CHARLEVOIX COUNTY

CHARLEVOIX COUNTY ROAD COMMISSION BOARD

Wilson Road & Wood Street Paving Project – Eveline Township

NOTICE TO BIDDERS

The Charlevoix County Road Commission invites qualified contractors to bid the following road work:

> ***0.51-Miles of drainage and subbase improvements, aggregate base, bituminous paving, aggregate shoulders and restoration on a portion of Wilson Road and the entire length of Wood Street in Advance (each a county local road), Eveline Township. August 31, 2017 completion date.***

Bids must be on Road Commission furnished forms (available at the main office, 1251 Boyne Ave., Boyne City, MI 49712-0039, phone 231-582-7330) plainly marked as to contents and presented at the main office before the 10:00AM, Monday, April 10, 2017 bid opening.

ROAD COMMISSION BOARD
CHARLEVOIX COUNTY

Russell MaGee	**Chairman**
Keith Ogden	**Vice-Chairman**
Denny Way	**Member**

Prepared By: James G. Vanek, Staff Engineer

WILSON ROAD & WOOD STREET PAVING PROJECT
EVELINE TOWNSHIP

PROJECT LOCATION (see enclosed map)

- **Wilson Rd. (0.39-Miles) – Lakeshore Drive South 2,035-FT.**
- **Wood St. (0.12-Miles) – Entire length.**

PROJECT DESCRIPTION

Project consists of threep main operations:

WEDGE & OVERLAY SECTION (Wilson Road)
Contractor shall grade outward from existing 20-FT bituminous roadway 4-FT each side to accommodate a 1-FT pavement widening and new 3-FT 23A gravel shoulders (each side), as shown on the Typical Cross Section (wider in bituminous curb section).

A 4E1, Mod. Bituminous wedge shall be placed first from the centerline crown outward to achieve a new 22-FT pavement width, followed by a 220#/SYD bituminous overlay resulting in a final 4-Inch minimum outside edge pavement thickness. New 3-FT 23A gravel shoulders shall be placed on each roadway side, as shown on the Typical Cross Section.

Other work included concrete curb & gutter, ditching, culvert replacement and restoration.

GRADE LIFT SECTION (Wilson Road)
Contractor shall place a 1.5-FT deep x 28-FT wide MDOT Class II subbase grade lift and 8-Inches x 28-FT wide 22A aggregate on a 325-FT portion of Wilson Road. A 3-Inch (two equal lifts) 4E1, Mod. Bituminous pavement shall be placed to a final 22-FT pavement width. New 3-FT 23A gravel shoulders shall be placed on each roadway side, as shown on the Typical Cross Section.

Other work includes placing embankment, cross culvert replacement, and restoration. Engineer will stake subbase, embankment, culvert and paving limits.

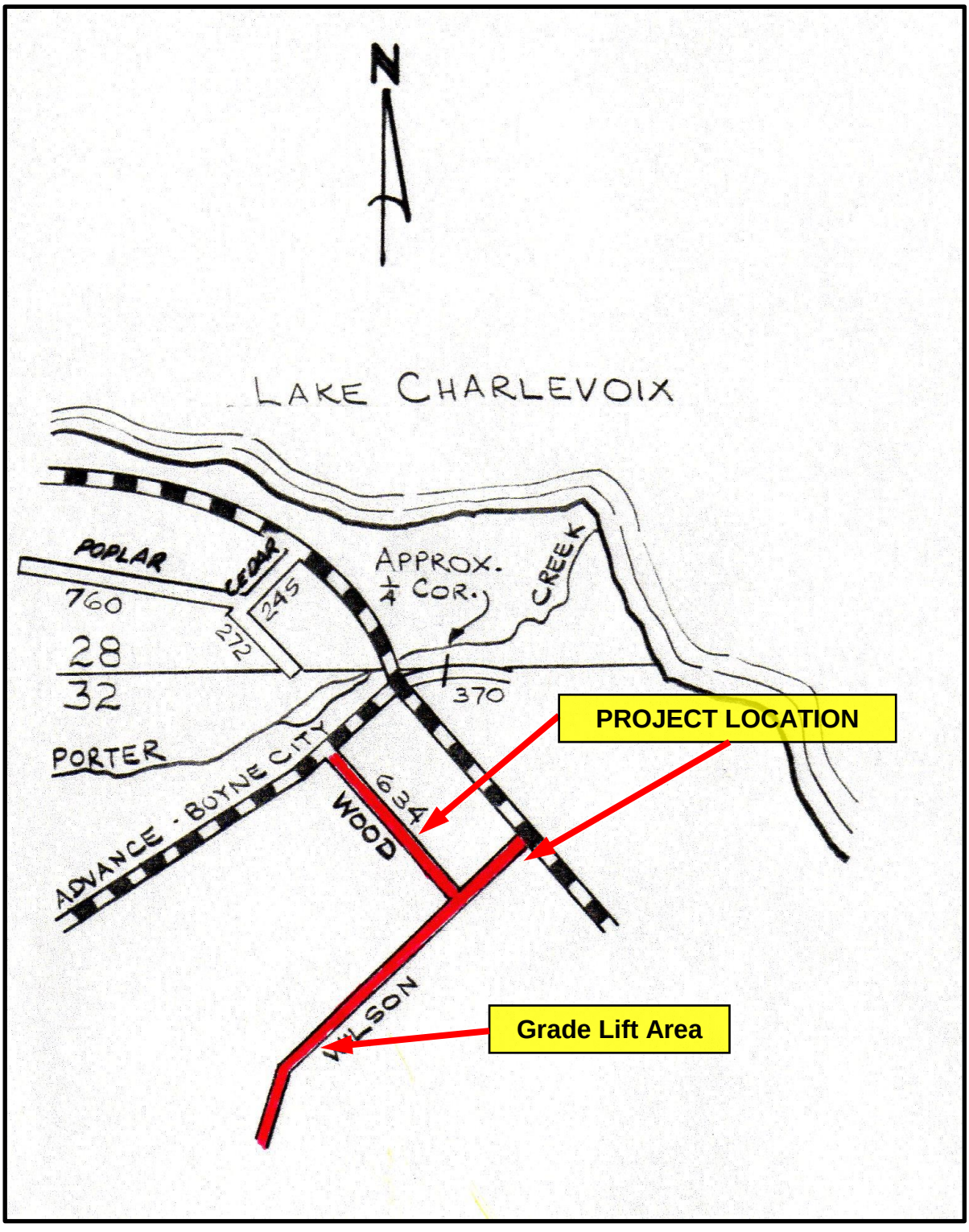
During grade lift construction, the contractor shall detour traffic. Detour signage and barricades shall be included and paid for in "Traffic Control" pay item.

OVERLAY SECTION (Wood Street)
Contractor shall sweep existing 20-FT bituminous roadway prior to bituminous overlay. A 4E1, Mod. 20-FT Bituminous overlay shall be placed averaging 220#/SYD. New 3-FT 23A gravel shoulders shall be placed on each roadway side, as shown on the Typical Cross Section

All work shall be completed by August 31, 2017.

NOTE: ***The term "Bidder" & "Contractor" may be used interchangeably in these specifications.***

PROJECT LOCATION



INSTRUCTIONS AND CONDITIONS

NON-DISCRIMINATION CLAUSE

The contractor, including any sub-contractors, shall not under this contract discriminate against any qualified person with a disability or any person based on race, color, national origin, sex, age or limited English proficiency. The Road Commission's non-discrimination requirements apply to all road construction projects regardless of funding source. Federally funded projects (including those with any past federal participation) will include a more detailed explanation of the various sections of the 1964 Civil Rights Act, showing titles, section numbers and codes.

SUBCONTRACTORS

Whenever the Primary Contractor employs subcontractors for any part of the job, those subcontractors shall be listed by name in the appropriate bid section. No unnamed subcontractor shall be substituted for a named subcontractor without Road Commission consent, which may or may not be granted. The Contractor is responsible for subcontractor's performance; subcontractor non-performance shall not be reason to void or reduce liquidated damages.

HOLD HARMLESS AGREEMENT

The Bidder shall hold the Charlevoix County Road Commission harmless against all claims for damages or injuries specifically resultant from and attributable to the contractor's (or subcontractor's) work on this project. By signing this bid, the bidder agrees to all provisions of the hold harmless and insurance requirements.

INSURANCE: WORKERS COMPENSATION

To protect the Charlevoix County Road Commission against claims that might arise from the contractor's work, the contractor must provide proof of the following minimum insurance coverage:

Commercial General Liability

$2,000,000	**General Aggregate Limit other than Products/Completed Operations**
$2,000,000	**Products/Completed Operations Aggregate Limit**
$1,000,000	**Personal & Advertising Injury Limit**
$1,000,000	**Each Occurrence Limit**
$ 500,000	**Fire Damage Limit (any one fire)**

The contractor must list the Charlevoix County Road Commission, its commissioners, officers, employees and agents as additional insured on the Commercial Liability policy.

If a motor vehicle is used to provide services under this Contract, the Contractor must have vehicle liability insurance for bodily injury and property damage as required by law on any auto used in the Contractor's business.

Workers disability compensation insurance must meet statutory requirements.

Note: The Contractor must provide proof of above insurance coverage within 14 days of tentative bid award (tentative bid award means the Road Commission has chosen a particular bidder as offering a bid in the best public interest, but will only award after the bidder/contractor complies with the insurance requirements, and signs the contract within 14 days).

The proof certificates(s) must be prepared by the insurance provider, not the contractor, and the certificate must state that the insurance will not be cancelled, reduced, or not renewed for at least thirty days after project begins.

PROPOSAL GUARANTY

Bid must include a check or bond equal to five percent of the bid, payable to the Charlevoix County Road Commission, as a guarantee the successful bidder shall enter into a contract and complete the work as outlined herein.

BONDS

The successful Contractor shall furnish a performance bond equal to the contract price as assurance for faithful contract performance.

The Contractor shall also furnish a separate *surety bond* equal to the contract price as security for payment to all persons performing labor and furnishing materials in connection with this contract. The Contractor shall pay the premium for all bonds.

***Bonds shall be submitted and approved before contract execution*.**

MARK ENVELOPES

All bids shall be in sealed envelopes plainly marked as to project name and bidder's name.

BID DEADLINE

Late bids will not be accepted.

BID PRICE AND WITHDRAWAL

Bid price shall include all labor, equipment and material costs to complete the proposed work. All bids shall be firm for 60 days from bid opening.

RIGHT TO REJECT

The Charlevoix County Road Commission reserves the right to reject any or all bids, but will only award in the best public interest.

LIQUIDATED DAMAGES

The Contractor shall complete all work under these specifications by August 31, 2017. The Road Commission will assess damages of $600 per calendar day if the project is not completed by the specified date. While not considered a penalty, liquidated damages are intended to compensate the Road Commission for project delay cost, and do not preclude the Road Commission from pursuing other remedies for breach of contract, or obtaining substitute performance.

PAYMENT

Payment will be a lump sum total paid within 45 days of invoice and after all specifications have been met and work completed and approved by the Engineer.

The Road Commission reserves the right to prepare a joint check to contractor and paving sub-contractor, for asphalt placement.

Engineer may approve periodic progress payments, less 10% withheld; final 10% paid upon project completion and Engineer's final approval.

GENERAL NOTES

Traffic Restrictions

Work shall be confined to daylight hours. No work permitted on Sunday unless Engineer approved. Road shall be open to two-way traffic at night. No work permitted during holiday periods as follows:

- **Memorial Day Holiday: No work from noon on May 26, 2017 thru May 29, 2017; work can resume May 30, 2017 at 7:00AM.**
- **July 4th Holiday: No work from noon on June 29, 2017 thru July 4, 2017; work can resume July 5, 2017 at 7:00AM.**

Standard Specifications

The improvements covered by this proposal shall conform to *Michigan Department of Transportation 2012 Standard Specifications and the 2011 Michigan Manual of Uniform Traffic Control Devices,* as amended by Supplemental Specifications and Special Provisions unless otherwise noted.

Test Requirements

The contractor shall submit (to the Engineer) a previously MDOT approved mix design for approval prior to HMA placement. As incidental, Bituminous Mixture shall conform to *Michigan Department of Transportation 2012 Standard Specifications* and the Charlevoix County Road Commission Special Provision for Acceptance of HMA Mixtures on Road Commission Projects. The Contractor shall provide certified daily test results for each type of bituminous mixture material. If the plans require concrete curb and gutter, and/or concrete driveway restoration, a concrete mix design shall be submitted to the Engineer for approval prior to curb and gutter placement..

Underground Utilities

To protect underground utilities, the Contractor shall contact "MISS DIG" (1-800-482-7171) at least three business days prior to any excavating. Contractor is not relieved of responsibility of non-notified utility owners.

Signs & Mailboxes

As incidental, the Contractor shall salvage and reset existing signs and mailboxes requiring relocation, as directed by the Engineer.

Soil Erosion Policy

Contractor shall comply with the newest Charlevoix County Soil Erosion Sedimentation and Stormwater Runoff Control Ordinance, any and all township or city soil erosion, sedimentation and storm water runoff ordinances in the applicable jurisdiction within which this project is located, and Road Commission Soil Erosion and Sedimentation Control Procedures Policy #001-1 and Act 451 Part 91, as amended. Where conflicts between requirements arise, the more stringent requirements prevail.

Exploratory Work/Oversight

The Contractor is responsible for all exploratory work, incidental to the project. There shall be no extra payment for Contractor oversight.

Private Work

Work outside the scope of this project is prohibited.

Equipment Storage

At workday end, Contractor shall remove from Right-of-Way all equipment not essential for ensuring a safe roadway.

PROPOSAL FOR WILSON ROAD & WOOD STREET PAVING PROJECT

TO: Charlevoix County Road Commission

The undersigned bidder understands the proposed work and construction conditions and has examined the plans, specifications and contract documents and will furnish all labor, material, tools, and equipment necessary to complete all work specified, in accordance with the Charlevoix County Road Commissions Standards and Michigan Department of Transportation Standard Specifications, and will accept in full payment the following unit prices.

WORK ITEM	QUANTITY	UNIT	UNIT PRICE	BID PRICE
Grading	20+35	STA		
Tree, Rem, 36-Inch or Larger	1	EACH		
Pavement Removal	230	SYD		
Subbase/Embankment, CIP	650	CYD		
Concrete Curb & Gutter, Det. B2	150	LFT		
Ditching	1,000	LFT		
Culvert, Class A, CSP, Elliptical (28"x20" DIA.)	55	LFT		
Culvert, Class A, CSP, 15-Inch DIA.	50	LFT		
22A Aggregate	500	TON		
4E1, Mod. Bituminous Pavement	1,400	TON		
Bituminous Curb	1,200	LFT		
Bituminous Spillway	12	SYD		
Riprap, Plain (8" to 12" DIA.)	12	SYD		
23A Shoulders	500	TON		
Restoration	2,500	SYD		
Traffic Control	1	LSUM		
			Total Project Cost:	$

COMPANY NAME _____

COMPLETED BY _____

BIDDER SIGNATURE _____

TITLE _____

ADDRESS _____

TELEPHONE _____

FAX NUMBER _____

SUBCONTRACTOR INFORMATION

I

Work Subcontracted: _____
Company Name: _____
Contact Person: _____
Title: _____
Address: _____
_____
Telephone: _____

II

Work Subcontracted: _____
Company Name: _____
Contact Person: _____
Title: _____
Address: _____
_____
Telephone: _____

WORK ITEMS

NOTE: All work shall comply with 2012 M.D.O.T. Standard Specifications for Construction, unless otherwise noted.

GRADING: The contractor shall grade *4-FT* wide on each side of existing Wilson Road pavement to allow for a *1-FT* bituminous widening and *3-FT* gravel shoulder. A broom tractor, or other Engineer approved method, shall perform incidental pavement edge cleaning prior to paving. Minimum 4-Inch asphalt depth shall be obtained at finished pavement outer edge, as shown on Typical Cross Section.

As incidental, the Contractor shall trench an area 635-FT long by 6-FT wide by 6-Inches deep to accommodate a 3-FT paved shoulder and 1-FT bituminous curb.

Incidental to all locations, graded material shall remain on jobsite in windrow to be used and placed as backfill to meet new shoulder edge. Where leaves or other debris infiltrate the windrowed material, the contractor shall remove the contaminants in an approved manner. After shoulder gravel placement, any required grading to blend windrowed material from new gravel shoulder edge out to existing ground is included in the grading pay item. As incidental, the contractor shall remove extra graded material from the job site, as directed by the Engineer, or may be used as embankment behind bituminous curb (if applicable).

TREE REMOVAL: Consists of contractor cutting, removing, and disposing trees (including stumps, roots, etc.) of the various listed diameter, as marked by the Engineer. As incidental, all tree material shall be removed from jobsite.

PAVEMENT REMOVAL: Consists of contractor removing existing sealcoat and incidental disposal off-site at Wilson Road and Lakeshore Drive intersection to prepare for concrete curb and gutter installation.

SUBBASE/EMBANKMENT, CIP: The subbase work essentially elevates the roadway to preclude the adjacent swamp area from flooding the roadway.

The work consists of contractor performing all earthwork required to construct the proposed subbase typical cross section to proposed dimensions, in preparation for a 22-FT bituminous surface.

Subbase pay item shall consist of full width grading, measured along the proposed road construction centerline and includes both roadway sides. It shall include all earthwork and grading related to the following work:

- **Stripping and stockpiling topsoil.**
- **Furnishing, hauling, placing and compacting MDOT Class II subbase material needed prior to 22A placement.**
- **Furnishing, hauling, placing and compacting additional subbase material to construct proposed slopes on each roadway side.**
- **All earthwork, grading, compacting and shaping required to construct the "Typical Subbase Section" prior to 22A placement.**
- **Earthwork required to construct proposed finished grade, including 3 on 1 slopes.**
- **Earthwork required to supply, place, grade and compact embankment behind concrete curb & gutter.**

All topsoil stripping, excavation, furnishing, placing, and compacting embankment and subbase, and excess material disposal for "*Subbase, CIP*" shall be incidental to the subbase pay item. The Engineer will calculate payment based on loose measure (LM) in the truck dump box, less 25% for CIP quantity.

CONCRETE CURB & GUTTER (MDOT B-2): Consists of all necessary work for the contractor to install concrete curb (MDOT Type B-2) at Wilson Rd./Lakeshore Dr. intersection; includes preparing base for curb, forming curb, furnishing and placing S2 Grade concrete, finishing and curing concrete curb. All work shall comply with Section 802 Standard Specifications for Construction, 2012 Edition, MDOT Standard Detail R-30-G and as directed by the Engineer. A minimum 7-Day cure time required prior to paving. Contractor shall establish all curb elevations and perform concrete quality control testing. Engineer will stake curb limits.

DITCHING : **Consists of contractor performing all necessary earth excavation, and removing all existing growth (including trees 6-Inches or less in diameter) at Engineer staked locations, required to establish or re-establish a ditch to obtain positive drainage. As incidental, all excavated ditch material shall be removed from jobsite.**

CULVERT, CSP: Consists of contractor excavating, removing and disposing existing culvert, furnishing, installing, backfilling and compacting to 95% Maximum Density with Class II Material the specified culvert diameter, length and class at Engineer staked location. Any excess excavated material shall be disposed off-site. 22A Aggregate shall be placed minimum 6-Inches thick above any new culvert; material paid for in "*Bituminous Driveway Restoration*" pay item. Culvert coating shall be "Aluminized".

Class A:
15-Inch DIA.: 50-FT
28-Inch x 20-Inch DIA.: 55-FT

22A AGGREGATE: Consists of contractor furnishing, placing, grading and compacting MDOT Specification No. 22A Coarse Aggregate to 98% Maximum Density to achieve proposed Wilson Road cross section and slope at grade lift area. 22A Aggregate paid as "Compacted in Place" and shall be on computer generated weight tickets. Computer generated tickets shall be submitted to the Engineer before payment.

As incidental, contractor shall water the grade, if needed, to achieve compaction, and to control dust.

4E1, MOD. BITUMINOUS PAVEMENT: The contractor shall comply with the attached Charlevoix County Special Provision for HMA Mixture Acceptance, and as follows:

Grade Lift Area (Wilson Rd. - 325-FT): Consists of contractor furnishing and placing a 4E1, Mod. Bituminous Mixture on new 22A aggregate base placed at 220#/SYD each lift (4-Inches total) to the proposed final pavement width and slope as shown on Typical Cross Section.

Overlay Section (Wilson Rd. – non grade lift area): Consists of contractor furnishing and placing a 4E1, Mod. Bituminous Mixture from centerline out *1-FT* past existing bituminous edge and to a minimum 2-Inch depth, as shown on Typical Cross Section. Second lift shall be a 22-*FT* wide overlay averaging 220#/SYD.

Overlay Section (Wood St. – 635-FT): Consists of contractor furnishing and placing a 4E1, Mod. Bituminous Mixture 20-FT wide overlay averaging 220#/SYD, as shown on Typical Cross Section. Contractor shall sweep existing 20-FT bituminous roadway prior to bituminous overlay.

Bituminous pavement mixture shall include PG 58-28 asphalt cement, 3% target air voids and 6% maximum soft particle content. Contractor shall stay within MDOT Tier 11 for reclaimed asphalt pavement material addition. NOTE: Recycled asphalt shingles (R.A.S.) not allowed in 4E1, Mod. bituminous mixture.

When each day's paving is complete, the contractor shall provide temporary measures (adding 23A Aggregate, etc.) to ensure all driveways are accessible until shoulders are placed. The work of placing 23A Aggregate is incidental; the material is paid for in "*23A Aggregate Shoulder*" pay item.

Longitudinal joint treatment: All asphalt longitudinal joints shall be the vertical butt type only; tapered or "overlap" type are not allowed. At the completion of each day's paving, all lanes shall be resurfaced to within one load of the same ending point. The center joint (when placing a lane adjoining a previously placed lane) shall be constructed per Section 501.03.F.2.b (Vertical Longitudinal Joint), Standard Specifications for Construction, 2012 Edition and as directed by the Engineer.

The Contractor shall apply incidental ss-1h bond coat below each new asphalt layer and on inside pavement edges so that coverage is uniform and complete; all longitudinal joint edges shall be sprayed twice to ensure subsequent complete bonding of the abutting new asphalt. The foregoing requirements will exceed the 0.10 Gallons/SYD application rate.

As incidental, temporary tape Type NR shall be placed on final pavement lift.

BITUMINOUS CURB: Consists of contractor placing an asphalt curb on the final pavement lift at Engineer staked locations. All restoration work behind bituminous curb, including furnishing and placing embankment, topsoil, grading, and seed and mulch to bituminous curb top, is included in "*Restoration*" pay item. Asphalt tonnage is included in "*4E1, Mod. Bituminous Pavement*" pay item.

BITUMINOUS SPILLWAY: Consists of contractor constructing a bituminous spillway on base course paving at Engineer staked locations. Spillway dimensions shall be minimum 4-FT wide by 6-FT long. Bituminous spillway tonnage is paid for in "*4E1, Mod. Bituminous Pavement*" pay item.

RIPRAP, PLAIN: Consists of contractor furnishing and placing 8 to 12-Inch diameter plain field stone riprap at Engineer specified bituminous spillway locations. Incidental non-woven geotextile fabric shall be placed under riprap.

23A AGGREGATE SHOULDERS: Consists of contractor furnishing, placing, grading and compacting to 98% maximum density MDOT Specification 23A Aggregate to achieve proposed cross section.

As directed by the Engineer, the contractor shall blend new aggregate shoulders into existing ground to ensure positive drainage. Contractor shall grade and add 23A aggregate to all existing gravel driveways, as directed, to ensure a smooth transition to new pavement edge. Where aggregate shoulders are constructed with a backslope not conducive to vertical compaction, the contractor shall employ an articulated grader wheel or other approved device to insure backslope density. Shoulder compaction shall be performed with a "rubber tire" roller; steel drum roller not allowed.

Aggregate shoulders paid as "Compacted in Place" and shall be on computer generated weight tickets.

As incidental, the Contractor shall remove spilled shoulder material from the asphalt surface at days end and place Engineer approved signs at each end of job delineating shoulder drop-off until gravel shoulders are complete.

To insure the safety of motorists using this road during construction, and to reduce the possibility of edge "drop-offs", the contractor shall place the specified gravel shoulders no later than the fourth calendar day after paving the finish course. Failure to do so will result in the Road Commission levying an additional $200 per calendar day in liquidated damages for each calendar day the shoulders remain uncompleted (separate from failure to complete the project on time).

RESTORATION: Consists of contractor furnishing and placing incidental topsoil/embankment, or Engineer approved equivalent material, grading and raking all Engineer located areas (behind concrete and bituminous curb, etc.), and fertilize, seed and mulch (includes incidental mulch anchoring) all exposed surfaces as a result of construction.

Contractor shall furnish, place and spread topsoil as directed by the Engineer, to a depth at least 3-Inches. As incidental, after spreading topsoil, the contractor shall remove and dispose of any large clods or lumps, and all stones and rocks over 1/2-inch in diameter, roots or any foreign matter.

Contractor shall furnish and apply incidental seed and fertilizer meeting current MDOT roadside seed specifications. Seed shall be distributed at a rate not less than 220 LB/ACRE. Seeded areas shall be fertilized (chemical nutrient, class A) with a mixture containing at least 10% nitrogen, 6% phosphorus and 4% potash. Mulch shall be of Contractors choosing; hay, straw or emulsion cover.

TRAFFIC CONTROL: The Contractor shall provide and maintain signs, barricades, warning lights, and other traffic control devices in accordance with the *2009 Michigan Manual of Uniform Traffic Control Devices* (MMUTCD). All channeling devices and lane closure signing shall meet the 2009 MMUTCD. Drums shall be placed every 500-FT (staggered) along new pavement edge until gravel shoulders are placed.

Signs and Barricades shall remain in place for the duration of the contract including any time extensions.

Contractor shall place "UNEVEN LANES" signs (W8-9b) at each job end until all work is completed.

For single lane daytime closures, traffic control devices shall be placed in accordance with a typical sign sequence, or as directed by the Engineer. At least two flagmen shall be used for single lane closures.

When flag control is utilized, intermediate flaggers shall be established at intersecting roads and at other traffic generators as directed by the Engineer.

The contractor shall furnish and install detour route signage during Wilson Road construction. Detour route signage plan shall be submitted to the Engineer for approval prior to construction. The Contractor shall provide and maintain signs, barricades, warning lights, and other traffic control devices in accordance with the *2009 Michigan Manual of Uniform Traffic Control Devices* (MMUTCD).

THE AGREEMENT

_____
(Company Name)

Hereinafter called the "Contractor", and the *CHARLEVOIX COUNTY ROAD COMMISSION* hereinafter called the "Owner", agree to the following:

ARTICLE 1 – THE WORK: Contractor shall furnish all material and equipment and perform all work described in the Specifications entitled:

Wilson Road & Wood Street Paving Project
Charlevoix County Road Commission Job Number: A 489.006-059

Contractor agrees to provide the named materials and work items listed in this proposal. Alterations must have Road Commission Engineer's prior approval.

ARTICLE 2 – ALTERATIONS: Contractor shall make alterations to work under this Contract when requested and approved by Engineer.

ARTICLE 3 – TIME: Contractor is authorized to begin work under this Contract after all required signatures are in place; all work shall be completed August 31, 2017, or liquidated damages will be assessed.

ARTICLE 4 – TIME EXTENSION: Contractor shall be granted extension of time, only if approved by Engineer.

ARTICLE 5 – CONTRACT ASSIGNMENT: Contractor shall not assign or transfer this Contract or sublet any work, except with written Owner permission.

When employing a subcontractor or subcontractors, Contractor will provide the specified information on "*Subcontractor Information*" form enclosed.

ARTICLE 6 – PAYMENT: Payment shall be a lump sum total paid within 45 days of invoice and after all specifications have been met.

Engineer may approve periodic progress payments, less 10% withheld; final 10% paid upon project completion and Engineer's final approval.

OWNER: Charlevoix County Road Commission **CONTRACTOR: _____**

By: _____ **By:** _____
Manager **Title:**

_____ **Witness:** _____
Clerk

Date Signed: _____ **Date Signed:** _____

Charlevoix County Road Commission

Special Provision

For

HMA Mixture Acceptance

CCRC:JV **3/24/17**

a) Description

This Special Provision provides acceptance-testing requirements for use on this project. The HMA mixture shall meet the requirements of the standard specifications for construct except where modified herein. The HMA mixture quality assurance and acceptance shall conform to Section 501 of the 2012 Michigan Department of Transportation Standard Specifications for Construction except where modified herein. The MDOT HMA Production Manual, current edition, applies to this work.

b) Submittals

The following items shall be submitted to the Engineer before payment.

1. **Job Mix Formula (MDOT Form 1911 or equivalent) for the project for review and approval by the Engineer. The Contractor shall not place any HMA without an approved JMF. Below are specific values required on the JMF (in addition to the normal requirements).**
    i. **Fine Aggregate Angularity**
    ii. **RAP Tiering based on JMF values**
    iii. **Fines to Asphalt Ratio (based on Effective Asphalt Content)**
    iv. **Soft Particle Percentage of each JMF Aggregate Type**
2. **Quality Control Plan.**
3. **A copy of all Contractor Quality Control Tests submitted within 7 working days of project completion.**
4. **A copy of the Bill of Lading or Delivery Ticket for the Asphalt Binder for the project. The Bill of Lading must include the type of material that was previously hauled in the delivery tank.**

c) Materials

Aggregates, mineral filler (if required), and asphalt binder shall be combined as necessary to produce a mixture proportioned within the master gradation limits and meeting the uniformity tolerances listed in Table 1 and the quality assurance testing tolerances in Table 2 of this special provision. The master gradation range is to be used for establishing mix design only. Topsoil, clay or loam shall not be added to aggregates used in plant produced HMA mixtures.

The Maximum Percentage of Soft Particles for any HMA mixture shall be 6%.

Table A: HMA Mixture Targets and Parameters

HMA Mix Type	VMA Minimum on any given Test (a,c)	VMA Target (c)	Asphalt Binder Content Minimum on JMF	Asphalt Binder Content Minimum on any given Test (a)	Fines to Asphalt Ratio Maximum on JMF (b)
4E1	14.0	14.8	5.80	5.50	1.10
5E1	15.0	15.8	6.10	5.80	1.10

a. **The HMA parameter minimum is per any given QC/QA test, regardless of Tolerances listed in Table 2 of this Special Provision.**
b. **Value based on Pbe (Effective Asphalt Percent) for each given mix and JMF.**
c. **VMA values are based on the Gsb (Bulk Specific Gravity) of the given HMA mixture not the Gse (Effective Specific Gravity).**

d) Asphalt Binder

Liquid Asphalt Binder shall be a Performance Graded (PG) binder as specified in the bid documents and/or approved by the Road Commission.

e) Air Voids

Design Air Voids shall be 4.0% and shall be regressed to 3.0% in production by the addition of virgin liquid asphalt.

f) Recycled Asphalt Materials

Recycled Asphalt Pavement (RAP) is allowed in the HMA mixtures subject to the following requirements. The method for determining the binder range in HMA mixtures incorporating RAP is divided into two categories designated Tier 1 and Tier 2. Each tier has a range of percentages that represent the contribution of the RAP toward the total binder replacement. Binder replacement will be determined by weight.

Recycled Asphalt Shingles (RAS) not allowed in the HMA Mixtures.

Tier 1 – 0.0% to 17.0% RAP binder by weight of the total binder in the mixture

No binder grade adjustment is required to compensate for the stiffness of the asphalt binder in the RAP.

Tier 2 – 18.0% to 27.0% RAP binder by weight of the total binder in the mixture

No Binder Grade change will be required for E1 mixtures used as Top or Base Course.

g) Construction

After the Job Mix Formula is established, the aggregate gradation of the HMA mixture furnished for the work shall be maintained within the Range 1 uniformity tolerance limits permitted for the job-mix-formula specified in Table 1. However, if deviations are predominantly either below of above the job-mix-formula, the Engineer may order alterations in the plant to bring the mixture to the job-mix-formula. If two consecutive aggregate gradations on one sieve as determined by the field tests are outside Range 1 but within Range 2 tolerance limits, the Contractor shall suspend all operations. Contract time will continue during these times when the plant is down. Before resuming any production, the Contractor shall propose, for the Engineer's approval, all necessary alterations to the materials or plant so that the job-mix-formula can be maintained. The Engineer, after evaluating for effects on AWI and mix design properties, will approve or disapprove such alterations.

Random Liquid Asphalt Binder samples will be witnessed by the Engineer or Consulting Firm. The Engineer reserves the right to test any or all samples taken.

The crushed particle content of the aggregate used in the HMA mixture shall not be more than 10 percentage points above or below the crushed particle content used in the job-mix-formula nor less than the minimum specified for the aggregate in the project documents.

Quality Assurance and Acceptance testing will be as follows:

1. **Asphalt Mixture Sampling Acceptance sampling and testing will be performed by the Engineer using the sampling method and testing option agreed upon by the Engineer and Contractor. Each day of production, random samples will be obtained for each mix type. Acceptance testing will be performed at a frequency specified by the Engineer.**

   For each given day of production, if the daily mix tonnage per HMA mix type is under 500 tons, the Engineer reserves the right to test one sample and obtain a second sample for future testing if necessary. If the daily mix tonnage per HMA mix type is over 500 tons, the Engineer reserves the right to test one sample. If the first sample meets the Range 1 tolerances in Table 1 and Table 2, the Engineer can obtain a second sample and perform any of the following actions:

   a) **Perform Full Quality Assurance testing**
   b) **Perform Volumetric Testing Only (Calculated AC/Gmm, Air Voids, VMA)**
   c) **Retain custody of the sample for future testing if necessary**

2. Asphalt Binder Sampling

The Contractor shall obtain the asphalt binder sample, correctly label the sample container, and complete a Sample Identification (Bituminous Material Form 1923B). The form must be filled out correctly and completely, and signed before the sample is given to the Engineer. The daily asphalt

binder sample must be taken from a sampling spigot located on the pipeline supplying asphalt binder to the plant, in a position between the asphalt binder pump and the point where the asphalt binder is introduced to the aggregate mixture. Personnel safety is critical in selection the position of the sampling spigot. Give the binder sample and completed Form 1923B to the Engineer.

Daily Asphalt Binder Sample are to be in 1 pint (16 ounce), slip top, seamless ointment tins. The tin must be at least three quarters full. All containers must be labeled in a legible format with the following information provided:

a. **Project Name**
b. **Binder Grade**
c. **Binder Supplier Certification Number**
d. **Supplier Name, City, and State**
e. **Date Sampled**
f. **Mixture Type**

The Engineer may request to witness the sampling of the asphalt binder upon visit to the HMA Plant. The Engineer will complete the 1923B Form for the witness sample. The witness sample will be recorded as the daily asphalt binder sample. Any other asphalt binder samples from that same day will be discarded.

The Engineer may request a copy of the MDOT Binder Certification Documents. These copies must be presented to the Engineer when the respective daily binder samples and the 1923B Forms are picked up at the plant. The Engineer will review these documents and communicate any problems that may arise.

3. **Mixture Testing**

Mixture samples will be tested to verify gradation, binder content, and volumetric properties per Table 1 and Table 2 listed below.

If the Engineer elects not to perform Quality Assurance testing on a given day or a given project. The Contractor is required to still perform testing in accordance with Table 1 and Table 2 below. The Contractor's Quality Control test results shall be sent to the Engineer within 2 working days of each day's productions for a given HMA mixture.

Table 1: Quality Assurance/Control Tolerance Limits for HMA Mixtures

Parameter	Action Limits (Range 1)	Suspension Limits (Range 2)
% Passing the #8 and Larger Sieves	+/- 5.0%	+/- 8.0%
% Passing the #30 Sieve	+/- 4.0%	+/- 6.0%
% Passing #200 Sieve	+/- 1.0%	+/- 2.0%

Table 2: Quality Assurance/Control Testing Tolerance (+/-) from JMF or Target Values

Parameter	Action Limits (Range 1)	Suspension Limits (Range 2)
Binder Content (a)	0.30% (a)	0.50% (a)
Maximum Specific Gravity (Gmm)	0.013	0.020
Voids in Mineral Aggregate VMA (a,b)	0.75% (a,b)	0.80% (a,b)
Air Voids (c)	0.60%	0.90%
Fines to Effective Asphalt Ratio	0.65-1.20	0.60-1.25

a. Refer to minimum parameters in Table A of this special provision.
b. These given limits are (+/-) from given targets in Table A of this special provision.
c. Limits are (+/-) from JMF/Target Value listed in Section e. of this special

provision.

4. Density

Pavement density will be measured by the Engineer, with a Nuclear Density Gauge, using the Gmm from the JMF for the density control target. The in-place density of the HMA mixture shall be at least 92.0% of the density control target. In-place density will be calculated by averaging four QA density test locations. Test locations will not be taken within 12 inches of any pavement edges or pavement joints.

h) Rejected Materials

1. Gradation

Action Limits - Range of values established in Table 1 – Quality Assurance/Control Tolerance Limits for HMA Mixtures. If exceeded on two consecutive tests, Contractor is required to take corrective action to bring the mixture produced into conformance with the specifications.

Suspension Limits – Range of values established in Table 1 – Quality Assurance/Control Tolerance Limits for HMA Mixtures. If exceeded on a single test, Contractor is required to suspend operations and determine, document, and correct the cause before resuming production. Prior to resuming production, the Engineer must be notified of the findings and approve correction action prior to resuming production.

2. Asphalt Binder

If a liquid asphalt binder sample does not meet the required specification, the mix produced from the point of the last liquid asphalt binder sample meeting specification to the failed sample shall be considered defective and shall be replaced at the sole expense of the Contractor.

3. Volumetric Properties

The acceptable tolerance for Binder Content, Gmm, VMA, Air Voids, and Fines to Pbe are listed in Table 2 above. Any HMA Mixture produced outside of these tolerances or any HMA Mixture that does not meet the requirements listed in the sub notes of Table 2 above will be subject to a negative adjustment or rejected. The resulting penalty will be a negative adjustment of 10% to 50% or remove/replace, to be determined by the Engineer.

4. Pavement Density

A negative 10% adjustment in the HMA Mixture contract price will be imposed if the pavement density (average of all gauge readings) is less than 92%, but equal to or greater than 91%; or if 2 or more readings are less than 91%.

A negative 25% adjustment in the HMA Mixture contract price will be imposed if the pavement density (average of all gauge readings) is less than 91%, but equal to or greater than 90%; or if 2 or more readings are less than 90%.

If the average density is less than 90% (for all gauge readings), the Contractor shall remove and replace the pavement at no cost to the Owner.