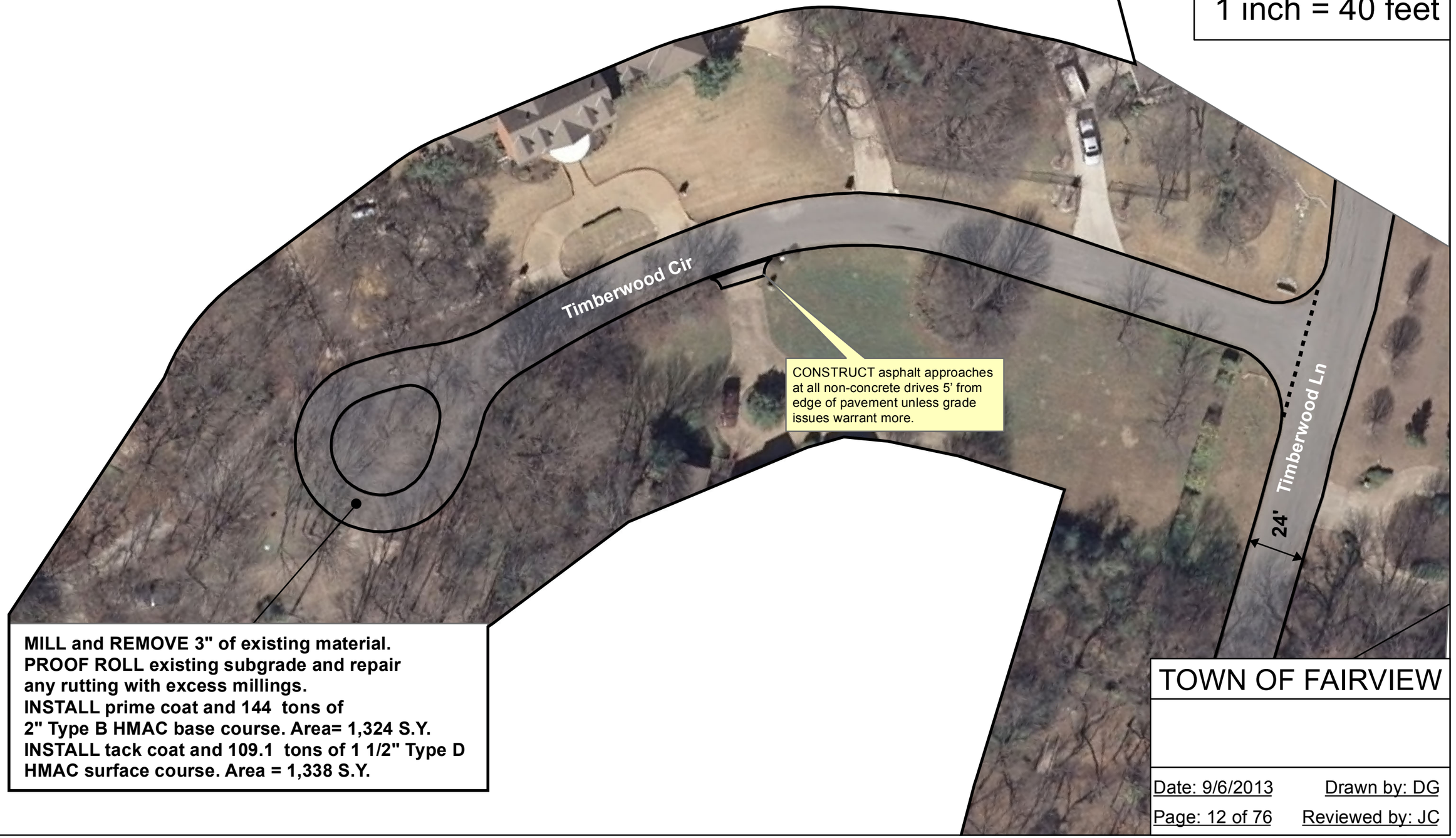
1 inch = 40 feet



**MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 144 tons of 2" Type B HMAC base course. Area= 1,324 S.Y.
INSTALL tack coat and 109.1 tons of 1 1/2" Type D HMAC surface course. Area = 1,338 S.Y.**

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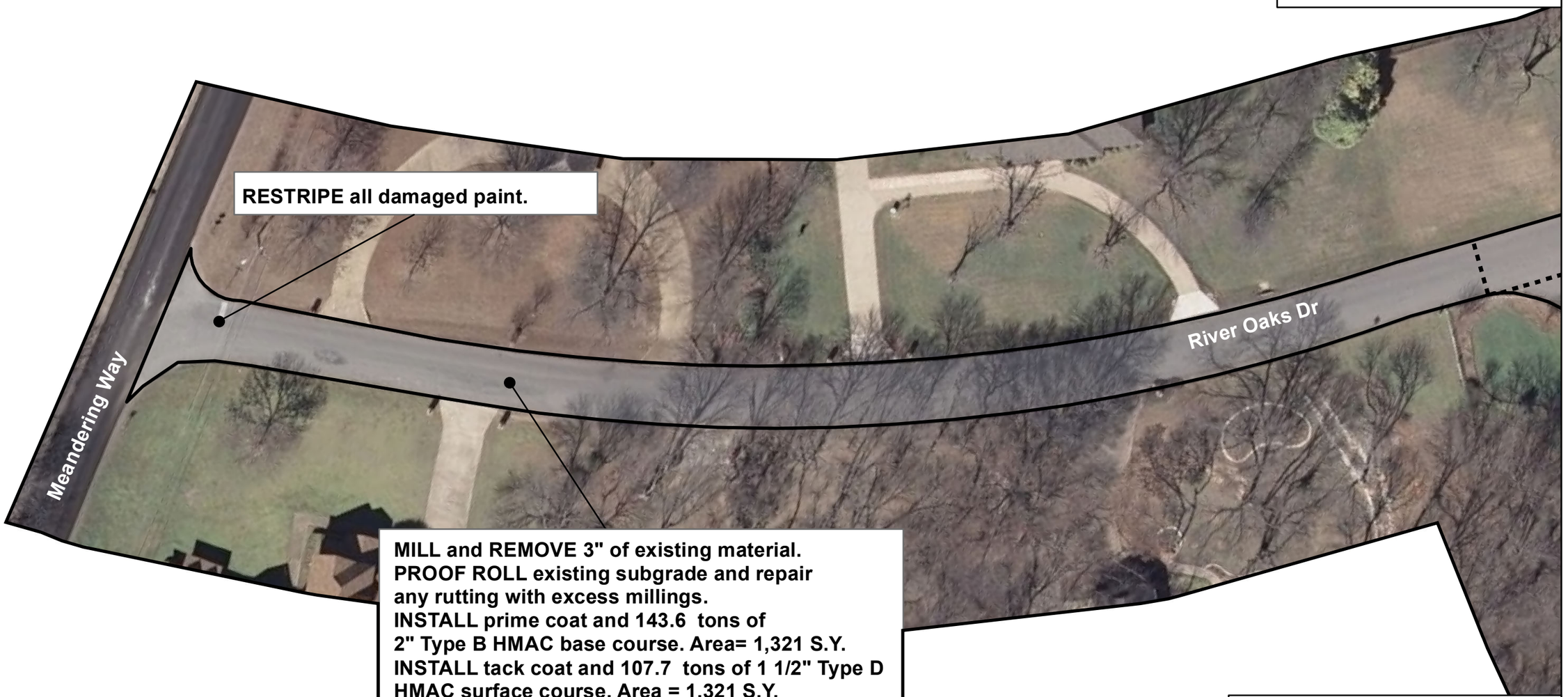
1 inch = 40 feet



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1 inch = 40 feet

**MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair
any rutting with excess millings.
INSTALL prime coat and 147.6 tons of
2" Type B HMAC base course. Area= 1,357 S.Y.
INSTALL tack coat and 110.7 tons of 1 1/2" Type D
HMAC surface course. Area = 1,357 S.Y.**

River Oaks Dr

River Oaks Cir

SAWCUT edge of pavement.

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1 inch = 40 feet

River Oaks Dr

Timberwood Ln

MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 156.6 tons of 2" Type B HMAC base course. Area= 1,440 S.Y.
INSTALL tack coat and 117.4 tons of 1 1/2" Type D HMAC surface course. Area = 1,440 S.Y.

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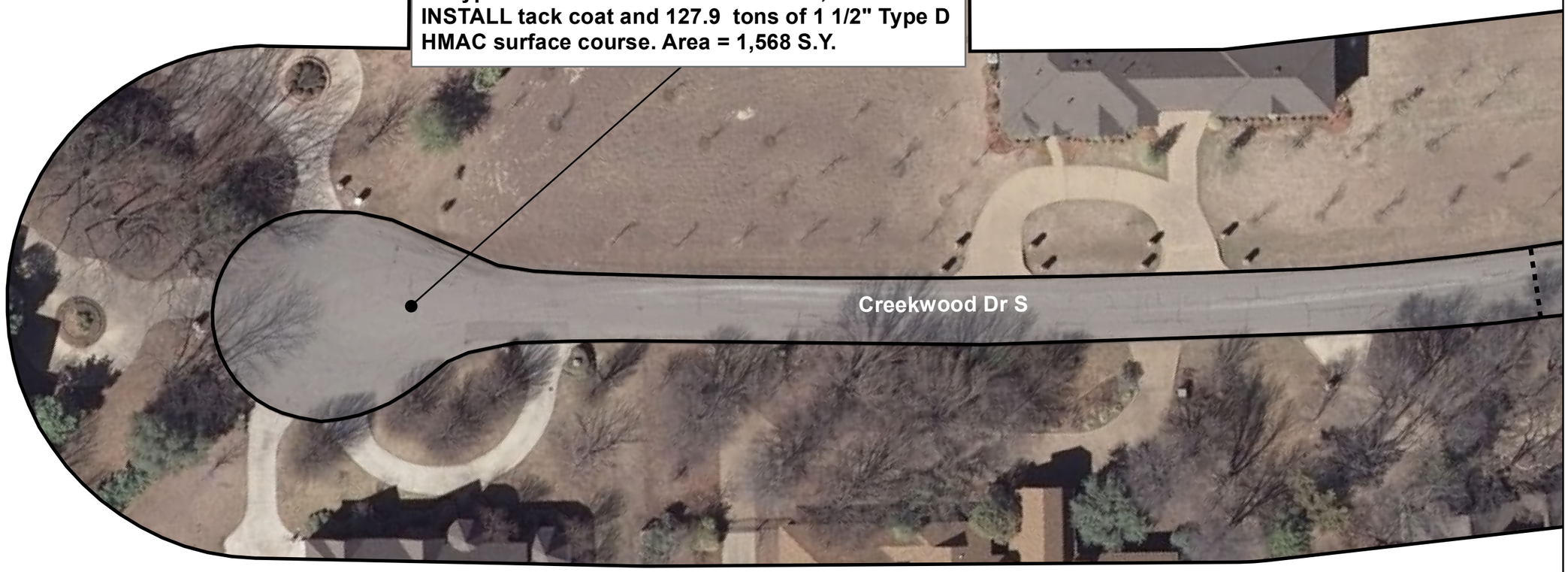
1 inch = 40 feet

MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 170.6 tons of 2" Type B HMAC base course. Area= 1,568 S.Y.
INSTALL tack coat and 127.9 tons of 1 1/2" Type D HMAC surface course. Area = 1,568 S.Y.



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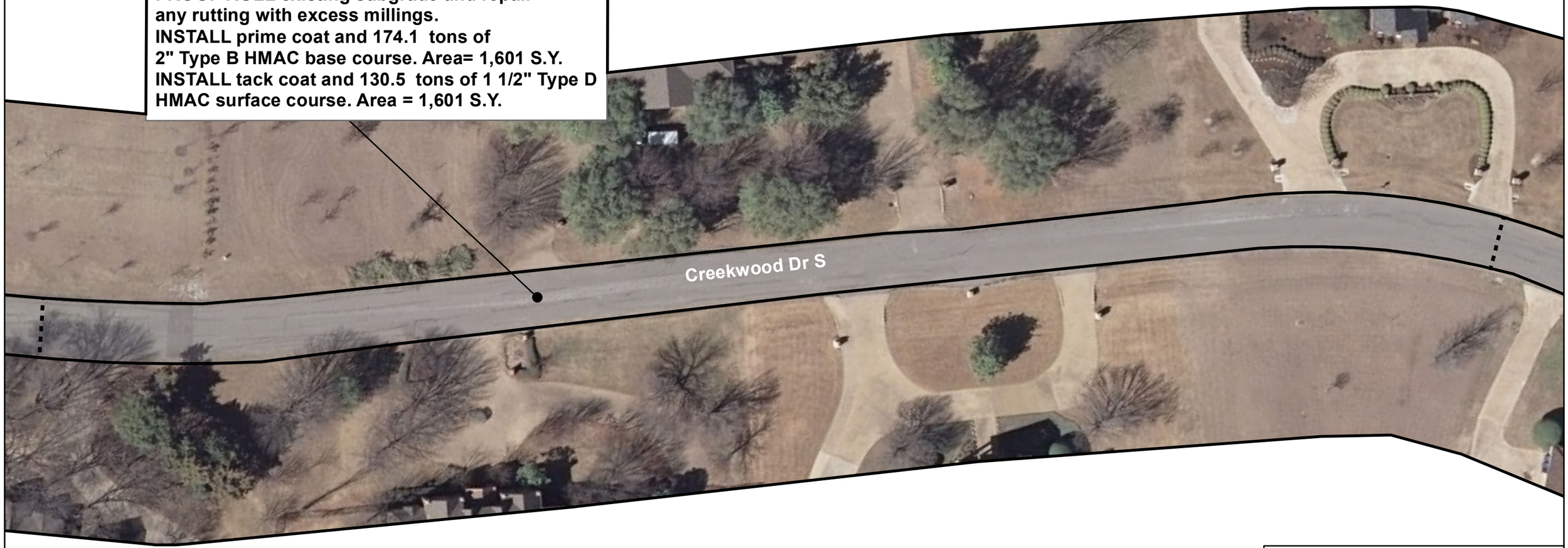
1 inch = 40 feet

MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 174.1 tons of 2" Type B HMAC base course. Area= 1,601 S.Y.
INSTALL tack coat and 130.5 tons of 1 1/2" Type D HMAC surface course. Area = 1,601 S.Y.



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1 inch = 40 feet

**MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair
any rutting with excess millings.
INSTALL prime coat and 187.5 tons of
2" Type B HMAC base course. Area= 1,724 S.Y.
INSTALL tack coat and 140.6 tons of 1 1/2" Type D
HMAC surface course. Area = 1,724 S.Y.**

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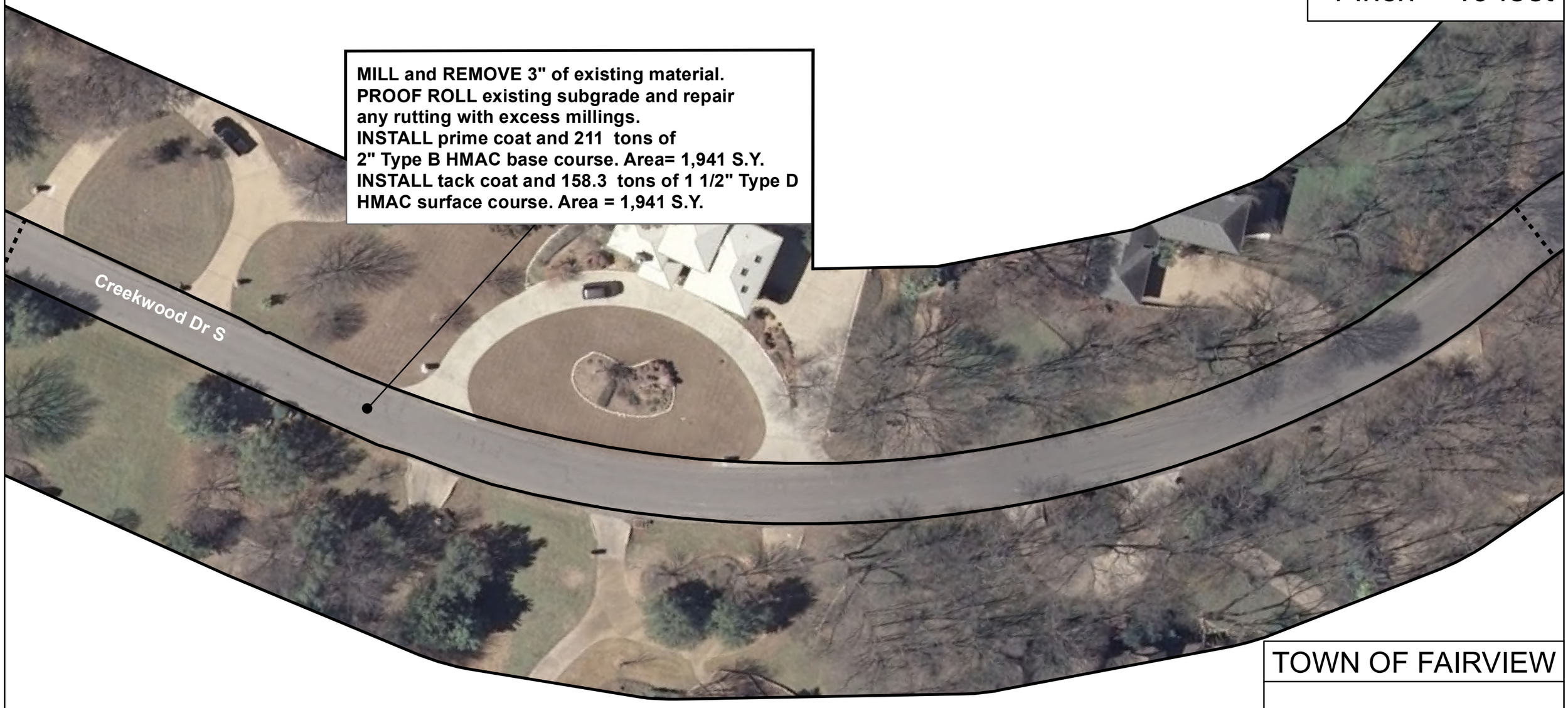
1 inch = 40 feet

MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 211 tons of 2" Type B HMAC base course. Area= 1,941 S.Y.
INSTALL tack coat and 158.3 tons of 1 1/2" Type D HMAC surface course. Area = 1,941 S.Y.



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1 inch = 40 feet

**MILL and REMOVE 4" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 186.6 tons of 2" Type B HMAC base course. Area= 1,715 S.Y.
INSTALL tack coat and 139.9 tons of 1 1/2" Type D HMAC surface course. Area = 1,715 S.Y.**

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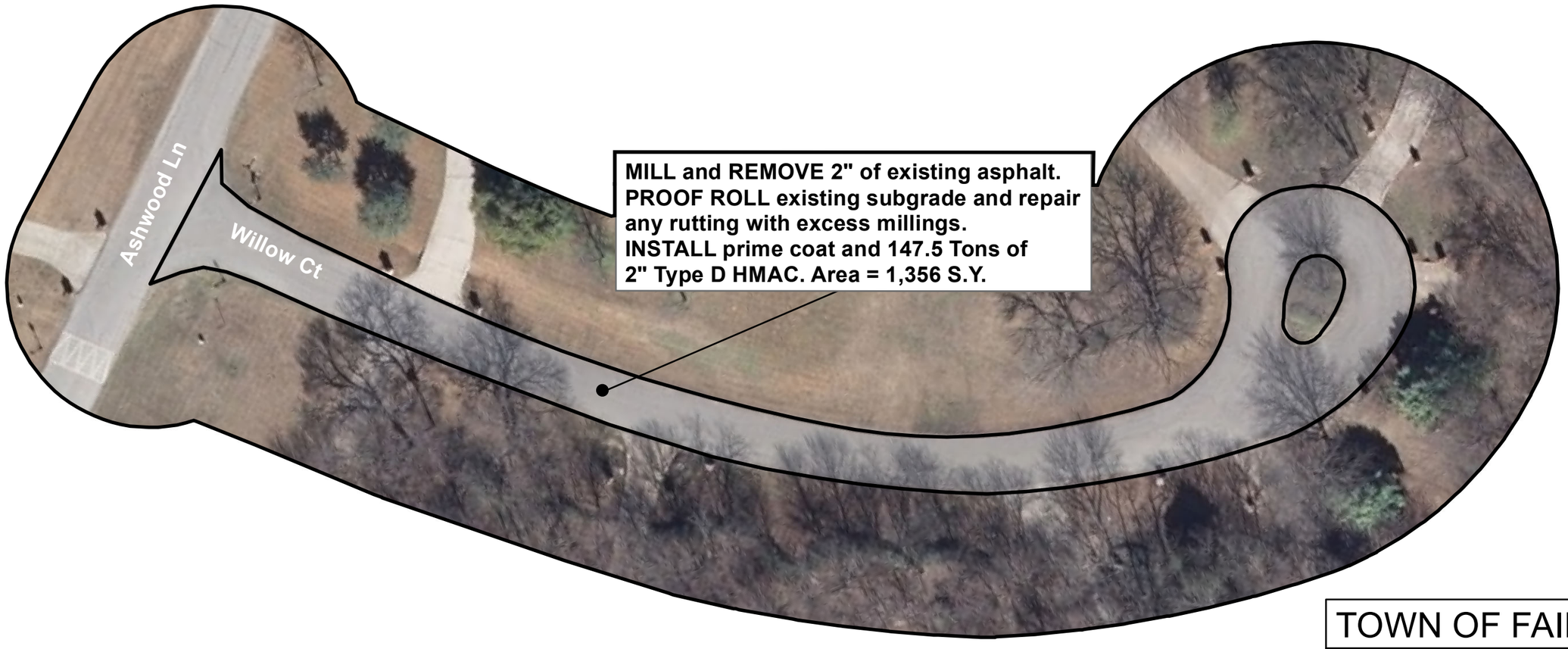
1 inch = 40 feet



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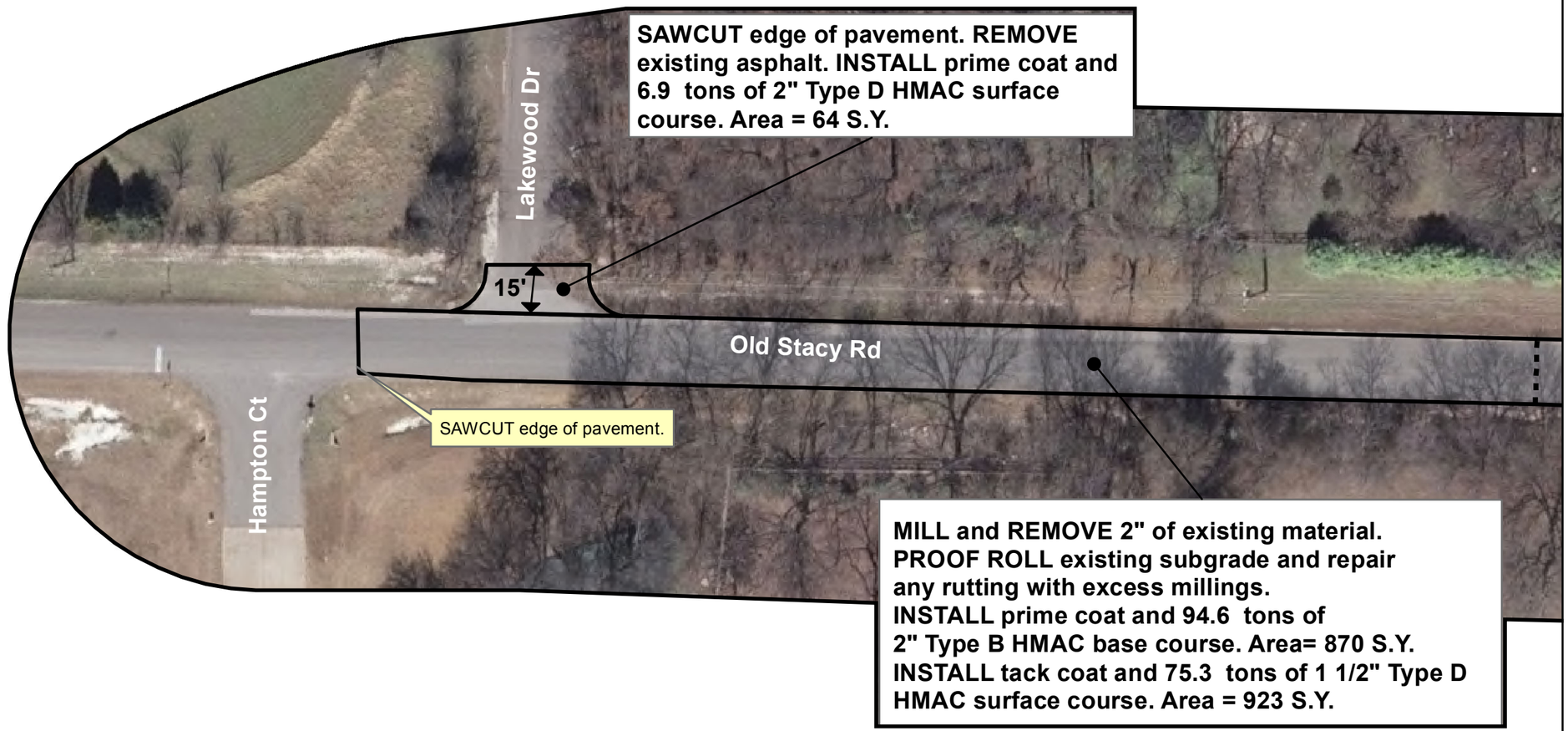
1 inch = 40 feet



SAWCUT edge of pavement. REMOVE existing asphalt. INSTALL prime coat and 6.9 tons of 2" Type D HMAC surface course. Area = 64 S.Y.

SAWCUT edge of pavement.

MILL and REMOVE 2" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 94.6 tons of 2" Type B HMAC base course. Area= 870 S.Y.
INSTALL tack coat and 75.3 tons of 1 1/2" Type D HMAC surface course. Area = 923 S.Y.

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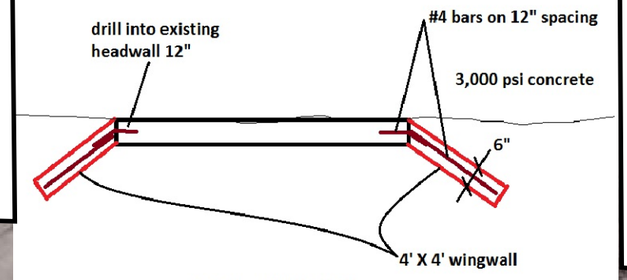
1 inch = 40 feet

MILL and REMOVE 2" of existing material. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 167.6 tons of 2" Type B HMAC base course. Area= 1,541 S.Y. INSTALL tack coat and 133.6 tons of 1 1/2" Type D HMAC surface course. Area = 1,639 S.Y.



CONCRETE WINGWALL EXTENSIONS (N.T.S.)

CONSTRUCT headwall extensions on south side of existing headwall.

Collinwood Dr

15'

Old Stacy Rd

SAWCUT edge of pavement. REMOVE existing asphalt. INSTALL prime coat and 9.6 tons of 2" Type D HMAC surface course. Area = 88 S.Y.

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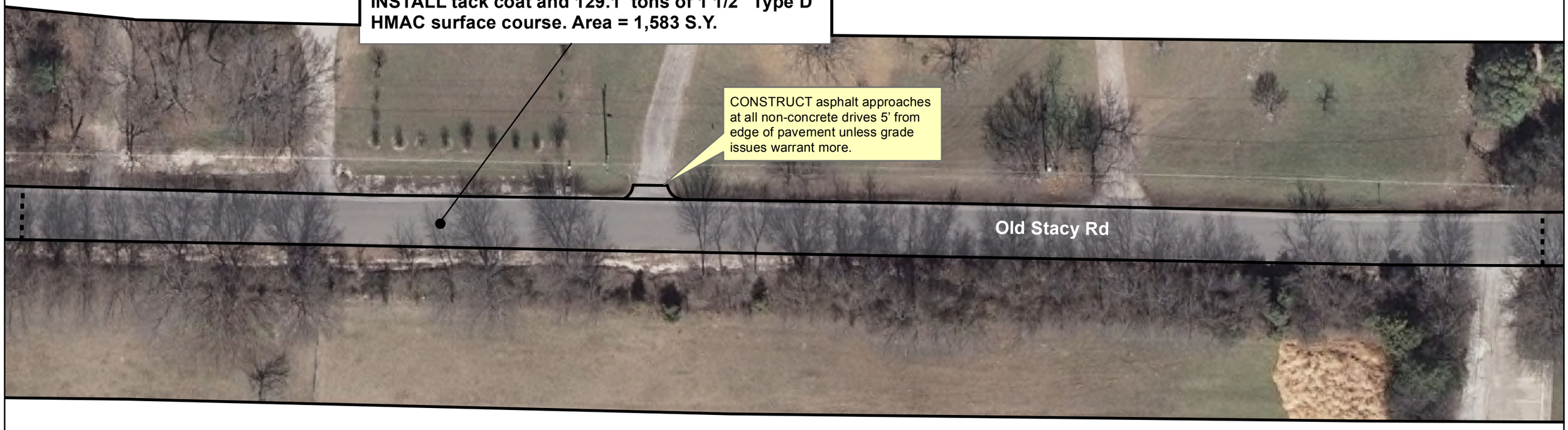
 Reviewed by: JC

N

1 inch = 40 feet

**MILL and REMOVE 2" of existing material.
PROOF ROLL existing subgrade and repair
any rutting with excess millings.
INSTALL prime coat and 171 tons of
2" Type B HMAC base course. Area= 1,572 S.Y.
INSTALL tack coat and 129.1 tons of 1 1/2" Type D
HMAC surface course. Area = 1,583 S.Y.**

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.



TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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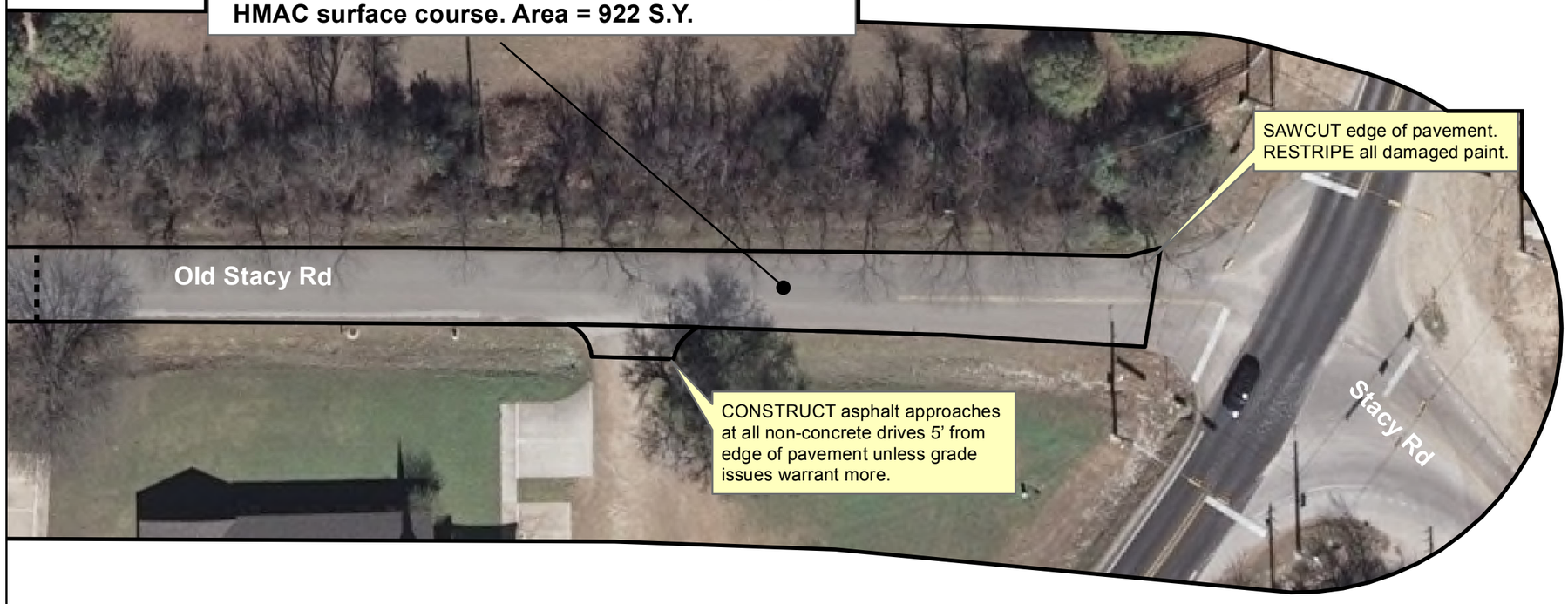
N

1 inch = 40 feet

**MILL and REMOVE 2" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 96.8 tons of 2" Type B HMAC base course. Area= 890 S.Y.
INSTALL tack coat and 75.2 tons of 1 1/2" Type D HMAC surface course. Area = 922 S.Y.**



TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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N

1 inch = 40 feet

MILL and REMOVE 2" of existing asphalt. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 105.8 tons of 2" Type D HMAC. Area = 973 S.Y.

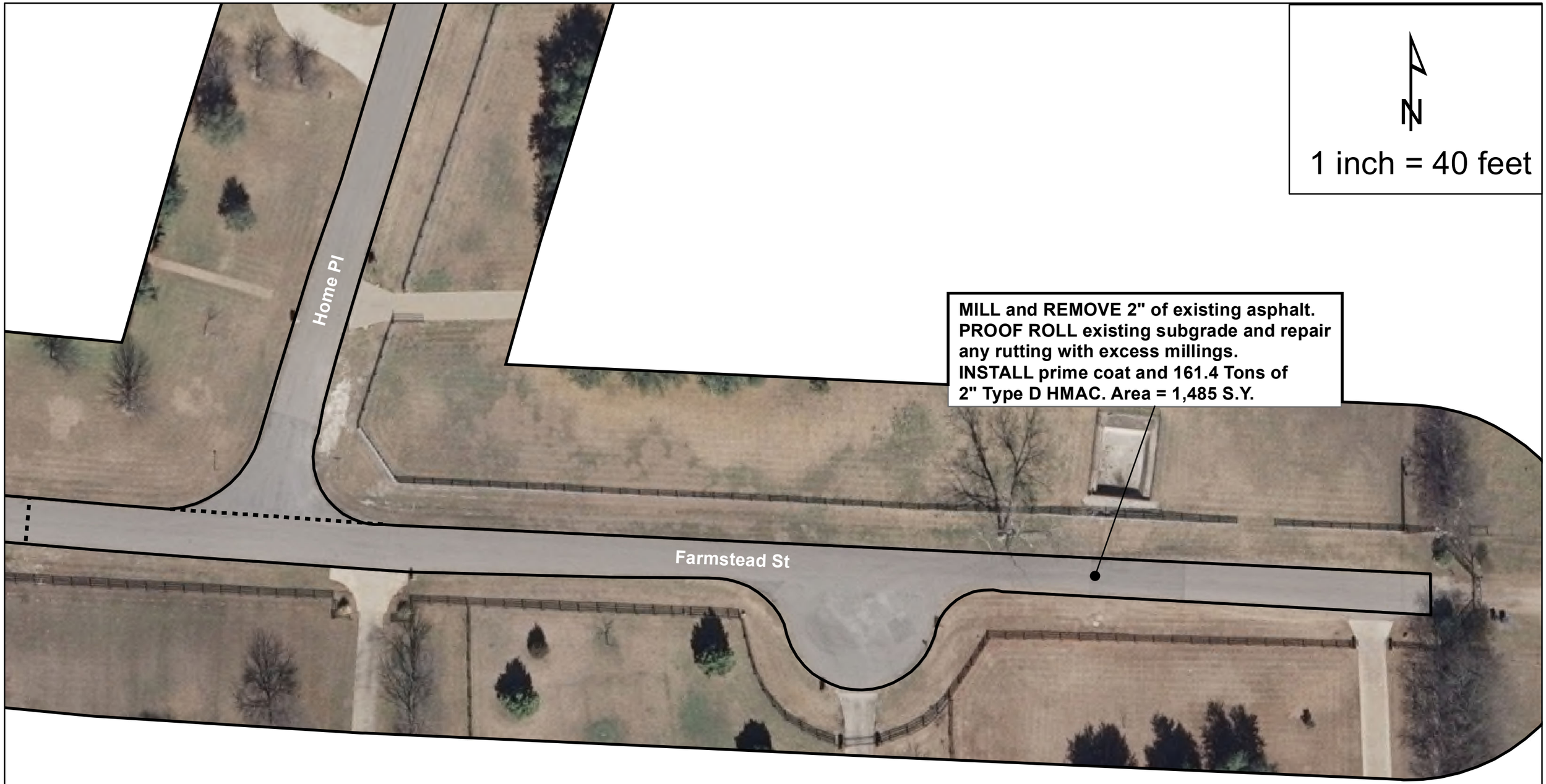
SAWCUT edge of pavement. REMOVE existing pavement and base material. CONSTRUCT 2" Type D HMAC on 6" HMAC Type B base. (Per TXDOT requirements.) A = 165 S.Y. RESTRIPE all damaged paint.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC



TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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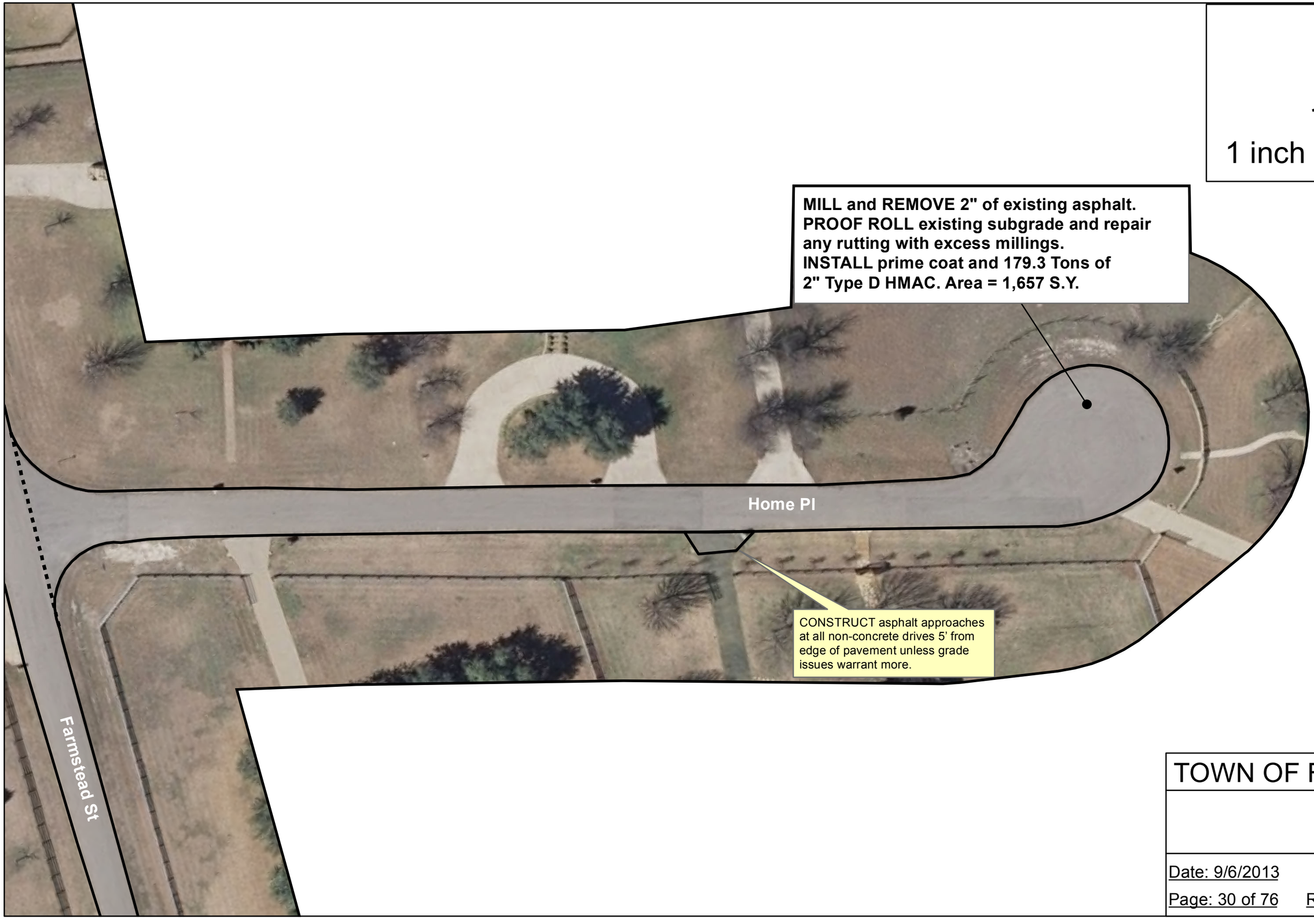

1 inch = 40 feet

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 108.4 tons of 1" Type D HMAC leveling course. A = 1,330 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 109.6 tons of 1 1/2" Type D HMAC surface course. A = 1,345 S.Y.

TOWN OF FAIRVIEW

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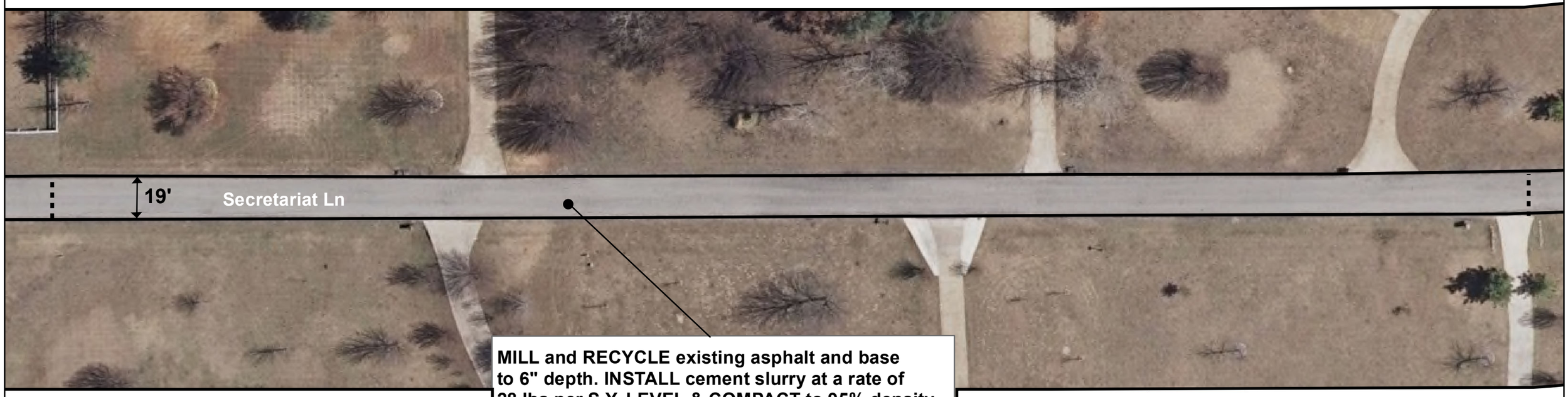
1 inch = 40 feet



MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 107 tons of 1" Type D HMAC leveling course. A = 1,313 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 107 tons of 1 1/2" Type D HMAC surface course. A = 1,313 S.Y.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

Secretariat Ln

19'

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 112.5 tons of 1" Type D HMAC leveling course. A = 1,381 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 116.5 tons of 1 1/2" Type D HMAC surface course. A = 1,429 S.Y.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 129.9 tons of 1" Type D HMAC leveling course. A = 1,593 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 129.9 tons of 1 1/2" Type D HMAC surface course. A = 1,593 S.Y.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 111.1 tons of 1" Type D HMAC leveling course. A = 1,363 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 111.1 tons of 1 1/2" Type D HMAC surface course. A = 1,363 S.Y.

TOWN OF FAIRVIEW

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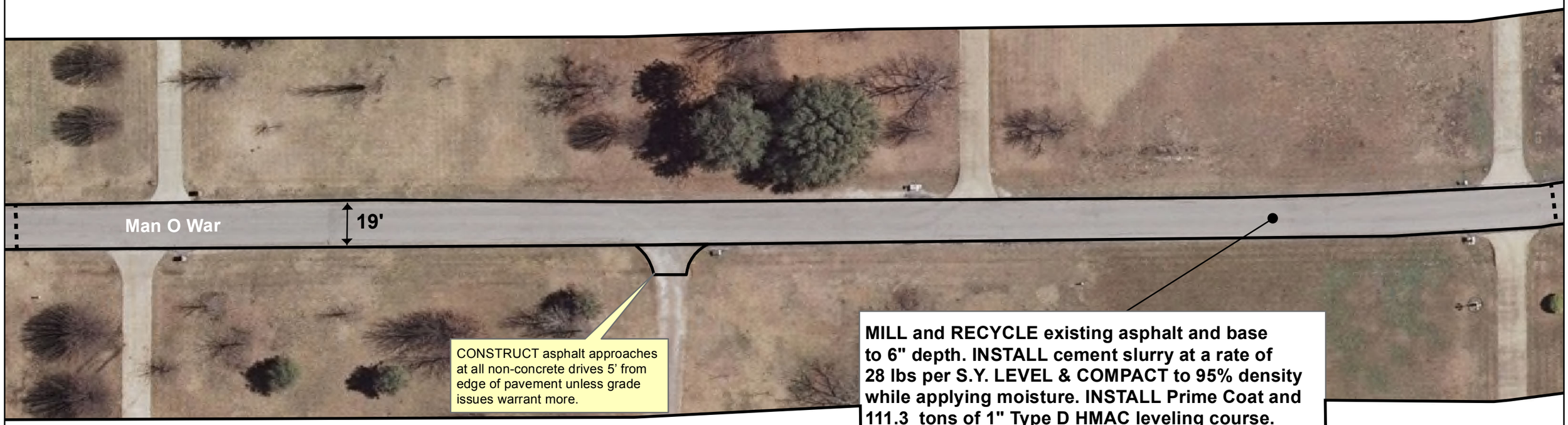
1 inch = 40 feet



TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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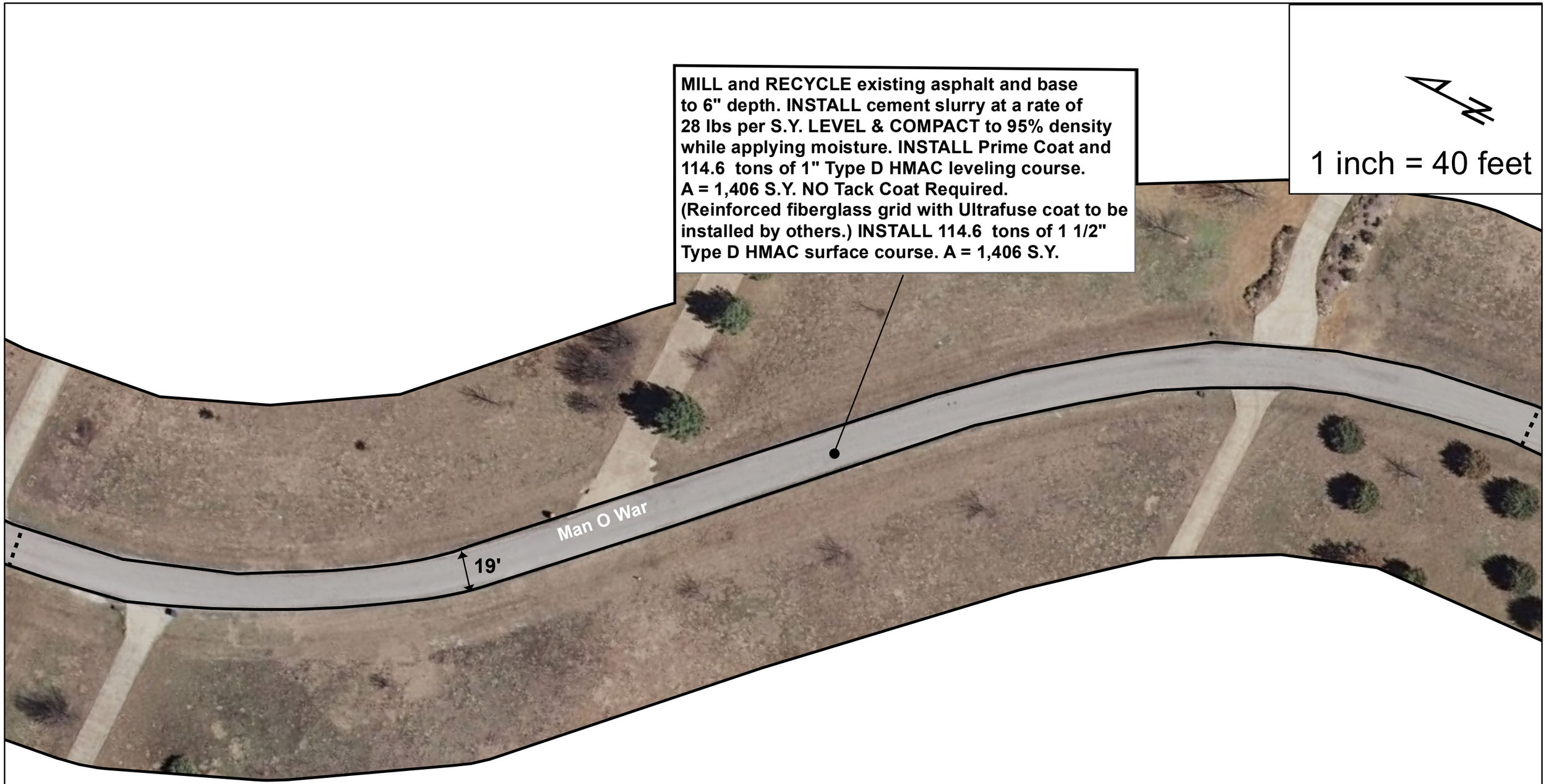

TOWN OF FAIRVIEW	
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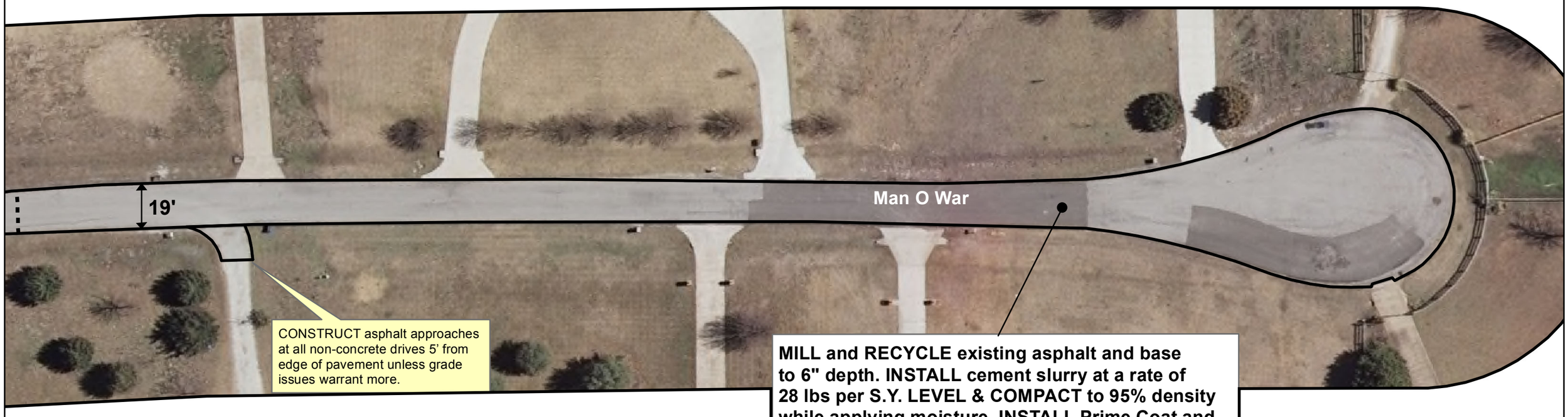
1 inch = 40 feet



TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 103.9 tons of 1" Type D HMAC leveling course. A = 1,275 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 104.8 tons of 1 1/2" Type D HMAC surface course. A = 1,286 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

19'

Kentucky Ln

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 109.3 tons of 1" Type D HMAC leveling course. A = 1,341 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 114.9 tons of 1 1/2" Type D HMAC surface course. A = 1,409 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

19'

Kentucky Ln

TOWN OF FAIRVIEW

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1 inch = 40 feet

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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1 inch = 40 feet

**MILL and REMOVE 2" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 139.4 tons of 2" Type B HMAC base course. Area= 1,282 S.Y.
INSTALL tack coat and 113.4 tons of 1 1/2" Type D HMAC surface course. Area = 1,391 S.Y.**

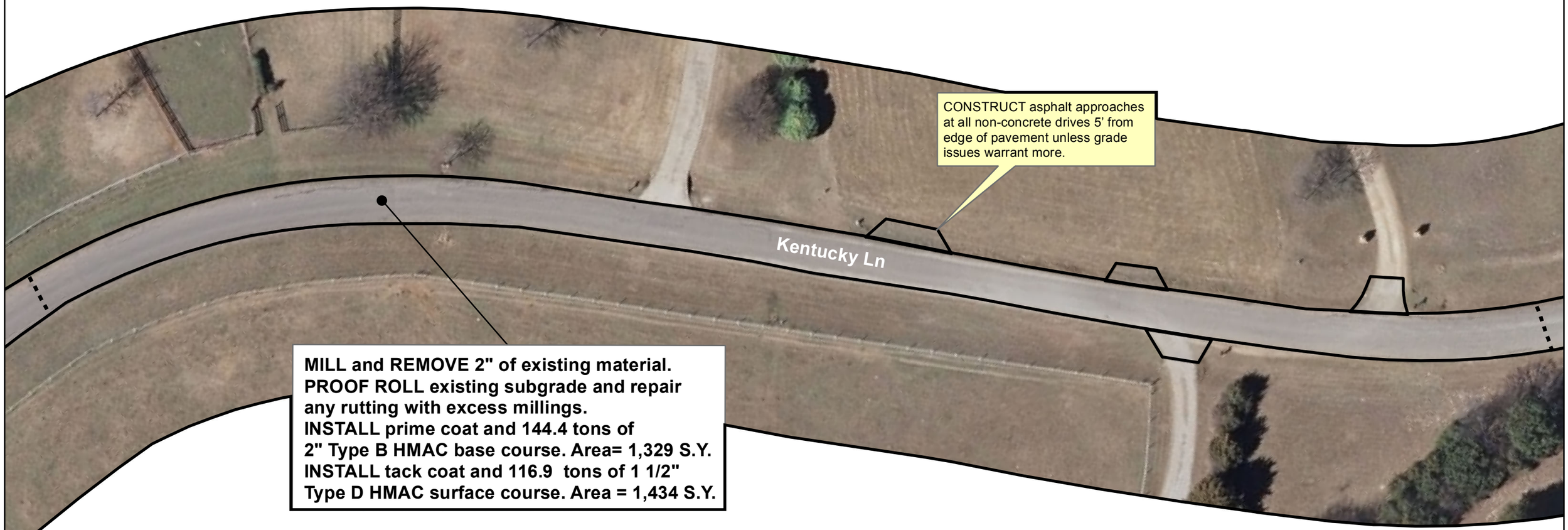
CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet



TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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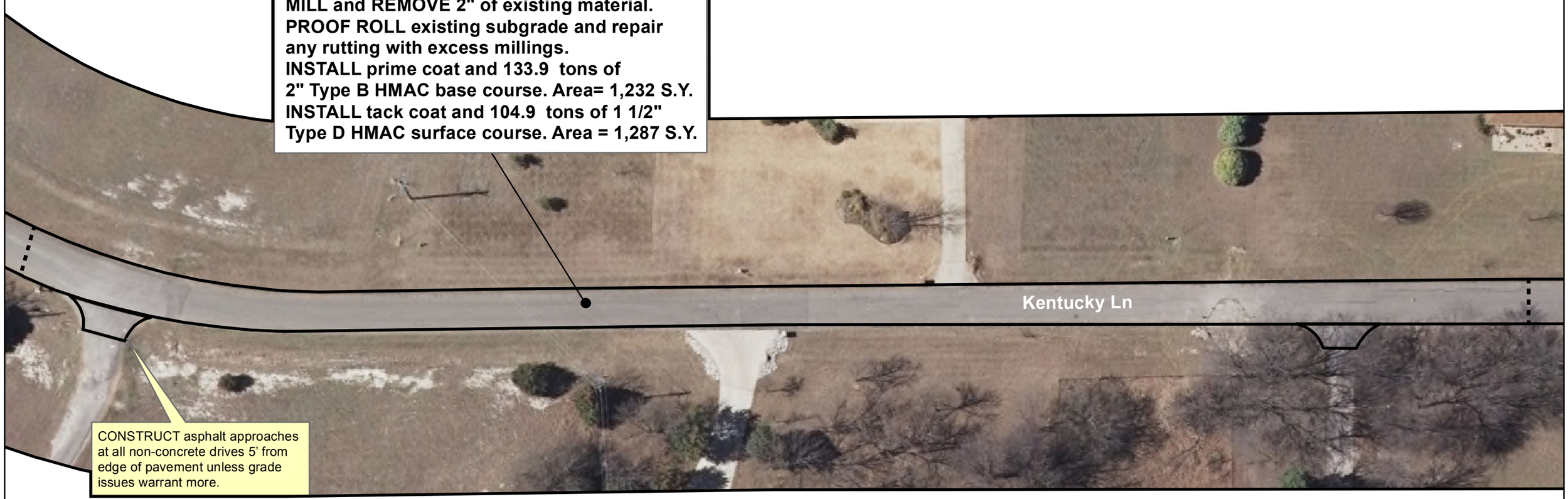
1 inch = 40 feet

MILL and REMOVE 2" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 133.9 tons of 2" Type B HMAC base course. Area= 1,232 S.Y.
INSTALL tack coat and 104.9 tons of 1 1/2" Type D HMAC surface course. Area = 1,287 S.Y.



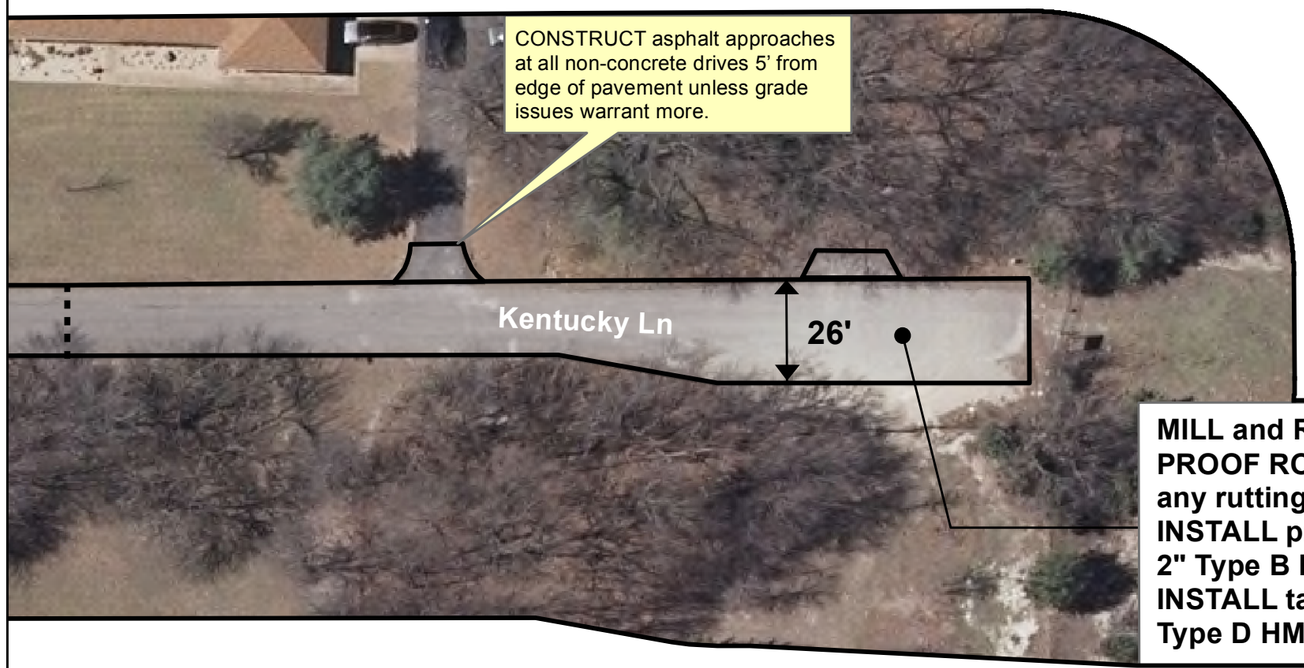
CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet



TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

N

1 inch = 40 feet

SAWCUT edge of pavement. REMOVE existing pavement and base material. CONSTRUCT 2" Type D HMAC on 6" Type B HMAC base. (Per TXDOT requirements.) A = 190 S.Y. RESTRIPE all damaged paint.

REMOVE existing concrete. A= 20 S.Y. RESET drainage pipe.

SAWCUT edge of pavement.

Red Oak Trl

22'

Sharon Rd

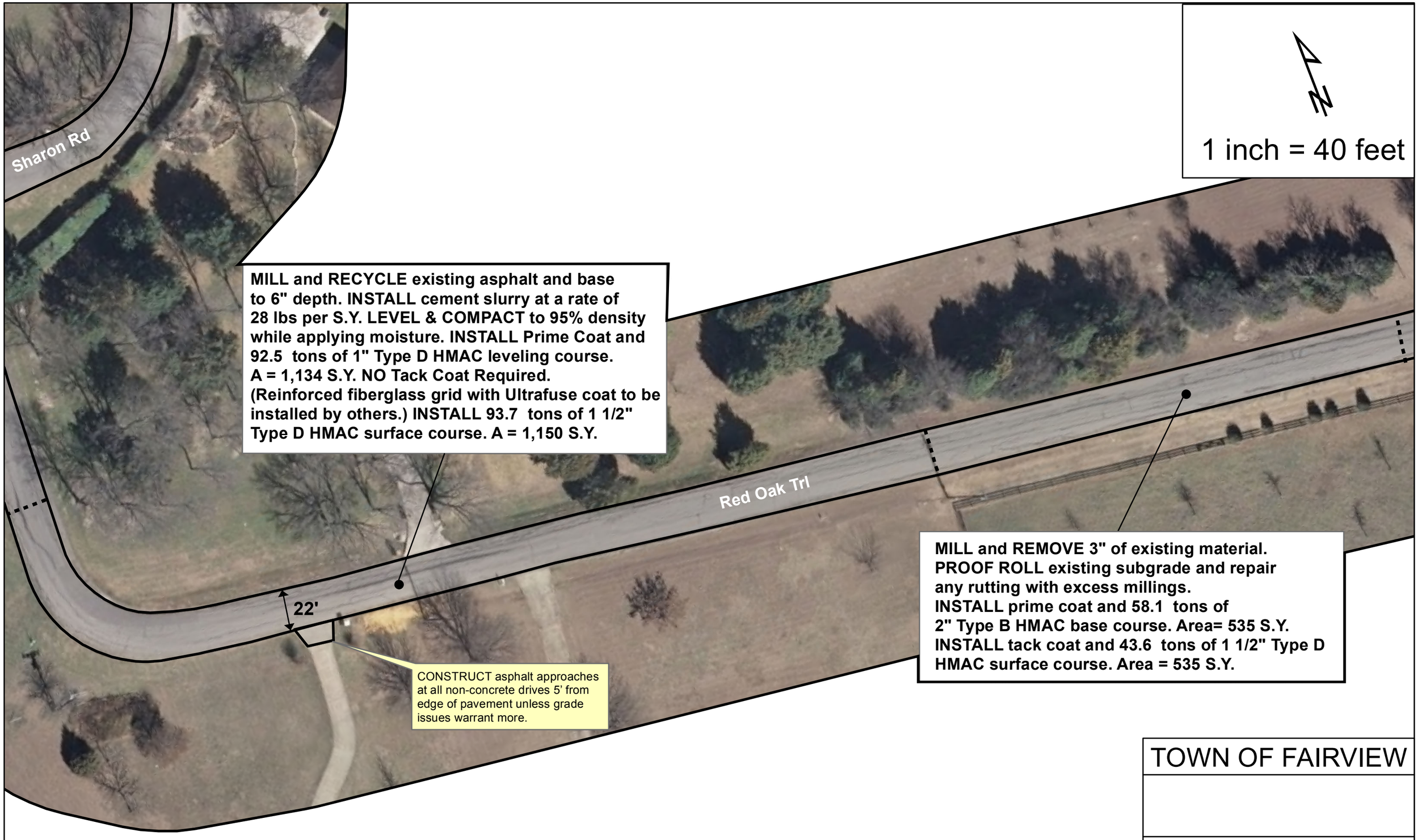
22'

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 124.6 tons of 1" Type D HMAC leveling course. A = 1,527 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 124.6 tons of 1 1/2" Type D HMAC surface course. A = 1,527 S.Y.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC



TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet

MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 157.8 tons of 2" Type B HMAC base course. Area= 1,451 S.Y.
INSTALL tack coat and 122.8 tons of 1 1/2" Type D HMAC surface course. Area = 1,506 S.Y.

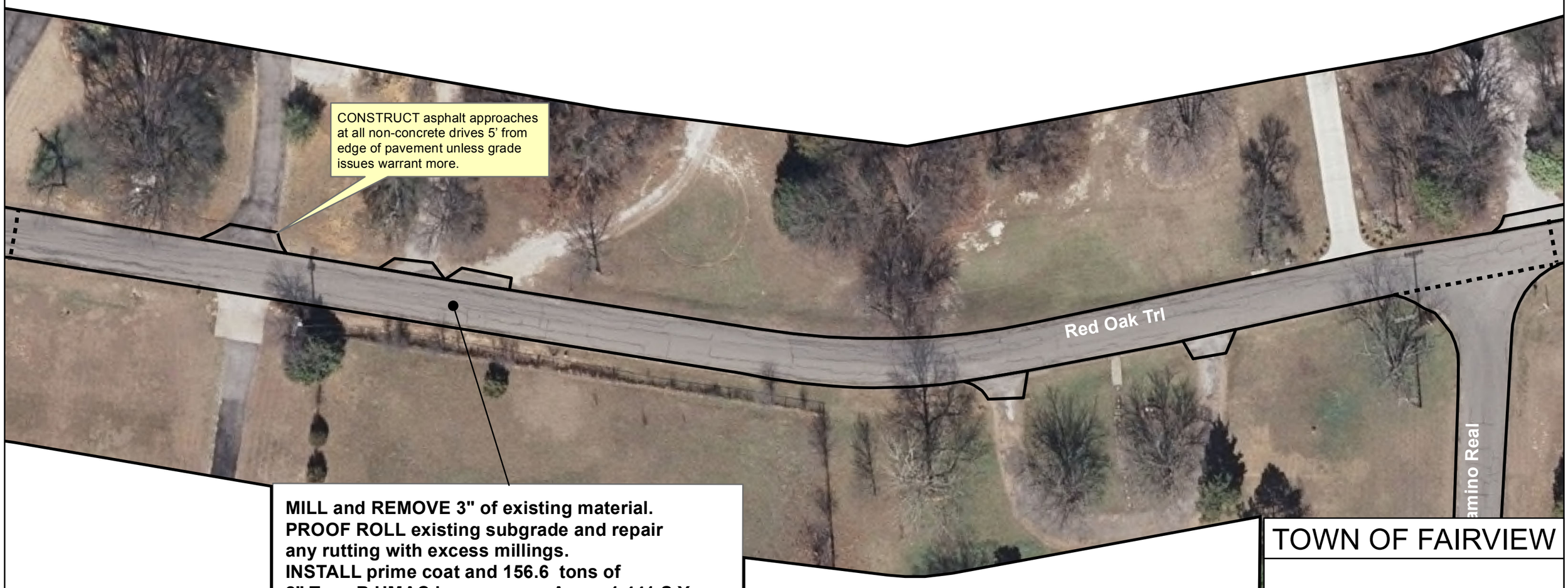
TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

N

1 inch = 40 feet



MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 156.6 tons of 2" Type B HMAC base course. Area= 1,441 S.Y.
INSTALL tack coat and 125 tons of 1 1/2" Type D HMAC surface course. Area = 1,534 S.Y.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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1 inch = 40 feet

MILL and REMOVE 3" of existing asphalt.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 130.5 Tons of 2" Type D HMAC. Area = 1,232 S.Y.

Red Oak Trl

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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N

1 inch = 40 feet

**MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 132.9 tons of 2" Type B HMAC base course. Area= 1,222 S.Y.
INSTALL tack coat and 102 tons of 1 1/2" Type D HMAC surface course. Area = 1,251 S.Y.**

Country Club Rd (FM1378)

Camino Real

**SAWCUT egde of pavement.
REMOVE existing pavement and base material. CONSTRUCT 2" Type D HMAC on 6" HMAC Type B base. (Per TXDOT requirements.) A = 127 S.Y.
RESTRIPE all damaged paint.**

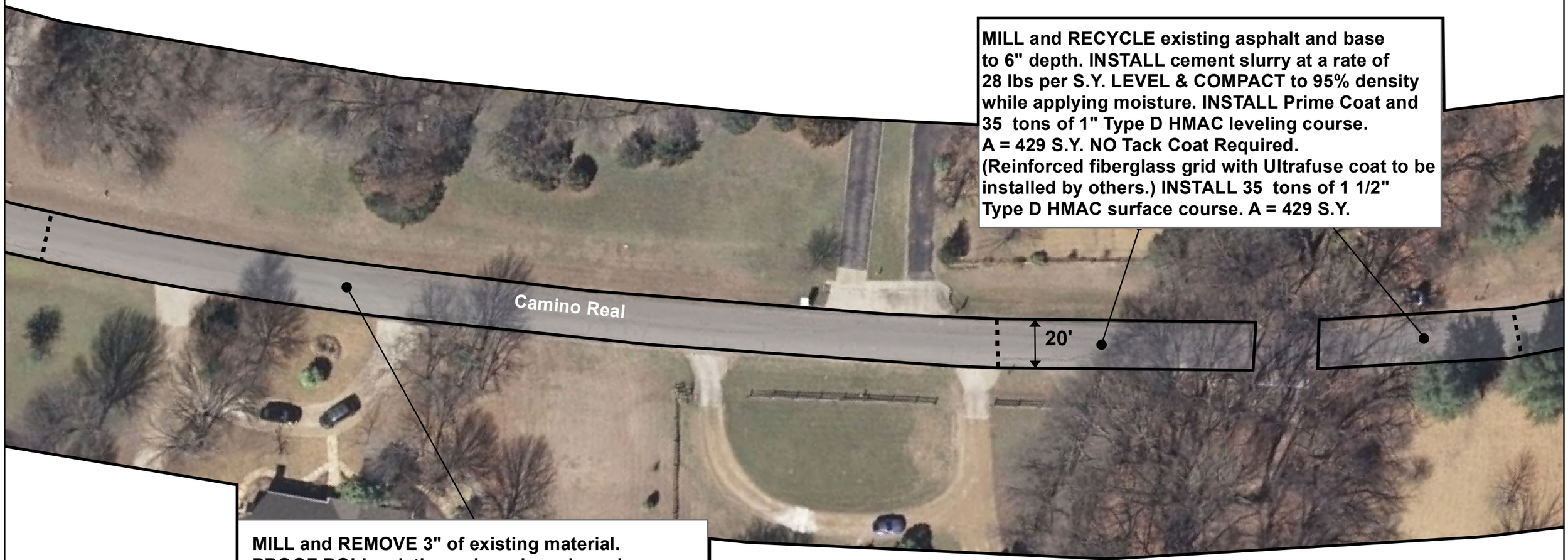
CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet



MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 35 tons of 1" Type D HMAC leveling course. A = 429 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 35 tons of 1 1/2" Type D HMAC surface course. A = 429 S.Y.

MILL and REMOVE 3" of existing material. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 99.6 tons of 2" Type B HMAC base course. Area= 916 S.Y. INSTALL tack coat and 74.7 tons of 1 1/2" Type D HMAC surface course. Area = 916 S.Y.

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TOWN OF FAIRVIEW

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MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 104 tons of 1" Type D HMAC leveling course. A = 1,275 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 107.4 tons of 1 1/2" Type D HMAC surface course. A = 1,317 S.Y.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet

Alto Vista St

20'

MILL and REMOVE 3" of existing asphalt. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 135.4 Tons of 2" Type D HMAC. Area = 1,245 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

Camino Real

Meandro Ria Ln

SAWCUT edge of pavement.

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 14.7 tons of 1" Type D HMAC leveling course. A = 180 S.Y. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 16.7 tons of 1 1/2" Type D HMAC surface course. A = 205 S.Y.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

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1 inch = 40 feet

MILL and REMOVE 3" of existing asphalt.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 151.2 Tons of 2" Type D HMAC. Area = 1,411 S.Y.

Camino Real

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

TOWN OF FAIRVIEW

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1 inch = 40 feet

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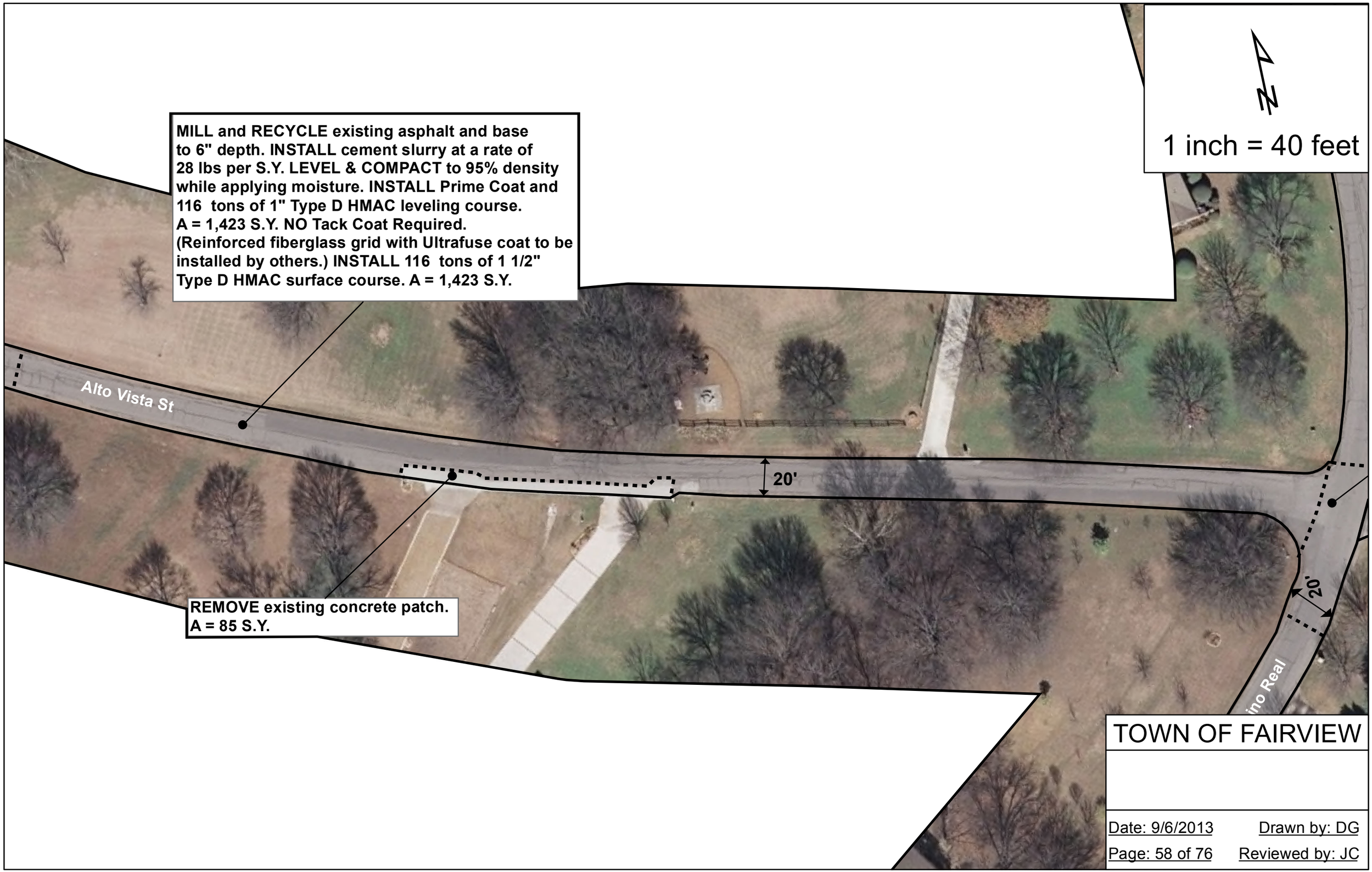
MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 116 tons of 1" Type D HMAC leveling course. A = 1,423 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 116 tons of 1 1/2" Type D HMAC surface course. A = 1,423 S.Y.
N
1 inch = 40 feet
Alto Vista St
20'
REMOVE existing concrete patch. A = 85 S.Y.
20'
TOWN OF FAIRVIEW
Date: 9/6/2013
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Page: 58 of 76
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1 inch = 40 feet

Minimum of 20 ft
Width for Fire Access

20'

Alto Vista St

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 57.2 tons of 1" Type D HMAC leveling course. A = 702 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 58.6 tons of 1 1/2" Type D HMAC surface course. A = 719 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

20'

Alto Vista St

MILL and REMOVE 3" of existing material. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 155.1 tons of 2" Type B HMAC base course. Area= 1,427 S.Y. INSTALL tack coat and 117.9 tons of 1 1/2" Type D HMAC surface course. Area = 1,446 S.Y.

TOWN OF FAIRVIEW

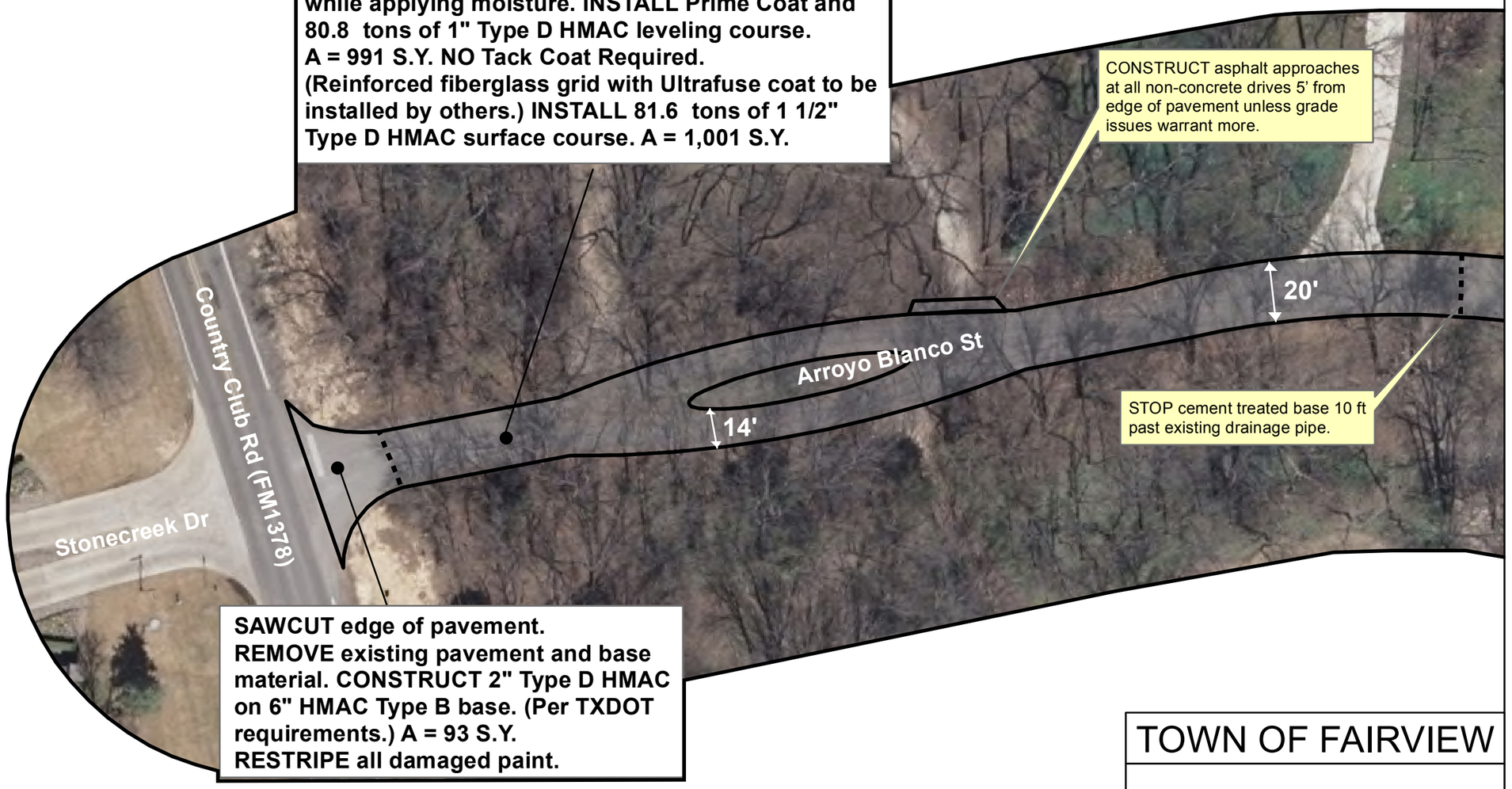
Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

N

1 inch = 40 feet

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 80.8 tons of 1" Type D HMAC leveling course. A = 991 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 81.6 tons of 1 1/2" Type D HMAC surface course. A = 1,001 S.Y.



SAWCUT edge of pavement. REMOVE existing pavement and base material. CONSTRUCT 2" Type D HMAC on 6" HMAC Type B base. (Per TXDOT requirements.) A = 93 S.Y. RESTRIPE all damaged paint.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

N

1 inch = 40 feet

**MILL and REMOVE 3" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 153.1 tons of 2" Type B HMAC base course. Area= 1,408 S.Y.
INSTALL tack coat and 122.8 tons of 1 1/2" Type D HMAC surface course. Area = 1,507 S.Y.**

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

SPOT TREAT low area in the street.

Arroyo Blanco St

TOWN OF FAIRVIEW

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MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 53.1 tons of 1" Type D HMAC leveling course. A = 651 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 70.8 tons of 1 1/2" Type D HMAC surface course. A = 651 S.Y.

N

1 inch = 40 feet

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

20'

14'

Arroyo Blanco St

MILL and REMOVE 3" of existing material. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 84.2 tons of 2" Type B HMAC base course. Area= 774 S.Y. INSTALL tack coat and 64.5 tons of 1 1/2" Type D HMAC surface course. Area = 792 S.Y.

amino Real

TOWN OF FAIRVIEW

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1 inch = 40 feet

SAWCUT edge of pavement.

16'

Fitzhugh Mill Rd

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 94 tons of 1" Type D HMAC leveling course. A = 1,154 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 100.3 tons of 1 1/2" Type D HMAC surface course. A = 1,230 S.Y.

TOWN OF FAIRVIEW

Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

1 inch = 40 feet

SAWCUT edge of pavement.

SAWCUT edge of pavement.

MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 75.6 tons of 1" Type D HMAC leveling course. A = 927 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 75.6 tons of 1 1/2" Type D HMAC surface course. A = 927 S.Y.

Summit Ct

16'

Fitzhugh Mill Rd

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1 inch = 40 feet

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N

1 inch = 40 feet

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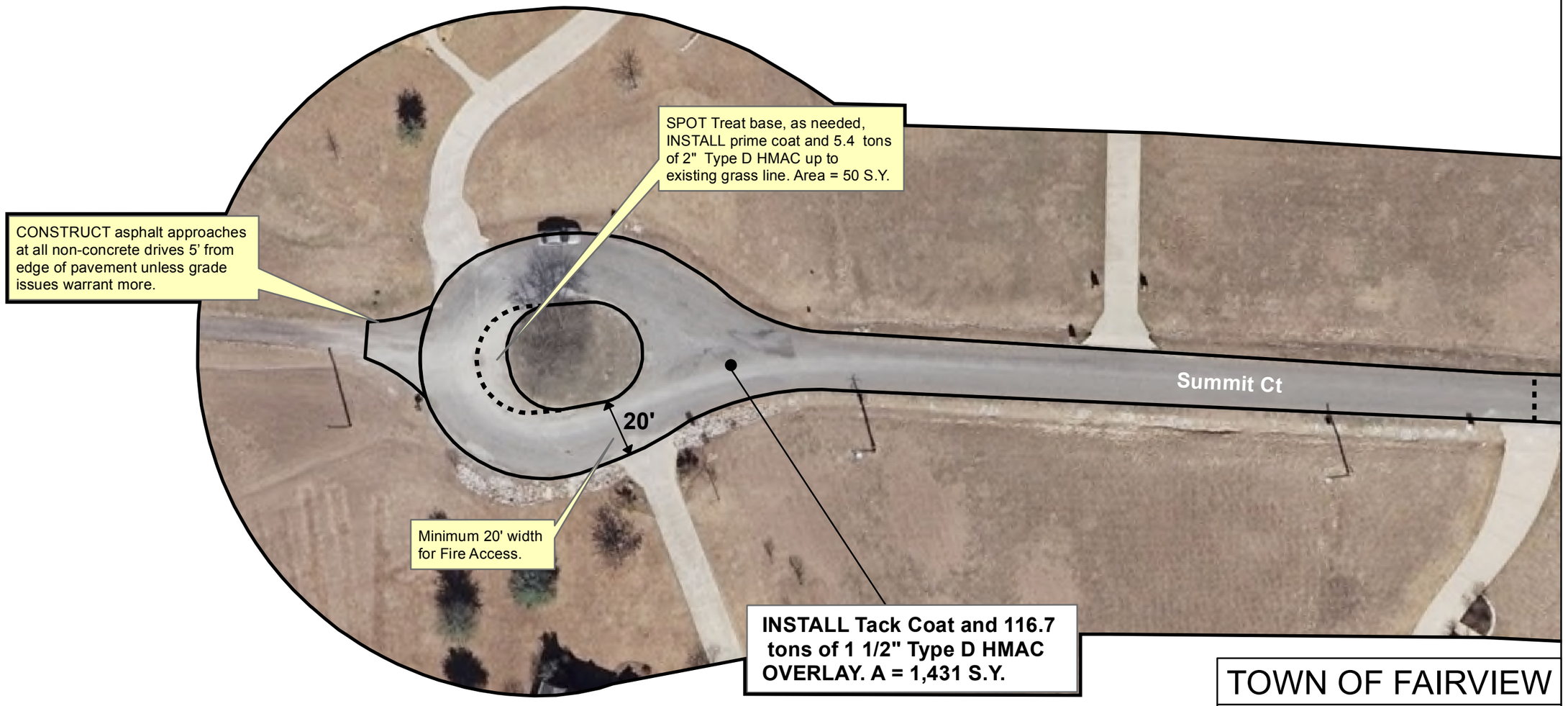
Date: 9/6/2013 Drawn by: DG

 Reviewed by: JC

N

1 inch = 40 feet



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 Reviewed by: JC

1 inch = 40 feet

Country Club Rd (FM1378)

Cottonwood Pl

MILL and REMOVE 2" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 193.3 tons of 2" Type B HMAC base course. Area= 1,778 S.Y.
INSTALL tack coat and 145 tons of 1 1/2" Type D HMAC surface course. Area = 1,778 S.Y.

SAWCUT edge of pavement.
REMOVE existing pavement and base material. CONSTRUCT 2" Type D HMAC on 6" HMAC Type B base. (Per TXDOT requirements.) A = 255 S.Y.
RESTRIPE all damaged paint.

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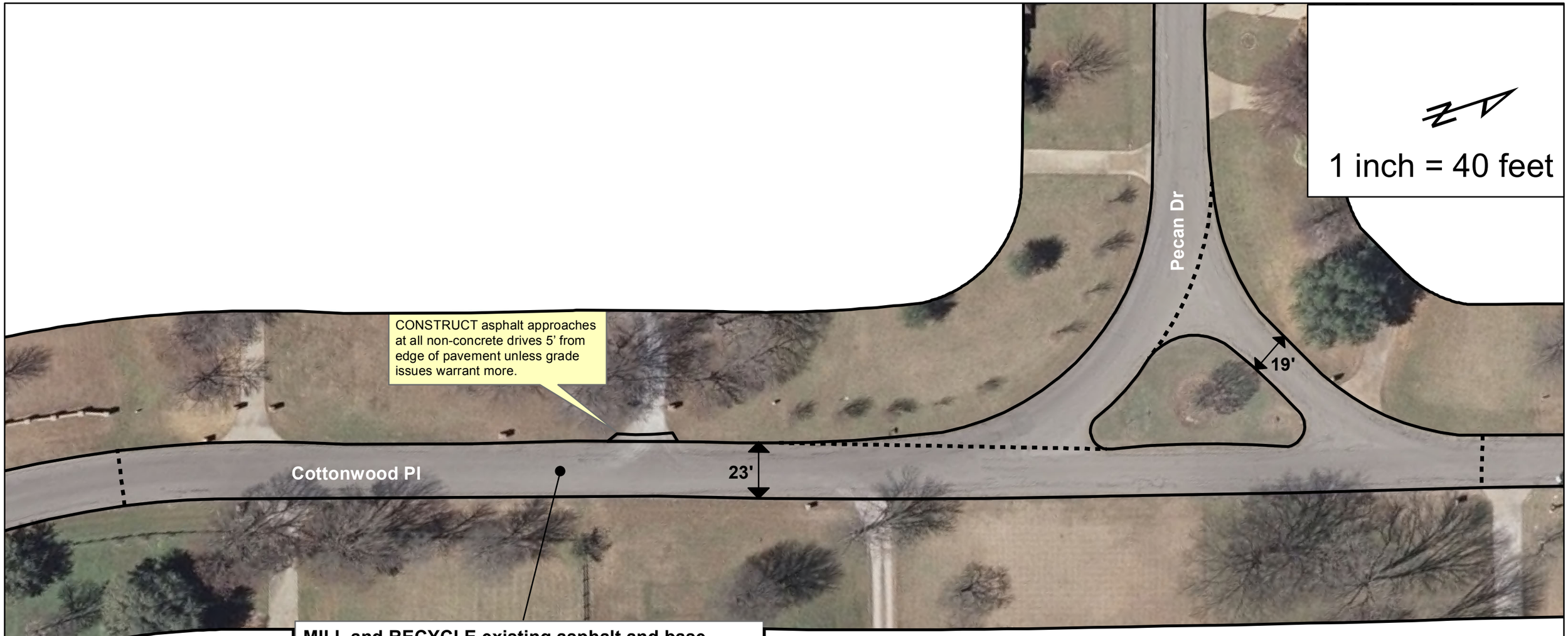

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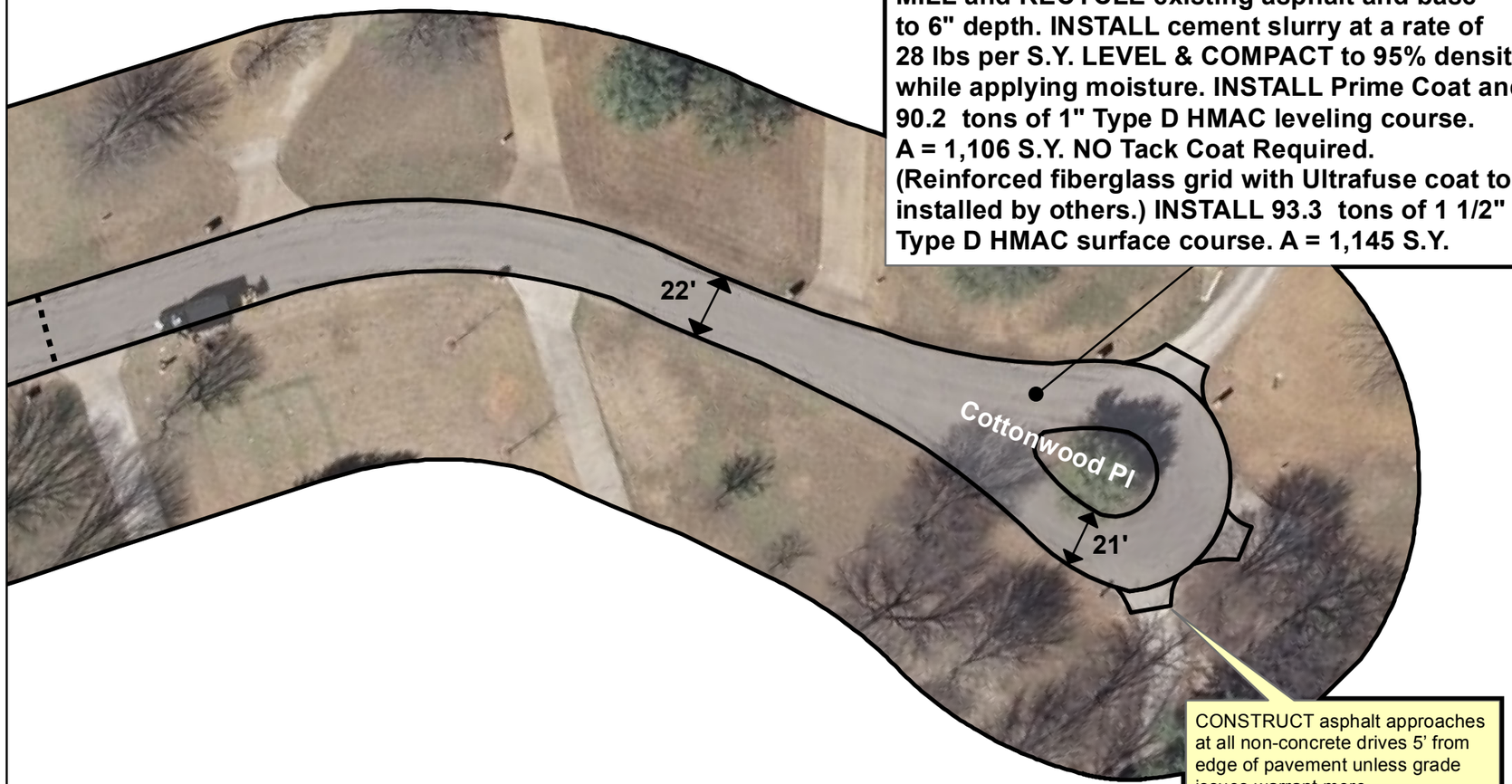
1 inch = 40 feet



MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 90.2 tons of 1" Type D HMAC leveling course. A = 1,106 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 93.3 tons of 1 1/2" Type D HMAC surface course. A = 1,145 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

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MILL and RECYCLE existing asphalt and base to 6" depth. INSTALL cement slurry at a rate of 28 lbs per S.Y. LEVEL & COMPACT to 95% density while applying moisture. INSTALL Prime Coat and 54 tons of 1" Type D HMAC leveling course. A = 662 S.Y. NO Tack Coat Required. (Reinforced fiberglass grid with Ultrafuse coat to be installed by others.) INSTALL 54 tons of 1 1/2" Type D HMAC surface course. A = 662 S.Y.

N

1 inch = 40 feet

18'

Redbud Ln

19'

MILL and REMOVE 2" of existing material. PROOF ROLL existing subgrade and repair any rutting with excess millings. INSTALL prime coat and 168.7 tons of 2" Type B HMAC base course. Area= 1,552 S.Y. INSTALL tack coat and 127.9 tons of 1 1/2" Type D HMAC surface course. Area = 1,568 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.

Pecan Dr

Hackberry Dr

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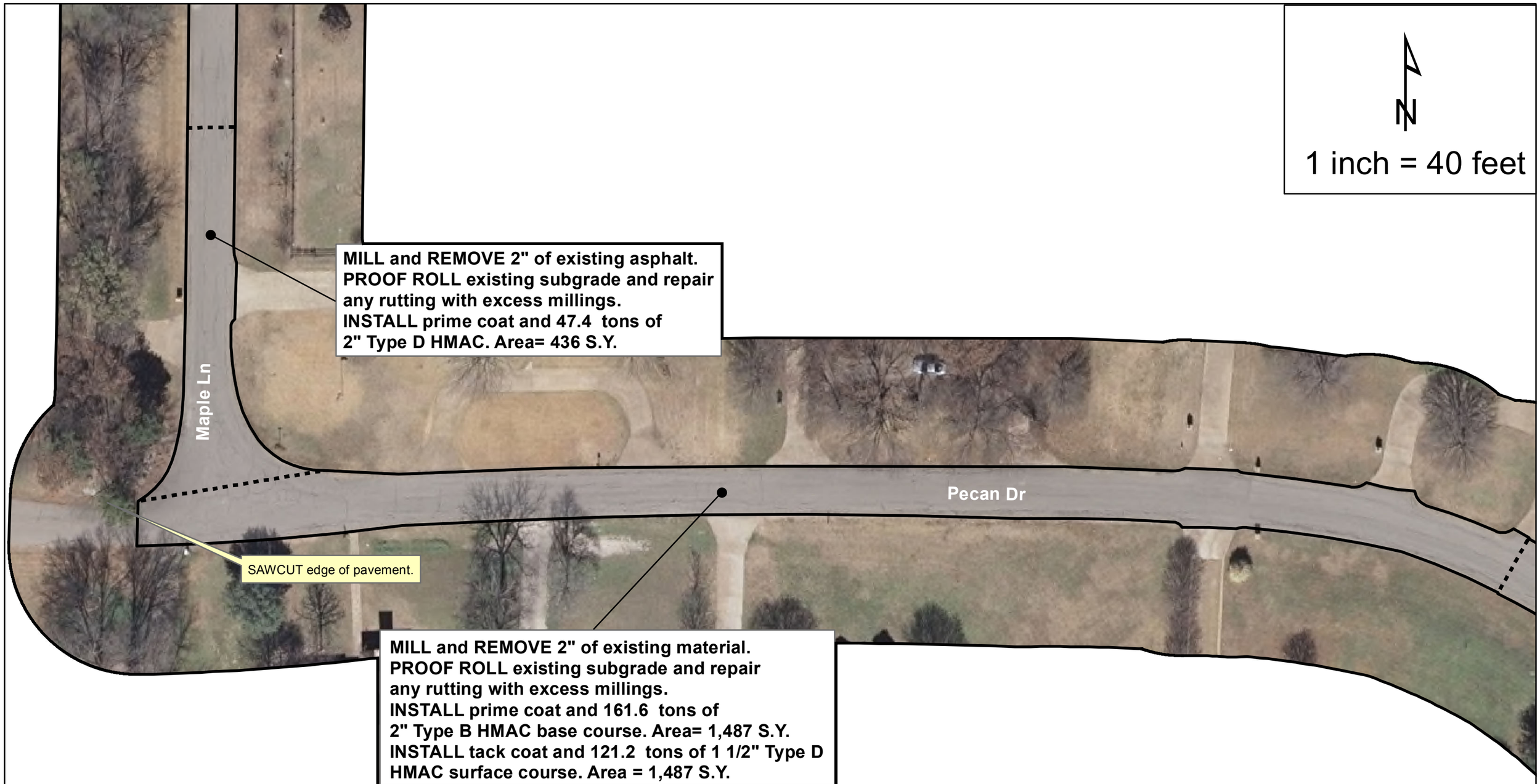

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N

1 inch = 40 feet

**MILL and REMOVE 2" of existing asphalt.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 96.6 tons of 2" Type D HMAC. Area= 889 S.Y.**

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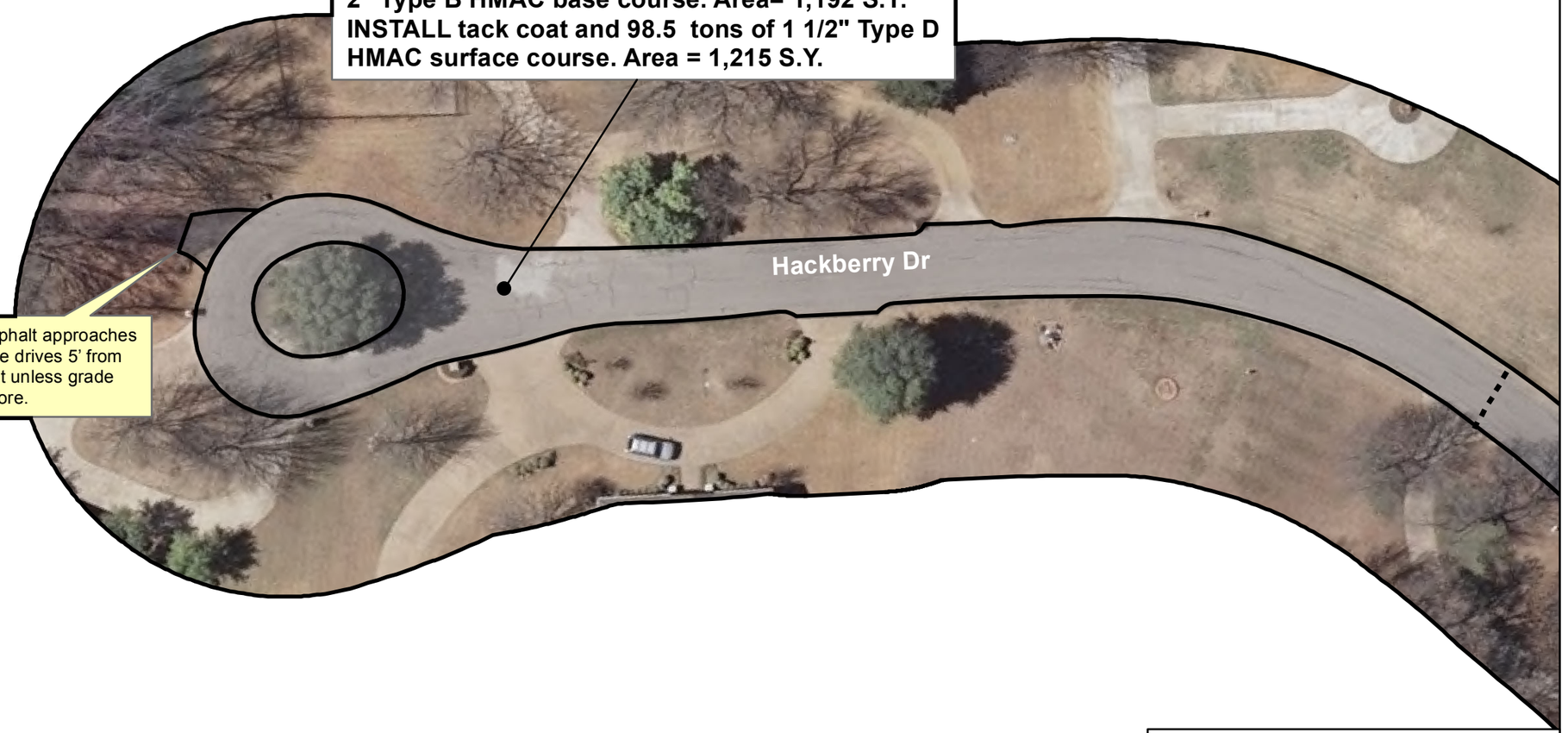
1 inch = 40 feet

MILL and REMOVE 2" of existing material.
PROOF ROLL existing subgrade and repair any rutting with excess millings.
INSTALL prime coat and 129.6 tons of 2" Type B HMAC base course. Area= 1,192 S.Y.
INSTALL tack coat and 98.5 tons of 1 1/2" Type D HMAC surface course. Area = 1,215 S.Y.

CONSTRUCT asphalt approaches at all non-concrete drives 5' from edge of pavement unless grade issues warrant more.



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