Town of Pelham

MUNICIPAL SQUARE ROAD EXTENSION

Proctor & Redfern Limited

September 26th, 1979

Project E.O. 79560

ADDENDUM NO. 2

This Addendum forms part of the Contract Documents. Include the related costs in the tender price. Insert the Addendum behind the cover page of the Contract Documents.

1. SECTION 00100 - TENDERING INFORMATION, TI.01 A.

   Change closing date from September 20th, 1979

   to OCTOBER 11th, 1979

Town of Pelham

Municipal Square Road Extension

Proctor and Redfern Limited September 14th, 1979

Project E.O. 79560

ADDENDUM NO. 1

This Addendum forms part of the Contract Documents. Include the related costs in the tender price. Insert the Addendum behind the cover page of the Contract Documents.

1. SECTION FORM OF TENDER, Page 4, Item A.018

   Change "Double prime" to "Prime".

2. SECTION 02590 - ROADS AND SURFACE WORKS

   Add Part 3.15 Prime Granular 'A' Base

   Carry out work in accordance with M.T.C. Form 302 except that no sand cover is required. Apply prime at a rate of 1/3 gal. per square yard.

CONTRACT DOCUMENTS

TOWN OF PELHAM

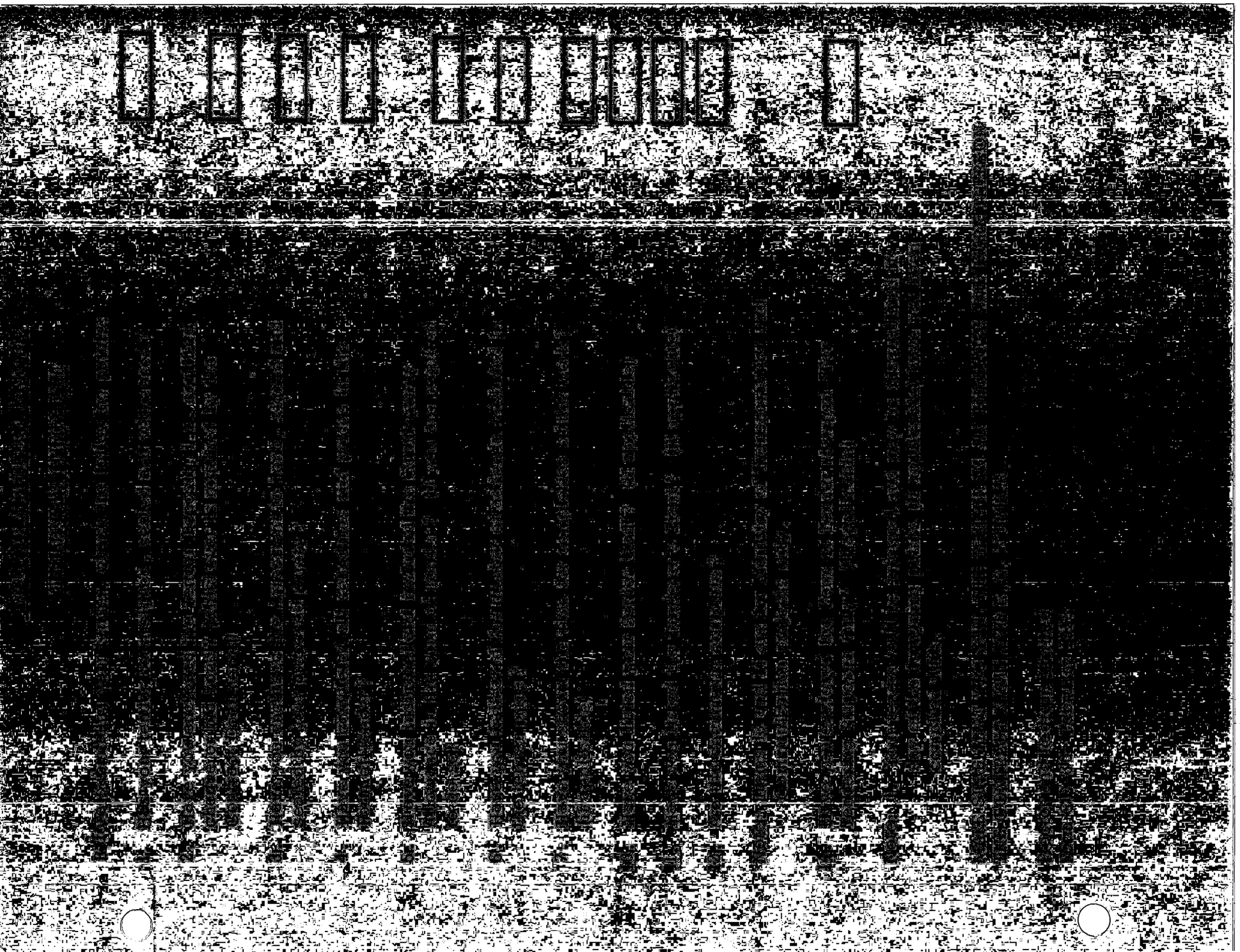
MUNICIPAL SQUARE ROAD EXTENSION

Project
E.O. 79560

September 1979

THE PROCTOR AND REDFERN GROUP,
Consulting Engineers and Planners,
110 James Street, St. Catharines, Ontario.
L2R 7E8

DLP
:tp



LIST OF CONTRACT DOCUMENTS

The following shall form the Contract Documents:

	Paper Colour	Pages
Addenda Numbered 1 to 2	Green	
Tenderer's Check List	Bright Pink	1
List of Contract Documents	Pink	1
Tendering Information	Blue	3
Form of Tender	Yellow	7
Agreement	White	1
Agreement to Bond (CD-22)	White	1
Bid Bond (CCA Document (S)20)	White	1
Performance Bond (CCA Document (S)21)	White	1
Labour and Materials Payment Bond (CCA Document (S)22)	White	2
List of Sub-Contractors (CD-3)	White	1
Tenderer's Experience (CD-4)	White	1
Tenderer's Senior Staff (CD-5)	White	1
Tenderer's Plant (CD-6)	White	1
Supplementary General Conditions	Blue	2
General Conditions of the Contract	Blue	8
Project Specifications		
Section 01010 - General	White	2
Section 02550 - Site Clearing, Excavation, Backfilling and Restoration of Trenches	White	5
Section 02560 - Sewers	White	5
Section 02570 - Watermains	White	4
Section 02590 - Roads and Surface Works	White	8

LIST OF DRAWINGS

B-79560-P1	Plan and Profile

LIST OF STANDARDS

DD-601	Concrete Curb and Gutter (Type 'G')
DD-704-B	Manhole Frame and Cover
DD-713-B	Catchbasin Frame and Grate
E-79560-L1	Shallow Precast Manhole (Manhole No. 1)
E-STD-2-1	Pipe Bedding Details (Storm Sewers and Watermains)
E-STD-2-2	Precast Manhole (Manhole No. 3)
E-STD-2-5	Precast Catchbasin Manhole (Manhole No. 2)
E-STD-2-10	Aluminum Ladder Rungs
E-STD-2-15	Precast Catchbasin

SECTION 00100 - TENDERING INFORMATION

TI.01 DELIVERY AND OPENING OF TENDERS

A. Sealed tenders, marked with the name of the project, will be received by -

Mr. L.C. Hunt, Clerk-Treasurer, Town of Pelham, 43 South Pelham Street, Fonthill, Ontario. L0S 1E0.

up to noon, local time -

Thursday, September 20th, 1979

B. The tenders will be opened publicly as soon after the closing time as possible.

C. Tenders shall be completed on the detachable Form of Tender included in the Contract Documents.

TI.02 DISCREPANCIES

A. If a Tenderer finds discrepancies in, or omissions from the Contract Documents, or if he is in doubt as to their meaning, he shall notify the Engineer, who may issue a written addendum. Neither the Owner nor the Engineer will make oral interpretations of the meaning of the Contract Documents.

B. Should the Tenderer 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 an event, the Engineer may choose to issue an addendum.

C. Addenda issued during the tendering period shall be allowed for by the Tenderer.

TI.03 EXAMINATION OF SITE

A. The Tenderer shall visit the site of the Work before submitting his tender and shall by personal examination satisfy himself as to the local conditions that may be encountered during construction of the Work. He shall make his own estimate of the facilities and difficulties that may be encountered and the nature of the subsurface materials and conditions.

B. He shall not claim at any time after submission of his tender that there was any misunderstanding of the terms and conditions of the Contract relating to site conditions.

TI.04 SALES TAX

A. The Tenderer shall include or exclude sales tax in accordance with current sales tax legislation taking into account any changes that have been made known by the Government and that will occur during the life of the Contract.

B. If sales taxes are increased or decreased, or other amendments are made in the legislation, during the course of the Contract, that alter tax amounts carried in the Contract price, an adjustment will be made accordingly.

C. The Contractor shall keep records and invoices of accounts subject to Federal and Provincial Sales Tax for the purpose of establishing taxes paid and for substantiation in the event of changes to the tax legislation during the course of the Contract.

TI.04 SALES TAX (Cont'd)

D. The Tenderer shall contact the Sales Tax authorities and determine what the applicable taxes are and the procedures for tax exemption and/or refunding and include related administrative costs in the tender.

TI.05 PROOF OF ABILITY

A. The Tenderer shall be competent and capable of performing the various items of Work. The Tenderer shall complete the following statement sheets, which shall form a part of the Contract Documents -

1. Tenderer's Experience on Similar Work (CD-4) with list of specific examples completed within the last 5 yrs., with appropriate references

2. Tenderer's Senior Staff to be employed (CD-5)

3. Tenderer's Plant to be used (CD-6)

B. The Tenderer may be required to furnish additional statements covering other matters, including financial resources.

TI.06 TENDER DEPOSIT

A. Every tender shall be accompanied by a Bid Bond in an amount equal to $2,000.00

C.C.A. Document (S)20 shall be used for the Bid Bond.

The Tenderer shall keep his tender open for acceptance for 60 days after the closing date. Withdrawal during this period will result in forfeiture or enforcement of the Bid Bond.

Upon being notified that his tender has been accepted, the Contractor shall execute copies of the Agreement, supply bonds and insurance documents as specified, and start Work as specified.

Failure to execute the copies of the Agreement, or to supply bonds and insurance documents, all within 2 weeks of the date of acceptance of the tender, or to start Work as specified, will automatically mean the forfeiture or enforcement of the Bid Bond.

Bid Bonds of unsuccessful Tenderers will be returned not later than 2 weeks following Contract award.

The Bid Bond of the successful Tenderer will be returned with the first progress certificate.

TI.07 AGREEMENT TO BOND

A. Every tender shall be accompanied by an 'Agreement to Bond' in the form attached, and shall be completed by a surety company lawfully doing business in the Province.

TI.08 SUB-CONTRACTORS

A. The Tenderer shall submit with his tender the names and addresses of Sub-contractors he proposes to use and the value for the subtrades listed in Form CD-3 'List of Sub-contractors'.

TI.09 ACCEPTANCE OF TENDERS

b. The lowest or any tender need not necessarily be accepted by the Owner.

TI.10 EQUIVALENTS

a. When an article is specified by its trade or other name (whether such name is followed by the phrase "or approved equal" or not), the Tenderer shall base his tender price on the supply of the named article and no other.

The Tenderer may submit with his tender suggested equivalents to those articles specified by trade or other names. Such submissions shall be made on Form CD-7 attached and shall show the name of the article specified, the name and description of the suggested equivalent, and the total revision to the tender price that would result if the equivalent were accepted.

FORM OF TENDER

FT.01 TENDER PRICE

1. Offer by - Name - Steed and Evans Limited

   Address - P.O. Box 420, Niagara Falls, Ontario L2E 6T8

   Date - September 20th, 1979

2. To The Corporation of the Town of Pelham

A. We, the undersigned, having examined the site of the Work, having carefully investigated the conditions pertaining to the Work and having secured all the information necessary to enable us to submit a bona fide tender, and having inspected all the Contract Documents, hereby agree to enter into a contract and to perform all the Work in a good and Workmanlike manner in accordance with the Contract Documents to the satisfaction of the Engineer for the total tender price of

dollars ($ 37,713.80)

FT.02 CONTINGENCIES AND ALLOWANCES

A. We agree that the tender price includes the contingency sum of $2,000.00 and that no part of this sum shall be expended without the written direction of the Engineer, and any part not so expended shall be deducted from the tender price.

FT.03 QUANTITIES

A. The tender price is compiled from the Schedule Of Tender Prices included hereinafter. The quantities in the schedule being approximate, we agree that the final valuation will be made on the basis of actual quantities measured during and on completion of the Work at the prices in the schedule.

FT.04 ADDITIONS AND DEDUCTIONS

A. We agree that the valuation of additions to, and deductions from, the contract shall be made as follows -

1. The prices in the Schedule Of Tender Prices shall apply where appropriate.

2. If the prices in subsection 1 are not appropriate, valuation will be made by one of the following methods -

   (A) The Engineer may ask the Contractor for a quotation for the proposed Work.

   (B) If the quotation referred to in (A) above is not accepted by the Engineer, the actual cost of the Work will be determined as the total of only the following -

   (1) Actual cost of labour, including such items as Workmen's Compensation and Unemployment Insurance.

   (2) Actual cost of materials to be incorporated into the Work, including such items as freight and taxes.

   (3) For Work done by the Contractor, an amount equal to 15 percent of the totals from subsections (1) and (2) above, which shall constitute overhead and profit of the Contractor.

FT.04 ADDITIONS AND DEDUCTIONS (Cont'd)

A. (Cont'd)

2. (B) (Cont'd)

(4) For Work done by Sub-contractors, an amount equal to 20 percent of the totals from subsections (1) and (2) above, which shall constitute overhead and profit of the Contractor and Sub-contractors.

(5) Rental of equipment and plant having a new value greater than $300. Rental rates shall be as set out in the current edition of MTC form 527.

3. Whenever extra Work is being performed under subsection 2(B) above, we agree to submit daily reports in writing, indicating the total chargeable costs incurred for the day. Valuation of the extra Work being so performed will be made only on the basis of the approved daily reports.

FT.05 ADDENDA

A. We agree that we have received addenda 1 to 2 inclusive, and the tender price includes the provisions set out in such addenda.

FT.06 COMPLETION

A. We agree to commence Work as specified, to proceed continuously to the completion and to complete all Work specified for 1979 within 5 weeks from the date of issue of the written order to start work.

We further agree to return in 1980 to complete all remaining work within 3 weeks of the written order to start work.

FT.07 SCHEDULE OF TENDER PRICES

Item No.	Description	Unit	Estimated Quantity	Contract Unit Price	Estimated Total Price
PART A - Work to be carried out in 1979					
A.001	Clearing and grubbing			Lump Sum	$ 780.00
A.002	Earth excavation and grading (including rough grading boulevards and placing and compacting earth in fill areas)	Cu.Yd.	750	$ 4.07	$ 3,052.50
A.003	15-inch diameter concrete storm sewer A257.1 ES, Manhole 1 to Manhole 2	Lin.Ft.	75	$ 14.48	$ 1,086.00
A.004	15-inch diameter concrete storm sewer A257.1 ES, Manhole 2 to Manhole 3	Lin.Ft.	200	$ 14.48	$ 2,896.00
A.005	12-inch diameter concrete catchbasin leads A257.1 ES (including tees at main sewer)	Lin.Ft.	75	$ 13.46	$ 1,009.50
A.006	Manhole No. 1 (STD E-79560-L1) complete, approximate depth 3.5 ft.			Lump Sum	$ 720.00
A.007	Catchbasin Manhole No. 2 (STD E-STD-2-5) complete, approximate depth 5 ft.			Lump Sum	$ 840.00
A.008	Manhole No. 3 (STD E-STD-2-2) complete, approximate depth 8 ft.			Lump Sum	$ 990.00
A.009	Catchbasins	Each	3	$ 540.00	$ 1,620.00
A.010	Locate and connect existing 12-inch diameter sewer and connect to Manhole 3			Lump Sum	$ 300.00
A.011	Remove and dispose of existing manhole and section of storm sewer to Manhole 1, backfill with select native material compacted to 95% Standard Proctor density			Lump Sum	$ 300.00
A.012	4-inch P.V.C. "Canron" duct concrete encased, including fish line as detailed	Lin.Ft.	45	$ 14.40	$ 648.00
A.013	6-inch diameter ductile iron watermain, Class II (including thrust block at end of main)	Lin.Ft.	55	$ 18,86	$ 1,037.30
A.014	Locate, salvage and relocate existing watermain main blow-off			Lump Sum	$ 120.00
			Sub-Total Forward		$ 15,399.30

Item No.	Description	Unit	Estimated Quantity	Contract Unit Price	Estimated Total Price
			Sub-Total Forward		$ 15,399.30
A.015	Connect to existing 6-inch diameter watermain			Lump Sum	$ 60.00
A.016	Saw cut and remove existing concrete curb and gutter	Lin.Ft.	85	$ 0.60	$ 51.00
A.017	Granular 'A' road base, 10-inch depth	Ton	750	$ 5.15	$ 3,862.50
A.018	Double prime granular 'A' base course (approximately 1,100 sq.yd.)			Lump Sum	$ 1,386.00
A.019	Grader rental 100 H.P. min. tandem drive (operated)	Hr.	4	$ 40.00	$ 160.00
A.020	Excavate soft spots in sewer and watermain trenches and backfill with Granular 'A' (as directed by the Engineer)	Cu.Yd.	5	$ 12.00	$ 60.00
			Total Part A Work to be carried out in 1979		$ 20,978.80

Item No.	Description	Unit	Estimated Quantity	Contract Unit Price	Estimated Total Price
PART B - Work to be carried out in 1980					
B.001	Concrete curb and gutter	Lin.Ft.	600	$ 6.85	$ 4,110.00
B.002	Granular 'A' road base 2-inch depth	Ton	150	$ 6.00	$ 900.00
B.003	Hot mix HL6 (1 1/2-inch depth)	Ton	85	$ 27.00	$ 2,295.00
B.004	Hot mix HL3 (1 1/2-inch depth)	Ton	85	$ 27.00	$ 2,295.00
B.005	Fine grade boulevards, supply and place 4-inch depth of top-soil (this item may be deleted from the contract at the discretion of the Town of Pelham)	Sq.Yd.	1,000	$ 1.57	$ 1,570.00
B.006	Supply and place nursery sod (this item may be deleted from the contract at the discretion of the Town of Pelham)	Sq.Yd.	1,000	$ 1.20	$ 1,200.00
B.007	Concrete sidewalk (this item may be deleted from the contract at the discretion of the Town of Pelham)	Sq.Ft.	1,100	$ 2.15	$ 2,365.00
			Total Part B Work to be carried out in 1980		$ 14,735.00
Contingency Allowance				Lump Sum	$ 2,000.00

SUMMARY

PART A - Work to be carried out in 1979	$ 20,978.80
PART B - Work to be carried out in 1980	$ 14,735.00
Contingency Allowance	$ 2,000.00
TOTAL CONTRACT PRICE*	$ 37,713.80

BREAKDOWN

Material	$ 15,000.00
Labour	$ 10,000.00
Plant	$ 10,713.80
Contingency Allowance	$ 2,000.00
TOTAL TENDER PRICE*	$ 37,713.80

*These two figures must agree.

OFFERED ON BEHALF
OF THE CONTRACTOR

Signature

R. Lepton
Signature

Contractor's Seal

Steed and Evans Limited
Company Name

Marion Sirianni
Witness

P.O. Box 420
Niagara Falls, Ontario
L2E 6T8
Address

oct 25/79
Date

Proctor & Redfern Limited
Project EO

AGREEMENT

This Agreement made in triplicate this 22nd day of October 19 79 , between

Steed and Evans Limited hereinafter called "The Contractor",

AND

The Corporation of the Town of Pelham hereinafter called "The Owner".

WITNESSETH, that the Contractor agrees with the Owner to perform all the Work in accordance with the Contract Documents referred to in the tender of the Contractor dated the 20th day of September , 19 79 , (which shall be deemed to form part of this Contract) to the satisfaction of the Engineer for the total contract price of $ 37, 713.80 which Contract Documents are attached hereto and which are hereby expressly made part of this Contract.

The Owner hereby agrees with the Contractor, that in consideration of the Work being performed by the Contractor as specified, the Owner shall pay the Contractor for said Work in accordance with the prices set out in the Form of Tender attached hereto, and in accordance with the provisions set out in the attached Contract Documents.

Time shall be deemed the essence of this Contract.

IN WITNESS WHEREOF the parties hereto have executed this Agreement under their respective corporate seals and by the hands of their proper officers thereunto duly authorized.

SIGNED, SEALED AND DELIVERED
in the presence of:

OWNER

The Corporation of the Town of Pelham
Name

E.G. Bergenstein
Signed

MAYOR
Name and Title

Signed

L.C. Hunt CLERK TREASURER.
Name and Title

Witness

Name and Title

CONTRACTOR

Steed and Evans Limited
Name

Signed

R. Lepton
Name and Title

Constr. manager
Signed

Name and Title

Marion Siviano
Witness

Name and Title

N.B. Where legal jurisdiction, local practice or Owner or Contractor requirement calls for proof of authority to execute this document, proof of such authority in the form of a certified copy of a resolution naming the person or persons in question as authorized to sign the Agreement for and on behalf of the Corporation or Partnership, parties to this Agreement, should be attached.

AGREEMENT TO BOND

Date _____ 19__

Proctor and Redfern Limited

Project E.O. 79560

*

Gentlemen:

Construction of Municipal Square Road Extension
in the Town of Pelham

In consideration of the Owner accepting the tender of and executing an Agreement with _____ (hereinafter referred to as "the Tenderer") for the construction of Municipal Square Road Extension in the Town of Pelham, Ontario subject to the express condition that the Owner receive the Performance Bond and the Payment Bond in accordance with the said tender, we the undersigned hereby agree with the Owner, to become bound to the Owner as surety for the Tenderer in a performance bond and a payment bond each in an amount equal to 100 percent of the tender price, in the standard forms of the Canadian Construction Association and in accordance with the said tender, and we agree to furnish the Owner with the said bonds within 7 days after notification of the acceptance of the tender has been mailed to us.

Yours very truly

Note: This Agreement must be executed on behalf of the surety company by its authorized officers under the company's corporate seal.

*Enter name and address of surety company at the top of the page.

April 1979

BID BOND

No. ..... $ .....

KNOW ALL MEN BY THESE PRESENTS THAT .....

..... as Principal

hereinafter called the Principal, and .....

a corporation created and existing under the laws of .....

and duly authorized to transact the business of Suretyship in .....

as Surety, hereinafter called the Surety, are held and firmly bound unto .....

..... as Obligee

hereinafter called the Obligee, in the amount of .....

..... Dollars ($ .....)

lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a written tender to the Obligee, dated the .....

day of ..... 19 ..... , for .....

.....

.....

.....

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the aforesaid Principal shall have the tender accepted within sixty (60) days from the closing date of tender and the said Principal will, within the time required, enter into a formal contract and give the specified security to secure the performance of the terms and conditions of the Contract, then his obligation shall be null and void; otherwise the Principal and the Surety will pay unto the Obligee the difference in money between the amount of the bid of the said Principal and the amount for which the Obligee legally contracts with another party to perform the work if the latter amount be in excess of the former.

The Principal and the Surety shall not be liable for a greater sum than the specified penalty of this Bond.

Any suit under this Bond must be instituted before the expiration of six months from the date of this Bond.

IN WITNESS WHEREOF, the Principal and the Surety have Signed and Sealed this Bond this .....

..... day of ..... 19 .....

SIGNED and SEALED
In the presence of

(.....
(Principal (Seal)

(.....
(Surety (Seal)

Endorsed by: R.A.I.C., A.C.E.C., C.C.A., E.I.C., S.W.A.C.

Approved by: INSURANCE BUREAU OF CANADA

PERFORMANCE BOND

C.C.A. Document No. (S) 21

No. ..... $ .....

KNOW ALL MEN BY THESE PRESENTS THAT .....

.....as Principal,

hereinafter called the Principal, and .....

a corporation created and existing under the laws of .....

and duly authorized to transact the business of Suretyship in .....

as Surety, hereinafter called the Surety, are held and firmly bound unto .....

..... as Obligee,

hereinafter called the Obligee, in the amount of .....

..... Dollars ($ .....)

lawful money of Canada, for the payment of which sum, well and truly to be made, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a written contract with the Obligee, dated the .....

day of ..... 19 ..... , for .....

.....

.....

.....

In accordance with the Specifications and Drawings submitted therefor which contract, Specifications and Drawings, are by reference made part hereof and are hereinafter referred to as the Contract.

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

Whenever the Principal shall be, and declared by the Obligee to be, in default under the Contract, the Obligee having performed the Obligee's obligations thereunder, the Surety may promptly remedy the default, or shall promptly

(1) complete the Contract in accordance with its terms and conditions or

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

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

The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

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

IN WITNESS WHEREOF, the Principal and the Surety have Signed and Sealed this Bond this .....

day of ..... 19 .....

SIGNED and SEALED
In the presence of:

(.....
(Principal (Seal)

(.....
(Surety (Seal)

LABOUR AND MATERIAL PAYMENT BOND
(TRUSTEE FORM)

No. ..... $ .....

Note: This Bond is issued simultaneously with another Bond in favour of the Obligee conditioned for the full and faithful performance of the Contract.

KNOW ALL MEN BY THESE PRESENTS THAT .....

..... as Principal,

hereinafter called the Principal, and .....

a corporation created and existing under the laws of .....

and duly authorized to transact the business of Suretyship in .....

as Surety, hereinafter called the Surety are, subject to the conditions hereinafter contained, held and firmly bound unto

..... as Trustee,

hereinafter called the Obligee, for the use and benefit of the Claimants, their and each of their heirs, executors, administrators, successors and assigns, in the amount of .....

..... Dollars ($ .....)

of lawful money of Canada for the payment of which sum well and truly to be made the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a written contract with the Obligee, dated the .....

day of ..... 19 ..... , for .....

.....

.....

.....

which contract, Specifications & Drawings are by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall make payment to all Claimants for all labour and material used or reasonably required for use in the performance of the Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A Claimant for the purpose of this Bond is defined as one having a direct contract with the Principal for labour, material, or both, used or reasonably required for use in the performance of the Contract, labour and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment directly applicable to the Contract provided that a person, firm or corporation who rents equipment to the Principal to be used in the performance of the Contract under a contract which provides that all or any part of the rent is to be applied towards the purchase price thereof, shall only be a Claimant to the extent of the prevailing industrial rental value of such equipment for the period during which the equipment was used in the performance of the Contract. The prevailing industrial value of equipment shall be determined, insofar as it is practical to do so, In accordance with and in the manner provided for in the latest revised edition of the publication of the Canadian Construction Association titled "Rental Rates on Contractors Equipment" published prior to the period during which the equipment was used in the performance of the Contract.

2. The Principal and the Surety, hereby jointly and severally agree with the Obligee, as Trustee, that every Claimant who has not been paid as provided for under the terms of his contract with the Principal, before the expiration of a period of ninety (90) days after the date on which the last of such Claimant's work or labour was done or performed or materials were furnished by such Claimant, may as a beneficiary of the trust herein provided for, sue on this Bond, prosecute the suit to final judgment for such sum or sums as may be justly due to such Claimant under the terms of his contract with the Principal and have execution thereon. Provided that the Obligee is not obliged to do or take any act, action or proceeding against the Surety on behalf of the Claimants, or any of them, to enforce the provisions of this Bond. If any act, action or proceeding is taken either in the name of the Obligee or by joining the Obligee as a party to such proceeding, then such act, action or proceeding, shall be taken on the understanding and basis that the Claimants; or any of them, who take such act, action or proceeding shall indemnify and save harmless the Obligee against all costs, charges and expenses or liabilities incurred thereon and any loss or damage resulting to the Obligee by reason thereof. Provided still further that, subject to the foregoing terms and conditions, the Claimants, or any of them, may use the name of the Obligee to sue on and enforce the provisions of this Bond.

3. No suit or action shall be commenced hereunder by any Claimant:

   (a) unless such Claimant shall have given written notice within the time limits hereinafter set forth to each of the Principal, the Surety and the Obligee, stating with substantial accuracy the amount claimed. Such notice shall be served by mailing the same by registered mail to the Principal, the Surety and the Obligee, at any place where an office is regularly maintained for the transaction of business by such persons or served in any manner in which legal process may be served in the Province or other part of Canada in which the subject matter of the Contract is located. Such notice shall be given

      (1) in respect of any claim for the amount or any portion thereof, required to be held back from the Claimant by the Principal, under either the terms of the Claimant's contract with the Principal, or under the Mechanics' Liens Legislation applicable to the Claimant's contract with the Principal, whichever is the greater, within one hundred and twenty (120) days after such Claimant should have been paid in full under the Claimant's contract with the Principal;

      (2) in respect of any claim other than for the holdback, or portion thereof, referred to above, within one hundred and twenty (120) days after the date upon which such Claimant did, or performed, the last of the work or labour or furnished the last of the materials for which such claim is made, under the Claimant's contract with the Principal;

   (b) after the expiration of one (1) year following the date on which the Principal ceased work on the Contract, including work performed under the guarantees provided in the Contract;

   (c) other than in a Court of competent jurisdiction in the Province or District of Canada in which the subject matter of the Contract, or any part thereof, is situated and not elsewhere, and the parties hereto agree to submit to the jurisdiction of such Court.

4. The Surety agrees not to take advantage of Article 1959 of the Civil Code of the Province of Quebec in the event that, by an act or an omission of a Claimant, the Surety can no longer be subrogated in the rights, hypothecs and privileges of Said Claimant.

5. The amount of this Bond shall be reduced by, and to the extent of any payment or payments made in good faith, and in accordance with the provisions hereof, inclusive of the payment by the Surety of Mechanics' Liens which may be filed of record against the subject matter of the Contract, whether or not claim for the amount of such lien be presented under and against this Bond.

6. The Surety shall not be liable for a greater sum than the specified penalty of this Bond.

IN WITNESS WHEREOF, the Principal and the Surety have Signed and Sealed this Bond this .....

day of ..... 19 .....

SIGNED and SEALED
In the presence of

(.....
(Principal (Seal)

(.....
(Surety (Seal)

Endorsed by: R.A.I.C., A.C.E.C., C.C.A., E.I.C., S.W.A.C.

Approved by: INSURANCE BUREAU OF CANADA

Statement Sheet
CD-3

LIST OF SUB-CONTRACTORS

SUB-TRADE	NAME OF SUB-CONTRACTOR	ADDRESS OF SUB-CONTRACTOR	VALUE OF SUB-CONTRACT
Sewers	Blairik	Sewers	$10,000.00

Note to Tenderer - Refer to Articles 3 of the General Conditions and TI.08 of Tendering Information.
- Names and addresses must be filled in and submitted with the tender. If a sub-contractor is not to be used for any work listed then show "by own forces."

Proctor & Redfern Limited
Consulting Engineers
November, 1977

Statement Sheet
CD-4

TENDERER'S EXPERIENCE IN SIMILAR WORK

YEAR COMPLETED	DESCRIPTION OF CONTRACT	FOR WHOM WORK PERFORMED	NAME OF CONSULTANT ENGINEER	VALUE
1979	Stanley Avenue Reconstruction	Region of Niagara		$450,000.00
1978	Paving	Region of Niagara		$420,000.00
Note to Tenderer - Refer to article TI.05 of Tendering Information				

Proctor & Redfern Limited
Consulting Engineers
November, 1977

Statement Sheet
CD-5

TENDERER'S SENIOR STAFF

NAME	APPOINTMENT	QUALIFICATIONS AND EXPERIENCE
Office		
B. Barrett	Constrction Manager	P.Eng.
R. Sexton	Division Manager	25 Years
Field		
C. May	Superintendent	15 Years

Proctor & Redfern Limited
Consulting Engineers
November, 1977

Statement Sheet
CD-6

TENDERER'S PLANT

The Tenderer shall list the plant, machinery and equipment he proposes to use on the work.

PLANT OWNED:

Cedar Rapids Paver
Steel Wheel Rollers
Rubber Tire Roller
Champion Grader
BW 210
Tandem Trucks
Single Axle Trucks

PLANT TO BE RENTED OR LEASED:

B/h as required
Trucks as required

PLANT TO BE PURCHASED:

Nil

Proctor & Redfern Limited
Consulting Engineers
November, 1977

SECTION 00800 - SUPPLEMENTARY GENERAL CONDITIONS

SC.01 GUARANTEE PERIOD

A. The guarantee period for the Contract shall be twelve months, unless an extended guarantee period is called for in any specific Section.

SC.02 DEFINITION

A. 'Department of Highways' and 'DHO' means 'The Ministry of Transportation and Communications' and 'MTC'.

B. 'The Department of Transportation and Communications' and 'DTC' means 'The Ministry of Transportation and Communications' and 'MTC'.

C. The word 'provide' shall mean - supply labour, materials, equipment, handling and cartage required for complete installation of the item concerned.

D. The words 'work' or 'works' have the same meaning as for 'Work' as defined in the General Conditions.

SC.03 INSURANCE

A. Damage insurance

1. Notwithstanding the provisions of clause 28 of the General Conditions, no 'Damage Insurance' will be required on this Contract.

SC.04 LIQUIDATED DAMAGES

A. Should the Contractor fail to complete the Work in accordance with the Contract and to the satisfaction of the Engineer, within the time specified in the Form of Tender, or as amended on the written authority of the Engineer, the Contractor shall pay to the Owner the sum of $150.00 for each calendar day that the Work shall remain unfinished after such time.

B. Such payments are agreed upon and fixed as liquidated damages that the Owner will suffer by reason of delay and default, and not as a penalty. The Owner may deduct and retain the amounts of such liquidated damages out of the monies which may be due or become due to the Contractor under the Contract.

SC.05 HOLDBACK FOR RECTIFICATION AFTER ACCEPTANCE OF THE WORK

A. To cover rectification costs during the guarantee period, the Owner will retain 5 percent of the value of Work done, such amount being held back in each progress certificate. This holdback will be retained for a period of 1 year from the 'Acceptance Date' which is described in article 35 of the General Conditions. Additional monies will be held back as required by provincial statutes.

SC.06 PAYMENT BOND

A. The Contractor, together with a surety company approved by the Owner and authorized by law to carry on business in the Province shall furnish 100 percent labour and materials payment bond to the Owner using C.C.A. Document (S) 22. The bond shall remain in effect until the issue by the Engineer of the final payment certificate.

SC.07 PERFORMANCE BOND

A. The provisions of the General Conditions shall apply except that C.C.A. Document (S) 21 shall be used.

SC.08 RELEASE OF HOLDBACK

A. Holdbacks held under the provisions of the Mechanics' Lien Act will be released upon application by the Contractor, and will be subject to the requirements of the Act. For the purpose of reducing the amount of holdback, the whole Contract is divided into two sections -

1. Contract I - Work to be carried out in 1979 - Part A of FT.07

2. Contract II - Work to be carried out in 1980 - Part B of FT.07

B. The statutory 15 percent holdback will apply to each Contract separately. The holdback will be released on each Contract under the following conditions -

1. Contract I - When all Works for 1979 have been accepted by the Engineer, and the Town of Pelham, a Total Performance Certificate will be issued as outlined in G.C. 35 followed in sixty (60) days by a holdback certificate under the terms of G.C. 34, but releasing the entire 15 percent holdback. This release will be contingent upon the Contractor supplying the necessary copies of paid invoices and completed excise department forms to enable the Owner to apply for rebate of federal sales tax on sewer and watermain pipe and appurtenances, in accordance with clause TI.04 C. of 'Tendering Information'. The 5 percent maintenance retention will be released at the expiry of the maintenance period.

2. Contract II - When all Works for 1980 have been accepted by the Engineer and the Town, Total Performance and holdback certificates will be issued for Contract II in accordance with the terms of G.C. 34 and 35. At the end of the guarantee period for Contract II, provided the provisions of the Contract have been fully met, the Final Certificate will be issued. The 5 percent maintenance retention will be released at the expiry of the maintenance period.

GENERAL CONDITIONS OF THE CONTRACT

SUBJECT INDEX

PROCTOR & REDFERN LIMITED
CONSULTING ENGINEERS
75 EGLINTON AVENUE EAST, TORONTO, ONT. M4P 1H3

Form CD-1
(Revised May 1978)

APPENDIX 2 OF THE GENERAL CONDITIONS OF THE CONTRACT

APPLICATION FOR RELEASE OF CONTRACTOR'S HOLDBACK

Owner:

Project:

EO: Contractor:

We, the said Contractor,
hereby confirm:

(i) that the Work under the above Contract is "substantially complete" as defined in the Mechanics' Lien Act, and

(ii) that there are no outstanding liens, garnishees, attachments or other charges affecting the Work, and

(iii) that the value of Work done to the date of substantial completion is $
and

(iv) that the value of Work remaining to be done is $

and hereby apply for release of holdback monies in accordance with the provisions of the Mechanics' Lien Act.

Date: _____ Signature: _____

SEAL:

SECTION 01010 - GENERAL

PART 1 GENERAL

PART 1.01 DESCRIPTION OF WORK

A. This Contract is for the construction of approximately 300 feet of road including storm sewers and watermain extension in the Town of Pelham.

PART 1.02 DEFINITION

A. The word 'Work' means supply labour materials, equipment handling and cartage required for complete installation of the item concerned.

PART 1.03 LIMITS OF SITE

A. The limits of the site are -

1. The road or street allowances on which Work is to be performed.
2. Such additional land as indicated in the Contract.
3. Such additional land designated as easements indicated in the Contract.
4. Such areas of private property adjacent to road or street allowances on which the Contractor is directed, in writing, to enter to carry out Work.

PART 1.04 LOCAL LABOUR

A. Give preference to the hiring of local labour. Maintain the labour force to at least 50 percent local labour, provided the labour is available locally and is physically fit and properly qualified by training and experience to meet the Contractor's requirements.

PART 1.05 SETTING OUT OF THE WORK

A. The Engineer will set such stakes as are necessary to mark the location, alignment, elevation and grade of the Work. Give adequate notice of the need for such setting out.

Carefully protect and preserve stakes, lot pins, marks and reference points and replace if destroyed or removed.

Provide grade stakes, masts, scaffolds, batter boards, straight edges, templates and other equipment necessary for laying out, and inspecting the Work.

Wherever necessary suspend Work temporarily to permit the Engineer to inspect and check the line and grade of any portion of the Work.

PART 1.06 CONSTRUCTION SCHEDULE

A. Within 1 week after being awarded the Contract, submit proposed construction schedule to the Engineer for approval. In the schedule show proposed progress in weekly stages for the main sections and subsections of the Work.

PART 2 PRODUCTS

PART 2.01 TESTS

A. Where required by the Engineer, supply for testing, samples of materials to be used in the construction of the Work. Do not use materials until they have been so approved.

PART 2.02 CANADIAN MATERIALS

A. Unless otherwise specifically approved, use materials and equipment of Canadian manufacture in constructing the Work.

PART 3 EXECUTION

PART 3.01 REQUIREMENTS OF MUNICIPALITIES

A. Be sure that the Work complies with the specifications of the municipalities.

B. The Engineer's acceptance of the Work may be withheld until the municipalities have issued their approvals.

PART 3.02 MUNICIPAL INSPECTORS

A. Municipal inspectors may be present during the construction of the Work. They have the power to order the Contractor to stop Work if the Work, in their opinion, is not being done in accordance with the set lines and grades or to the Drawings and Specifications.

Unless otherwise specified, the cost of municipal inspectors will not be charged to the Contractor.

PART 3.03 USE OF HYDRANTS

A. Keep fire hydrants accessible and free of obstructions.

B. Fire hydrants may be used as a source of water only with the approval of the water authority, and subject to its rules and conditions.

PART 3.04 INCLEMENT WEATHER

A. Make adequate protection and take precautions at times of inclement weather.

B. Inclement weather or extra Work caused by such weather will not be accepted as reason for additional payment.

PART 3.05 MUD AND DUST

A. Keep streets and other construction areas clean. If it is necessary to haul wet material, use suitable watertight trucks.

B. Control dust by the use of water or calcium chloride, or both.

PART 3.06 CLEAN-UP

A. On a daily basis as the Work progresses and on completion of the Work, clean-up and remove the rubbish and debris from the site. Remove excess material that is not required to be left on the site by the conditions of the Contract.

SECTION 02550 - SITE CLEARING, EXCAVATING, BACKFILLING AND RESTORATION OF TRENCHES

PART 1 GENERAL

PART 1.01 INTENT

A. This Section covers the Work for site clearing, excavating, backfilling and restoration for sewers, watermains, forcemains and yard piping, from 2 ft. beyond the exterior wall of structures. It also covers the site clearing, excavating, backfilling and restoration for valve chambers, manholes and catchbasins.

B. Work included is as follows -

1. Excavating
2. Sheathing and shoring
3. Backfilling

C. Related Work specified elsewhere is as follows -

1. Section 02560 - Sewers
2. Section 02570 - Watermains

PART 1.02 EXISTING UTILITIES

A. Contact the various utility companies prior to commencing Work and become informed of the exact location of utilities and protect them during construction and assume liability for damage to utilities.

B. Utilities that require relocation will be the responsibility of the Utility Company concerned at no expense to the Contractor. Cooperate with the utility companies and always provide them free access to their plant.

C. Where existing pipes, ducts, or other underground services intersect the pipe trench support the pipe trench to the approval of the Engineer and the Utility Company.

D. Where existing overhead pole lines are adjacent to the excavation, temporarily support them to the approval of the Engineer and the Utility Company concerned.

PART 1.03 EXISTING DRAINAGE

A. Maintain temporary and permanent flow in sewers, drains, gutters, ditches, watercourses, house and inlet connections.

PART 1.04 BASIS FOR PAYMENT

A. Conditions

1. Unless otherwise specified, include temporary access, site clearing, earth excavating, shoring, sheathing, support of existing utilities, dewatering, testing of material, backfilling, removal of surplus excavation, restoration and other labour, equipment and materials necessary for the complete installation of the Work, in unit prices for sewers, watermains, manholes, and catchbasins.

PART 2 PRODUCTS

PART 2.01 MATERIALS

- Conform to latest edition of reference standards.

- Where MTC specifications are referred to comply also with supplements to those specifications.

A. Granular Materials

1. Granular 'A', in accordance with MTC Form 1010.

B. Hot Mix Asphalt

1. Hot mix asphaltic concrete - MTC Form 310.

C. Topsoil

1. Use existing topsoil wherever suitable and as approved by the Engineer. Before re-using the topsoil clean out foreign matter and stones over 2 in. in size.

2. Imported Topsoil - Medium loam from a meadow or farm area known to be free from weeds.

3. Notify the Engineer at least 3 days before starting topsoil stripping operations. Sources of supply will require the Engineer's approval before being brought on the job.

D. Fertilizer

1. Use complete commercial fertilizers, in compliance with the Canadian Fertilizer Act, not less than 60 percent urea-formaldehyde and the following percentages by weight -

Nitrogen	Phosphoric Acid	Potash
10	10	10 or
0	20	10

E. Sod

1. Use No.1 nursery grown, 50 percent Kentucky blue, 50 percent Merion blue sod, fully root permeated in a close mat, uniform in texture.

2. Cut sod by approved methods in accordance with the Nursery Sod Growers Association of Ontario. Cut pieces 1 sq. yd. in area with a minimum of 3/4 in. soil portion.

PART 3 EXECUTION

PART 3.01 SITE CLEARING

A. Remove trees, shrubs, roots, vegetation, loose surface rock, fences, and other obstructions on the line of the Work.

B. Carefully protect trees, fences, shrubs and other vegetation designated by the Engineer and save from injury during the construction operation.

PART 3 EXECUTION (Cont'd)

PART 3.02 TOPSOIL

A. If suitable for sodding and seeding, strip the topsoil from within the limits of excavation and from fill areas in advance of construction and stockpile in areas completely separated from subsoil and as designated by the Engineer.

B. Strip topsoil in such a manner as to prevent damage to the roots of trees designated to be saved.

PART 3.03 EXCAVATING

A. Dig the trench to the alignment and depth required and only so far in advance of pipe laying as the Engineer will permit.

B. Minimum and maximum trench widths up to a point 1 ft. above top of pipe, for single pipe -

1. Minimum

(A) 1 ft. greater than the external diameter of pipe or 2 ft. 6 in. for earth excavation or 3 ft. for rock excavation whichever is greater, excluding an allowance for shoring.

2. Maximum

(A) Not more than 16 in. greater than the external diameter of pipe or 2 ft. 6 in. whichever is greater for pipe up to and including 33 in. dia., excluding an allowance for shoring.

(B) Not more than 2 ft. greater than the external diameter of pipe for 36 in. dia. pipe and larger, excluding an allowance for shoring.

C. The width of the trench at ground level is not to be less than the width at any depth in the trench. Fill overbreak and slides that have occurred during excavation with approved materials.

D. Where trench excavations are not kept within the design limits of the pipe, the Engineer may order sheathing and shoring, and/or a heavier class of pipe, and/or use of a higher class of bedding.

E. Grade and shape the pipe trench and the specified bedding to give uniform and even bearing for the length of the pipe. Dig bell holes at each joint. Make corrections in the grade with compacted granular material acceptable to the Engineer, or with fill concrete.

F. Where pipes are to be laid in filled ground, construct the fill first, to at least 2 ft. above the elevation of the top of the pipes before trenching for the pipes. Place fill in 12 in. lifts and compacted to 95 percent Standard Proctor Density.

G. Where the subgrade in its natural state is inadequate to support the pipe, the Engineer will give instructions as to the proper procedure, and such additional Work as ordered will be paid for as described in the Form of Tender.

H. Remove the subgrade where it has been adversely changed by construction operations and is not adequate to support the pipe. Replace with crushed stone or other approved material as directed by the Engineer.

PART 3.04 SHEATHING AND SHORING

A. Supply, install and remove temporary sheathing and shoring where directed by the Engineer and in accordance with applicable safety regulations.

B. Drive sheathing to a sufficient penetration to effectively cut off any seepage of water into the base of the excavation which could create an upward

B. (Cont'd)

flow of water or a 'quick' condition at the base of the excavation. Leave sheathing in place until the trench has been backfilled to a minimum depth of 2 ft. above the pipe. If there is danger of cave-in completely backfill the trench before removing sheathing.

C. Take special care to ensure that voids left by the sheathing and shoring are refilled with approved material.

D. Withdraw sheathing and shoring as the trenches are being backfilled, except where the Contractor, at his own request and expense, is permitted to leave the same in place. Sheathing left in place on written order of the Engineer will be an addition to the Contract.

E. Cut off sheathing left in place at least 3 ft. below the surface of the ground.

PART 3.05 DEWATERING

A. Always maintain the excavation free of water.

B. Do not use sanitary sewers for the discharge of water from the trenches.

PART 3.06 BACKFILLING

A. Backfill trenches from the top of the pipe bedding to the underside of surface restoration with site selected excavated material. Provide backfill free of roots, organic material and stone larger than 9 in. Place backfill material in lifts not exceeding 9 in. Compact to 95 percent Standard Proctor Density.

PART 3.07 COMPACTION TESTS

A. Where compaction of backfill is called for, the Engineer may order compaction tests by an independent testing company. Tests will be arranged for by the Engineer and paid for by the Owner.

1. Where tests show that the compaction does not meet the specified requirement, carry out further compaction in a manner directed by the Engineer, and pay for further testing to establish proof of the specified compaction.

2. For backfill compaction, tests will be made at every 18 in. max. depth, after each two 9 in. lifts have been placed.

3. Co-operate with the Engineer and Testing Company by scheduling the placing and compaction of backfill so that tests can be progressively taken.

PART 3.08 DISPOSAL OF SURPLUS EXCAVATED MATERIAL

A. Remove surplus excavated material from the site.

PART 3.09 RESTORATION (PLAZA PARKING LOT)

A. Roadways, Driveways and Parking Lots

1. Restore roadways, driveways and parking lots as follows unless shown otherwise on the Drawings -

A. 1. (Cont'd)

(A) Paved roadways, driveways and parking lots

	Parking Lots and Driveways (thickness)
(1) H.L. 3	1 in.
(2) H.L. 6	2 in.
(3) Granular 'A'	12 in.

B. Preparation of Subgrade for Sodding

1. Verify the subgrade and if required make adjustments to allow for topsoil and seeding or sodding to finish level with adjacent surfaces.

2. Scarify the backfill and disturbed areas to a minimum depth of 3 in. to produce an even, loose textured surface, free of stones, roots, branches larger than 3 in. dia., and live weeds.

3. Have the finished subgrade approved by the Engineer prior to placing the topsoil.

C. Preparation of Finish Grade

1. Spread the topsoil evenly over the approved subgrade to a minimum of 4 in. Compact to 80-85 percent Standard Proctor Density.

2. Work the fertilizer into the top 1 in. of the topsoil by discing, raking or harrowing to provide a smooth, fine textured finish surface, and firm against footprints.

3. Base quantities of fertilizer on the following minimum rates -

(A) 10 - 10 - 10 at 20 lb/100 sq. yd. or

0 - 20 - 10 at 12 lb/100 sq. yd. with

(B) Superphosphate at 25 lb/100 sq. yd.

4. Lay sod within 48 hrs. of working the fertilizer into the topsoil.

D. Laying sod

1. Lay sod as soon as possible after delivery.

2. Lay sods together so that there are no open joints or pieces overlapping. Lay sod smooth and flush with existing grade.

3. Immediately after laying sod spread sufficient water to saturate the sod and the upper 4 in. of topsoil.

4. After sod and soil has dried sufficiently to prevent damage, roll the area with a roller providing 1500 lb. per sq. ft. pressure to ensure a good bond between sod and soil and to remove minor depressions and irregularities.

5. Water with sufficient amounts to ensure continued healthy and vigorous growth.

SECTION 02560 - SEWERS

PART 1 GENERAL

PART 1.01 INTENT

A. This Section covers sewer Work, manholes and catchbasins from 2 ft. beyond the exterior walls of structures.

B. This Section covers sewer Work including -

1. Pipe
2. Manholes and catchbasins
3. Line and grade
4. Bedding
5. Testing

PART 1.02 TESTING

A. Supply test certificates in accordance with the appropriate specification, for the following materials -

1. Pipe

PART 1.03 DELIVERY, STORAGE AND HANDLING

A. Delivery

1. Replace materials found to be defective in manufacture or damaged in handling after delivery including the furnishing of material and labour required for the replacement of installed material found to be defective.

B. Handling

1. Load and unload materials so as to avoid shock or damage.

C. Storage

1. Place materials in safe storage. Keep interiors of pipes, and fittings clean.

PART 1.04 MEASUREMENT FOR PAYMENT

A. The Engineer will -

1. Measure sewers along the centreline of constructions from centre to centre of manhole.
2. Measure catchbasin leads along the centreline of construction from the centreline of the main sewer to the centreline of the catchbasin.
3. Count each type of manhole.
4. Count each type of catchbasin.
5. Count each type of catchbasin manhole.

PART 1 GENERAL (Cont'd)

PART 1.05 BASIS OF PAYMENT

A. Conditions

1. Unless otherwise specified include testing of materials, bedding and testing of pipes after installation and the requirements of Section 02550 - Site Clearing, Excavating, Backfilling and Restoration of Trenches.

2. The Engineer will measure the Work when completed and the Contract Price will be increased or decreased in accordance with the final measurement.

B. Items

1. Include in the unit price per lineal ft. of sewer, the pipe and the complete installation of the pipe, including the connections to manholes, catchbasins, existing sewers or other facilities.

2. Include in the unit price for each type of catchbasin, the complete installation of the catchbasin including concrete, brickwork, reinforcing steel, goss traps if required, frame and grating as shown on the Drawings.

3. Include in the unit price for each catchbasin manhole, the complete installation of the catchbasin manhole including concrete, benching, brickwork, reinforcing steel, ladder rungs, drop pipe and safety grating if required, frame and grating as shown on the Drawings.

4. Include in the unit price for each manhole, the complete installation of the manhole including concrete, benching, brickwork reinforcing steel, ladder rungs, drop and safety grating if required, frame and cover as shown on the Drawings.

PART 2 PRODUCTS

PART 2.01 GENERAL

A. Tender on the basis of the type of material specified on the Drawings and in the Form of Tender.

PART 2.02 MATERIALS

Conform to latest edition of reference standards.

A. Concrete sewer pipe

1. Concrete pipe -

(A) Non-reinforced Circular Concrete Pipe - CSA A257.1

(B) Reinforced Circular Concrete Pipe - CSA A257.2

2. Pipe Diameter and Class - As shown on the Drawings.

3. Fittings and Specials - In accordance with the specification for the type of pipe being used.

4. Portland Cement - type - 10 normal

5. Rubber Gaskets - ASTM C443.

B. Manholes and Catchbasin Manholes.

1. Precast Concrete Manholes and Catchbasin Manholes - ASTM C478 and as shown on E-STD-2-2 and E-STD-2-5 Rubber type gaskets - ASTM C443.

PART 2 PRODUCTS (Cont'd)

PART 2.02 MATERIALS (Cont'd)

B. (Cont'd)

2. Cast Iron Covers for Storm Sewer Manholes - DD-704-B

3. Cast Iron Gratings for Catchbasin Manholes - DD-713-B

4. Ladder rungs - as shown on E-STD-2-10

5. Bricks - clay or shale ASTM C32 grade MS

- concrete ASTM C55, N11

6. Reinforcing Steel - CSA G30.12, Grade 60.

7. Parge brickwork inside and outside with 1/2 in. thickness of sand cement mortar.

C. Catchbasins

1. Precast Concrete Catchbasins - Construct as shown on E-STD-2-15 with sump depth of 3 ft. 0 in. minimum (goss trap not required)

2. Cast Iron Gratings for Catchbasins - DD-713-B

3. Bricks - Clay or Shale ASTM C32 grade MS

- Concrete ASTM C55, N11

4. Parge brickwork inside and outside with 1/2 in. thickness of sand cement mortar.

PART 3 EXECUTION

PART 3.01 LINE AND GRADE

A. Supply, erect and maintain batter boards and site rails to ensure accurate line and grade of pipes. Always have at least three batter boards in use, placed not more than 50 ft. apart. Obtain Engineer's approval for alternative methods.

PART 3.02 FROZEN GROUND

A. Do not place Work on frozen ground. Should the bottom of the trench become frozen, remove and replace the frozen material with bedding material compacted to 95 percent Standard Proctor Density.

PART 3.03 BEDDING

A. Sewer bedding - as specified on E-STD-2-1 (Class B)

B. Granular material - 'A' Conform to Section 02550.

C. Compact Granular Bedding Material to 95 percent Standard Proctor Density.

D. Compact material around the pipe with hand tampers properly shaped to ensure full compaction below the haunches. Do not use mechanical tampers over the top of pipe where cover is less than 1 ft.

PART 3 EXECUTION (Cont'd)

PART 3.04 CONNECTIONS TO EXISTING FACILITIES

A. Connect sewers to existing manholes, catchbasins and other facilities as shown on the Drawings or as directed by the Engineer.

B. Obtain permission from the Engineer and the authority responsible for the existing facilities prior to making connections.

C. Connect to existing service pipes using suitable external rubber fittings fastened with mechanical stainless steel clamps.

PART 3.05 PIPE LAYING

A. Lay, joint and test pipes and fittings in accordance with the manufacturer's instructions and in the manner hereinafter specified.

B. Lower pipe carefully into the trench. Before lowering and while suspended, inspect the pipes for defects. Remove foreign material from inside of the pipe.

C. Use temporary watertight bulkheads to prevent the flow of trench water, storm water, silt and sand within the pipe.

D. Mortar joints for storm sewers - Cover lower portion of bell with mortar, place next length of pipe such that the inner surfaces of the abutting sections are flush, fill remainder of joint with mortar, place bead of mortar around the joint to form 45 degree bevel from the outer circumferences of the bell to the adjoining spigot section. Thoroughly wet surfaces to receive mortar, prevent water from running through sewer until mortar is set.

E. Do not deviate from line and grade except where changes in direction or the laying of pipes along a curve are limited by the pipe manufacturers tolerance for joints.

PART 3.06 MANHOLES AND CATCHBASIN MANHOLES

A. Proceed with the construction of manholes and catchbasin manholes at the same time as the pipe laying operation.

B. Install precast manholes in accordance with E-STD-2-2

C. Install precast catchbasin manholes in accordance with E-STD-2-5

D. Set covers at slope and height compatible with pavement or final grade levels.

PART 3.07 CATCHBASINS

A. Proceed with construction of catchbasins at same time as pipe laying.

B. Install precast catchbasins in accordance with E-STD-2-15

C. Set covers at slope and height compatible with pavement or final grade levels.

PART 3.08 CLEANING AND INSPECTION OF STORM SEWERS

A. Flush and clean sewers, manholes and catchbasins prior to acceptance.

B. Inspect manholes for defects and signs of leakage. Repair visible leaks or faults as approved by or as directed by the Engineer.

C. The alignment of sewers between manholes may be tested at each section as laid. The Engineer may order a strong light to be shone through the pipe from manhole to manhole. If less than one-half of the full diameter of the pipe at the light source is visible from the far end, the Engineer may order the pipes re-aligned.

SECTION 02570 - WATERMAINS

PART 1 GENERAL

PART 1.01 INTENT

A. This Section covers watermain Work including -

1. Pipe
2. Fittings, specials and joints
3. Line and grade
4. Bedding
5. Testing
6. Disinfecting

B. Related Work specified elsewhere is as follows -

1. Section 02550 - Site Clearing, Excavating, Backfilling and Restoration of Trenches.

PART 1.02 DELIVERY, STORAGE AND HANDLING

A. Delivery

1. Replace materials found to be defective in manufacture or damaged in handling after delivery including the furnishing of material and labour required for the replacement of installed material found to be defective.

B. Handling

1. Load and unload materials so as to avoid shock or damage.
2. Handle pipe and fittings so that the coating and lining will not be damaged. If, however, the coating or lining is damaged, then repair in a satisfactory manner.

C. Storage

1. Place materials in safe storage. Keep interiors of pipes, fittings, and other accessories clean. Store valves and hydrants so as to protect them from damage by freezing.

PART 1.03 MEASUREMENT FOR PAYMENT

A. The Engineer will -

1. Measure watermains along the centreline of construction, straight-through bends, fittings and specials

PART 1.04 BASIS FOR PAYMENT

A. Conditions

1. Unless otherwise specified, include testing of materials, thrust blocks, anchor blocks, bedding, insulation, testing and disinfecting the pipes after installation and the requirements of Section 02550 Site Clearing,

PART 1 GENERAL (Cont'd)

PART 1.04 BASIS FOR PAYMENT (Cont'd)

A. 1. (Cont'd)

Excavating, Backfilling and Restoration of Trenches.

2. The Engineer will measure the Work when completed and the Contract price will be increased or decreased in accordance with the final measurement.

B. Items

1. Include in the unit price per lineal ft. for watermains the complete supply and installation of the pipe and necessary fittings.

2. Include in the unit price for connection to existing watermains the locating of and connection to the existing watermain.

PART 2 PRODUCTS

PART 2.01 GENERAL

A. Tender on the basis of the type of pipe specified in the Form of Tender.

PART 2.02 MATERIALS

- Conform to latest edition of reference standards.

A. Ductile Iron Pipe

1. Pipe - AWWA C151 (ANSI A21.51).

2. Pipe Diameter and Class - 6-inch Class II

3. Supply pipe in standard lengths with mechanical or push-on joints - AWWA C111 (ANSI A21.11). Provide rubber gaskets for mechanical joints with lead tips. Provide copper straps across push-on joints to provide electrical continuity.

PART 2 PRODUCTS (Cont'd)
PART 2.02 MATERIALS (Cont'd)

C. Cast Iron Fittings and Specials

1. Cast Iron Fittings - AWWA C110 (ANSI A21.10).

2. Pressure Rating of Fittings - 125 psi

3. Fittings - mechanical joint ends

4. Rubber gaskets for fittings - AWWA C111 (ANSI A21.11)

5. Rubber Gaskets for Mechanical Joints - lead tipped

PART 3 EXECUTION

PART 3.01 LINE AND GRADE

A. Supply, erect and maintain batter boards and site rails to ensure accurate line and grade of pipes. Always have at least 3 batter boards in use, placed not more than 50 ft. apart. Obtain Engineer's approval for alternative methods.

B. On straight lines, lateral deviation in excess of 6 in. will not be tolerated. On straight grades, grade deviation in excess of 3 in. will not be tolerated.

C. For vertical or horizontal bends do not deviate the pipe lines more than 12 in. from line or more than 6 in. from grade as the case may be.

PART 3.02 FROZEN GROUND

A. Do not place work on frozen ground. Should the bottom of the trench become frozen, remove and replace the frozen material with bedding material compacted to 95 percent Standard Proctor Density.

PART 3.03 BEDDING

A. Watermain Bedding - as specified on E-STD-2-1 (Class B)

B. Granular Material - Granular "A" Conform to Section 02550.

C. Compact granular bedding material to 95 percent Standard Proctor Density.

D. Compact the material around the pipe with hand tampers properly shaped to ensure full compaction below the haunches. Do not use mechanical tampers over the top of the pipe where cover is less than 1 ft.

E. Do not use crushed slag produced from iron blast furnace slag for cast iron pipe fittings or valves.

PART 3.04 CONNECTION TO EXISTING WATERMAINS

A. Connect new mains to existing mains as shown on the Drawings.

B. Obtain permission from the Engineer and the authority responsible for the existing mains prior to making connections to an existing main. Valves on the existing system will be operated only by the watermain authority. Notify affected water users in advance of interruption of service.

PART 3.04 CONNECTION TO EXISTING WATERMAINS (Cont'd)

C. Provide temporary water service for interruptions longer than 3 hr.

PART 3.05 PIPE LAYING

A. Lay, joint and test pipes and accessories in accordance with the manufacturers instructions and in the manner hereinafter specified, in the presence of and subject to the Engineer's approval.

B. Use temporary water tight bulkheads to prevent the flow of trench water, storm water, silt and sand within the pipe.

C. Carefully lower pipe into the trench. Before lowering and while suspended, inspect the pipe for defects. Remove foreign material from the inside of the pipe.

PART 3.06 TESTING

A. Flush out watermain and test at working pressure prior to backfill. No leakage is allowed under working pressure.

PART 3.07 STERILIZING WATERMAINS

A. Supply and place chlorinous compound tablets in main and flush clean at relocated blow-off.

SECTION 02590 - ROADS AND SURFACE WORKS

PART 1 GENERAL

PART 1.01 INTENT

A. This Section covers the Work for roads and surface works including -

1. Site clearing
2. Grubbing
3. Stripping and stockpiling of topsoil
4. Excavation and grading
5. Compaction
6. Granular courses
7. Curb and gutter
8. Sidewalk and pavement
9. Existing utilities
10. Existing drainage
11. Removal of asphalt pavement, concrete pavement, concrete curb and gutter and sidewalk
12. Removal of catchbasins and manholes
13. Removal of existing pipes
14. Concrete sidewalk
15. Concrete curb and gutter
16. Asphaltic concrete
17. Adjustment of cast iron frames and valve boxes
18. Placing topsoil
19. Fertilizer
20. Sod

PART 1.02 EXISTING UTILITIES

A. Contact the various utility companies prior to commencing Work and become informed of the exact location of all utilities, protect them during construction and assume all liability for damage to utilities.

B. Utilities that require relocation will be the responsibility of the Owner, including costs. Co-operate with the utility companies and always provide them with free access to their plant.

C. Where existing overhead pole lines are adjacent to the excavation, temporarily support them to the approval of the Engineer and the Utility Company concerned.

PART 1.03 EXISTING DRAINAGE

A. Maintain temporary and permanent flow in sewers, drains, gutters, ditches, watercourses, house and inlet connections.

PART 1.04 MEASUREMENT FOR PAYMENT

A. The Engineer will measure items in the units as detailed in the Form of Tender. Measurements will be taken in the horizontal plane except for seed, sod and rip-rap.

PART 1.05 BASIS OF PAYMENT

A. Conditions

1. The Engineer will measure the Work when completed and the Contract price will be increased or decreased in accordance with the final measurements.
2. No additional payment will be allowed for difficulties resulting from relocating of utilities by others not being done until after road excavation, placing of granular base, or paving.

B. Items

1. Include in the unit prices for items the associated Work as follows -

(A) Excavation of Roads and Sidewalks

(1) Excavate to the lines and grades as set out. Payment will not be made for over excavation.

(2) Haul excess material from the site

(B) Strip Topsoil

(C) Remove Concrete Curb and Gutter

(1) Excavate, load and haul from site

(D) Remove Manholes and/or sewerpipe

(1) Backfill with compacted site selected material as approved by the Engineer

(E) Provide Granular 'A'

(1) Supply, load, weigh, haul, place and compact to 100 percent Standard Proctor Density, and fine grade

(F) Provide Concrete Sidewalk

(1) Including 6 in. Granular 'A' base compacted to 100 percent Standard Proctor Density

(2) Pliable impervious underlay

(3) Expansion joint material

(4) Formwork, concrete, finishing and surface sealing

(5) Adjustment of existing cast iron frames and valve boxes to match finished grade

(G) Provide Concrete Curb and Gutter

(1) Expansion joint material

(2) Formwork, concrete finishing and surface curing

(3) Adjustment of existing cast iron frames and valve boxes to match finished grade

(H) Provide Asphalt

(1) Adjust cast iron frames, valve boxes to final grades

(2) Trim existing asphalt to make joints straight and square

(3) Supply, place and compact asphaltic cement concrete

(I) Provide Topsoil

(1) Supply, load, haul, place and fine grade

(J) Provide Sod

(1) Fertilize, wire and stake where required, supply, place, roll, water and maintain

(K) Grader Rental

(1) As directed

(2) 100 H.P. min.

(3) This item applies only to grading items not covered by earth excavation or other unit prices

PART 2 PRODUCTS

PART 2.01 GENERAL

- Conform to latest edition of reference standards.

- Where applicable comply with MTC supplements as well as MTC reference standard specifications.

A. Granular Materials

1. Granular 'A', in accordance with MTC Form 314.

B. Portland Cement Concrete

1. Produce in accordance with CSA-A23

2. Strength - 3500 psi or other strength as approved by the Engineer

3. Maximum aggregate size - 3/4 in.

4. Air entraining agent - Comply with ASTM-C260. By volume, 5 percent to 6 percent entrained air at placement

C. Hot Mix Asphaltic Concrete -

1. HL6 base course - MTC Form 310

2. HL3 surface course - MTC Form 310

D. Topsoil

1. Topsoil, free of wood and non-organic material

E. Fertilizer

1. Use complete commercial fertilizers, in compliance with the Canadian Fertilizer Act, not less than 60 percent urea-formaldehyde and the following percentages by weight -

Nitrogen	Phosphoric Acid	Potash
10	10	10 or
0	20	10

F. Sod

1. Use No. 1 nursery grown, 50 percent Kentucky blue, 50 percent Merion blue sod, fully root permeated in a close mat, uniform in texture.

2. Cut sod by approved methods in accordance with the Nursery Sod Growers Association of Ontario. Cut pieces 1 sq. yd. in area with a min. of 3/4 in. soil portion.

G. Pliable impervious membrane - Polyethylene film, 2 mils. thick.

H. Expansion joint filler - ASTM D1751.

I. Curing compound - ASTM C309, type 2 (white).

PART 3 EXECUTION

PART 3.01 CLEARING

A. Carefully protect trees, shrubs and other vegetation designated to be saved during construction. Carefully carry out designated 'spot' or selective clearing.

B. Cut and dispose of trees, brush, vegetation, windfalls, timber, fences and surface litter.

C. Clear areas beyond the street lines or on easements only where specifically directed.

PART 3.02 GRUBBING

A. Remove and dispose of stumps, roots, embedded logs, loose surface boulders and masonry, and surface debris.

PART 3 EXECUTION (Cont'd)

PART 3.03 STRIPPING AND STOCKPILING TOPSOIL

A. Strip topsoil within the limits of excavation and fill areas before grading, prevent damage to roots of trees and vegetation to be saved, stockpile in regular trapezoidal sections to a max. height of 10 ft.

PART 3.04 REMOVALS

A. Remove existing asphalt, concrete pavement, concrete sub-base, curbs, gutters and sidewalks as required for the new work. Dispose of removed materials off the site

PART 3.05 EXCAVATION AND GRADING

A. Make cuts and fills employing excavating, compacting of subgrade, filling, loading, hauling and fine grading. Cross-sections on the Drawings show the limits of excavation, filling, sideslopes, toe of slope and limit of cut locations. Dispose of surplus excavated material off the site .

B. Soils on the site will be considered 'earth' except rock. Boulders and masonry exceeding 1 cu. yd. in volume will be termed 'rock'. Bury rock and boulders up to 1/3 cu. yd. in volume - not less than 4 ft. below top of subgrade. Dispose of rock and boulders between 1/3 cu. yd. and 1 cu. yd., as earth, and rock and boulders which re-appear during grading.

C. Excavate soft spots in subgrade. Fill with Granular 'A' or select excavated material and compact to 95 percent Standard Proctor Density.

D. Fine grade road subgrade to specified cross-section and compact to 95 percent Standard Proctor Density.

E. Maintain grading tolerance for subgrade at plus or minus 0.1 ft.

PART 3.06 COMPACTION ON FILL AREAS

A. Place fill in layers not exceeding 9 in. and compact with either a sheepsfoot roller or a pneumatic tire roller. Maintain optimum moisture in the fill and compact to 95 percent Standard Proctor Density.

PART 3.07 COMPACTION ON SUBGRADE AREAS

A. During construction of the underground utilities, compact trenches to subgrade elevations at 95 percent Standard Proctor Density.

B. Compact subgrade and fill areas on road allowances to 95 percent Standard Proctor Density.

PART 3.08 GRANULAR COURSES

A. Supply, weigh, place, grade and compact to 100 percent Standard Proctor Density, Granular "A" courses to the depths indicated on the Drawings. Maintain optimum moisture content.

B. Maintain grading tolerance for Granular "A" to plus or minus 1/4 in.

PART 3.09 COMPACTION TESTS

A. Where compaction of sub-grade, granular courses, granular base course and fill is called for, the Engineer may order compaction tests by an independent testing company. Tests will be arranged for by the Engineer and paid for by the Owner.

1. Where tests show that the compaction does not meet the specified requirement, pay the costs for further compaction in a manner dictated by the Engineer, and pay for further testing to establish proof of the specified compaction.

2. For fill compaction, tests will be made at every 18 in. max. depth, after two 9 in. lifts have been placed. Granular courses will be tested at depths as directed by the Engineer.

3. Co-operate with the Engineer and testing company by scheduling the placing and compaction of fill and granular courses so that tests can be progressively taken.

PART 3.10 SETTING MANHOLES, CATCHBASINS AND VALVE CHAMBERS

A. Adjust cast iron frames and valve boxes to finish grades of roads and curbs, sidewalks or sod before the task is completed. Where brick and concrete chimneys are adjusted, maintain the ladder rung pattern, with the largest from the top not to exceed 15 in. For masonry adjustments use sound mortar construction. Firmly bed castings in mortar.

B. Make slope castings parallel to slope of finished grade.

PART 3.11 CONCRETE CURB AND GUTTER AND SIDEWALK

A. Carry out excavations, setting of forms to the lines and grades.

B. Compact granular base courses under forms to 100 percent Standard Proctor Density.

C. Use flexible forms on curves with radius less than 200 ft.

D. See Drawings for concrete cross-sections.

E. Have concrete workmanship conform to CSA A23.

F. Place pliable impervious membrane on granular subgrade.

G. Do not pour concrete until forms and subgrade have been inspected and approved.

H. Provide 1/2 in. thick expansion joints, cut to full cross-section at 20 ft. intervals, at each point of tangent, at the centre of each driveway and at catchbasins.

I. Mark sidewalks at 5 ft. intervals transversely, strike the joint to a penetration of 20 percent of the sidewalk thickness, mark curb and gutter only at the expansion joints, and round marked joints to 1/4 in.

J. Finish exposed surfaces with a uniform wood-float or broom finish, and correct surface irregularities before final set.

K. Apply a curing compound, after initial set has occurred.

L. Protect the Work until final set has occurred.

PART 3 EXECUTION (Cont'd)

PART 3.12 ASPHALTIC CONCRETE

A. Quality Control

1. maintain paving mixture at plus or minus 0.3 percent of asphaltic cement content.

B. Advance Preparations

1. Give 48 hr. notice of each intention to pave.

2. Paint tops of cast iron castings with fuel oil.

3. Review the fine grade of the Granular 'A' surface, scarify, grade and recompact if necessary.

4. Paint joints between the asphalt and the gutters and cast iron castings with hot liquid asphalt cement.

C. Paving

1. Use a maximum screed 14 ft. wide for laying base course and 10 ft. wide for laying the surface course.

2. MTC Form 310 governs the laying of the base course and the surface course.

3. Provide thickness of base and surface courses as shown on the Drawings.

4. Where surface course will not be laid, ramp cast iron castings and valve boxes with asphalt.

5. Leave an unpaved strip 2 ft. wide on each side, where surface course will not be laid and where curb and gutter has not been constructed.

6. Weigh materials as in MTC Form 318.

PART 3.13 SEEDING AND SODDING

A. Preparation of Finish Grade

1. Spread the topsoil evenly over the approved subgrade to a min. of 4 in. Compact to 80-85 percent Standard Proctor Density.

2. Work the fertilizer into the top 1 in. of the topsoil by discing, raking or harrowing to provide a smooth, fine textured finish surface, and firm against footprints.

D. (Cont'd)

3. Base quantities of fertilizer on the following minimum rates -

   (A) 10 - 10 - 10 at 20 lb/100 sq.yd. or

   0 - 20 - 10 at 12 lb/100 sq. yd. with

   (B) Superphosphate at 25 lb/100 sq.yd.

4. Lay sod or spread seed within 48 hours of working the fertilizer into the topsoil.

E. Laying Sod

1. Lay sod as soon as possible after delivery.

2. Lay sods together so that there are no open joints or pieces overlapping.

3. Lay sod smooth and flush with existing grade.

4. Immediately after laying sod spread sufficient water to saturate the sod and the upper 4 in. of topsoil.

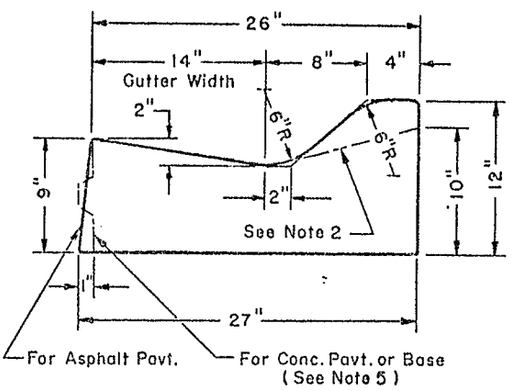
5. After sod and soil has dried sufficiently to prevent damage, roll the area with a roller providing 1500 lb. pressure per sq. ft., to ensure a good bond between sod and soil and to remove minor depressions and irregularities.

6. Water with sufficient amounts to ensure continued healthy and vigorous growth.

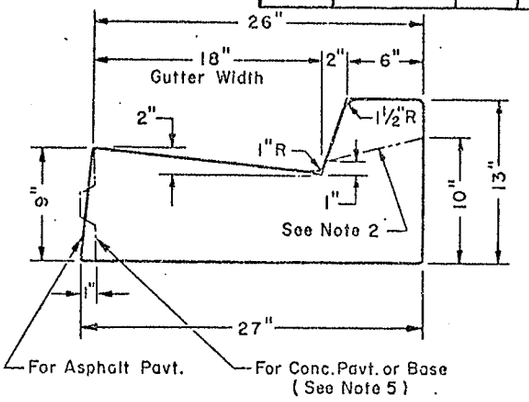
PART 3.14 CLEAN-UP

A. On a daily basis, as the Work proceeds, and on completion remove rubbish and surplus material from the site.

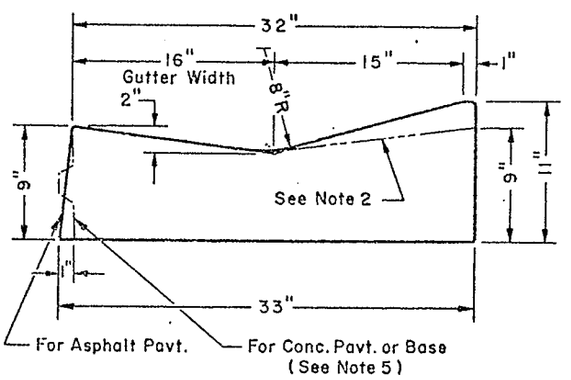
No. DD-601			
Date	Feb. 15/ 73	Rev.	3



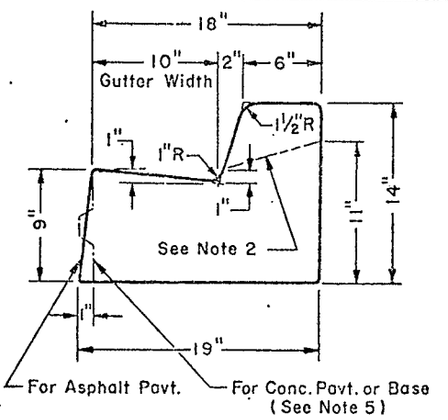
Type A : 0·060 cu. yds. per lineal ft.



Type B : 0·063 cu. yds. per lineal ft.



Type D : 0·072 cu. yds. per lineal ft.



Type G : 0·050 cu. yds. per lineal ft.

NOTES:

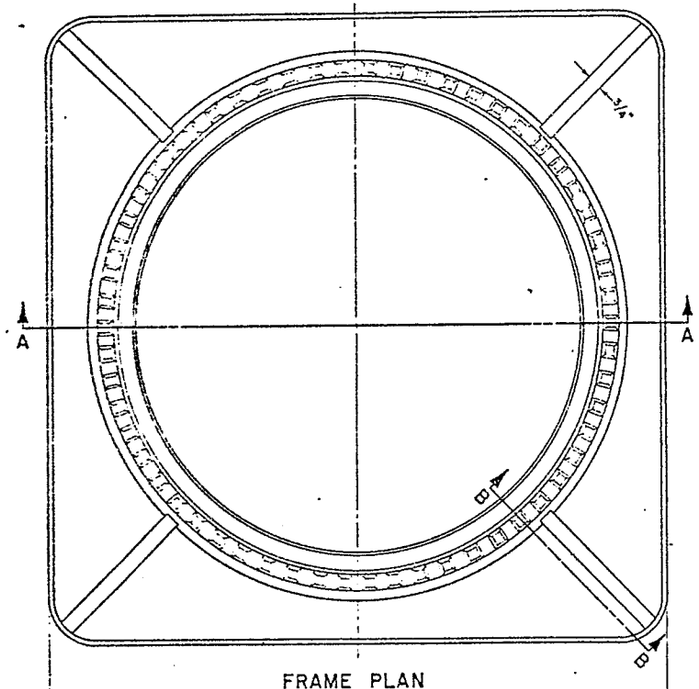
1. Top edges of front and back of curb & gutter to be rounded with a ¼ in. radius edging tool, except where front edge abuts concrete pavement with longitudinal joint.
2. Dropped curb at entrances: length as shown on the plans or as directed by the Engineer.
3. The length of transition from one type to another shall be the greatest of:
   a. 48 x difference in overall curb heights (1 ft per ¼ in.), or
   b. 24 x difference in gutter widths (1 ft. per ½ in.), or
   c. 8 ft.
4. All concrete work to conform to Section 9·04 of M T C Form 9.
   Class of concrete: 3000 p.s.i.
5. When curb & gutter is adjacent to concrete pavement or base, this Std. to be used in conjunction with DD-514-C.

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS – ONTARIO

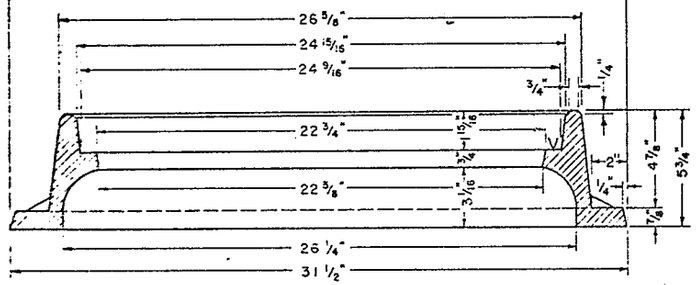
CONCRETE CURB AND GUTTER

Drawn by S.S.	APPROVED
Traced by S.S.	
Checked by E.G.	
Passed by D.J.R.	Director, Systems Design Branch

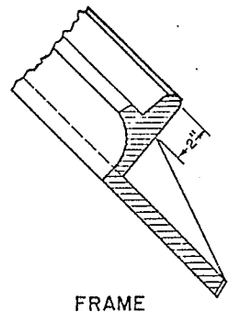
No. DD-704-B		
Date	June 21/73	Rev



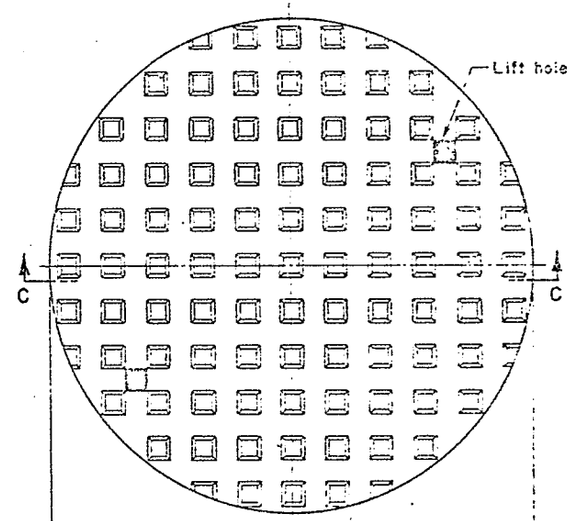
FRAME PLAN



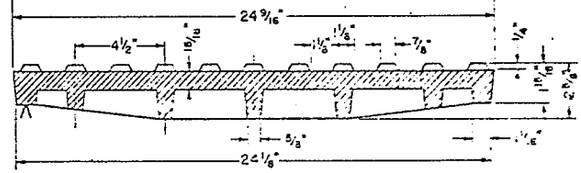
FRAME SECTION A-A



FRAME
SECTION B-B



COVER PLAN.



COVER SECTION C-C

NOTES:

1. Allowable tolerances:
   Dimensions 12 in. or less — ± 1/8 in.
   Dimensions over 12 in. up to and including 36 in. — ± 1/4 in.
2. Marking:
   The initials or mark of the manufacturer are to be distinctly cast in raised letters on both frame and grate.

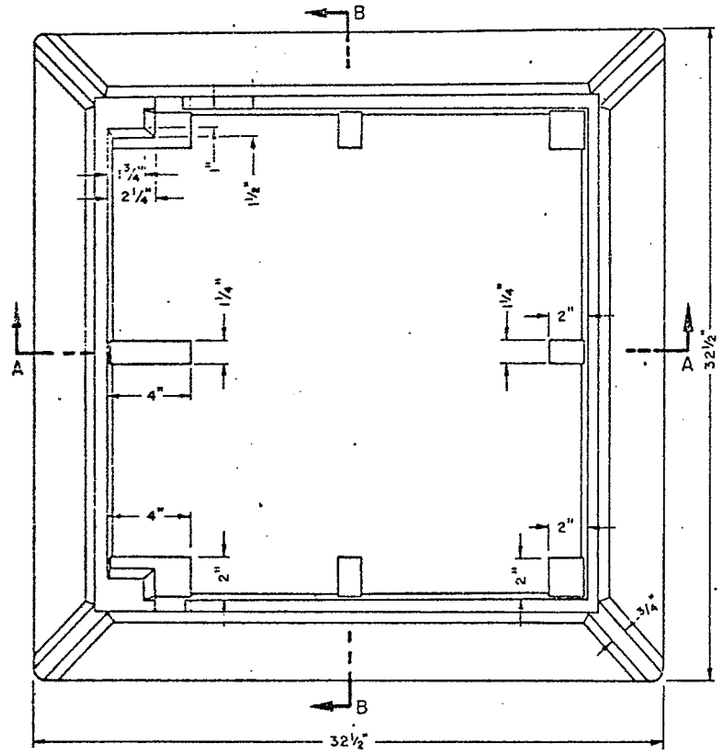
MINISTRY OF TRANSPORTATION AND COMMUNICATIONS — ONTARIO

MANHOLE FRAME AND CLOSED COVER

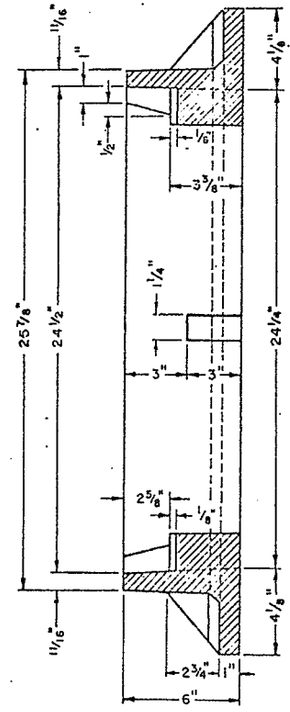
Drawn by S.S.	APPROVED
Traced by S.S.	
Checked by E.G.	
Passed by D.J.E.	Director, Systems Design Branch

No. DD-713-B

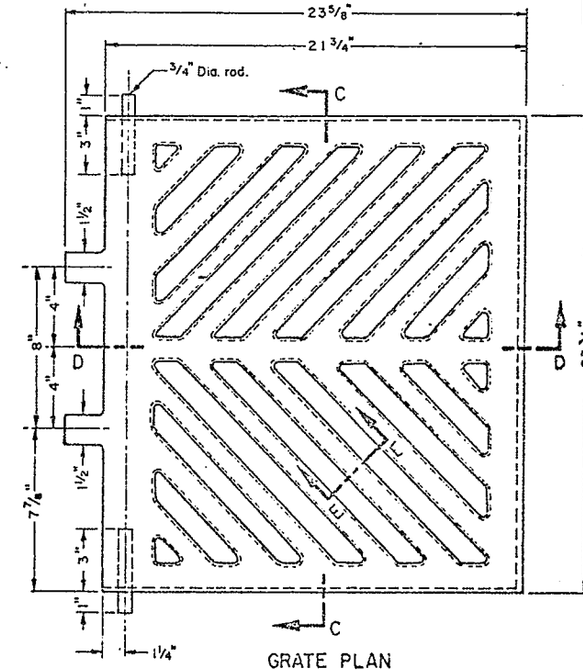
Date June 21/73 Rev.



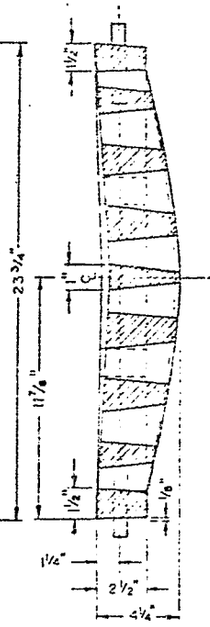
FRAME PLAN



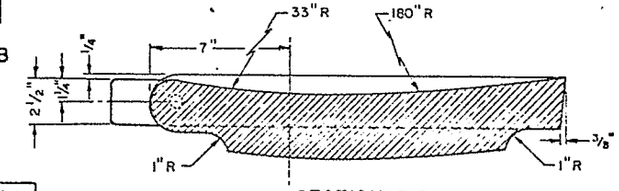
SECTION B-B



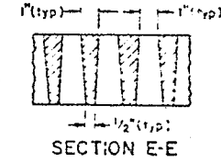
GRATE PLAN



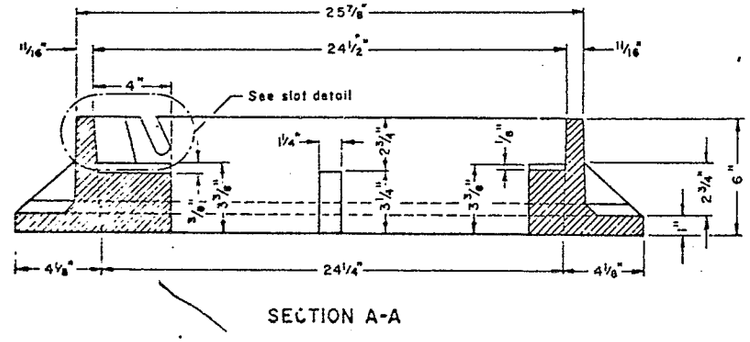
SECTION C-C



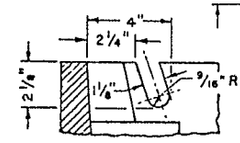
SECTION D-D



SECTION E-E



SECTION A-A



SLOT DETAIL

NOTES:

1. Allowable tolerances:
   - Dimensions 12" or less ±⅛"
   - Dimensions over 12" up to and including 36" ±¼"
2. The initials or mark of the manufacturer are to be distinctly cast in raised letters on both frame and cover.

MINISTRY OF TRANSPORTATION AND COMMUNICATIONS — ONTARIO

DEPRESSED CATCH BASIN FRAME AND GRATE

DIAGONAL OPENINGS

Drawn by S.S.
Traced by S.S.
Checked by E.G.
Passed by D.L.Z.

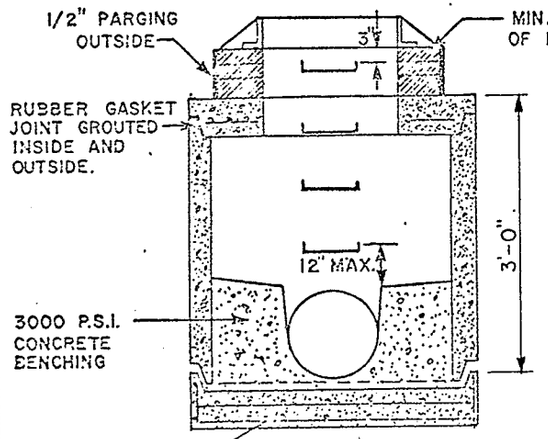
APPROVED

Director Systems Design Branch

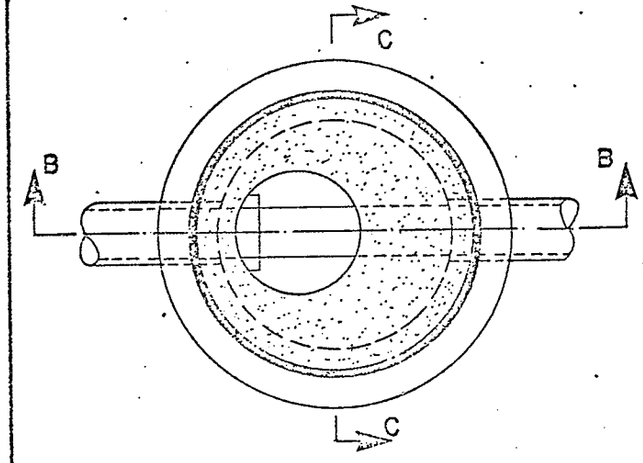
APPROVED BY

REVISIONS

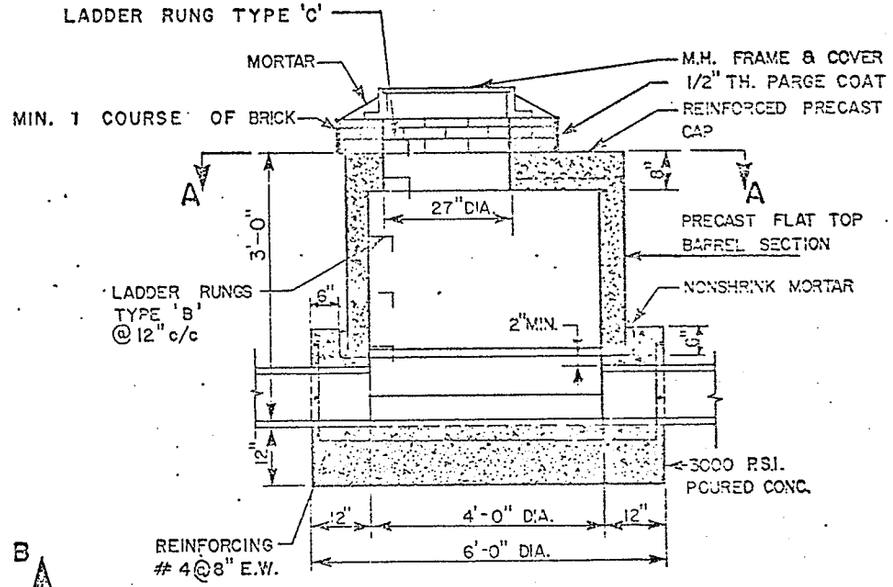
M.H.1
SHALLOW PRECAST MANHOLE
MAXIMUM PIPE - 33" ϕ



SECTION 'C-C'



SECTION 'A-A'



SECTION 'B-B'

NOTES:

1.) THE OUTSIDE LIMIT OF THE BASE MAY BE SQUARE OR CIRCULAR. THE INSIDE OF THE BASE WALLS SHALL BE CIRCULAR TO CONFORM TO THE INSIDE OF THE MANHOLE BARREL

2.) THE BASE TO BE 3000 PSI AT 28 DAYS, CAST IN PLACE OR 4000 PSI. PRECAST.

3.) PRECAST MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. SPEC. C-478 AND SHALL BE SUPPLIED IN INCREMENTS OF 12" IN HEIGHT

4.) PLACE EXTRA STEP DIRECTLY ABOVE INCOMING AND OUTGOING PIPES TO AID IN THE USE OF SEWER CLEANING EQUIPMENT.

5.) MANHOLE FRAME AND COVER TO BE AS SPECIFIED.

6.) PARGING - 1:3 MORTAR MIX APPLIED 1/2" THICK

7.) ALL OPENINGS AND JOINTS TO BE FILLED WITH MORTAR AND PAINTED BEFORE BACKFILLING.

Proctor & Redfern Limited
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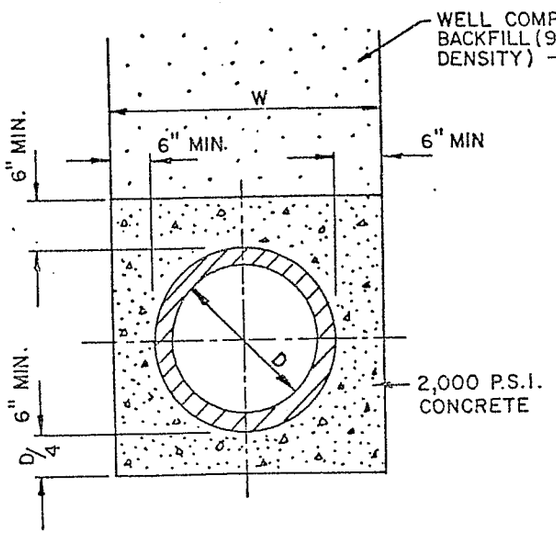
Toronto

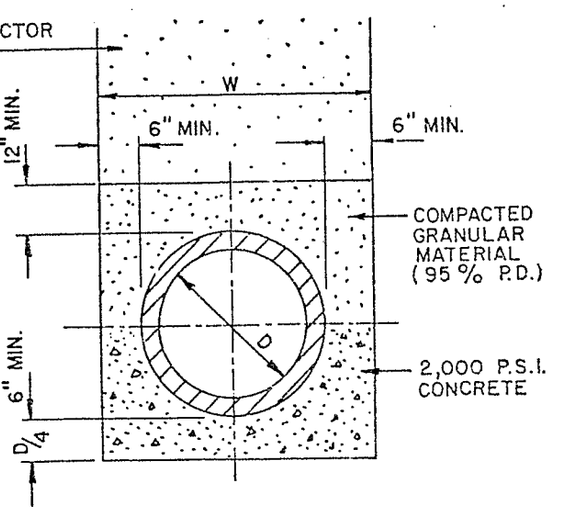
DRAWING NO. E-79560-L1

DATE JUNE, 1979

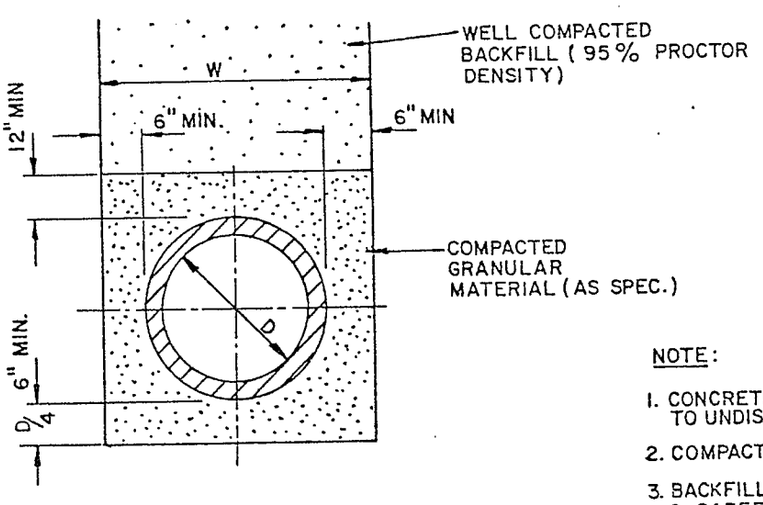
REV.



CONCRETE ENCASEMENT
(CLASS 'AA')



CONCRETE CRADLE
(CLASS 'A')



GRANULAR BEDDING
(CLASS 'B')

NOTE:

1. CONCRETE OR GRANULAR MATERIAL TO EXTEND TO UNDISTURBED TRENCH WALLS.
2. COMPACTION – 95% PROCTOR DENSITY MINIMUM.
3. BACKFILL HANDPLACED TO 2'-0" ABOVE TOP OF PIPE & CAREFULLY TAMPED IN 6" LAYERS, REMAINING TO BE PLACED IN LAYERS & THOROUGHLY CONSOLIDATED ACCORDING TO SPECIFICATION.
4. FOR TRENCH WIDTH 'W' REFER TO SPECS..

REVISIONS	3-30/11/76	4-16/2/77	5 – D/4 ADDED 3/6/77

APPROVED BY
Feb 21/77
RST

PIPE BEDDING DETAILS
(PIPE SIZES UP TO D = 48"Ø)

Proctor & Redfern Limited
Consulting Engineers
Toronto

JUNE 1973

DRAWING NO. E-STD.-2-1 REV. 5

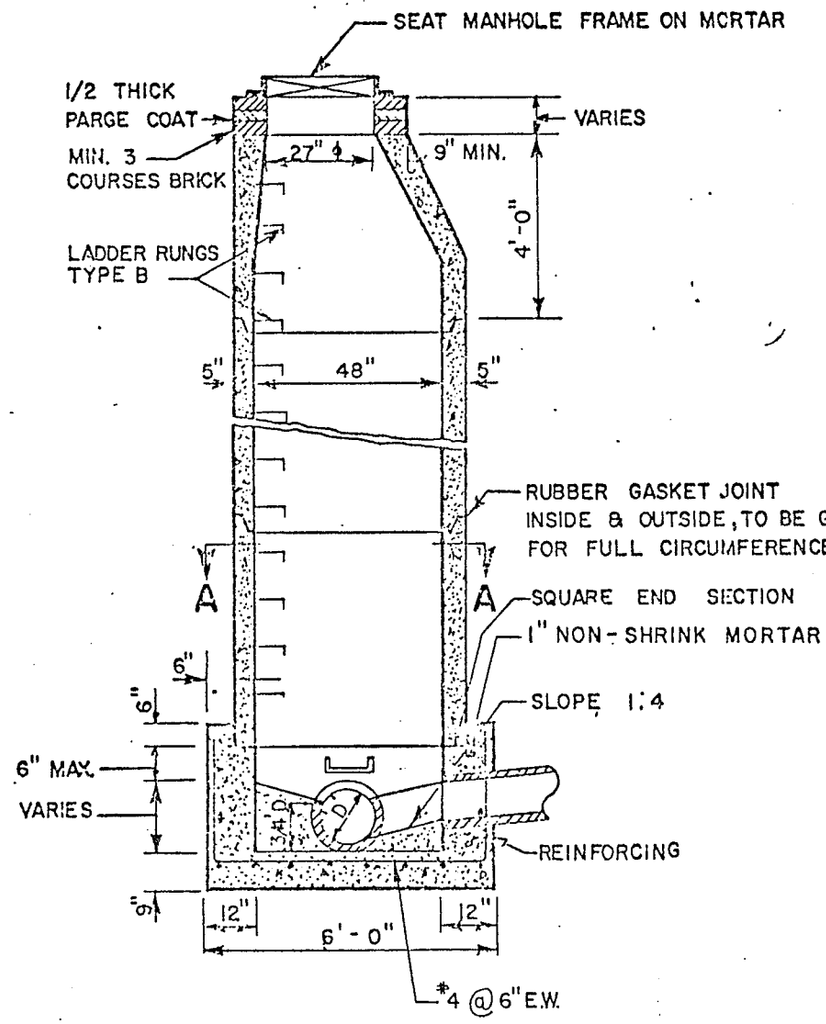
APPROVED BY

REVISIONS

1. NOTES ADDED C.S.
2. 16/3/76

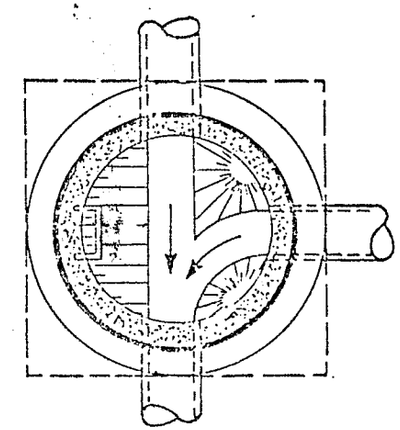
PRECAST MANHOLE

(MAX. DEPTH 25' - MAX. PIPE DIA. 24")



NOTES:

1. THE OUTSIDE LIMIT OF THE BASE MAY BE SQUARE OR CIRCULAR. THE INSIDE OF THE BASE WALLS SHALL BE CIRCULAR TO CONFORM TO THE INSIDE OF THE MANHOLE BARREL.
2. THE BASE TO BE 3000 P.S.I. AT 28 DAYS, CAST IN PLACE OR PRECAST.
3. PRECAST MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. SPECIFICATION C-478 AND SHALL BE SUPPLIED IN INCREMENTS OF 12" IN HEIGHT.
4. PLACE EXTRA STEP DIRECTLY ABOVE INCOMING AND OUTGOING PIPES TO AID IN THE USE OF SEWER CLEANING EQUIPMENT.
5. MANHOLE FRAME AND COVER TO BE AS SPECIFIED.
6. FOR SAFETY GRATING REFER TO E-STD.-2-12
7. FOR SAFETY GRATING SPACING REFER TO SPEC.
8. FOR ALUMINUM SAFETY LADDER RUNGS REFER TO E-STD.-2-10



SECTION A-A

Proctor & Redfern Limited
Consulting Engineers
Toronto

DRAWING NO. E-STD.-2-2

DATE JUNE, 197

NOTES:

1. THE OUTSIDE LIMIT OF THE BASE MAY BE SQUARE OR CIRCULAR. THE INSIDE OF THE BASE WALLS SHALL BE CIRCULAR TO CONFORM TO THE INSIDE OF THE MANHOLE BARREL.
2. THE BASE TO BE 3000 P.S.I. AT 28 DAYS, CAST IN PLACE OR PRECAST.
3. PRECAST MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. SPECIFICATION C-478 AND SHALL BE SUPPLIED IN INCREMENTS OF 12" IN HEIGHT.
4. PLACE EXTRA STEP DIRECTLY ABOVE INCOMING AND OUTGOING PIPES TO AID IN THE USE OF SEWER CLEANING EQUIPMENT
5. CATCHBASIN FRAME & GRATE TO BE AS SPECIFIED
6. FOR SAFETY GRATING REFER TO E-STD.-2-12
7. FOR SAFETY GRATING SPACING REFER TO SPEC.
8. FOR ALUMINUM LADDER RUNGS REFER TO E-STD.-2-10

REVISIONS	1. NOTES ADDED C.S.	2. 16/3/76
APPROVED BY		

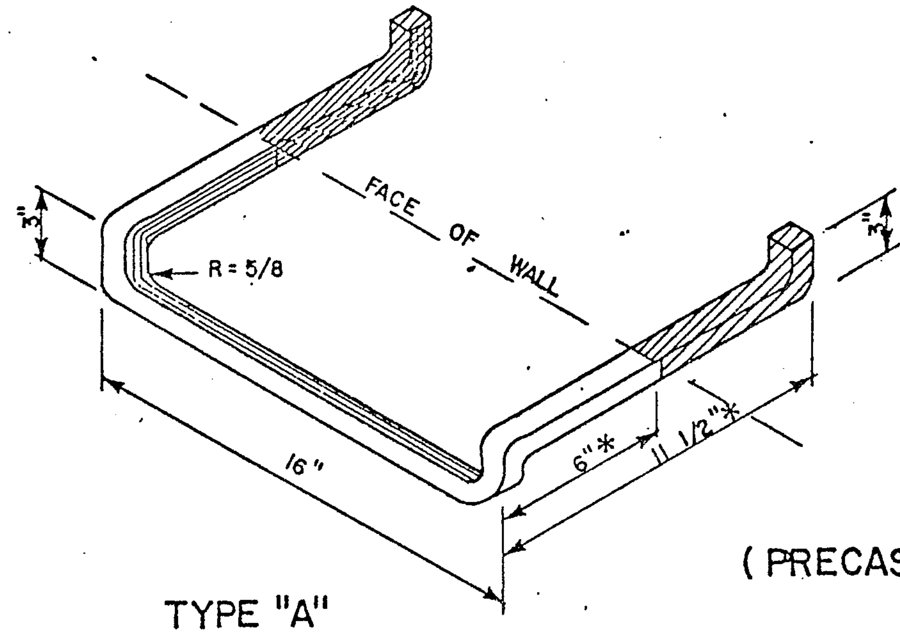
PRECAST CATCHBASIN MANHOLE

(MAX. DEPTH 25' - MAX. PIPE DIAMETER 24")

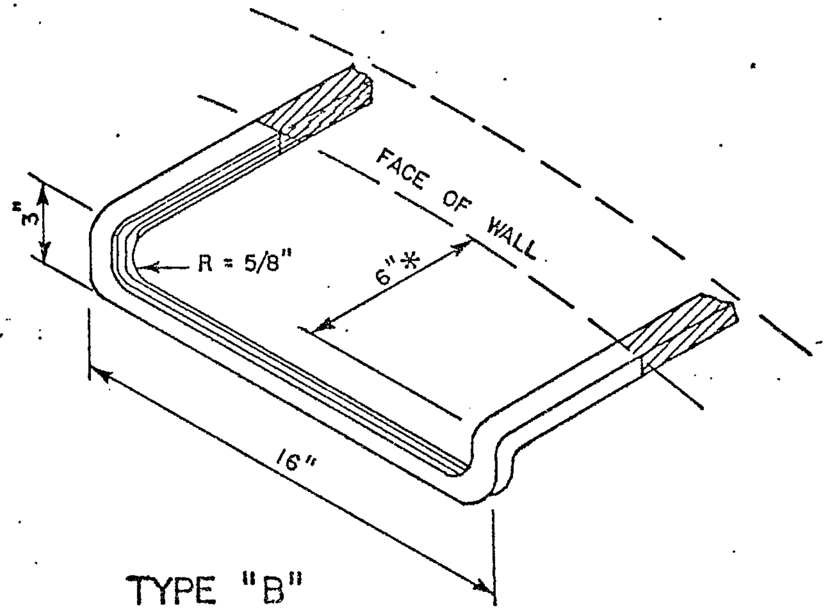
Proctor & Redfern Limited
Consulting Engineers
Toronto

DATE JUNE, 1973

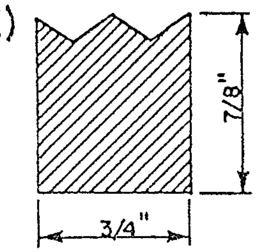
DRAWING NO. E - STD - 2-5



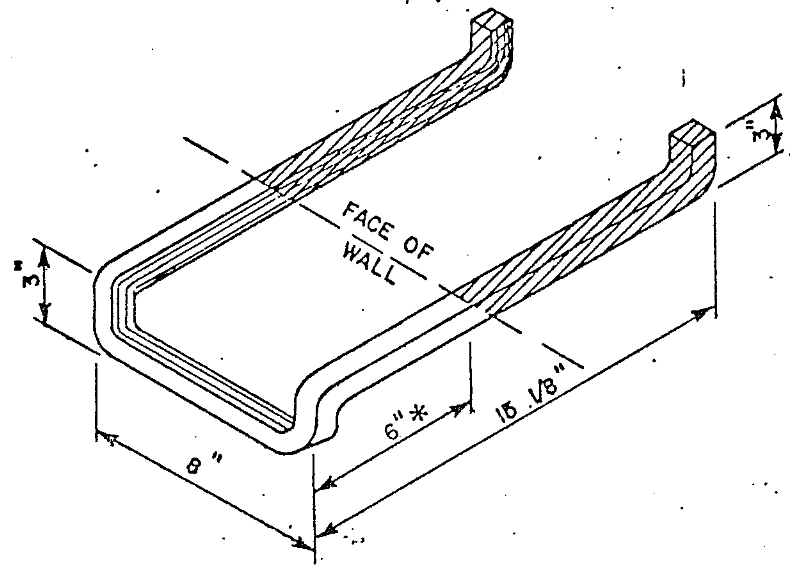
TYPE "A"
(CAST IN PLACE CONCRETE)



TYPE "B"
(PRECAST CONCRETE)



SECTION THROUGH
ALUMINUM STEPS



TYPE "C"
(MASONRY)

NOTES:

1. MATERIAL FOR STEPS TO BE ALUMINUM ALLOY 65 ST 4 (ALUMINUM CO. OF CANADA SPECIFICATION)
2. ALL ALUMINUM IN CONTACT WITH CONCRETE OR BRICKWORK TO HAVE 2 COATS FLINTKOTE C-12 STATIC ASPHALT PAINT OR APPROVED EQUAL
3. CONTRACTOR TO SUPPLY SHOP DRAWING SHOWING PIPE MANUFACTURERS METHOD OF SECURING STEPS IN PRECAST UNITS
4. LADDER RUNGS TO BE SPACED 12" CENTER TO CENTER ON FACE OF WALL

REVISIONS	*DIMENSION REV. 1 CHANGED 3/6/77	
APPROVED BY K.S.T. M.G.O.	ALUMINUM SAFETY LADDER RUNGS	Proctor & Redfern Limited Consulting Engineers Toronto DATE JUNE, 1973. DRAWING NO. E-STD.-2-10. REV. 1

SECTION B-B

SECTION A-A

NOTES:
1. GOSS TRAP TO BE INSTALLED WHERE SPECIFIED
2. REINFORCING STEEL TO BE 4 X 4 - 6/6

PLAN

GOSS TRAP

REVISIONS	1. 19/3/76	
APPROVED BY K.B.T. M.E.A.	PRECAST CATCHBASIN	Proctor & Redfern Limited Consulting Engineers Toronto DATE JUNE, 197
		DRAWING NO. F-STD.-2-15