



# **CITY OF BLACK JACK**

**BID DOCUMENTS AND  
SPECIFICATIONS  
FOR**

**SIDEWALK & STREET IMPROVEMENTS  
AT VARIOUS LOCATIONS**

**IN THE  
CITY OF BLACK JACK FOR  
2018**

**PROJECT CAP/CSS-18001**

**Approved Budget 2018/19 C7910 and C7920**

**Vijay K. Bhasin, P.E.  
Director of Public Works  
12500 Old Jamestown Road  
Black Jack, MO 63033  
314-355-0400 Ext. 110  
314-355-4196 (Fax)**

**APRIL 2018**

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Notice to Contractors Regarding Prevailing Wage Rates

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## ADVERTISEMENT FOR BIDS

### CITY OF BLACK JACK

#### CONCRETE/ASPHALT STREET & SIDEWALK PROGRAM IN THE CITY OF BLACK JACK AT VARIOUS LOCATIONS

#### PROJECT CAP/CSS-18001

Written sealed bids for Concrete and Asphalt Street and Sidewalk Improvements in the City of Black Jack will be received at Black Jack City Hall, 12500 Old Jamestown Road, Black Jack, MO 63033 until **10:00 a.m. on Tuesday, June 5, 2018** and at that time publicly opened and read. Contact the City Clerk, Karen Robinson, at City Hall for bid packages, available after **Thursday, May 17, 2018**. Any other questions should be directed to Vijay K. Bhasin, P.E., Director of P.W./City Engineer.

Vendors must agree to comply with Prevailing Wage Rate Provisions and other statutory regulations as referred to in these specifications. Each bid must be accompanied by a cashier's check or certified check, or a bid bond executed by the bidder and approved surety company, and payable to the City, in an amount not less than ten percent (10%) of the sum of your bid. No bid may be withdrawn for a period of sixty (60) days, subsequent to the specified time for receipt of bids. After May 17, 2018, specifications and contract documents will be on file and may be inspected at no charge. This set of documents can be procured from the City by paying a non-refundable amount of Forty Dollars (\$40.00) cash or money order or download free at [www.cityofblackjack.com](http://www.cityofblackjack.com). These can be procured from the City Clerk's Office.

All bidders must agree to comply with the Prevailing Wage Rate Provisions and other statutory regulations including City Ordinance No. 974. Contractors to post Performance/Payment Bond and Insurance Certificate to match City requirements.

Please print on the outside of sealed envelope, "Bids for Concrete/Asphalt Street & Sidewalk Program – Project CAP/CSS-18001" which contains your bid.

---

Karen E. Robinson, MRCC-S/CMC  
City Clerk

**THIS BID IS POSTED UNDER THE BLACK JACK WEB SITE AT  
[WWW.CITYOFBLACKJACK.COM](http://WWW.CITYOFBLACKJACK.COM) AND CAN BE DOWNLOADED AT NO COST OR  
CAN BE PICKED UP AT BLACK JACK CITY HALL FOR \$40.00 CASH OR MONEY  
ORDER.**

**NOTE:**

Different vendors of specialized fields are encouraged to provide bids, pertaining to their business trade/s while complying with all other requirements of these documents.

## **INFORMATION FOR BIDDERS**

### 1. Scope of Work:

The work shall consist of replacement of sidewalk concrete slabs and street concrete, then paving with hot asphalt in the City of Black Jack at various locations identified by the City Engineer, all in strict accordance with the Contract Documents and as described below and details shown on the enclosed typical section.

#### **Street Locations:**

- Paddock Point Drive and Paddock Point Ridge Court
  - Broadridge Lane and Broadridge Court
  - Mystic Bend Lane and Mystic Bend Drive
  - High Crest Street and High Crest Court
  - Persimmon Bend Lane
  - Latonka Trail
  - Hazeloak Drive
  - Helenoak Drive
- 
- Replacement and repairs to existing concrete, as marked per City Engineer.
  - Mill about 8-foot wide strip of pavement edge adjacent to curb and gutter.
  - 2-inch asphalt overlay on the entire street. (DO NOT ALLOW OVERLAY TO FLOW INTO GUTTER).
  - Installation of Petro mat with Tack Coat.
  - Provide 8 Ft. wide leveling and patching course in the center.
  - Installation of under-drains, if needed in the field and connect to adjacent catch basins. The decision will be made in the field.
  - Restore all the disturbed and damaged areas.
  - The finish surface will be substantially free from waves, bumps, or irregularities. The profile index will not be more than 15 inches per mile.
  - Various locations of sidewalks

List of locations for R/R of street slabs, sidewalk and concrete curbing is attached.

All work including restoration to meet St. Louis County requirements.

The Contractor is to obtain all permits (from St. Louis County) at Contractor's cost and comply with applicable E-Verification and Prevailing Wages requirements. Each member of Contractor's on-site crew must be 10-Hour OSHA Certified at a minimum.

### 2. Inspection of Site and Working Conditions:

Bidders or their authorized agents shall visit the locality of the work and inform themselves fully of the conditions relating to construction and labor under which the work will be performed.

### 3. Check of Specifications by Bidder:

The Contractor shall read thoroughly the specifications to assure him/her that he/she understands what materials the City wants him/her to use. The Contractor shall not be permitted to use to his/her advantage any omission or error in the Specifications or contract documents and the City retains the right to issue new instructions in the form of addendum to the bid documents or change orders to the contract documents for such error or omission and the Contractor shall carry out such instructions as if originally specified.

If the Contractor incurs additional costs for work performed pursuant to additional information which could not reasonably be inferred from the Specifications or field conditions, such additional costs may be subject to an increase in Contract sum in accordance with the Contract provisions.

4. Interpretation of Contract Documents:

If the bidder has any questions which arise concerning the true meaning or intent of the Specifications, or any part thereof, which affect the cost, quality, quantity, or character of the project, he/she shall request in writing that an interpretation be made and an addendum be issued by the engineer, which shall be delivered to all bidders to whom specifications have been issued. This written request should be at least five (5) working days prior to opening of the bid. Failure to request an addendum shall not relieve the bidder from delivering the completed project in accordance with the intent of the Specifications.

5. Intent of Specifications:

The general intent of the Specifications is to state what material and procedures are to be used in accomplishing the work.

6. Qualifications of Bidders:

The City may make such investigations as it deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish the City all such information and data for this purpose as the City may request. The City reserves the right to reject any bid if the evidence submitted by or investigation of such bidder fails to satisfy the City that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. The City further reserves the right to accept any bid and/or bids, to reject any and all bids in full or in part, and to waive irregularities and formalities as deemed appropriate. Price will not be the only consideration in the selection of the contract or agreement.

7. Equivalent Material:

Wherever definite reference is made in these Specifications to the use of any particular material or equipment, it is to be understood that any equivalent material or equipment may be used which will perform adequately the requirements imposed by the general design, subject to the approval of the Director of Public Works. The Contractor will indicate the substitution of materials in the bid documents.

8. Bid Security:

Each bid must be accompanied by a deposit of not less than ten percent (10%) of the amount of the bid. The deposit shall consist of a certified check, a cashier's check or bid bond, payable to the City of Black Jack. Checks or bid bonds will be returned within thirty (30) days after the date the bids are formally opened, except those deposited by the three (3) lowest bidders, which with the exception of the bid security of the successful bidder will be returned within fourteen (14) days after the execution of the Contract between the successful bidder and the City. The bid security of the successful bidder will be returned to him/her without interest when the Contract is executed, and a satisfactory performance and payment bonds are delivered to the City.

9. Preparation of Bids:

Bids must be made upon the prescribed forms attached to these Specifications. Only sealed bids will be considered; all proposals otherwise submitted will be rejected as irregular.

The City is exempt from all sales taxes, which might otherwise be lawfully assessed. **The bidder does not have to include the cost of sales taxes in his/her bid prices.** A tax-exempt number will be provided to the successful bidder for use in purchasing materials the date the Contract is signed.

All blank spaces in the Proposal must be filled in and no changes shall be made in the phraseology of the Proposal, or addition to the items mentioned therein. Any conditions, limitations or provisions attached to proposals will render them informal and may be considered cause for their rejection.

10. Bid:

The bid for the project shall include the costs of all labor, materials, tools and equipment required to complete the project as described herein.

11. Compensation for Altered Quantities:

When the accepted quantities of work vary from the quantities in the bid schedule, the Contractor shall accept as payment in full, so far as Contract Agreement items are concerned, payment at the original Contract unit prices for the accepted quantities of work done.

12. Alterations:

Alterations by erasures or interlineation must be explained or noted in the Proposal over the signature of the bidder.

13. Signatures:

A Proposal by a person, who affixes to his/her signature the word "President," "Secretary," "Agent," or other designation, without disclosing his/her principal, is the proposal of the individual. That by a corporation should be signed with the name of the corporation followed by the signature of the president, secretary, or other person authorized to bind it in the matter, who should file evidence of his/her authority to do so.

14. Residence of Bidders:

The place of residence and post office address, with County and State of every bidder, and telephone number, must be given after his/her signature.

15. Submission of Proposal:

The Proposal and the Bid Security guaranteeing the same shall be placed in a sealed envelope addressed to Karen Robinson, City Clerk, 12500 Old Jamestown Road, Black Jack, MO 63033, and marked "**Concrete Sidewalk & Street Program CSS/CSP-18001**" on outside of envelope.

16. Withdrawal of Proposals:

If a bidder wishes to withdraw his/her Proposal, he/she may do so before the time fixed for the opening, without prejudice to him/her. No bidder may withdraw his/her Proposal for a period of thirty (30) days after the scheduled closing time for the receipt of bids.

17. No Bids Received After Time Set for Opening:

No bids received after the time set for opening will be considered.

18. Right to Reject Bids:

The City of Black Jack reserves the right to reject any or all bids, to waive any informality in the bids received, or to accept the bid or bids that in its judgment will be for the best interest of the City of Black Jack.

19. Bidders to be Present:

Bidders are invited to be present at the opening of the bids.

20. Comparison of Bids:

The Contract will be awarded to the bidder submitting the lowest and best **responsive** bid, considering the bidder's experience and ability to do the work.

21. Award of Contract:

If, within fourteen (14) days after he/she has received notice of acceptance of his/her bid, the successful bidder shall refuse or neglect to come to the office of the City Clerk and execute the Contract, and furnish the required Performance and Payment Bonds, properly signed by the Contractor, and the surety or sureties satisfactory to the City as hereinafter provided, the bidder or bidders shall be deemed to be in default and shall forfeit his/her bid deposit.

22. Performance and Payment Bonds:

A Performance and Payment Bond in an amount equivalent to one hundred percent (100%) of the Contract price must be furnished and executed by the successful bidder, or bidders, these bonds to be in the form contained in the Contract.

The Surety shall be a corporate surety company or companies of recognized standing, licensed to do business in the State of Missouri and acceptable to the City.

23. Notice to Proceed:

A written notice to begin construction will be given to the bidder by the City within twenty-one (21) days after the Award of Contract. The time for completion of the project shall begin to run on the date established in this notice.

24. Time of Completion:

The bidder provides that construction work must begin within three (3) days after receipt of written notice to proceed and shall be carried on at a rate to secure the full completion of the Contract within forty-five (45) calendar days from the date of written notice to proceed, the rate of progress and the time of completion being essential conditions of the Agreement.

25. Liquidated Damages:

The bidder further agrees that, should he fail to fully and finally complete the Work in the time specified or such additional time as may be allowed by the Engineer under the Contract, the amount of liquidated damages to be recovered in accordance with requirements of **Sec. 108.7 of the Standard Specifications** shall be as follows:

Liquidated Damages shall accrue at the rate of **\$500.00 per day** for each day the work remains incomplete as determined solely by the City.

26. Bid Security Returned to Successful Bidder:

Upon execution of the Contract and approval of Performance Bond, the Bid Security will be returned to the bidder unless the same shall have been presented for collection prior to such time, in which case the amount of the deposit will be refunded by the City of Black Jack.

27. Indemnification and Insurance:

Before commencing any work under this Contract, the bidder will be required to procure and keep in effect during the period of work thereon, at the bidder's own cost and expense, the insurance specified in the General Conditions of these Specifications, indemnifying and holding harmless the City of Black Jack.

28. Assignment:

No assignment by the bidder of Contract or any part thereunder by the bidder will be recognized, unless such assignment has had the approval of the City, and the Surety has been given due notice of such assignment in writing in accordance with the terms of its bond.

No assignment will receive approval unless the instrument of assignment contains a clause to the effect that it is agreed that the funds to be paid to the assignee under the assignment are subject to a prior lien for services rendered or materials supplied for the performance of the work called for in the Contract in favor of all persons, firms, or corporations rendering such services or supplying such materials.

29. Affidavit of Work Authorization:

Pursuant to Section 285.530 of the Missouri Revised Statutes, the successful bidder must affirm its enrollment and participation in a federal work authorization program with respect to the employees proposed to work in connection with the services requested herein by:

- submitting a completed, duly executed and notarized copy of the attached AFFIDAVIT OF WORK AUTHORIZATION and
- providing documentation affirming the bidder's enrollment and participation in a federal work authorization program with respect to the employees proposed to work in connection with the services requested herein.

30. Occupational Safety and Health Administration Construction Safety Program:

Pursuant to Section 292.675 of the Missouri Revised Statutes and the General Conditions, bidder, if awarded the Contract, shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for the bidder's on-site employees which includes a course in construction safety and health approved by OSHA or a similar program approved by the department which is at least as stringent as an approved OSHA program. Bidder shall require each of its subcontractors to provide a construction safety program in accordance with this provision.



PROPOSAL FOR CONCRETE SIDEWALK/STREET PROGRAM

PROJECT CSS/CSP-18001

City of Black Jack  
 12500 Old Jamestown Road  
 Black Jack, MO 63033

Date: \_\_\_\_\_

Gentlemen/Ladies:

In accordance with the Advertisement for Bids inviting proposals for the above project in the City limits of Black Jack, Mo, subject to the conditions and requirements of the General Conditions, the Special Conditions, and Technical Specifications, the undersigned herewith proposes to provide the specified item with Forty-five (45) calendar days after receipt of notice to proceed.

The Contractor is to provide proposed qualifications, and pamphlets about the proposed Concrete Sidewalk/Street Project being bid under this proposal.

Please attach the manufacturer's product information/data, specifications, photos, and warranty information for proposed materials. The Contractor will be paid for all the work completed and based on the following prices:

UNIT PRICE SCHEDULE

<u>SPEC. NO.</u>	<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QUANTITY</u>	<u>PRICE</u>	<u>EXTENSION</u>
03520	1	Concrete Street Removal & Replace with 7" Thick PCC Pavement & 6" Aggregate Base	<u>4577</u> S.Y.	\$ _____ /S.Y.	\$ _____
03527	2	Remove & Replace PCC Lip Curb and Gutter with Rock Base	<u>165</u> L.F.	\$ _____ /L.F.	\$ _____
03527	2A	Remove and Replace PCC - 6" Straight Face Curb with 6" Rock Base	<u>330</u> L.F.	\$ _____ /L.F.	\$ _____
02513	3	Asphalt Concrete	<u>3811</u> Tons	\$ _____ /Tons	\$ _____
03520	4	Remove and Replacement of Concrete Driveway Apron	<u>20</u> S.Y.	\$ _____ /S.Y.	\$ _____
02580	5	Rotomilling	<u>17752</u> S.Y.	\$ _____ /S.Y.	\$ _____
02800	6	Replace Inlet Top and Sills	<u>4</u>	\$ _____ /Each	\$ _____
	7	Paving Fabric	<u>27219</u> S.Y.	\$ _____ /S.Y.	\$ _____
		<b>TOTAL</b>			<b>\$ _____</b>
	8	Removal & replacement of concrete sidewalk 5ft. wide with 2inch rock base	<u>350</u> S.Y.	\$ _____ /S.Y.	\$ _____
	8A	Repairs of tripping hazards *	<u>100</u> Slabs	\$ _____ /Slabs	\$ _____
	9	Thermo Plastic markings for traffic use	_____ L.F.	\$ _____ / L.F.	\$ _____
	9A	Thermo Plastic stop bars 12" wide	<u>80</u> L.F.	\$ _____ /L.F.	\$ _____

\*Site item #25 on Page 16 of this document

**TOTAL** \$ \_\_\_\_\_

**Total:** \_\_\_\_\_ **Dollars**

**and** \_\_\_\_\_ **Cents**

Name of Street	Length	Width *	-----Concrete-----		Pavement	8' Wide Milling	Fabric	Asphalt 3
			1	2				
1a) Paddock Point Drive (with big cul-de-sac)	1500 Ft.	26 Ft.	100 S. Yds.	50 S. Yds.	1076 S. Yds.	2667 S. Yds.	4000 S. Yds.	560 Tons
1b) Paddock Point Ridge Ct.	600 Ft.	26 Ft.	75 S. Yds.	75 S. Yds.	347 S. Yds.	1066 S. Yds.	1600 S. Yds.	224 Tons
2a.) Broadridge Lane (from metal grate to Jamestown Ridge)	1100 Ft.	26 Ft.	125 S. Yds.	40 S. Yds.	795 S. Yds.	1956 S. Yds.	2933 S. Yds.	410 Tons
2b.) Broadridge Court	200 Ft.	26 Ft.	30 S. Yds.		173 S. Yds.	356 S. Yds.	533 S. Yds.	75 Tons
3a.) Mystic Bend Ln. & Dr. (up to Parkton Place)	950 Ft.				2755 S. Yds.	1800 S. Yds.	2433 S. Yds.	340 Tons
4a.) High Crest Street	1850 Ft.				534 S. Yds.	3400 S. Yds.	5333 S. Yds.	747 Tons
4b.) High Crest Court (with 1.5 Cul-de-sac)	550 Ft.				160 S. Yds.	1100 S. Yds.	1867 S. Yds.	260 Tons
4c.) Persimmon Bend Ln.	975 Ft.				425 S. Yds.	1733 S. Yds.	2600 S. Yds.	364 Tons
5a.) Latonka Trail	650 Ft.				178 S. Yds.	1150 S. Yds.	2133 S. Yds.	300 Tons
5b.) Hazeloak Drive	700 Ft.				303 S. Yds.	1244 S. Yds.	1867 S. Yds.	261 Tons
5c.) Helenoak Drive	720 Ft.				311 S. Yds.	1280 S. Yds.	1920 S. Yds.	270 Tons
<b>TOTAL-----</b>			<b>330 S. Yds.</b>	<b>165 S. Yds.</b>	<b>4577 S. Yds.</b>	<b>17752 S. Yds.</b>	<b>27219 S. Yds.</b>	<b>3811 Tons</b>

1 Straight Face Curb

2 Curb & Gutter Sections

3 Includes Leveling & Patching

\* Width varies

All concrete, asphalt and restoration of all disturbed areas to be done within 45 calendar days in accordance with these specifications. Enclosed drawing shows the street locations for this project.

Name and address of any sub-contractor to be utilized on any phase of your proposed work.

NAME	ADDRESS	ADDRESS	TELEPHONE
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			

Enclosed herewith is a suitable bid security in the amount of \_\_\_\_\_

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Dollars (\$\_\_\_\_\_), as required by the Advertisement for Bids. This sum shall be forfeited to the City of Black Jack if the party or parties making this proposal fail to enter into the Contract with approved securities within seven (7) days after the award of the Contract has been made.

The undersigned party or parties has visited the project site and has examined the specifications for, and the location of, the project, and has satisfied himself/herself as to the work to be done and the conditions under which it must be carried out.

Firm Name \_\_\_\_\_

Signature \_\_\_\_\_

Name/Title \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Phone No. \_\_\_\_\_

Cell No. \_\_\_\_\_

Fax No. \_\_\_\_\_

E-Mail \_\_\_\_\_

Date \_\_\_\_\_

ADDRESS:	STREET:	SLABS:	COMMENTS:
5144	Abington Road	3	
5177	Abington Road	1	
5357	Abington Road	1	
5367	Abington Road	1	
11883	Barden Tower	3	
(see comments)	Barden Tower	3	@ Brampton Hunt
12519	Bielefeld Court	1	
4211	Bielefeld Drive	1	
4230	Bielefeld Drive		@ street curb
4241	Bielefeld Drive	2	
4278	Bielefeld Drive	2	
4307	Bielefeld Drive	1	With crack
4313	Bielefeld Drive	1	
12431	Bielefeld Lane	1	
(see comments)	Bielefeld Lane	2	@ Bielefeld Ln and Bielefeld Dr.
13	Bridekirk	1	
4842	Bristol Rock	2	
4872	Bristol Rock	2	
5112	Bristol Rock	2	
5113	Bristol Rock	2	
5163	Bristol Rock	2	
3	Brixworth	1	
12	Brixworth	1	

ADDRESS:	STREET:	SLABS:	COMMENTS:
30	Brixworth	3	
5235	Elk Trail	4	
5239	Elk Trail	4	
5255	Elk Trail	2	
5266	Elk Trail/Bristol Rock	2	Across the street from 5266
4890	Evelynaire Drive	2	
4960	Evelynaire Drive	1	
4975	Evelynaire Drive	1	
11615	Hazeloak	3	
11620	Hazeloak	2	
11630	Hazeloak	2	
11635	Hazeloak	2	
11645	Hazeloak	2	
11670	Hazeloak	4	
11615	Helenoak Drive	3	Cracked
11675	Helenoak Drive	3	
4918	High Crest Court	1	
4925	High Crest Court	1	
4942	High Crest Court	1	
4946	High Crest Court	1	
4949	High Crest Court	1	
4954	High Crest Court	2	
12819	High Crest Street	1	
12823	High Crest Street	2	
12824	High Crest Street	1	

ADDRESS:	STREET:	SLABS:	COMMENTS:
12827	High Crest Street	1	
12835	High Crest Street	1	
12905	High Crest Street	1	
12921	High Crest Street	2	
12946	High Crest Street	1	
12957	High Crest Street	1	
4958-4954	High Crest Street	2	Between 2 address
13025	Jamestown Ridge		@ street
12371	Jerries Lane	2	
12465	Jerries Lane	1	
11620	Latonka Trail	2	
11630	Latonka Trail	2	
11645	Latonka Trail	2	
11655	Latonka Trail	3	
11665	Latonka Trail	3	
11670	Latonka Trail	2	
13006	Mystic Bend		10 ft. of straight face curbing
13027	Mystic Bend	2	Along portion going to Parkton Place
13035	Mystic Bend	3	Near tree
13039	Mystic Bend	2	
13047	Mystic Bend	2	10 Ft. curbing
13054	Mystic Bend	1	
4940	Patriciaridge	2	
4980	Patriciaridge	1	

ADDRESS:	STREET:	SLABS:	COMMENTS:
4886	Persimmon Bend	1	
5172	Trailbend	2	
5282	Trailbend	2	
5332	Trailbend	1	
5432	Trailbend	1	
12392	Trailforest	1	
5384	Trailoaks	1	
5404-5394	Trailoaks	2	Between
5478	Trailoaks	2	Across the street
12238	Trailoaks	3	1 slab cracked
12238	Trailoaks	2	Near fence
4757	Trees Edge	4	
12075	Wensely	3	
12275	Winterset		Sink hole



## Notes:

1. Contractor's bid and material prices included in same shall not be subject to escalation for the period of twelve (12) months after the deadline to submit bids.
2. All work to be done in accordance with the rules and regulations of St. Louis County.
3. The Contractor will acquire all necessary building permits from St. Louis County, if required.
4. Contractor will provide all necessary coordination with his or her subcontractors, suppliers, and St. Louis County's Permitting Department.
5. The City will waive its street excavation permit fee, but the contractor and all subcontractors shall pay all necessary permit fees to outside agencies and will acquire all necessary permits from all jurisdictions prior to start of work.
6. Contractor shall comply with all applicable building and electrical permit requirements.
7. City will decide between different options or equipment at the time of making final decision.
8. **Prior to commencement of any work, Contractor shall provide to Owner an insurance certificate evidencing the required insurance coverage specified in Section 35 of the General Conditions.**
9. The Contractor shall provide Performance and Payment Bonds for 100% of the contract value in the form provided with this Request for Proposals.
10. The Contractor shall complete all of its work in a good and workmanlike manner, free of defects, and in accordance with industry standards as well as in accordance with the plans and specifications. No bumps, pits, or defects in the finished asphalt surfaces shall be accepted. Contractor shall inspect the site prior to bidding and inform itself / himself / herself fully of the conditions relating to construction and labor under which the work will be performed.
11. Owner or its representative's presence on site will not relieve the contractor from liability for failure to complete all of its work in a good and workmanlike manner, free of defects, and in accordance with industry standards as well as in accordance with the plans and specifications.
12. The Contractor and all subcontractors shall pay the Prevailing Wages under this public works project.
13. Contractor will furnish a certified copy of its payroll report, if the Missouri Prevailing Wage Law found in the Revised Statutes of Missouri sections 290.210 through 290.340, and the regulations promulgated thereunder (the "Missouri Prevailing Wage Law") are applicable, and Lien Waivers with each request for payment.
14. All material and equipment installation shall comply with manufacturer's guidelines. No variations will be accepted.
15. Contractor to provide manufacturer's product information / data, specifications and manufacturer's warranty information pertaining to the products being included in this bid.
16. All work and material to be guaranteed to be free of defects for one (1) year. This one-year period shall begin upon Contractor's last date of work or the date that the last material is provided, whichever is later. Contractor shall provide a Maintenance Bond for 10% of the contract value in the form provided with this Request for Proposals
17. The Contractor will clean the entire site after completion of the work.
18. Work to start within 5 days of the Notice to Proceed. All work to be completed in 45 calendar days. Liquidated damages of \$500/day will be assessed for work not completed within the assigned time.

19. Some of the above said line items are approximate quantities. The City will pay on the actual quantities placed in the field based on unit prices. The City may increase or decrease the quantities.
20. The City will test the material or base. All material provided and/or installed by Contractor shall comply with these specifications. The concrete installed by Contractor shall have a minimum compressive strength of 3500 PSI (pounds per square inch) and any reinforcing steel therein shall be epoxy coated. All concrete testing to be per contractor's expense and original reports to come to City Engineer.
21. The Contractor shall advise the Owner at the time of this bid if he or she proposes to use any material under the "or equal" clause (Section 5 of the General Conditions). Contractor will furnish the names of all sub-contractors and appropriate cost of their proposed work with the bid.
22. Contractor shall contact the appropriate authority (i.e., Missouri One Call) to identify and locate any subsurface utilities at least 72 hours prior to commencing the Work.
23. All restoration of disturbed areas will be incidental to this work. If more than one contractor is working in the same area, each contractor will rectify his or her disturbed/damaged area.
24. These are approximate quantities. The City will pay on the actual quantities placed in the field. For item #1, 2 and 8, the City may increase or decrease the quantities or add other City street/s or remove some streets. A final list of streets to be improved will be provided at the time of award of contract.
25. \* For item #8A in the Unit Price Schedule, certain existing sidewalk. Sidewalk trip hazard repair to be removed by processes adopted by "Precision Concrete" cutting, or any other equipment process. The purpose is to provide existing trip hazards to be removed or reduced or repaired for uneven sidewalk surfaces and other concrete walkways for safe use of these devices.  
  
This method will provide smooth edges of sidewalk and result in level surface with the next slabs. The proposed method will not negatively affect the adjoining sidewalk slab. The finished surface will be smooth and without any bumps. No "fill" materials to be used. No damage to existing landscaped areas, retaining walls, utility covers. No debris or washout to be directed towards catch basins.
26. The Contractor to furnish Thermo Plastic markings including placement of yellow or white color as recommended by the engineer.
27. Line item for #1 has about 20% additional quantity over and above the attached list to accommodate cold weather damaged areas.
28. In case of partial slab or curb removal and replacement, this price includes the saw cutting of existing concrete and is incidental to the work at no additional cost. Care will be taken to not damage the good slab.
29. Straight face concrete curb to be properly pinned to the asphalt/concrete. Proper reinforcement will be used at no more than 3 ft. apart from center to center.
30. No asphalt work to be done prior to June 1, 2018.
31. The City reserves the right to modify the terms of the standard form contract provided herein prior to the successful bidder's execution thereof.
32. All work is to be performed in a safe manner.
33. The Contractor is to provide all the following documents with final invoice:
  - All lien and claim waivers
  - Copy of final approval from St. Louis County.
  - Certified copy of signed payroll and affidavit of wage rate compliance, if the Missouri Prevailing Wage Law is applicable.

BID BOND

KNOW ALL MEN BY THESE PRESENTS, That \_\_\_\_\_  
\_\_\_\_\_ hereinafter called the "Principal", and the \_\_\_\_\_  
\_\_\_\_\_ hereinafter called the "Surety", are held and firmly bound unto the \_\_\_\_\_  
\_\_\_\_\_, hereinafter called the "Obligee" in the full and just sum of  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_), good and lawful money of the United  
States of America, to the payment of which said sum of money well and truly to be made and done, the said  
Principal binds himself, his heirs, executors, administrators, successors and assigns, jointly and severally,  
firmly by these presents.

SIGNED, SEALED, and DATED, this \_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.

The conditions of this obligation are such that if any award is made within thirty (30) days from the date of this instrument by said Obligee to the above bounded Principal under an Invitation for Bids for Concrete/Asphalt Sidewalk & Street Program CAP/CSS-18001 in the City of Black Jack, pursuant to the Specifications prepared by Vijay K. Bhasin, P.E., Director of Public Works, it shall be accepted by said Principal, and said Principal shall enter into a Contract for the completion of said work as required and give bond with good and sufficient sureties, subject to the approval of Obligee, for the faithful performance thereof, then this obligation shall be null and void; otherwise, to remain in full force and effect.

Provided: First, that the liability of the surety shall in no event exceed, the penalty of his bond.

Second, that any suits at law or proceedings in equity brought or to be brought against said surety to recover any claim hereunder must be instituted within eighteen (18) months from the date of this instrument.

\_\_\_\_\_  
Principal

Attest:

By: \_\_\_\_\_  
(Title)

SIGNATURE PAGE TO FOLLOW

(Seal)

\_\_\_\_\_  
(Principal) Secretary

\_\_\_\_\_  
Witness as to Principal (Signature)

\_\_\_\_\_  
Witness as to Principal (Print Name)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

By \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
Surety

By \_\_\_\_\_  
Attorney in Fact

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

ATTEST:

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That \_\_\_\_\_

as Principal, hereinafter called Contractor, and \_\_\_\_\_

\_\_\_\_\_ as Surety, hereinafter called Surety, are held and firmly bound

unto the City of Black Jack, Missouri as Obligee, hereinafter called Owner, in the amount of:

\_\_\_\_\_ Dollars

(\$\_\_\_\_\_), for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated \_\_\_\_\_

Entered into a contract with Owner for \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

in accordance with drawings and specifications prepared by the City of Black Jack which contract is by reference made a part hereof and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the Owner.

Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations there under, the Surety may promptly remedy the default, or shall promptly

1. Complete the Contract in accordance with its terms and conditions, or
2. Obtain a bid or bids for submission to Owner for completing the Contract in accordance with its terms and conditions, and upon determination by Owner and Surety of the lowest responsible Bidder, arrange for a contract between such Bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price," as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the Contract and any amendments hereto, less the amount properly paid by Owner to Contractor.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of Owner.

Signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20\_\_.

IN THE PRESENCE OF

(Principal)

\_\_\_\_\_  
Principal

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Surety)

\_\_\_\_\_  
(Title)

PAYMENT BOND

KNOWN ALL MEN BY THESE PRESENTS: that

\_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_, hereinafter call Principal, and  
(Corporation, Partnership or Individual)

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto \_\_\_\_\_

\_\_\_\_\_  
(Name of Owner)

\_\_\_\_\_  
(Address of Owner)

hereinafter called OWNER, in the penal sum of \_\_\_\_\_  
\_\_\_\_\_, in lawful money of the United States, for the payment of  
which sum well and truly to be made, we bind successors, assigns, and ourselves jointly and severally, firmly  
be these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the principal entered into a certain contract  
with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto  
attached and made a part hereof for the construction of:

\_\_\_\_\_.

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors,  
corporations and otherwise furnishing any and all materials incorporated, consumed or used in connection with  
the construction of such work, and all insurance premium, both for compensation, and for all other kinds of  
insurance, said work, and for all labor performed in such work, provided for in such contract and any  
authorized extension or modification thereof, then this obligation shall be void, otherwise to remain in full force  
and effect.

PROVIDED, FURTHER, that the said 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 hereunder  
or the specifications accompanying the same shall in any wise 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 work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the owner and the contractor shall abridge the right  
of any beneficiary hereunder, whose claim may be unsatisfied.

SIGNATURE PAGE TO FOLLOW

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
Principal (print)  
(Seal)  
\_\_\_\_\_  
(Principal) Secretary

\_\_\_\_\_  
Witness as to Principal (Signature)  
By \_\_\_\_\_  
(Signature)

\_\_\_\_\_  
Witness as to Principal (Print Name)  
\_\_\_\_\_  
(Print Name)

\_\_\_\_\_  
(Address)  
\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Address)  
\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)

ATTEST:

\_\_\_\_\_  
Surety

\_\_\_\_\_  
Witness as to Surety  
By \_\_\_\_\_  
Attorney in Fact

\_\_\_\_\_  
(Address)  
\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Address)  
\_\_\_\_\_  
(Address)

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.

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 where the project is located.



MAINTENANCE BOND

**BOND**\_\_\_\_\_

KNOW ALL BY THESE PRESENT, That we, \_\_\_\_\_ as Principal, and \_\_\_\_\_, a corporation organized under the laws of the State of \_\_\_\_\_ and duly authorized to do business in the State of Missouri, as Surety, are held and firmly bound unto the City of Black Jack, Missouri as Obligee, in the penal sum of \_\_\_\_\_ (\$\_\_\_\_\_) to which payment well and truly to be made we do bind ourselves, our and each of our heirs, executors, administrators, successors and assigns jointly and severally, firmly by these present.

WHEREAS, the said Principal entered into a Contract with the City of Black Jack, Missouri dated \_\_\_\_\_ for Concrete/Asphalt Sidewalk & Street Program.

WHEREAS, said Contract has been completed, and was approved on \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, That if the Principal shall promptly and satisfactorily remedy any defective materials or workmanship which becomes apparent during the period of One (1) year following the completion of the Contract \_\_\_\_\_ then this obligation shall be void, otherwise to remain in full force and effect such that Surety shall promptly and satisfactorily remedy any defective materials or workmanship which becomes apparent during the aforementioned One (1) year period in the event that Principal fails to timely and properly effect such remedy and Obligee declares Principal to be in default hereunder. However, any additional warranty or guarantee whether expressed or implied is extended beyond the One (1) year period by the Principal or Manufacturer only, and the Surety assumes no liability for such a guarantee.

\_\_\_\_\_  
Signature

HOLD HARMLESS AGREEMENT

Date: \_\_\_\_\_

We \_\_\_\_\_

agree to protect indemnify save and keep harmless, City of Black Jack, Missouri, its agents and servants, and employees against and from any and all loss, cost damage or expense, arising out of or from any accident or other occurrence on or about said premises, causing injury to any person or property whomsoever and whatsoever and will protect, indemnify and save and keep harmless the above mentioned parties from any and all claims, costs or expense arising out of any failure of the contractor in any respect to comply with and perform all the requirements and provisions agreed to and required by any law or ordinance, during period commencing \_\_\_\_\_ at the premise of the City of Black Jack, Missouri.

Contractor: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_



**CONTRACT AGREEMENT**  
(For Concrete/Asphalt Sidewalk & Street Program)  
Project CAP/CSS-18001

THIS AGREEMENT made the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by and between \_\_\_\_\_ hereinafter called the "Contractor", and the City of Black Jack, Missouri, hereinafter called the "Owner".

WITNESSED, that the Contractor and Owner for the consideration hereinafter named agree as follows:

**ARTICLE 1. SCOPE OF WORK**

The Contractor shall furnish all of the material, equipment, and labor; and perform all of the work to remove and replace approximately 4577 S. Yds. of concrete streets; 350 S. Yds. of concrete sidewalks; 3811 Tons of Type C Asphalt overlay and other tasks as bid for the project; at various locations within the City of Black Jack. All work and material to comply with MoDOT Section 413 for the project.

All work to meet St. Louis County requirements.

The Contractor to comply with E-Verification and Prevailing Wages requirements, if applicable. Each member of Contractor's on-site crew must be 10-Hour OSHA Certified at a minimum.

The minimum specifications in the bid document are included as part of this Contract Agreement by reference.

**ARTICLE 2. TIME OF COMPLETION**

All the work shall be completed within Forty-Five (45) calendar days from the date of written notice. The details are included on Page 5 of Information for Bidders.

**ARTICLE 3. ACCEPTANCE AND FINAL PAYMENT**

Final payment at the unit prices stated in the Contractor's Proposal for the accepted work completed shall be due thirty (30) days after acceptance and completion of the work, provided the contract be then fully performed, subject to the provisions of the General Conditions and of the Special Conditions. Contractor will furnish a certified copy of its Lien Waivers with each request for payment.

The Contractor shall provide all the following documents with final invoice:

- All lien and claim waivers
- Affidavit of wage rate compliance
- Copy of final approval from St. Louis County.  
Certified copy of signed payroll and affidavit of wage rate compliance, if the Missouri Prevailing Wage Law found in the Revised Statutes of Missouri sections 290.210 through 290.340, and the regulations promulgated thereunder are applicable.

**ARTICLE 4. CONTRACT DOCUMENTS**

The Contract Documents consist of this Contract Agreement and the manual titled City of Black Jack Specifications for Bid Documents and Specifications for Concrete/Asphalt Sidewalk and Street Program in the City of Black Jack for 2018 - Project CAP/CSS 18001 in the City of Black Jack and dated April 2018 including without limitation, the Advertisement for Bids, the Information for Bidders; the Pricing of the materials and Work found in the Contractor’s Proposal (exclusive of terms and conditions in the Contractor’s Proposal); the Bid Bond; the Performance Bond; the Payment Bond; the Maintenance Bond; the Hold Harmless Agreement; Affidavit of Work Authorization; the General Conditions; the Specific Conditions; and all modifications and addenda incorporated in the documents before the execution of this Contract Agreement and are fully a part of the Contract Agreement as if attached to this Agreement or repeated herein. The Contract Documents represent the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreement, either written or oral.

**ARTICLE 5 WARRANTY**

Contractor warrants that its work, including all labor, material and workmanship, shall be free from defects for the period of three (3) years after substantial completion.

**ARTICLE 6.**

Contractor will comply with Prevailing Wage Rate Provisions and other statutory regulations, applicable to this project.

**ARTICLE 7.**

Contractor will comply with Prevailing Wage Rate Provisions and other statutory regulations, applicable to this project.

**ARTICLE 8.**

The Contractor will not damage any items, outside the scope of this work. All disturbed areas will be properly repaired at Contractor’s cost.

**ARTICLE 9. CONTRACT SUM**

The Owner shall pay the Contractor in current funds for the Contractor’s performance of the Contract. The

Contract Sum shall be \_\_\_\_\_

Dollars (\$\_\_\_\_\_ ) subject to additions and deductions as provided in the Contract

Documents.

**ARTICLE 10. PERFORMANCE AND CONTRACTOR’S BOND**

Contractor shall provide a Performance Bond and Contractor (Payment) Bond as required by the Contract Documents and in accordance with Section 107.170 of the Revised Statutes of Missouri.

## **ARTICLE 11. MAINTENANCE BOND**

Contractor shall provide a Maintenance Bond as required by the Contract Documents and in accordance with appropriate amount as described in applicable section of this Bid Document.

## **ARTICLE 12. WORKING HOURS**

City Hall is open Monday through Friday from 8:30 a.m. to 5:00 p.m. Contractor shall complete all work during these hours. No evening or weekend work will be allowed. City Hall will be operating its business as normal during the Project. Contractor must use best efforts to avoid unnecessarily disturbing or disrupting the employees and visitors.

## **ARTICLE 13. SUBCONTRACTORS**

Prior to beginning its work, Contractor will furnish the names of any and all subcontractors that Contractor intends to use / hire for the Project, if any. Owner reserves the right to reasonably object to the use of any subcontractors intended to be used by Contractor. If Owner does so, Contractor will find a suitable replacement subcontractor for use.

## **ARTICLE 14. INSURANCE**

Prior to commencement of any work, Contractor shall provide to Owner an insurance certificate evidencing the required insurance coverage specified in Section 35 of the General Conditions.

## **ARTICLE 15. GOVERNING LAW**

This Contract Agreement shall be construed and governed in all respects according to the laws of the State of Missouri, without giving effect to any choice of law or conflict of law provision or rule (whether of the State of Missouri or any other jurisdiction) that would cause the application of laws of any jurisdiction other than those of the State of Missouri.

## **ARTICLE 16. LIQUIDATED DAMAGES**

Liquidated damages shall accrue at the rate of **\$500.00 per day** for each calendar day the work remains incomplete as determined by the Owner in its sole discretion.

SIGNATURE PAGE TO FOLLOW

IN WITNESS WHEREOF, the parties hereto executed this Agreement, the day and year first above written.

For the Owner

\_\_\_\_\_  
Mayor Norman McCourt

\_\_\_\_\_  
Vijay K. Bhasin, P.E., Director of P.W./City Engineer

Attest:

\_\_\_\_\_  
City Clerk

For the Contractor

\_\_\_\_\_  
Corporate Name (If a Corporation)

By \_\_\_\_\_  
President (If a Corporation)

Attest:

\_\_\_\_\_  
Clerk or Notary Public

\_\_\_\_\_  
Secretary

## GENERAL CONDITIONS

### 1. Definitions

The following terms used in the Contract Documents are respectively defined as follows:

- a. "Owner" or "City"                      City of Black Jack
- b. "City Engineer"                         The City Engineer, an employee of the City of Black Jack
- c. "Engineer"                                 The engineer or engineering firm engaged by the City to design the Project and if otherwise so identified in the Contract Documents to serve as the "Engineer" during construction administration of the Project; and in the absence of any such individual or firm for the Project, the "Engineer" shall be the "City Engineer".
- d. "Contractor"                              The person, firm or corporation to whom the within Contract is awarded by the City of Black Jack and who is subject to the terms and conditions of the Contract Documents.
- e. "Subcontractor"                         A person, firm or corporation, performing any part of the Contractor's obligations hereunder at the site of the work, excluding, however, the furnishing of standard materials and other materials not worked to a special design under the Plans and Specifications for the work. The term "Subcontractor" includes each subcontractor at every tier performing or furnishing a portion of the Work, whether that person or entity is a subcontractor directly or indirectly to Contractor.
- f. "Contract Documents"                 The Advertisement for Bids, the Information for Bidders, the Contractor's Proposal or Bid, the signed Contract, the Payment and Performance Bonds, the General Conditions, the Special Conditions, the Specifications and Plans, including all modifications thereof incorporated in the documents before their execution, and any other document incorporated by reference in the signed Contract.
- f. "Work"                                        The furnishing of all labor, materials, equipment, services, supervision, temporary utilities, work, and incidentals necessary or convenient to the successful completion and carrying out of all duties and obligations of the Contractor under the Contract Documents.
- g. "Consultant"                                City-hired outside individual or firm to provide technical assistance in connection with the Project.



2. Order of Completion

The Contractor shall complete any portion or portions of the Work in such order of time as the Owner may declare necessary by reason of an emergency. Moreover, the Contractor shall perform the Work in a sequence so as to cause the least convenience to the public and the City's taxpayers. Also, in the event that a particular sequence or activity of the Work interferes with the work by another contractor or by the City itself, City Engineer is authorized to determine how the interference should be eliminated or minimized.

3. Contractor's Understanding

It is understood and agreed that the Contractor has, by careful examination of the Contract Documents as well as the careful examination and investigation of the Project site(s), satisfied itself as to the nature and location of the Work, the conformation and elevations of the ground, the character, quality and quantity of the materials to be encountered anywhere within or near the Project, the character of the equipment and facilities needed preliminary to and during the prosecution of the Work, the general and local conditions, and all other matters which may in any way or manner affect the performance of the Work required under the Contract Documents.

No official, agent or employee of the Owner is authorized to make any representations as to the materials or workmanship performed by a contractor or anyone else other than by Contractor, or the conditions to be encountered, and the Contractor agrees that no such statement or the evidence of any document or plan, not a part of the Contract Documents, shall constitute any grounds for a claim as to conditions encountered. No verbal agreement or conversation with any officer, agent or employee of the Owner either before or after the execution of this Contract shall affect or modify any of the terms or obligations herein contained or otherwise be binding on the Owner.

It is understood and agreed that the Contractor has informed himself/herself/itself fully as to the conditions relating to construction and labor under which the Work will be performed and agrees as far as possible to employ such methods and means in the carrying out of the Work as will not cause any interruption or interference with the work of any other contractor or the City.

4. Materials, Services, and Facilities

It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the Work within the specified time (the "Contract Time") established by the Contract Documents.

All the Work at the Project site(s) shall be performed during regular working hours, Monday through Friday. No work shall be performed on Saturdays, Sundays, or legal holidays unless and only to the extent Engineer authorizes same in writing in advance thereof.

5. "Or Equal" Clause

Whenever in any of the Contract Documents an article, appliance, device, material, or item or piece of equipment is designated by the name of the manufacturer, vendor, or by any proprietary name and such name is not followed by the words "or equal," it shall be deemed that such words "or equal" do follow such designation, unless the context clearly requires a contrary construction. Any such item which satisfies the standards fixed for the specified item may be used in lieu of the item specified by the Plans, Specifications or other Contract Documents, provided that the item proposed is first submitted to and approved by the Owner or his authorized representative in accordance with the provisions governing substitutions.

6. Royalties and Patents

The Contractor shall hold and save the Owner and its officials, agents, servants, and employees harmless from any claim, cause of action, demand or liability of any nature or kind, including costs, expenses and reasonable attorneys' fees, for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the Owner, unless otherwise specifically stipulated in the Contract Documents.

7. Permits and Regulations

Contractor shall be solely responsible for ensuring that all permits and licenses of a temporary nature necessary for the prosecution of the Work are secured and paid for by the Contractor or its Subcontractors.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work. The Contractor is required to observe all laws, ordinances, rules and regulations relating to the obstructing of streets, sidewalks or other public right-of-ways, obstructing of driveways, maintaining signals, keeping open passageways and protecting them where exposed to danger, and all general ordinances affecting Contractor, any Subcontractor, or any of their respective employees or the work of Contractor or any of its Subcontractors in relation to the Owner or any other person or entity, and also generally to obey all laws, rules, regulations, and ordinances controlling or limiting the Contractor and its Subcontractors while engaged in the prosecution of the Work under the Contract Documents. If the Contractor observes that the Plans, Specifications or other Contract Documents are at variance with any such laws, regulations, rules or ordinances, Contractor shall promptly notify the Owner in writing, and any necessary changes shall be adjusted as provided in the Contract for changes in the Work. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules or regulations, and without such notice to the Owner in advance thereof, Contractor shall bear all additional costs of whatever nature arising therefrom.

8. Protection of Work, Persons, Property, etc.

The Contractor shall protect and support all existing underground, overhead and other utilities.

9. Surveillance and Examination of the Work

The Owner and Owner's authorized representatives shall, always, have access to the Work whenever it is in preparation or progress and the Contractor shall provide proper facilities to permit such access and surveillance.

The Work is to be done under the surveillance of the Owner or Owner's authorized representatives. The duties of Owner's authorized representatives only run to the City and not to the Contractor or any Subcontractor. Such surveillance is for the purpose of examining the Work from time to time as it is under construction for determining, consistent with the City's best interests, conformance with the Plans, Specifications and other Contract Documents, but the presence or absence of any such surveillance is in no manner to be presumed to relieve in any degree the responsibilities or obligations of the Contractor or its Subcontractors. Neither the City nor the Engineer has any obligation or responsibility to address or consider, nor is any City official or employee or Engineer authorized to address or consider, Contractor's means, methods, or techniques affecting job site safety, as Contractor and its Subcontractors are fully and completely responsible for such means, methods and techniques and for making the job site safe for the construction workers, the public and others.

If the Plans, Specifications, or other Contract Documents, or if the Owner's instructions, laws, ordinances, or any public authority, require any part of the Work to be specially tested or approved, the

Contractor shall give timely notice to Engineer of its readiness for such examination or testing, and if the inspection is by another authority other than the Owner, shall notify the Owner of the date fixed for such inspection. Contractor shall fully cooperate with Owner to permit Owner to make as many inspections as Owner deems appropriate. If any work requiring examination should be covered up without the Contractor first obtaining approval or consent of the Engineer or other proper authority of the Owner, it must, if required by the Owner or Engineer, be uncovered at the Contractor's expense to permit examination.

The Contractor shall remove, rebuild and make good at Contractor's own cost any of the Work that the Engineer determines is defectively executed or not conforming to the requirements of the Plans, Specifications and other Contract Documents. Any failure of Owner or Engineer to condemn or reject work at the time of its construction shall not be construed as an acceptance of defective work or work not conforming to the requirements of the Plans, Specifications and other Contract Documents. If any doubt exists as to the character of such work, it must, on order of the Owner or the Engineer, be taken up or removed. If found to be improper, it must be made good without additional compensation; if found to be satisfactory, the actual cost, plus fifteen percent (15%) of that removal and replacement cost, shall be added to the Contract Price by change order.

10. Removal of Improper Material

All materials to be provided by the Contractor (whether ordered by Contractor or by a Subcontractor, directly or indirectly, of Contractor) shall be of the best quality, and if the Contractor shall bring or cause to be brought on the Work, materials which do not conform to the requirements of the Contract Documents, the Owner has the right to order removal of the same forthwith while having Contractor waive any defense of economic waste, and in case of the neglect or refusal of the Contractor or those employed by Contractor to remove such material, to cause the same to be removed at the expense of the Contractor and to deduct the cost of such removal and all other expenses incident thereto, including Consultant or experts fees and expenses, from the amounts otherwise payable to the Contractor under the Contract Documents.

11. Superintendence; Supervision or Project Manager

The Contractor must at all times have an authorized representative at the Project site during the construction of the Work with whom Owner or the Engineer may communicate, this representative to have full authority to carry out all orders given by the Owner or Engineer per the Contract Documents, and shall maintain at the Project site, during the progress of construction, a competent superintendent (which may be a full time working foreman) and any necessary assistants, all satisfactory to the Owner.

In the absence of Contractor designating another authorized representative by a written notice to the Owner, Contractor's superintendent shall be Contractor's authorized representative for the Project.

The Contractor's authorized representative shall represent the Contractor in all matters involving the Contract and all directions given to him/her and all decisions made by him/her shall be as binding as if given to or made by, as the case may be, the chief executive officer of the Contractor. Directions will be confirmed in writing upon written request in each case. The Contractor shall give efficient supervision to the Work, using Contractor's best skill and attention.

If the Contractor, in the course of the Work, finds any discrepancy between the Contract Documents and the physical conditions of the locality, or any errors or omissions in the Contract Documents or in the layout as given by points and instructions, it shall be the Contractor's duty to immediately inform the Owner in writing and the Owner shall promptly verify the same. Any work after such discovery, until authorized, will be done at the Contractor's risk.

12. Changes in the Work

The Owner, without invalidating the Contract, may order extra work or make changes by altering, adding to, or deducting from the Work, the Contract Sum being adjusted accordingly. All such extra work and changes in the Work shall be executed under the conditions of the Contract Documents except that (a) the scope of the Work shall be adjusted accordingly and (b) the Contract Time shall be subject to adjustment provided Contractor has made a timely claim for extension of the Contract Time and such an adjustment is otherwise required under the Contract Documents.

In giving instructions, the Owner shall have authority to make minor changes in the Work, not involving extra cost, and not inconsistent with the purposes of the Work, but otherwise, except in an emergency endangering life or property, no extra work or change in the Work shall be executed by Contractor unless in pursuance of a written Change Order or a written directive signed by an authorized representative of the Owner, and no claim for an addition to the Contract Sum shall be valid unless so ordered or directed by Owner in writing.

The net value of any such extra work or change in the Work shall be determined in one or more of the following ways:

- a. The estimate and acceptance in a lump sum by both Owner and Contractor.
- b. By unit prices in the Contract Documents or as subsequently agreed upon in writing by both Owner and Contractor.
- c. By net cost and percentage for overhead and profit, or by net cost and a fixed fee for overhead and profit.

If none of the above methods is agreed upon, the Contractor, provided Contractor receives a written order or directive as above from Owner, shall proceed with the extra work or change in the Work. In such case and also in the event subpart (c) above applies, Contractor shall keep and present in such form as the Owner may direct, a correct accounting of the net cost of labor, materials and equipment, together with vouchers, invoices and other evidence of costs, involved in the extra work or change in the Work. In any case, the Engineer shall certify to the amount, including reasonable allowance for overhead and profit, due to the Contractor. Pending final determination of net value, payments on account of authorized extra work and changes in the Work shall be made on the Owner's estimate.

13. Extras

Except as otherwise herein provided, no charge for any extra work or material will be allowed unless the same has been ordered or directed in writing by the Owner by means of a signed Change Order or a signed directive to perform a change in the Work.

14. Claims for Extra Cost

No claims for additional payments above the Contract Sum other than such amounts as are authorized by the Owner for authorized extra work or authorized changes in the Work in accordance with the aforesaid paragraphs designated "Extras" or "Changes in the Work" will be considered or allowed.

15. Deductions for Uncorrected Work

If the Owner deems it inexpedient or not significantly beneficial to direct the correction or replacement of work injured or not accomplished in accordance with the Contract Documents, the Owner may then elect to apply an equitable credit which will be deducted from the Contract Price.

16. Delays and Extension of Time

If the Contractor is delayed or disrupted at any time in the progress of the Work by an act of, or by the neglect of, the Owner or any of the Owner's agents or employees, or by changes in the Work authorized in writing by the Owner, or by strikes or lock outs beyond Contractor's control, or by fire, an unusual delay in transportation beyond Contractor's control or unavoidable casualties, or by any other cause that in spite of the exercise of reasonable efforts is beyond Contractor's control, or by a cause which the Owner determines is not the Contractor's responsibility, then Contractor's sole remedy in such an event is an extension of the Contract Time provided the Contractor timely submits a claim therefor. The Engineer shall determine whether a time extension is warranted, and, if so, the Engineer shall also determine the additional time for performance to be granted to the Contractor caused solely by a time extension event and not contributed to by any other cause or event.

No such extension shall be made for delay occurring more than seven (7) days before claim therefor is made in writing to the Owner. In the case of a continuing cause of delay, only one claim is necessary.

If no schedule or agreement stating the dates upon which shop drawing or other submittal responses shall be furnished by Engineer is made, then no claim for delay shall be allowed on account of failure to furnish any such response if the response is made within two (2) weeks after the Engineer received the shop drawing or submittal.

17. Suspension of Work

The Owner may at any time suspend the prosecution of the Work, or any part thereof, by giving forty-eight (48) hours' notice to the Contractor in writing; provided, however, that such advance notice is not required in the case of a matter deemed by the Owner to be an emergency or a matter in which advance notice is impracticable. The work shall be resumed by the Contractor within two (2) days after the date fixed in the written notice from the Owner to the Contractor to do so. In the event of such an Owner-directed suspension of all or any portion of the Work not caused by defective or non-conforming Work, the Owner's liability therefor shall be limited to reimbursing the Contractor for reasonable jobsite-related expenses incurred by the Contractor in connection with the Work under this Contract as a result of such suspension, and in no event shall the Contractor receive extended home office overhead or additional profit as a result of the suspension.

18. Owner's Right to Do Work

In case the Contractor fails to prosecute any portion of the Work at a rate of progress satisfactory to the Owner, or in a manner not in compliance with the Plans, Specifications or other Contract Documents, the Owner or Engineer shall, in writing, notify the Contractor to remove all cause of complaint within a time specified in such notice. If the Contractor fails to do so, the Owner may proceed to complete such portion of the Work in such manner as Owner may determine in the exercise of reasonable discretion. Alternatively, the Owner may elect to engage one or more other contractors to supplement the completion of the Work. In either case, all costs of such work shall be credited against the Contract Price.

19. Right of the Owner to Terminate Contract

If the Contractor should: (a) refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, (b) fail to make prompt payment to Subcontractors or for materials or labor, (c) disregard laws, rules, regulations or ordinances affecting the performance of the Work, or the instruction of the Owner, (d) cease operations under this Contract at any time for at least two (2) working days without Owner's written consent, or (e) otherwise be guilty of a substantial violation of an provision of the Contract Documents, then in that event the

Owner may without prejudice to any other right or remedy and after giving the Contractor and its surety forty eight (48) hours' advance written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools, and appliances thereon and finish the uncompleted and improperly completed Work by whatever method Owner may deem expedient including on a time and materials basis. In such a case, the Contractor shall not be entitled to receive any further payment until the Work is properly completed. If the unpaid balance of the Contract Price shall exceed the Owner's expense to properly complete the Work, including compensation for additional managerial, engineering, administrative, and legal services, such excess shall be paid to the Contractor. If, however, such Owner's expense shall exceed such unpaid balance, the Contractor and surety shall be jointly and severally responsible for paying the difference to the Owner. The City Engineer shall determine in writing the expense incurred by the Owner as a result of the Contractor's default.

20. Contractor's Right to Terminate Contract

If any portion of the Work should be stopped under an order of any court or other public authority for a period of three (3) months, through no act or fault of the Contractor or of anyone employed by Contractor or any of its Subcontractors, then the Contractor may, upon forty eight (48) hours' advance written notice to the Owner, terminate this Contract and recover from the Owner payment for all Work executed prior to the termination, including a reasonable mark-up for overhead and profit on the portion of the Work completed, taking into account all previous payments as well as credits and set offs authorized by the Contract Documents.

21. Removal of Equipment

In the case of the termination of this Contract before completion from any cause whatever, the Contractor, insofar as notified by the Owner to do so, shall promptly remove Contractor's equipment and supplies as so designated from the property of the Owner, failing which the Owner shall have the right to remove such equipment and supplies with the expense thereof credited against the Contract Price.

22. Use of Completed Portions

The Owner shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding the time for completing the entire Work or such portions which may not have expired; but taking such possession and making such use shall not be deemed an acceptance of any of the Work not properly completed in accordance with the Contract Documents. If such prior use increases the cost of the performance of the Work or delays the completion of the Work, the Contractor shall promptly notify Owner of that affect and provide a reasonable estimate of the increase in costs, and if the Engineer agrees with the Contractor's claim, the Contractor shall be entitled to such extra compensation, or extension of time, or both, as the Engineer may determine.

23. Owner's Right to Withhold Certain Amounts and Make Application Thereof

The Owner may withhold from payment to the Contractor such an amount or amounts as the Engineer determines to be sufficient to cover:

- a. Payments that may be earned or due to Subcontractors and suppliers for just claims for labor or materials furnished in and about the Work which Contractor has not timely paid.
- b. The amounts to remedy or complete defective portions of the Work or incomplete portions of the Work or damage to the Work.

- c. An amount to cover damage to another contractor.
- d. Amounts authorized under the Missouri Prevailing Wage Laws or the Davis-Bacon Act, depending upon which law governs.
- e. Amounts authorized by applicable law.
- f. Any damages or other amounts that are due or estimated by the Owner to become due from the Contractor to the Owner under the terms of the Contract Documents or otherwise.

The Owner shall have the right to disburse and shall have the right to act as agent for the Contractor in disbursing such funds as have been withheld pursuant to this paragraph to the party or parties who are entitled to payment therefrom. All such payments shall be treated as if made directly to the Contractor for purposes of determining the total amount paid by the Owner to the Contractor under this Contract. The Owner will render to the Contractor a proper accounting of all such funds disbursed in behalf of the Contractor.

24. Damages

The Contractor, as a condition precedent to preserving a specific claim for additional compensation or damages, shall furnish the Owner a written statement of the claim within five (5) days of the event, order or decision giving rise to the claim. The written statement of claim shall contain the following: (a) a narrative of the facts and grounds supporting the claim; (b) a statement detailing the additional compensation or the amount of damages sought, with supporting cost information; and (c) a certification signed by an authorized representative of the Contractor certifying, under penalty of perjury, that the facts set forth in the written claim are true and correct to the best of the knowledge and information of the Contractor. Contractor's failure to strictly comply with this claim procedure shall constitute a waiver of any such claim that the Contractor may have otherwise had against the Owner. The decision by the City Engineer on the Contractor's claim shall be final and binding on the parties to this Contract, subject to the right of the Contractor to seek review of that decision by the Owner in accordance with these General Conditions.

25. Liens

If the Project is a public works project, the Contractor and its Subcontractors and suppliers may not file a claim for a mechanic's lien against the Project or the Project improvements.

If a Subcontractor or supplier, directly or indirectly, of Contractor files a claim for a mechanic's lien against all or any portion of the Project or the Project improvements, Contractor shall indemnify and hold Owner harmless from all liability, costs, expenses and fees resulting from that claim for mechanic's lien, including without limitation, Owner's reasonable attorneys' fees.

With respect to each Project that is not a public works project, a payment otherwise due under the Contract Documents shall not become due until the Contractor has furnished waivers signed by Contractor and the Subcontractors and suppliers in such forms satisfactory to Owner whereby Contractor, the Subcontractors and suppliers waive any and all claims against the Owner and any property interest the Owner has in the Project and any Project improvements with respect to any claims that arise or have arisen prior to the date upon which the Contractor's application for payment is submitted to the Owner.

26. Assignments

The Contractor shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the Owner. In case the Contractor assigns all or any part of any monies due or to become due under this Contract, the instrument or assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to the Owner's rights under the Contract Documents and the law and to prior liens and interests of all person, firms, and corporations for services rendered, or materials supplied for the performance of the Work called for in this Contract.

27. Rights of Various Interests

Wherever work being done by the Owner or by other contractors within the area of, or contiguous to, the Work covered by this Contract, the respective rights of the various interests involved shall be established by the City Engineer.

28. Other Contracts

The Owner reserves the right to let other contracts in connection with this Work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall promptly connect and coordinate the Work of Contractor with the work of Owner or others.

If any part of the Contractor's Work depends, for proper execution or results, upon the work of any other contractor, the Contractor shall inspect and promptly report to the Owner any defects in such work that render it unsuitable for such proper execution and results. Contractor shall be fully responsible for any additional costs due to the Contractor's failure to properly perform its obligations under this paragraph.

To ensure the proper execution of Contractor's subsequent Work, the Contractor shall measure work already in place and shall at once report to the Owner any discrepancy between the executed work and the drawings. Contractor is solely responsible for all field measurements and is barred from making any claim for additional compensation or an extension in the Contract Time due to a dimensional error or discrepancy in the Plans that the Contractor could have discovered through timely field measurements.

29. Approval of Subcontracts; Subcontractors

Unless the Invitation for Bids or the Proposal form provides otherwise, the Contractor shall include names of all its Subcontractors, proposed to work on this Project, in its Proposal.

The Contractor agrees that Contractor is as fully responsible to the Owner for the acts and omissions of each of its Subcontractors and of persons either directly or indirectly employed by them, as Contractor is for the acts and omissions of persons directly employed by Contractor.

Nothing contained in the Contract Documents shall create any contractual relation between the Owner and any Subcontractor or supplier, directly or indirectly, of Contractor.



30. Construction Staking and Layout

The Contractor shall be responsible for providing labor, equipment and materials necessary for construction staking and layout as required to establish the grades, elevations and alignment at the Project and as directed by the City. No separate payment will be made for construction staking and layout. The Contractor acknowledges that it prepared its bid accordingly.

31. City Engineer

The City Engineer shall have the authority to reject any and all of the Work. In addition to the City Engineer's authority as otherwise provided in the Contract Documents, the City Engineer will decide the following except and to the extent specifically delegated in writing to the Engineer (if any): All questions which may arise as to the quality, quantity and acceptability of materials furnished and the Work performed and as to the rate of progress of the Work; all questions which may arise as to the interpretation of the Plans, Specifications and other Contract Documents; all questions as to the acceptable fulfillment of the Contract on the part of the Contractor; all questions of classification and measurement of quantities; the proper compensation or damages for the performance or breach of the Contract by the Contractor; and all claims and disputes of any character or type whatsoever between Contractor and Owner arising out of or relating to the Contract Documents, whether in contract or otherwise. The estimates and decisions of the City Engineer, or Engineer when authorized under the Contract Documents to make the decision, if made in good faith and consistent with the Contract Documents, shall be final, binding and conclusive on the parties to the Contract, subject to the Contractor's right to seek review of that decision or estimate in accordance with these General Conditions.

32. Review of Decisions & Estimates

If the Contractor disagrees with a written decision or estimate by the City Engineer or Engineer as the case may be, the Contractor shall submit a written request for review to the Owner within seven (7) days of the date of the City Engineer's or Engineer's written decision or estimate. The Owner shall afford the Contractor an opportunity to present relevant information supporting the Contractor's contention for a modification or change in the City's Engineer's or Engineer's decision or estimate. The Owner's written decision upon review of the City Engineer's or Engineer's decision or estimate, if rendered in good faith and consistent with the Contract Documents, shall be final, binding and conclusive on the parties to the Contract.

33. Lands for Work

The Owner shall provide the lands or property upon which the Work under this Contract is to be done and rights of access to same. Any delay in the furnishings of these lands or property by the Owner shall be deemed proper cause for an adjustment in the Contract Time only, subject to the provisions relating to timely submitting a claim for an extension of the Contract Time.

34. Cleaning Up

The Contractor shall, as directed by the Owner, remove from the property of the Owner, and from all public and private property, at Contractor's own expense, all temporary structures, rubbish and waste materials resulting from the operations of Contractor and its Subcontractors, as determined by the City Engineer. Contractor shall ensure that all streets and sidewalks affected by the Work shall, to the maximum extent possible, remain in good, passable and clean condition.

35. Indemnification and Insurance

To the maximum extent permitted by law, Contractor shall indemnify and hold Owner harmless from any and all damages, loss, costs, expenses and fees, including without limitation attorneys' fees, expert and consultant fees, and litigation-related expenses, arising out of or related to any claim, cause of action or demand involving an injury to any person or persons, whether bodily injury or other personal injury (including death), or involving an injury or damage to property (including loss of use of any property), but only to the extent the damages, loss, costs, expenses and fees were caused by the negligence or other wrongdoing of Contractor, or any Subcontractor or supplier, or by any negligence or wrongdoing by any agent or employee of any of them, regardless of whether caused in part by the negligence or wrongdoing of Owner or any of Owner's agents or employees.

Notwithstanding the foregoing, to the full extent the damages, loss, costs, expenses and fees attributable to the injury to the person or persons (including death), or attributable to the injury or damage to property, are within the limits of contractual liability coverages afforded under the commercial general liability insurance Contractor is required to maintain pursuant to the terms of this Contract, the scope of the above indemnity shall extend to all such damages, loss, costs, expenses and fees if caused at least in part by the negligence or other wrongdoing of Contractor, or any Subcontractor or supplier, or by any negligence or wrongdoing by any agent or employee of any of them, regardless of whether caused in part by the negligence or wrongdoing of Owner or any of Owner's agents or employees. Contractor acknowledges that the terms and conditions in this paragraph constitute a promise by Contractor to indemnify and hold Owner harmless for which Contractor is obligated to provide specific limits of insurance that afford contractual liability coverage for this indemnity obligation, and Contractor further acknowledges that Contractor had the opportunity to recover the costs of Contractor's liability insurance coverages required by this Contract in the contract price set forth in the Contract.

Contractor's indemnity obligations pursuant to the above two paragraphs shall apply without any reduction in amount to be indemnified to Owner, regardless of: (a) whether the claim that ultimately triggers Contractor's indemnity obligations is made by an employee of Contractor or any Subcontractor or supplier; (b) whether that employee of Contractor or any Subcontractor or supplier has received or later receives from Contractor, a Subcontractor, or a supplier workers' compensation benefits or benefits for a claimed occupational disease in connection with the transaction giving rise to the individual's claim.

Without limiting its liability under this Contract, the Contractor shall procure and maintain at his/her expense during the life of this Contract, insurance of the types and in the minimum amounts stated as follows:

a. Worker's Compensation Insurance in full compliance with the Worker's Compensation Act of the State of Missouri and Employer's Liability coverage in the amount of \$3,000,000.

b. Commercial General Liability

Bodily Injury, Including Death	\$3,000,000 each person \$3,000,000 each occurrence
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Property Damage	\$3,000,000 each occurrence \$3,000,000 each aggregate
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OR

\$3,000,000 combined single limit

c. Commercial Automobile Liability

Bodily Injury, Including Death	\$3,000,000 each person \$3,000,000 each occurrence
Property Damage	\$3,000,000 each accident OR \$3,000,000 combined single limit

A Certificate of Insurance is required to be on deposit with Owner prior to the commencement of any work and must contain the following:

1. The City of Black Jack ("Owner") shall be named "AS AN ADDITIONAL INSURED" with respect to Contractor's Auto Liability and Commercial General Liability.
2. The Certificate of Insurance shall contain a minimum of thirty (30) days written notice of alteration, change or cancellation to the Owner.

The Commercial General Liability policy shall include coverage for injury to or destruction of wires, conduits, pipes, mains and sewers, and other property under the surface of the ground.

Said insurance shall be written by a commercial insurance company or companies licensed to do business in the State of Missouri and satisfactory to the Owner.

Each Subcontractor of the Contractor shall be required to procure and maintain, during the life of the subcontract and thereafter as provided below, the insurance required of Contractor hereunder and comply with the provisions of this Article, including maintaining an additional insured endorsement specifically naming the Owner as an additional insured.

Notwithstanding anything seemingly to the contrary, Contractor and each Subcontractor shall continue to maintain its respective Commercial General Liability insurance coverages required by this Contract for a period of five (5) years following the completion of the Work.

36. Prevailing Wage Law

Except when the Project is federally funded and subject to the Federal Davis-Bacon Act, the Missouri Prevailing Wage Law (the Prevailing Wage Law), found at Revised Statutes of Missouri sections 290.210 through 290.340, and the regulations promulgated thereunder shall apply. Contractor is responsible for ensuring that all construction labor subject to the Prevailing Wage Laws is paid wages and benefits in full compliance with the Prevailing Wage Law, including but not limited to the requirements covering wage rates, benefit rates, and job classification. Contractor shall submit with each pay application certified payrolls from Contractor and each Subcontractor evidencing full compliance with the Prevailing Wage Law or the Davis-Bacon Act, as the case may be. Should Owner have reasonable grounds to believe one or more construction workers working at or for the Project, whether employed by Contractor or by a Subcontractor at any tier, did not receive wages and benefits in full compliance with the Prevailing Wage Law or the Davis-Bacon Act as the case may be, Owner shall investigate and Contractor in such an event shall indemnify and hold Owner harmless from all costs and fees incurred by Owner as a result, including reasonable attorneys' fees. Any failure to fully comply with the Prevailing Wage Law or the Davis-Bacon Act as the case may be, whether by Contractor or any Subcontractor at any tier, as well as any failure by Contractor to fully comply with this Article, shall be considered a substantial violation of the Contract by Contractor. As one of the conditions precedent to final payment, Contractor shall furnish to Owner an Affidavit of Compliance with the Prevailing Wage Law or the Davis-Bacon Act as the case may be, in such form as Owner may reasonably require, stating under oath that to the best of Contractor's knowledge and information, Contractor and the Subcontractors have fully complied with the requirements of the Prevailing Wage Law or the Davis-Bacon Act, as the case may be.

37. Contract Price or Contract Sum

This Article applies if all or a portion of the Work is subject to unit prices. The Contract Price or Contract Sum was established by adding the aggregate of the prices for the lump sum items and the aggregate of the amounts for the unit price items based on the estimated quantities set forth in the Invitation for Bids with respect to the unit price items. To the extent the actual quantities of unit price items vary from the estimated quantities found in the Invitation for Bids, the Contract Sum or Contract Price shall be adjusted accordingly. Nothing herein shall preclude the Owner from exercising the right to take one or more valid credits against the Contract Sum or Contract Price insofar as authorized by the terms and conditions of the Contract Documents or pursuant to law.

38. Occupational Safety and Health Administration Construction Safety Program

Pursuant to Section 292.675 of the Missouri Revised Statutes, Contractor shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for the Contractor's on-site employees which includes a course in construction safety and health approved by OSHA or a similar program approved by the department which is at least as stringent as an approved OSHA program. Contractor shall require each of its subcontractors to provide a construction safety program in accordance with this provision.

All employees of the Contractor and employees of the Contractor's subcontractors are required to complete the program within sixty days of beginning work on such construction project.

Any employee of Contractor or any of Contractor's subcontractors found on the Project site without documentation of the successful completion of the course required herein shall be afforded twenty days to produce such documentation before being subject to removal from the project.

Contractor shall forfeit to the City as a penalty Two Thousand Five Hundred Dollars (\$2,500.00) plus One Hundred Dollars (\$100.00) for each employee employed by the Contractor or any of Contractor's subcontractors, for each calendar day, or portion thereof, such employee is employed without the required training. The penalty shall not begin to accrue until both the 60-day time period for completing the training program and the 20-day period for producing the documentation have elapsed.

The City shall withhold and retain from payments otherwise due the Contractor all sums and amounts due and owing the City as a result of any such violation. The Contractor may withhold from any subcontractor sufficient sums to cover any penalties the City has withheld from the Contractor resulting from the subcontractor's failure to comply with the terms of this Section 292.675 of the Missouri Revised Statutes.

The terms of this provision shall be construed consistent with Section 292.675 of the Missouri Revised Statutes (including the definition of terms found in subsection 1 of section 292.675), and to the extent of any conflict between this provision and that statute, the requirements of the statute shall govern.

## SPECIAL CONDITIONS

### 1. Specifications

All Work shall be performed in strict accordance with the Contract Documents presented herein, of which these Special Conditions are a part thereof. Where there are no separately prepared Technical Specifications or other project-specific specifications for the Project, the City-prepared scope of work constituting Contractor's Work shall constitute the Technical Specifications.

### 2. Payments

Requests for payment shall be directed to the Finance Director at City Hall, who shall refer to the Director of Public Works for verification prior to processing for payment. Final payment including all retained amounts shall be made when all the Work is properly completed, approved and accepted by the City, provided Contractor has satisfied all conditions to final payment and no grounds then exist for withholding payment. Provided no grounds exist for withholding payment, each payment will be made within thirty (30) days from receipt from Contractor of a pay application in proper form as determined by the City Engineer and also properly supported by waivers and other supporting documentation. Notwithstanding any other provision concerning payment to the Contractor or to any Subcontractor, nothing in the Contract Documents shall be construed or applied in a manner contrary to Revised Statutes of Missouri section 34.057 concerning prompt payments as required on a public works project in Missouri.

### 3. Standard Retainage

The rate of standard retainage required to ensure performance of the Contract is five percent (5%) of each progress payment otherwise due. Accordingly, unless grounds exist for additional retainage, each of Contractor's progress payments shall be reduced for standard retainage by five (5%) of the amount which otherwise would have been paid to the Contractor. The City Engineer, in his sole discretion, may reduce or eliminate the standard retainage on any contract payment if, in the City Engineer's opinion, the Work is proceeding satisfactorily and in a timely manner. Standard retainage shall apply only if the Work is not completed within 30 days from the date of the Agreement.

### 4. Progress Payments

- a. Subject to the provisions on standard retention and the other provisions of the Contract Documents, the City will pay the Contractor for all work completed by the 30<sup>th</sup> of the previous month. The City will not pay for any material stored on site and not incorporated into and forming a part of the Work in place.
- b. No progress payment, nor any partial or entire use or occupancy of the Work by the City, shall constitute an acceptance of any Work not completed in accordance with the requirements of the Contract Documents.

### 5. Payment After Substantial Completion

Within thirty (30) days of the City Engineer's determination that the Work is substantially completed and the City Engineer's receipt and approval of the pay application covering that portion of the Work in proper form, the City shall pay the Contractor the retainage and any other unpaid contract sum, less all credits, offsets and deductions authorized by the Contract Documents or by law as determined by the City Engineer. If release of the retention is requested after Substantial Completion of the Work and there remain minor items of the Work to be completed (which includes items that were not performed in accordance with the requirements of the Contract Documents and therefore require correction in

order to be properly completed), an amount equal to one hundred fifty percent (150%) of the value of each item as determined by the City Engineer shall be withheld until such item or items are properly completed in accordance with the requirements of the Contract Documents.

If the Contractor requests an inspection of the Work to evaluate whether the work is substantially complete, and the City Engineer determines that Work is not substantially complete, the City will provide a written explanation to the Contractor within 14 days.

6. Buy American

Subject to the provisions of sections 34.350 through 34.359 of the Missouri Revised Statutes, known as the "Missouri Domestic Products Procurement Act", any and all manufactured goods and commodities used or supplied in the performance of the Work under this public works contract or any subcontract for this Project shall be manufactured, assembled or produced in the United States or as permitted by NAFTA. Contractor and each Subcontractor and vendor shall provide proof of compliance in accordance with, and at such times as required by, section 34.355 of the Act or NAFTA.

7. Preference for Missouri Products

By virtue of Missouri Statutory Authority, preference will be given to materials, products, supplies and other articles produced, grown or manufactured within the State of Missouri.

8. Minority Business Enterprises

The City hereby notifies all bidders that it will affirmatively ensure that in any contract entered into in connection with this Project, minority business enterprises will be afforded full opportunity to submit bids and will not be discriminated against on the grounds of race, color or national origin or any other prohibited basis in consideration for an award. The successful bidder will be required to comply with all pertinent federal and state requirements regarding equal opportunity.

9. Contractor's Warranties

Contractor warrants that all Work shall be performed in a good and workmanlike manner and in strict compliance with the plans, specifications and other contract documents. Contractor further warrants that all manufactured, assembled or fabricated materials, including those arranged for by the Contractor but purchased by the City in order to receive the sales and use tax exemption, are new, and that all materials, including those arranged for by the Contractor but purchased by the City in order to receive the sales and use tax exemption, are free from faults or defects, and strictly comply with the requirements of the Plans, Specifications and other Contract Documents.

10. Examination of Contract Documents & the Project Site

Contractor represents that prior to the submission of its bid to the City, Contractor has carefully studied the Drawings, Specifications and other Contract Documents, and has also carefully examined all areas constituting the Project site(s). Contractor shall be liable for all additional costs, expenses and damages incurred by the City caused by the Contractor's failure to promptly report to the City Engineer in writing any error, inconsistency or omission which Contractor, through such careful study or through such careful examination of the actual conditions at the Project site(s), should have discovered.

11. Field Measurements and Verifications

Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements, conditions and other information known by the Contractor with the indications in the Contract Documents before commencing construction in that area. Any possible error, inconsistency or omission shall be promptly reported in writing to the Engineer.

12. Safety

Contractor shall be solely responsible for initiating, maintaining and supervising all appropriate safety precautions and programs in connection with the performance of the Work by Contractor and by all subcontractors at any tier, including compliance with all safety requirements of the Occupational Safety & Health Act, and the regulations and orders promulgated by OSHA, and the laws, regulations, and orders of the State of Missouri and the City of Black Jack relating to safety.

13. City's Expenses & Damages

Should the City Engineer determine that Contractor is in default and the City take any steps in an effort to investigate (including testing and consultant expenses), to cure, and/or to minimize the effects of a breach by the Contractor of any of the provisions of the Contract Documents, Contractor shall be liable to the City for the City's resulting costs, expenses and damages.

14. Contractor's Bond

The penal sum of the Contractor's Bond shall be automatically adjusted to the extent the contract sum is adjusted by Change Orders executed by the Contractor and the City. The surety on the Contractor's Bond waives notice of and presentment of any and all Change Orders, time extensions and demands. The obligations, pursuant to the terms of the Contract Bond, to properly and promptly complete the Work in accordance with the provisions of the Contract Documents and to perform all the undertakings stipulated by the Contractor to be performed and within the time mentioned in said Contract shall include, but not be limited to, all warranty work and remedial measures required after completion of the Work and all costs, expenses and damages incurred by the City as a result of each breach by Contractor of one or more of the provisions of the Contract Documents. The terms of the Contractor's Bond shall be deemed to include each and every one of the obligations imposed on the principal and surety as established by section 107.170 of the Revised Statutes of Missouri as if the scope of the bond coverage required by the above-cited statute is set forth word-for-word in the Contractor's Bond. In this section, the term "Contractor's Bond", while in the singular, refers to both the public works bond required by section 107.170 of the Revised Statutes of Missouri, i.e., the Statutory Payment Bond, and the Performance Bond required by the Agreement and the law. Contractor's Performance Bond required under the Agreement shall be deemed amended to cover and shall be construed to cover, among other performance obligations of the Contractor, any and all performance required, including repair and replacement work, to achieve compliance with the Contractor's warranties under the Contract Documents.

15. Work, Temporary Services, etc.

Except as may be specifically stated otherwise in the Contract Documents, Contractor, as part of its Work, shall be responsible for arranging for and paying for all labor, materials, equipment, tools,

construction equipment and machinery, water, utilities, transportation, and other facilities and services, temporary or otherwise, necessary for the proper execution of the Work.

16. Storage

Contractor shall be responsible for arranging for the storage, at Contractor's cost, of all materials and construction equipment. Contractor shall bear the risk of loss or damage to any and all materials and equipment due to theft, vandalism, act of God, or otherwise.

17. Non-Waiver

No action or failure to act by the City or the Engineer shall constitute a waiver of any right afforded either of them under the Contract Documents, nor shall such action or failure to act constitute approval or acquiescence in a breach by Contractor of any of the provisions of the Contract Documents, except as may be specifically agreed to in writing between the Contractor and the City.

18. No Third-Party Beneficiary

Nothing in the Contract Documents is intended to create any third-party beneficiary rights in any Subcontractor at any tier, any supplier at any tier, any worker at any tier, or any other person or firm against the City. City's duties under the Contract Documents run to and are directed only to the Contractor and not otherwise.

19. Material Variation in Quantities

If the Engineer determines that the quantity required of any specified material which is subject to a unit price varies materially from the estimated quantity such that the unit price as bid is greater than it should be for the actual quantity required, the unit price shall be equitably adjusted.

20. Removal of Materials and Equipment

If the Work is stopped for fourteen (14) days, then all equipment and materials shall be removed from the project site until the Work is restarted. The Contractor shall not receive any additional compensation for removal of equipment or materials.

21. Existing Signs

Signs, if they impact the Work, will be adjusted or relocated as necessary by the various City departments following reasonable written notice from Contractor. Adjustments of utility facilities, lines or other improvements not normally provided by utility companies in this type of Project will be provided by the Contractor as necessary.

22. Removal of Rubbish & Waste

The Contractor shall at all time keep the Project premises free from accumulations of waste material or rubbish. Upon completion of the Work, the Contractor shall remove all his rubbish and the rubbish created by any Subcontractor from and about the structures, buildings, and/or Project premises, as well as his tools, equipment, and surplus materials, and shall leave the Work clean and ready for use. In case of dispute, the City may remove the rubbish, surplus materials and waste, and charge or allocate the cost of removal to the Contractor and separate contractors, if any, in proportion to amounts determined by the City Engineer to be just.



23. Attorneys' Fees & Other Fees and Costs

In the event of the failure to properly perform one or more obligations or duties required of the Contractor under the Contract Documents after notice to Contractor and its surety and a reasonable opportunity to cure, the City shall be entitled to recover pursuant to this Contract and under the Contractor's Bond, in addition to all other available remedies, the City's reasonable attorneys' fees and expert fees and costs incurred by the City to enforce the City's rights and benefits under the Contract Documents and to enforce the Contractor's obligations under the Contract Documents and the governing law.

(End of Special Condition.)

**SECTION 01040 - COORDINATION AND SITE CONDITIONS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES:**

- A. Requirements for coordinating and sequencing the work under the Contract and requirements regarding existing site conditions.

**1.02 SITE CONDITIONS:**

**A. Information on Site Conditions:**

- 1. General: Information obtained by the Owner regarding site conditions, topography and subsurface information obtained by the Engineer's investigation of surface and subsurface conditions, shall be considered part of the Contract Documents. Neither the Engineer nor the Owner assumes any responsibility for its accuracy or completeness or for the Contractor's interpretation of such information.
- 2. Existing Elevations: Elevations are expected to vary about 0.1 feet from the existing elevations shown. The Contractor shall verify existing elevations prior to start of new work.

**B. Existing Utilities and Facilities:**

**1. Location:**

- a. Contractor shall exercise reasonable care to verify locations of utilities. Immediate and adjacent areas where excavations are to be made shall be thoroughly checked by visual examination for indications of underground facilities, and also checked with electronic metal and pipe detection equipment. Where there is reasonable cause to verify the presence or absence of an underground facility, make exploratory excavations prior to proceeding with major excavation in the area.

**2. Preconstruction Survey and Monitoring:**

- a. After the Contract is awarded and before starting the work, the Contractor shall perform a preconstruction survey of the site. Make a thorough examination, providing color photographs, and a color videotape in VHS format of all existing buildings, structures and other improvements which might be damaged by the Contractor's operations. The examination shall be made jointly by representatives of the Contractor, the Owner and the
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Engineer. The scope of the examination and photographs shall include cracks in structures, settlement, leakage, and similar conditions. The Contractor shall be responsible for all documentation, including video cassettes, photos, etc.

- b. Records of all observations shall be prepared in triplicate by the Contractor. Two copies of each document and photograph and one copy of the videotape shall be provided to the Owner.
- c. The above records and photographs are intended for use as evidence in ascertaining the extent of any damage, which may occur as a result of the Contractor's operations and are for the protection of the Contractor and the Owner. The records will provide a means of determining whether and to what extent damage may have occurred as a result of the Contractor's operations. The records will also be utilized to guide the restoration phase of this project.

3. Contractor's Responsibilities:

- a. Where Contractor's operations could cause damage or inconvenience to railway, telegraph, telephone, television, power, oil, gas, water, sewer, or irrigation systems, the Contractor shall make arrangements necessary for the protection of these utilities and services. Replace existing utilities removed or damaged during construction, unless otherwise provided for in these Contract Documents.
  - b. Notify utility offices that are affected by construction operations at least 72 hours in advance. Under no circumstances expose any utility without first obtaining permission from the appropriate agency. Once permission has been granted, locate, expose, and provide temporary support for the utilities.
  - c. Contractor shall be solely and directly responsible to Owner and operator of such properties for damage, injury, expense, loss, inconvenience, delay, suits, actions, or claims of any character brought because of injuries or damage which may result from construction operations under this Contract.
  - d. Neither Owner nor its officers or agents shall be responsible to Contractor for damages as a result of Contractor's failure to protect utilities encountered in the work.
  - e. In event of interruption to domestic water, sewer, storm drain, or other utility services as a result of accidental damage due to construction operations, promptly notify the proper authority. Cooperate with said authority in restoration as promptly as possible and pay for repair.
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Prevent interruption of utility service unless granted by the utility owner.

- f. In the event Contractor encounters water service lines that interfere with trenching, obtain prior approval of the water utility, cut the service, dig through, and restore service to previous conditions using equal materials.

C. Interfering Structures:

1. Take necessary precautions to prevent damage to existing structures whether on the surface, aboveground, or underground. While the information has been compiled from the best available sources, its completeness and accuracy cannot be guaranteed.
2. Protect existing structures from damage, whether or not they lie within limits of easements obtained by the Owner. Where existing fences, gates, barns, sheds, buildings, or other structure must be removed to properly carry out work, or are damaged during the work, restore them to original condition and to the satisfaction of property owner.
3. Contractor may remove and replace in equal or better than original condition, small structures such as fences, and signposts that interfere with Contractor's operations.

D. Connecting to Existing Facilities: Unless otherwise shown or specified, determine methods of connecting new work to existing facilities, and obtain Engineer's review and acceptance of connections.

1. Determine location, elevation, nature, materials, dimensions, and configurations of existing facilities where necessary for connecting new work.
2. Inspect existing record drawings and shop drawings, conduct exploratory excavations and field inspections, and conduct similar activities as needed.
3. Shutdown of Owner's existing facility prior to connection, if necessary, shall be by Owner or as specified.
4. Prior to beginning connection work, the Contractor shall meet the notice requirements specified herein.

1.03. PROJECT MEETINGS

- A. Preconstruction Conference: See Section 01310, PROGRESS SCHEDULES.
  - B. Progress Meetings: Engineer will schedule regular progress meetings to review work progress, schedules, and other matters needing discussion and resolution. See Section 01310, PROGRESS SCHEDULES for details on progress meetings.
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- C. Coordination Meetings: The Engineer will conduct weekly coordination meetings between the Contractor, Owner, and the Engineer for the purposes of discussing and resolving various project elements requiring interface or coordination with the Owner's treatment.
  - 1. Schedule and conduct activities to enable existing facilities to operate continuously, unless otherwise specified.
  - 2. Liquidated damages for failure to achieve Substantial Completion on these designated portions of the work are also set forth in the proposal.
- D. Time of Work:
  - 1. No work shall be done between 6:00 p.m. and 7:00 a.m., nor on Saturdays, Sundays or legal holidays, without written permission of the Owner. However, maintenance or emergency work during these hours may be done without prior permission.
  - 2. Night work may be scheduled by Contractor as regular procedure with the written permission of Owner. Such permission, however, may be revoked at any time if Contractor fails to properly execute and control nighttime work.
- E. Overtime Notice: If Contractor for convenience should desire to carry on work at night or outside regular hours, submit written notice to the Engineer and allow ample time for satisfactory arrangements to be made for inspecting work in progress.

**PART 2 – PRODUCTS**

(Not Used)

**Part 3 – EXECUTION**

(Not Used)

**PART 4 – PAYMENT**

**4.01 GENERAL:**

- A. Payment for work in this section will be considered incidental to the project.

**END SECTION 01040**

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**SECTION 01310 - PROGRESS SCHEDULES**

**PART 1 - GENERAL**

1.01 SECTION INCLUDES:

- A. Detailed scheduling requirements and procedures including preparation and overall schedule.
- B. Preconstruction conference requirements.
- C. Monthly progress report requirements.
- D. Mobilization

1.02 SUBMITTALS:

- A. Submit the following items as specified in this section:
  - 1. Overall schedule
  - 2. Progress reports
  - 3. Cash flow summary

1.03. PROGRESS OF THE WORK:

- A. General:
  - 1. Execute work with such progress as necessary to prevent delay to the overall completion of the project.
  - 2. Execute work at such times and on such parts of the project, and with such forces, materials, and equipment, to assure completion in the time established by the Contract.

1.04 PRECONSTRUCTION CONFERENCE:

- A. A preconstruction conference shall be held as soon as possible after the award of the Contract but before the Notice to Proceed. Contractor shall meet with Owner and Engineer for discussion of scheduling requirements, procedures for handling shop drawings and other SUBMITTALS, processing application for payment, and establishing a working understanding among the parties. The conference shall be held at the jobsite at a location selected by the Owner. The conference shall be attended by:

1. Contractor's office representative.
2. Contractor's general superintendent.
3. Subcontractor's representative whom Contractor may desire, or Engineer may request to attend.
4. Engineer's representative.
5. Owner's representative.
6. Representative of utility companies.

1.05 OVERALL SCHEDULE:

A. General:

1. Contractor shall prepare and submit, within 10 days after the award of Contract, an Overall Schedule comprised of all construction operations in connection with the Contract.
2. Overall Schedule shall indicate the sequence of work and the time of starting and completion of each activity. Activities shall include, but not be limited to, the following items as they pertain to the Contract.
  - a. Each subcontractor's items of work.
  - b. Shop drawing submittal from Contractor, checking and coordination, submittal to the Engineer, review, and return to Contractor.
  - c. Material and equipment order, manufacture, delivery, installation, and checkout.
  - d. Move in and site preparation.
  - e. Concrete placement sequence.
  - f. Backfilling, grading, seeding, paving, etc.
  - g. Electrical activities.
  - h. Plumbing and piping activities.
  - i. Final cleaning.
  - j. Allowance for inclement weather.

3. The Overall Schedule shall show all stipulated milestone dates, constraints, substantial completion and final completion dates.
- B. Progress Reports:
1. Once each month on a date mutually agreed upon by the Contractor, Owner and Engineer, a jobsite progress meeting will be held at which time the schedule will be reviewed. Immediately prior to the meeting, Contractor shall obtain the necessary information to update the Overall Schedule to reflect progress to date. Furnish sufficient copies of the updated schedule at the meeting for review.
  2. In updating the schedule, progress will be reviewed:
    - a. To identify those activities started and completed during the previous period.
    - b. For remaining duration, from the date of update, required to complete each activity started but not completed.
    - c. For review of remaining durations for selected activities not yet started.
    - d. For addition of Change Orders and proposed sequencing changes to the network diagram and schedule listings.
  3. At least once each month, and utilizing data accumulated during the previous joint Owner-Engineer-Contractor reviews, the Contractor shall revise the Overall Schedule. Also, revise and submit the Overall Schedule when one of the following conditions occur:
    - a. Delay in completion of a work item or sequence of work items causes an estimated extension of project completion by 15 or more working days.
    - b. Delays in submittals, deliveries, or work stoppages are encountered which require re-planning rescheduling of work.
    - c. Schedule no longer represents actual prosecution and progress of work.
  4. Whenever revised scheduling documents are submitted, they shall be accompanied by a written Narrative Report which shall:
    - a. Describe amount of progress since the last revision in terms of activities started, continuing, and completed.
    - b. Describe problem areas, current and anticipated delay factors, and their estimated impact on performance of other activities and completion dates.
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c. Explain corrective action taken or proposed.

C. Acceleration:

1. If at any time during the project Contractor fails to complete an activity by its latest scheduled completion date, which late completion will impact the end date of the work part of the Contract completion date, submit within 7 calendar days plans to reorganize the work force to return to the current schedule.
2. The Owner may require Contractor to add construction forces, as well as increase working hours, if operations fall behind schedule at any time.
3. Addition of equipment or construction forces, increasing working hours, or other method, manner, or procedure to return to the contractually required completion date will not be justification for Contract modification or treated as an acceleration.
4. Contractor shall plan, schedule, and coordinate construction operations and activities in a manner that will facilitate progress of work.

1.06 CASH FLOW:

- A. Contractor shall submit a cash flow summary with the initial Overall Schedule submittal and each monthly update. Cash flow summary shall be based on the submitted Overall Schedule and equal in total the Contractor's bid plus approved Contract modifications. Include expected payment requests for each month, as well as cumulative payment requests to date after deducting retainage. Failure to submit and adequately update an acceptable cash flow summary will be considered cause for withholding partial payments otherwise due under the Contract.

1.07 PAYMENT:

A. General:

1. Payment for work in the section will be incidental to the contract.
2. Any extension of contract time that may be granted by the Owner will not of itself constitute a claim for additional payment for work under this section.

**END SECTION 01310**

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**SECTION 01700 - CONTRACT CLOSEOUT**

**PART 1 - GENERAL**

1.01 SECTION INCLUDES:

- A. Procedures to be followed in closing out the Contract.

1.02 SUBSTANTIAL COMPLETION:

- A. Substantial completion dates for the Contract shall be established as stated in the Supplementary Conditions.

1.03. FINAL SUBMITTALS:

- A. No Contract will be finalized until all guarantees, bonds, certifications, licenses, and affidavits required for work or equipment as specified are satisfactorily filed with the Engineer and Owner.

1.04 RELEASE OF LIENS OR CLAIMS:

- A. No Contract will be finalized until satisfactory evidence of release of liens and claims has been submitted to Owner as required by the General Conditions.

**PART 2 - PRODUCTS**

(Not Used)

**PART 3 - EXECUTION**

3.01 FINAL CLEANING:

- A. At completion of work and immediately prior to final inspection, clean entire project according to the following provisions:
  - 1. Clean, sweep, and wash work and equipment provided under the Contract. Leave the structures and site in a complete and finished condition to the satisfaction of the Engineer.
  - 2. Should Contractor not remove rubbish or debris or not clean the facilities and site as specified above, the Owner reserves the right to have final cleaning done at the sole expense of the Contractor.

- B. The Contractor shall:
1. Employ experienced workers and professional cleaners for final cleaning.
  2. Conduct final inspection of exposed surfaces and of concealed spaces in preparation for substantial completion or occupancy.
  3. Remove grease, dust, dirt, stains, labels, and other foreign materials from exposed finished surfaces.
  4. Repair, patch, and touch up marred surfaces to specified finish, and match adjacent surfaces.
  5. Broom clean paved surfaces; rake clean other surfaces.
  6. Remove from the Owner's property temporary structures and materials, equipment, and appurtenances not required as part of, or appurtenant to, the completed work.
  7. Leave water courses, gutters, and ditches open and in condition satisfactory to Engineer.
- C. Owner will assume responsibility for cleaning as of the date of final acceptance.

3.02 FINAL INSPECTION:

- A. After final cleaning and upon written notice from Contractor that the work is completed, Engineer will make preliminary inspection with the Owner and Contractor present. Upon completion of preliminary inspection, Engineer will notify Contractor in writing of particulars in which the completed work is defective or incomplete.
- B. Upon receiving written notice from Engineer, Contractor shall immediately undertake work required to remedy defects and complete the work to the satisfaction of Engineer.
- C. After the items as listed in Engineer's written notice are corrected or completed, inform Engineer in writing that required work has been completed. Upon receipt of this notice, Engineer, in the presence of Owner and Contractor, will make final inspection of the project.
- D. Should the Engineer find all work satisfactory at the time of final inspection, Contractor will be allowed to make application for final payment in accordance with provisions of the General Conditions. Should Engineer still find deficiencies in the work, Engineer will notify Contractor in writing of deficiencies and will not approve Contractor's request for final payment until such time as Contractor has
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satisfactorily completed the required work.

PART 4 – PAYMENT

4.01 GENERAL:

- A. Payment for work in this section will be considered incidental to the project.

**END SECTION 01700**

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**SECTION 02513 – ASPHALT CONCRETE PAVING**

**PART 1 – GENERAL**

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK:

- A. Extent of asphalt concrete paving work is shown on drawings.
- B. Joint and Crack Sealing are specified in Section 02525.

1.03 SUBMITTALS:

- A. Material Certificates: Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

1.04 QUALITY ASSURANCE:

- A. Codes and Standards: Comply with St. Louis County Highway standard specifications, latest edition, and with local governing regulations if more stringent than herein specified.

1.05 SITE CONDITIONS:

- A. Weather Limitations: Apply pavement fabric tack coat when ambient temperature is above 50 deg. F (10 deg.C), and when temperature has not been below 35 deg.F (1 deg. C) for 12 hours immediately prior to application. Do not apply when pavement surface is wet or contains an excess of moisture.
- B. Construct asphalt concrete surface course when atmospheric temperature is above 40 deg.F (4 deg.C), and when base is dry.
- C. The placement of asphaltic concrete will not be limited by St. Louis County Highway Department's November 1st cut-off date.
- D. Grade Control: Establish and maintain required lines and elevations.

**PART 2 - PRODUCTS**

2.01 MATERIALS:

- A. General: Use locally available materials and gradations which exhibit a satisfactory record of previous installations.
  - B. Coarse Aggregate: Crushed stone, crushed gravel, crushed slag, and sharp-edged natural
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sand meeting the requirements of Section 1002.1 of the St. Louis County Standard Specifications for Highway Construction.

- C. Fine Aggregate: Fine, granular material naturally produced by the disintegration of rock of a siliceous nature meeting the requirements of Section 1002.2 of the St. Louis County Standard Specifications for Highway Construction.
- D. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with the requirements of Section 1002.3 of the St. Louis County Standard Specifications for Highway Construction.
- E. Asphalt Cement shall be homogenous and free from water, and shall not, on heating, foam below the specified minimum flash point. It shall be prepared by refining crude petroleum by suitable methods. It shall conform to the requirements of Section 1015.5 of the St. Louis County Standard Specifications for Highway Construction.
- F. Tack Coat: Emulsified asphalt, AASHTO M 140 (ASTM D 997) or M 208 (D 2397); SS-1, SS-1H, CSS-1 or CSS-1H, diluted with one-part water to one-part emulsified asphalt.
- G. Prime Coat: Cut-back asphalt type, AASHTO M-82 (ASTM D2027) MC-30, MC-70 or MC-250.
- H. Blotter Aggregate: Washed concrete sand.

2.02 ASPHALT-AGGREGATE MIXTURE:

- A. Provide plant-mixed, hot-laid asphalt-aggregate mixture complying with Section 404 - Type "C" , "X" and "D" of the St. Louis County Standard Specifications for Highway Construction.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION:

- A. Subgrade shall be re-compacted prior to placement of asphaltic material.
  - B. Tack Coat: Apply to contact surfaces of previously constructed asphalt surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.05 to 0.15 gal. per sq. yd. of surface.
    - 1. Allow to dry until at proper condition to receive paving.
    - 2. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.
  - C. Spalled concrete surfaces shall be patched and compacted with asphaltic concrete (Type D)
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prior to applying fabric tack coat.

**3.02 PLACING MIX:**

- A. General: Place asphalt concrete mixture on dry, prepared surface, spread and strike-off. Spread mixture at minimum temperature of 225 deg. F (107 deg.C). Place only when both air temperature and surface temperature are above 40 deg. F (50 deg. F minimum air temperature for surface course if less than 2 1/2" thick). Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness.
- B. Joints: Make joints between old and new pavements or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of asphalt concrete course. Clean contact surfaces and apply tack coat.

**3.03 ROLLING:**

- A. General: Begin rolling when mixture will bear roller weight without excessive displacement.
- B. Compact mixture with hot hand tampers or vibrating plate compactors approved by the Engineer in areas inaccessible to rollers.
- C. Breakdown Rolling: Accomplish breakdown or initial rolling using an eight ton to twelve-ton three-wheel roller or two-wheel tandem roller or self-propelled pneumatic roller immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.
- D. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot with a pneumatic tire oscillating-type roller developing at least 80 pounds per square inch contact pressure for all wheels. Continue second rolling until mixture has been thoroughly compacted.
- E. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks with not less than a ten ton, two or three-wheel tandem-type roller. Continue rolling until roller marks are eliminated and course has attained maximum density.
- F. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

**3.04 FIELD QUALITY CONTROL:**

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- A. General: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by Engineer.

3.05 THICKNESS:

- A. In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:
- B. Surface Course: 2" nominal thickness, or as otherwise indicated on the plans, with a variance of no more than 1/4", plus or minus, 1-3/4 to 2-1/4.

3.06 SURFACE SMOOTHNESS:

- A. Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area.
- B. Check surface areas at intervals as directed by Engineer.

PART 4 - PAYMENT

4.01 GENERAL:

- A. Payment shall be at the unit prices as herein indicated. These prices shall be full compensation for the execution of pay items indicated including all material, furnishing equipment, labor, tools and incidentals necessary to complete these items.
- B. If there is no quantity shown in the bidding schedule, the work covered by this section shall be considered as a subsidiary obligation of the Contractor covered under the other contract items. Only accepted work will be measured.

4.02 TACK COAT: No direct measurement of tack coat will be performed but will be considered as a subsidiary obligation of the Contractor covered under Asphalt Concrete.

4.03 ASPHALT CONCRETE - PER TON: The quantity measured shall be the number of tons of asphalt material placed, compacted and approved by the Engineer. Asphalt type "C" and "D" and "X" shall also be measured as on a per ton basis.

4.04 ASPHALT PATCH - SQUARE YARD: The quantity measured shall be the number of square yards of full depth asphalt pavement removed, replaced and compacted including base rock, as approved by the Engineer, in-place.

**NOTE: NEED TO DEFINE: (above sec. 4.04 "of full depth") TO STATE: 6" ROCK, 4" BASE COURSE AND 2" OF WEARING COURSE.**

**END SECTION 02513**

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**SECTION 02525 - JOINT SEALING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS:**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.

**1.02 SCOPE OF WORK:**

- A. This Section Includes: Preparation and sealing of joints in the concrete pavement and curbs, and other miscellaneous items. The Work shall be accomplished in accordance with these specifications and drawing.
- B. All joints in new pavement shall be cleaned and sealed including joints covered by interlayer.
- C. All joints and cracks in existing pavement to be used in place shall be cleaned and sealed.
- D. The cracks and joints in the curb and gutter line of existing pavement shall be sealed.
- E. The joints in new curb and gutter shall be sealed.

**PART 2 - PRODUCTS**

**2.01 MATERIALS:**

- A. Joint Sealant: ASTM D 1190 Crafc0 "Asphalt Rubber Plus," or approved equal for exposed joints in curb, curb gutter, and pavement.
- B. Emulsified Asphalt and Aggregate: The aggregate shall consist of limestone, volcanic ash, sand or other material that will cure to form a hard substance. The combined gradation shall be as follows:

<u>Sieve Size</u>	<u>Percent Passing</u>
No. 4	100
No. 8	90-100
No. 16	65- 90
No. 30	40- 60
No. 50	25- 42
No. 100	15- 30
No. 200	10- 20

Up to 3% cement can be added to accelerate the set time. The mixture shall not contain more than 20% natural sand without approval in writing from the City Engineer.

The proportions of asphalt emulsion and aggregate shall be determined in the field and may be varied to facilitate construction requirements. Normally, these proportions will

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be approximately one-part asphalt emulsion to five parts aggregates by volume.

2.02 **EQUIPMENT:**

- A. **Joint Cleaning Equipment:** The following equipment may be used for cleaning the joints and shall consist of, but not be limited to, the following items:
1. **Concrete Saw:** The concrete saw shall be a self-propelled power saw with diamond or abrasive blades designed for sawing hardened concrete, to re-face, widen or deepen existing joints without damaging the sides, bottoms or top edges. Blades may be single for gage blades with one or more blades mounted in tandem for fast cutting. All blades shall be of the proper hardness for the concrete being sawed. If at any time it is demonstrated that abrasive type blades will not cut a smooth and even vertical face of specified width and depth, the Contractor shall then furnish and use diamond blades at no extra cost to the Owner. The saw shall be adequately powered and capable of cutting to the specified width and depth with not more than two passes of the saw through the joints.
  2. **Sandblasting:** Sandblasting equipment shall be standard commercial type capable of effectively "scaling-off" any foreign material which may prevent proper bond of the new sealer. The compressor used for sandblasting shall provide air at a pressure of not less than 90 psig and a minimum volume of 150 cubic feet of air per minute at the nozzle.
  3. **Air Compressor:** The air compressor will be portable and capable of blowing out sand and other objectionable materials from the joints. This equipment will meet the same capacity requirements as specified above for the compressor for the sandblasting equipment. The compressor will be equipped with sufficient hose and adequate capacity and nozzles of proper size and shape for the type and size joint to be cleaned.
  4. **Vacuum Sweeper:** The vacuum pickup sweeper shall be self-propelled and shall be capable of completely removing all loose material, concrete slurry from the joints after sawing, and debris from the pavement surface. A sweeper of adequate capacity or a sufficient number of sweepers shall be provided to maintain the work area. Production of dust shall be minimized by taking necessary preventative measures subject to approval of City Engineer.
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- B. Application Equipment for Hot Poured Sealer: Applicators used for heating and installing the sealing materials shall be of the mobile type and shall be equipped with a double-wall agitator-type kettle (double boiler units) with suitable oil toe extruding device with nozzle or nozzles shaped for insertion in the joints and cracks to be filled, positive temperature devices for controlling the temperature of oil bath and sealer, and a recording thermometer for recording the temperature of the sealer. The applicator unit shall be designed so that the sealer may circulate in the inner kettle when not in use and shall be capable of completely filling the joint with the sealer without formation of voids or entrapped air. The applicator wand shall be insulated all the way to the nozzle and shall be maintained in a satisfactory working condition.

**PART 3 - EXECUTION**

3.01 GENERAL:

- A. Joint Sealing: Sealer shall be placed in dry joints only. Sealer shall be applied in a continuous steady flow and shall be filled to a depth of no greater than 1/8 inch from the surface. Special care shall be expressed to ensure sealer is placed into the joint or crack reservoir and not over poured. Areas over poured will be removed and re-poured at no additional expense to the City.

**PART 4 - MEASUREMENT**

4.01 GENERAL:

- A. No direct measurement shall be made of joints, cleaned and sealed in new PC pavement, curb and gutter and dowel on curb. This work is included in Section 03520 - PORTLAND CEMENT CONCRETE PAVING REPLACEMENT and Section 03527 - CONCRETE CURB REPLACEMENT.

**PART 5 - PAYMENT**

5.01 GENERAL:

- A. Sealing of joints shall be considered as incidental to the contract.

**END OF SECTION 02525**

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**SECTION 02580 – COLD MILLING**

**PART 1 – GENERAL**

1.01 SCOPE:

- A. This work shall include all labor and equipment necessary to remove and profile the existing asphaltic concrete or Portland Cement Concrete pavement to a uniform longitudinal profile and uniform cross slope, by the removal of approximately 1-1/2 to 3 inches from the existing surface, at the locations requested. This removal shall be accomplished through the use of cold milling or other methods as approved by the Engineer. The intent of the operation is to leave the roadway surface in a condition to receive a uniform overlay of approximately 2 inches of asphaltic concrete wearing course.

**PART 2 - PRODUCTS**

2.01 MATERIAL:

- A. All materials removed under this item shall become the property of the Contractor, unless otherwise designated, and shall be removed promptly from the site and disposed of by the Contractor. Contractor is responsible to find a safe and legal site for the disposal of the materials removed under this item. *(Note: The City might need a portion or all of it for its own use. That decision will be made at the time of award of the bid.)*

**PART 3 - EXECUTION**

3.01 NOTIFY UTILITIES:

- A. Contractor shall be responsible for notifying utilities to locate all frame and covers on utility vaults, in accordance with the scheduling requirements of Section 01040, "General Provisions." Damage to utility vaults as a result of not obtaining locates shall be repaired by the Contractor at his expense.

3.02 PROFILE PAVEMENT SURFACE:

- A. Perform the milling in such a way as to form the cross-direction profile of the base as called for or directed by the Engineer. Adjust the profile of milling in the curb lane at intersecting streets, to maintain the cross slope of the intersecting street.

3.03 TEMPORARY WEDGES:

- A. As soon as the milling operation is completed, this contractor shall add a triangular wedge of asphalt around all man-hole covers, to transition up from the sub-grade to the top of the man-hole cover. Contractor shall also add a triangular wedge of asphalt at all butt joints at
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the beginning and end of milled areas, and at all butt joints at intersecting streets.

**3.04 MEASUREMENT OF MILLING:**

- A. The scope of work shall be to mill the streets indicated on the drawings, to the extent indicated. The quantities of cold milling shown on the drawings and included in the bid items have been computed from maps, and these quantities shall be defined as accurately representing the quantity of work to be done. No additional measurement of the work will be made, unless significant errors are found in the quantities. Changes to the limits of the work will be measured and paid to the nearest one-half square yard.

**PART 4 - PAYMENT**

**4.01 GENERAL:**

- A. Payment for "Cold Milling" will be made at contract unit price per square yard, which price shall include all materials, labor, equipment, tools, hauling and work incidental thereto. The quantity shown shall be considered the contract quantity and shall be adjusted only if there is a definite change in the limits of the work, or significant errors are found in the quantities.

**END SECTION 02580**

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**SECTION 02585 - HOT APPLIED THERMOPLASTIC PAVEMENT  
MARKING SPECIFICATION**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work in this section.

1.02 DESCRIPTION OF WORK:

This specification describes the minimum optical and physical properties required for a thermoplastic road marking compound that is to be applied in a molten state, onto a pavement surface, to provide traffic stripes and/or markings.

The appearance of the finished markings shall have a uniform surface, crisp edges with a minimum over-spray, clean cup-off, meet straightness requirements and conform to the design drawings.

1.03 QUALITY ASSURANCE:

- A. Codes and Standards. Comply with the latest edition of the Manual on Uniform Traffic Control Devices.

**PART 2 - PRODUCTS**

2.01 MATERIALS:

The following composition requirements shall be met:

	<u>White</u>	<u>Yellow</u>
Binder	18% min.	18% min.
TiO <sup>2</sup> (Type 2 Rutile)	10% min.	N/A
Glass Spheres	48% min.	48% min.
Yellow Pigment	N/A	4.0% min.

**BINDERS:** The alkyd binder shall consist of maleic modified rosin ester and other plasticizers.

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**PIGMENTS:** The yellow pigment used shall be an encapsulated type of heat stabilized medium lead chromate pigment with a minimum of 50% lead content.

2.02 PHYSICAL REQUIREMENTS:

The meltdown procedure for Thermoplastic described in the attached procedure "MELTDOWN PROCEDURE FOR GRANULATED THERMOPLASTIC MATERIAL AND APPARATUS" (p. 11) shall be used when conducting laboratory testing to verify the following property requirements.

- A. **COLOR:** The white thermoplastic shall be pure white and free from any tint. Using a Colorimeter, such as a Gardner Color Difference Meter, the material shall not show deviations from a magnesium oxide color standard that are greater than the following.

<u>Scale</u> <u>Definition</u>	<u>Magnesium</u> <u>Oxide</u> <u>Standard</u>	<u>Sample</u>
RD Reflectance		10075% min.
a Red-Green	0	-5 to +5
b Yellow-Blue	0	-10 to +10

The color of the yellow thermoplastic shall visually match that of FHWA PR Color #1. The daytime reflectance values and chromaticity coordinates, shall fall within the following limits:

Reflectance ..... 45% min.  
Chromaticity  
Coordinates x, y ..... Shall fall in an area bordered

by these coordinates:

x	0.470	0.510	0.490	0.537
y	0.455	0.489	0.432	0.462

- B. **COLOR RETENTION:** The thermoplastic materials shall maintain the color values specified in the above section (COLOR) for white and yellow after 72 hours of exposure to the following test:

Samples used shall be prepared and subjected to an ultraviolet light source as described in ASTM test method D-795. Note: A General Electric 275-watt sun lamp (Type RS) with a build in reflector, may be substituted for the light source.

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- C. WATER ABSORPTION: When tested in accordance with test method ASTM D-570, the thermoplastic compound shall have no more than 0.5% by weight or retained water.
- D. SOFTENING POINT: When tested in accordance with test method ASTM E-28, the compound shall have a softening point of not less than 90 degrees C.
- E. LOW TEMPERATURE STRESS RESISTANCE: A test sample shall not crack or fail to adhere to a concrete substrate when subjected to the following low temperature test:
- A concrete substrate coated with a minimum of 32 square inches of thermoplastic material shall be immersed in cold water for one hour; then immediately placed in an insulated cold compartment and maintained at a temperature of minus 10 degrees C for a period of 24 hours. When removed and allowed to come to room temperature, the sample shall show no cracking or flaking from the concrete substrate.
- F. SAFETY: At the recommended application temperature, the material shall not give off fumes which are toxic or otherwise injurious to persons or property.
- G. SPECIFIC GRAVITY: The specific gravity of the compound shall be between 1.9 and 2.3. The water displacement method shall be used to determine specific gravity.
- H. DRYING TIME: When the material is applied at 400 degrees F, the line shall be completely solid and show no effect of tracking after 15 minutes or at an ambient temperature of 75 degrees Fahrenheit.
- I. INDENTATION RESISTANCE: The hardness shall be measured by a Shore Durometer, Type A2, as described in test method ASTM D 2240. The durometer and the panel shall be at  $45 \pm 2$  degrees C with a two-kilogram load applied, the scale reading shall be between 40 and 75 units after 15 seconds.
- J. ABRASION RESISTANCE: When tested by the abrasive blasting method, the sample shall show a maximum material loss of eight grams. See the attached "TEST METHOD: ABRASION RESISTANCE OF THERMOPLASTIC MARKING MATERIALS" (p. 12).
- K. IMPACT RESISTANCE: When tested according to Method A of ASTM Test Method D 256-72a, the average impact resistance of 4 separate samples shall not be less than 10 inch-pounds.
- L. REHEATING: The thermoplastic compound shall maintain the proper physical
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properties outlined above, when heated to 425 degrees F for up to 6 hours. After heating to 425 degrees F for 6 hours while continually stirring at 50 to 100 RPM, the Brookfield viscosity shall not exceed 18,000 centipose at 12 RPM.

2.03 GLASS SPHERES:

- A. REFRACTIVE INDEX: The reflective glass spheres, premixed into the compound and the reflective glass spheres used for surface application shall have refractive index of not less than 1.50 when tested by the liquid emersion method at 25 degrees C.
- B. ROUNDNESS: When tested according to ASTM Method D-155, a minimum of 75 percent of the glass spheres pre-mixed into the compound and the reflective glass spheres used for surface application shall be true spheres.
- C. GRADATION: The glass spheres both premixed into the compound and used for surface applications shall meet the gradation requirements of AASHTO C247, Type 1, as follows:

AASHTO C247 GRADATION

sieve size	percent passing
20	100%
30	75 to 95%
50	15 to 35%
100	0 to 5%

- D. INTER-MIX BEAD COATING: The glass spheres pre-mixed into the compound shall have an adhesion promoting coating which is specific for the thermoplastic system. The presence of a coating specific to Thermoplastic systems shall be determined by the attached "TEST METHOD: FOR THE DETECTION OF A SALINE ADHESION COATING ON INTERMIX GLASS SPHERES" (p. 15).
- E. DROP-ON BEAD COATING: Moisture Resistance: The glass spheres for surface application shall be resistant to clumping caused by moisture and shall pass the moisture resistance test described in "TEST METHOD: MOISTURE RESISTANCE" (p. 16). The glass spheres must pass this moisture resistance test before being tested for the following anti-wicking and adhesion properties.
- F. ANTI-WICKING (FLOTATION): The glass spheres for surface application, which have passed the moisture resistance test as described above, shall be tested for anti-wicking by the attached "TEST METHOD: FLOTATION AND ANTI-WICKING" (p. 16).

The anti-wicking properties of the glass spheres shall be demonstrated if the spheres exhibit retro reflection on the surface of the thermoplastic material.

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- G. **ADHESION:** The glass spheres for surface application which have passed both the moisture resistance test and the Anti-wicking test shall be capable of adhering to the surface of the plastic as determined by the attached "TEST METHOD: BEAD ADHESION" (p. 18). When tested by this procedure a minimum of the 75% of the beads shall remain bonded to the surface of the thermoplastic.

### **PART 3 - EXECUTION**

#### **3.01 SURFACE PREPARATION:**

- A. **MOISTURE:** All surfaces shall be inspected for moisture content prior to application of thermoplastic. Approximately two square feet of a clear plastic or tar paper shall be laid on the road surface and held in place for 15 to 20 minutes. The underside of the plastic or tar paper shall then be inspected for a buildup of condensed moisture from the road surface. If the amount of condensed moisture is of a sufficient amount to result in water dripping from the plastic or tar paper when held in a vertical position, thermoplastic shall not be applied. This moisture test shall be repeated until the moisture in the road surface has been allowed to evaporate to a level whereby there is not excessive buildup of condensed moisture on the underside of the plastic or tar paper.
- B. **CLEANING:** All surfaces shall be clean and dry before thermoplastic can be applied. Loose dirt and debris shall be removed by blowing compressed air over the area to be striped. If the thermoplastic is to be applied over existing paint lines, the paint line shall be swept with a mechanical sweeper or wire brush to remove poorly adhered paint and dirt that would interfere with the proper bonding of the thermoplastic. Latence and curing compound shall be removed from all new Portland cement concrete surfaces by loose grain abrasive pressure blasting or wire brushing.
- C. **LAYOUT:** The pavement markings shall be placed in proper alignment with guidelines established on the roadway. Deviation from the alignment established shall not exceed two inches and, in addition, the deviation in alignment of the marking being placed shall not exceed one inch per 200 feet of roadway nor shall any deviation be abrupt.

Longitudinal markings shall be offset at least two inches from construction joints of Portland cement concrete surfaces and joints and shoulder breaks of asphalt surfaces.

- D. **PRIMER AND SEALER:** Primer sealer shall be used on all Portland cement concrete surfaces. A primer sealer shall be used on asphalt surfaces that are over two years old and/or on asphalt surfaces that are worn or oxidized to a condition where 50 percent or more of the wearing surface is exposed aggregate.
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- E. PRIMER AND SEALER APPLICATION: When required as described in the "LAYOUT" section above, the primer sealer shall be applied to the road surface in a continuous film at a minimum thickness of 3 to 5 mils. Before the Thermoplastic is applied, the primer-sealer shall be allowed to dry to a tacky state. The Thermoplastic shall be applied within 4 hours after the primer application.

3.02 TEMPERATURE REQUIREMENTS:

- A. AMBIENT CONDITIONS: The ambient air and road surface shall be 55 degrees F and rising before application of thermoplastic can begin.
- B. MATERIAL REQUIREMENTS: The thermoplastic compound shall be heated from 400 to 450 degrees F and shall be a minimum of 400 degrees F as it makes contact with road surface during application.
- C. DROP-ON GLASS SPHERE APPLICATION:

APPLICATION RATE: Retro reflective glass spheres shall be applied at the rate of 10 pounds per 100 square feet of applied markings. This application rate shall be determined by confirming the following consumption rates:

Two hundred (200) pounds of drop on glass spheres per ton of applied thermoplastic when the thermoplastic is being applied at 0.090-inch film thickness.

One hundred and fifty (150) pounds of drop on glass spheres per ton of applied thermoplastic when the thermoplastic is being applied at 0.125-inch thickness.

- D. APPLICATION METHOD: Retro reflective glass spheres shall be applied by a mechanical dispenser properly calibrated and adjusted to provide proper application rates and uniform distribution of the spheres across the cross section of the entire width of the line. To enable the spheres to embed themselves into the thermoplastic to approximately 60% of their diameter, the glass sphere dispenser shall be positioned immediately behind the thermoplastic application device. This insures that the spheres are applied to the thermoplastic material while it is still in the molten state.

- E. APPLICATION FILM THICKNESS:

HIGH WEAR AND TRANSVERSE MARKINGS: All lane lines, center lines, transverse markings and pavement markings in high traffic wearing areas shall have a minimum film thickness of 0.125 inch at the edges and a maximum of 0.188 inch at the center. A minimum average film thickness of 0.125 inch shall be maintained.

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3.03 PACKAGING:

- A. LABELING: Each container shall be clearly marked to indicate the color of the material, the process batch number and/or manufacturer's formulation number, the manufacturer's name and address and the date of the manufacture.

3.04 SAMPLING AND TESTING:

- A. SAMPLING PROCEDURE: The right is reserved by the Bidding Agency to inspect the thermoplastic material at the place of manufacture or at the destination of shipment or both. If inspected at the place of manufacture, the manufacturer shall furnish such facilities as may be required for collecting and forwarding samples: and shall furnish facilities for the testing of the material during the manufacturing process. Such test will be at the expense of the Bidding Agency. All material samples for acceptance tests shall be obtained or witnessed by a representative of the Materials and Tests Laboratory at the manufacturer's plant and shall be submitted to the engineer of Material and Tests at least 20 days in advance of the pavement marking operations. Random check samples may be taken at the job site at the discretion of the Resident Engineer.

The following sample procedures shall be used.

The sample(s) shall be labeled as to the shipment number, lot number, date, quantity, and any other pertinent information. At least three randomly selected bags shall be obtained from each lot. A 10-pound sample from the three bags shall be submitted for testing and acceptance. The lot size shall be approximately 44,000 pounds unless the total order is less than this amount.

- B. MANUFACTURER'S RESPONSIBILITY:

SAMPLING AND TESTING: The manufacturer shall submit test results from an approved independent laboratory. All material samples shall be obtained 20 days in advance of the pavement marking operations. The cost of testing shall be included in the price of thermoplastic material. The approved independent laboratory's test results shall be submitted to the bidding agency in the form of a certified test report.

- C. BILL OF LADING: The manufacturer shall furnish the Material and Tests Laboratory with copies of Bills of Lading for all materials inspected. Bills of Lading shall indicate the consignee and the destination, date of shipment, lot numbers, quantity, type of material, and location of source.
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- 3.05 MATERIAL ACCEPTANCE: Final acceptance of a particular lot of thermoplastic will be based on the following:
- A. Compliance with the specification for material composition requirements verified by approved independent laboratory with test results.
  - B. Compliance with the specification for the physical properties required and verified by an approved independent laboratory with test results.
  - C. Manufacturer's test results for each lot of thermoplastic have been received.
  - D. Identification requirements are satisfactory.
- 3.06 CONTRACTOR'S RESPONSIBILITY: The contractor shall notify the Division of Traffic Office 24 hours prior to the placement of the thermoplastic markings to enable an inspector to be present during the application operation. At the time of notification, the Contractor shall indicate the manufacturer and the lot numbers of the thermoplastic that he intends to use. A check should be made by the contractor to ensure that the approved lot numbers appear on the material package. Failure to do so is cause for rejection.
- 3.07 MELTDOWN PROCEDURE FOR GRANULATED THERMOPLASTIC:
- A. MATERIAL AND APPARATUS:
    - EQUIPMENT: Granulated thermoplastic sample in an unlined tin can
      - Metal spatula
      - Beaker tongs
      - Hot plate
      - Air-powered Cowles blade stirrer
      - Oven at 420 degrees F
      - ASTM certified thermometer (20 - 500 degrees F)
      - Thermo-degradable polyethylene bag (normal packaging medium of hydrocarbon Thermoplastic)
    - PROCEDURE:
      1. Cut the rim out of the unlined tin can.
      2. Prepare approximately half of the Thermoplastic sample for melting in the unlined can. If testing hydrocarbon thermoplastic, add thin strips of thermo-degradable bag to the plastic sample. Add an amount of bag equal to 0.32 of the total weight of the entire sample to be melted.
      3. Melt the plastic sample with bag on the hot plate. Hold the can steady with

the beaker tongs and stir the sample with the spatula approximately every 30 seconds to avoid scorching.

4. When the sample is molten, place it under the Cowles' blade stirrer. Allow it to stir continuously \* at medium speed and continue heating.
5. Gradually add the remaining granulated plastic to the sample as it stirs and heats.
6. Using the glass thermometer, check the temperature of the plastic sample periodically as it heats.
7. When the sample reaches 420 degrees F, remove it from the hot plate. The sample is ready for initial testing.
8. If tests are to be performed after extended heating, place the molten sample in the 420 degrees F oven for four hours. Stir the sample every thirty minutes with a spatula.
9. After four hours, remove the sample from the oven and prepare desired test samples.

\*If a mechanical stirrer is unavailable, follow steps 4 - 7, stirring the sample by hand with a spatula at thirty second intervals.

**B. TEST METHOD: ABRASION RESISTANCE OF THERMOPLASTIC MARKING MATERIAL:**

**MATERIALS AND APPARATUS:**

1. Blasting cabinet made from 3/4-inch plywood and lined with steel sheeting. Inside dimensions are 12 x 12 x 12 inches with blasing nozzle, glass bead container, air pressure regulator and filter. The bottom of the unit has a removable drawer to catch the expended glass beads. The thermoplastic sample is held in position by metal clips and positioned as shown in the diagrams. The top of the unit has a hinged window to permit viewing, placing and removal of the sample. This apparatus is shown in Figures 1 and 2.
  2. Glass beads, -25 +30 mesh.
  3. Steel sample mold, 4-1/2 inches x 4-1/2 inches x 1/2 inch as shown in Figure 3.
  4. Steel base plate, 5 x 5 x 1/8 inches as shown in Figure 3.
  5. Mold release.
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6. Balance, at least 500-gram capacity, capable of weighing 0.01 gram.
7. Clean, dry, air supply to 40 psi.
8. Vacuum cleaner to exhaust bead and dust particles.

C. PROCEDURE:

1. Spray the steel sample mold with release agent and place concentrically on the 5 x 5-inch steel base plate.
  2. With the 2 oz. ladle, remove enough hot thermoplastic from the Vollrath beaker to fill the sample mold.
  3. When cool, loosen the mold screws and remove the mold.
  4. Weigh the base plate and thermoplastic.
  5. Weigh 400 grams of the -25 +30 glass beads and fill bead container in blasting cabinet.
  6. Position thermoplastic sample as shown in diagram so that blaster hits one corner of sample. Use the spring clips to keep sample in place.
  7. Close hinged window, turn on air supply, set regulator at 22 psi, observe level of beads in glass bead container to see if they are flowing into blast nozzle. Check air pressure frequently to be sure regulator remains at 22 psi.
  8. Turn on vacuum cleaner if available. The vacuum cleaner is not required but helps keep the surrounding area much cleaner.
  9. When bead container is empty, close air valve, turn off vacuum cleaner and remove sample.
  10. Brush off loose dust from sample and reweigh, noting the weight loss.
  11. Place sample back in blasting cabinet and rotate 90 degrees from original position so that a fresh corner may be blasted.
  12. Repeat weighing and blasting until all 4 corners have been blasted.
  13. Average the weight loss of the 4 corners. Maximum deviation among the 4 corners should be 0.5 gram.
  14. Do not blast down to the base metal on the base plate. If sample blasts
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through before bead supply is exhausted, blast enough of one corner so that base metal does not show through then stop blasting, remove sample, and rotate 90 degrees to expose a fresh surface and continue blasting until beads have been used.

D. HAZARDS:

1. When splitting out granular type material, wear approved type of respirator or dust mask. Wear safety glasses and gloves when handling the thermoplastic. Practice normal hygiene procedures, i.e., wash hands and face after handling the dry thermoplastic.
2. Due to the elevated temperatures involved in the testing of the thermoplastic, eye protection and suitable gloves are mandatory at all times when pouring samples and other tests involving the thermoplastic in the molten state.
3. If thermoplastic burns do occur, immediately flush affected area with cold water. Be aware of location of safety shower and cold-water taps.

TEST METHOD: FOR THE DETECTION OF A SILANE ADHESION COATING OF INTERMIX GLASS SPHERES.

The test method is designed for the rapid detection of a saline adhesion coating on glass spheres. The test is based on observance of a yellow/green fluorescent color when treated spheres are inspected under ultraviolet light in a darkened room.

MATERIAL AND APPARATUS:

Dansyl Chloride  
Analytical balance  
2-inch Buchner funnel  
Glass filter paper  
Ultraviolet light source  
Acetone  
Intermix glass beads  
Medicine dropper  
2-inch filter paper  
Glass filtering flask

E. PROCEDURE:

1. Place 10 grams of inter-mix glass spheres on a filter paper in a w" Buchner funnel. Attach the funnel to a glass filtering flask.
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2. Use a medicine dropper to saturate the glass spheres with the dansyl chloride solution.
3. Allow the glass spheres to stand undisturbed for 30 seconds. While applying vacuum suction, rinse the spheres with 100 mils. of acetone to remove the yellow color.
4. Remove the beads and filter paper from the funnel and let the spheres dry at room temperature for 5 to 10 minutes.
5. Place the spheres on glass filter paper and inspect them under ultraviolet light in a dark room. the ultraviolet light source shall have an intensity of 7,000 micro w/cm<sup>2</sup>. (A Blak-Ray Model B100A has been found to be satisfactory).

A yellow-green florescence color denotes the presence of a saline adhesion coating on the glass spheres.

TEST METHOD: MOISTURE RESISTANCE:

MATERIAL AND APPARATUS:

Spatula  
Medicine dropper  
Petri dish (90 mm diameter, 20 mm height)

3.08 PROCEDURE:

1. Overfill a petri dish with the glass spheres and use a spatula to level off and remove the excess beads.
2. Using a medicine dropper, allow 20 drops of water to fall onto the glass spheres in one area.
3. Allow the glass spheres to stand undisturbed and observe the glass spheres for evidence of water absorption. The water shall remain on the surface of the glass spheres for a minimum of 15 minutes.

TEST METHOD: FLOTATION AND ANTI-WICKING:

This test is designed to determine the anti; -wicking characteristics of glass spheres. Drop-on glass spheres are applied to a molten thermoplastic sample when the sample is inside a preheated oven. After further exposure to heat, the beaded thermoplastic sample is removed from the oven and inspected for retro reflection.

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**MATERIALS AND APPARATUS:**

Quart can and lid  
Hot plate  
Thermometer  
Heat resistant gloves  
Tongs  
Stopwatch  
Thermoplastic pavement marking material  
diameter U.S.A. standard 20 mesh sieve  
Lantern flashlight with a halogen bulb  
Mechanical stirrer  
Oven (air circulating type)  
Triple Beam Balance

**PROCEDURE:**

1. Preheat an air circulating oven to a temperature of  $400 \pm 5$  degrees F. Place the lid of a quart size can on a level surface in the oven. Position the lid with the inside surface up. Heat the lid in the oven for a minimum of 30 minutes.
2. In a quart can, melt the thermoplastic material on a hot plate while continually mixing it with a mechanical stirrer. Heat the thermoplastic until the temperature reaches  $415 \pm 5$  degrees F.
3. While the lid remains in the oven, quickly fill the lid with the hot thermoplastic material.
4. Use a 3" diameter U.S.A. standard 20 mesh sieve to uniformly disperse 1.5 grams of glass spheres in a monolayer over the entire surface of the hot thermoplastic. Immediately close the oven door.
5. After 3 minutes, remove the sample from the oven. Let the sample cool at room temperature for 10 minutes. Place the thermoplastic sample on a countertop that is approximately 3 feet in height.
6. Using a flashlight held at eye level, shine the light on the sample and observe the sample from a distance of 5 feet.

Glass spheres that possess flotation and anti-wicking properties will exhibit retro reflectance. Spheres that do not possess these properties will be hidden in the thermoplastic and will exhibit little or no retro reflectance.

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**TEST METHOD: BEAD ADHESION:**

The bead adhesion test is designed to test the adhesion of drop-on spheres to thermoplastic pavement marking material.

Thermoplastic test samples are prepared by applying glass spheres to molten thermoplastic in such a manner as to insure 40 to 50% sphere exposure on the surface of the thermoplastic binder and 50 to 60% sphere embedment in the thermoplastic binder. A reinforced adhesive sealant is applied to the surface of the thermoplastic sample. After cured for 24 hours, the reinforced adhesive sealant is stripped from the sample. The thermoplastic sample and the adhesive sealant are examined for glass spheres that have deboned from the thermoplastic sample.

**MATERIALS AND APPARATUS:**

diameter U.S.A. standard 20 mesh sieve  
Three 6" diameter lids for 1-gallon tin cans  
Unlined tin can (pint size)  
Nylon netting (16 to 20 mesh/in)  
Air circulating oven  
Heat resistant gloves  
Mechanical stirrer  
Wooden-handled dissecting needle  
Three pieces of 6" diameter iron pipe  
thick, 2" height)  
100 Silicone Rubber Adhesive  
Sealant (black, stock number 5030)  
Thermoplastic pavement marking material  
Thermometer  
Microscope  
Spatula  
Tongs  
Hot Plate  
Stopwatch  
Caulking gun  
Triple Beam Balance

**PROCEDURE:**

**A. PREPARATION OF TEST SAMPLES:**

1. Place the 3 metal pipes and the 3 lids on a level surface in the air circulating oven at  $400 \pm 5$  degrees F with the OUTSIDE surface up. Condition the pipes and lids for a minimum of 30 minutes.
  2. In a pint can, melt the thermoplastic material on a hot plate while continually
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mixing it with a mechanical stirrer. Heat the thermoplastic until the temperature reaches  $400 \pm 5$  degrees F.

3. While the 3 lids remain in the oven, quickly fill each lid with the hot thermoplastic material to the level of the inner rim and close the oven door.
  4. After 1 minute remove the hot thermoplastic samples from the oven and place them on a firm, smooth, level surface. Immediately place a hot metal pipe over each sample. Position the pipes to rest on the outer rim of each lid. (The hot pipes prevent the samples from cooling too rapidly near the outer edges and allow the samples to cool uniformly over the entire surface).
  5. After 5 minutes, with a 3" diameter U.S.A. standard 20 mesh sieve, disperse 3.0 grams of glass spheres in a monolayer over the entire surface of one sample. Use the same procedure on the second and third samples and disperse the spheres at 6 and 7 minutes, respectively.
  6. After dispersing the beads, immediately remove the pipes from the samples and let each sample cool to room temperature.
- B. SELECTION OF TEST SAMPLE: The following procedure is used to select the sample that exhibits 50% to 60% sphere embedment in the thermoplastic binder.
1. Place a mark on a small area of each sample with a black felt tipped pen.
  2. While examining the marked area under a microscope, use a dissecting needle to remove several spheres from the marked area.
  3. Examine the black markings on the removed spheres and determine the percent of sphere embedment in the thermoplastic binder. Select the sample that exhibits 50% to 60% sphere embedment in the thermoplastic material. Run the bed adhesion test on this sample.
- C. TESTING THE SAMPLE:
1. Place a 7" x 5" piece of nylon netting on the surface of the thermoplastic sample. Use a caulking gun to apply a layer of silicone rubber adhesive sealant over a 6" x 4" area of the sample. Use a spatula to firmly press the adhesive sealant onto the surface of the sample to produce a uniform layer approximately 1/8" thick.
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2. Allow the adhesive sealant to cure for 24 hours. Remove the nylon reinforced adhesive sealant from the surface of the thermoplastic sample. Examine the thermoplastic sample and the adhesive sealant for glass spheres that have debonded from the marked area.

A minimum of 75% of the spheres shall remain bonded to the surface of the thermoplastic sample.

#### PART 4 - PAYMENT

##### 4.01 GENERAL:

- A. Payment shall be at the unit prices as herein indicated. These prices shall be full compensation for the execution of pay items indicated including all material, furnishing equipment, labor, tools and incidentals necessary to complete these items.
- B. If there is no quantity shown in the bidding schedule, the work covered by this section shall be considered as a subsidiary obligation of the Contractor covered under the other contract items. Only accepted work will be measured.
- C. THERMOPLASTIC SOLID LINES - PER LINEAL FOOT: The quantity shall be measured by the lineal foot for both white and yellow lines.
- D. THERMOPLASTIC SOLID DOUBLE LINES - PER LINEAL FOOT: The quantity shall be measured by the lineal foot.
- E. THERMOPLASTIC DASHED LINE - PER LINEAL FOOT: The quantity shall be measured by the lineal foot including painted segments and gaps for both white and yellow lines.
- F. THERMOPLASTIC STOP LINES - PER LINEAL FOOT: The quantity shall be measured by the lineal foot (24" wide).
- G. THERMOPLASTIC SYMBOLS - EACH: The quantity shall be accounted for by each letter installed.

**END SECTION 02585**

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**SECTION 02620 – SUBSURFACE DRAINS**

**PART 1 – GENERAL**

**1.01 SCOPE:**

- A. This item shall consist of excavating an eighteen (18)-inch wide, variable depth trench and furnishing and installing open graded aggregate backfill, four (4)-inch perforated PVC drain pipe and cleanouts, polypropylene filter fabric, four (4)-inch CMP outlets, and incidentals necessary to complete the subsurface drainage system as required by the engineer and as shown on the plans.

**PART 2 – PRODUCTS:**

**2.01 PERFORATED PIPE:**

- A. Pipe for subsurface drains shall be four (4)-inch nominal size perforated polyvinylchloride (PVC) plastic pipe conforming to the requirements of ASTM D 3034. The minimum pipe Stiffness at five (5) percent deflection shall be fifty (50) psi, the pipe shall withstand flattening to where the distance between the plates is twice the wall thickness plus five (5) percent of the inside diameter, and the pipe shall have impact resistance at 0°C (32°F) equal to or greater than forty-five (45) percent of that required when tested at 23°C (73.4°F). All joints shall be sand tight. Placement, number and size of perforations shall be subject to the approval of the engineer.

**2.02 POROUS BACKFILL:**

- A. Porous backfill aggregate shall be a one-inch maximum washed concrete rock, consisting of sound durable particles reasonably free of objectionable deleterious material. Aggregate shall comply with the requirements of ASTM C-33.

**2.03 FILTER FABRIC:**

- A. Fabric shall be non-woven polypropylene specifically designed for support and drainage systems. The fabric shall have the minimum property values shown in Table 18-1. The properties will be determined in accordance with the test procedures shown in Table 18-1.

TABLE 18-1

<u>Property</u>	<u>Method</u>	<u>Minimum Values</u>
Grab Tensile Strength	ASTM-D-1682	100 lb
Grab Elongation	ASTM-D-1682	62%
Mullen Burst Strength	ASTM-D-774	200 psi
Permeability Coefficient (K)		10 cm/sec

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Thickness	ASTM-D-1777	15 mils
Weight	ASTM-D-1910	4.0 oz/yd
Equivalent Opening Size (EOS)	CW-02215	70 to 100 US Std.Sieve

2.04 CLEANOUTS:

- A. Cleanouts shall consist of four-inch diameter Schedule 40 nonperforated PVC pipe and fittings and shall be field located as required by the city engineer.

PART 3 – EXECUTION

3.01 EXCAVATION:

- A. The Contractor shall do all necessary excavation to the elevations to be determined by the city engineer. The excavation shall be unclassified and shall be performed regardless of the material encountered.
  - B. When rock or non-cushioning material is encountered in trench excavation, a cushion at least two inches thick shall be placed between the rock and the bottom of the pipe. The cushion shall consist of clean sand or equivalent granular material. The cost of furnishing and placing the cushion material shall be included in the bid price per linear foot of subsurface drain. When rock is encountered, the bottom of the trench shall be excavated to a horizontal section as far as is practicable.
  - C. Excavated material not required or acceptable for backfill shall be disposed of by the Contractor as directed by the engineer. The excavation shall not be carried below the required depth; when this is done, the trench shall be backfilled at the Contractor's expense with material approved by the engineer and compacted to the density of the surrounding earth material.
  - D. The minimum width of the trench at the top of the pipe, when placed, shall be a width which will permit the proper construction of joints and compaction of backfill around the pipe, but shall be at least equal to the outside diameter of the pipe plus six (6) inches on each side of the pipe.
  - E. The bed for the pipe shall be so shaped that at least the lower quarter of the pipe shall be in continuous contact with the bed. Spaces for the pipe bell shall be excavated accurately to size to clear the bell so that the barrel supports the entire weight of the pipe.
  - F. The Contractor shall do such trench bracing, sheathing, or shoring necessary to perform and protect the excavation as required for safety and conformance to governing laws. Unless otherwise provided, the bracing, sheathing, or shoring shall be removed by the Contractor after the completion of the backfill at least twelve (12) inches over the top of the pipe. The sheathing or shoring shall be pulled as the granular backfill is placed and compacted to avoid any unfilled spaces between the trench wall and the backfill material. The cost of
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bracing, sheathing, or shoring, and the removal of same, shall be included in the unit price bid per foot for the subsurface drain.

3.02 INSTALLING FILTER FABRIC:

- A. The filter fabric shall have sufficient width to completely surround the porous backfill and to provide two thicknesses over the top of the trench. Any joints shall overlap a minimum of three feet. Mechanical ties shall be used as required. Where outlet pipe passes through the fabric, a separate piece of fabric of sufficient size to be wrapped around the pipe and flared against the side of the filled drain shall be used.
- B. Field splices of filter fabric shall be anchored with securing pins as directed to insure the required overlap is maintained. Care shall be taken during the placement of the backfill as well as the pipe installation, when required, to prevent damage to the fabric. The fabric shall be snug against the bottom and sides of the trench and at the corners of the trench.

3.03 LAYING AND INSTALLING PIPE:

- A. The upgrade end of pipelines, not terminating in a structure, shall be plugged or capped as approved by the engineer, unless a cleanout is indicated.
- B. Unless otherwise shown on the plans, a two-inch bed of granular backfill material shall be spread in the bottom of the trench throughout the entire length under all perforated pipe underdrains.
- C. Pipe outlets for the underdrains shall be constructed when required or shown on the plans. The pipe shall be laid with tight-fitting joints. Porous backfill is not required around or over pipe outlets for underdrains. All connections to other drainage pipes or structures shall be made as required and in a satisfactory manner. If connections are not made to other pipes or structures, the outlets shall be protected and constructed as shown on the plans.

3.04 BACKFILLING:

- A. Placement of the porous backfill in the trench and about the pipe shall be as shown on the plans. Special care shall be taken in placing the backfill. The granular backfill shall not contain a damaging amount of foreign matter, nor shall earth from sides of the trench or from the window be allowed to filter into the back fill. The backfill shall be placed in loose layers not exceeding twelve (12) inches in depth and compacted by approved methods. Backfilling shall be done in a manner to avoid injurious top or side pressure on the pipe. The porous backfill shall be made to the elevation of the trench.
  - B. When perforated pipe is specified, granular backfill material shall be placed along the full length of the pipe.
  - C. Upon completion of the porous backfill placement and compaction, the filter fabric shall be overlapped over the backfill and secured. Previously excavated select material shall then be
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backfilled over the filter fabric to a depth of twelve (12) inches and compacted. This earth layer shall not contain rock larger than one (1) inch in diameter.

PART 4 – PAYMENT

4.01 METHOD OF MEASUREMENT:

- A. The footage of subsurface drain to be paid for shall be the number of linear feet of subsurface drain in place, completed and approved.

4.02 BASIS FOR PAYMENT:

- A. The accepted quantities of subsurface drains will be paid for at the contract unit price bid per linear foot of pipe. Such prices shall include excavation, granular backfill, engineering fabric, labor, tools, equipment and material for the drain in place and complete.

**END SECTION 02620**

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**SECTION 02725 - SUBDRAIN SYSTEM**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification Sections, apply to this Section.

1.02 SUMMARY:

- A. This Section includes the following:
  - 1. Circular corrugated perforated piping for longitudinal and transverse underdrain applications.
  - 2. Filter fabric for pipe prefiltering applications.

1.03 SUBMITTALS:

- A. Submit the following:
  - 1. Product data for drainage systems including piping and filter fabric.

1.04 UTILITY COMPLIANCE:

- A. Before any excavation, the Contractor shall be responsible for verifying the actual location of all underground utilities within the grading limits, whether shown or not shown on the drawings, and to field locate each utility line. These provisions shall in no way absolve any party from complying with the Underground Facility Safety and Damage Prevention Act, Chapter 319, RSMo.
  - B. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with the Condominiums and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
  - C. Except as otherwise indicated with the bid documents or at the direction of the Engineer, comply with applicable portions of the Metropolitan St. Louis Sewer District regulations pertaining to storm sewerage.
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PART 2 - PRODUCTS

2.01 GENERAL:

- A. Circular Underdrain Pipe and Pipe Fittings: Provide perforated pipe and pipe fitting materials compatible with each other. Provide 4-inch corrugated rigid dual wall smooth bore drain line "Advanced Drainage System" Type "N12" or approved equal for transverse underdrains. Provide 4-inch corrugated flexible drain line "Advanced Drainage System" Type "N12" or approved equal for longitudinal underdrains located outside of the pavement limits.
- B. Filter Fabric: Provide "Mirafi" Type "140N" or approved equal.
- C. Stone: 1-inch Meramec "C" gravel.

PART 3 - EXECUTION

3.01 GENERAL:

- A. Prepare Foundation for Buried Piping as Follows:
    - 1. Grade trench bottom to provide a smooth, firm, stable and rock free foundation, throughout the length of the pipe.
    - 2. Remove unstable, soft and unsuitable materials at the surface upon which pipes are to be laid and backfill with clean sand or pea gravel to indicated level.
    - 3. Shape bottom of trench to fit bottom of pipe. Fill unevenness with tamped sand backfill. Dig bell holes at each pipe joint to relieve the bells of all loads, and to ensure continuous bearing of the pipe barrel on the foundation.
    - 4. Clean back of existing or new curb of all soil and debris before placing edge drain.
  - B. Install piping beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's recommendations for use of lubricants, cements, and other installation requirements. Maintain swab or drag in line and pull past each joint as it is completed.
  - C. Use proper size increasers, reducers, and couplings, where different size or material of pipes and fittings are connected. Reduction of the size of piping in the direction of flow is prohibited.
  - D. Install piping pitched down in direction of flow, at minimum slope of 1 percent, except where indicated otherwise.
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- E. Cleaning: Remove silt and debris from all inlets and connecting piping systems. Upon completion of cleaning operations, lamp all storm lines. If storm lines remain obstructed, notify Engineer immediately.
- F. Connections to Inlets: Connections to inlets shall be performed in accordance with the plans. Properly grout around connections within inlets to ensure proper seal.

3.02 INSPECTION:

- A. Placement of all drainage piping systems shall be inspected by the Engineer prior to backfilling. Piping rejected shall be removed and reinstalled at the direction of the Engineer.

PART 4 - MEASUREMENT

4.01 GENERAL:

- A. General: If there is no quantity shown in the bidding schedule, the work covered by this section shall be considered as a subsidiary obligation of the Contractor covered under the other contract items. Only accepted work will be measured.
- B. Circular Underdrain: The quantity measured shall be the number of lineal feet of circular underdrain pipe placed for transverse applications and the number of lineal feet of circular underdrain pipe placed for longitudinal applications including excavation, piping, cleanouts, special cleanouts, geotechnical fabric, crushed stone, backfilling and removal of excess material, completed and approved by the Engineer, including tapping into existing inlets any clean-out and fittings which shall be considered a subsidiary obligation under this item.
- C. Cleaning: No direct measurement of the cleaning of inlets and storm sewers will be performed but will be considered as a subsidiary obligation of the Contractor.
- D. Permits: The Contractor shall be responsible for all sewer permit costs.

PART 5 - PAYMENT

5.01 GENERAL:

- A. Payment shall be at the unit prices as herein indicated. These prices shall be full compensation for the execution of the pay items indicated including all material, furnishing equipment, labor, tools and incidentals necessary to complete these items.
- B. Item CIRCULAR UNDERDRAIN PIPE: Per lineal foot.

**END OF SECTION 02725**

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**SECTION 02800 - SEWERS**

**PART 1 - GENERAL**

1.01 WORK INCLUDES:

- A. This section covers the work necessary for the installation and abandonment of storm sewers.
- B. Rebuilding and abandoning private drains.

1.02 GENERAL:

- A. Where the term "Standard Specifications" is used, such reference shall mean the 1992, or latest revision, of the Metropolitan St. Louis Sewer District Revised Standard Construction Details and Specification, except as otherwise provided in the contract documents. Where reference is made to a specific part of the Standard Specifications, such applicable part shall be considered as part of this Section of the Specifications.
- B. All underground work contemplated in the area of the subgrade shall be completed and properly backfilled before subgrade work is started.

1.03. DEFINITIONS:

- A. Relative Compaction: Relative compaction is defined as the ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D 1557. Corrections for oversize materials may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.

**PART 2 - PRODUCTS**

2.01 STRUCTURES AND MATERIALS:

- A. All structures and materials used shall conform to the 1992, or latest revision, of the Metropolitan Sewer District Revised Standard Construction Details and Specifications.

2.02 SUBGRADE REPAIR AND BACKFILL:

- A. Material used for subgrade repair shall conform to the requirement for Granular Fill in Section 02200, EARTHWORK.

2.03 EQUIPMENT:

- A. Furnish all necessary equipment required to accomplish the excavating, shaping, grading and rolling, and compaction specified herein.
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PART 3 - EXECUTION

3.01 PREPARATION:

- A. Preparation of excavation and embankment areas shall be in accordance with the Metropolitan St. Louis Sewer District.

3.02 SUBGRADE:

- A. Excavate and backfill shall be in accordance with the Metropolitan St. Louis Sewer District.

PART 4 - PAYMENT

4.01 GENERAL:

- A. Payment for work specified in this section will be made on a per unit basis and will include all appurtenances to make the unit function as it has been specified.
- B. REBUILD SEWER STRUCTURES - VERTICAL FOOT: This work shall include the rebuilding of existing structures to MSD standards. Work to include dismantling, providing additional materials, adjustment to grade, and reconstruction of existing cover (inlet stone and sill or cast-iron cover) to be reused unless indicated. Work to be measured by the vertical foot. The amount of rebuilding shall be as directed by the Engineer.
- C. ADJUSTMENT TO GRADE OF UTILITY SERVICE COVERS - EACH: Measurement of utility covers shall be made per item. Utility service covers include water meters, water service valves, and sewer vents (including the repair and/or replacement of missing pieces).
- D. SEWER STRUCTURES ADJUSTED TO GRADE - EACH: Manholes/inlets adjusted to grade shall be measured as the number of manholes and inlets/sills actually adjusted and accepted by the Engineer. This shall include any minor rebuilding of the structure as stated above up to and including 12 inches of the top of the existing structure. This will also include the work required to set the sill at the proper elevation for curb inlets, as directed by the Engineer.
- E. REBUILD PRIVATE DRAINS - EACH: Shall be measured as the number of drains actually rebuilt.
- F. REPLACE INLET STONE AND SILL – EACH: This item shall be measured per each item placed. This shall include the whole cost and expense to provide and install new inlet stones and sills including rebuilding of one foot of the sewer structure as necessary.

**END SECTION 02800**

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**SECTION 03375 - CONCRETE SEALING**

**PART 1 - GENERAL**

1.01 DESCRIPTION:

- A. Work Included: Provide concrete sealing where called for on the drawings, as specified herein, and as needed for a complete and proper installation. Seal all exposed concrete surfaces (horizontal and vertical) including vertical curbs.

1.02 QUALITY ASSURANCE:

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this section.

1.03 PRODUCT HANDLING:

- A. Protect the materials of this section before, during, and after installation and protect the work and materials of all other trades.
- B. In the event of damage, immediately make replacements and repairs to the approval of the Engineer and at no additional cost to the Owner.

**PART 2 PRODUCTS**

2.01 SEALER:

- A. Where concrete sealer is called for on the drawings or is specified herein, provide "Ashford Formula" manufactured by Curecrete Chemical Company, P.O. Box 551, Springville, Utah 84663 (801) 489-5663, or approved equal.
  - 1. Local Representative: Ameristar Building Products Corporation  
St. Charles, Missouri 63301  
(636) 946-4488

**PART 3 EXECUTION**

3.01 SURFACE CONDITIONS:

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.
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3.02 INSTALLATION:

- A. Notification of Supplier: The local supplier must be notified and be able to certify in writing that their product was applied properly.
  
- B. Preparation:
  - 1. Follow the manufacturer's recommendations.
  - 2. On freshly finished concrete surfaces, no additional surface preparations will be required.
  - 3. On areas where forms are recently removed, remove all form oil and breaking compound residue to assure penetration of the product into the surface.
  - 4. When applying near windows, mask the glass.
  - 5. Avoid contact with plant life, glass, aluminum and other finished surfaces. Where contact occurs, immediately wipe with damp cloth or flush with water.
  - 6. Avoid contact with asphaltic concrete.
  
- C. Application:
  - 1. On freshly finished surfaces, spray the product with a low-pressure sprayer immediately following the finishing operation.
    - a. To assure proper curing, apply the product to the entire surface as soon as the surface is firm enough to walk on, and before checking and temperature cracking begins.
    - b. Keep the entire surface wet for 30 minutes by spraying the dry spots immediately.
    - c. As the product begins to dry into the surface and becomes slippery underfoot, lightly sprinkle the surface with water to aid penetration and to bring alkali to the surface.
  
  - a. As the product again begins to dry into the surface and becomes slippery underfoot, flush the surface with water and squeegee the surface totally dry, removing all excess product and alkali or other impurities brought to the surface.



2. On broom finished surfaces, no flushing is required but squeegee or broom the excess product from the surface after 30 to 40 minutes.
3. On cured concrete surfaces, saturate the surface with the specified product.
  - a. If dry spots appear, broom excess material onto the dry spots or respray them immediately.
  - b. Keep the entire surface wet with the product for 30 minutes.
  - c. If, after 30 to 40 minutes, the majority of the product is still on the surface, wait until the surface becomes slippery underfoot and then flush the entire surface with clear water and squeegee completely dry. If no water is available, squeegee the excess product from the surface after 30 minutes so that the surface is completely dry.

#### PART 4 PAYMENT

##### 4.01 GENERAL:

- A. Payment shall be made as part of the unit price for PCC pavement replacement and vertical curb or lip and curb replacement.

**END SECTION 03375**

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**SECTION 03520 - PORTLAND CEMENT CONCRETE PAVING REPLACEMENT**

**PART 1 - GENERAL**

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to this section.

1.02 SCOPE OF WORK:

- A. Removing existing concrete street slabs at various locations within the City limits of Black Jack, Missouri at the addresses shown on the accompanying list.
- B. Replacing the pavement in strict accordance with the Materials and Execution sections of this specification, including sealing of joints and proper saw cutting.
- C. Restoring areas behind the curb disturbed by work in strict accordance with the Materials and Execution sections of this specification.

1.03 SUBMITTALS:

- A. Provide samples, manufacturer's product data, test reports, and materials' certifications as required in referenced sections for concrete and joint fillers and sealers.

1.04 QUALITY ASSURANCE:

- A. Codes and Standards: Comply with St. Louis County Highway Standard specifications (latest edition), and local governing regulations if more stringent than herein specified.

1.05 JOB CONDITIONS:

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other activities.
  - B. Barricades should be standard type with a working warning light attached at the top.
  - C. A sign which states ONE LANE ROAD AHEAD shall be placed several hundred feet ahead of the work being performed.
  - D. Lighting barricades shall be set up around the perimeter of excavated areas to warn motorists to avoid the particular location.
  - E. The lighted barricades shall be put back around the perimeter of the newly poured and
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finished concrete. The barricades shall be removed at the end of the fifth day.

## PART 2 - PRODUCTS

### 2.01 MATERIALS:

- A. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
  - 1. Use flexible spring steel forms or laminated boards to form radius bends as required.
- B. Coat forms with a nonstaining form release agent that will not discolor or deface surface of concrete.
  - 1. Reinforcing steel shall be as stated in Section 03210 - REINFORCING STEEL.
  - 2. Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 60. Cut bars true to length with ends square and free of burrs.

### 2.02 CONCRETE MATERIALS:

- A. Portland Cement: ASTM C 150, Type I.
    - 1. Use one brand of cement throughout project, unless otherwise acceptable to City Engineer.
    - 2. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source. Do not use fine or coarse aggregates containing spall-causing or other deleterious substances.
    - 3. Lightweight Aggregates: ASTM C 330.
  - B. Water: Potable.
  - C. Pozzolanic Admixtures: Pozzolanic admixtures shall be fly ash or raw or calcined material pozzolans meeting the requirements of ASTM C 618 Type C or Type F with the exception of loss of ignition, where the maximum should be less than 6%. Although it is not mandatory to use fly ash concrete on the project, the Contractor may substitute up to 10% fly ash by weight for cement. The fly ash shall be included in the mix design.
  - D. Air-Entraining Admixtures: Air-entraining admixtures shall meet the requirements of ASTM C 260 and shall be added to the mixer in the amount necessary to produce the specified air content. The air-entrainment agent and the water reducer admixture shall be compatible.
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- E. Water-Reducing Admixtures: Water-reducing, set-controlling admixtures shall meet the requirements of ASTM C 494, Type A, water-reducing or Type D, water-reducing and retarding admixtures, and shall be added at the mixer separately from air-entraining admixtures in accordance with the manufacturer's printed instructions.
- F. Grout: The grout mixture can be any commercially made product for highway patching made of an epoxy base. The grout shall be compatible with concrete and steel and capable of binding the dowel with the concrete. The matrix may be extended with hard durable aggregate following the manufacturer's recommendations. The grout shall be discarded after 45 minutes and shall not be retempered. The minimum strength shall be equal to the strength of the concrete pavement. Samples of the grout shall be submitted to the Engineer before grouting begins. Grout shall have a minimum strength of 4,000 psi in 28 days.
- G. See Section 03375 – CONCRETE SEALING.
- H. Joint Fillers: All expansion joints shall be "non-gassing".

2.03 CONCRETE MIX, DESIGN, AND TESTING:

- A. Design mix to produce normal-weight concrete consisting of Portland cement, aggregate, pozzolanic admixture, water-reducing or high-range water-reducing admixture (super-plasticizer), air-entraining admixture, and water to produce the following properties:
  - 1. Compressive Strength: 4,000 psi, minimum at 28 days, unless otherwise indicated.
  - 2. Air Content: 5 to 8 percent.
  - 3. Cement Content: 6-1/2 sack mix as used in Phase I of this project.
- B. Design mix to be used for driveways and approaches shall have a compressive strength of 4000 psi minimum at 28 days, unless otherwise indicated (to be used to repair/replace damaged driveways).

2.04 RESTORATION:

- A. Topsoil: Natural, friable, fertile, fine loamy soil possessing the characteristics of representative topsoils in the vicinity which produces a heavy growth; free from subsoil, objectionable weeds, litter, sods, stiff clay, stones larger than 1" in diameter, stumps, roots, trash, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations. The Contractor is to verify the amount stockpiled and supply any additional as needed.
  - B. Sod: Sod shall be a species recommended by an experienced local A.N.A. – certified nursery. Sod to be strongly rooted, weed-disease and pest free and uniform in thickness. Blue grass sod shall be utilized in all disturbed areas except areas that are currently covered by zoysia grass. These areas shall be restored with zoysia sod. If zoysia sod is out of season, temporary
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planting will be provided. Replanting zoysia sod will then be required during subsequent planting season.

## 2.05 AGGREGATE BASE MATERIAL

- A. Aggregate Base Material: Aggregate base material shall be a Type I aggregate according to the St. Louis County Standard Specifications for Highway Construction.

## PART 3 - EXECUTION

### 3.01 SURFACE PREPARATION:

- A. The existing concrete to be removed shall be freed from all the pavement to remain unless jackhammers are used for the complete removal. This shall be accomplished by sawing through the complete depth of the slab. The pavement inside the full depth saw cut shall be broken by methods suitable to the Contractor and approved by the Engineer. The Contractor's removal operation shall not cause damage to utilities or drainage structures under the pavement. Any damage shall be repaired by the Contractor at no expense to the City. Excavation shall include an additional 6" of subgrade to accommodate the new 6" crushed stone base. Remove loose material from compacted subbase surface immediately before placing concrete.
- B. Proof-roll prepared subbase surface to check for unstable areas and need for additional compaction. In areas too small or confined to proof-roll, method shall be approved by the Engineer. Do not begin paving work until such conditions have been corrected and are ready to receive paving.
- C. Before placement of any PCC concrete, the subgrade shall be inspected before concrete is to be poured and approved by the Engineer or his/her representative, or corrected as necessary, using rock or cement to provide compaction to at least 90% of maximum density, modified proctor standard, ASTM D1557/AASHTO T180. Engineer/Director shall be given 24-hour advance notice of any concrete pour facilitate proper inspection.

### 3.02 FORM CONSTRUCTION:

- A. Set forms to required grades and lines, braced and secured.
  - B. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.
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3.03 CONCRETE PLACEMENT:

- A. Do not place concrete until subbase and forms have been checked for line and grade. Moisten subbase if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- B. Place concrete by methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, or side forms. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices. On street grade, above 5%, placement shall proceed from lower level going uphill, and adequate equipment and personnel shall be available to prevent undesirable downslope movement of placed concrete.
- C. Concrete placement during Hot or Cold Weather shall follow the requirements for Hot Weather or Cold Weather Concreting recommended by the American Concrete Institute.
- D. Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than 2 hours, place a construction joint.
- E. When adjacent pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained sufficient strength to carry loads without injury.

3.04 JOINTS:

- A. General: Construct weakened-plane (contraction), and construction joints true to line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated.
    - 1. When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.
  - B. Weakened-Plane (Contraction) Joints: Provide weakened-plane (contraction) joints, sectioning concrete into areas as shown on drawings. Construct weakened-plane joints for a depth equal to at least 1/4 concrete thickness, and width between 1/4 to 3/8 inch as follows:
    - 1. Sawed Joints: Form weakened-plane joints with powered saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action. Seal joint after sawing with appropriate joint filler.
    - 2. Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for more than 2 hours, except where such placements terminate at expansion joints.
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- a. Construct joints as shown or, if not shown, use standard metal keyway-section forms.
- b. Where load transfer-slip dowel devices are used, install so that one end of each dowel bar is free to move.
- c. Dowel bar/baskets shall be placed between adjoining slabs. It is not necessary to provide dowel bars between existing and new slabs.

3.05 CONCRETE FINISHING:

- A. After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture. A channel-type float (48-inch minimum) shall be used to minimize float deformation.
  - B. After floating, test surface for trueness with a 10-ft. straightedge. Distribute concrete as required to remove surface irregularities and refloat repaired areas to provide a continuous smooth finish.
  - C. Work gutters and back top edge of curb with an edging tool, and round to 2-inch radius, unless otherwise indicated. Eliminate tool marks on concrete surface.
  - D. After completion of floating and when excess moisture or surface sheen has disappeared, complete troweling and finish surface as follows:
    1. Broom finish by drawing a fine-hair broom across concrete surface perpendicular to line of traffic. Repeat operation if required to provide a fine line texture acceptable to Engineer.
    2. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Engineer.
  - D. Profile Index (PRI) shall be no greater than 30 inches/mile (PRI less than 30) in accordance with the American Concrete Pavement Association Technical Bulletin TB-006. O-C "Construction Smooth Concrete Pavements."
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**Acceptable Profile Index for Different Facilities**

ROAD CLASS	FACILITY TYPE	ACCEPTABLE PROFILE INDEX	
		< 45 MPH	> 45 MPH
A (1)	Interstate and Rural Primary (tangents and curves > 1500 ft. radius)	C	10
A (2)	Interstate and Rural Primary (curves > 850 ft. < 1500 ft. radius)	C	12
B	Urban Freeways	C	12
C	Ramps/Loops	30	30
D	Secondary Roads and Municipal Streets	30	12

3.06 CURING:

- A. Protect and cure finished concrete paving using white pigmented membrane-forming curing and sealing compound applied at a minimum of one gallon per 150 square feet or approved moist-curing methods. Apply per manufacturer's recommendations.
- B. Protect pavement from rain by an approved means during the curing process.

3.07 REPAIRS AND PROTECTIONS:

- A. Repair or replace broken or defective concrete, as directed by the Engineer.
- B. Drill test cores where directed by the Engineer when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to pavement with epoxy adhesive.
- C. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just before final inspection.

3.08 JOINT SEALING:

- A. Seal all joints in the new pavement including curbs and joints adjoining existing slabs.
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3.09 RESTORATION:

- A. All exterior ground within the limit of the contract shall be sodded or planted as required to remediate to preconstruction conditions. Furnish topsoil, finish grading, prepare seed bed, sod and maintain areas as indicated on the drawings. Replace disturbed plant and tree material.
- B. Restoration of the tree lawn shall be performed on the sixth day; no later than two days after the end of the five-day cure time.
- C. Restore all disturbed areas with "in kind materials" and workmanship.
- D. Sod: All disturbed ground within the limit of the contract shall be sodded as required to remediate to preconstruction conditions. Furnish topsoil, finish grading, prepare seed bed, seed and maintain areas as indicated on the drawings.
- E. Sod Bed Preparation: Grade areas to finish grade, filling as needed or removing surplus dirt, stones, debris, etc., and floating areas to a smooth, uniform grade as indicated on grading plans. All lawn areas are to slope to drain.
- F. Sod shall be cut and laid on site the same day. Only healthy vigorous growing sod is to be laid.
- G. Always lay sod across slope and tightly together so as to make a solid area.
- H. Roll of firmly but lightly tamp with a suitable wooden or metal tamper all new sod sufficiently to set or press sod into underlying soil.
- I. After sodding has been completed, clean up and thoroughly moisten, by sprinkler, newly sodded areas.

3.10 PAVEMENT BASE COURSE:

- A. General: Base course consists of placing base material, in layers of specified thickness, over subgrade surface to support a pavement course.
  - B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of base course.
  - C. Placing: Place base course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.
    - 1. When a compacted subbase course is indicated to be 6" thick or less, place material in a single layer.
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PART 4 - PAYMENT

4.01 GENERAL:

- A. The quantity of concrete pavement replaced shall be the number in place, completed and accepted by the Engineer.
- B. PCC STREET PAVEMENT REMOVAL AND REPLACEMENT – PER SQ. YD: Payment shall be at the unit price per square yard of concrete replaced which shall be full compensation for pavement removal; saw cutting; furnishing and placing all materials, including subgrade materials, crushed stone, all dowels, joint material for new joints, finishing, sealing and curing, including rolled lip curbing, and sealing of joints; and restoration. Restoration shall include remediation of lawn areas to preconstruction conditions; backfilling behind curbs and pavements; grading behind the curb line to assure proper drainage; sodding (including mulch); relocation of mail boxes (temporarily and permanent); and removal and replacement of brick and stone edging, wooded tie walls, boulders, flower boxes, trees, shrubs, plantings and all other appurtenances not covered by unit prices shall be considered as restoration.
- C. Drilling and testing of cores to determine if concrete is defective will be considered incidental to the contract with no additional compensation made. Filling of the core hole as stated in Repairs and Protections of this Section will also be considered incidental to the contract.
- D. Final cleanup of the surfaces will also be considered incidental to the contract.

**END OF SECTION 03520**

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**SECTION 03527 - CONCRETE CURB REPLACEMENT**

**PART 1 - GENERAL**

1.01 WORK INCLUDED:

- A. This section covers the work necessary to remove and construct concrete curbs complete.

1.02 GENERAL:

- A. Where the term "Standard Specifications" is used, such reference shall mean the 1980, or latest revision, of the St. Louis County Standard Specification for Highway Construction, except as otherwise provided in the contract documents. Where reference is made to a specific part of the Standard Specifications, such applicable part shall be considered as part of this Section of the Specifications. In case of conflict in the requirements of the Standard Specifications and the requirements stated herein, the requirements herein shall prevail.

1.03. DEFINITION:

- A. Relative Compaction: Relative compaction is defined as the ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by ASTM D 1557. Corrections for oversize materials may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.

**PART 2 - PRODUCTS**

2.01 FORMS:

- A. Materials for curb and gutter forms shall be 2-inch dressed dimension lumber or of metal of equal strength, free from defects which would impair the appearance or structural quality of the completed curb. Where short-radius forms are required, 1-inch dressed lumber or plywood may be used. Form material for the face of the curb shall not have any horizontal joints closer than 7 inches from the top of the curb. Provide stakes and bracing materials as required to hold forms securely in place. Metal forms shall be subject to approval of the Engineer.
  - B. Materials for sidewalk forms shall be 2-inch dressed lumber straight and free from defects or standard metal forms may be used. Where short-radius forms are required, 1-inch dressed lumber or plywood may be used. Provide stakes and bracing materials as required to hold forms securely in place.
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2.02 CRUSHED AGGREGATE BASE COURSE:

- A. Type I of the Standard Specifications.

2.03 EXPANSION JOINT FILLER:

- A. Expansion joint filler shall be 2-inch or 3/4 inch thick, preformed and nongassing.

2.04 CONCRETE:

- A. Concrete shall have a compressive strength of 4,000 psi at 28 days. Conform to Section 03520, PORTLAND CEMENT CONCRETE PAVING REPLACEMENT.

2.05 CURING AND SEALING COMPOUND:

- A. Conform to Section 03375, CONCRETE SEALING.

2.06 ACCEPTANCE OF MATERIALS:

- A. All materials shall be subject to inspection for suitability as the Engineer may elect, prior to or during incorporation into the work.

2.07 ASPHALTIC CONCRETE:

- A. Type X and C of the Standard Specifications.

PART 3 - EXECUTION

3.01 SURFACE PREPARATIONS:

- A. Curbs and Gutter: See Section 03570, PORTLAND CONCRETE PAVING, Section 3.01, Surface Preparation. Remove an additional 2' of pavement (over-dig).

3.02 SETTING FORMS:

- A. Construct forms to the shape, lines, grades, and dimensions called for on the drawings. Stake wood or steel forms securely in place, true to line and grade.
  - B. Forms on the face of the curb shall not have any horizontal joints within 6-1/2 inches of the top of the curb. Brace forms to prevent change of shape of movement in any direction resulting from the weight of the concrete during placement. Construct short-radius curved forms to exact radius. Tops of forms shall not depart from grade line more than 1/8 inch when checked with a 10-foot straightedge. Alignment of straight sections shall not vary more than 1/8 inch in 10 feet.
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3.03 CURB CONSTRUCTION:

- A. Construct curb to line and grade shown or established by the Engineer. Curbs and gutter shall conform to the details shown on the drawings.
- B. Place 2-inch thick preformed asphalt-impregnated expansion joints at intervals not exceeding 45 feet and at the beginning and end of curved portions of the curb, also at connections to existing curbs.
- C. Place contraction joints in the curb at intervals not exceeding 15 feet.
- D. Place, process, finish, and cure concrete in conformance with the applicable requirements of ACI 614, and this Specification. Wherever the requirements differ, the higher shall govern.
- E. Machine placing, forming and consolidation of concrete curb and gutters shall be in accordance with the Standard Specifications.
- F. As soon as the concrete has set sufficiently to support its own weight, remove the front curb form and finish all exposed surfaces. Finish formed face by rubbing with a burlap sack or similar device that will produce a uniformly textured surface, free of form marks, honeycomb, and other defects.
- G. All defective concrete shall be removed and replaced at the Contractor's sole expense. Upon completion of the finishing, apply an approved curing compound to exposed surfaces of the curb. Curing shall continue for a minimum of 5 days.
- H. Upon completion of the curing period, but not before 7 days has elapsed since pouring the concrete, backfill the curb with earth, free from rocks 2 inches and larger and other foreign material. Tamp backfill firmly in place.
- I. Finished curb shall present a uniform appearance for both grade and alignment. Remove any section of curb showing abrupt changes in alignment or grade, or which is more than 1/4 inches away from its location as staked and construct new curb in its place at the Contractor's sole expense.

3.04 PAVEMENT REPLACEMENT (OVER-DIG AREA):

- A. Place and compact 6" of Type I aggregate base. See Section 03520, PORTLAND CEMENT CONCRETE PAVING REPLACEMENT, Section 3.10, Pavement Base Course.
  - B. Place and compact 6" of Type X and 2" of Type C asphaltic concrete per the Standard Specifications.
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3.05 RESTORATION:

- A. Restore areas behind curb, including backfilling, sodding and restoration with in-kind materials and workmanship. See Section 03520, PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT, Section 3.09, Restoration.

PART 4 - PAYMENT

4.01 GENERAL:

- A. 4-INCH LIP CURB AND GUTTER – LINEAL FOOT: Payment shall be per lineal foot, which shall be full compensation for curb and over-dig removal, saw cutting, furnishing and placing all materials, including crushed stone, PC concrete, AC concrete, joint materials, finishing, curing, sealing of joints and restoration.
- B. Final cleanup of the surfaces will also be considered incidental to the contract.

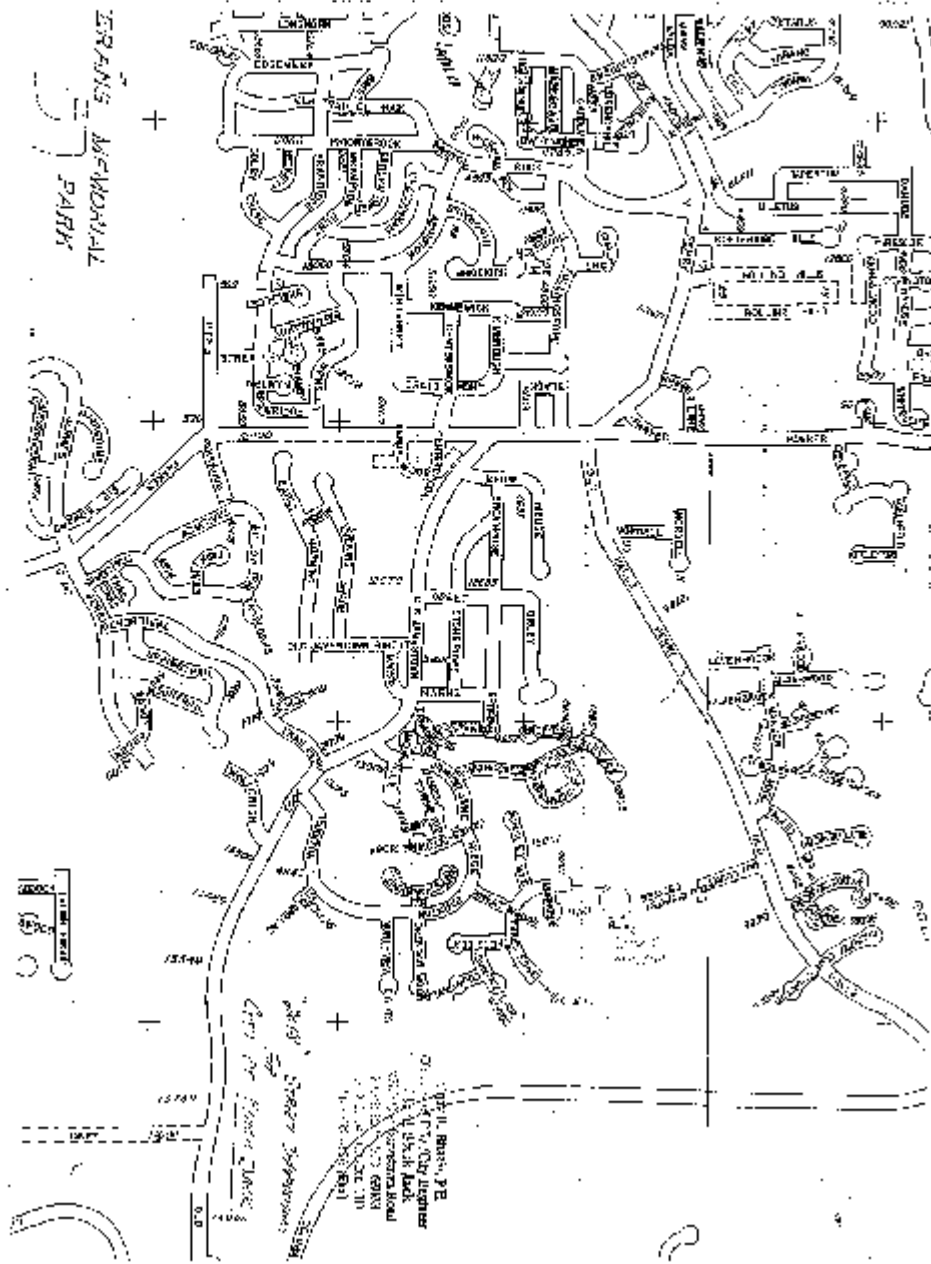
**END SECTION 03527**

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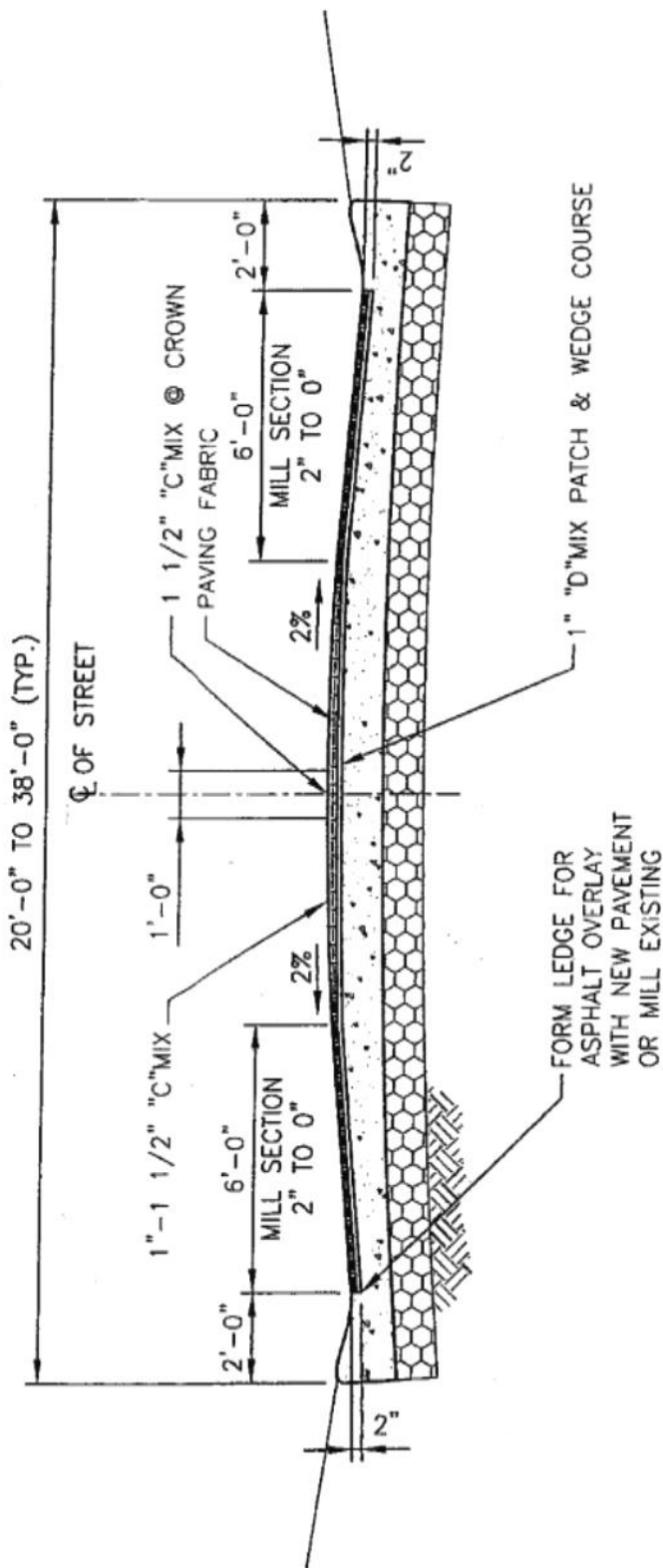
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## NOTICE TO CONTRACTORS REGARDING PREVAILING WAGE RATES

The prevailing hourly rate of wages for each type of workman required executing the contract, and the general prevailing rate for legal holiday and overtime work is determined by the State of Missouri, Department of Labor and Industrial Relations and issued in an Annual Wage Order ("AWO") for St. Louis, County and periodically updated. The selected Contractor hereby agrees to pay at least the prevailing hourly rate of wages for each type of workman needed to execute the Contract, and the general prevailing rate for legal holiday and overtime work as determined the State of Missouri for all work performed under this Contract during the course of work. A copy of updated prevailing wage rates and related documents can be inspected at the office of the Department of Public Works for the City of Black Jack and photocopied at Contractor's expense.









**TYPICAL MILL & OVERLAY CROSS SECTION**

N.T.S.

REV.		DATE	DESCRIPTION	APPROVED	DRAWN BY TWJ	CDG Engineers Architects Planners, Inc.	 <small>One Oregon Plaza 50th &amp; Arsenal Streets St. Louis, MO 63108 Tel. 314-567-1176</small>	
					CHECKED BY MWB			
CITY OF BLACK JACK, MISSOURI STREET IMPROVEMENT PROJECT PH. V TYPICAL MILL & OVERLAY CROSS SECTION STREET REHABILITATION				PROJECT NO. 01007	SCALE NTS			
				DRAWN NO. SK-01	DATE 01/18/06			