



VELSICOL CHEMICAL CORPORATION

CONTRACT DOCUMENTS & SPECIFICATIONS

Storm Sewer Construction

Plant Site Perimeter

St. Louis, Michigan

83165



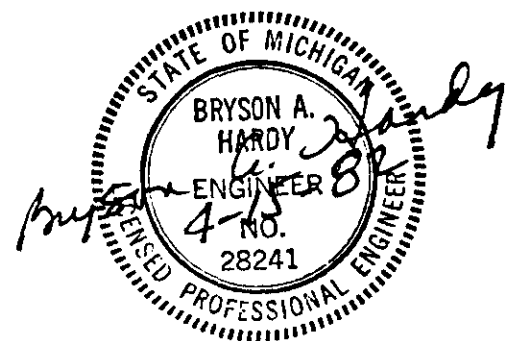
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**April, 1982
9-0803**

CONESTOGA-ROVERS & ASSOCIATES LIMITED

TABLE OF CONTENTS

Page

INFORMATION FOR BIDDERS

B.01	DATE AND PLACE FOR SUBMITTING BIDS	1
B.02	ENGINEER	1
B.03	BID DEPOSIT	1
B.04	EXAMINATION OF SITE	2
B.05	OMISSIONS, DISCREPANCIES AND INTERPRETATIONS	2
B.06	FEES, PERMITS, LICENSES	2
B.07	JURISDICTION	2
B.08	AGREEMENT TO BOND	3
B.09	BID LEFT OPEN	3
B.10	COMMENCEMENT AND COMPLETION	3

FORM OF BID

Fb.01	CONTRACT PRICES	4
Fb.02	PRICES AND QUANTITIES	4
Fb.03	MODIFICATIONS AND EXTRA WORK	4
Fb.04	PAYMENT FOR EXTRA WORK AND CREDIT FOR DELETIONS	5
Fb.05	COMMENCEMENT AND COMPLETION	9
Fb.06	AWARD OF CONTRACT	9
Fb.07	EXECUTION OF CONTRACT	9

	<u>Page</u>
Fb.08 INDEPENDENT CONTRACTOR	10
Fb.09 ADDENDA	10
BID SUMMARY SHEET	11
AGREEMENT	22
PERFORMANCE BOND	31
LABOR AND MATERIAL BOND	33
LIST OF SUB-CONTRACTORS	38
BID BOND	39

GENERAL CONDITIONS

Gc.01 DEFINITIONS	43
Gc.02 DOCUMENTS	45
Gc.03 SUB-CONTRACTORS	46
Gc.04 NOTICE	46
Gc.05 INFORMATION TO BE FURNISHED BY CONTRACTOR	47
Gc.06 COMMENCEMENT AND COMPLETION	47
Gc.07 USE OF PREMISES	48
Gc.08 UTILITIES	48
Gc.09 PUBLIC SAFETY	48
Gc.10 STATUTES	49
Gc.11 PROSECUTION OF THE WORK	49
Gc.12 RESTORATION	49
Gc.13 OPERATIONAL RISKS	50

	<u>Page</u>
Gc.14 WORKMANSHIP	50
Gc.15 OWNERSHIP OF PLANT AND MATERIAL	50
Gc.16 REJECTION OF WORK AND MATERIALS	50
Gc.17 MATERIAL	51
Gc.18 THE ENGINEER	52
Gc.19 COLD WEATHER	53
Gc.20 OWNERSHIP OF DOCUMENTS	53
Gc.21 DETAILS AND INSTRUCTIONS	53
Gc.22 LIABILITY	54
Gc.23 LIABILITY INSURANCE	54
Gc.24 VEHICLE INSURANCE	54
Gc.25 INSURANCE POLICIES AND CERTIFICATES	55
Gc.26 WORKMEN'S COMPENSATION	55
Gc.27 LOSS OR DAMAGE	55
Gc.28 HOURS OF WORK	56
Gc.29 PAYMENTS TO THE CONTRACTOR AND SUB-CONTRACTOR	56
Gc.30 PROGRESS CERTIFICATE	57
Gc.31 FINAL ACCEPTANCE CERTIFICATE	57
Gc.32 FINAL PAYMENT CERTIFICATE AND RELEASE OF HOLDBACK	58
Gc.33 VALUATION	58
Gc.34 TERMINATION OF CONTRACT	59
Gc.35 STANDARD SPECIFICATIONS	60
Gc.36 ASSIGNMENT	60

SPECIAL CONDITIONS OF THE CONTRACT

Sc.01	GENERAL	61
Sc.02	CONTRACTOR'S SCHEDULE FOR CONSTRUCTION	61
Sc.03	PERMANENT RECORD	61
Sc.04	INCLEMENT WEATHER	61
Sc.05	INSURANCE CLAIMS	61
Sc.06	PERFORMANCE AND PAYMENT BONDS	62
Sc.07	UTILITIES	62
Sc.08	FAILURE TO COMPLETE WORK ON TIME AND LIQUIDATED DAMAGES	62
Sc.09	EXTENSION OF TIME	63
Sc.10	ENGINEERING CHARGES	64
Sc.11	SAFETY AND SECURITY	64
Sc.12	INSURANCE	64
Sc.13	ENGINEER'S OFFICE	67
Sc.14	STANDARD SPECIFICATIONS	67
Sc.15	CONFIDENTIALITY	68
Sc.16	LABOR RELATIONS	68
Sc.17	IMPORTED FILL	68
Sc.18	ADJACENT LANDS	69
Sc.19	GUARANTEED PERIOD	69
Sc.20	MATERIALS TESTING	69
Sc.21	WATERMAIN	69

PROJECT SPECIFICATIONS

Ps.1	PROJECT SPECIFICATIONS - GENERAL	70
	Ps.1.01 CONTRACTOR'S OFFICE	70
	Ps.1.02 CONTRACTOR'S REPRESENTATIVE	69
	Ps.1.03 CONSTRUCTION UTILITIES AND MISCELLANEOUS FACILITIES	70
	Ps.1.04 SURVEYS	71
	Ps.1.05 LANDS BY OWNER	71
	Ps.1.06 LANDS BY CONTRACTOR	72
	Ps.1.07 EXISTING UTILITIES	72
	Ps.1.08 RESTORATION OF STRUCTURES AND SURFACES	73
	Ps.1.09 FIELD TESTS AND ADJUSTMENTS	74
	Ps.1.10 CLEANING UP	74
Ps.2	CONSTRUCTION	75
	Ps.2.01 GENERAL	75
	Ps.2.02 INITIAL SOIL EXCAVATION AND DISPOSAL	78
	Ps.2.03 TRENCH EXCAVATION	78
Ps.3	STORM SEWERS	80
	Ps.3.01 EXTENT OF WORK	80
	Ps.3.02 MATERIALS	80
	Ps.3.03 TOPSOIL UTILIZATION	81
	Ps.3.04 LINE AND GRADE	82
	Ps.3.05 TRENCH EXCAVATION	82
	Ps.3.06 LAYING AND JOINTING OF PIPE	83
	Ps.3.07 BEDDING	83
	Ps.3.08 SEWER TO BE KEPT CLEAN	83
	Ps.3.09 LENGTH OF OPEN TRENCH	84
	Ps.3.10 PROTECTION OF PIPES FROM DAMAGE	84
	Ps.3.11 MANHOLE BENCHING	84
	Ps.3.12 CONNECTION OF EXISTING SEWERS	84
	Ps.3.13 ELEVATION OF MANHOLES AND CATCHBASINS DURING CONSTRUCTION	85
	Ps.3.14 INFILTRATION AND EXFILTRATION TESTING	85
	Ps.3.15 BACKFILLING	85
	Ps.3.16 DISPOSAL OF EXCESS EXCAVATED MATERIAL	86
Ps.4	ROAD CONSTRUCTION	87
	Ps.4.01 GENERAL	87
	Ps.4.02 MATERIAL	87
	Ps.4.03 CONSTRUCTION	87

	<u>Page</u>
Ps.5 CAST IN PLACE CONCRETE	88
Ps.5.01 GENERAL	88
Ps.5.02 MATERIAL	88
Ps.5.03 PROPORTIONING	89
Ps.5.04 FORMWORK	89
Ps.5.05 CONCRETE PLACEMENT	89
Ps.5.06 COMPACTION	90
Ps.5.07 FINISHES	90
Ps.5.08 CURING - SEALING	90
Ps.5.09 TESTING AND INSPECTION	91
Ps.6 LANDSCAPING	93
Ps.6.01 GENERAL	93
Ps.6.02 MATERIALS	93
Ps.6.03 CONSTRUCTION METHODS	95
Ps.6.04 TESTING	97
Ps.6.05 MAINTENANCE	97
Ps.7 RIP RAP	98
Ps.7.01 GENERAL	98
Ps.7.02 MATERIAL	98
Ps.7.03 CONSTRUCTION	98

METHOD OF PAYMENT

Mp.1 GENERAL	99
Mp.2 CONSTRUCT STORM SEWER COMPLETE	100
Mp.2.01 PIPE INSTALLATION	100
Mp.2.02 DITCH INTERCEPTORS	100
Mp.3 CONSTRUCT MANHOLES, CATCHBASINS AND HEADWALLS	102
Mp.3.01 MANHOLES AND CATCHBASINS	102
Mp.3.02 HEADWALL	102
Mp.4 MISCELLANEOUS	103
Mp.4.01 EXCAVATE AND DISPOSE OF SURFACE MATERIAL	103
Mp.4.02 EASEMENT BACKFILL	103
Mp.4.03 REGRADE WATSON STREET	103
Mp.4.04 DRIVEWAY RESTORATION	104
Mp.4.05 DITCH REGRADING	104
Mp.4.06 CALCIUM CHLORIDE	104
Mp.4.07 SEED AND MULCH	104
Mp.4.08 TREES AND SHRUBS	105
Mp.4.09 HEADWALL RIP-RAP	105

INFORMATION FOR BIDDERS

B.01 DATE AND PLACE FOR SUBMITTING BIDS

Sealed Bids will be received by Velsicol Chemical Corporation (herein called the Owner) at 341 East Ohio Street, Chicago, Illinois, 60611

until _____ p.m. local time, _____, 1982.

Each Bid must be submitted in a sealed envelope, addressed to J.M. Rademacher, Velsicol Chemical Corporation, 341 East Ohio Street, Chicago, Illinois, 60611. Each sealed envelope containing a bid must be plainly marked on the outside as Bid for "Storm Sewer Construction, St. Louis, Michigan", and the envelope should bear on the outside the name of the Bidder and his address.

The Bid must be signed by an officer of the Company, designating the position and executed with the Company Seal.

In the case of an individual trading as a Company, the signatures of the person signing the Bid must be witnessed.

B.02 ENGINEER

The Engineer is Conestoga-Rovers & Associates Limited. Their address is 651 Colby Drive, Waterloo, Ontario, Canada, N2V 1C2.

B.03 BID DEPOSIT

Each Bid must be accompanied by a Bid Bond executed by the Bidder as Principal and having as surety thereon a Surety Company acceptable to the Owner, any of which must be in an amount not less than five percentum (5%) of the amount of the base bid listed in the Form of Bid. Such security will be returned to all except the three (3) lowest formal Bidders within ten (10) days after the formal opening of Bids, and the remaining cash, checks or Bid Bonds will be returned to the three (3) lowest Bidders within forty-eight (48) hours after the Owner and the accepted Bidder have executed the Contract, or if no Contract has been executed within thirty (30) days after the date of opening of Bids, upon demand of the Bidder at any time thereafter, so long as he has not been notified of the acceptance of his Bid. A certified cheque may be substituted for the Bid Bond requested.

B.04 EXAMINATION OF SITE

Each Bidder shall visit the site of the work before submitting his Bid and shall satisfy himself by personal examination as to the local conditions to be met with during the construction and conduct of the work. The Bidder is not to claim at any time after submission of his Bid that there was any misunderstanding of the terms and conditions of the Contract related to the site conditions.

B.05 OMISSIONS, DISCREPANCIES AND INTERPRETATIONS

Should a Bidder find omissions from or discrepancies in any of the Bid Documents or should he be in doubt as to the meaning of any part of such Documents, he should notify the Engineer, preferably in writing, and not later than five (5) days before the closing date for Bids. If the Engineer considers that a correction, explanation or interpretation is necessary or desirable, he will issue an addendum to all who have taken out Bid Documents and all Bidders shall include the requirement of the addenda in Bids to be submitted for consideration.

Should the Bidder not agree that the materials and methods specified, or designed on the Drawings, will provide an installation to meet the requirements of the project, he shall notify the Engineer in writing stating his reason for objection and may submit a suggested alternative. In such event, the Engineer will make the final decision in selecting the alternative to be implemented.

B.06 FEES, PERMITS, LICENSES

The Contractor shall be responsible for obtaining all permits and the licenses required in the performance of the work and shall include the cost of permits, licenses and inspection fees or other charges made by concerned authorities in his total Bid price.

B.07 JURISDICTION

Applicable Federal and State laws, municipal by-laws, permits and the rules and regulations of all authorities having jurisdiction over construction of the work shall apply to this Contract throughout and such laws, by-laws, permits and rules and regulations will be deemed to be included in this Contract as though written in full herein.

B.08 AGREEMENT TO BOND

Every Bid shall be accompanied by an "Agreement to Bond" which shall be completed by a Surety Company lawfully doing business in the State of Michigan.

B.09 BID LEFT OPEN

The Bidder shall keep his Bid open for acceptance for thirty (30) days after its submission.

B.10 COMMENCEMENT AND COMPLETION

Bidders shall be prepared to commence work within seven (7) days of being given written notice by the Engineer to proceed and to continue in an expeditious manner and to complete substantially all the work in accordance with the Contract requirements.

FORM OF BID

OFFERED BY: NAME _____

ADDRESS _____

DATE _____

TO: Mr. Jack Rademacher,
Vice-President Environmental Affairs,
Velsicol Chemical Corporation
341 East Ohio Street,
Chicago, Illinois
60611

Fb.01 CONTRACT PRICES

We, the undersigned, having examined the site of the work and all the Contract Documents, hereby agree to supply all material and to perform and complete all the work, in accordance with the Contract Documents to the satisfaction of the Engineer for the total Contract Price of (\$ _____).

/100 DOLLARS

(Write amount of total Contract Price in words)

Fb.02 PRICES AND QUANTITIES

The Schedule of Unit Prices is to be used as a basis of payment only and shall not be used as a description of the full extent of the work to be completed under this Contract. Any work required to properly complete the project, but not specifically listed as a separate item must be provided for and the cost of such work included in the appropriate item listed in the Schedule of Unit Prices.

Quantities in the Bid, unless otherwise expressed, are approximate only. Final payment will be based on the actual field measurements upon completion of the work.

Where "Lump Sum" or "Pay Quantity" are specified in the Bid, they shall represent payment in full for the completion of the work specified.

Fb.03 MODIFICATIONS AND EXTRA WORK

The Contractor, in entering into this Contract, understands that the Owner reserves the right to modify the arrangement, character or size of the work or appurtenances whenever in its opinion it shall deem it necessary or advisable to do so. Minor changes in the work not involving extra cost and not inconsistent with the purpose of the work may be made by verbal

order, but no modifications involving substantial extra work or changes shall be made unless ordered in writing by the Engineer. The Contractor shall and will accept such modifications when ordered in writing by the Engineer, and the same shall not vitiate or void this Contract. Any such modifications so made shall not, however, subject the Contractor to increased expenses without equitable compensation. If such modifications result in a decrease in the cost of work involved, an equitable deduction from the Contract price, to be determined by the Engineer on the basis of unit prices Bid and accepted, shall be made.

The Owner may make alterations in the line, grade, plan, form, dimensions or materials of the work, or any part thereof, either before or after the commencement of construction. If such alterations diminish the quantity of work to be done, no claim for damages or for anticipated profits on the work dispensed with shall be warranted thereby or claimed therefor; and if they increase the amount of work, such increase shall be paid for according to the quantity actually done at the unit prices bid for such work under this contract, or in case there is no price established it shall be paid for as extra work in accordance with Section Fb.04 of the Form of Bid.

The Owner will not accept any modifications that significantly changes the dimensions or appearance of any structure. If, however, the Contractor requests permission to use manufactured equipment that would necessitate changes in the interior layout of a structure such as the relocation of equipment, structural supports, platforms, access, and similar components, the Owner reserves the right to grant such permission. If permission for such modifications is granted, the Contractor shall be responsible for all resulting revisions. He shall be responsible for and pay the cost of the preparation of revisions in plans and the cost of any additional construction occasioned by the requested revisions. In the preparation of the revised plans, clearance access, walkway widths, headroom and other structural and equipment layout features shall be equal to those shown on the original Plans. All materials involved in the redesign shall conform to the applicable provisions of the Project Specifications.

Any modifications in work required under other contracts to accommodate the changed design will be incorporated in the appropriate Contracts and any resulting increases in contract prices will be deducted by the Owner from payments otherwise due the Contractor who initiated the changed design.

Fb.04 PAYMENT FOR EXTRA WORK AND CREDIT FOR DELETIONS

The Contractor shall and will do any work and furnish any materials not herein provided which, in the opinion of the Engineer, may be found necessary or advisable for the proper completion of the work or the purposes thereof, or any modification or alterations. All extra work and materials shall be ordered in writing by the Engineer, and in no case will any work or materials in excess of the amount shown by said Plans and Specifications be paid for unless so ordered. The Contractor further agrees that he will accept as full compensation for such extra work and

materials the unit prices Bid, in the case of items covered by unit prices in the proposal, and no more; and for such items as are not covered by a unit price, he will accept as full compensation the unit price or lump sum price agreed to by him and the Engineer.

Where there are no applicable unit prices for extra work ordered pursuant to this Specification and agreed prices cannot be readily established or substantiated, the Contractor shall be paid the actual and reasonable cost of:

1. Necessary materials (including transportation to the site). Materials used, if acquired by direct purchase, must be covered by receipted bills or acceptable invoices. All prices on used material incorporated in either temporary or permanent work shall be billed at a fair value, less than the original cost when new. A reasonable salvage credit shall be given for all salvagable material recovered. Salvage value of substantial material recovered must be determined jointly by the Contractor and the Engineer; plus
2. Necessary direct labor charges. Each class of labor shall be billed separately, preferably at actual payroll rates. Average rates based on different classes of labor, will not be accepted; plus
3. Payment required to be made to labor organizations under existing labor arrangements; plus
4. Sales taxes as required by law; plus
5. Equipment and plant rentals, other than small tools, as follows:

The base hourly rate shall be the daily rate as listed in the current year Blue Book divided by eight (8).

The first twenty (20) hours will be paid at 90% of the base hourly rate.

For twenty-one (21) to forty (40) hours, the rate will be 80% of the base hourly rate.

For over forty (40) hours, the rate will be 45% of the base hourly rate.

To each of the above rates, the estimated hourly operating cost, as listed in the Blue Book, shall be added.

The number of hours to be paid for shall be the number of hours that the equipment or plant is actually used on a specified force account.

Equipment to be used by the Contractor shall be specifically described and be of suitable size and suitable capacity required for the work to be performed. In the event the Contractor elects to use equipment of a higher rental value than that suitable for the work, payment will be made at the rate applicable for the suitable equipment. The equipment actually used and the suitable equipment paid for will be recorded as part of the record for

force account work. The Engineer shall determine the suitability of the equipment. If there is a differential in the rate of pay of the operator of oversize or higher rate equipment the rate paid for the operator will likewise be that for the suitable equipment.

In the event that a rate is not established in "The Blue Book" for a particular piece of equipment or plant, the Engineer shall establish a rate for that piece of equipment or plant that is consistent with its cost and use.

It is mutually understood that the base daily rates include all costs incidental to equipment and plant rentals including cost of moving to and from the site; plus

6. Fifteen percent (15%) of the total material cost (Bare Cost F.O.B.) and direct labor cost (actual hours worked multiplied by regular hourly wage rates) as compensation for profit and overhead.

If any of the work is performed by a subcontractor the Contractor shall be paid the actual and reasonable cost of such subcontracted work computed as outlined above or on such other basis as might be approved by the Engineer, plus an additional allowance of five percent (5%) of materials and direct labor to cover the Contractor's profit, superintendence, administration, insurance and other overhead. The cost of transportation of materials shall be excluded when computing the above described charges for profit and overhead.

In computing the value of a change order which involves additions and deductions of work not covered by unit prices in the Form of Bid, where the added work exceeds the omitted work, overhead and profit shall be computed on the amount by which the cost of the additional work exceeds the cost of the omitted work.

In computing the value of a change order which involves deductions and additions of work not covered by unit prices in the Form of Bid, where the omitted work exceeds the added work, the Contractor shall credit ten percent (10%) for overhead and profit on the amount of work deducted.

In computing the value of a change order wholly or partially involving the work covered by unit prices listed in the Form of Bid, the value of that portion of the work covered by the unit prices shall be determined for both additions and/or deductions of work using the Bid unit prices, with no additional allowance made or credit taken for overhead and profit.

Overhead may be defined to include the following items:

- a) Premium on bond;
- b) Premium on insurance required by the State other than Workmen's Compensation Insurance, public liability and property damage insurance, unemployment insurance, Federal old-age benefits, other payroll taxes and such reasonable charges that are paid by the Contractor pursuant to written agreement with his employee;

- c) All salary and expenses of executive officers, supervising officers or supervising employees;
- d) All clerical or stenographic employees;
- e) All charges for minor equipment, such as small tools, including shovels, picks, axes, saws, bars, sledges, lanterns, jacks, cables, pails, wrenches, air tools, pumps, etc. and other miscellaneous supplies and services;
- f) All drafting room accessories such as paper, tracing cloth, blueprinting, etc.

Payment for force account work will be made on the basis of the following reports:

1. The Contractor will deliver to the Engineer a daily summary of force account work done on the Contract. This summary on 8-1/2" x 11" paper will be delivered to the Engineer not later than closing time on the day following that for which the work is reported.
2. The summary shall contain:
 - a) A list of materials used indicating the amount and nature of each material. The cost (if known) should also be included. This must be later documented by proper receipts.
 - b) A list of equipment used indicating the number of hours used and the kind, type and size of equipment.
 - c) A list of personnel by name, including the hours and rate at which they were used on the force account work.
 - d) A statement of the work accomplished by force account for that day.
 - e) This summary will be dated and signed by the Contractor's authorized representative and the Engineer.
 - f) The Contract number and other identification as well as the name of the Contractor shall appear on the statement.
 - g) The Engineer will make any notations, remarks or comments on this form that may assist in final payments.

Contractor's Cost Records

The Contractor shall maintain records of all payrolls and of the details that comprise his total cost pursuant to any of the provisions under the headings, Extra Work and Deductions, and he shall at any time within three (3) years following the date of acceptance of the project, make such records available, upon request therefor, to the Owner for review and audit, if deemed necessary by the Engineer or the Owner. In case all or

part of such records are not made so available, the Contractor understands and agrees that any items not supported by reason of such unavailability of the records shall be disallowed, or if payment therefor has already been made, the Contractor shall, upon demand in writing by the Engineer or the Owner, refund to the Owner the amount so disclosed.

The Contractor agrees to prosecute such extra work with all reasonable diligence, and to employ thereon competent men. The Contractor shall give the Engineer or the Owner access to all accounts, bills, payrolls and vouchers relating to extra work not covered by unit prices unless a statement in writing of the actual cost of the same, fully itemized as to labor, materials and equipment is presented to the Engineer before the thirtieth (30th) day of the month following that during which each specific order was complied with by him.

Fb.05 COMMENCEMENT AND COMPLETION

Bidders shall be prepared to commence work within seven (7) calendar days of being given written notice by the Engineer to proceed and to continue in an expeditious manner and to complete substantially all the work in accordance with the Contract requirements. All of the work in this Contract shall be completed within one hundred (100) calendar days of the date of Notice to Proceed.

Fb.06 AWARD OF CONTRACT

Acceptance of a Bid will be evidenced by notice of award of Contract, in writing, delivered in person or by registered mail to the Bidder whose Bid is accepted. No other act of the Owner shall constitute acceptance of a Bid. The award of a Contract shall obligate the Bidder whose Bid is accepted to furnish a Performance Bond, evidence of insurance, evidence of good standing with the Workmen's Compensation Board and execute the Agreement set forth in the Contract Documents.

Fb.07 EXECUTION OF CONTRACT

The Contract Agreement shall be executed in quadruplicate by the successful Bidder and returned, together with contract bonds, evidence of insurance and required letters within seven (7) calendar days after receiving written notice of the award of the Contract. After execution by the Owner, one copy shall be returned to the Contractor.

If the Bidder refuses or fails to execute the Contract Agreement within seven (7) calendar days after the award, it will be considered that the Bidder has abandoned all rights and interests in the award in which case the Bid Bond, or certified check, accompanying the Bid Proposal shall become the property of the Owner.

Fb.08 INDEPENDENT CONTRACTOR

The Contractor shall be an independent contractor, maintaining control over his own employees and operations; and neither the Contractor nor anyone employed by the Contractor shall be deemed to be a servant, employee or agent of Velsicol. The Contractor shall be responsible for and shall withhold or pay, or both, as may be required by law, all federal state and local taxes and contributions with respect to, measured by, or based upon compensation paid to or earned by the Contractor's employees.

Fb.09 ADDENDA

We acknowledge receipt of Addenda numbered _____ to _____ inclusive, and the Contract Price includes the provisions set out in the issued Addenda.

BID SUMMARY SHEET

STORM SEWER CONSTRUCTION

ST. LOUIS, MICHIGAN

SECTION A	\$
SECTION B	\$
SECTION C	\$
	<hr/>
TOTAL BID PRICE	<u>\$</u>

		FOR	BID			
Item	Description	Estimated Quantity	Unit	Unit Price	Total Price	
<u>SECTION A. CONSTRUCT STORM SEWERS COMPLETE</u>						
A-1	MH10 to MCB9 18"Ø Conc. Pipe (CL. IV) Avg. depth = 3.5' to invert	185'	L.F.			
A-2	MCB9 to MH8 18"Ø Conc. Pipe (CL. IV) Avg. depth = 4.0' to invert	253'	L.F.			
A-3	Existing CB TO MH8 12"Ø Conc. Pipe		L.S.			
A-4	MH8 to MCB7 18"Ø Conc. Pipe (CL. IV) Avg. Depth = 7.0' to invert	187'	L.F.			
A-5	MCB7 to MCB6 21"Ø Conc. Pipe (CL. IV) Avg. Depth = 8.5' to invert	284'	L.F.			
A-6	MCB6 to MCB5 21"Ø Conc. Pipe (CL. IV) Avg. Depth = 8.5' to invert	270'	L.F.			
A-7	MCB5 to MCB4 21"Ø Conc. Pipe (CL. IV) Avg. Depth = 10.0' to invert	185'	L.F.			
A-8	MCB4 to MCB3 21"Ø Conc. Pipe (CL. IV) Avg. Depth = 13.0' to invert	172'	L.F.			
A-9	MCB3 to MCB2 21"Ø Conc. Pipe (CL. IV) Avg. Depth = 13.0' to invert	200'	L.F.			
A-10	MCB2 to MCB1 21"Ø Conc. Pipe (CL. IV) Avg. Depth = 11.0' to invert	200'	L.F.			
A-11	MCB1 to Headwall 21"Ø Conc. Pipe (CL. IV) Avg. Depth = 5.0' to invert	150'	L.F.			
A-12	Ditch Interceptors 12"Ø CMP (8' ea.)	3	Each			

TOTAL SECTION A

\$

FORM OF BID

Item	Description	Estimated Quantity	Unit	Unit Price	Total Price
<u>SECTION B. CONSTRUCT MANHOLES, CATCHBASINS & HEADWALL</u>					
B-1	Manhole 10	4	V.F.		
B-2	Manhole Catchbasin 9	4	V.F.		
B-3	Manhole 8	6	V.F.		
B-4	Manhole Catchbasin 7	8	V.F.		
B-5	Manhole Catchbasin 6	9	V.F.		
B-6	Manhole Catchbasin 5	9	V.F.		
B-7	Manhole Catchbasin 4	12	V.F.		
B-8	Manhole Catchbasin 3	14	V.F.		
B-9	Manhole Catchbasin 2	12	V.F.		
B-10	Manhole Catchbasin 1	10	V.F.		
B-11	Headwall		L.S.		
B-12	Supply and place rip rap at headwall	20	S.Y.		

TOTAL SECTION B

\$

FORM OF BID

Item	Description	Estimated Quantity	Unit	Unit Price	Total Price
<u>SECTION C. MISCELLANEOUS</u>					
C-1	Excavate upper one (1) foot of material from easements west of Watson St. and east of North St. including transport and disposal of excavated material in designated areas on Plant Site.	3400	C.Y.		
C-2	Backfill all excavated areas in Item C-1 with one (1) foot of imported topsoil.	3400	C.Y.		
C-3	Regrade Watson St. from Station 0+00 to Station 4+30 with imported granular material.	710	Ton		
C-4	Regrade driveway entrances with imported granular material.	50	Ton		
C-5	Regrade ditches as indicated on drawings.		L.S.		
C-6	Supply and place calcium chloride.	20,000	Gal.		
C-7	Seed, fertilize, and mulch.	3	Ac.		
C-8	Restore trees and shrubbery within construction easement west of Watson St.		L.S.		

TOTAL SECTION C

\$ _____

SECTION D. ADDITIONAL UNIT PRICES

The Contractor also agrees to accept payment at the following Bid Unit Prices for work done and materials supplied if and when directed by the Engineer. The Bid Prices include material, plant, labor, repairs, fuel, maintenance, overheads, supervision and profit in accordance with the specifications.

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Unit Price</u>
1.	Superintendent	Hour Day Week Month	
2.	Foreman, including truck	Hour Day Week Month	
3.	Operator	Hour Day Week Month	
4.	Laborer	Hour Day Week Month	
5.	Tradesman (electricians, plumbers, carpenters, etc.)	Hour Day Week Month	
6.	Teamster	Hour Day Week Month	
7.	Office Engineer/Clerk	Hour Day Week Month	
8.	Surveyor	Hour Day Week Month	
9.	Low-boy with tractor		
	1) 16 - 40 tons	Hour Day Week Month	

SECTION D. ADDITIONAL UNIT PRICES (Continued)

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Unit Price</u>
	ii) 40 - 60 tons	Hour	_____
		Day	_____
		Week	_____
		Month	_____
10.	Backhoe crawler mounted, hydraulically operated		
	i) less than 2 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	ii) 2 c.y. to 2.5 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	iii) greater than 2.5 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
11.	Front End Loader, Crawler mounted		
	i) less than 2 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	ii) 2 c.y. to 2.5 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	iii) greater than 2.5 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
12.	Front End Loader - Wheel mounted		
	i) less than 2 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	ii) 2 c.y. to 2.5 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____

SECTION D. ADDITIONAL UNIT PRICES (Continued)

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Unit Price</u>
	iii) greater than 2.5 c.y.	Hour Day Week Month	
13.	Tractor bulldozer crawler		
	i) less than 80 H.P.	Hour Day Week Month	
	ii) 80 - 140 H.P.	Hour Day Week Month	
	iii) Greater than 140 H.P.	Hour Day Week Month	
14.	Dump trucks		
	i) Single rear axle	Hour Day Week Month	
	ii) Tandem rear axle	Hour Day Week Month	
	iii) Tri rear axle	Hour Day Week Month	
	iv) Tractor-Trailer	Hour Day Week Month	

SECTION D. ADDITIONAL UNIT PRICES (Continued)

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Unit Price</u>
15.	Graders		
	i) Greater than 100 H.P.	Hour Day Week Month	
	ii) 80 - 100 H.P.	Hour Day Week Month	
	iii) less than 80 H.P.	Hour Day Week Month	
16.	Vibratory sheepsfoot roller self propelled		
	i) 10 Ton or less	Hour Day Week Month	
	ii) Greater than 10 Ton	Hour Day Week Month	
17.	Vibratory sheepsfoot roller - Towed		
	i) 10 ton or less	Hour Day Week Month	
	ii) Greater than 10 ton	Hour Day Week Month	
18.	Static pneumatic tired roller self propelled		
	i) 10 Ton or less	Hour Day Week Month	

SECTION D. ADDITIONAL UNIT PRICES (continued)

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Unit Price</u>
	ii) 10 ton to 25 ton	Hour Day Week Month	
	iii) Greater than 25 ton	Hour Day Week Month	
19.	Static pneumatic tired roller-towed		
	i) 10 Ton or less	Hour Day Week Month	
	ii) 10 Ton to 20 Ton	Hour Day Week Month	
	iii) Greater than 20 Ton	Hour Day Week Month	
20.	Crane-Crawler or Rubber Tired		
	i) 15 Ton or less	Hour Day Week Month	
	ii) 15 Ton to 25 Ton	Hour Day Week Month	
	iii) 25 Ton to 50 Ton	Hour Day Week Month	
	iv) Greater than 50 Ton	Hour Day Week Month	

SECTION D. ADDITIONAL UNIT PRICES (Continued)

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Unit Price</u>
21.	Rubber tired tractor backhoe		
	i) 1/2 c.y. or less	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	ii) 5/8 to 3/4 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	iii) Greater than 3/4 c.y.	Hour	_____
		Day	_____
		Week	_____
		Month	_____
22.	Attachments to backhoes		
	i) HoePac compactor or equal	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	ii) HoeRam breaker or equal	Hour	_____
		Day	_____
		Week	_____
		Month	_____
23.	Compressor (Including Hoses)		
	i) less than 125 CFM	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	ii) 126 CFM to 175 CFM	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	iii) 176 to 375 CFM	Hour	_____
		Day	_____
		Week	_____
		Month	_____
	iv) Greater than 375 CFM	Hour	_____
		Day	_____
		Week	_____
		Month	_____

SECTION D. ADDITIONAL UNIT PRICES (Continued)

<u>Item</u>	<u>Description</u>	<u>Unit</u>	<u>Unit Price</u>
24.	Farm tractor (all sizes)	Hour Day Week Month	
25.	Generator		
	i) 5 KVA or less	Hour Day Week Month	
	ii) 5.5 KVA to 15 KVA	Hour Day Week Month	
	iii) Greater than 15 KVA	Hour Day Week Month	
26.	i) load, haul, place and compact to 90% standard maximum proctor density imported fill as directed by the Engineer, borrow area 3 miles or less from site	bank c.y.	
	ii) incremental cost for each additional mile that borrow area is from site	bank c.y.	

The prices submitted in this Table of "Additional Unit Prices" (Section D of the Form of Bid) do not affect the Contractor's Bid price on the project. The prices will be reviewed by the Engineer, and the Owner and the Engineer reserve the right to delete any price of the "Additional Unit Prices" that in their opinion is unbalanced or excessive; in such case work done under the item deleted will be negotiated in accordance with Section Fb.04.

AGREEMENT

VELSICOL CHEMICAL CORPORATION

CONTRACT NO:

THIS AGREEMENT, entered into this _____ day of _____, 19____,
by VELSICOL CHEMICAL CORPORATION, hereinafter referred to as the "Owner",
and _____,

a Corporation organized and existing under the laws of the
State of Michigan

a partnership, consisting of _____

an individual conducting business as _____

the location of whose principal office is _____

hereinafter called the "Contractor".

WITNESSETH: That the Owner and the Contractor, for the consideration
hereinafter named agree as follows:

ARTICLE 1 WORK TO BE DONE

The Contractor shall:

- a) furnish all the materials (except as provided in Article 3), appliances, tools and labor of every kind required, and construct and complete in the most substantial and workmanlike manner, the construction, improvement or reconstruction of the project generally identified and shown on the Plans entitled "Storm Sewer Construction, St. Louis, Michigan", in accordance with the Contract Documents and Specifications entitled "Storm Sewer Construction, St. Louis Michigan", which contain the information for bidders; form of proposal, agreement, and bonds; general specifications and conditions of contract; materials of construction; and payment items; and
- b) do everything required by the Contract (Contract Documents) as defined herein.

ARTICLE 2 DOCUMENTS FORMING THE CONTRACT

The Contractor (and Contract Documents) shall be deemed to include: the Contractor's proposal (Form of Bid); the Agreement; the General and Special Conditions; the "Specifications" referred to above; the plans; any addenda to Specifications if the same are issued prior to the date of receipt of proposal; and all provisions required by law to be inserted in the Contract whether actually inserted or not.

The Contract Documents consist of the sections listed below and should conflict appear in the various sections, priority shall be given in order of appearance in the following lists.

1. Agreement
2. Plans
 - (a) General
 - (b) Details
3. Special Conditions, Bidding Information, Form of Bid
4. Specifications
5. General Conditions

ARTICLE 3. MATERIAL FURNISHED BY OWNER

The Owner will furnish to the Contractor within three (3) miles of the site of work, without cost, topsoil and clay fill at source, lying in its natural state and condition, in quantity sufficient to complete the scope of work, and of quality to meet the detailed specifications for each material.

ARTICLE 4. EXAMINATION OF DOCUMENTS AND SITE

The Contractor agrees that before making his proposal he carefully examined the Contract Documents, together with the site of the

proposed work, as well as its surrounding territory, and is fully informed regarding all of the conditions affecting the work to be done and labor and materials to be furnished for the completion of this Contract, including the existence of structures of municipal and other public service corporations on, over or under the site, and that his information was secured by personal investigation and research and not from the estimates or records of Velsicol Chemical Corporation, and that he will make no claim against the Owner by reason of estimates, tests or representations of any officer or agent of the Owner. When used in the Contract Documents, the term site shall refer to the lands privately owned, or owned by the City of St. Louis which run along the south and east perimeter of the Plant Site owned by Velsicol Chemical Corporation St. Louis, Michigan on which the storm sewer installation will take place.

ARTICLE 5 DATE OF COMMENCEMENT

The Contractor further agrees that he will begin the work herein embraced within seven (7) days of the effective date hereof, unless the consent of the Owner, in writing, is given to begin at a later date.

ARTICLE 6 ALTERATIONS AND OMISSIONS

The said work shall be performed in accordance with the true intent and meaning of the Contract Documents without any further expense of any nature whatsoever to the Owner other than the consideration named in this Agreement.

The Owner reserves the right, at any time during the progress of the work, to alter the Plans or omit any portion of the work as it may deem reasonably necessary; making allowances for additions and deductions at the prices named in the proposal, for this work without constituting grounds for any claim by the Contractor for allowance for damages or for loss of anticipated profits, or for any variations between the approximate quantities and the quantities of the work as done.

ARTICLE 7 NO COLLUSION OR FRAUD

The Contractor hereby agrees that the only person or persons interested as principal or principals in the Bid or proposal submitted by the Contractor for this Contract are named therein, and that no person other than those mentioned therein has any interest in the above-mentioned proposal or in securing the award, and that this Contract has been secured without any connection with any person or persons other than those named, and that the proposal is in all respects fair and was prepared and the Contract was secured without collusion or fraud and that neither any officer nor employee of Velsicol Chemical Corporation has or shall have a financial interest in the performance of the Contract or in the supplies, work or business to which it relates, or in any portion of the profits thereof.

ARTICLE 8 PAYMENT OF ESTIMATES

As the work progresses in accordance with the Contract and in a manner that is satisfactory to the Owner, the Owner hereby agrees to make payment to the Contractor therefor, based upon the proposal attached hereto and made a part hereof, as follows: The Owner shall once in each month and on such days as it may fix, make an estimate of the quantity of work done and of material which has actually been put in place in accordance with the terms and conditions of the Contract, during the preceding month, and compute the value thereof and pay to the Contractor the moneys due within 30 days of certification of the progress certificate by the Engineer. No monthly estimate shall be rendered unless the value of the work done equals five (5) percent of the Contract amount or \$1,000.00, whichever is lesser. Semi-monthly estimates may be rendered provided that the value of the work performed in two (2) successive weeks is more than \$50,000.00. The Owner shall retain ten per cent (10%), until the date of substantial completion, of all payments due the Contractor under this Contract.

No payment shall be made to the Contractor hereunder unless Contractor shall have delivered to Owner, good and sufficient Contractors' and Sub-Contractors' sworn statements listing the names of all parties furnishing labor or materials, and the amounts due, or to become due to each; and unless Contractor shall have delivered to Owner good and valid waivers of lien of every party supplying labor and materials in the amount of all prior payments to such party.

All such sworn statements and waivers of lien shall comply with the Mechanics Lien laws of the State of Michigan and shall be in a form satisfactory to the Owner and Engineer.

ARTICLE 9 NO ESTIMATE ON CONTRACTOR'S NON-COMPLIANCE

It is further agreed that so long as any lawful or proper direction concerning the work or material given by Velsicol Chemical Corporation, or its representative, shall remain uncomplied with, the Contractor shall not be entitled to have any estimate made for the purpose of payment, nor shall any estimate be rendered on account of work done or material furnished until such lawful or proper direction aforesaid has been fully and satisfactorily complied with.

ARTICLE 10 SUBSTANTIAL COMPLETION

When the work or major portions thereof as contemplated by the terms of the Contract are, in the opinion of the Engineer, substantially complete, the Contractor shall submit to the Owner a requisition for payment of the remaining amount of the Contract balance. The Owner agrees to pay to the Contractor the remaining Contract balance less two times the estimated value of work items remaining to be completed, and an amount necessary to satisfy any claims, or judgements against the Contractor which have not been suitably discharged.

This Certificate shall be submitted to Velsicol Chemical Corporation for approval. The right, however, is hereby reserved to Velsicol Chemical Corporation to reject the whole or any portion of the Final Certificate, should the said certificate of the Engineer be found or known to be inconsistent with the terms of the Agreement or otherwise improperly given. All Certificates upon which partial payments may have been made being merely estimates, shall be subject to correction in the Final Certificate.

Final payment will be made by the Owner to the Contractor within sixty (60) days of the Owners approval of the Final Certificate.

ARTICLE 13 TAXES

The Contractor's prices set forth hereof does include sales, use, excise or similar taxes. Contractor agrees to provide proof of payment of sales tax at the time of invoice for all items covered by the invoice. Said proof is a condition precedent to Velsicol's obligation to pay.

ARTICLE 14 RIGHT TO SUSPEND WORK AND CANCEL CONTRACT

It is further agreed that if at any time during the prosecution of the work Velsicol Chemical Corporation shall determine that the work upon the Contract is not being performed according to the Contract or for the best interest of the Owner, the execution of the work by the Contractor may be temporarily suspended by Velsicol Chemical Corporation, who may then proceed with the work under its own direction in such manner as will accord with the Contract Specifications and be for the best interests of the Owner; or he may terminate the Contractor's employment under the Contract while it is in progress, and thereupon proceed with the work, in affirmance of the Contract, by Contract negotiated or publicly let, by the use of his own forces, by calling upon the surety to complete the work in accordance with the Plans and Specifications or by a combination of any such methods; or he may cancel the Contract and either readvertise and relet, or complete the work under his own direction in such manner as will accord with the Contract Specifications and be for the interests of the Owner; any excess in the cost of completing the Contract beyond the price for which it was originally awarded shall be charged to and paid by the Contractor failing to perform the work or his surety.

Whenever the Owner or the Engineer determines to suspend or stop work under the Contract, a written notice sent by mail to the Contractor at his address and to the sureties at their respective addresses, shall be sufficient notice of its action in the premises.

The Engineer shall be the sole judge as to the scope and value of uncompleted work items.

The amount of retention held by the Owner following substantial completion will not be less than five (5) per cent of the Contract value.

ARTICLE 11 PRELIMINARY ACCEPTANCE OF WORK

When in the opinion of the Engineer representing Velsicol Chemical Corporation the Contractor has fully performed the work under the Contract, the Engineer shall recommend to Velsicol Chemical Corporation the preliminary acceptance of the work so completed. If Velsicol Chemical Corporation accepts the recommendation of the Engineer, it shall thereupon by letter notify the Contractor of such preliminary acceptance, and copies of such acceptance shall be sent to other interested parties.

After preliminary acceptance of the work, the Engineer shall prepare an Agreement of work done from actual measurements and computations relating to the same, and he shall compute the value of such work under and according to the terms of the Contract. This Agreement shall be certified as to its correctness by the Engineer and submitted to Velsicol Chemical Corporation for approval. The right, however, is hereby reserved to Velsicol Chemical Corporation to reject the whole or any portion of the Agreement, should the said Certificate of the Engineer be found or known to be inconsistent with the terms of the Agreement or otherwise improperly given. All Certificates upon which partial payments may have been made being merely estimates, shall be subject to correction in the Final Certificate or Final Agreement.

Following acceptance by Velsicol Chemical Corporation of the Agreement of work done, prepared by the Engineer, the Owner will pay to the Contractor the full value of the Contract less two (2) per cent of the Contract value, the two (2) per cent being retained by the Owner until Final Acceptance.

ARTICLE 12 FINAL ACCEPTANCE AND PAYMENT

Prior to Final Acceptance of the Project and expiration of the Guarantee Period, the Engineer and Contractor shall perform a joint Final Inspection of the completed works. The Engineer will then prepare a schedule of deficient or inadequate work. The Contractor will promptly repair or replace all deficient work so listed to the satisfaction of the Engineer. Following completion of repairs, the Engineer will prepare a Final Certificate which shall:

- a) detail the final value of the Contract
- b) certify that all work performed is in accordance with the Terms and Conditions of the Contract

ARTICLE 15 DETERMINATION AS TO VARIANCES

In case of any ambiguity in the Plans, Specifications or maps, or between any of them, the matter must be immediately submitted to the Engineer, who shall adjust the same, and his decision in relation thereto shall be final and conclusive upon the parties.

ARTICLE 16 REMOVAL OF REJECTED WORK AND MATERIAL

The Contractor agrees that all work or material which may be rejected by the Owner or its representative shall be at once removed from the site of the work by the Contractor at his own expense, and replaced by work or material satisfactory to the Owner.

ARTICLE 17 SUCCESSORS AND ASSIGNS

This agreement shall bind the successors, assigns, and representatives of the parties hereto.

ARTICLE 18 PATENTS

- a) With regard only to equipment independently designed or manufactured by the Contractor, the Contractor shall defend and hold the Owner harmless from all costs, damages and expenses of litigation arising from infringement or claim of infringement of existing U.S. patents relating to such equipment or the use thereof by the Owner.
- b) With regard to equipment purchased by the Contractor for installation in the project, the Contractor shall secure from manufacturers, vendors and Subcontractors for such equipment the following hold harmless clause:

Seller shall defend and hold Buyer and Buyer's customer harmless from liability of every nature, including costs and expenses, for or on account of Seller's manufacture, sale or use of any patented or unpatented invention, article or appliance in the course of Seller's performance hereunder, the use and sale thereof by Buyer and the use thereof by use of any patented or unpatented invention, article or appliance in the course of Seller's performance hereunder, the use and sale thereof by Buyer and the use thereof by Buyer's customer; provided, however, that the foregoing provisions shall not extend to infringement to the extent that such infringement results from compliance with designs or drawings originating with Buyer or Buyer's customer.

- c) Should the Owner authorize the Contractor to purchase or design equipment in accordance with specifications provided by Owner, the Owner shall defend and hold the Contractor harmless from all costs, expenses and damages arising from infringement or claim of

infringement of existing U.S. patents with respect to such equipment brought against the contractor.

- d) The Owner shall defend and hold the Contractor harmless from all costs, expenses and damages arising from infringement or claim of infringement of any existing U.S. patents by any process to be embodied in the project based upon information supplied by the Owner.
- e) The obligations with respect to defense and hold harmless as contained in this Article shall be conditioned upon the party to be defended or held harmless giving prompt notification of any claim of infringement and on the cooperation of such party in the defense of any infringement claim brought against the other.

ARTICLE 19 HOLD HARMLESS

- a) Contractor agrees to indemnify and hold harmless Owner, its agents officers and employees against all claims, suits, judgements and costs for injury or destruction of property or persons including death (including without limitation amounts paid pursuant to investigations or settlements and as counsel fees) in consequence of any claim by a third party against Owner, including without limitation any claim by an employee of Owner, Contractor or its Subcontractor and any claim by employees of another contractor or its subcontractor whether filed before or after payment, based on actual or alleged damage to or destruction of property or injury to persons caused by Contractor or any of his Subcontractors or by their respective employees in connection with the work.
- b) Contractor agrees to hold harmless and indemnify Owner for all claims, suits, judgements, settlements or costs for personal injuries to Contractor's employees or its Subcontractors' employees while on Owner's premises unless caused by Owner's sole negligence.
- c) Contractor agrees to hold harmless and indemnify Owner for all claims, suits, judgments, settlements or costs resulting from Contractors breach of any covenant, term or condition contained in this Agreement, including the General and Special Conditions attached hereto.

ARTICLE 20 WAIVER

The failure of either party to insist in one or more instances upon the terms of the Contract, or to exercise any right hereunder, shall not be construed as a waiver of the future performance of any such term or the future exercise of such right, and the obligation of each party with respect to such future performances shall continue in full force and effect.

ARTICLE 21 LIENS

The Contractor shall, without cost to the Owner, obtain by bonding or otherwise, the prompt discharge of any lien or liens which may be filed in connection with the work hereunder. Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall have delivered to the Owner a complete release of all liens arising or which may arise out of this Contract or receipts in full in lieu thereof, and, in either case, an affidavit of the chief financial officer of the Contractor stating that the releases and receipts include all the labor and material for which a lien could be filed; but the Contractor may, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner, to indemnify him against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may pay in discharging a lien, including all costs and reasonable attorneys' fees.

IN WITNESS WHEREOF:

The parties hereto executed this Agreement the day and year first written.

VELSICOL CHEMICAL CORPORATION

CONTRACTOR

BY _____

BY _____

TITLE

TITLE

WITNESS _____

WITNESS _____

PERFORMANCE BOND

1. KNOW ALL MEN BY THESE PRESENTS, that we (hereinafter called the "Principal")

_____ of _____
_____ of _____
_____ of _____
_____ of _____
and _____ of _____

(hereinafter called the "Surety") are held and firmly bound unto Velsicol Chemical Corporation 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 or assignees and the said SURETY binds itself, its successors or assigns, jointly and severally, firmly by these presents.

2. SIGNED, SEALED AND DATED this _____ day of _____, 19____,
3. WHEREAS, said Principal has entered into a certain written Contract bearing date on the _____ day of _____, 19____, with Velsicol Chemical Corporation for the Storm Sewer Construction, St. Louis, Michigan.

Now, therefore, THE CONDITION OF THIS OBLIGATION IS SUCH that if the said Principal shall well, truly and faithfully perform the work in accordance with the terms of the Contract, and with the Plans and Specifications, and will commence and complete the work within the time prescribed in the Contract, on part to be kept and performed according to the terms and tenor of said Contract, and shall protect the said Velsicol Chemical Corporation against, and pay any excess of cost as provided in said Contract, and all amounts, damages, costs, and judgments which may be recovered against said State or its officers or agents or which Velsicol Chemical Corporation may be called upon to pay to any person or corporation by reason of any damages, direct or indirect, arising or growing out of the doing of said work, or from the negligence, nonfeasance, misfeasance or malfeasance of any office, agent or employee of Velsicol Chemical Corporation thereof, or suffered or claimed on account of said construction of the project during the time thereof and until the final completion and acceptance of the work, or the manner of doing same, or the neglect of the said Principal, or

LABOR AND MATERIAL BOND

KNOW ALL MEN BY THESE PRESENTS, that _____ of
"Principal" and the _____ hereinafter called the
and existing under the laws of the State of Michigan having its principal office
in the City of _____, (hereinafter called the "SURETY"), are held
and firmly bound unto the Velsicol Chemical Corporation (hereinafter called the
"OWNER"), in the full and just sum of _____
good and lawful money of the United States of America, for
payment of which said sum of money, well and truly to be made and done, the said
Principal binds himself, his heirs, executors and administrators, successors and
assigns, and the said Surety binds itself, its successors and assigns jointly and
severally, firmly by these presents:

SIGNED, Sealed and Dated this _____, 19____ A.D.

WHEREAS, said PRINCIPAL has entered into a certain written Contract, bearing date
with the

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said
Principal shall promptly pay all moneys due to all persons furnishing labor or
materials to him or his subcontractors in the prosecution of the work provided
for in said Contract, then this obligation shall be void, otherwise to remain in
full force and effect;

Further, provided, that the place of trial of any action on this bond shall be in
the county in which the said Contract was to be performed, or if said Contract
was to be performed in more than one county, then in any such county, and not
elsewhere.

(Acknowledgment by principal, unless it be a corporation)

VELSICOL CHEMICAL CORPORATION)
) ss.:
COUNTY OF _____)

On this _____ day of _____, 19____, before me personally came
_____ to me known to be the person described in
and who executed the foregoing instrument and he acknowledged that he executed
the same.

Notary Public _____ County

his agents, or servants, or the improper performance of the said work by the said Principal, or his agents, or servants, or from any other cause, then this obligation shall be null and void, otherwise to remain in full force and virtue.

The Surety hereto agrees that in case the said Contract is forfeited by the Principal hereto in the manner provided in the Contract and the Principal fails to deposit to the credit of Velsicol Chemical Corporation the excess cost of completing the work occasioned by the failure of the Contractor, then and in that case the Surety will within ten (10) days from the date of notice by Velsicol Chemical Corporation of the amount of such excess cost deposit to the credit of said Department such sum of money as the said Department certifies to the Surety as being the excess above the funds remaining available for this Contract, free from all liens and incumbrances in the hands of Velsicol Chemical Corporation.

And the said SURETY hereby stipulates and agrees that no changes, extension, alteration, deduction or addition in or to the terms of the said Contract or the Plans or Specifications accompanying the same, shall in any way affect the obligations of said SURETY of his bond.

CORPORATE SEAL OF PRINCIPAL
if a CORPORATION

CORPORATE SEAL OF SURETY

L.S.

L.S.

L.S.

L.S.

L.S.

(Acknowledgment by Principal, if a corporation)

VELSICOL CHEMICAL CORPORATION)

) ss.:

COUNTY OF _____)

On this _____ day of _____, 19____, before me personally came _____ to me known, who being duly sworn, did depose and say that he resides in _____ that he is the _____ of the _____ the corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

(Seal)

Notary Public

(Acknowledgment by Surety Company)

VELSICOL CHEMICAL CORPORATION)

) ss.:

COUNTY OF _____)

On this _____ day of _____, 19____, before me personally came _____ to me known, who being duly sworn, did depose and say that he resides in _____ that he is the _____ of the _____ the corporation described in and which executed the foregoing instrument; that he knew the seal of said corporation; that the seal affixed to said instrument was such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that he signed his name thereto by like order.

(Seal)

Notary Public

(The Surety Company must append statement of its financial condition and a copy of the resolution authorizing the execution of Bonds by officers of the Company)

IN TESTIMONY WHEREOF, the said PRINCIPAL has hereunto set his (their, its) hand and seal and the said Surety has caused this instrument to be signed by its

President and its _____

Secretary, and its corporate seal to be hereunto affixed, the day and year first above written.

SIGNED, SEALED AND DELIVERED
in the presence of

(Corporate seal of
Principal if a
Corporation

(L.S.)

(L.S.)

(L.S.)

Principal

Company

Of _____

By _____

(Title of Officer)

Attest _____

(Title of Officer)

Surety

(Corporate Seal
of Surety Co)

(Acknowledgment by Principal, unless it be a corporation)

VELSICOL CHEMICAL CORPORATION)

) ss.:

COUNTY OF _____)

On this _____ day of _____, 19____, before me personally came _____ to me known and known to me to be the person described in and who executed the foregoing instrument and acknowledged that he executed the same.

Notary Public

County

(Acknowledgment by Principal, if a corporation)

VELSICOL CHEMICAL CORPORATION)
) ss.:
COUNTY OF _____)

On this _____ day of _____, 19____, before me personally
came _____ to me known, who being duly sworn,
did depose and say that he resides in _____
that he is the _____ of the _____
the corporation described in and which executed the foregoing instrument; that he
knew the seal of said corporation; that the seal affixed to said instrument was
such corporate seal; that it was so affixed by order of the Board of Directors of
said corporation, and that he signed his name thereto by like order.

Notary Public

(Acknowledgment by Surety Company)

VELSICOL CHEMICAL CORPORATION)
) ss.:
COUNTY OF _____)

On this _____ day of _____, 19____, before me personally
came _____ to me known, who being duly sworn,
did depose and say that he resides in _____
that he is the _____ of the _____
the corporation described in and which executed the foregoing instrument; that he
knew the seal of said corporation; that the seal affixed to said instrument was
such corporate seal; that it was so affixed by order of the Board of Directors of
said corporation, and that he signed his name thereto by like order.

Notary Public

VELSICOL CHEMICAL CORPORATION

I hereby approve the foregoing Contract and bond as to form and manner of execution.

DATED _____

Corporate Counsel

VELSICOL CHEMICAL CORPORATION

I hereby approve the foregoing Contract and bond.

DATED _____

Vice President
Health and Regulatory Affairs

LIST OF SUB-CONTRACTORS

The following is a list of Sub-contractors or Sub-trades together with a description of the items showing the portion of the work to be undertaken by each.

NAME	ADDRESS	ITEM DESCRIPTION
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		

The employment of Sub-contractors or Sub-trades other than those listed above will not be permitted without written approval from the Engineer. Information indicating how the Sub-contractors or Sub-trades listed above qualify in experience and background required of the Contractor in accordance with this Document shall be requested by the Engineer before award of the Contract.

DATED THIS _____ DAY OF _____, 19__

Signature of Witness

Signature of Authorized Person
signing for Contractor

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____
_____, as Principal, and _____
_____, as Surety, are hereby held and
firmly bound unto Velsicol Chemical Corporation as Owner
in the penal sum of _____
for the payment of which, well and truly to be made, we hereby jointly and
severally bind ourselves, our heirs, executors, administrators, successors and
assigns.

Signed, this _____ day of _____, 19__.

The condition of the above obligation is such that whereas the Principal has
submitted to Velsicol Chemical Corporation a certain Bid,
attached hereto and hereby made a part hereof to enter into a contract in
writing, for the Storm Sewer Construction,
St. Louis, Michigan

NOW, THEREFORE,

- (a) If said Bid shall be rejected, or in the alternate,
- (b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid.

(ACKNOWLEDGMENT BY PRINCIPAL UNLESS IT BE A CORPORATION)

STATE OF _____)
COUNTY OF _____) ss:

On this _____ day of _____, 19__

before me personally came _____
to me known and known to me to be the person described in and who executed the
foregoing instrument, and who acknowledged to me the execution thereof for the
purposes therein mentioned.

Notary Public

(ACKNOWLEDGMENT BY PRINCIPAL, IF A CORPORATION)

STATE OF _____)
COUNTY OF _____) ss:

On this _____ day of _____, 19__

before me personally came _____
to me known, who, being by me duly sworn did depose and say that he resides
in _____ that he is the _____
of _____, the corporation which executed
the foregoing instrument; that he knows the seal of said corporation; that the
seal affixed to said instrument is such corporate seal; that it was so affixed by
order of the directors of said corporation, and that he signed his name thereto
by like order.

Notary Public

(S E A L)

(ACKNOWLEDGMENT BY SURETY COMPANY)

STATE OF _____)
COUNTY OF _____) ss:

On this _____ day of _____, 19____
before me personally came _____
to me known, who being by me duly sworn, did depose and say that he resides in

that he is the _____ of the _____
_____, the corporation
described in and which executed the within instrument; that he knows the seal of
said corporation; that the seal affixed to said instrument is such corporate
seal; that it was so affixed by the order of the Board of Directors of said
corporation and that he signed his name thereto by like order; and that the
liabilities of said company do not exceed its assets as ascertained in the manner
provided by the laws of the State of Michigan.

Notary Public

(S E A L)

Then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligation of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

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

Principal

Surety

By _____

(S E A L)

GENERAL CONDITIONS

Gc.01 DEFINITIONS

a) Contract

"Contract" means the Contract to do the work, the Bonds or Securities, the Addenda (if any), the Specifications, the General and Special Conditions, the Bidding Information, the List of Contract Documents, the Drawings, and all other documents referred to or connected with the agreement.

b) Owner

"Owner" means Velsicol Chemical Corporation.

c) Contractor

"Contractor" means the person or corporation to whom the Contract for the work has been awarded.

d) Subcontractor

"Subcontractor" means the person or corporation having a contract with the Contractor (or with another subcontractor) for the execution of a part or parts of the work included in the Contract, or for the supplying of material for the Contract and worked to a special design according to the Plans and Specifications.

e) Engineer

"Engineer" means Conestoga-Rovers & Associates Limited and their duly authorized agents.

f) Work

"Work" means all labor, materials and other things required to be done, that are shown, described or implied in the Contract Documents, and includes all extra and additional work and material that may be ordered by the Engineer.

g) Contract Price

"Contract price", wherever and in whatever manner used, means either the total lump sum Bid of the Contractor or the total of the unit price Bids of the Contractor extended, based upon the estimated quantities set forth in the proposal, or combinations thereof, plus or minus any adjustments made in accordance with the Contract.

h) Day

"Day" means a calendar day of 24 hours.

i) Person

"Person" includes firms, companies and corporations.

j) Contract Drawings

"Contract Drawings" or "Drawings" means and includes (a) all Drawings which have been prepared on behalf of the Owner and which are included as part of the Contract Documents and all modifying Drawings issued by addenda thereto; (b) all Drawings submitted pursuant to the terms of the Contract by the Contractor with his proposal and by the Contractor to the Owner during the progress of work when accepted by the Engineer; and (c) all Drawings submitted by the Engineer to the Contractor during the progress of the work.

k) Contractor's Plant and Equipment

"Contractor's plant and equipment" means everything, except labor, brought onto the site by the Contractor in order to carry out the work, but not to be incorporated in the work.

l) Act of God

"Act of God" means an earthquake, flood, cyclone or other cataclysmic phenomenon of nature. A rain, windstorm, high water or other natural phenomenon of unusual intensity for the specific locality of the work, which might reasonably have been anticipated from historical records of the general locality of the work, shall not be construed as an Act of God.

m) Shown

"Shown", "indicated", "detailed", and words of like import, wherever and in whatever manner used, with or without reference to the Drawings, means shown, indicated or detailed on the Drawings.

n) Sufficient

"Sufficient", "necessary", or "proper", "acceptable", "satisfactory", "desirable", and words of like import, wherever and in whatever manner used, with or without reference to the Engineer, means sufficient, necessary, proper, acceptable, satisfactory and desirable in the judgment of the Engineer.

o) Directed

"Directed", "designated", "permitted", "required", "accepted", and words of like import, wherever and in whatever manner used, with or without reference to the Engineer, means as directed, designated, permitted, required, and accepted by the Engineer.

p) Specified

"Specified", "described", or "noted", wherever and in whatever manner used, means as specified, described or noted in the Contract Documents.

q) Submitted

"Submitted", wherever and in whatever manner used, means submitted to the Engineer for his acceptance.

r) Provide

"Provide", wherever and in whatever manner used, shall be understood to mean provide complete in place; that is, furnish and install.

s) Shall or Will

"Shall" or "will", whenever used to stipulate anything, means shall or will be done or be performed by either the Contractor or Velsicol Chemical Corporation and means that the Contractor or Velsicol Chemical Corporation has thereby entered into a covenant with the other party to do or perform the same.

t) May

"May", wherever and in whatever manner used, is permissive.

u) Herein

"Herein", "hereinafter" and words of similar import shall refer to the Contract Documents.

v) Supply

"Supply", wherever and in whatever manner used means Contractor supplies, F.O.B. the site.

w) Progress Payment (also known as Estimate for Payment)

"Progress Payment" and "Estimate for Payment" and like terms shall be one and the same and refer to the method of monthly payments to the Contractor in accordance with the terms of the Contract.

Gc.02 DOCUMENTS

- a) The Contract Documents shall be signed and sealed, in quadruplicate, by the Owner and the Contractor.

- b) The Contract Documents are complementary and what is called for by any one shall be as binding as if called for by all. The intention of the documents is to include all plant, labor and materials (except as specifically excepted) necessary for the complete and proper execution of the work.
- c) Reference to published standard specifications shall be to the edition current at the time of the signing of the Contract Documents.
- d) Plans and Specifications shall be read and interpreted together. Work and materials not specifically described, but obviously necessary for the satisfactory completion of the work for the purpose intended shall be supplied and performed by the Contractor as though it has been described and shown in the Plans and Specifications.

Gc.03 SUB-CONTRACTORS

- a) Without the written approval of the Engineer, the Contractor shall not change the subcontractors named in the Contract.
- b) The Contractor shall be held as fully responsible to the Owner for the acts and omissions of his sub-contractors (and of persons directly and indirectly employed by them) as for the acts and omissions of persons directly employed by the Contractor.
- c) Nothing in the Contract Documents shall create any contractual relation between any sub-contractor and the Owner.
- d) The Contractor shall bind every sub-contractor to the terms of the Contract Documents, as far as applicable to the sub-contractor's work.
- e) Any division of the Specifications into sections or sub-sections shall be only for clarity of reading and reference, and shall not be taken to be a division into trades, sub-trades or sections of work of any kind.

Gc.04 NOTICE

- a) Any notice of communication to the Contractor shall be deemed to be legally well and sufficiently given and served if:
 - (i) posted or sent to the address given in the Bid, or
 - (ii) posted or sent to the place where the work is, or is to be carried on, or

- (iii) posted or sent to the address given in the Agreement, or
 - (iv) posted or sent to the Contractor's domicile or usual place of business, or
 - (v) posted to or left at his last known address, or
 - (vi) handed to the Contractor or any of his clerks or agents.
- b) In any notice to the Contractor with respect to work and repairs of any nature required to be done under the Contract (or with respect to any other matter), it shall not be obligatory for the Engineer to specify minutely and in detail everything required, nor to specify by measurement the exact extent or place where the work and repairs are to be carried out. Reference may be made in such a notice to the clauses in the Contract bearing upon the matter, the general location, and the general description of the work and repair to be done.

Gc.05 INFORMATION TO BE FURNISHED BY CONTRACTOR

The Contractor shall furnish all drawings, specifications, descriptive data, certificates, samples, tests, methods, schedules, and manufacturer's instructions as specifically required in the Contract Documents, and all other information as may reasonably be required to demonstrate fully that the materials and equipment to be furnished and the methods of work comply with the provisions and intent of the Specifications and Drawings. If the information shows any deviation from the Contract requirements, the Contractor shall, by a statement in writing accompanying the information, advise the Engineer of the deviation and state the reason therefor.

Gc.06 COMMENCEMENT AND COMPLETION

- a) The Contractor shall obtain materials and start work when the Contract Documents have been signed by the Owner and the Contractor, and when the Engineer has issued a written instruction to commence.
- b) No progress certificate (also called 'estimate for payment') shall release the Contractor from any responsibility under the Contract, nor be taken as evidence of acceptance of work or material, nor as a waiver of any provisions of the Contract.
- c) The Contractor shall protect the work from damage from every cause, and shall, on completion, leave the work in a good and satisfactory condition. The work shall be finished in all respects and shall comply with the Contract in every particular.
- d) On completion, all surplus material and rubbish shall be removed, all damage to adjacent property caused by the Contractor shall be made good, and the site shall be made clean and neat.

Gc.07 USE OF PREMISES

- a) The Contractor shall confine his plant, labor and materials within limits specified in the Contract or as otherwise indicated by law or as directed by the Engineer. The Contractor shall not unreasonably encumber the site with plant and materials.
- b) The Contractor shall not load, or permit to be loaded, any structure with a weight that may endanger its safety, with the exception of structures scheduled for demolition.
- c) The Contractor shall comply with the Engineer's directions regarding signs, advertisements, fires and smoking.
- d) The Contractor shall use the premises only for the completion of the work forming the Contract.

Gc.08 UTILITIES

Unless otherwise specified, the Contractor shall provide all utility services, such as water, electricity, heat and gas, needed for the execution of the work.

Gc.09 PUBLIC SAFETY

- a) During the progress of the work, the Contractor shall keep the site and the work in as tidy a condition as practicable. The Contractor shall not deposit any material on any portion of a street, sidewalk, boulevard, or other public property without the approval of the Engineer. Material so deposited shall be removed without delay as soon as possible and when directed.
- b) When work is carried out at night, the Contractor shall provide, erect and operate a sufficient number of lights to enable the work to be performed satisfactorily.
- c) If the work is closed, suspended or stopped for the winter (or for any other approved reason), the Contractor shall remove all material from streets, sidewalks, boulevards and other public property.
- d) The Contractor shall provide, erect and maintain all necessary barriers, fences and other proper protection, and shall provide and maintain watchmen and lights as may be necessary to ensure the safety of the public and others. Unless otherwise specified, the Contractor shall keep all streets and sidewalks open for use by the public, for such width as the Engineer may direct. The Contractor shall provide, erect and maintain a sufficient number of detour signs, and other proper notices, wherever the use of any street or sidewalk is dangerous due to the Contractor's operations.

- e) Only authorized employees of contractors or subcontractors shall have access to the Plant Site. In no circumstance shall contractors' or subcontractors' employees enter upon any portion of the Plant Site for which entry has not been authorized.

Gc.10 STATUTES

- a) In all matters affecting the performance of the work, the Contractor shall comply with all relevant statutes, by-laws, and ordinances of Federal and State Governments and of Municipal Corporations. The Contractor shall also comply with all relevant regulations made under such statutes, by-laws and ordinances.
- b) Unless otherwise specified, the Contractor shall pay all fees, procure all licenses and certificates, deposit all Drawings and give all notices required by any of the foregoing statutes, by-laws, ordinances and regulations.

Gc.11 PROSECUTION OF THE WORK

- a) The Contractor shall complete all the work in accordance with a schedule set down in co-operation with the Engineer at the time of the award of the Contract. Amendments to this schedule may be made by the Engineer, on application by the Contractor.
- b) Should the Contractor leave the site of the work (either permanently or temporarily), he shall provide and leave a competent and reliable agent or superintendent in charge. Such person shall act in place of the Contractor.
- c) Should the Engineer be of the opinion that the quantity or quality of labor or plant supplied by the Contractor is not sufficient, or that the methods being employed are not such as will ensure that the work will be completed within the specified time, the Contractor shall forthwith improve the quality and increase the number of men employed, shall make revisions to the plant, and shall employ work methods satisfactory to the Engineer.

Gc.12 RESTORATION

- a) Unless otherwise specified, the Contractor shall restore all lands and other property to their original condition.
- b) The Contractor shall maintain the flow of water in ditches, culverts and watercourses. At the conclusion of construction, ditches, culverts and watercourses shall be restored in a neat and workmanlike manner to a condition at least equal to the original.

Gc.13 OPERATIONAL RISKS

- a) The position of pole lines, conduits, watermains, sewers, and other underground and overground utilities and structures is not necessarily shown on the Contract Drawings, and, where shown, the accuracy of the position of such utilities and structures is not guaranteed. Before starting work, the Contractor shall inform himself of the exact location of all such utilities and structures, and shall assume all liability for damage to them. Unless otherwise specified, the Contractor shall support all such utilities and structures, or temporarily remove them, and restore them, to the satisfaction of the owners of the utilities and structures.

Gc.14 WORKMANSHIP

- a) All workmanship and material shall be first-class in every particular and shall be to the approval of the Engineer. The Contractor shall pay due regard to the neat appearance of the finished work.
- b) If ordered by the Engineer, the Contractor shall make such openings in the work as are needed to re-examine the work, and shall forthwith make the work good again. Should the Engineer find the work so opened up to be faulty in any respect, the whole of the expense of opening, inspecting and making good shall be borne by the Contractor. Should the Engineer find the work opened up to be in perfect condition, such expense will be borne by the Owner.

Gc.15 OWNERSHIP OF PLANT AND MATERIAL

- a) The Contractor's plant, and all approved material to be incorporated into the work, shall, at the option of the Owner, become and continue to be under the control of the Owner from the time of arrival on the site until completion of the work.
- b) The Contractor shall not remove any such plant or approved material from the site without the Engineer's approval. No payment of money will be made by the Owner with respect to such plant.

Gc.16 REJECTION OF WORK AND MATERIALS

The Engineer may at any time condemn and reject material and work, which, in his opinion, are not in accordance with the Contract Documents or the Engineer's instructions, and the Engineer will require the substitution of proper materials. All rejected material shall be promptly removed from the site.

Gc.17 MATERIAL

Unless otherwise specified, the Contractor shall supply all material, and shall furnish for approval representative samples of all material. Substitution of material of equivalent quality shall be made only on the written approval of the Engineer.

a) General Quality

All materials, equipment and accessories shall be new and unused and shall be essentially the standard product of a manufacturer regularly engaged in the production of such material or equipment. The Contractor, when specifically requested in the detailed specifications for a particular material, equipment or accessory item, shall offer satisfactory operation for five (5) or more years, except that in the instance of recently developed items having a short service record, they may be considered if the equipment supplier or manufacturer supplies a bond or cash deposit which will guarantee replacement in the event of failure within a five (5) year period from the date of acceptance of the items. Such items proposed under these conditions must meet all the technical requirements as stated in the specifications.

b) Quality in Absence of Detailed Specifications

Whenever, under the Contract Documents, it is provided that the Contractor shall furnish materials or manufactured articles or shall do work for which no detailed specifications are set forth, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable in the market from firms of established good reputation, or if not ordinarily carried in stock, shall conform to the usual standards for first-class materials or articles of the kind required with due consideration of the use to which they are to be put. In general, the work performed shall be in full conformity and harmony with the intent to secure the best standard of construction and equipment of the work as a whole or in part.

c) Material and Equipment Specified by Name

Whenever any material or equipment is specified by patent or proprietary name or by the name of the manufacturer, such specification shall be considered as used for the purpose of describing the material or equipment desired and shall be considered as if followed by the words "or acceptable equal", whether or not such words appear. The Contractor may offer material or equipment with equal or better qualities and performance in substitution for those specified which he considers would be in the Owner's interest to accept. No offers for substitution will be acknowledged or considered from suppliers, distributors, manufacturers or

sub-contractors. Any such offer shall be made in writing to the Engineer for his consideration at least 2 weeks in advance of the time at which the Contractor wishes to order the material or equipment for use in the work, and the Contractor shall include with his offer sufficient data which, together with any other data the Engineer may require, will enable the Engineer to assess the acceptability of the material or equipment. When the substitute equipment or material necessitates changes to or coordination with any other portion of the work, the data submitted shall include drawings and details showing all such changes, and the Contractor shall perform these changes as part of any acceptance of his offer by the Engineer. Such acceptance by the Engineer shall not relieve the Contractor from full responsibility for the efficiency, sufficiency, and quality and performance of the substitute material or equipment, in the same manner and degree as the material and equipment specified by name.

Gc. 18 THE ENGINEER

- a) The Engineer will make such decisions as are necessary with respect to:
- i) Discrepancies in the Contract Documents, or
 - ii) Differences of opinion or misunderstanding that may arise as to the meaning of the Contract, or
 - iii) Omissions or misstatements in the Contract Documents, or
 - iv) Quality, dimensions and sufficiency of plant, materials, or work, or
 - v) The due and proper execution of the work, or
 - vi) The measurement, quantity or valuation of the work, including additional work and deductions, or
 - vii) Any other questions or matters arising out of the Contract.

The Engineer's decision as to any matter referred to in this clause shall be binding upon the parties concerned.

- b) The Engineer may at all reasonable times visit, enter and make inspections at any building, factory, workshop, work or site whenever materials are being prepared, made or treated, or where work is being done in connection with the Contract. The Engineer may also take such samples as he may consider necessary.
- c) When the Engineer makes a decision under this clause, the Contractor shall immediately proceed with all work affected by the decision. Additions to or deductions from the Contract price shall be made only provided for in the Contract, and no revisions to the completion time shall be made, unless approved by the Engineer.

Gc.19 COLD WEATHER

When work is permitted or ordered by the Engineer to be done in cold weather, the Contractor shall provide suitable means for heating and protection, and all the materials shall be heated and protected. Unless the Engineer directs otherwise, all work such as masonry, concrete and painting that may be injured by frost, and which cannot be satisfactorily completed, shall be put in a proper and satisfactory condition, and shall be protected from damage by frost. The cost of such protection shall be borne by the Contractor.

Gc.20 OWNERSHIP OF DOCUMENTS

All Contract Documents, including all Drawings, Specifications, models and similar items supplied by the Engineer are his property. Such Documents are not to be used on other work and, with the exception of the signed Contract Documents, shall be returned by the Contractor to the Engineer on the completion of the work. This section refers to all copies or reproductions as well as original material.

Gc.21 DETAILS AND INSTRUCTIONS

- a) The Contractor shall not deviate from or in any way alter the Contract Documents without the written authority of the Engineer. Any ambiguities, omissions or discrepancies that may arise will be explained and adjusted by the Engineer, who may issue to the Contractor instructions directing the manner of performing the work.
- b) If necessary for the proper execution of the work, the Engineer may issue additional instructions, as drawings or otherwise, and all such instructions shall become parts of the Contract. The work shall be executed in conformity with such instructions, and the Contractor shall do no additional work without such instructions.
- c) The Contractor shall perform and observe the provisions of the Contract and carry out the written directions of the Engineer. Should the Contractor refuse or neglect to carry out the written instructions of the Engineer within seven (7) days, the Engineer may
 - i) take such steps (including the procuring of plant, labor and material) and do such work as he may consider advisable, or
 - ii) at the option of the Owner, exercise the powers specified in Gc.34.

The cost so incurred may be deducted or collected under the provisions of the Contract, and any such action taken by the Engineer shall not relieve the Contractor from any liability under the Contract.

Gc.22 LIABILITY

The Contractor shall assume the defence of and shall indemnify and save harmless the Owner from all claims unless specified otherwise:

- a) resulting from the prosecution of the work, or
- b) resulting from any of the Contractor's operations, or
- c) caused by reason of any material, plant or labor used in the work, or
- d) arising from any act of commission or omission on the part of the Contractor, or
- e) relating to inventions, copyrights, trademarks, patents (and rights to them) used in doing the work, or in the use and operation of work on completion, unless otherwise specified.

Gc.23 LIABILITY INSURANCE

The Contractor shall, at his expense, insure and maintain insurance against liability for bodily injury and property damage that may arise with respect to the work being performed under the Contract. Such insurance shall:

- a) be in the joint names of the Owner, the Contractor, the Sub-contractors, the Engineer and the Municipality.
- b) have inclusive limits of liability as set forth in the Special Conditions, Clause SC.12.
- c) include coverage for:
 - i) Contractual liability, and
 - ii) Cross liability, and
 - iii) Contingent Employer's liability, and
 - iv) Completed Operations liability, and
 - v) Property in care, custody, and control of Contractor
 - vi) Explosion, collapse or underground fault
- d) remain in force for 60 days following the issue by the Engineer of the Final Payment Certificate.

Gc.24 VEHICLE INSURANCE

The Contractor shall, at his expense, insure and maintain insurance against liability for bodily injury and property damage caused by vehicles owned by the Contractor and used on the work. The Contractor shall also, at his expense, insure and maintain insurance against liability for bodily injury and property damage caused by vehicles not owned by the Contractor and used on the work. Such insurance shall each have an inclusive limit at least equal to \$3,000,000.00.

Gc.25 INSURANCE POLICIES AND CERTIFICATES

- a) When the successful Bidder is notified that his Bid has been accepted he shall deposit with the Owner.
 - i) either copies of liability and vehicle insurances, or insurance certificates indicating compliance with Clauses Gc.23 and Gc.24.
- b) Insurance policies shall stay in force and not be amended, cancelled or allowed to lapse without thirty (30) days' prior notice.
- c) The Contractor shall deposit certificates with the Owner indicating that the Contractor has paid assessments under the Workmen's Compensation Act as provided in Clause Gc.26. Such certificates shall be deposited:
 - i) at the time of award of the Contract, and
 - ii) at intervals of six months during the course of the Contract, and
 - iii) prior to the issue of the Final Certificate.

Gc.26 WORKMEN'S COMPENSATION

The Contractor and his sub-contractors shall maintain Workmen's Compensation Insurance in the amount and type required by law for all employees employed under this Contract who may come within the protection of Workmen's Compensation Laws. In jurisdictions not providing complete Workmen's Compensation protection, the Contractor and his sub-contractors shall maintain employer's general liability insurance in an amount, form, company and agency satisfactory to the State for the benefit of all employees not protected by Workmen's Compensation Laws.

The Contractor shall pay such assessments as will protect him and the Owner from claims under the Workmen's Compensation Laws.

Gc.27 LOSS OR DAMAGE

The Owner shall not be answerable or accountable for loss or damage by fire or otherwise of the work, or part of the work, or for any material, equipment, or similar items to be incorporated into the work.

The Contractor shall properly guard the works and make good all loss or damage of whatever nature or origin that may arise out of the Contract, until the work is complete as indicated by the issue by The Engineer of the Acceptance Certificate.

Gc.28 HOURS OF WORK

The Engineer may prohibit the Contractor from carrying on operations during any hour or hours of the day in which the Engineer, in his judgment, deems such operations to be a disturbance or nuisance to the public.

Such prohibition may be made notwithstanding any prior consent, order, agreement or requirement in the Contract that stipulates maximum or minimum hours of work.

Gc.29 PAYMENTS TO THE CONTRACTOR AND SUB-CONTRACTORS

Payment to the Contractor and Sub-contractors shall be made as follows:

1. Payment by Owner to Contractor

The Contractor shall periodically, in accordance with the terms of the Contract, submit to the Owner and/or his agent a requisition for a progress payment for the work performed and/or materials furnished to the date of the requisition less any amount previously paid to the Contractor. The Owner shall in accordance with the terms of the Contract approve and promptly pay the requisition for the progress payment less an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged and less any retained amount as hereafter described. The Owner shall retain not more than ten (10) per centum of each progress payment to the Contractor. The Owner shall pay, upon requisition from the Contractor, for materials pertinent to the project which have been delivered to the site or off-site by the Contractor and/or Subcontractor and suitably stored and secured as required by the Owner and the Contractor provided, the Owner may limit such payment to materials in short and/or critical supply and materials specially fabricated for the project each as defined in the Contract. When the work or major portions thereof as contemplated by the terms of the Contract are substantially completed, the Contractor shall submit to the Owner and/or his agent a requisition for payment of the remaining amount of the Contract balance. Upon receipt of such requisition the Owner shall approve and promptly pay the remaining amount of the Contract balance less two (2) times the value of any remaining items to be completed and an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. As the remaining items of work are satisfactorily completed or corrected, the Owner shall promptly pay, upon receipt of a requisition, for these items less an amount necessary to satisfy any claims, liens or judgments against the Contractor which have not been suitably discharged. Any claims, liens and judgments referred to in this section shall pertain to the project and shall be filed in accordance with the terms of the applicable Contract and/or applicable law.

2. Payment by Contractor to Subcontractors

Within fifteen (15) calendar days of the receipt of any payment from the Owner, the Contractor shall pay each of his subcontractors and material men the proceeds from the payment representing the value of the work performed and/or materials furnished by the subcontractor and/or materialman as reflected in the payment from the Owner less any amount necessary to satisfy any claims, liens or judgments against the subcontractor or materialman which have not been suitably discharged and less any retained amount as hereafter described. The Contractor shall retain not more than ten (10) per centum of each payment to the subcontractor and/or materialman. However, the Contractor shall retain nothing from those payments representing proceeds owed the subcontractor and/or materialman from the Owner's payments to the Contractor for the remaining amounts of the Contract balance as provided in subdivision of this section. Within fifteen (15) calendar days of the receipt of payment from the Contractor, the subcontractor and/or materialman shall pay each of his subcontractors and materialmen in the same manner as the Contractor has paid the subcontractor. Nothing provided herein shall create any obligation on the part of the Owner to pay or to see to the payment of any moneys to any subcontractor or materialman from any Contractor nor shall anything provided herein serve to create any relationship in contract or otherwise, implied or expressed, between the subcontractor or materialman and the Owner.

Gc.30 PROGRESS CERTIFICATE

The Contractor shall be entitled to receive partial payments upon the certificate of the Engineer of the value of work done and materials supplied.

For Progress Certificates, the Engineer's decision as to the estimated value of completed work and materials supplied shall be final, but shall not be binding on him, the Contractor or the Owner in the estimating of the final value of the work, nor shall it be taken as evidence as to the ownership of, or payment for the work.

Gc.31 FINAL ACCEPTANCE CERTIFICATE

- a) When the work required to be done under the Contract has been completed in every respect and is acceptable to the Engineer, a final valuation of the Contract will be prepared by the Contractor and the Engineer.
- b) The Contractor shall submit to the Engineer a statement indicating the Contractor's valuation of the work according to records available to the Contractor. The Engineer will review this statement and either approve it or submit detailed reasons for revisions that, in his opinion, should be made.

- c) Should the Engineer consider it advisable, the Engineer will prepare a final valuation of the work and submit it to the Contractor who shall either approve it or submit detailed reasons for revisions that, in his opinion, should be made.
- d) When the Engineer and Contractor have reached agreement as to the final value of the work, the Engineer will issue an Acceptance Certificate, detailing the valuation of the Contract, and certifying its acceptance at a certain specific date, referred to as the "acceptance date".
- e) Should the Engineer and Contractor be unable to reach agreement as to the final value of the work within a reasonable period, the Engineer will issue his Acceptance Certificate detailing his valuation of the Contract and certifying acceptance of the work at a certain specific date, referred to as the "acceptance date".

Gc.32 FINAL PAYMENT CERTIFICATE AND RELEASE OF HOLDBACKS

Provided all the provisions of the Contract have been fully met, the Engineer will issue a Final Payment Certificate upon final acceptance. The Final Payment Certificate will entitle the Contractor to receive the full amount due under the Contract. Holdbacks held under the provisions of Clause Gc.29 shall be released as recommended in the Final Payment Certificate only after the Contractor has provided a properly completed Statutory Declaration indicating that no moneys, claims, liens, or judgments against the Contractor relative to this Contract has been received by the Engineer.

Gc.33 VALUATION

- a) At monthly intervals, the Contractor and the Engineer shall make a valuation of the work constructed and material supplied under the Contract. Should the Engineer wish to measure any of the work or material, the Contractor shall assist in such measurements and furnish all particulars required.
- b) The monthly valuations described in subsection (a) above shall not bind the Owner, the Contractor or the Engineer to any final valuation of the work to be done under the Contract, but shall be construed as approximations only for the purpose of Progress Certificates.
- c) The final valuation of the work shall be prepared as soon as possible after the whole of the works has been completed.

Gc.34 TERMINATION OF CONTRACT

- a) In addition to Owner's cancellation rights as set forth in Article 14 of the Agreement, the Owner may terminate the employment of the Contractor, if the Engineer certifies that sufficient cause exists to justify such action. Such termination of employment may be made:
- (i) if the Contractor should be adjudged a bankrupt, or
 - (ii) if he should make a general assignment for the benefit of his creditors, or
 - (iii) if a receiver should be appointed on account of his insolvency, or
 - (iv) if he should take the benefit of any Act relating to insolvent debtors, or
 - (v) if a winding up order be made against the Contractor, or
 - (vi) if he should refuse or fail to supply enough plant, properly skilled labor or proper materials after having received seven (7) days' notice in writing from the Engineer to do so, or
 - (vii) if he should fail to make prompt payment to subcontractors and suppliers, or
 - (viii) if he should persistently disregard laws, ordinances or the instructions of the Engineer, or
 - (ix) if he should otherwise be guilty of a substantial violation of the provisions of the Contract.
- b) Should the Owner terminate the employment of the Contractor, as provided in subsection (a) above, he shall give the Contractor seven (7) days' written notice of such termination of employment.
- c) Should the Owner terminate the employment of the Contractor, as provided in subsection (a) above, he may take possession of the premises and of all materials and plant on the premises, and may finish the work by any method he may deem expedient, but without undue delay or expense. In such case, the Contractor shall not receive any further payment until the work is completed.
- d) If the unpaid balance of the Contract price exceeds the expense of finishing the work (including compensation to the Engineer for his additional services), such excess shall be paid to the Contractor. If such expense exceeds the unpaid balance, the Contractor shall pay the difference to the Owner. The additional expense incurred by the Owner due to the Contractor's default shall be certified by the Engineer.
- e) If the work should be stopped by order of any court or public authority, for a period of 90 days or more through no act or fault of the Contractor, anyone employed by him, or any of his subcontractors, the Contractor, after ten (10) days written notice to the Owner, may terminate the Contract. Forthwith upon the termination of the Contract, the Engineer shall estimate all of the work done up to the time of such termination and the Contractor shall be entitled to and shall receive payment therefor in the manner provided in the Contract. In addition thereto, the Owner will pay to the Contractor in full and complete satisfaction and settlement for the Contractor's

inconvenience, loss of anticipated profits, cost of removing his equipment from the site and all other expenses whatsoever, ten (10) percent of the difference between the Engineer's estimate of the Contract price and the sum of the payments made to the Contractor for work done up to the date of the termination of Contract. The Contractor shall be entitled to no further payment whatsoever for the work.

For the purpose of this article, "all of the work done" includes all materials ordered by the Contractor prior to the date of receipt of such notice of termination, whether or not they have been delivered to the site of the work. The amount of payment for all such materials under this article shall be their actual necessary cost to the Contractor up to the date of receipt of such notice of termination. Upon the receipt of such notice of termination, all the Contractor's right, title and interest in and to the materials mentioned in this article shall be vested in the Owner, and the Contractor shall upon demand of the Owner execute and deliver to the Owner all requisite bills of sale, assignments and other documents of transfer that may be necessary to give effect to the intention of this article.

Gc.35 STANDARD SPECIFICATIONS

Whenever a standard specification, code or recommended practice is referred to, it shall be the latest edition of that specification code or recommended practice and it shall be considered to be a part of the Contract Documents insofar as it applies. Standard specifications, codes, recommended practices and abbreviations used in the Contract Documents are listed in Section Sc.14 of the Project Specifications.

Gc.36 ASSIGNMENT

The Contractor shall not assign the Contract, or any part of it without the written consent of the Owner, nor shall the Contractor assign any moneys due, or to become due, to him without consent of the Owner.

SPECIAL CONDITIONS OF THE CONTRACT

Sc.01 GENERAL

It is the intent of these Special Conditions to describe the miscellaneous work to be done and the materials to be used in the construction of services and all related work under this Contract and to amplify the Standard Specifications.

The Special Conditions are to be read in conjunction with and take precedence over the Standard Specifications and General Conditions.

Sc.02 CONTRACTOR'S SCHEDULE FOR CONSTRUCTION

The Contractor shall submit to the Engineer a complete detailed construction schedule indicating the various elements of the construction procedure, equipment deliveries and installations and an indication of all areas of critical happenings which are for some reason flexible and which may alter the path and timing of the proposed schedule. The construction schedule shall be submitted to the Engineer for approval not more than one (1) week after the notification to the Contractor to commence work.

Sc.03 PERMANENT RECORD

The Contractor shall keep a permanent record on the sites showing dates of commencement and completion of all trades and other work, daily weather conditions, excavations, formwork, concrete work, and removal of forms. He shall keep in duplicate, daily records of the number of men engaged on the job and on each division of the work and make these available to the Engineer upon request.

Sc.04 INCLEMENT WEATHER

The Contractor shall provide adequate protection and take caution at times of inclement weather. Inclement weather or extra work caused by such weather will not be accepted as reason for any additional payment.

Sc.05 INSURANCE CLAIMS

Claims or alleged claims received by the Contractor shall be dealt with immediately by the Contractor and a copy sent to the Engineer. If a

claim is settled to the satisfaction of the claimant, the Contractor shall submit a copy to the Engineer of the claimants release.

If a claim or alleged claim is rejected by the Contractor and/or his insurance company, the Contractor shall immediately report this fact to the Engineer.

Should thirty (30) days elapse after the claim or alleged claim has been received by the Contractor, and the Contractor is not able to report a settlement or rejection of the claim, he shall report to the Engineer the steps being taken with respect to the claim.

Sc.06 PERFORMANCE AND PAYMENT BONDS

The successful Bidder must deliver to the Owner an executed Performance Bond in an amount at least equal to one hundred percent (100%) of the accepted Bid as security for the faithful performance of the Contract, and also must deliver to the Owner a separate executed Payment Bond in an amount at least equal to one hundred percent (100%) of the accepted Bid as security for the payment of all persons performing labor and furnishing materials in connection with this Contract. The sureties of all bonds shall be such surety company or companies as are approved by the Owner, and as are authorized to transact business in the State of Michigan. The bonds must be approved by the Owner prior to execution of the formal Contract, and shall remain in effect for ninety (90) days beyond the date of the Final Acceptance of the project.

Sc.07 UTILITIES

The Contractor shall protect and support if necessary all utilities to maintain their operation. Any utilities which are damaged by the Contractor shall be immediately replaced, at the Contractor's expense.

Sc.08 FAILURE TO COMPLETE WORK ON TIME AND LIQUIDATED DAMAGES

For each calendar day that any work shall remain uncompleted after the Contract date specified for the completion of the work provided for in the Contract, the amount of \$1,000.00 per calendar day will be deducted from any money due the Contractor, not as a penalty but as liquidated damages; provided however, that due account shall be taken of any adjustment of the Contract time for completion of the work as provided for elsewhere in the Specifications.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion or after the date to which

the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of its rights under the Contract.

The Owner may waive such portions of the liquidated damages as may accrue if he deems the work is in such condition as to be safe and convenient for use.

The assessing of liquidated damages shall be in addition to Engineering Charges as provided for in Sc.10 of the Specifications.

Sc.09 EXTENSION OF TIME

Delays which affect the scheduled completion date of the project and attributable to interference between contractors and utility owners, delays by railroad companies in progressing related work, special requirements or actions by municipalities, federal agencies and other public bodies not anticipated in the Contract Documents, and unusually severe storms of extended duration or impact shall be compensated solely by the granting of an extension of time by the Velsicol Chemical Corporation to complete the work of the Contract without engineering charges. Time necessary for reviews by Velsicol Chemical Corporation of shop drawings, for field changes to meet actual conditions, and delays incurred by seasonal and weather limitations should be anticipated and are neither compensatory nor eligible for extensions of time.

Where extra costs can be demonstrated relative to delays caused directly by acts of the Owner beyond the Contract requirements, such costs as are necessary may be reimbursable subject to the prompt substantiation of such costs by the Contractor via the initiation of procedures specified in Fb.04 and Fb.05. The substantiated necessary costs of such delays which may be considered for reimbursement shall be limited to orders by the Owner to stop work for reasons other than provided in the Contract Specifications and requirements and for the unavailability of right-of-way parcels for such an extended period beyond that indicated in the Contract Documents that the Contractor's progress on the Contract as a whole is significantly affected.

The Contractor agrees that he has included in his unit price Bid for the various items of the Contract the additional costs of doing the work under this Contract caused by not having a clear site for the work, by interference by other contractors and necessary utility work and by the other non-compensatory delays described above.

Sc.10 ENGINEERING CHARGES

When the work embraced in the Contract is not completed on or before the date specified therein, engineering and inspection expenses incurred by the Owner upon the work from the completion date originally fixed in the Contract to the final date of completion of the work may be charged to the Contractor and may be deducted by the Owner from any moneys due the Contractor. Consideration of any extra work or order on the Contract added to the original Contract, as well as extenuating circumstances beyond the control of the Contractor, will be given due consideration by the Owner before assessing engineering and inspection charges against the Contractor. Such charges will be assessed, however, in cases where the work has been unduly delayed by the Contractor because of unwarranted reasons, inefficient operation, or for any other reason for which the Owner determines the Contractor liable.

Sc.11 SAFETY AND SECURITY

The Contractor shall perform all work in the Contract in a workmanlike manner with due regard to the safety of the employees and of the public.

The Contractor shall fully comply with all Velsicol safety and security regulations in force at the time of performance and pertinent to the work. Contractor agrees that the employees of Contractor and/or any subcontractor will be notified that in consideration of working on Velsicol's premises, each employee and his automobile shall be subject to search at any time while on, entering or leaving Velsicol's premises and each employee understands that promptly upon Velsicol's request, any employee may be requested to submit to a polygraph (lie detector) test regarding theft of property located on Velsicol's premises.

Sc.12 INSURANCE

The Contractor shall procure and maintain at his own expense, and without expense to the Owner, until Final acceptance by the Owner of the work covered by the Contract, insurance for liability for damages imposed by law, of the kinds and in the amounts hereinafter provided by insurance companies authorized to do such business in the State and covering all operations under the Contract whether performed by him or by subcontractors. Before commencing the work the Contractor shall furnish to the Engineer a certificate or certificates of insurance in form satisfactory to the Engineer showing that he has complied with this paragraph, which certificate or certificates shall provide that the policies shall not be changed or cancelled until thirty (30) days written notice has been given to the Engineer. The types and limits of insurance are as follows:

A. Workmen's Compensation Insurance

A policy covering the obligations of the Contractor in accordance with the provisions of the Laws, as amended, known as the Workmen's Compensation Law, covering all operations under the Contract, whether performed by him or by his Subcontractor. The Contract shall be void and of no effect unless the person or corporation making or executing same shall secure compensation and disability benefits coverage for the benefit of and keep insured during the life of said Contract, such employees in compliance with the provisions of the Workmen's Compensation Law. Coverage under this section will not be less than \$100,000.00.

B. Liability and Property Damage Insurance

Unless otherwise specifically required by special specifications, each policy will have limits as shown hereafter:

<u>Employers Liability</u>	- \$200,000.00 each accident - Coverage B
<u>Contractor Comprehensive</u>	- General Liability (including Contractual, complete operations, and XCU coverage.)
Bodily Injury	- \$200,000.00 each person - \$500,000.00 each occurrence
Property Damage	- \$200,000.00 each occurrence (including operative, products, contractual)
<u>Automobile Liability</u>	
Bodily Injury	- \$100,000.00 each person - \$300,000.00 each occurrence
Property Damage	- \$100,000.00 each accident
<u>Umbrella Coverage</u>	- \$5,000,000.00 in excess of primary limits above

FOOTNOTE: The Contractor's attention is directed to the insurance limits required for the performance of work under this Contract and that these limits of coverage ARE NOT to be amended by deductible clauses of any nature without the expressed written consent of the Owner, or unless specifically provided for in these Specifications.

1. Contractor's Liability Insurance issued to and covering the liability for damages imposed by law upon the CONTRACTOR with respect to all work performed by him under the agreement;

2. Contractor's Liability Insurance issued to and covering the liability for damages imposed by law upon EACH SUBCONTRACTOR with respect to all work performed by said Subcontractor under the agreement;
3. Contractor's Protective Liability Insurance issued to and covering the liability for damages imposed by law upon the Contractor with respect to all work under the agreement performed for the Contractor by Subcontractors;
4. Protective Liability Insurance issued to and covering the liability for damages imposed by law upon Velsicol Chemical Corporation and the City of St. Louis and all employees and agents of the Velsicol Chemical Corporation and the City of St. Louis both officially and personally, with respect to all operations under the agreement by the Contractor or by his Subcontractors, including omissions and supervisory acts of the State;
5. Completed Operations' Liability Insurance issued to and covering the liability for damages imposed by law upon the Contractor and each Subcontractor arising out of that part of the work performed by each;
6. Owners', Landlords' and Tenants' Liability Insurance issued to and covering the liability for damages imposed by law upon Velsicol Chemical Corporation and the City of St. Louis and all employees and agents of the Velsicol Chemical Corporation and the City of St. Louis both officially and personally, with respect to temporarily opening to vehicular traffic any portion of the project under the agreement, until the construction pursuant to the agreement has received final acceptance by Velsicol Chemical Corporation.
7. Automotive Liability Insurance issued to and covering the liability for damages imposed by law upon the Contractor, his sub-contractor, Velsicol Chemical Corporation and the City of St. Louis, and all employees and agents of Velsicol Chemical Corporation and the City of St. Louis with respect to the operation and control of any and all vehicles owned, leased or otherwise employed by the Contractor or his sub-contractors during performance of work under the agreement.
8. All Risk Insurance to protect the Contractor from the hazard of damage to the work in progress. Such insurance shall be in the amount of the total Contract Bid or in the sum of One Million Dollars, (\$1,000,000.) whichever is the lesser, and shall contain a deductible feature not to exceed the sum of Five Hundred Dollars (\$500).

Sc.13 ENGINEER'S OFFICE

Velsicol Chemical Corporation shall supply an office for the use of the Engineer and Velsicol Chemical Corporation employees. The Contractor shall supply to the Engineer, as requested, two desks, four chairs, drafting table and lamp, four drawer lockable filing cabinet, telephone, power and lighting of an intensity acceptable to the Engineer. The office shall be maintained at a temperature range of 68°F. to 72°F. at the Contractor's expense.

Sc.14 STANDARD SPECIFICATIONS

The following standard specifications may be referred to herein, and should be read in conjunction with the General Conditions, Section Gc.35.

Air Moving and Conditioning Association (AMC)
American Association of State Highway Officials (AASHO)
American Concrete Institute (ACI)
American Gas Association (AGA)
American Gear Manufacturer's Association (AGMA)
American Institute of Steel Construction (AISC)
American Iron and Steel Institute (AISI)
American National Standards Institute (ANSI)
American Society for Testing and Materials (ASTM)
American Society of Civil Engineers (ASCE)
American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE)
American Society of Mechanical Engineers (ASME)
American Standard Safety Code for Elevators, Dumbwaiters and Escalators (ASE Code)
American Water Works Association (AWWA)
American Welding Society (AWS)
American Wood Preservers' Association (AWPA)
Anti-friction Bearing Manufacturers' Association (AFBMA)
Gratiot County Building Code
Gratiot County Electrical Code
Gratiot County Plumbing Code
Gratiot County Standard Plans and Specifications
Concrete Products Association of Washington (CPAW)
Diesel Engineer Manufacturers' Association (DEMA)
Edison Electric Institute (EEI)
Expansion Joint Manufacturers' Association (EJMA)
Federal Specifications (Fed. Spec.)
Illuminating Engineering Society (IES)
Institute of Electrical and Electronics Engineers, Inc. (IEEE)
Instrument Society of America (ISA)
Insulated Power Cable Engineers' Association (IPCEA)
Joint Industrial Council (JIC)

National Electric Safety Code (NESC)
National Electrical Code (NEC)
National Electrical Manufacturers' Association (NEMA)
National Fire Protection Association (NFPA)
National Lumber Manufacturers' Association (NLMA)
Occupational Safety and Health Act (OSHA)
Office of State Contract Compliance (OSCC)
Overhead Electrical Crane Institute (OECI)
Rental Rates for Construction Equipment (BLUE BOOK) by Associated
Equipment Distributors
Tabular Exchanger Manufacturers' Association (TEMA)
Underwriters' Laboratories, Inc. (UL)
Uniform Building Code (UBC)
Applicable Environmental Standards

Sc.15 CONFIDENTIALITY

The Contractor shall not, without the prior consent of Velsicol, in each instance, describe to any third person any of the details or characteristics of the work and Contractor, its employees and representatives will hold in confidence and not use or reveal to others any proprietary Velsicol technology or other data which may come into its or their possession or knowledge in connection with the work.

Sc.16 LABOR RELATIONS

The Contractor shall use its best efforts to maintain satisfactory labor relations with organization representing labor hired directly by Contract and by any Subcontractor. Contractor will use its best efforts to promptly resolve disputes with the objective of reducing work stoppages to a minimum.

The Contractor shall immediately notify the Owner of the occurrence of any labor dispute, or of a threatened or actual stoppage, affecting employees of Contractor or of a Subcontractor.

Sc.17 IMPORTED FILL

Velsicol shall provide to the Contractor, without cost, topsoil and earthen fill lying in its natural state, at a location approximately 2.3 miles distant from the site of work. The location of the topsoil and fill source is indicated on Plan No. 6 as well as the haul routes to be used between the topsoil and fill source and the site of work. The Contractor shall limit the travel of loaded trucks or heavy equipment to the roads indicated on this plan.

Sc.18 ADJACENT LANDS

The Contractor shall limit his activities to roads and lands directly adjacent to the areas of Storm Sewer Construction as detailed on the Contract Drawings. All damages to other privately owned lands and land owned by the City of St. Louis shall be restored at the Contractor's expense to the satisfaction of the Engineer and the City of St. Louis.

Sc.19 GUARANTEE PERIOD

The guarantee period for the Contract shall be twelve (12) months, and shall commence at the date of Preliminary Acceptance.

Sc.20 MATERIALS TESTING

Where required by the Engineer, the Contractor shall supply for testing, samples of all materials to be used in the construction, and shall not use any material until it has been approved. All testing will be done by a testing firm hired and approved by the Engineer, except as otherwise specified in the Contract Documents.

Sc.21 WATERMAIN

The Contractor's attention is drawn to the existence of an 8 inch cast iron watermain along the north side of Washington Street (M-46), adjacent to the location of the proposed storm sewer.

It is the Contractor's responsibility to maintain this watermain at all times during storm sewer construction activities to the satisfaction of the City of St. Louis. All costs for maintenance of the watermain, and adjacent structures shall be the Contractors sole responsibility.

PROJECT SPECIFICATIONS

Ps.1 PROJECT SPECIFICATIONS - GENERAL

Ps.1.01 CONTRACTOR'S OFFICE

During the performance of the Contract, the Contractor shall provide and maintain a suitable office at the site of the work which shall be the headquarters of a representative of the Contractor.

Ps.1.02 CONTRACTOR'S REPRESENTATIVE

During the performance of the Contract, the Contractor shall have on site during working hours a designated Project Manager empowered to act on behalf of the Contractor in all matters pertaining to the Contract. The Contractor shall within seven (7) days of execution of the Contract, nominate such person or persons, in writing, to the Engineer. Such person or persons shall remain, in the context of this Contract, the Contractor's designated agent(s) until such time as notification to the contrary is received in writing by the Engineer.

Ps.1.03 CONSTRUCTION UTILITIES AND MISCELLANEOUS FACILITIES

1. Power

Unless otherwise specified, the Contractor shall provide at his own expense all necessary power and special connections to power lines.

2. Water

Unless otherwise specified, the Contractor shall provide at his own expense all necessary water and special connections to a potable water supply.

3. Telephone

The Contractor shall provide at his own expense, a telephone service and required secretarial extension, at each of the Contractor's and Engineer's office. A radio telephone service is not acceptable as a substitute for the required telephone service. Long distance phone calls made by the Engineer shall be paid for by the Owner upon receipt of the proper documentation.

4. Sanitary Facilities

The Contractor shall provide at his own expense adequate toilet facilities for all workmen and the Owner's representatives employed on the work. The Contractor shall maintain at his own expense the same in sanitary condition from the beginning of the

work until completion and shall then remove the facilities and disinfect the premises. All portions of the work shall be maintained at all times in a sanitary condition.

5. Parking Facilities

The Contractor shall provide at his own expense off-road parking facilities for the automobiles used by his construction employees, the Owner's representatives and the Engineer.

6. Temporary Heating

The Contractor shall provide at his own expense temporary heating, covering and enclosures as necessary to protect all work and material against damage by dampness and cold and to facilitate completion of the work. The Contractor shall supply all the fuel, equipment and materials required for temporary heating.

Ps.1.04 SURVEYS

Unless otherwise specified, the Engineer will establish reference bench marks and base lines adjacent to the work. The Contractor shall develop and make such additional detail surveys as are needed for construction, such as slope stakes, batterboards, stakes for pile locations and other working points, lines and elevations. Bench marks, base lines, property boundaries, line and grade hubs, and other references and construction points, and such survey points shall thereafter be maintained. The Contractor shall notify the Engineer in writing at least five (5) working days in advance of the time he will commence work on any part of the construction.

The Engineer shall be responsible for measurement of all items for payment. The Engineer shall provide a certificate of such measurements to the Contractor.

The Contractor shall provide reasonable and necessary opportunities and facilities for setting points and making measurements during construction. He shall not proceed until he has made request to the Engineer for, and has received from him, such points as may be necessary as the work progresses. The construction shall be done in conformance with such points.

Ps.1.05 LANDS BY OWNER

The Owner will provide certain lands, in connection with the work under the Contract, together with the right of access to such lands. The Contractor shall not unreasonably encumber the premises with his plant or materials.

Ps.1.06 LANDS BY CONTRACTOR

The Contractor shall provide, with no liability to the Owner, any additional land and access thereto not shown or described that may be required for temporary construction facilities or storage of materials. He shall construct all access roads, detour roads, or other temporary work as required by his operations. All such areas must be approved by the Engineer prior to use by the Contractor.

Ps.1.07 EXISTING UTILITIES

In general the locations of some existing major utilities, whether aboveground or underground, are indicated on the drawings. This information has been obtained from utility maps and from verbal descriptions provided by the various agencies involved. The Engineer or the Owner do not guarantee the accuracy or completeness of this information and it is to be understood that other aboveground or underground facilities not shown on the drawings may be encountered during the course of the work. In any case, minor lines such as water, gas, and sewer services are not indicated.

Existing aboveground utilities, including but not limited to power transmission and distribution, telegraph, telephone and traffic control systems, whether shown on the drawings or not, shall, at the Contractor's expense, be maintained, relocated, rerouted, removed and restored as may be necessary by the Contractor in a manner satisfactory to owners and operators of the utilities and to the Owner.

Existing major underground utilities and appurtenant structures whether shown on the drawings or not, shall, at the Contractor's expense, be maintained, relocated, rerouted, removed and restored by the Contractor.

Minor underground utility service lines, including but not limited to sanitary sewer services, gas services, water services, house or yard drains, and electric or telephone services, shall be maintained, relocated, rerouted, removed and restored by the Contractor with the least possible interference with such services and in no case shall the interference of such service lines be considered for extra compensation under any of the special cases listed above.

The right is reserved by owners of public utilities and franchises to enter upon any street, road, right-of-way, or easement for the purpose of maintaining their property and for making necessary repairs or changes caused by the work. The costs thus incurred shall be paid by the Contractor.

Ps.1.08 RESTORATION OF STRUCTURES AND SURFACES

1. Structures

The Contractor shall remove such existing structures as may be necessary for the performance of the work, and if such structures are not shown or specified for demolition, shall rebuild the structures thus removed in as good a condition as found with minimum requirements as herein specified. He shall also repair all existing structures which may be damaged as a result of the work under this contract.

2. Curbs, Gutters, Driveways and Sidewalks

All curbs, gutters, driveways, sidewalks and similar structures that are broken or damaged by the installation of the work, unless shown otherwise, shall be reconstructed by the Contractor. Reconstruction shall be of the same kind of material with the same finish, and in not less than the same dimensions as the original work. All concrete shall be as specified herein unless otherwise indicated. Repairs shall be made by removing and replacing the entire portions between joints or scores and not merely refinishing any damaged part. All work shall match the appearance of the existing improvements as nearly as possible.

3. Roads and Streets

All roads and streets in which the surface is removed, broken or damaged, or in which the ground has caved or settled due to work under this contract, unless shown otherwise, shall be completely resurfaced and brought to the original grade and crown sections unless otherwise indicated. Before resurfacing material is placed, edges of pavements shall be trimmed back far enough to provide clean, solid, vertical faces, and shall be free of any loose material. Paving shall be as indicated and specified. Roadways used by the Contractor for hauling materials, equipment, supplies, etc., shall be cleaned and repaired if the condition of the roadway is damaged or otherwise affected due to the Contractor's operations.

4. Cultivated Areas and Other Surface Improvements

All cultivated areas, either agricultural or lawns, and other surface improvements which are damaged by actions of the Contractor, unless otherwise shown, shall be restored as nearly as possible to their original condition. Altering of original conditions during restoration must be done only on written approval of the Engineer.

5. Existing Stakes and Marks

All section, section subdivision, plat, U.S.E.D, U.S.C. & G.S., U.S.G.S. and other official monuments or bench marks shall be carefully preserved or replaced. In the event any such monument or marker is disturbed as a result of the Contractor's operations, the Contractor shall replace or reset such monument or marker in a manner satisfactory to the Engineer. Replaced or reset monuments shall be of acceptable type and quality and shall be located so as to clear existing utilities or any other interferences. They shall be placed in a manner consistent with good and recognized engineering and surveying practice by a Michigan State licenced surveyor.

Ps.1.09 FIELD TESTS AND ADJUSTMENTS

All work shall be tested by the Contractor to the satisfaction of the Engineer before any facility is put into operation. Tests shall be as specified herein and shall be made to determine whether the work has been properly performed. Any changes, adjustments or replacements required to bring the work into conformance with the Specifications shall be carried out by the Contractor as part of the work.

CLEANING UP

Ps.1.10

The Contractor shall not allow the site of the work to become littered with trash and waste material, but shall maintain the same in a neat and orderly condition throughout the construction period. On or before the completion of the work, the Contractor shall carefully clean out all pits, chambers or conduits and shall tear down and remove all temporary structures provided by him and shall remove rubbish of all kinds from any of the grounds which he has occupied and leave them in first-class condition to the satisfaction of the Engineer.

The Contractor is advised that the final cleanup of the project shall be done with meticulous care.

Ps.2 CONSTRUCTION

Ps.2.01 GENERAL

The Contractor shall perform his work in such a manner as not to harm the undisturbed condition of the underlying or adjacent soils or damage or prevent the proper placement of fill. The Contractor shall bear the cost of any repair required by the Engineer as a result of unnecessary disturbance of soils adjacent to the construction area.

a) Removal of Obstructions

Unless otherwise noted, the Contractor shall remove all brush, trees, logs, stumps, roots, heavy sods, heavy growth of grass, all decayed vegetable matter, fences and all structures where the proper construction and completion of the work require their removal. Disposal of this material shall be at the Contractor's expense.

Material that is removed as herein specified shall be disposed of on the Plant Site as directed by the Engineer.

b) Excess Excavated Material

Excess excavated material shall be removed from the site for disposal on the Plant Site by the Contractor at his expense.

c) Shoring, Sheet piling and Bracing

Where sheet piling, shoring, sheeting, bracing, or other supports are necessary, they shall be furnished, placed, maintained, and except as shown or specified otherwise, removed by the Contractor.

All sheet piling, shoring, sheeting and bracing shall be designed by a Professional Engineer engaged by the Contractor with demonstrated competence and experience in such work. The sheeting system shall be designed to prevent bottom failure and hydrostatic uplift within the excavation. Provision shall also be made in the design for lateral pressures due to side slope and construction equipment or other surcharge loads, as applicable.

The Contractor shall provide to the Engineer for his review, design calculation and arrangement drawings of the sheeting system prior to ordering any materials for bracing, sheeting, etc., and prior to the commencement of the excavation.

All material, except as otherwise specified, used for sheeting and sheet piling, lagging, braces, shores and stringers, or waling strips shall be of approved quality and dimensions throughout.

Materials for sheeting systems shall be furnished and driven or set in place by the Contractor, where necessary or wherever ordered by the Engineer, whether the same is or is not considered necessary by the Contractor. If, in the opinion of the Engineer, the material furnished by the Contractor is not of proper quality or sufficient size or not properly placed to ensure the safety of the work or of adjacent structures and property, the Contractor shall, upon notice from the Engineer to that effect, forthwith procure, furnish and set in place or drive other and satisfactory material, or place the material in a satisfactory manner; and if he shall fail or neglect to do so, the Engineers may order all or any part of the work to be stopped until such material so used is furnished and placed; and the Contractor shall not be entitled to claim, demand or receive any compensation for larger size or better quality or different disposal of material ordered by the Engineer, nor any compensation for allowance of any kind whatsoever for or on account of any damage or delay resulting from such stoppage of work.

Steel sheet piling may be either new or used. It shall be of adequate strength, straight and properly braced. Steel sheet piling shall be of the interlocking type. Friction in the interlocks shall not be assumed to contribute to the strength of the sheet piling.

The design, planning, installation and removal, if required, of all sheet piling, shoring, sheeting and bracing shall be accomplished in such a manner as to maintain the required excavation or trench section and to maintain the undisturbed state of the soils below and adjacent to the excavation.

Steel sheet piling for the excavation shall be driven straight and in line. The piling shall be supported above ground, before driving, by a guide frame at least 20 feet high which will keep the piling accurately in the required position and vertical. Each piece of piling shall be driven only a few feet at a time and driving shall proceed continuously around the perimeter so that the piles shall reach their full penetration together.

Walers and bracing shall be supplied and installed as required to complete the sheeting system. Walers and braces shall be of adequate strength for the loads imposed. Splices in walers shall develop the full strength of the member in bending, shear and axial compression.

If bracing members are to be removed during construction, the timing and procedure for removal shall not induce excessive stresses in the permanent structures or in steel sheet piling and bracing members.

If the construction sequence of structures requires the transfer of bracing to the completed portions of any structure, the

Contractor shall secure written acceptance of the Engineer prior to the installation of such bracing.

In trenching operations the use of horizontal strutting below the barrel of pipe or the use of the pipe as support for trench bracing will not be permitted. The use of a traveling shield for sewer construction shall require that the device be approved for use by a Professional Engineer. Sheet piling and timbers in trench excavations shall be withdrawn in a manner so as to prevent subsequent settlement of the pipe or additional backfill loadings which might overload the pipe.

The neglect, failure or refusal of the Engineer to order the use of sheeting, or sheet piling, or steel or to order the same to be left in place, or the giving or failure to give of any order or directions as to the manner or methods of driving or placing sheeting, sheet piling, bracing, shores, etc., shall not in any way relieve the Contractor of any or all obligations under this Contract. Sheeting left in place shall be cut off 1' below existing grade.

The rules of the OSHA and the State Department of Labor with respect to excavation and construction shall at all times be strictly observed.

d) Control of Water

All excavation and placement of sewers, backfill and fill shall be carried out in the dry. The Contractor shall furnish, install and operate all necessary machinery, appliances and equipment to keep excavations free from water during construction, and shall dewater and dispose of such water. He shall at all times have on hand sufficient pumping equipment and machinery in good working condition for all ordinary emergencies, including power outage, and shall have available at all times competent workmen for the operation of the pumping equipment. The dewatering systems shall not be shut down during work stoppage without written permission from the Engineer. Disposal plans for removed groundwater shall be approved by the Engineer prior to disposal.

The control of groundwater shall be such that softening of the bottom of excavations, or formation of "quick" conditions or "boils" during excavation shall be prevented. Dewatering systems shall be designed and operated so as to prevent removal of the natural soils.

During excavation, construction of structures, installing of pipelines and sewers, placing of structures and trench backfill and the placing and curing of concrete, excavations shall be kept free of water. The Contractor shall control surface runoff so as

to prevent entry or collection of water in excavations.

Before dewatering is started, the Contractor shall obtain acceptance by the Engineer for the method, installation and details of the dewatering system he proposes to use.

The release of ground water to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines or sewers.

Ps.2.02 INITIAL SOIL EXCAVATION AND DISPOSAL

The temporary construction easement along the backyards of the homes on Watson Street and a fifty foot strip on the east side of the Plant Site shall be excavated to a depth of one (1) foot and disposed of on the Plant Site as directed by the Engineer prior to commencing work on the storm sewer. Excavation and disposal shall include all topsoil, trees, gardens, shrubs, etc. and shall be in the areas indicated on the Contract Drawings.

Upon completion of storm sewer installation these excavated areas shall be backfilled with clean imported topsoil and the properties shall be restored to their original or better condition including replacement of shrubs, gardens and seeding.

Ps.2.03 TRENCH EXCAVATION

Unless otherwise specified or indicated, the Contractor may use any method of excavation which will not damage or endanger adjacent structures or property or disturb the natural or fill soils below and adjacent to the excavation. In no case shall excavation advance more than two pipe lengths ahead of the last installed section of sewer.

Where, in the opinion of the Engineer, the undisturbed condition of the natural soils is inadequate for the support of the planned pipeline or sewer, the Engineer shall direct the Contractor to overexcavate to adequate supporting soils and refill the excavated space to the proper elevation in accordance with the procedure specified for backfill. Where so directed by the Engineer, the excavation, removal of excavated material as specified, furnishing and placement of such material in excess of the quantities shown on the drawings will be paid for under the appropriate item of the Additional Unit Prices.

Should the excavation be carried below the lines and grades indicated on the drawings because of the Contractor's operations, the Contractor shall refill such excavated space to the proper elevation as directed. Should the natural or fill foundation soils be disturbed or loosened because of the Contractor's operations, they shall be recompacted or removed and the space refilled as directed at the Contractor's expense.

Should the excavation along Washington Ave. (M-46) between the concrete headwall and MCB 3 be to the extent that the existing 8"Ø watermain is uncovered, the Contractor shall propose a method approved by the Engineer and the City of St. Louis, of supporting the watermain such that the watermain is not damaged in any way. Upon backfilling of the trench, select granular material shall be well compacted around the watermain in order that the watermain is left in its original or better condition. Any damage to the watermain by the Contractor during construction shall be repaired immediately by the Contractor at his own expense.

Except as permitted by the Engineer, the trench at the end of the day shall not be excavated in advance of pipe laying and shall be fully backfilled with granular material except where the trench is fully shielded. The Contractor shall, at the end of the day, secure any shielded area of trench which is left open by surrounding it with snow fencing.

Ps.3 STORM SEWERS

Ps.3.01 EXTENT OF WORK

- a) The work shall consist of site clearing, removal of topsoil, trench excavation, bedding and backfill, restoration and all other work necessary for the complete construction of storm sewers and appurtenances.
- b) Trees, fences, shrubs and other vegetation designated by the Engineer will be carefully protected and saved from injury during the construction operation.

Ps.3.02 MATERIALS

1. General

- a) All materials required for the performance of this Contract with the exception of topsoil or clay fill shall be supplied by the Contractor.
- b) All materials supplied by the Contractor shall be delivered to and stored on the site in a manner satisfactory to the Engineer. All fabricated materials shall be inspected by the Contractor for damage in transit.
- c) No defective material shall be delivered to the site and materials found defective at any time shall be removed immediately and replaced at the Contractor's expense.

2. Concrete Pipe

- a) Reinforced concrete sewer pipe shall be used for storm sewers and shall comply with ASTM Specification C-76, or latest revision with "B" wall. Classes shall be as shown on the Contract drawings and as described in the Form of Bid.
- b) For storm sewers, rubber-type gasket joints shall comply with ASTM Specification C-443, or latest revision, and be designed to meet the test requirements specified in Clause 4.11.

3. Corrugated Metal Pipe

Corrugated metal pipe shall comply with AASHTO Specification M-36 or latest revision, and shall be to the U.S. Standard gauges shown on the drawings. The pipe shall have a standard two ounce galvanized coating and joints shall be bolted.

4. Precast Manholes and Manhole Catchbasins

- a) All manholes shall have a reinforced 3000 p.s.i. concrete base constructed as shown on Contract Drawings. A precast base may be used if the base is placed on 6" of compacted granular "A" (100% Standard Proctor) extending 12" beyond the outside diameter of the base.
- b) All manhole risers, tops and bases shall be precast reinforced concrete in accordance with ASTM Specification C-478, or latest revision.

5. Cast Iron Frames, Covers and Side Inlet Castings

Frames and covers for manholes and manhole catchbasins shall be in accordance with the most current municipal standards or as shown on the Contract Drawings and Specifications.

6. Manhole Bricking

Manholes and catchbasin tops shall be brought to final grade using approved bricking. Bricking shall be placed no more than 5 rows high and no less than 3 rows high.

7. Bedding & Backfill Material

- a) All storm sewer bedding and backfill shall be Class "6A" bedding, as specified on the Contract Drawings. The bedding shall be compacted to a density of 95% standard proctor maximum density.

8. Manhole Steps

- a) All manhole steps shall be manufactured of hot dipped galvanized iron as shown on the Contract Drawings.

Ps.3.03 TOPSOIL UTILIZATION

- a) Topsoil, if suitable for sodding and seeding will be stripped from within the limits of excavation excluding areas detailed in Section Ps.2.02 in advance of construction and stockpiled in areas designated by the Engineer.
- b) Topsoil excavated from the areas outlined in Section Ps.2.02 shall be disposed of on the Plant Site.
- c) On completion of the backfill of the trench, the topsoil shall be spread as directed by the Engineer.

Ps.3.04 LINE AND GRADE

- a) The Contractor shall supply, erect and maintain approved batter boards and sight rails to ensure accurate line and grade of all pipes. At least 3 batter boards shall be in use at all times, placed not more than 50 feet apart. The Contractor may use other methods of setting line and grade such as laser providing the method is approved by the Engineer.
- b) No deviation from the line and grade set out by the Engineer will be tolerated, except where changes in direction or the laying of pipes along a curve are limited to the pipe manufacturer's tolerances for joints.
- c) Test for Line and Grade: During pipe laying between adjoining manholes or structures, light from the beginning end of each straight or working section of the sewer shall remain constantly in plain view throughout the entire length of such section, and shall show the true character and shape of the interior surface of the sewer, which shall be circular in form. This test will be applied to each completed working section of sewer before its acceptance. The Contractor shall take up and relay all pipe which is not in true alignment or shows any settlement after laying.

Ps.3.05 TRENCH EXCAVATION

- a) Trenches shall be dug to the alignment and depth required.
- b) Trench Width
 - i) The transition trench width shall be applicable in all cases except when otherwise specified on the Contract Drawings.
 - ii) The following conditions shall apply when width is specified.
 - a) Minimum - The width of trenches shall be such as to give a maximum clearance of 12 inches on each side of the barrel of the pipe, plus the actual additional width required for sheeting and shoring.
 - b) Maximum - The width of the trench at the top of the pipe shall be not greater than 2 feet, plus the outside diameter of the pipe.
- c) The width of the trench at ground level will not be less than the width at any depth in the trench. Fill overbreak and slides which have occurred during excavation will be excavated and backfilled with approved materials.
- d) Where trench excavations are not kept within the design limits of the pipe, the Engineer may order sheeting and shoring, and/or a heavier class of pipe, and/or use of a higher class of bedding. No extra payment will be made for such remedial action.

- e) The pipe trench shall be graded and shaped and the specified bedding shall be provided, to give uniform and even bearing for the length of the pipe, and bell holes shall be dug at each joint. All correction in the grade shall be made with compacted granular material acceptable to the Engineer, or with fill concrete, all at the Contractor's expense.
- f) Ledge rock, boulders and masonry shall be removed to provide a clearance of at least 6 inches below and on all sides of the pipe or structure.
- g) Where the subgrade is inadequate to support the pipe, the Engineer will instruct the Contractor as to the proper procedure, and such additional work so ordered will be paid for as described in the Form of Bid.

Ps.3.06 LAYING AND JOINTING OF PIPE

- a) All pipe shall be laid and jointed in strict accordance with the manufacturer's recommendations and instructions, and with the approval of the Engineer.
- b) The laying of the pipe shall start at the lowest pipe and shall be laid upgrade, with the bell or socket pointing upstream. The pipes shall be firmly fixed and accurately set to line and grade during construction of the specified bedding, with the inverts smooth and uniform.
- c) Pipe which is not true to alignment or which shows any settlement after laying shall be taken up and relaid entirely to the satisfaction of the Engineer and at the expense of the Contractor.
- d) All pipe joints shall have approved rubber gaskets. Prior to inserting the spigot into the bell, the surface of both bell and spigot shall be wiped clean and lubricated with a liberal coating of an approved vegetable base soap compound such as linseed soap. The rubber gasket shall also be coated with the lubricating soap and then stretched uniformly over the spigot end and seated in the gasket groove or recess. In cold weather, the Contractor shall use a small amount of glycol base anti-freeze for thinning.

Ps.3.07 BEDDING

The trench shall be backfilled and compacted for a specified height above the top of the pipe, in accordance with the details described in Section Ps 3.02.7, and Ps 3.15.

Ps.3.08 SEWER TO BE KEPT CLEAN

- a) During the progress of the work and until the completion and final acceptance, the sewer and connections shall be kept clean

and free of water. If, in the final inspection of the sewer, any obstruction or deposit is discovered, it shall be removed by the Contractor.

- b) If it should be considered necessary by the Engineer, after the sewers have been laid and backfilled a wood or metal ball two inches less in diameter than the sewer shall be pulled through each section of the sewer. Should, for any reason, the ball not easily pass through the sewer, the Contractor shall open up the defective portion and repair it. The cost to test and repair shall be borne by the Contractor.

Ps.3.09 LENGTH OF OPEN TRENCH

- a) The Contractor shall not continue excavation and pipe laying at any time when two or more manholes, including benching, are incomplete.

Ps.3.10 PROTECTION OF PIPES FROM DAMAGE

- a) The Contractor shall assume full responsibility for the protection of pipes from crushing after backfilling. Where pipes are laid with shallow cover, the Contractor shall barricade the trench to protect the pipe from damage by trucks or other heavy equipment.

Ps.3.11 MANHOLE BENCHING

- a) Manholes shall be benched with 3,000 p.s.i. concrete. Channelling shall have a semi-circular bottom and vertical sides extending up to 0.8 of the pipes diameter entering or leaving the manhole. Ledges at the side of channels shall have a slope of an inch per foot unless shown otherwise on the drawings.
- b) Where there is a difference in elevation between the incoming and the outgoing pipe, the channelling shall slope downward from the higher pipe at a slope not steeper than 1 to 1, except where shown otherwise on the drawings or as directed by the Engineer.

Ps.3.12 CONNECTION OF EXISTING SEWERS

- a) All connections of existing sewers to new sewers shall be made at a time and in a manner approved by the Engineer. No connections shall be made until the new downstream sewers have been inspected, tested and approved by the Engineer.

- b) The Contractor shall supply all labour, materials and equipment to block up, divert or pump flows in existing sewers, so that benching can be completed satisfactorily and not be damaged subsequently. High early strength or "quick set" admixtures approved by the Engineer may be used in the grout and concrete and shall be at the Contractor's expense.

Ps.3.13 ELEVATION OF MANHOLES AND CATCHBASINS DURING CONSTRUCTION

- a) Manholes and catchbasins shall be constructed such that not less than 3 nor more than 5 courses of manhole brick or approved equivalent will be required to adjust the cast iron frames to final elevation.
- b) Cast iron frames shall initially be set on the concrete at the time of construction and shall be adjusted to final elevation at the time of final grading.
- c) Catchbasins shall at all times be capable of receiving surface drainage. Bricks may be omitted during the construction of roads to ensure surface drainage, but brick openings shall be sealed before roads have been completed.

Ps.3.14 INFILTRATION AND EXFILTRATION TESTING

- a) Maximum permissible infiltration or exfiltration shall be 300 gallons per inch of pipe diameter per mile of sewer per 24-hour day, with a static head of 3 feet above the crown of the pipe at the high end of the line. The Contractor shall supply all materials and labour to conduct infiltration or exfiltration tests that may be ordered by the Engineer.

Ps.3.15 BACKFILLING

- a) The Contractor shall complete the specified type of bedding and shall obtain the Engineer's approval of the specified bedding, before any backfilling.
- b) Backfilling of all trenches shall be carried out continuously and immediately after the specified bedding has been completed and approved by the Engineer.
- c) The trench between the top of the specified bedding and finished road subgrade shall be backfilled with imported select granular material placed in layers not exceeding 12 inches and shall be compacted to a density of at least 95% standard proctor maximum density. Trenches not under travelled surfaces of existing roads shall be backfilled to finished surface elevation in the same manner.

- d) Backfill materials shall not contain any:
 - i) Trees, stumps, branches, or any other wood or lumber.
 - ii) Topsoil, sod, leaves or any other organic material.
 - iii) Boulders, rock, masonry or concrete larger than 6 inches measured through any axis.
 - iv) Excess concrete not used in any structure.
 - v) Wire, steel, cast iron, cans, drums or any other foreign materials.
 - vi) Site materials not eliminated above, that contain water in excess of their optimum moisture content.
- e) Frozen materials may not be used for backfill.
- f) Soil density tests will be ordered by the Engineer, at the expense of the Owner, to prove that the general directions described above for granular bedding and trench backfilling have been followed. The re-excavation, backfilling and additional compaction expense shall be borne by the Contractor.

Ps.3.16 DISPOSAL OF EXCESS EXCAVATED MATERIAL

- a) Surplus excavated material shall be hauled, placed and spread on the Plant Site as directed by the Engineer. The costs associated with the disposal of the material shall be the responsibility of the Contractor.

Ps.4 ROAD CONSTRUCTION

Ps.4.01 GENERAL

This work shall consist of the alteration of existing roadways including granular materials, grading, and compaction.

Ps. 4.02 MATERIAL

Granular for road base and driveway restoration shall conform to Michigan Department of Transport Specifications for Michigan Series 23 Class A dense graded aggregate.

Calcium chloride shall be in liquid solution containing no less than 30% Calcium chloride by weight.

Ps.4.03 CONSTRUCTION

a) Granular Road Base

Granular road base shall be placed in lifts not exceeding six inches, and compacted to a minimum of 95% standard proctor maximum density.

b) Culverts

Culverts as required shall be placed to the lines and grades directed by the Engineer.

Bedding shall be as approved by the Engineer and shall extend to a depth of six inches below and above the pipe. Bedding and backfill shall be compacted to a minimum of 95% standard proctor maximum density.

Culvert and bedding installation shall take place in the dry.

c) Calcium Chloride

Following completion of fine grading operations, the Contractor shall apply calcium chloride and thoroughly compact the road surface.

Ps.5 CAST IN PLACE CONCRETE

Ps.5.01 GENERAL

This work shall consist of all labor and material required for mixing, proportioning, testing, placing and finishing plain and reinforced cast in place concrete including forming, reinforcing, curing and related work.

Ps.5.02 MATERIAL

a) Cement

Standard Portland Cement, conforming to ASTM C150, Type II.

b) Aggregate

(i) Coarse

Normal weight, conforming to ASTM C33. Aggregate to be hard, durable, uncoated, uncracked gravel with specific gravity approximately 2.62.

(ii) Fine

Clean, hard, durable uncoated grains, free from loam, silt and clay, and conforming to ASTM C33.

c) Admixtures

(i) Air Entraining Agent

Conforming to ASTM C260. "Darex AEA" (W.R. Grace Co.) or MB-AE10 (Master Builders) or approved equal.

(ii) No other admixtures will be permitted. In particular calcium chloride based compounds are specifically barred.

d) Reinforcing Steel

Grade 60, new billet steel conforming to ASTM A615.

e) Anchor Bolts

Carbon steel conforming to ASTM A36 with heavy hex heads.

Ps.5.03 PROPORTIONING

a) Concrete

- (i) All concrete for all parts of the work shall be of the specified quality capable of being placed without excessive segregation, and when hardened, of developing all characteristics required by these specifications.
- (ii) All concrete used shall be 3,000 p.s.i.
- (iii) Entrained air content to be $6\% \pm 1\%$ by volume.
- (iv) At least 90% of the design water must be added at the concrete batch plant.
- (v) Slump shall be $4" \pm 1/2$ inch.
- (vi) All concrete must be delivered to the site between 60° and 80° F.

Ps.5.04 FORMWORK

Forms shall be designed, constructed, installed and maintained so as to ensure that after removal of forms, the finished concrete will have true surfaces free of waviness or bulges, conforming accurately to the indicated shapes, dimensions, lines, and elevations. Form surfaces that will be in contact with concrete shall be thoroughly cleaned before each use.

Ps.5.05 CONCRETE PLACEMENT

All concrete shall be placed in accordance with specifications by the American Concrete Institute (ACI 304-73) and as specified herein.

a) Preparation for Placing

All hardened concrete, debris and foreign materials shall be removed from the interior of forms and from inner surfaces of mixing and conveying equipment. Reinforcement shall be secured in position, and shall be inspected and approved by the Engineer before placing concrete. Runways shall be provided for wheeled concrete-handling equipment; such equipment shall not be wheeled over reinforcement nor shall runways be supported on reinforcement.

b) Placing Concrete

Concrete shall be handled from mixer to transport vehicle to place of final deposit in a continuous manner, as rapidly as practicable, without segregation or loss of ingredient until the approved unit of operation is completed. Placing will not be permitted when the sun, heat, wind, or limitations of facilities furnished by the Contractor prevent proper finishing and curing of the concrete. Concrete shall be placed in the forms, as close as possible in final position in uniform approximately horizontal layers not over 12 inches deep. Forms splashed with concrete which subsequently hardens and reinforcement splashed with concrete which subsequently hardens or form coating, shall be cleaned in advance of placing subsequent lifts. Concrete shall not be allowed to drop freely more than 5 feet in unexposed work nor more than 3 feet in exposed work. Conduits and pipes shall not be embedded in concrete unless specifically indicated.

Ps.5.06 COMPACTION

Immediately after placing, each layer of concrete shall be compacted by internal concrete vibrators supplemented by hand-spading, rodding and tamping.

Ps.5.07 FINISHES

a) Exposed Edges

- (i) Provide 1 inch chamfer where specifically designated on drawings.
- (ii) Except where chamfer is called for, edge-tool top horizontal edges of all exposed structures.
- (iii) Remove fins and burrs and patch voids or irregularities in all other exposed vertical edges.

Ps.5.08 CURING - SEALING

Concrete shall be maintained in a moist condition at temperatures above 40°F for a minimum of 7 days. Concrete shall be protected from rapid temperature change and rapid drying for the first 72 hours following the removal of temperature protection. Curing activities shall be started as soon as free water has disappeared from the surface of the concrete after placing and finishing.

a) Moist Curing

Unformed surfaces shall be covered with burlap or mats, wetted before placing and overlapped at least 6 inches. Burlap or mats shall be kept continually wet and in intimate contact with the surface. Where formed surfaces are cured in the forms, the forms shall be kept continually wet. If the forms are removed before the end of the curing period, curing shall be continued as on unformed surfaces, using suitable materials. Burlap shall be used only on surfaces that will be unexposed in the finished work and shall be in two layers.

b) Membrane-Forming Compound Curing

The compound shall be applied on damp surfaces as soon as the moisture film has disappeared. The curing compound shall be applied by power spraying equipment using a spray nozzle equipped with a wind guard. The compound shall be applied in a two-coat, continuous operation at a coverage of not more than 400 square feet per gallon for each coat. When application is made by hand sprayers, the second coat shall be applied in a direction approximately at right angles to the direction of the first coat. The compound shall form a uniform, continuous, adherent film that shall not check, crack or peel, and shall be free from pinholes or other imperfections. Surfaces subjected to rainfall within 3 hours after compound has been applied, or surfaces damaged by subsequent construction operations within the curing period shall be immediately resprayed at the rate specified above. Where membrane forming curing compounds are permitted, permanently exposed surfaces shall be cured by use of a nonpigmented membrane-forming curing compound containing a fugitive dye. Where nonpigmented-type curing compounds are used, the concrete surface shall be shaded from the direct rays of the sun for the curing period. Surfaces coated with curing compound shall be kept free of foot and vehicular traffic and from other sources of abrasion and contamination during the curing period.

Ps.5.09 TESTING AND INSPECTION

- a) Materials and operations shall be tested and inspected as work progresses. Failure to detect defective work shall not present rejection when defect is discovered, nor shall it obligate the Owner for final acceptance.
- b) Testing agencies shall meet the requirements of "Recommended Practice for Inspection and Testing Agencies for Concrete and Steel in Construction" ASTM E-324-70.
- c) The following tests shall be performed by the Owner or a designated agency and shall be paid for by the Owner.

- (i) Secure composite samples in accordance with "Method of Sampling Fresh Concrete" ASTM C172-71.
- (ii) Mold and secure specimens from each sample in accordance with "Method of Making and Curing Concrete Test Specimens in the Field" ASTM C31-69.
- (iii) Test specimens in accordance with "Method of Test for Compressive Strength of Molded Concrete Cylinders" ASTM C39-72. Two specimens shall be tested at 7 and 28 day strengths.
- (iv) Make one strength test for each 50 cubic yards or fraction thereof, (or as directed by the Owner) of each mix design of concrete placed in any one day.
- (v) Determine slump for each strength test. The slump tests shall be determined at the beginning of each, the middle of, and the end of a particular mixer/agitator truck which is selected for testing. In addition, slump tests shall be taken whenever and at the discretion of the Owner the consistency of the concrete seems to vary. The slump shall be determined using the "Method of Test for Slump of Portland Cement Concrete" (ASTM C143-71).
- (vi) Determine total air content of normal weight concrete sample for each strength test in accordance with "Method of Test of Air Content of Freshly Mixed Concrete by the Pressure Method" ASTM C231-72T or "Method of Test for Air Content of Freshly Mixed Concrete by the Volumetric Method" ASTM C173-75.
- (vii) Determine temperature of concrete sample and mixing water for each strength test and as required by the Owner. Determine the temperature of aggregates, cement water and the mixture thereof at the batch plant as required by the Owner.

Ps.6 LANDSCAPING

Ps.6.01 GENERAL

The work shall consist of the supply and placement of topsoil, fertilizer, grass seed and mulch over the disturbed areas of the site. The Contractor shall supply all labor, material and equipment necessary to fully complete this landscaping in all respects.

Ps.6.02 MATERIALS

a) Topsoil

Topsoil shall be fertile loamy material free from roots, vegetation, weeds, parts of weeds, weed seeds and other debris. The source of topsoil shall be an area free from growth of Quackgrass, Japanese Clover, Horsetail, Morning Glory, and other persistent weed plants. Topsoil should be free from stones and clods over two inches in diameter.

Topsoil shall not be obtained from swampy areas and shall not be infested with the seeds of noxious weeds. The pH of the topsoil shall be between 5.5 and 7.0.

Topsoil shall be inspected and approved by the Engineer prior to delivery to the job site.

b) Seed

Grass seed is to be obtained from a recognized seed house and shall be supplied in the following mix quantities per acre.

90 lbs. Creeping Red Rescue, Ruby
50 lbs. Blue Grass, Park Variety
10 lbs. White Clover
30 - 40 lbs. Ammonium Nitrate

c) Fertilizer

Fertilizer shall be a standard commercial fertilizer with a ratio of 6-12-12. Fertilizer shall be stored in a dry area and shall be kept free flowing and free from lumps.

Fertilizer for top dressing shall be ammonium nitrate.

d) Water

Water used for hydraulic seeding shall be free of any impurities which would inhibit germination or otherwise adversely affect growth.

e) Mulch

Mulching material shall be oat or wheat straw free from weeds and all other foreign matter. Mulch shall be used dry.

f) Asphalt Emulsion

Asphalt emulsion to be used as an adhesive with the mulching material shall be a specially refined petroleum asphalt emulsified in water, containing no petroleum solvents or other components known to be toxic to plant life.

It shall be of fluid consistency, designed for cold spray applications and shall be so manufactured and stored as to show no separation of the asphalt.

Asphalt emulsion shall conform to the following specific requirements:

Viscosity, 60 ml. @ 77°F., SSF	17 - 40
Residue by Distillation, %	55 - 58
Settlement, 7 days %	5.0 Max.
Demulsibility, 50 ml. of 0.10N CaCl ₂	2.0 Max.
Sieve Test	0.10 Max.

Tests of Residue from Distillation

- a) Penetration, 77°F., 100 g,
5 Sec. 100 - 200
- b) Solubility, CCl₄, % 97.5 Min.
- c) Ductility, 77°F., cm. 40 Min.

Fireproofness	Pass
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Methods of testing shall be in accordance with ASTM Designation D244, except that for the Settlement Test the Settlement period shall be 7 days, for the Solubility Test the Solvent shall be carbon tetrachloride, and the fireproofness requirement shall be met if there is no flash or flame when the flame of a bunsen burner is held in contact for 10 seconds with the surface of the material, as received.

Adhesive materials for mulch other than asphalt emulsion will be considered as alternatives upon written application to the Engineer.

Approval by the Engineer of an alternate mulch adhesive will not increase the price of the work.

g) Sod

Sod, if required, shall be mature nursery grown sod well permeated with roots. The sod shall be uniform in texture, free from weeds and be in a healthy condition with no sign of decay.

All sod is to be delivered to the job within 24 hours of being cut and shall be placed within 36 hours of being cut. The sod shall contain sufficient moisture to maintain its vitality during transportation and placement. Sod shall be sprayed with water and covered with moist burlap if required to prevent its drying out before laying.

Sod may be rolled to facilitate handling and transportation and shall be in widths not less than 12" nor more than 18", in lengths not less than 14" nor more than 6', in thickness not less than 1 1/2".

Sod shall contain Merian Blue and/or Kentucky and/or Creeping Red Fescue grasses and shall not contain more than thirty (30) percent of other common grasses.

h) Sod Pegs

Sod pegs shall be at least one inch square and 18 inches long with one end pointed.

Ps.6.03 CONSTRUCTION METHODS

a) Topsoil Placement

Prior to seeding, the Contractor shall uniformly spread topsoil over the entire work area to a depth of 6 inches. Excavated areas in the temporary construction easement and along the east property line of the Plant Site shall be backfilled with 12" of topsoil prior to seeding. All clods and lumps shall be pulverized and any roots and foreign matter shall be raked up and removed. The entire topsoil shall be raked to a uniform finish.

b) Seeding

The grass seed and fertilizer shall be uniformly spread over the entire work area with an approved hydraulic seeder. The quantities of materials to be charged into the seeder shall be measured by weight or by a system of weight-calibrate volume. The Contractor shall provide all equipment for this purpose.

No area shall be seeded which cannot be mulched on the same day as it is sown.

Seeding is to be completed prior to September 1 of any given year.

c) Mulching

Mulch material shall be applied with an approved mulch blower and shall be sufficiently dry that it can be processed through the blower without stoppage.

Mulch shall be applied evenly over all seeded areas at the rate of 2.5 tons per acre.

To facilitate tying the mulch down, asphalt emulsion shall be sprayed into the air stream of the mulch blower at a rate sufficient to form an effective, cohesive mat. The emulsion application rate shall not be less than 150 gallons per acre. Emulsion shall be distributed uniformly throughout the mulch material by not less than two nozzles.

d) Placing of Sod

Before placement of sod, if required, fertilizer is to be uniformly applied at a rate of 500 lbs. per acre. This shall be incorporated into the topsoil by raking, disking or harrowing. Fertilizer shall be applied not more than 48 hours before the sod is placed.

Sod shall be neatly and evenly placed so that the appearance on completion shall be as nearly as possible that of a good natural growth in place. Where sodding meets seeded areas, the sod shall be countersunk to the existing grade level at the edges to permit the free flow of water across the joint.

On slopes, sod shall be laid lengthwise across the face of the slope with the ends close together. Joints in adjacent rows shall be staggered. Joints and broken sod shall be pounded to a uniform surface. On slopes 3:1 and steeper, sodding shall be pegged as follows:

On slopes steeper than 1 3/4:1 each and every row of sod shall be pegged; on slopes from 1 3/4:1 to 3:1 each of the bottom three rows and each third row above shall be pegged.

In a pegged row of sod, the pegs shall be uniformly spaced across the face of the slope at uniform intervals of not greater than 24" such that when the sods therein are:

- (a) 24" or less in length, there shall be a peg in each sod.
- (b) greater than 24" but not greater than 48" there shall be two pegs in each sod.
- (c) greater than 48" but not greater than 72" there shall be three pegs in each sod. The pegs shall be driven flush with the sod.

The Contractor shall water the sod as required to establish good growth. Water shall be applied in a manner that the newly sodded surface shall not be eroded, washed out or damaged in any way. No additional payment shall be made for watering of the sod.

e) Pegging Sod

Where sod is to be pegged, pegs shall be driven through every sod in every row, unless directed by the Engineer to be in every second row, or in every third row, as provided for in the Form of Tender. Pegs shall be driven through the centre of each sod flush with the surface.

f) Fertilizing

300 lbs. per acre of fertilizers is to be thoroughly disced into the surface of the topsoil prior to seeding.

Weed killer will be applied only as required, and approved, by the Engineer.

g) Overlap

Where the work adjoins existing vegetation the Contractor shall overlap the seed and mulch material to bond the new growth intimately to the existing growth.

h) Weather and Seasonal Conditions

Work shall only be done when the ground is free of snow, ice or standing water and when the opinion of the Engineer, weather and seasonal considerations are suitable. Work will not be permitted to proceed when wind conditions are such that material would be carried beyond the designated work area or that materials would not be uniformly applied.

Ps.6.04 TESTING

Materials shall be tested to confirm compliance with specifications at a frequency as determined by the Engineer. Upon request, the Contractor shall submit to the Engineer samples in volumes and containers as directed.

The cost of initial or primary testing shall be borne by the Owner. Should it be necessary to conduct subsequent testing due to initial non-compliance of samples with specification, all cost of such testing shall be the responsibility of the Contractor.

Ps.6.05 MAINTENANCE

The Contractor is responsible for establishing vegetative cover and shall re-seed any areas that do not properly take or are not adequately covered.

Maintenance shall continue until preliminary acceptance of the entire project, and shall include watering, mowing, and any other operations, including re-seeding as necessary to produce a close stand of grass over the entire designated area.

In no event will acceptance for this portion of the work be granted until establishment of vegetative cover and after second cutting.

Ps.7 RIP RAP

Ps.7.01 GENERAL

This work shall consist of constructing a protective covering of approved stone without mortar on an earth bed, and shall include the required excavating, trimming and consolidating of foundations as directed, and will include the hauling and delivery of all rock and other material, and all labor and equipment incidental to the handling and placing.

Ps.7.02 MATERIAL

The quality of rock or concrete fragments shall be approved by the Engineer. Rock or concrete subject to marked deterioration by water or weather will not be accepted.

Crushed rock shall be quarried stone of good quality with no more than 10% passing the 3 inch sieve.

Ps.7.03 CONSTRUCTION

Where and as directed by the Engineer, excavation shall be performed to provide a shelf or ledge to retain the rock so dumped as permitted under this section.

The Contractor may use quarry run rock fragments but excluding those fragments smaller than the sizes hereinbefore specified. Such material may be placed by dumping it into position over the surface to be rip rapped, or placed by derrick or other approved means. A reasonable endeavour shall be made to place the larger fragments at the bottom of the slopes. Material sized larger than 12 inches shall be placed and graded by size up the slope with the larger sizes placed at the toe of the slope. Placing shall be done in such a manner that the surface of the finished rip rap shall have a uniform appearance.

The finished rip rap protection layer shall average 12 inches in thickness with a tolerance of ± 3 inches.

METHOD OF PAYMENT

Mp.1

GENERAL

The Form of Bid and Additional Unit Prices are to be used as a basis of payment only and shall not be used as a description of the full extent of the work required to be performed under this Contract. All work specified on the Contract Drawings and in the Specifications must be included in the appropriate items in the Form of Bid. The method of payment for each of the bid items will be as outlined in this section. Items not specifically listed in the Form of Bid or outlined in the Method of Payment shall be included in the appropriate Unit Prices for full and complete performance of the work.

Mp.2 CONSTRUCT STORM SEWER COMPLETE

Mp.2.01 PIPE INSTALLATION

The price per lineal foot for installation of concrete storm sewer pipe shall include all labor, materials and equipment required to excavate the trench, lay and assemble the pipe and properly backfill the trench.

The Contractor shall only excavate the trench to the depth and width shown on the Contract Drawings or as directed by the Engineer. Should deeper excavation of the trench be required in the Engineers opinion, in order to obtain adequate support for the pipe, the Contractor shall excavate to the necessary depth and backfill with approved granular material to the grades on the Contract Drawings. Payment for this additional excavation & backfill material shall be paid for under the appropriate item of the Additional Unit Prices.

The price shall include any testing required to maintain proper alignment of the pipe and proper grade of the pipe. Should the Engineer feel that proper grade or alignment is not being maintained the Contractor must correct the problem as directed.

The price shall include all bedding and backfill required as shown on the Contract Drawings. Bedding must be approved Michigan Department of Transportation course aggregate "6A" compacted to 95% maximum density. Backfill shall be any approved select granular material also compacted to 95% maximum dry density. Payment shall not be made for any additional excavation and backfill beyond the limits specified in Ps.3.05.

The price shall include the excavation and removal of the CMP pipes crossing under Watson Street at locations shown on the Contract Drawings. The excavated pipe shall be disposed of on the Plant Site as directed by the Engineer.

The price shall include any labor, material and equipment required to connect new sewer lines into existing catchbasins or manholes. This shall not be done until all downstream sections of new pipe have been inspected and approved by the Engineer.

The price for pipe installation shall include flushing and cleaning all storm sewer pipe prior to "end of maintenance inspection". All sewer lines must be flushed and cleaned to the Engineer's satisfaction.

Payment will be based on the lineal foot of pipe installed, measured horizontally between the centres of each manhole.

Mp.2.02 DITCH INTERCEPTORS

The price for installation of each interceptor shall include all labor, materials and equipment required to excavate, connect

interceptor line into the main storm sewer line and backfill to proper grade.

Payment will be based on a lump sum item for each interceptor installed.

Mp.3 CONSTRUCT MANHOLES, CATCHBASINS AND HEADWALL

Mp3.01 MANHOLES AND CATCHBASINS

The price per vertical foot for installation of each manhole or catchbasin shall include all labor, materials and equipment required to excavate to the required depth and construct the manholes and/or catchbasins. The manholes and catchbasins shall be constructed as indicated on the Contract Drawings.

The price shall include providing a proper granular base for both manholes and catchbasins and providing an adequate concrete base as indicated on the Contract Drawings. It shall also include the cost of granular backfill to the limits indicated on the Contract Drawings.

The price shall include providing the proper cast iron frames and lids as well as providing masonry bricking to adjust manhole and catchbasin frames and lids to final grade. Manhole and catchbasin bricks shall be placed no more than 5 rows high and no less than 3 rows high.

The price shall include installation of benching in the invert of manholes or catchbasins. The manholes and catchbasins which require benching and the benching detail are shown on the Contract Drawings.

The price shall include flushing and cleaning each manhole and catchbasin prior to "end of maintenance inspection". All manholes and catchbasins must be flushed and cleaned to the Engineer's satisfaction.

Payment will be based on the vertical foot of each catchbasin and manhole installed measured vertically from the lowest invert in the manhole to the final elevation of the top of the manhole cover.

Mp.3.02 HEADWALL

The lump sum price for installation of the headwall shall include all labor, materials and equipment required to excavate, form and pour the concrete headwall. Construction of the headwall shall conform to the headwall detail on the Contract Drawings.

The price shall include final grading and sodding of the slope along the outfall of the headwall above the rip-rap. The Contractor shall follow the pegging details outlined in Ps.6.03 when required.

Payment will be based on a lump sum item for installation of the concrete headwall and sodding the slope above the rip-rap along the headwall outfall.

Mp.4 MISCELLANEOUS

Mp.4.01 EXCAVATE AND DISPOSE OF SURFACE MATERIAL

The price for excavating one (1) foot of surficial material within the areas shown on the Contract Drawings shall include labor, material and equipment necessary to excavate, load and transport the material to the Plant Site for disposal in locations as directed by the Engineer.

The price shall include removing gardens, trees, shrubs, etc. that are within the excavation areas shown on the Contract Drawings. This material shall be disposed of on the Plant Site as directed by the Engineer.

Payment will be based on bank cubic yard calculation made by the average end area method from cross sections of the excavated areas taken prior to and subsequent to excavation of the material.

Mp.4.02 EASEMENT BACKFILL

The price per cubic yard shall include all labor, material and equipment required to backfill the temporary construction easement along the back lots of Watson Street homes and the 50 foot wide strip on the northeast side of the Plant Site with topsoil. Backfilled topsoil shall be raked to final grades as shown on the Contract Drawings in preparation for seeding and mulching.

The price shall include any allowances required to clean up spillage of topsoil along the haul route required as a result of the Contractor's operations. All such cleaning shall be to the satisfaction of the Engineer.

Payment will be based on a cubic yard calculation made by the average end area method from cross-sections of the excavated areas taken prior to and subsequent to backfilling of the area.

Mp.4.03 REGRADE WATSON STREET

The price per ton for regrading Watson Street shall include all labor, materials and equipment required to raise Watson Street to the new grades proposed on the Contract Drawings. Granular placement shall be restricted to 12" lifts compacted to a minimum density of 95% maximum dry density.

Payment for regrading shall be on a per ton basis as verified by weigh tickets issued at the material source.

Mp.4.04 DRIVEWAY RESTORATION

The price per ton shall include all labor, materials and equipment required to restore all driveway ramps on Watson Street between North Street and Central Street and to repair driveway ramps damaged during storm sewer construction. Driveway ramps must be replaced to their original or better condition using granular material specified in Section Ps.4.02.

The price shall include all labor, material and equipment required to install 12"Ø CMP pipe under all ramps on Watson Street between North Street and Central Street.

Payment for driveway restoration will be on a per ton basis as verified by weigh tickets issued at the material source.

Mp.4.05 DITCH REGRADING

The price quoted for ditch regrading, shall include all labor, material and equipment required to regrade all ditching to maintain proper flow as shown on the Contract Drawings.

The price shall include regrading the ditch on Watson Street such that it connects with the existing 21"Ø storm sewer.

Payment will be made on a lump sum basis upon completion of all ditch regrading.

Mp.4.06 CALCIUM CHLORIDE

The price for calcium chloride shall include all labor, materials and equipment required to supply and distribute calcium chloride as directed by the Engineer.

Payment will be on a per gallon basis for calcium chloride used.

Mp.4.07 SEED AND MULCH

The price for seed and mulch shall include all labor, materials and equipment required to hydroseed and mulch all topsoiled areas including ditches and backyards of Watson Street homes.

Payment will be made based on a per acre field measurement of the seeded and mulched area.

Mp.4.08 TREES AND SHRUBS

The price for trees and shrubs shall include all labor, material and equipment required to replant all disturbed areas to their original or better condition.

Payment will be made on a lump sum basis at the completion of planting all trees and shrubs.

Mp.4.09 HEADWALL RIP-RAP

The unit price quoted for provision of the rip-rap erosion control shall include excavation of the foundation and preparation of the bed, hauling and delivery of all rock and other material, and all labor and equipment incidental to the completion of the work in accordance with the specifications.

The material to be supplied, delivered and placed by the Contractor shall be quality concrete fragments or quarried stone with no more than 10% passing the three inch sieve.

Payment for rip-rap will be based on the slope measured square yards of rip-rap in place.