



TOWNSHIP OF CHISHOLM

CONTRACT FOR

REPLACEMENT OF CHISWICK ROAD ARCH PIPE STRUCTURE NO. 007

CONTRACT NO. CH 2026-05

AUGUST 2026

THE CORPORATION OF THE TOWNSHIP OF CHISHOLM

2847 Chiswick Line RR#4

POWASSAN, ONTARIO P0H 1Z0

THE CORPORATION OF THE TOWNSHIP OF CHISHOLM

2847 Chiswick Line RR#4

POWASSAN, ONTARIO P0H 1Z0

TENDER NUMBER: CH 2026-05

**Only Sealed and Marked
Tenders will be received by:
received by:** **THE TOWNSHIP OF CHISHOLM**

2847 Chiswick Line
Powassan, ON
P0H 1Z0

Attention: Lesley Marshall, CAO Clerk-Treasurer

Tender Closing Date: Thursday August 27th, 2026

Tender Closing Time: 3:00 pm

Tender Opening Time: August 27th, 2026, 3:15 pm

Tender for: **CHISWICK LINE - ARCH PIPE CULVERT 007**

Location: Chiswick Line 1.1km West of Beach Road Lot 12, Concession X/XI

(Lowest or any tender not necessarily accepted.)

TOWNSHIP OF CHISHOLM

CONTRACT FOR
CHISWICK LINE ARCH PIPE CULVERT 007

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1. Sealed tenders are requested for the execution of the works described herein. Tenders are to be addressed and delivered to:

and endorsed:

Tenders will be received until:

(day of week)

(month -day - year -time)

2. Scope of Work

3. Schedule and time of completion for

September 30th, 2026

4. The Tender shall be signed by an authorized officer of the company submitting the Tender, witnessed and sealed with the company seal, including the "Information for Tenderers".

5. The schedule of prices shall be completed.

6. The addenda shall be indicated in the Form of Tender and included in the Tender price.

7. The Subcontractors shall all be listed in the Form of Tender

8. The contract plan "Proposed Work" is attached for bidding reference.
9. The contractor shall maintain and keep clean all streets utilized during the performance of this contract, at no extra cost to this contract.
10. Any work that is deemed to be extra to the contract must be approved by the owner prior to starting.
11. The contractor shall be responsible for redirecting any surface water that may cause problem in the installation of the underground services.
12. The contractor is responsible to obtain the most current standard detail drawings from the governing municipality and/or Ontario Provincial Standard Specifications and Drawings.
13. This contract is prepared by the Municipality.

For further information regarding specifications, questions should be submitted in writing by email (antoine.boucher@eastferris.ca), at least two (2) working days before the tender closing date. For general information, bidders may contact Antoine Boucher, at the East Ferris Municipal Office at 705-752-2740 or on his cell at 705-471-7729.

DIVISION "B"

INFORMATION TO TENDERERS

INFORMATION FOR TENDERERS

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1. TENDER FORM

Tenders must be submitted before the closing time in sealed envelopes, with the contract number and the Tenderer's name and address clearly marked on the outside. Bids received after closing time will not be considered. The Tender must be legible, written in ink or be typed and ALL ITEMS MUST BE BID. The bid must not be restricted by a statement or alterations to the Tender Form or will be rejected as informal.

Adjustments by telegram or letter to a Tender already submitted will not be considered. A Tenderer desiring to adjust a Tender must withdraw the Tender and/or supersede it with a later Tender submission on or before the Tender closing date and time.

The Tender Form must be signed and witnessed in the spaces provided on the form with the signature of the Tenderer or of a responsible official of the organization bidding. If a joint bid is submitted, it must be signed and witnessed on behalf of each of the Tenderers, and if the signing authority for each Tenderer is vested in one individual, he shall sign separately on behalf of each Tenderer. In the case of an incorporated company, the corporate seal must be affixed to the Tender Form.

Erasures, overwriting or strikeouts must be initialled by the person signing on behalf of the organization bidding.

2. TENDER DEPOSIT

At the time of tendering, the Tenderer shall submit, with its Tender, a deposit in the form of a certified cheque or a bid bond in favour of the Corporation of the TOWNSHIP OF CHISHOLM. The Tender deposit shall equal at least 10 percent (10%) of the total Tender price. The 10% deposit must include all applicable taxes.

The Owner shall not pay interest on the Tender deposits.

The Owner shall retain the Tender deposit of the successful Tenderer until:

- (a) the successful Tenderer has executed the Form of Agreement in accordance with Section 35 of the tender.
- (b) the successful Tenderer has provided all bonding and other documents in accordance with Sections 8 and 14 of the Tender.

The Owner shall return the deposits of unsuccessful Tenderers within 14 days of the Tender closing date.

3. INFORMAL OR UNBALANCED TENDERS

Tenders which are incomplete, conditional or obscure, or which contain additions not called for, erasures, reservations, alterations or irregularities of any kind may be rejected.

Tenders that contain prices, which appear to be so unbalanced as likely to affect adversely the interests of the Owner, may be rejected. Each item in the Tender Form shall be a reasonable unit price for such item. The Engineer shall be the sole judge of such matters, and should any Tender be considered to be unbalanced, then it may be rejected by the Owner.

Wherever in a Tender the amount tendered for an item does not agree with the extension of the estimated quantity and the tendered unit price, the unit price shall govern, and the amount shall be corrected accordingly.

The Owner reserves the right to waive informalities at his discretion.

Tenderers who have submitted Tenders, which have been rejected by the Owner because of informalities, will be notified of the reasons for the rejection within ten (10) days after the closing date for Tenders.

Tenders, which are based upon an unreasonable period of time for the completion of the work, may be rejected.

4. **EXAMINATION OF SITE**

No formal test dig will be scheduled for this contract. Bidders are expected to have completed a site visit and are to satisfy themselves by personal examination as to the scope of work, the local conditions to be met with during the construction and conduct of the work. He/she shall make his/her own estimate of the facilities and difficulties to be encountered including the nature of the subsurface materials and conditions. **The Tenderer is not to claim at any time after submission of the Tender that there was any misunderstanding of the terms and conditions of the Contract relating to site conditions.**

- For this project, it must be understood that the road is currently closed to traffic and will remain closed during the entire construction period.
- For this project, it must be understood that the multiplate is to be constructed on-site, and will require a crane to be moved, and installed.
- For this project, it must be understood that the new multiplate will be shifted easterly some 30m easterly, allowing sheet piling to be installed into the road embankments on both sides, to assist in the dewatering of the construction zone.
- A hydro line is located on the North Side, and a bell line is located on the South Side. Both are near the structure inverts, and the pipe will be installed below wiring.
- Upon completion of the install of the new pipe, the creek will need to be re-opened into the new pipe, followed by the removal of the old failed multiplate structure.

5. **OMISSIONS AND DISCREPANCIES**

Should a Tenderer find discrepancies in, or omissions from, the Proposed Work Drawing or Contract Documents, or should he be in doubt as to their meaning, he should notify the Consulting Engineers who may send a written instruction to all Tenderers

6. **INTERPRETATIONS AND ADDENDA**

No oral interpretation shall be made to a Tenderer as to the meaning of any of the Contract Documents, or be effective to modify any of the provisions of the Contract documents. Every request for an interpretation shall be made in writing, addressed and forwarded to the consulting Engineers.

7. ACCEPTANCE OR REJECTION OF TENDERS.

Subject to the General Conditions, neither the Consulting Engineers nor any officer or employee of the Owner has authority to make or accept an offer or to enter into a Contract on behalf of the Owner or to create any right against or to impose any obligations on the Owner. Recommendation of a Tender to the Owner for acceptance does not constitute acceptance of the Tender by the Owner.

A Tender is accepted by the Owner and a Contract is made thereby between the Owner and a Tenderer only when an Agreement is executed by the Owner and by the Tenderer, and the acceptance of a Tender and the execution of an Agreement by the owner within seven (7) days after notification of the execution of the Agreement by the owner has been mailed to the Tenderer whose Tender has been accepted as aforesaid.

The Owner shall not be responsible for any liabilities, costs, expenses, loss or damage incurred, sustained or suffered by any Tenderer prior or subsequent to or by reason of the acceptance or the non-acceptance by the Owner of any Tender or by reason of any delay in the acceptance of a Tender save as provided in the Contract. Tenders are subject to a formal Contract being prepared and executed. The owner reserves the right to reject any or all Tenders and to waive formalities as the interests of the Owner, may require without stating reasons therefore and the lowest or any Tender will not necessarily be accepted.

8. BOND AND AGREEMENT

There will be no bonding for this Contract. However, the Warranty period will require some moneys to be retained as specified in the section below.

9. GUARANTEED MAINTENANCE PERIOD

The Guaranteed Maintenance Period shall start the day of the Certificate of Substantial Performance for all works until June 1st, 2027. During this period, the Contractor shall be responsible to repair or replace any sections of the work which exhibit distresses (not caused from natural disaster), at their own expense, as directed by the Engineer. Repairs, as requested by the Engineer, shall be undertaken within 5 working days of notice being given; otherwise, the Owner shall have such repairs carried out by others and charged against the Contractor.

During the Guaranteed Maintenance Period, the Contractor shall provide a Maintenance Security in the amount of \$5,000 to be retained by the Township of Chisholm until the Final Certificate is issued. That amount is to be released after the Guaranteed Maintenance Period, unless the Contractor fails to repair items identified in the list of deficiencies prior to the Final Certificate.

10. SUBCONTRACTORS

The Tenderer shall give in the Form of Tender the name and address of each proposed Subcontractor stating the portion of work allocated to each and the cost thereof; any changes of a Subcontractor require approval of the Owner. The owner shall reserve the right to reject any subcontractor.

11. APPROVALS AND PERMIT

The construction of the Work and all operations connected therewith are subject to the approval, inspection, by-laws and regulations of all municipal, provincial and federal and other authorities having jurisdiction with respect to any matter arising out of this Contract.

The Owner will obtain and pay the fees, if any, for basic approvals and permits relating to the design and location of the permanent Work required from the Departments or Ministries of Transportation, Energy and Environment, Labour, Public Works or Transport, from railway or pipeline companies or from hydro-electric, canal or seaway authorities.

Unless otherwise specifically stated in the tender documents, the Contractor shall obtain and pay the fees for all other approvals and permits required for or in respect of the Work.

The Municipality is obtaining NBMCA authority permits and has identified the project to the MNR. The work zone is identified as cold water, with no in-water work after mid-September. Given that this project is an emergency, the construction window will be allowed to overlap the no in-water work period, however the Contractor is advised that the construction shall be scheduled to minimize the overlap period.

12. CURRENT STANDARDS

All material and work on this Contract shall be in accordance with current Municipal, O.P.S. and M.E.C.P. Standards and Specifications. No work shall commence without on-site inspection by the Municipal Engineer.

13. HARMONIZE SALES TAX

The amount of the Harmonized Sales Tax is to be entered as a line item in the space provided in the schedule of prices in the Form of Tender.

14. INSURANCE

"The Contractor shall indemnify and hold harmless the Owner, the Consultants and the Construction Manager, their agents and employees and the TOWNSHIP OF CHISHOLM from and against all claims, demands, losses, costs, expenses (including, but not limited to legal fees and disbursements) damages, actions, suits or proceedings by third parties that arise out of or result from or are attributable to the Contractor's performance of the Contract (hereinafter called "Claims") provided such Claims are caused by negligent or wilful acts or omission of the Contractor, any Subcontractor and anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable."

"Without restricting the generality of GC 6.02 - INDEMNIFICATION, the Contractor shall provide, maintain and pay for the insurance coverage specified in GC 6.03 - INSURANCE. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the Work until the date of the final certificate for payment. Prior to the commencement of the work and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the Contractor shall promptly provide the Owner with confirmation of coverage and if required, a certified true copy of the policies certified by an officer of the insurer together with copies of any amending endorsements.

a) General Liability Insurance

"General liability insurance shall be in the joint names of the Contractor, **The Corporation of the TOWNSHIP OF CHISHOLM, Her Majesty the Queen in Right of Canada, Her Majesty the Queen in right of Ontario, Her Ministers, directors, officers, agents, appointees and employees** and any other person, firm or corporation the Owner may from time to time require with limits of not less than \$5,000,000 per occurrence and with a property damage deductible not exceeding \$1,000. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent replacement, including coverage for the blasting, pile driving, caisson and collapse hazards. To achieve the desired limit, umbrella or excess liability insurance may be used. All liability coverage shall be maintained with annual aggregate limits dedicated to the "Work" for products and completed operations hazards from the date of Substantial Performance of the Work, as set out in the certificate of Substantial Performance of the Work, on an on-going basis for a period of 6 years following Substantial Performance of the Work. Where the Contractor maintains a single, blanket policy, the addition of the Owner and the Consultant is limited to liability arising out of the Project and all operations necessary or incidental thereto. The policy shall be endorsed to provide the Owner with not less than 30 days notice in writing by registered mail in advance of any cancellation, and of change or amendment restricting coverage. All such policies shall be primary non-contributing with, and not excess of any other insurance available to the Owner."

b) Automobile Liability Insurance, Aircraft and Watercraft Liability Insurance, Property and Boiler Insurance, Contractor's Equipment Insurance and Insurance Requirements and Duration shall be as per GC 6.03.03, GC 6.03.04, GC 6.03.05, GC 6.03.06 and GC 6.03.07, respectively.

15. SETTING OUT AND AS-BUILT INFORMATION

The Contractor will be responsible for ALL layout from information supplied on the Drawings and **SIB's** in the field. He will set his own batter boards or sight lines from bench marks supplied by the Engineer.

It is emphasized that the Contractor must exercise extreme care in setting invert grades. The Contractor shall work to sufficient precision to ensure that every point in the sewer invert will be set within a vertical tolerance of 5mm of the correct elevation.

Should inspection by the Engineer or Inspector reveal an error greater than the said tolerance, the Contractor shall, at his own expense, rectify such error to the satisfaction of the Engineer.

The Contractor shall prepare with the Engineer a plan showing all **as-built information** in order for the engineer to prepare the final as-built drawing.

16. LEGAL SURVEY BARS, LINE AND GRADE STAKES

The Contractor is hereby informed that he will be responsible for replacing and damaged S.I.B due to the construction work at his own cost.

17. MAINTENANCE OF TRAFFIC

Tenderers are advised that it will be essential to maintain a ROAD CLOSED at all times during the entire construction period.

Until acceptance of the entire project, the Contractor shall be responsible for maintenance and upkeep to the Owner's satisfaction, and shall install any additional construction signs in accordance with Book 7, and submit their traffic plan prior to starting work.

18. MISCELLANEOUS ITEMS

Tenderers shall note that although the main items of work are listed in the Schedule of Items and Prices in the Form of Tender, it shall be required that the Contractor complete all the work required by the Plans or the Specifications even though every item may not be specifically listed in the Form of Tender. The cost of such miscellaneous items shall be deemed to be included in the unit prices for the main items of work listed in the Form of Tender. Miscellaneous work shall include but not be limited to such items as the cost of permits, access roads, cleanup and all other things necessary for the proper carrying out and completion of the work.

19. PARKING

The Contractor shall allow suitable parking access for construction vehicles and for the cars of his employees and those of his subcontractors and visitors to the satisfaction of the owner.

20. LIMITS OF SITE

The Contractor is to contain his operation to the street right-of-way, except for trailer locations, parking area and stockpile sites which must be agreed upon by the Engineer.

21. TESTS

- (a) Granular materials, sieve analysis of original material from the source i.e. plant, quarry, pit, shall be provided at the Contractor's cost for this project.
- (b) Costs for tests on granular materials, sieve analysis or compaction tests ordered by the Engineer will be paid by the Municipality.
- (b) Notwithstanding the above, all other testing programs, or tests of failed specimens, or excessive amounts of testing which in the Engineer's opinion results from inefficiency or lack of normal care and workmanship, will be at the Contractor's expense.

22. HOLDBACK RELEASE

The Owner shall retain a Holdback payment of ten percent (10%) of the total invoiced amount. Release of the Holdback shall be made after forty-five (45) calendar days from the date of completion of the work as established by the Completion Certificate, but subject to the provisions of the Construction Lien Act RSO 1990, and the submission by the Contractor of the following documents :

- (a) A release shall be provided by the Contractor in a form satisfactory to the Director of Engineering, releasing the Owner from any claims relating to the Contract, qualified by stated exceptions, where appropriate.

- (b) A statutory declaration shall be provided in a form satisfactory to the Director of Engineering that all liabilities incurred by the Contractor and the Contractor's Subcontractors in carrying out the work have been discharged, qualified by stated exceptions where appropriate, and
- (c) A satisfactory Certificate of Clearance from the Workplace Safety and Insurance Board

23. CONFLICTS AND OMISSIONS

In any case of conflict between the requirements of the contract documents, the order of precedence shall be as per the Contract Agreement.

Notwithstanding the above, neither party to the contract shall take advantage of any apparent error or omission in the plans or specifications, but the Engineer shall be permitted to make such corrections and interpretations as may be necessary for fulfilment of the intent of the plans and specifications. Any work or material not herein specified but may be fairly implied as included in this contract, of which the Engineer shall be the judge, shall be done or furnished by the Contractor as if such work or material has been specified.

24. SCHEDULE OF QUANTITIES

The schedule of quantities for the items of work, furnished herewith, is for the sole purpose of indicating to the Tenderer the general magnitude of the work. If the quantity of work to be done and material to be furnished exceeds, or is less than, the estimated quantity, the Contractor shall proceed with the work and payment will be made for the actual amount of work done and material furnished at the unit prices set out in the Tender. The Contractor shall not be entitled to any claim for lost profit, overhead or any other reason due to variations between the Tender quantity and the actual quantity measured for payment.

25. COMMENCEMENT OF THE WORK

Tenderers are advised that the multiplate is scheduled to be delivered near the end of August 2026 and that assembly of the Multi-Plate shall be scheduled upon delivery. Armtec is supplying the poly laminated structure, and an exact delivery date will be provided to the Bidders before closing.

26. PROVISIONAL ITEMS

Items of work that may be required during the course of construction, but the exact requirements of which will depend on ground conditions or other uncertain factors encountered, are shown as "Provisional Items". These quantities are anticipated to vary significantly, or may not be used at all. The Contractor shall price these items accordingly and shall not claim any anticipated loss of profit or increased overhead if any or all of these items is deleted altogether.

27. CONTINGENCY ITEM

An amount has been placed in the Tender to cover extra work that may be ordered by the Engineer. This Contingency Allowance will be drawn upon only as directed and as authorized in writing by the Engineer and approval by the Owner.

28. ACCEPTANCE OF TENDER

If this Tender is accepted, the Tenderer agrees to furnish an approved surety and Workers' Compensation Clearance every 45 days for the proper fulfilment of the contract as required and to execute the agreement and bond, in triplicate, within seven (7) days, not including Sundays or a legal holiday, after being notified to do so by the Engineer.

29. PRIVATE LANDS

The Contractor shall not enter upon or occupy any lands outside of the public road allowance and the right-of-way shown on the plans except after consent has been received from the proper parties, a certified copy of which consent shall have been furnished to the Engineer.

When work has to proceed on private property, the Contractor will take every precaution to minimize the damage and inconvenience to property owners. The unit prices will be deemed to cover any restoration work necessary and all remedial work will be done to the satisfaction of the Engineer and the property owner.

30. SURPLUS EXCAVATION MATERIAL

The Contractor is hereby advised that all excavated materials shall be disposed of in accordance to OPSS 180. The Township proposed to dump excess material at the Public Works Yard, or at nearby properties approved.

31. SCHEDULE OF WORK

The Contractor is advised that the contract will not be allowed to start until a proposed schedule of work is submitted and approved by the Engineer. The schedule, when approved, will form part of the contract and shall be binding on the Contractor.

During the operation of the contract, if any change arises which, in the opinion of the Contractor, prevents him from functioning at the progress scheduled, he shall immediately apply to the Engineer, in writing, requesting such an alteration.

The Tenderer is advised that work shall commence immediately upon being awarded the contract and to continue in an expeditious manner, and to complete the contract within the contract period.

32. COOPERATION

The Contractor shall cooperate fully with any utility agencies (in ground and above ground) in protecting their plant or in shifting, removing, or new installation of same.

33. CLEANING OF ROADS

The contractor will be responsible to keep all roads affected by his operation clean . Daily scraping and weekly flushing will be required as part of his contract .

34. LIQUIDATED DAMAGE

Persuant to section GC 8.02.09 of the General Conditions, the liquidated damages shall be in the amount of:

Five Hundred Dollars (\$ 500.00) per calendar days beyond each milestone indicated in item 3 of the “Attention Sheet”.

34. LOCATES

The location of all mainline underground Utilities that may affect the Work shall be determined and arranged by the Contractor. The Contractor is also responsible for all Aerial lines.

35. CLARIFICATION OF DOCUMENT

Any clarification of the document required by the Proponent prior to submission shall be requested in writing through the Acting Municipal Engineer. Clarifications will be discussed during the mandatory site visit. Addendum if necessary will be provided following the site visit.

No officer, agent or employee of the Township is authorized to alter orally any portion of these documents during the period prior to submissions. Alterations will be issued to Proponents as written addenda only. In the submission, the Proponent shall enclose all addenda that were considered when the submission was prepared.

36. LAYOUT

The Contract Administrator shall provide baseline and benchmark information for the general location, alignment and elevation of the work. If requested by the Contractor, the Contract Administrator will establish offset stakes indicating offset distance, profile grade and super elevation where applicable. Offset stakes, once established, shall become the responsibility of the Contractor.

37. ARMTEC SITE SERVICES

The Contractor is informed that Armtec will be providing site services for the Assembly of the Multi-Plate structure as well as for the backfilling as per their proposal included herein. They anticipate that they will be required on site for approximately 1 day to ensure the Contractor is using the proper equipment and methodology.

38. GEOTECHNICAL SERVICES

The contractor must notify the engineer once the subgrade level has been exposed to verify existing soils conditions and groundwater levels. Specifications regarding the typical bedding material and thickness may be modified based on the site conditions at that time.

39. EROSION AND SEDIMENTATION MANAGEMENT

The Contractor will have to maintain the Erosion and Sedimentation Management plan during construction.

40. NBMCA

The Municipality is in the process of obtaining the Permit for the work.

41. PROPOSED DEWATERING PLAN

The proposed dewatering as discussed with the NBMCA will maintain flow in the existing multiplate. The road is closed to traffic, and the Multiplate is not able to handle live traffic loads. The Contractor is responsible for maintaining that damage superstructure in place during the entire construction as part of the dewatering.

Sheet piling or equivalent measures is required at the proposed superstructure location to maintain the excavation dry. The Contractor will be responsible to ensure no sedimentation enters the existing stream. Upon completion of the new Superstructure, the Contractor is to reverse the creek, by shifting the creek into the new pipe.

The Contractor is to complete the construction work by removing the damaged Culvert last and backfill. Once the completion work is approved, the creek flow will remain in the new structure.

42. ABILITY AND EXPERIENCE OF CONTRACTOR

The Contractor is requested to provide three (3) similar project that were completed in the course of the last 7 years. The Owner reserves the right to reject the Tender of any Contractor who does not furnish satisfactory evidence of sufficient capital, plant and experience to successfully prosecute and complete the work in the proposed timeframe.

43. HEALTH AND SAFETY

The Township Is committed to ensuring that a high standard of health and safety is provided and maintained for all employees, visitors, guests, contractors, agents and others on our premises.

The Contractor shall be the “Constructor” under the provisions of the Occupational Health and Safety Act.

Accordingly all Contractors shall comply with the following:

- a. Demonstrate establishment and maintenance of a health and safety program with objectives and standards consistent with applicable legislation, and with the Corporation of the Township of Chisholm.
- b. Submit their Workplace Safety Insurance Board number.
- c. Include health and safety provisions in their management systems to reach and maintain a consistently high level of health and safety.
- d. Prior to commencement of work the Contractor will notify the Owner of all products controlled under

the Workplace Hazardous Materials Information System (WHMIS) and ensure that workers in their employ are aware of hazardous substances that may be in use at their place of work and wear appropriate personal protective equipment as may be required.

- e. Provide a copy of the applicable WSIB Certificate of Clearance before starting a project, and upon completion.
- f. Provide upon request a copy of your Company Health and Safety Policy.
- g. Upon request at any time from the awarding to the completion of the contract, submit proof of fulfilment of the above noted responsibilities.

44. WORKING AREA

The Contractor shall provide and maintain a portable toilet for the term of the contract.

DIVISION "C"

FORM OF TENDER

TOWNSHIP OF CHISHOLM

DESCRIPTION

CHISWICK LINE ARCH PIPE CULVERT

Tender CH 2026-05

A. Tender by: _____

A corporation having its office at: _____

(or in case of partnership)

B. Tender by: _____

Place of residence or business: _____

And: _____

Place of residence or business: _____

Carrying on business under the firm name of: _____

(or in case of unincorporated and non-partnership Tenderer)

C. Tender by: _____

Place of residence or business: _____

hereinafter referred to as the Tenderer

NOTE: in the case of partnership the name and place of residence or business of each partner must be inserted.

1. **DECLARATION OF TENDERER**

The Tenderer declares that:

- (a) No persons, other than the Tenderer, has any interest in this Tender or in the Contract proposed to be entered into.
- (b) This Tender is made without any connection, knowledge, comparison of figures, or arrangement with any other person or persons making a Tender for the same work, and is in all respects fair and without collusion or fraud.
- (c) The several matters stated in the said Tender are in all respects true.
- (d) The Tenderer has carefully examined the locality and site of the proposed works, as well as all the Contract documents, and hereby accepts the same as part and parcel of this Contract, and do as hereby tender and offer to enter into a Contract to do all the work, provide the labour and to provide, furnish, deliver, place and erect all materials mentioned and described or implied therein, including in every case freight, duty, exchange, and all other charges on the terms and conditions, and under the provisions therein set forth, and to accept in full payment therefore in accordance with the schedule of prices hereto annexed, and the Tenderer also agrees that this offer is to remain open to acceptance until the formal Contract is executed by the successful Tenderer for said work, and that the Owner may at any time without notice accept this Tender whether any other Tender has been previously accepted or not.
- (e) The prices offered in this schedule take into account in all respects for the cost of execution of work under all weather conditions.
- (f) The submission of this Tender is based on the terms and conditions of the draft form of agreement furnished to us, and any addenda identified herein. It is agreed that in the event of conflict between the unit prices and definitions of this Tender Form, and those contained in the specifications, then this Tender Form shall govern.
- (g) The work is to commence a maximum of seven days after notice to commence work has been issued by the Engineer.
- (h) In tendering for the work and in entering into the Contract, he has investigated for himself the character of the work to be done and all local conditions that might affect his Tender of his acceptance of the work.

He also declares that in tendering for the work and in entering into the Contract, he did not and does not rely upon verbal information furnished by the Owner or the engineer.

2. **ADDENDA**

The Tenderer will acknowledge receipt of all addendum and list them as follows:

Number _____ Dated _____ Initial _____

Number _____ Dated _____ Initial _____

Number _____ Dated _____ Initial _____

Number _____ Dated _____ Initial _____

Number _____ Dated _____ Initial _____

Number _____ Dated _____ Initial _____

ITEM NO.	SPEC NO.	DESCRIPTION OF ITEM	EST. QTY	UNIT PRICE	TOTAL
LOCATION: Arch Pipe Culvert 007 on Chiswick Line					
1	S.P.	Traffic Control To maintain Existing Road Closed condition and install necessary Road Closed signs	L.S.	\$	\$
2	S.P.	Environmental protection Installation, maintenance and removal of silt fence, straw bales all in accordance with erosion and sedimentation control plan	L.S.	\$	\$
3	S.P.	Dewatering of new work zone Install sheet piling along embankment to isolate excavation area for proposed new location of multi-plate.	L.S.	\$	\$
4	421 S.P.	Construction - Assemble and Install NEW 19m - 3890 mm span x 2690 mm rise Polymer Coated CSP Arch Culvert based on ARMTEC specification.	L.S.	\$	\$
5	510 902 S.P.	Earth Excavation Material to be excavated, minimum of 400 m ³ (assumed suitable material) to be stockpiled onsite for re-use on both new and old culverts. Remainder (unsuitable) material to be hauled and <u>stockpiled</u> <u>Public Works Yard on Chiswick Line</u> and/or at approved nearby property.	500 m ³	\$	\$
6	S.P.	Dewatering of work zone – Contractor will be required to pump and maintain work zone dry by the use of sump pumps to be all out letting into sedimentation filtration bags. This item is for all manpower and equipment to maintain the work zone dry.	L.S.	\$	\$
7	314 902 S.P.	Compacted Bedding - Foundation Backfill - Placement of material below obvert for bedding foundation using Granular “A” type II. This material must be placed to an EGG SHAPE to accept the new pipe.	110 tonnes	\$	\$
8	S.P.	Non-Woven Class II – 270R - Geotextile below Culvert to be installed to wrap all loose bedding cushion foundation.	120 m ²	\$	\$
9	314 902	Loose Bedding Cushion – Placement of 200mm cushion loose bedding on top of the compacted bedding foundation as per Armtec Specifications. Using Granular “A” type II.	36 m ³	\$	\$
10	S.P.	CONCRETE PUMPING FOR BASE SUPPORT – This item will be done by Labonté Pumping Truck using 54m ³ of Concrete Grout. Contractor is to schedule work and allow Labonté to access site, contact numbers will be provided.	N/A	N/A	N/A
11	314 902 S.P.	Placement and Compaction of approved backfill in 200mm lifts and compacted as per manufacturer technical specifications. 1000mm around the Superstructure and base will be Granular “A”. Remainder of backfill will be approved material from the excavation.	750 tonnes	\$	\$
12	S.P.	Placement and Compaction of Granular “A” Type II for road surface for approximately 300m thick	175 tonnes	\$	\$
13	S.P.	RIP RAP on embankment (300mm thick on Non-Woven Class II geotextile.	100 m ²	\$	\$
14	421, S.P.	Removal - of existing Multi-plate Culvert	L.S.	\$	\$
15	S.P.	Road Backfill at location of failed Culvert	L.S.	\$	\$

CONTIGENCIES (TO BE ONLY USED UPON DIRECTIVE OF THE ENGINEER)					
16	510 902 S.P.	Additional Earth Excavation This item allows for extra excavation in accordance with ARMTEC design to dig 600mm below structure for additional trench reinforcement if required. Material to be excavated, is still to be hauled and <u>stockpiled at Public Works Yard and/or at nearby property approved by Township.</u>	175 m ³	\$	\$
17	314 902 S.P.	Trench Reinforcement Foundation Backfill - Placement of material below pipes on both sides using Granular "A" Type II. This item will only be needed if the Additional Earth Excavation is requested.	200 tonnes	\$	\$
18	314 902	Placement and Compaction of additional approved backfill in the event additional excavation was required.	350 tonnes	\$	\$
19	S.P.	Additional work to the discretion of the Municipal Engineer.	Lump Sum	\$ 65,000	\$ 65,000

SUMMARY SHEET

ESTIMATED TOTAL \$ _____

PLUS 13% HST \$ _____

TOTAL TENDER PRICE \$ _____

Repeat total Tender price in writing _____

H.S.T. Registration # _____

The Contractor by this Tender, offers to complete this Contract in accordance with the terms contained herein.

DATED AT _____ THIS _____ DAY OF _____ 2026.

WITNESS: _____

NAME OF COMPANY

Signature of Authorized Person
Signing for Contractor (SEAL)

(Tenderer's Initials)

(POSITION)

Confirm Project Start Date : _____

DIVISION "D"

CONTRACT AGREEMENT

PROJECT

Chiswick Line Arch Pipe Culvert 007

THIS AGREEMENT made in Triplicate this _____ day of _____
in the year Two Thousand Seventeen.

BETWEEN:

_____	(hereinafter called the "CONTRACTOR") of the first part
and	
<u>The Corporation of the TOWNSHIP OF CHISHOLM</u>	(hereinafter called the "Owner") of the second part.

WITNESSETH that the Contractor and the Owner, for the considerations hereinafter indicated, undertake and agree as follows:

ARTICLE 1

The following documents, which have been signed or initialled in triplicate for identification by both parties, are to be read herewith and form part of this present agreement for each contract as fully and completely to all intents and purposes as though all the stipulations thereof have been embodied herein.

In the event of any inconsistency or conflict in the contents of the following documents, such documents shall take precedence and govern as per section GC 2.02 in the following descending order:

- a) Agreement
- b) Addenda No. to No. Inclusive
- c) Special Provisions
- d) Contract Drawings
- e) Standard Specifications
- f) Standard Drawings
- g) Instructions to Tenderers
- h) Tender
- i) Supplemental General Conditions
- j) General Conditions
- k) Working Drawings

Later dates shall govern within each of the above categories of documents.

ARTICLE II

The Contractor undertakes and agrees as follows:

- (a) To provide, at his own expense, all and every kind of labour, machinery, plant, structures, roads, ways, materials, appliances, articles and things necessary for the due execution and completion of all the work set out elsewhere in this contract and shall forthwith according to the instructions of the Engineer commence the works and diligently execute the respective portions thereof, and deliver the works complete in every particular to the Owner within the time specified in the contract.
- (b) To grant the Owner the right to use completed portions of all contract construction prior to completion of the contract without any additional compensation.

ARTICLE III

The Owner undertakes and agrees as follows:

- (a) To pay the Contractor in lawful money of Canada for the performance of the work of each contract (subject to additions and deductions as provided in the General Conditions of the contract) at the unit prices set out in the schedule of unit prices, as described in the Form of Tender, annexed to this Agreement. It is estimated (without limiting the foregoing) that the aggregate payable under this Agreement will be in the approximate amount of based on the unit prices bid and applied to the measurements of the work.
- (b) To make payments on account thereof upon the certificate of the Engineer (when the Engineer is satisfied that payments due to Subcontractors have been made) as follows:
 - (i) On the 25th day of each calendar month, the Contractor shall prepare and deliver to the Engineer, for checking, a written estimate of the value of the labour and material incorporated in the work of the contract up to the 25th day of that month. The Engineer shall, by the first day of the following month, issue in favour of the Contractor a certificate for ninety percent (90%) of the value of labour and materials incorporated in the work up to the first day of that month as estimated by the Contractor and approved by the Engineer, less the aggregate of previous payments. Within thirty (30) days after delivery by the Engineer to the Owner of each certificate, the Owner shall pay to the Contractor the amount of such certificate.
 - (ii) Payment by the Owner of the ten percent (10%) holdback shall be in accordance with the Construction Lien Act, and provision of the following:
 1. Maintenance Bond as described in the Information for Tenderers.
 2. A satisfactory certificate of clearance from the Workers' Compensation Board.
 3. A statutory declaration completed by a signing officer of the company in a form satisfactory to the Engineer that all liabilities incurred by the Contractor and his Subcontractors in carrying out the contract have been paid and that there are no liens, garnishes, attachments of claims relating to the work.
 4. Copy of the Publication of the Substantial Performance Certificate.
 5. Completed Form 5 of the construction Lien Act 1993

ARTICLE IV

In the event that the Tender provides for and contains a contingency allowance, it is understood and agreed that such contingency allowance is merely for the convenience of accounting by the Owner, and the Contractor is not entitled to payment thereof except for extra or additional work carried out by him in accordance with the contract and only to the extent of such extra or additional work as approved in writing by the Owner.

ARTICLE V

No implied contract of any kind whatsoever by or on behalf of the Owner shall arise or be implied from anything in this contract contained, nor from any position or situation of the parties at any time, it being clearly understood that the express covenants and agreements herein contained made by the Owner shall be the only covenants and agreements upon which any rights against the Owner may be founded.

ARTICLE VI

The Contractor declares that in tendering for the works and in entering into this contract, he has either investigated for himself the character of the work and all local conditions that might affect his Tender or his acceptance of the work, or that not having so investigated, he is willing to assume and does hereby assume all risk of conditions arising or developing in the course of the work which might or could make the work, or any items thereof, more expensive in character, or more onerous to fulfil, than was contemplated or known when the Tender was made or the contract signed. The Contractor also declares that he did not and does not rely upon information furnished by any methods whatsoever by the Owner or Engineer, being aware that any information from such sources was not in any manner warranted or guaranteed by the Owner.

ARTICLE VII

The Contractor and the Owner for themselves, their successors and assigns, hereby undertake and agree to the full performance of the covenants contained herein and in the contract documents as listed in Article 1 herein.

ARTICLE VIII

If and whenever either party hereto desires to give notice to the other party under or in connection with this Agreement, such notice will be effectively given if sent by registered mail

to the Contractor at:

to the Owner at:

TOWNSHIP OF CHISHOLM
2847 Chiswick Line
Powassan, ON
P0H 1Z0

and to the Engineers at:

25 Taillefer Road
Corbeil, Ontario
P0H 1K0

CONTRACT AGREEMENT
Page 4

and will be considered as having been so given at the time of the deposit hereof in the post office.

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

SIGNED, SEALED AND DELIVERED

in the presence of

[illegible]

DIVISION "E"

MUNI OPSS

**CONTRACTOR must refer to the most current MUNI OPSS
FOR ALL CONSTRUCTION ITEMS WITHIN THIS CONTRACT**

DIVISION "F"

SPECIAL PROVISIONS AND SUPPLEMENT
TO OPSS STANDARD FOR UNDERGROUND CONSTRUCTION

ITEM NO. 1: TRAFFIC CONTROL

Under this item the Contractor shall install proper Road Closed Signs and maintain the road under closed condition. The Contractor is to also provide Detour Signs (D1 and D2) to allow Chiswick Line through traffic to detour. At the end of the project, the Contractor is responsible to re-open the road to traffic. At a minimum, four (4) Road Closed signs will be required, two at the nearest intersections on Chiswick Line and Two at the job site on both sides of the work zone.



Current road closure setup by Township Public Works staff at Culvert Failure

ITEM NO. 2: ENVIRONMENTAL PROTECTION

All excavated banks shall have silt fences at the toe of excavation. The Contractor will is responsible to add more silt fence where and when required to manage to prevent silt from entering the watercourse.

Under this item, the Contractor is required to have a minimum of a dozen (12) Straw Bales on site for use as directed by Municipal Engineer. In the event Straw Bales are to be used, they will need to be properly staked.

Under this item, the Contractor is also required to install silt fence at the water level of the backfill for the road reconstruction over the failed multiplate. It will be required to prevent erosion from fines within the new fill zone, as this is determined to be a sensitive zone. ~~Any pumping within the work zone shall be drained into a sedimentation bag to prevent fines from the pumps to enter the natural water course.~~

ITEM NO. 3: SHEET PILING FOR WORK ZONE

The Contactor shall price in this item all work necessary to install sheet piling for the new Multiplate approximately 30m east of the failed Multiplate Pipe. The Sheet Piling is to block all creek flows to enter into the new zone of excavation. This work is based on maintaining all creek water to continue to flow throughout the failed multiplate, therefore eliminating the need for re-routing the creek.

The Contractor shall install Sheet Piling at a 3m offset of the proposed new superstructure inlet & outlet, and ensure the Sheet Piling wraps back into the embankment while maintaining a 3m offset of the outside pipe perimeter as shown on drawings. This proposed system is intended to prevent creek water from entering the work zone.

Once the new work zone is isolated from the creek water inflows, the contractor will be authorized to start the excavation work. The Contractor shall maintain the sheet piles throughout the construction period. It is expected that a minimum of two rows of meter bags will be placed on the inside and outside perimeter of the sheet piles system to improve stability and provide reinforcement. Alternative methods may be

approved. In the event of failing, the Contractor is ultimately responsible to re-install sheet piles and provide an escape plan for workers on both sides of the excavation by mean of proper ladder system.



Picture showing sample layout of sheetpiling at a 3m offset from the proposed new multiplate.



Sketch showing the proposed location of the new multiplate (in green) approximately 30m east of the existing superstructure to be removed upon completion of construction (in red).

ITEM NO. 4: Construction – Assemble both new 3890 mm x 2690 mm CSP ARCH CULVERT (Lump Sum)

Work under this item shall include installing one (1) new, 19m - 3890 mm x 2690 mm Poly-laminated Multi plate Arch Structural Pipe, which is supplied by the Owner and manufactured by Armtec. See assembly pipe drawings provided separately by Armtec.

The delivery date (following manufacturing) of the new Multi-Plate Arch Pipe is currently to be assumed

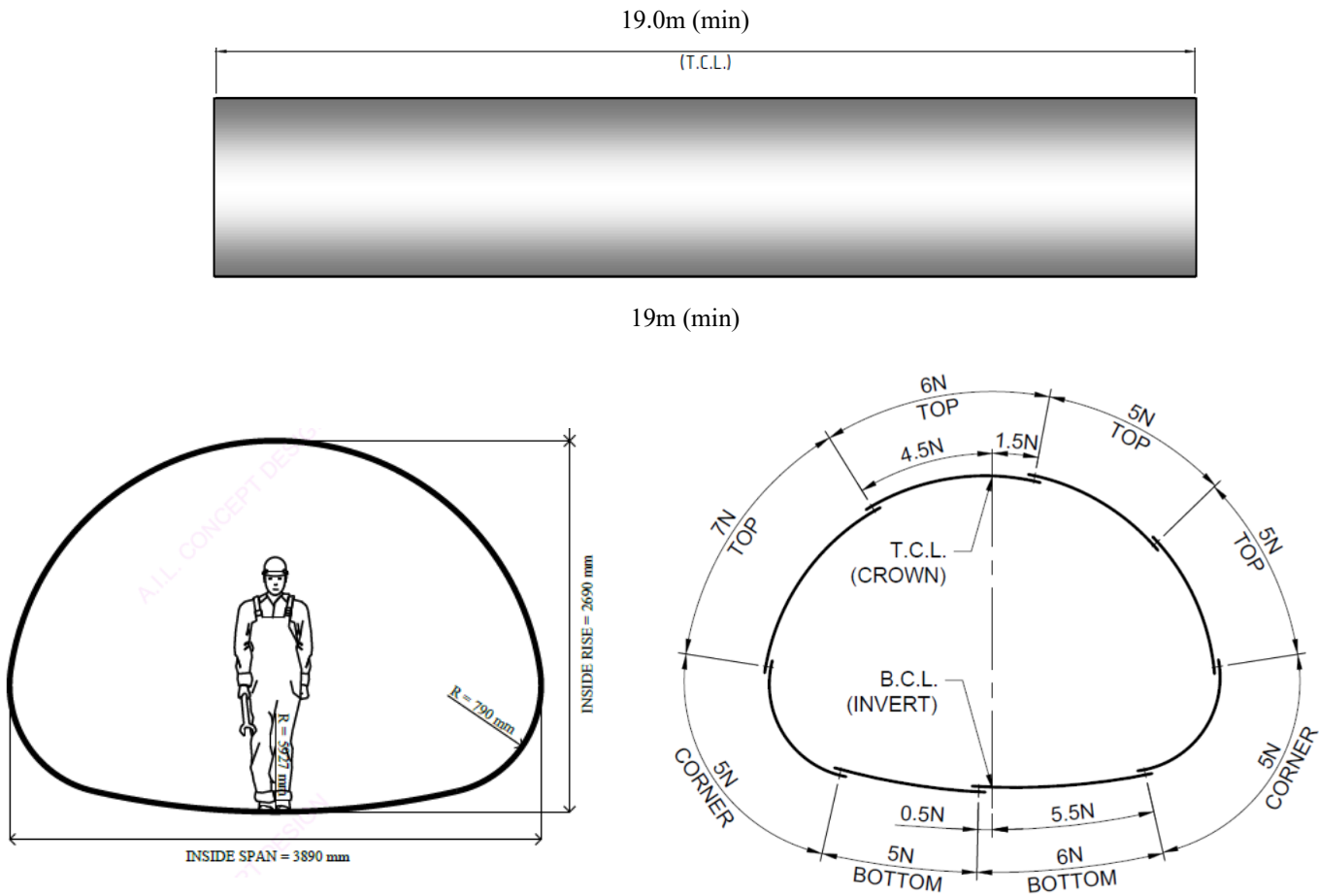
around September 11th as fabrication is currently sitting in queue. Once Armtec provides a firm completion and delivery date (FOB on-site), all bidders will be immediately advised. Upon award of this tender, the Contractor will take responsibility for the superstructure material once delivered on-site and shall be responsible for any damage which occurs thereafter.

Armtec will provide a partial day supervision service for the construction assembly methodology. Armtec’s assembly information is attached for the Contractor’s information. Armtec provides the list of equipment necessary and an estimated timeline to assemble the multi-plates. They will provide additional information upon request, should the Contractor require additional information. The Municipal Engineer shall be included in the chain of emails when it comes to assembly questions.

From the limit of excavation, a 1:1 excavation side slope was assumed acceptable for this project in accordance with the plan and profile provided. This superstructure will require a minimum of 700mm of cover as noted.

Payment for this item is a single lump sum amount for the installation of the pipe.

PROPOSED SUPERSTRUCTURE



Weight of heaviest plate = 611 Lbs
Weight of one complete ring = +/-3730 Lbs

SECTION DETAIL
5
006
SCALE: NTS
PLATE LAYOUT & LAPPING

ITEM NO. 5: EARTH EXCAVATION (m³)

Work under this item shall include all labour, equipment and materials required to remove existing material as required. The total volumetric material quantity to be excavated has been broken into sections; The estimated quantity of 500m³ allows sufficient earth removal for the new Superstructure on a 1H:1V.

In advance of excavating the Contractor shall schedule for the services of a Geotechnical Engineer to perform Quality Control for Independent Testing/ Inspection including but not limited to: Subgrade inspections, Concrete testing, Soil Compaction Testing, Aggregates sampling and testing. Englobe shall be retained when required for this work, their work will be at the cost of the Municipality. Englobe is located at:

2-120 Progress Court, North Bay (Ontario) P1A 0C2, T 705.476.2550, F 705.476.8882

In the event additional excavation is necessary, a supplementary item has been allocated in the Contingencies. The above quantities allow for a bottom excavation at least 6.8m wide, 1:1 side walls and 15.7m wide road cut. The Superstructure has no skew, excavation is assumed to follow the pipe. The top pipe elevation at the road centerline is 267.17 and a benchmark is provided in the Bell Utility Pole at 266.84. The proposed excavation will leave approximately 1.44m on both sides of the Super Structure for backfill.

ITEM NO. 6: Dewatering of work zone

Under this item, the contractor by means of a minimum of four (x4) - 3" pumps, shall provide and maintain a minimum of four sump pits near the proposed pipe inlets, to maintain the work zone dewatered. All water pumped shall be pumped towards the downstream side of the creek into sedimentation bags, and/or a filtration pit. All manpower, material and equipment required to maintain the water level below pipe shall be included in this line item. It is noted that the creek water level is observed adjacent to the work zone, with water levels at least 2m above the structure inverts. Although sheet piling is used, and the excavation zone is some 30m easterly, with earth embankments reducing direct water inflows, the Contractor shall assume water seepage and infiltration will be present, and dewatering will require continuous monitoring.

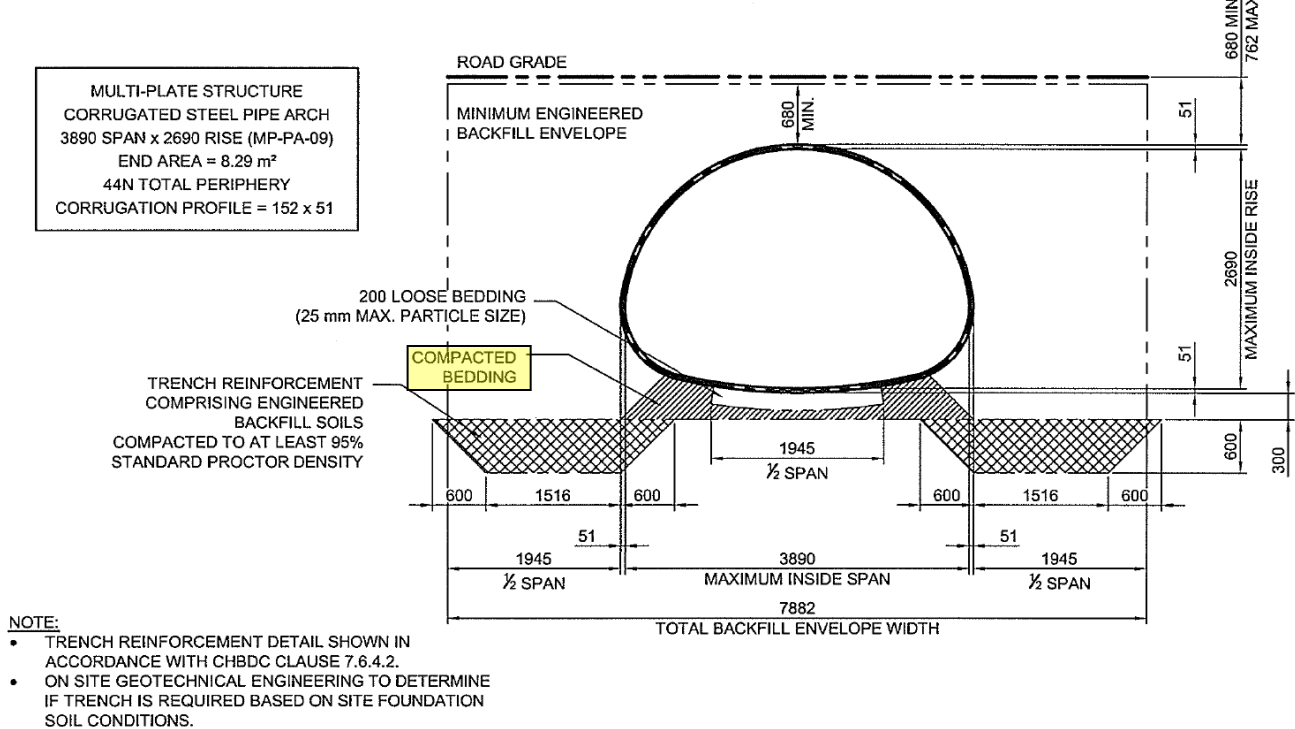


Recent picture showing water levels near the top of pipe.

All pumps shall be drained into a sedimentation bag or filtered zones to prevent siltation from entering the stream. **Pumped water from work zone is considered “silty water” and is required to be filtered before out letting into the downstream. Contingency plan may be required if regular operation fails.**

ITEM NO. 7: Compacted Bedding

This item represents the quantity for the COMPACTED BEDDING (in box below) as per the diagram.



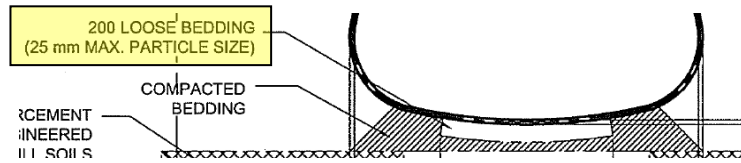
The Granular will be supplied by the Bidder (Contractor) and shall be part of your bid price.

Installation shall include any extra measures required for placing and compacting materials in the work zone, any other aspect in advance of installing the Culvert which may be required but which has not been mentioned. The Layout will be provided by the Municipality. Compaction Testing will be by the Municipality.

ITEM NO. 8: Geotextile for base of excavation

It is understood that the Contractor is responsible for the Supply and installation of a geotextile at the base of the excavation prior to placing the foundation backfill. The geotextile must be overlapped at all four sides prior to backfill and there shall be additional material to fold back all extremities once the foundation backfill layer is compacted. The main concept is to create a "pillow" wrapping the bedding materials.

ITEM NO. 9: Loose Bedding Cushion - ‘compressible granular cushion’ – See in Box Below...



As per the diagram above, the loose bedding cushion is 200mm thick as shown in the “White” zone above. Shall be 25mm Max in stone. Material supplied by Municipality. This will allow the Multiplate to sit on. Must be pre-shaped properly.

Once approved by Engineer, Contractor is to lay the Super Structure using a crane – Armtec weight under 11 Tonnes. When laying the pipe, the Contractor must ensure that the pipe is entered, and that balanced evenly.



ITEM NO. 10: Concrete pumping for base support

Coordination by Contractor, material and pumping paid by Municipality. There are no cost item for this line item.

This work shall be at the Municipality’s Cost and performed by Labonté Concrete using flowable Concrete. This is a liquid mix that is to be installed at the base of the culvert on both sides for approximately 450mm high. The Contractor shall allow access to the Pump Truck that will require an 85ft reach to pump on the opposite site. It is anticipated that the work can be performed from the same site at once. The work will require 6 loads of concrete in total, three on each side.

Although there is not unit price and cost allocation for this item, the Contractor will still be required to do the following work:

- Install and hold four sheets of heavy plywood at all four corners shaped in the curvature of the pipe to contain the grout inside the poured zone.
- Apply pressure to the top of the structure using an excavator to avoid lifting of the pipe due to buoyancy while the Concrete is wet.
- Coordinate the work with Labonté.

Upon having completed to place the Superstructure into the excavated area using a Crane, **this work shall immediately take place**. It may be necessary to maintain pressure on the Structure overnight.

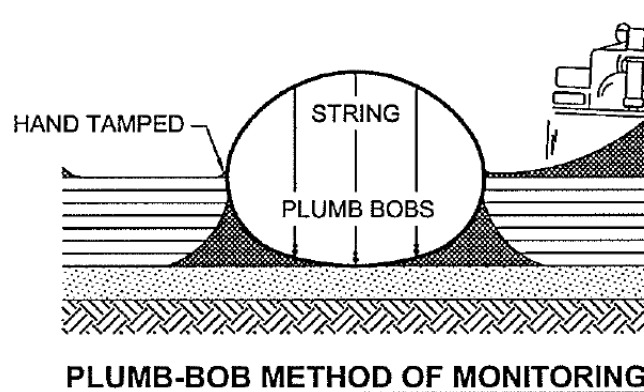
It is anticipated that will complete a workday, and that the backfilling and compaction in layers of backfilling will start the next morning.



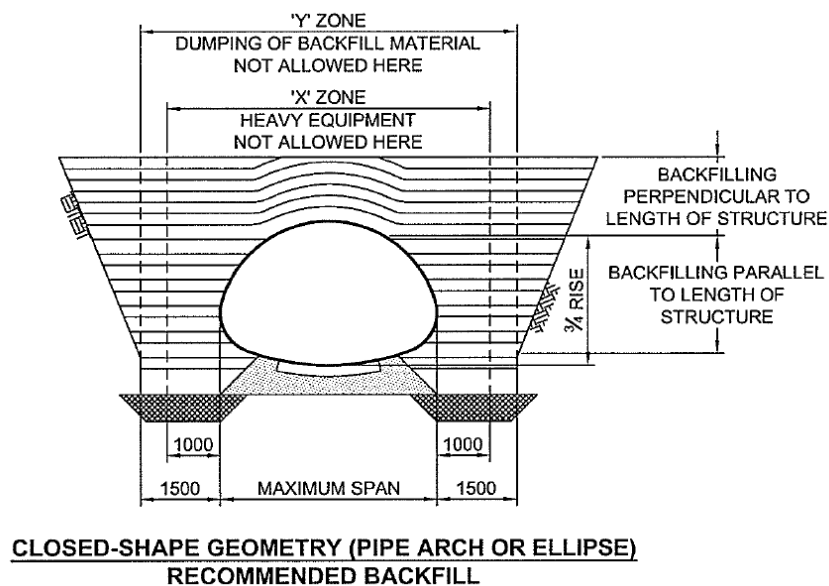
ITEM NO. 11: Placement and Compaction Backfill Zone

Granular 'A' supplied by the Municipality will be used surrounding the pipe for the first 1000mm. The layers shall be installed and compacted as per Armtec recommendation, i.e.: 200mm lifts.

See details from Armtec Plans about methodology, lifts, ensuring that the pipe keeps its shape...



Once the 1000mm cover of the existing structure is achieved, the Contractor may be allowed to switch to suitable material that was excavated during the construction.

**ITEM NO. 12: PLACEMENT OF GRANULAR "A" ROAD:**

The Contractor shall provide a rough grade within 25mm from the finish grade. The Finish Grade shall be prepped and ready for paving. The Township of Chisholm will pave the surface upon completion under a separate contract.

ITEM NO. 13: RIP RAP (m²):

Work under this item shall consist of the supply and placement of Rip Rap placed on top of Geotextile material as per plan and as directed by the Contract Administrator.

Payment shall be by the square metre of rip rap placed on top of Geotextile material.

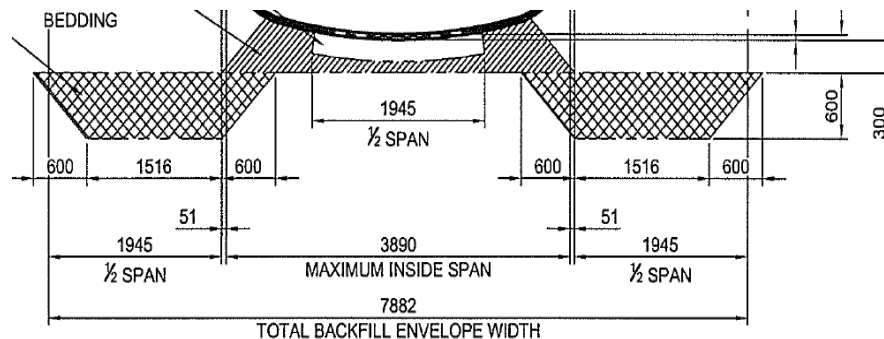
ITEM NO. 14: Removal of existing CSP ARCH CULVERT (Lump Sum)

Work under this item shall include removing and disposing of the existing main culvert. The Contractor shall load, haul and dispose of the existing material to a local Scrap Metal Yard (i.e. North Bay). This material shall be considered the property of the Township of Bonfield. It is anticipated that the Scrap Metal Yard will be issuing a credit to the Township of Bonfield for the salvaged used culvert based on weight.

All earth excavation for this removal shall be included in this line item. The excavated earth required for backfill once the steel pipe has been removed shall be stockpiled on-site. The excess material shall be hauled to the Chisholm Public Works Yard.

ITEM NO. 15: Road Backfill of failed culvert

This item shall include the placement of larger 600mm diameter boulder average size, allowing some larger stones, to be placed at the bottom of the backfill zone, for approximately 2.0m. The Contractor shall provide a sheet of 270R Geotextile overtop of the boulders, backfilling shall consist of the next layer of approximately 0.5m of Granular “B” Quarry. The next 0.5m layer shall consist of suitable material stockpiled during excavation. The contractor shall provide a road top dressing of Granular ‘A’ material for a minimum of 150mm thick.

ITEM NO. 16: Additional Earth Excavation

As shown above in the crossed hatched areas are referred as the “REINFORCED FOUNDATION”. It was deemed not required for this project. In the event that the Geotechnical Engineers informs the Municipality at the end of the excavation that the soils are not satisfactory and that in fact the additional excavation for the hatched area is required, The Contractor will be required to complete this work. In the contrary, if the soils are satisfactory, this item will not be required.

ITEM NO. 17: Trench Reinforcement Foundation Backfill

This item is to place Granular “A” supplied by the Municipality and compacted at 95% in the crossed hatched area above. This item will only be necessary if the excavation of such area is required.

DIVISION "G"

ADDITIONAL INFORMATION PROVIDED BY ARMTEC

Plot Date & Time: 2026-08-12, 11:34:17 AM

z:\1_projects\2026\26-197 on mp township of chisholm mp\drawings\1_ifa_r.al\26-197_ifa_r.a.dwg



KEY PLAN
SCALE: NTS

APPROXIMATE LOCATION OF SITE

OWNER	ARMTEC CUSTOMER
TOWNSHIP OF CHISHOLM	RMA LAS -C/O CANOE PROCUREMENT GROUP OF CANADA A DIV OF 2510 SPARROW DRIVE NISKU AB CANADA T9E 8N5 TEL: 780-955-4083

TOWNSHIP OF CHISHOLM MUTIPLATE PIPE ARCH STRUCTURE

TOWNSHIP OF CHRISHOLM, ON
3890 SPAN x 2690 RISE SPCSP MULTIPLATE CULVERT
(152 x 51 CORRUGATION)
MP-PA-09 PIPE ARCH STRUCTURE
ARMTEC PROJECT #26-197

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

DRAWING INDEX			
DRAWING #	DRAWING TITLE	REV. DATE	REV #
26-197-001	COVER PAGE	2026-08-12	A
26-197-002	ABBREVIATIONS AND SYMBOLS	2026-08-12	A
26-197-003	DESIGN NOTES	2026-08-12	A
26-197-004	SITE PLAN, LONGITUDINAL PROFILE	2026-08-12	A
26-197-005	GEOMETRY AND BACKFILL SECTION	2026-08-12	A
26-197-006	STRUCTURE LAYOUT	2026-08-12	A
26-197-007	PLATE LAPPING DETAILS	2026-08-12	A
26-197-008	RECOMMENDED PLATE ASSEMBLY AND BACKFILL OPERATION NOTES, CLOSED-SHAPE, PIPE ARCH OR ELLIPSE STRUCTURES	2026-08-12	A
26-197-009	BILL OF MATERIALS	2026-08-12	A



ARMTEC.COM

Plot Date & Time: 2026-08-12, 11:34:18 AM

z:\1_projects\2026\26-197 on mp township of chrisholm m\drawings\1_ifa_r_a\26-197_ifa_r_a.dwg

SYMBOLS & NOTATIONS

- 

TRUE LENGTH OF AN ARC
- 

ANGLE
- 

ALMOST EQUAL (APPROXIMATE)
- 

BREAK LINE
- 

CENTRE LINE
- 

DEGREES
- 

DELTA (QUANTITY DIFFERENCE)
- 

DIAMETER
- 

TOLERANCE
- 

UNIT WEIGHT OF SOIL
- 

WATER LEVEL
- 

DITCH/CREEK WITH FLOW DIRECTION
- 

BENCHMARK, ELEVATION LOCATION
- 

NORTH ARROW
- 

SECTION SYMBOL
- 

VIEW SYMBOL
- 

DETAIL REFERENCE SYMBOL
- 

REVISION INDICATOR

- 

COMPACTED BEDDING
- 

TRENCH REINFORCEMENT

COMMON ABBREVIATIONS

- BCL

BOTTOM CENTRE LINE
- C/C

CENTRE TO CENTRE
- CLSM

CONTROLLED LOW-STRENGTH MATERIAL
- CSP

CORRUGATED STEEL PIPE
- C_u

COEFFICIENT OF UNIFORMITY –
CHARACTERISTIC OF SOIL GRADATION CURVE
- C_c

COEFFICIENT OF CURVATURE –
CHARACTERISTIC OF SOIL GRADATION CURVE
- EL

ELEVATION
- I/S

INSIDE
- INV

INVERT
- N

CIRCUMFERENTIAL BOLT HOLE SPACING (1N = 244 mm)
- NA

NEUTRAL AXIS
- NTS

NOT TO SCALE
- OBV

OBVERT
- O/O

OUTSIDE TO OUTSIDE
- O/S

OUTSIDE
- SPCSP

STRUCTURAL PLATE CORRUGATED STEEL PIPE
- STA

STATION
- TCL

TOP CENTRE LINE
- TYP

TYPICAL
- UON

UNLESS OTHERWISE NOTED
- U/S

UNDERSIDE

COMMON TERMS

- BEDDING:

THE ENGINEERED SOIL ON WHICH THE CLOSED CONDUIT IS SUPPORTED.
- CAMBER:

AN ADJUSTMENT REQUIRED IN THE LONGITUDINAL PROFILE OF BEDDING TO COMPENSATE FOR POST-CONSTRUCTION SETTLEMENT.
- CONDUIT:

THE BRIDGED OPENING OF A BURIED STRUCTURE. NOTE: THROUGHOUT THESE DRAWINGS, 'CONDUIT' AND 'CULVERT' SHALL INDICATE THE SAME STRUCTURE.
- COVER (COVER HEIGHT):

THE VERTICAL DISTANCE BETWEEN THE ROADWAY SURFACE (OR BOTTOM OF TIE FOR RAILWAYS) AND THE OUTSIDE CREST OF THE CONDUIT WALL.
- CROWN:

THE HIGHEST POINT OF THE TRANSVERSE SECTION OF THE CONDUIT WALL.
- DELETERIOUS MATERIAL:

MATERIALS OR COMPONENTS THAT DO NOT COMPLY WITH THE SPECIFIED MATERIAL (I.E. ORGANICS, ROOTS, STONES, CLAY, SILT, SNOW, ICE, ETC.)
- ENGINEERED BACKFILL:

SOIL SELECTED AND PLACED TO ACHIEVE DESIRED GEOTECHNICAL PROPERTIES.
- ENGINEERED BACKFILL ENVELOPE:

DEFINED ZONE OF ENGINEERING BACKFILL SURROUNDING THE CONDUIT.
- HEADWALL:

A TRANSVERSE WALL AT THE END OF A CULVERT.
- HAUNCH / CORNER:

THE PORTION OF THE CONDUIT WALL BETWEEN THE SPRING LINE AND THE TOP OF THE BEDDING.
- INSIDE VIEW:

FLAT PLAN VIEW OF A CONDUIT PLATE LAYOUT VIEWING THE INSIDE OF THE STRUCTURE, WHERE PLATES ARE SHOWN WITH VISIBLE INSIDE FACES.
- INVERT:

THE LOWEST POINT OF THE INSIDE TRANSVERSE SECTION OF THE CONDUIT WALL.
- LONGITUDINAL DIRECTION:

THE DIRECTION ALONG THE CULVERT LENGTH.
- MASTER CORNER HOLE:

CORNER HOLE IN THE OUTSIDE VALLEYS CLOSEST TO THE VISIBLE EDGE.
- OBVERT:

THE HIGHEST POINT OF THE INSIDE TRANSVERSE SECTION OF THE CONDUIT WALL.
- OUTSIDE VIEW:

FLAT PLAN VIEW OF A CONDUIT PLATE LAYOUT VIEWING THE OUTSIDE OF THE STRUCTURE, WHERE PLATES ARE SHOWN WITH VISIBLE OUTSIDE FACES.
- PERIPHERY:

PERIMETER OF A STRUCTURE OPENING ALONG THE CIRCUMFERENTIAL SEAM, EXPRESSED IN MULTIPLES OF 'N'.
- PLATE:

AN INDIVIDUAL SEGMENT USED IN THE FORMATION OF THE CONDUIT, CONSISTING OF A CORRUGATED METAL SHEET.
- RING:

COMBINATION OF PLATES FORMING AN ANNULAR CONFIGURATION OF THE CONDUIT.
- RISE:

THE MAXIMUM VERTICAL CLEARANCE INSIDE A CONDUIT AT A TRANSVERSE SECTION, MEASURED AT THE INSIDE CREST OF THE CORRUGATIONS OF METAL STRUCTURES.
- SEAM:

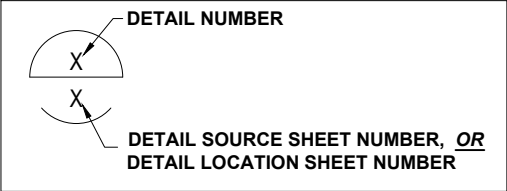
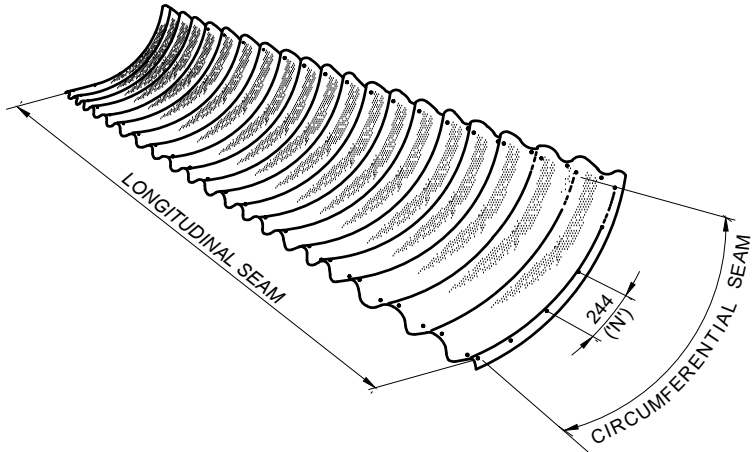
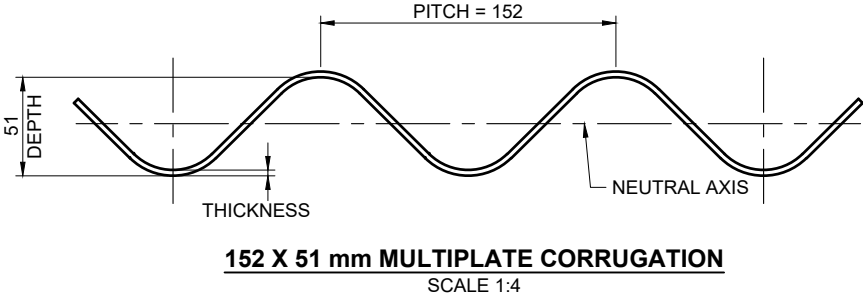
JOINT BETWEEN STRUCTURAL STEEL PLATES FORMED BY OVERLAPPING AND BOLTING PLATES TOGETHER.
A) CIRCUMFERENTIAL SEAM: SEAM RUNNING PERPENDICULAR TO THE LENGTH OF THE CULVERT.
B) LONGITUDINAL SEAM: SEAM RUNNING PARALLEL TO THE LENGTH OF THE CULVERT.
- SKEW ANGLE:

THE ANGLE BETWEEN THE LONGITUDINAL AXIS OF A CULVERT AND A LINE PERPENDICULAR TO THE CENTRELINE OF THE ROAD.
- SPAN:

THE HORIZONTAL WIDTH BETWEEN THE SIDE WALLS OF THE CONDUIT, MEASURED AT THE INSIDE CRESTS OF THE CORRUGATIONS.
- SPRING LINE:

THE HORIZONTAL LINE CONNECTING THE OUTER MOST POINTS OF THE CONDUIT.
- VISIBLE EDGE OF PLATE:

EXPOSED EDGE OF STEEL, LOCATED AT THE LONGITUDINAL SEAM.



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 ARMTEC.COM		CUSTOMER RMA LAS -C/O CANOE PROCUREMENT GROUP OF CANADA A DIV OF		
APPROVALS	DATE	PROJECT NAME MUTIPLATE PIPE ARCH STRUCTURE TOWNSHIP OF CHRISHOLM, ON		
DESIGN BY	SP	2026-05-27	DRAWING TITLE ABBREVIATIONS AND SYMBOLS	
DESIGN CHECK AMT	2026-05-27			
DRAFT BY	JE	2026-08-12		
DRAFT CHECK	CG	2026-08-12	SCALE	
SALES ORDER NO. 388476	SHEET NO. 2 OF 9			
		PROJECT NO. 26-197	DRAWING NO. 002	

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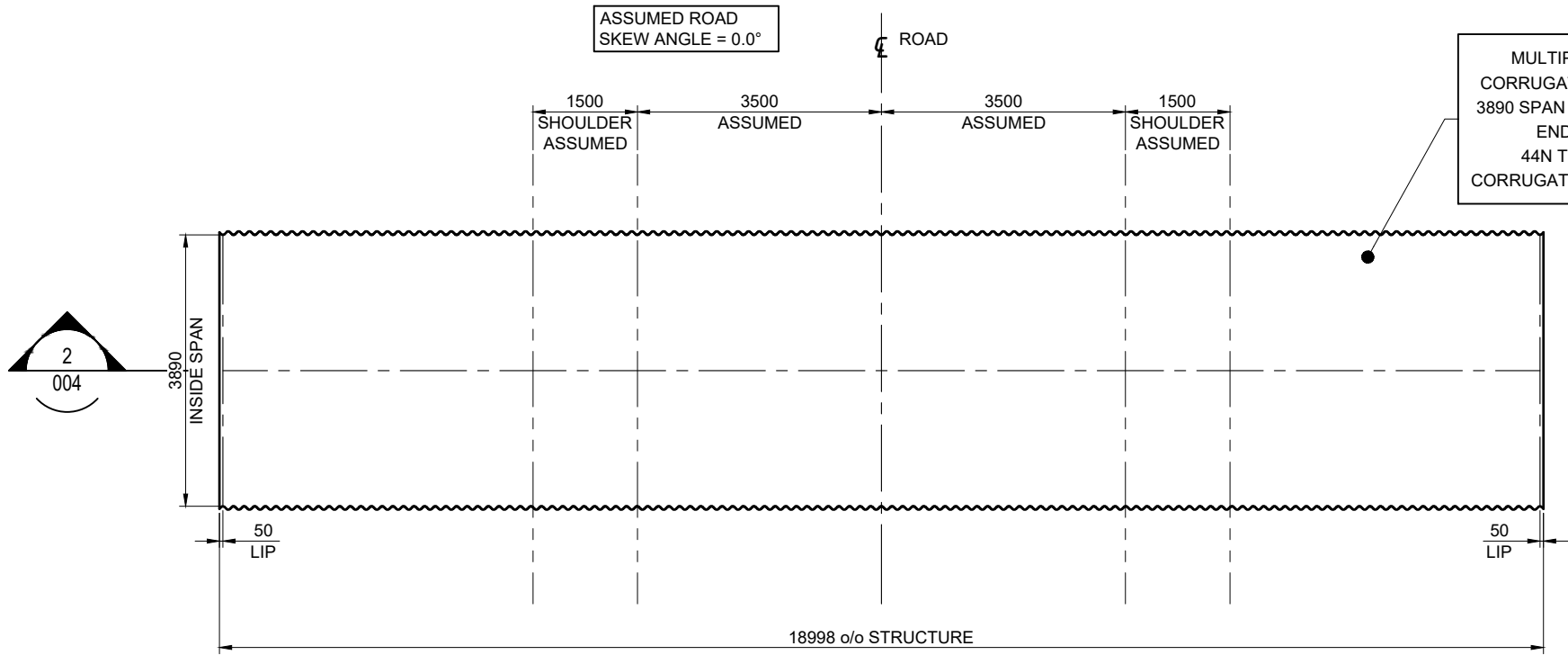
GENERAL DESIGN NOTES					
1. <u>DIMENSIONS</u>					
1.1. THE FOLLOWING DIMENSIONAL CONVENTIONS ARE FOLLOWED, UNLESS OTHERWISE NOTED:					
1.2. ALL DIMENSIONS ARE IN MILLIMETERS (mm)					
1.3. ALL ELEVATIONS ARE IN METERS (m)					
1.4. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.					
1.5. ALL DIMENSIONS ARE TO THE INSIDE CREST OF STEEL.					
1.6. ALL DIMENSIONS ARE TO THE CENTRE OF BOLT HOLE.					
1.7. 1N = 244 mm.					
1.8. ARMTEC RESERVES THE RIGHT TO MODIFY THE PLATE ARRANGEMENT WITHOUT NOTICE BASED ON PLATE AVAILABILITY AT TIME OF FABRICATION.					
2. <u>DESIGN STANDARDS</u>					
2.1. CANADIAN HIGHWAY BRIDGE DESIGN CODE CAN/CSA-S6-19.					
2.2. CANADIAN STANDARDS ASSOCIATION (CSA).					
2.3. ASTM INTERNATIONAL (ASTM).					
2.4. CSPI PERFORMANCE GUIDELINE FOR BURIED STEEL STRUCTURES (TECHNICAL BULLETIN, ISSUE THIRTEEN).					
3. <u>DESIGN PARAMETERS</u>					
3.1. SERVICE LOADS					
3.1.1. LIVE LOAD: CL-625-ONT.					
3.1.2. DEAD LOAD: SOIL COVER AS NOTED ON LONGITUDINAL PROFILE SECTION.					
3.2. CONSTRUCTION LOADS (ASSUMED CONFIGURATION).					
3.2.1. 1500 LBS WALK BEHIND COMPACTOR 200 mm MINIMUM COVER (FOR COMPACTING BACKFILL MATERIAL).					
3.2.2. 20900 LBS MAX. OPERATING WEIGHT DOZER 600 mm MINIMUM COVER (FOR SPREADING BACKFILL MATERIAL)					
3.2.3. 15000 LBS VIBRATORY DRUM ROLLER COMPACTOR 600 mm MINIMUM COVER (FOR COMPACTING BACKFILL MATERIAL).					
3.2.4. MINIMUM COVER REQUIREMENT FOR THE CONSTRUCTION LOADS HEAVIER THAN THE ABOVE SHALL BE APPROVED BY DESIGN ENGINEER.					
3.3. UNIT WEIGHT OF ENGINEERED SOIL 22 kN/m³.					
3.4. UNIT WEIGHT OF RANDOM FILL SOIL 22 kN/m³.					
3.5. DESIGN SERVICE LIFE 75 YEARS.					
3.6. SITE ENVIRONMENTAL LIMITS (WATER):					
pH = 4 - 9					
RESISTIVITY > 750 ohm-cm					
MAXIMUM ABRASION LEVEL 3: FLOW VELOCITY ≤ 4.5 m/s WITH MODERATE BEDLOADS OF SAND AND GRAVEL					
4. <u>MATERIAL SPECIFICATIONS</u>					
4.1. MULTIPLATE STEEL SHALL CONFORM TO CAN/CSA G401-14.					
4.2. DESIGN YIELD STRENGTH OF PLATE 230 MPa.					
4.3. Ø 3/4" BOLTS SHALL CONFORM TO CAN/CSA G401-14 AND ASTM A 449, TYPE 1.					
4.4. Ø 3/4" NUTS SHALL CONFORM TO CAN/CSA G401-14 AND ASTM A 563, GRADE C.					
4.5. PROTECTIVE COATING					
4.5.1. PLATES: THERMOPLASTIC COPOLYMER COATING, STRATA-CAT, SHALL CONFORM TO CAN/CSA G401-14 AND SHALL BE AS FOLLOWS:					
4.5.1.1. FIRST LAYER - ZINC-RICH PRIMER WITH MINIMUM 60% ZINC CONTENT.					
4.5.1.2. SECOND LAYER - SHALL CONSIST OF MINIMUM 85% ETHYLENE ACRYLIC ACID (EAA).					
4.5.1.3. TOTAL COATING THICKNESS SHALL BE 250 µm ON EACH SURFACE.					
4.5.2. BOLTS: MECHANICALLY GALVANIZED ACCORDING TO ASTM B 695, CLASS 55.					
4.5.3. NUTS: HOT-DIP GALVANIZED ACCORDING TO ASTM A153, CLASS C, OR MECHANICALLY GALVANIZED ACCORDING TO ASTM B 695, CLASS 55.					
4.5.4. BOLTS AND NUTS, OR ANCHOR BOLTS AND NUTS, SHALL BE COATED USING THE SAME ZINC COATING PROCESS.					
4.5.5. REPAIR OF DAMAGED THERMOPLASTIC COPOLYMER COATING, STRATA-CAT, SHALL BE DONE IN ACCORDANCE WITH CSA G401-14, CLAUSE 6.3 WITH A MATERIAL SUCH AS RANVAR TPC-515-7 BLACK OR DENSO BITUMEN MASTIC OR APPROVED EQUAL.					
5. <u>FOUNDATION</u>					
5.1. MAXIMUM UNFACTORED CORNER PRESSURE = 150 kPa.					
5.2. CONFIRMATION OF ADEQUATE SOIL BEARING CAPACITY IS THE RESPONSIBILITY OF THE CONTRACTOR'S / OWNER'S GEOTECHNICAL ENGINEER.					
5.3. ALL UNSUITABLE MATERIAL WITHIN THE FOUNDATION ZONE SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL AS DETERMINED AND APPROVED BY THE CONTRACTOR'S / OWNER'S GEOTECHNICAL ENGINEER.					
6. <u>ASSEMBLY</u>					
6.1. LONGITUDINAL SEAMS SHALL BE OVERLAPPED TO ENSURE THE HOLE IN THE VALLEY IS CLOSEST TO THE VISIBLE EDGE WHEN VIEWED FROM THE INSIDE OR OUTSIDE.					
6.2. BOLT HEADS CAN BE PLACED ON THE INSIDE OR OUTSIDE OF THE CONDUIT WALL, WHICHEVER FACILITATES THE BEST INSTALLATION.					
6.3. CURVED SURFACE OF NUT SHALL FACE THE HOLE ON THE CORRUGATED PLATE.					
6.4. BOLTS SHALL HAVE A MINIMUM OF TWO (2) THREAD PITCHES PROTRUDING BEYOND THE NUT FACE AND BE TORQUED WITHIN THE FOLLOWING RANGE:					
MINIMUM 200 Nm (150 ft lbs)					
MAXIMUM 340 Nm (250 ft lbs)					
6.5. CARE SHALL BE TAKEN TO AVOID OVERTORQUING OF BOLTS.					
7. <u>ENGINEERED BACKFILL AND BEDDING MATERIAL</u>					
7.1. BURIED CORRUGATED STEEL PLATE STRUCTURE IS A COMPOSITE SYSTEM MADE UP OF THE STEEL RING AND THE SOIL ENVELOPE, AND BOTH ELEMENTS PLAY A VITAL PART IN THE STRUCTURAL INTEGRITY OF THE COMPOSITE SYSTEM THROUGHOUT THE SERVICE LIFE. IT IS THEREFORE IMPORTANT TO ENSURE THAT ENGINEERING BACKFILL IS MADE UP OF ACCEPTABLE MATERIAL AND WELL-CONSTRUCTED.					
7.2. ENGINEERING BACKFILL MATERIAL SHALL BE CLEAN, GRANULAR, AND POSSESS TIME-INDEPENDENT PROPERTIES.					
7.3. BACKFILL MATERIAL SHALL CONSIST OF A WELL GRADED GRANULAR MATERIAL WITH ANGULAR GRAINS CLASSIFYING AS "GRANULAR A" OR "GRANULAR B TYPE II" IN OPSS 1010 AND MEETING THE FOLLOWING REQUIREMENTS.					
7.4. MATERIAL GRADATION (ASTM C136 AND C117):					
SIEVE NUMBER SIEVE SIZE (mm) PERCENT PASSING					
75.00 100					
37.50 80 - 100					
26.50 70 - 100					
19.00 60 - 95					
4 4.75 25 - 65					
16 1.18 10 - 35					
50 0.30 5 - 20					
200 0.075 0 - 10					
7.5. MAXIMUM PARTICLE SIZE IN THE LOOSE BEDDING SHALL NOT EXCEED 25 mm.					
7.6. PARTICLE ANGULARITY: PERCENTAGE OF FRACTURED GRAVEL PARTICLE (MINIMUM 2 FACES) SHALL BE MORE THAN 50% (ASTM D5821).					
7.7. PARTICLE DURABILITY: MICRO-DEVAL ABRASION COARSE AGGREGATE LOSS SHALL NOT EXCEED BY 30% AS DETERMINED BY MICRO-DEVAL TEST METHOD (MTO LS-618).					
7.8. DELETERIOUS DURABILITY:					
7.8.1. BACKFILL MATERIAL SHALL BE FREE FROM FOREIGN MATTER.					
7.8.2. SHALES AND CLAYSTONES ARE GENERALLY CONSIDERED DELETERIOUS MATERIALS AND SHALL NOT BE ALLOWED IN THE ENGINEERED BACKFILL ENVELOPE.					
7.8.3. FROZEN MATERIAL SHALL NOT BE ALLOWED IN THE BACKFILL ZONE.					
7.9. PLASTICITY INDEX (PI) OF FINE GRAINED PORTION OF THE SOIL SHALL BE LESS THAN 10% (ASTM D4318). PLASTICITY INDEX CAN BE WAIVED IF FINES CONTENT IS LESS THAN OR EQUAL TO 5%					
7.10. ELECTROCHEMICAL LIMITS FOR POLYMER-COATED PLATES:					
pH = 4 - 9 (AASHTO T289 OR EQUIVALENT)					
RESISTIVITY > 750 ohm-cm (AASHTO T288 OR EQUIVALENT)					
ORGANICS ≤ 1% (AASHTO T267 OR EQUIVALENT)					
7.11. COMPACTION					
7.11.1. MAXIMUM UNCOMPACTED LIFT HEIGHT SHALL BE 200 mm.					
7.11.2. EACH LAYER SHALL BE COMPACTED TO 95% STANDARD PROCTOR DENSITY ASTM D 698.					
7.11.3. OPTIMUM MOISTURE CONTENT SHALL BE MAINTAINED DURING COMPACTION ASTM D 698.					
7.12. BALANCED BACKFILLING: ROADWAY SKEW ANGLE SHALL BE LESS THAN 40 DEGREES. FOR SKEW ANGLE GREATER THAN 20 DEGREES EARTH PRESSURE IMBALANCE SHALL BE ACCOMMODATED BY CONTOUR GRADING OF EMBANKMENT SLOPE.					
8. <u>QUALITY ASSURANCE / CONTROL & INSPECTION</u>					
8.1. QUALITY ASSURANCE / CONTROL OF THE COMPLETE PROJECT INCLUDING FOUNDATION AND BACKFILL MATERIAL AND PLACEMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE CONTRACT REQUIREMENTS AND NOT BE THE RESPONSIBILITY OF ARMTEC.					
8.2. THE CONTRACTOR'S / OWNER'S REPRESENTATIVE SHALL ALSO BE RESPONSIBLE FOR ENSURING THAT THE FOLLOWING ITEMS HAVE BEEN ACHIEVED WITHIN THE REQUIRED TOLERANCES:					
8.2.1. SATISFACTORY BEDDING AND/OR FOUNDATION					
8.2.2. CORRECT ORIENTATION / CONFIGURATION OF PLATES AND OVERLAPS AFTER ASSEMBLY					
8.2.3. TORQUE ON THE BOLT ASSEMBLIES					
8.2.4. ENGINEERED BACKFILL ELECTRO-CHEMICAL PARAMETERS					
8.2.5. ENGINEERED BACKFILL REQUIREMENTS					
8.2.6. ENGINEERED BACKFILL LIFT HEIGHT AND COMPACTION					
8.2.7. CONFIRMATION OF DIMENSIONAL CHECKS OF THE CONDUIT PRIOR TO AND AFTER BACKFILLING					
8.2.8. CONFIRMATION OF THE MINIMUM AND MAXIMUM COVER					
9. <u>HYDRAULIC CAPACITY & SCOUR PROTECTION</u>					
9.1. HYDRAULIC CAPACITY OF THE CONDUIT AND STABILITY OF THE INLET AND OUTLET IS THE RESPONSIBILITY OF THE CONTRACTOR'S / OWNER'S HYDROTECHNICAL ENGINEER.					
9.2. TYPE AND EXTENT OF SCOUR PROTECTION TO PREVENT EROSION AND LOSS OF ENGINEERING BACKFILL FOR THE CONDUIT, BEDDING, AND FOUNDATION IS THE RESPONSIBILITY OF THE OWNER'S HYDROTECHNICAL ENGINEER.					
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		PROJECT NAME MUTIPLATE PIPE ARCH STRUCTURE TOWNSHIP OF CHRISHOLM, ON			
APPROVALS	DATE	DRAWING TITLE DESIGN NOTES			
DESIGN BY	SP				
DESIGN CHECK AMT	2026-05-27				
DRAFT BY	JE				
DRAFT CHECK	CG				
SALES ORDER NO. 388476	SHEET NO. 3 OF 9	SCALE AS NOTED	PROJECT NO. 26-197	DRAWING NO. 003	

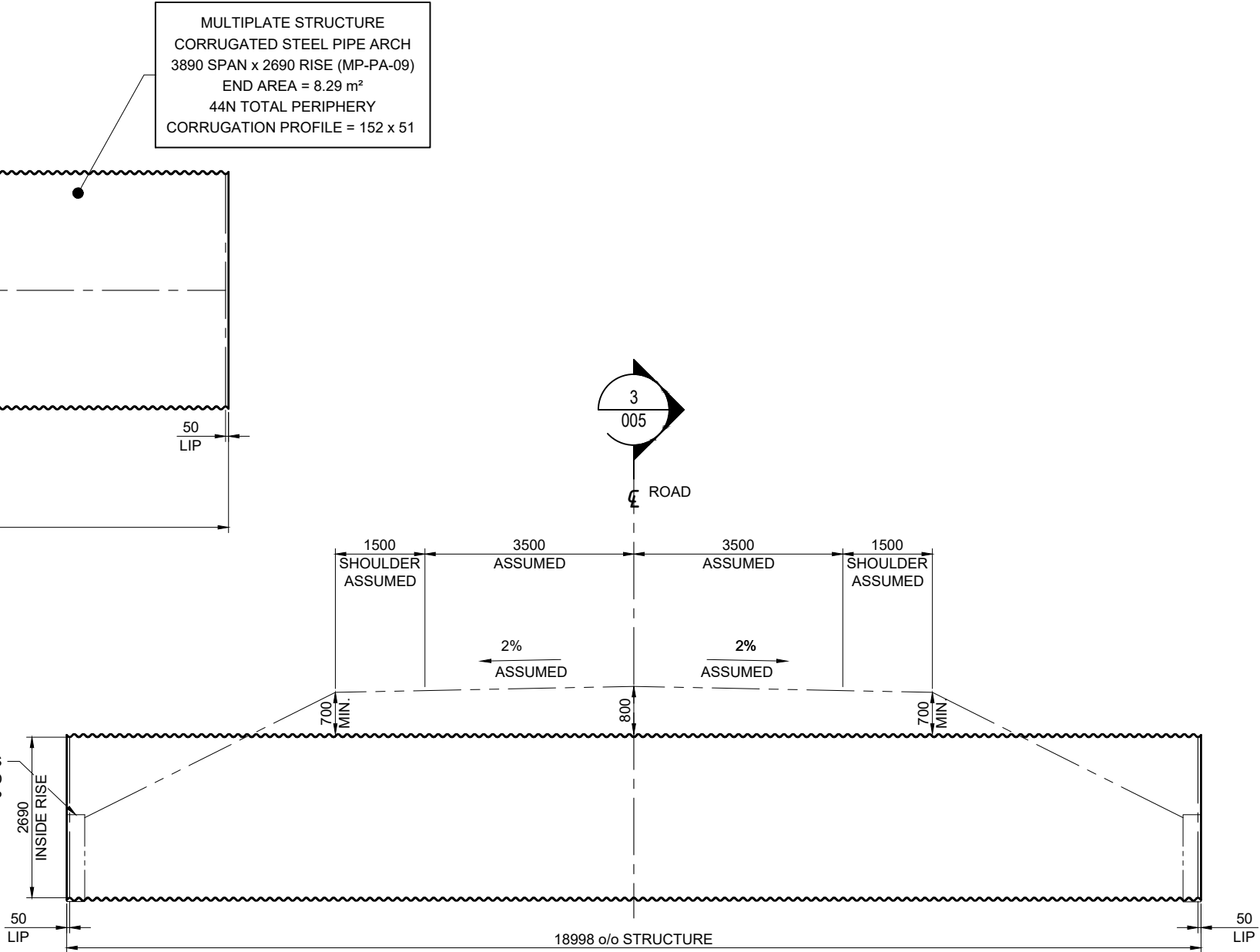
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NOTE:
ALL DIMENSIONS AND ELEVATIONS
ARE TO BE CONFIRMED BY OWNER /
CONTRACTOR'S ENGINEER.



1 SITE PLAN - SCHEMATIC LAYOUT
004 SCALE 1:100



2 LONGITUDINAL PROFILE
THROUGH CL OF STRUCTURE
004 SCALE 1:100

END RETAINING SYSTEMS
WILL BE REQUIRED
BY OTHERS -TYP

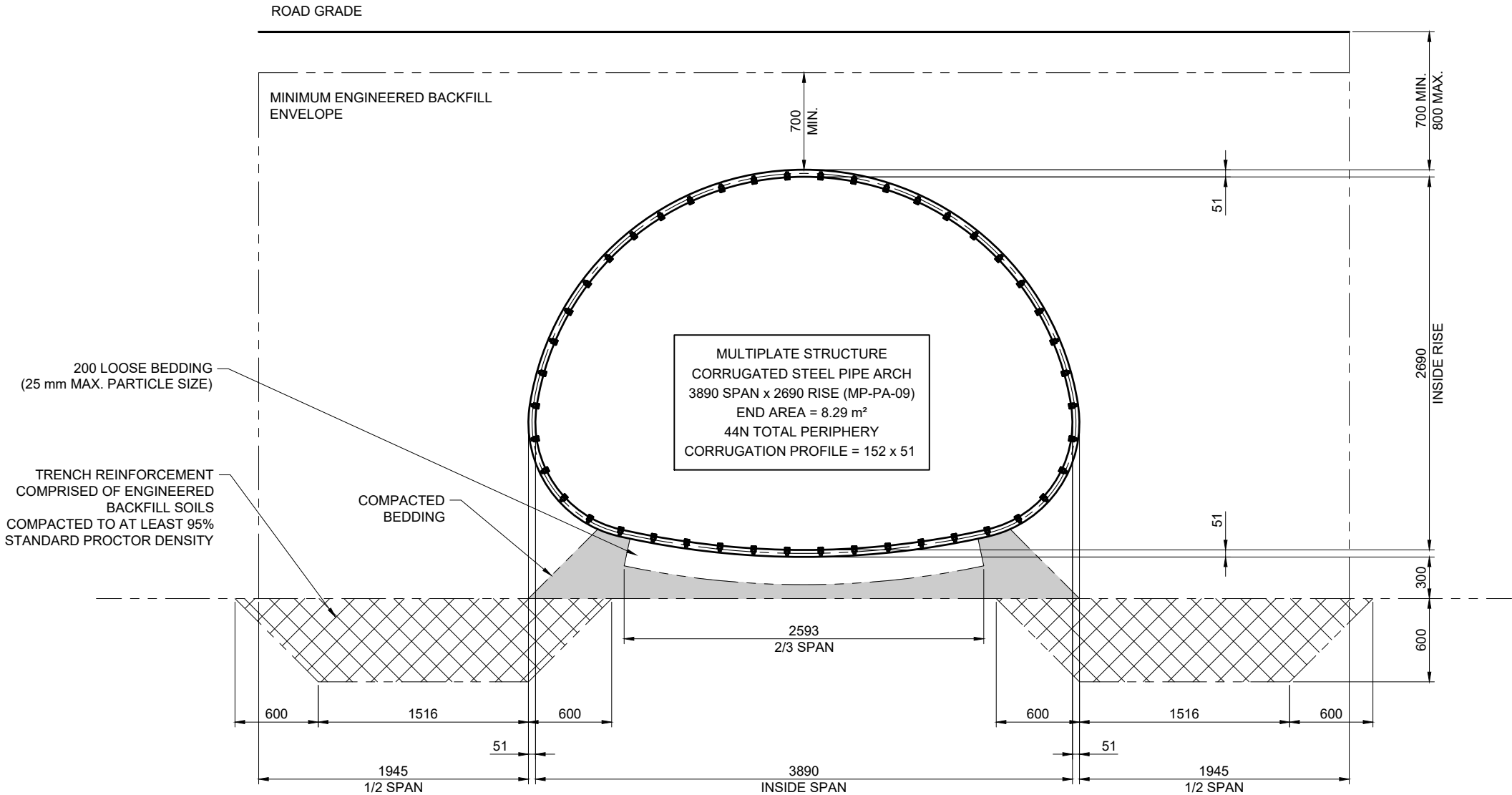
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		PROJECT NAME MUTIPLATE PIPE ARCH STRUCTURE TOWNSHIP OF CHRISHOLM, ON			
APPROVALS	DATE	DRAWING TITLE SITE PLAN, LONGITUDINAL PROFILE			
DESIGN BY	SP				2026-05-27
DESIGN CHECK	AMT				2026-05-27
DRAFT BY	JE				2026-08-12
DRAFT CHECK	CG	2026-08-12			
SALES ORDER NO. 388476	SHEET NO. 4 OF 9	SCALE AS NOTED	PROJECT NO. 26-197	DRAWING NO. 004	

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- NOTE:
- TRENCH REINFORCEMENT DETAIL SHOWN IN ACCORDANCE WITH CHBDC CLAUSE 7.6.4.
 - ON SITE GEOTECHNICAL ENGINEERING TO DETERMINE IF TRENCH IS REQUIRED BASED ON SITE FOUNDATION SOIL CONDITIONS.

3
004

GEOMETRY AND BACKFILL - SECTION

SCALE 1:40

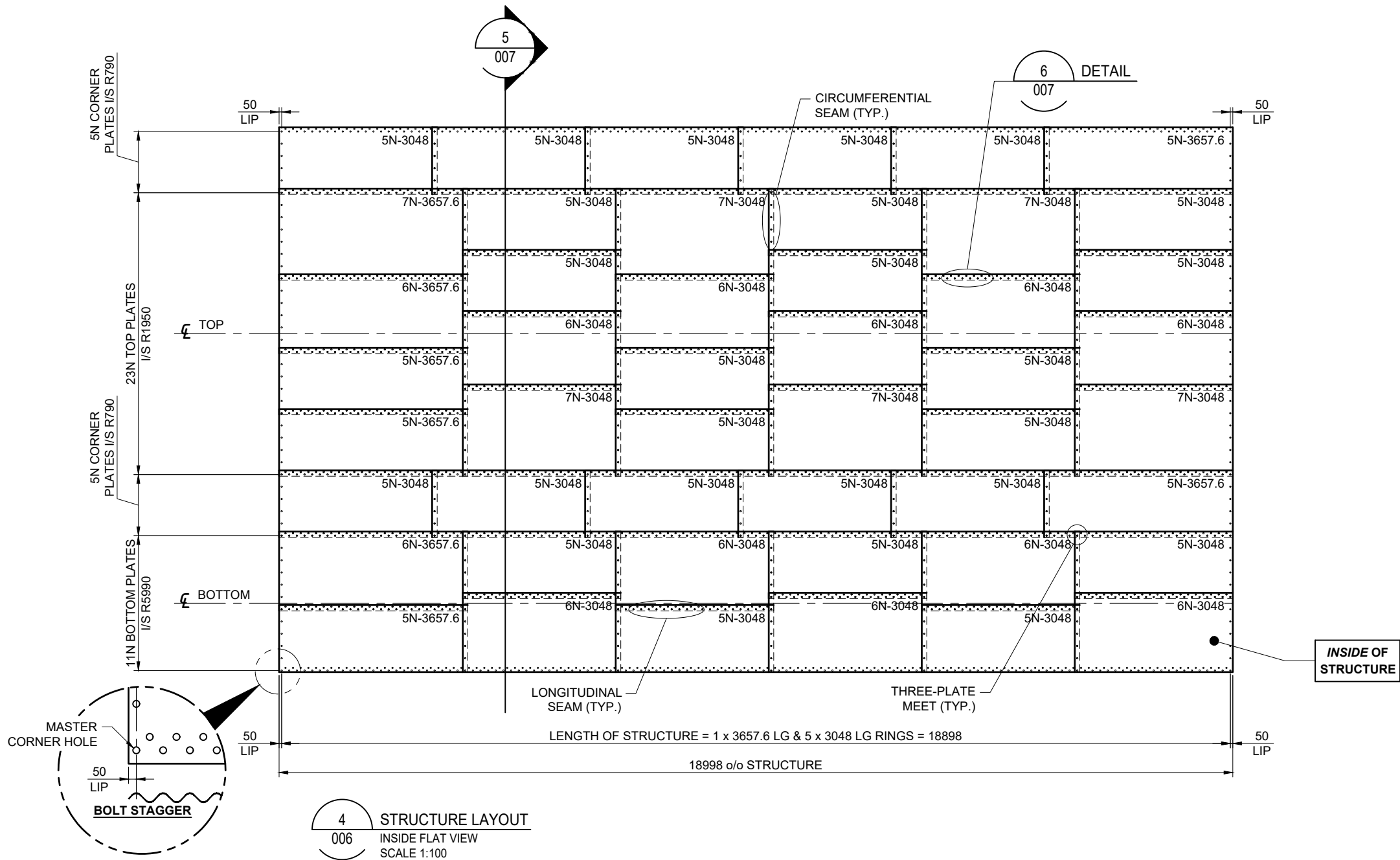
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		PROJECT NAME MUTIPLATE PIPE ARCH STRUCTURE TOWNSHIP OF CHRISHOLM, ON		
APPROVALS	DATE	DRAWING TITLE GEOMETRY AND BACKFILL SECTION		
DESIGN BY	SP 2026-05-27			
DESIGN CHECK AMT	2026-05-27			
DRAFT BY	JE 2026-08-12			
DRAFT CHECK	CG 2026-08-12			
SALES ORDER NO. 388476	SHEET NO. 5 OF 9	SCALE AS NOTED	PROJECT NO. 26-197	DRAWING NO. 005

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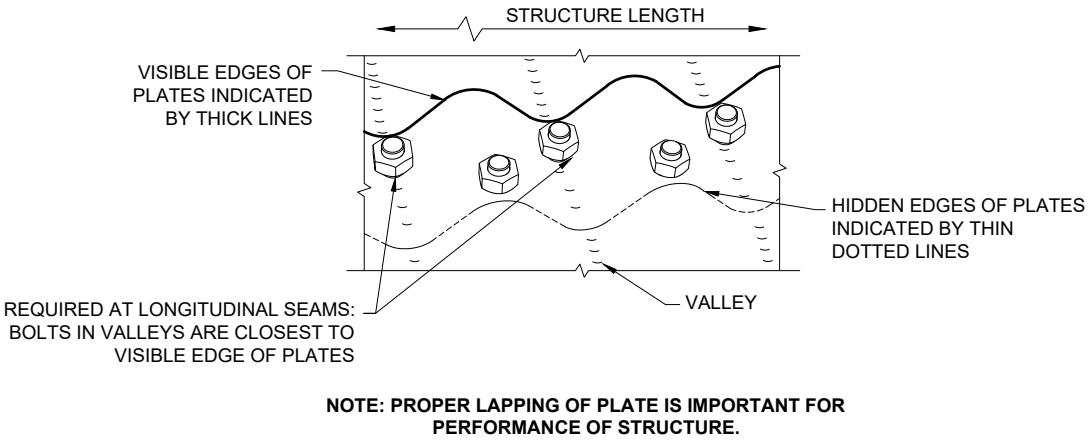
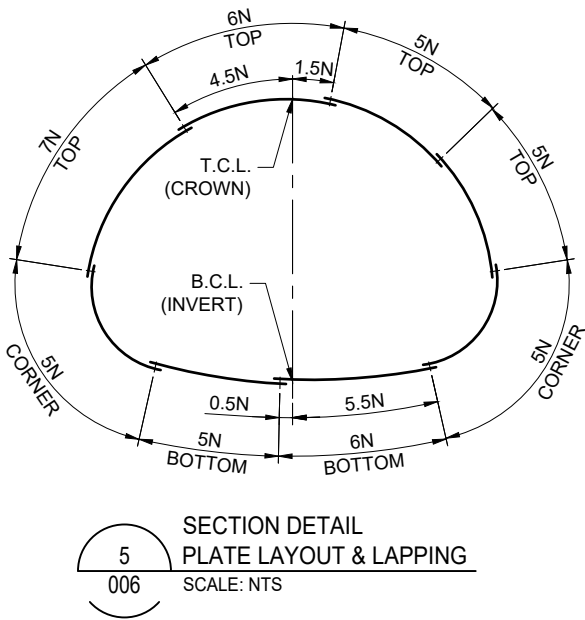


BOLT LENGTH CHART		
MULTIPLATE PLATE THICKNESS (mm)	BOLT LENGTH TO BE USED (INCHES)	COMMENTS
4.0	1 1/2"	IF NEEDED, USE 3" LONG BOLTS TEMPORARILY @ THREE PLATE MEETS, TO BRING PLATES TOGETHER.
PLATE STAMP =	2641950	TOP PLATES
PLATE STAMP =	2640790	CORNER PLATES
PLATE STAMP =	2645990	BOTTOM PLATES
WEIGHT OF HEAVIEST PLATE = 611 LBS		
WEIGHT OF ONE COMPLETE RING = ±3730 LBS		

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		PROJECT NAME MUTIPLATE PIPE ARCH STRUCTURE TOWNSHIP OF CHRISHOLM, ON			
APPROVALS	DATE	DRAWING TITLE STRUCTURE LAYOUT			
DESIGN BY	SP				2026-05-27
DESIGN CHECK AMT					2026-05-27
DRAFT BY	JE				2026-08-12
DRAFT CHECK	CG	2026-08-12			
SALES ORDER NO. 388476	SHEET NO. 6 OF 9	SCALE AS NOTED	PROJECT NO. 26-197	DRAWING NO. 006	



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		PROJECT NAME MUTIPLATE PIPE ARCH STRUCTURE TOWNSHIP OF CHRISHOLM, ON			
APPROVALS	DATE	DRAWING TITLE PLATE LAPPING DETAILS			
DESIGN BY	SP				2026-05-27
DESIGN CHECK AMT					2026-05-27
DRAFT BY	JE				2026-08-12
DRAFT CHECK	CG	2026-08-12			
SALES ORDER NO. 388476	SHEET NO. 7 OF 9	SCALE AS NOTED	PROJECT NO. 26-197	DRAWING NO. 007	

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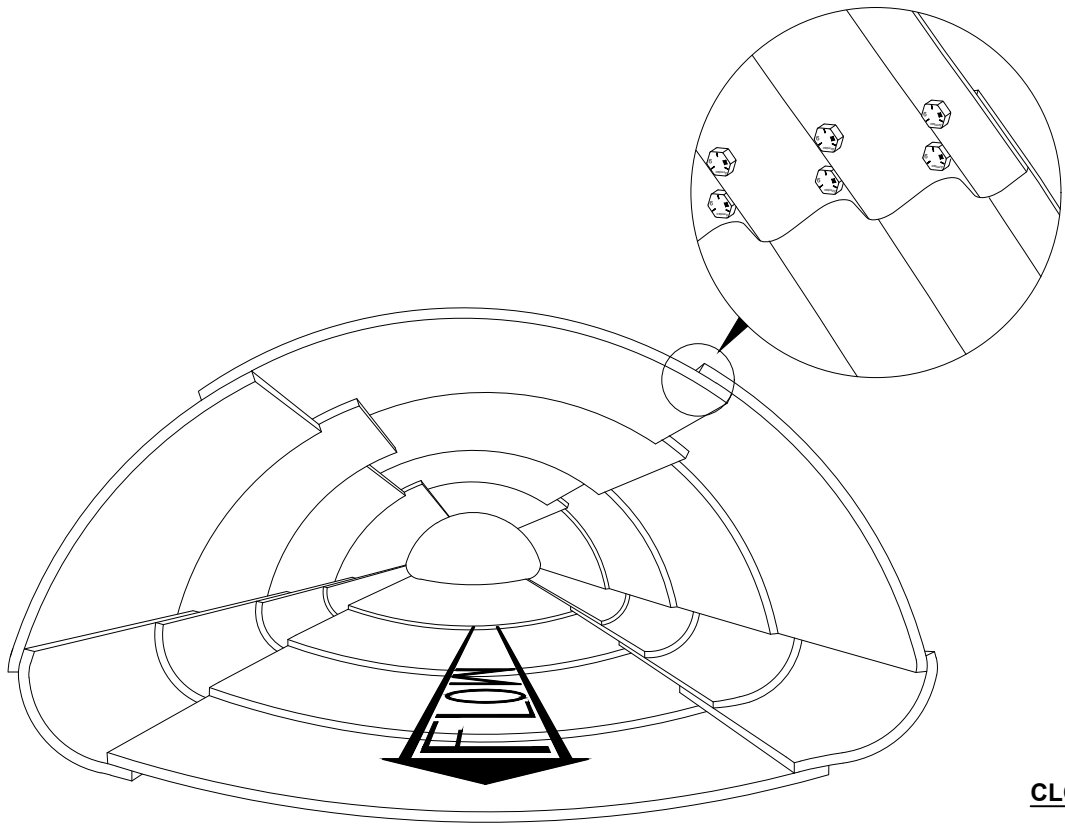
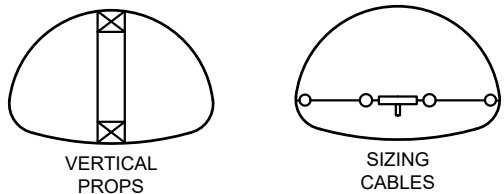
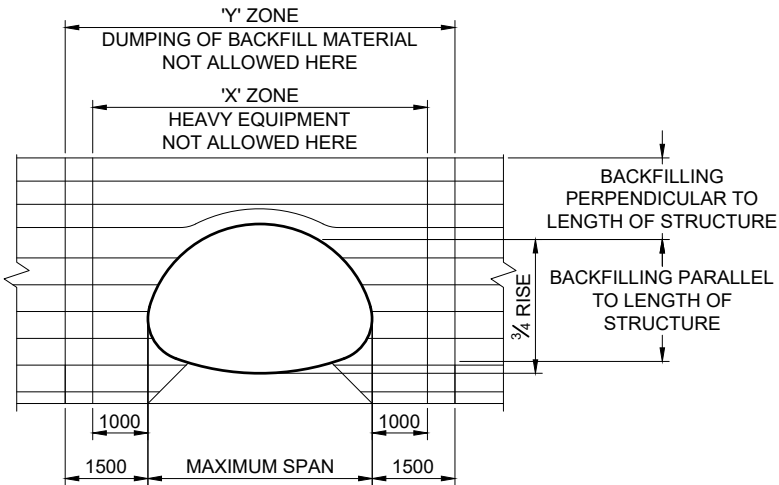


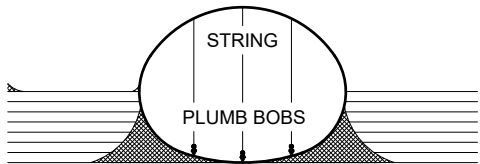
PLATE LAP DETAIL



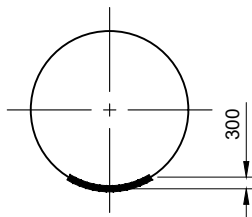
METHODS OF SHAPE CONTROL



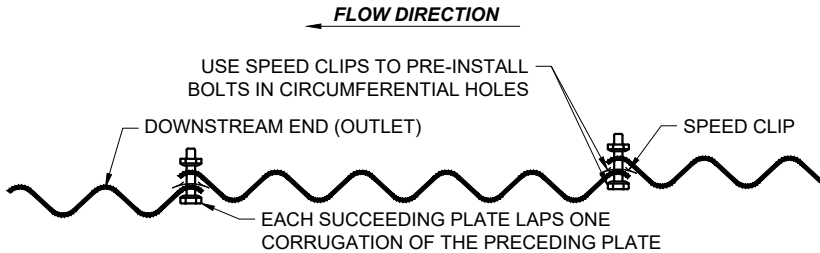
CLOSED-SHAPE GEOMETRY (PIPE ARCH OR ELLIPSE)
RECOMMENDED BACKFILL



PLUMB-BOB METHOD OF MONITORING



SPEED (SPRING) CLIP PLACEMENT - OPTIONAL
PLACE ALONG CIRCUMFERENTIAL SEAMS ONLY, FOR THE FULL LENGTH OF STRUCTURE.
CLIPS SUPPLIED TO COVER AT LEAST 300 mm UP FROM THE STRUCTURE'S INVERT.



DETAIL OF BOTTOM PLATE LAP

IMPORTANT: THE FOLLOWING NOTES ARE RECOMMENDATIONS ONLY. CONTRACTOR SHALL APPLY OWN KNOWLEDGE AND STANDARDS FOR APPROPRIATE INSTALLATION PROCEDURE BASED ON SITE CONDITIONS.

1. RECOMMENDED PLATE ASSEMBLY

- 1.1. INSTALL BOTTOM PLATES FROM DOWNSTREAM TO UPSTREAM END.
- 1.2. INSTALL SIDE / TOP PLATES FROM UPSTREAM TO DOWNSTREAM END.
- 1.3. INSTALL BOLTS HAND-TIGHT, STARTING NEAR THE MIDDLE OF THE PLATES.
- 1.4. TIGHTENING OF BOLTS CAN BEGIN ONCE 3 TO 4 FULL RINGS ARE ASSEMBLED.
- 1.5. KEEP 2 OR 3 RINGS WITH HAND-TIGHT BOLTS TO AID WITH INSTALLATION OF REMAINING PLATES.
- 1.6. USE OF PRY BAR AND BULL PIN WILL AID ASSEMBLY WHEN BOLTS ARE LOOSE.
- 1.7. USE TEMPORARY BRACING AS REQUIRED TO SUPPORT PLATES AND MAINTAIN GEOMETRY DURING ASSEMBLY. TEMPORARY BRACING SHALL NOT HINDER MOVEMENT OF STRUCTURE DURING BACKFILL OPERATION AND CAN BE REMOVED WHEN BACKFILLING IS NEAR THE SPRINGLINE.

2. RECOMMENDED BACKFILL OPERATION

- 2.1. BEDDING SHALL BE PLACED ON STABLE NATIVE GROUND AND PRESHAPED IN THE TRANSVERSE DIRECTION TO ACCOMMODATE CURVED INVERT.
- 2.2. BACKFILL MATERIAL SHALL BE PLACED IN 200 mm THICK LOOSE LIFTS (LAYERS) AT CONSTANT GRADE.
- 2.3. BACKFILL MATERIAL SHALL BE PLACED UNIFORMLY ON BOTH SIDES OF THE STRUCTURE.
- 2.4. LIFTS MUST NOT EXCEED 400 mm DIFFERENTIAL BETWEEN SIDES OF STRUCTURE, MEASURED AT ANY TRANSVERSE SECTION THROUGH THE STRUCTURE.
- 2.5. COMPACTION EQUIPMENT TO TRAVEL PARALLEL TO THE LENGTH OF THE STRUCTURE FOR BACKFILLING THE SIDES, UP TO 3/4 OF THE STRUCTURE'S RISE.
- 2.6. WHEN BACKFILL REACHES 3/4 OF THE STRUCTURE RISE (OR WHEREVER CONVENIENT) ONLY LIGHT COMPACTION EQUIPMENT SHALL COMPACT BACKFILL OVER THE STRUCTURE CROWN UNTIL MINIMUM COVER IS ATTAINED AND IN A DIRECTION PERPENDICULAR TO THE LENGTH OF THE STRUCTURE. MAXIMUM OPERATING WEIGHT FOR COMPACTION EQUIPMENT SHALL BE AS FOLLOWS:
 - 2.6.1. 1500 LBS WALK BEHIND COMPACTOR 200 mm MINIMUM COVER (FOR COMPACTING BACKFILL MATERIAL).
 - 2.6.2. 20900 LBS MAX. OPERATING WEIGHT DOZER 600 mm MINIMUM COVER (FOR SPREADING BACKFILL MATERIAL)
 - 2.6.3. 15000 LBS VIBRATORY DRUM ROLLER COMPACTOR 600 mm MINIMUM COVER (FOR COMPACTING BACKFILL MATERIAL).
- 2.7. HEAVY EQUIPMENT SHALL NOT BE ALLOWED WITHIN THE 'X' ZONE (1000 mm MIN. FROM THE STRUCTURE, MEASURED AT THE MAXIMUM SPAN), UNTIL THE MINIMUM COVER OVER THE STRUCTURE IS IN PLACE. HAND TAMPING OR HAND-HELD COMPACTOR SHALL BE USED WITHIN 500 mm FROM THE STRUCTURE.
- 2.8. HEAVY EQUIPMENT SHALL VEER AWAY FROM THE ENDS OF THE STRUCTURE.
- 2.9. DUMPED BACKFILL MATERIAL WILL NOT BE ALLOWED WITHIN THE 'Y' ZONE (1500 mm MIN. FROM THE STRUCTURE, MEASURED AT THE MAXIMUM SPAN).
- 2.10. BACKFILL MATERIAL SHALL BE COMPACTED TO THE REQUIREMENTS AS DESCRIBED ON NOTE 7, SHEET 003.
- 2.11. CAUTION SHALL BE EXERCISED IN COMPACTING MATERIAL NEAR THE CORNERS/HAUNCHES.
- 2.12. IF THE BACKFILL IS NOT TO BE PLACED IMMEDIATELY TO THE FINISHED ROAD ELEVATION, A WEARING AND TRAVELLING SURFACE IS TO BE BUILT OVER THE CRITICAL BACKFILL ZONE IN ORDER TO KEEP THE LATTER OPERATIVE AND ADEQUATE TO PERFORM ITS FUNCTION AS A SAFE STRUCTURE (OR AS A SOIL ARCH) AT ALL TIMES.

3. SHAPE MONITORING AND TOLERANCES

- 3.1. IT IS IMPORTANT THAT THE DESIGN SHAPE OF THE STRUCTURE BE MAINTAINED AT ALL STAGES OF CONSTRUCTION.
- 3.2. BEFORE STARTING BACKFILLING OPERATION, CHECKS SHALL BE MADE TO ENSURE THAT RISE AND SPAN DIMENSIONS ARE WITHIN THE ALLOWABLE ASSEMBLY TOLERANCE LIMITS.
- 3.3. STRUCTURE SHAPE SHALL BE MONITORED REGULARLY.
- 3.4. DIMENSIONS AND TOLERANCES (RISE AND SPAN)
 - 3.4.1. DIMENSIONS OF ASSEMBLED SHAPE AFTER TORQUING AND PRIOR TO BACKFILLING SHALL BE WITHIN $\pm 1\%$ OF THE DESIGN DIMENSIONS.
 - 3.4.2. LENGTH OF ASSEMBLED STRUCTURE SHALL BE WITHIN $\pm 1\%$ OF THE SPECIFIED LENGTH.
 - 3.4.3. FINAL SHAPE AFTER BACKFILLING SHALL BE WITHIN $\pm 1\%$ OF ASSEMBLED SHAPE AND WITHIN $\pm 2\%$ OF DESIGN SHAPE.

4. MONITORING THE SHAPE DURING BACKFILLING

- 4.1. PLUMB-BOBS SUSPENDED FROM THE STRUCTURE WILL SHOW LATERAL MOVEMENT OF THE CROWN (ROLLING) AND VERTICAL MOVEMENT (PEAKING). THESE MOVEMENTS CAN RESULT FROM THE COMPACTION EFFORTS NEAR THE STRUCTURE SIDES, UNBALANCED FILL HEIGHTS OR HEAVY EQUIPMENT WORKING TOO CLOSE TO THE STRUCTURE. SPAN AND RISE DIMENSIONS SHOULD BE CHECKED AND RECORDED AFTER EVERY SIGNIFICANT OPERATION. OTHER ACCEPTABLE MONITORING METHODS MAY ALSO BE USED AS DETERMINED BY CONTRACTOR.

A	ISSUED FOR APPROVAL	JE	CG	SP	2026-08-12
REV.	REVISION NOTE	BY	CK'D	REV'D	DATE

ISSUED FOR APPROVAL
NOT FOR CONSTRUCTION

 ARMTEC.COM		CUSTOMER RMA LAS -C/O CANOE PROCUREMENT GROUP OF CANADA A DIV OF				
		PROJECT NAME MUTIPLATE PIPE ARCH STRUCTURE TOWNSHIP OF CHRISHOLM, ON				
APPROVALS		DATE				
DESIGN BY	SP	2026-05-27				
DESIGN CHECK AMT		2026-05-27				
DRAFT BY	JE	2026-08-12				
DRAFT CHECK	CG	2026-08-12		DRAWING TITLE RECOMMENDED PLATE ASSEMBLY AND BACKFILL OPERATION NOTES, CLOSED-SHAPE, PIPE ARCH OR ELLIPSE STRUCTURES		
SALES ORDER NO. 388476		SHEET NO. 8 OF 9		SCALE AS NOTED	PROJECT NO. 26-197	DRAWING NO. 008

Plot Date & Time: 2026-08-12, 11:34:22 AM

BILL OF MATERIALS - MULTIPLATE 152 x 51 CORRUGATION PROFILE - TOTAL No. STRUCTURES = 1											
PART ID	QTY	DESCRIPTION	CORRUGATION (mm)	LENGTH (mm) U.N.O.	DIAMETER (INCHES)	INSIDE RADIUS (mm)	THICKNESS (mm)	MATERIAL SPECIFICATION	COATING SPECIFICATION	LABEL / COLOUR	COMMENT
M436542	1	7N CORRUGATED STEEL PLATE	152 x 51	3657.6	-	1950	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	TOP PLATE
M430542	5	7N CORRUGATED STEEL PLATE	152 x 51	3048	-	1950	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	TOP PLATES
M436460	1	6N CORRUGATED STEEL PLATE	152 x 51	3657.6	-	1950	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	TOP PLATE
M430460	5	6N CORRUGATED STEEL PLATE	152 x 51	3048	-	1950	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	TOP PLATES
M436380	2	5N CORRUGATED STEEL PLATE	152 x 51	3657.6	-	1950	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	TOP PLATES
M430380	10	5N CORRUGATED STEEL PLATE	152 x 51	3048	-	1950	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	TOP PLATES
M436460	1	6N CORRUGATED STEEL PLATE	152 x 51	3657.6	-	5990	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	BOTTOM PLATE
M430460	5	6N CORRUGATED STEEL PLATE	152 x 51	3048	-	5990	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	BOTTOM PLATES
M436380	1	5N CORRUGATED STEEL PLATE	152 x 51	3657.6	-	5990	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	BOTTOM PLATE
M430380	5	5N CORRUGATED STEEL PLATE	152 x 51	3048	-	5990	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	BOTTOM PLATES
M436380	2	5N CORRUGATED STEEL PLATE	152 x 51	3657.6	-	790	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	CORNER PLATES
M430380	10	5N CORRUGATED STEEL PLATE	152 x 51	3048	-	790	4.00	CSA G401-14	POLYMER COATING (STRATA-CAT) PER CSA G401-14	-	CORNER PLATES
SPB3415MG	2250	MECH. GALV. STEEL BOLT Ø3/4" x 1 1/2"	-	1 1/2"	Ø3/4"	-	-	CSA G401-14/ASTM A449, TYPE 1	ASTM B695, CLASS 55	-	-
SPB3430MG	5	MECH. GALV. STEEL BOLT Ø3/4" x 3"	-	3"	Ø3/4"	-	-	CSA G401-14/ASTM A449, TYPE 1	ASTM B695, CLASS 55	-	-
SPN34MG	2255	MECH. GALV. STEEL NUT Ø3/4"	-	-	Ø3/4"	-	-	CSA G401-14/ASTM A563, GRADE C	ASTM B695, CLASS 55	-	TO BE USED WITH ALL MATING MECHANICALLY GALVANIZED BOLTS
SC34	100	SPRING CLIP	-	-	Ø3/4"	-	-	-		-	-
PRYBAR42	2	PRY BAR	-	3'-6"	-	-	-	-		-	-
BULLPIN	1	BULL PIN	-	1'-2"	Ø1 1/4"	-	-	-		-	-
A116123	1	DENSO BUTYL 35 TAPE (50mm WIDE)	-	-	-	-	-	-		-	FOR FIELD REPAIRS TO POLYMER COATING
-	1	SHIPPING ENVELOPE	-	-	-	-	-	-		-	-
-	3	SAMPLE PLATE FOR QUALITY CONTROL	-	102 x 152	-	FLAT	3.00	CSA G401-14	POLYMER COATING PER CSA G401-14	-	CUT ONE Ø19 (Ø3/4") HOLE IN ONE CORNER OF EACH PLATE, FOR HANGING. SAMPLE PLATES TO REMAIN AT THE COATING PLANT.

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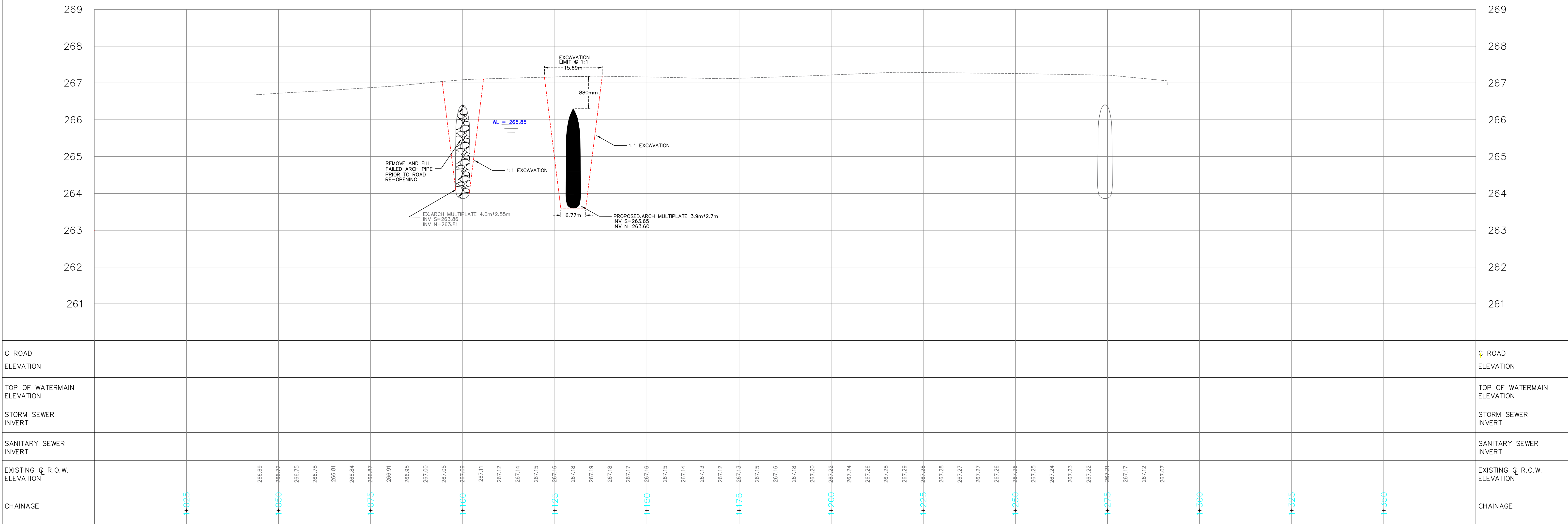
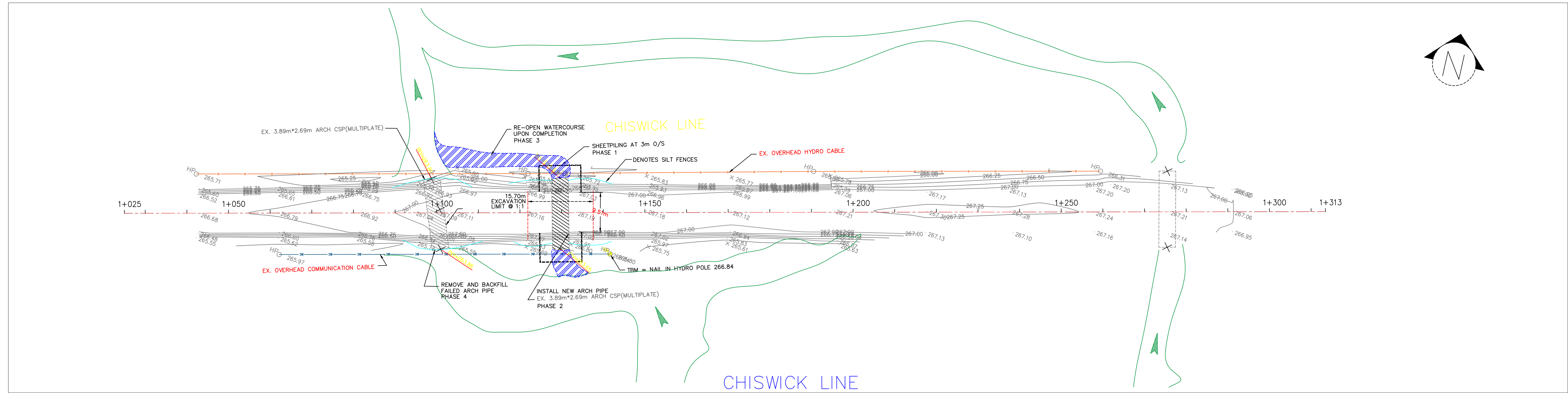
A	ISSUED FOR APPROVAL	JE	CG	SP	2026-08-12
REV.	REVISION NOTE	BY	CK'D	REV'D	DATE

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		PROJECT NAME MUTIPLATE PIPE ARCH STRUCTURE TOWNSHIP OF CHRISHOLM, ON			
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DESIGN BY SP	2026-05-27				
DESIGN CHECK AMT	2026-05-27				
DRAFT BY JE	2026-08-12				
DRAFT CHECK CG	2026-08-12	SCALE AS NOTED			
SALES ORDER NO. 388476	SHEET NO. 9 OF 9				
		PROJECT NO. 26-197	DRAWING NO. 009		

DIVISION "H"

General Arrangement Engineering Drawing



NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	APPLIES WHEN DRAWING MODIFIED	DATE	BY

SCALE

1:500

5m 0 15m

HORIZONTAL

1:50

0.5m 0 1.5m

VERTICAL

DESIGN

ACB

CHECKED

DRAWN

ACB

CHECKED

APPROVED

LICENSED PROFESSIONAL ENGINEER

A.C. BOUCHER

08/12/26

PROVINCE OF ONTARIO

CHISHOLM TOWNSHIP

MULTIPLATE CULVERT 007

PLAN AND PROFILE

CHISWICK LINE

STATION 1+075 TO STATION 1+400

MULTIPLATE EMERGENCY REPLACEMENT

CLIENT No. 003

PROJECT No. 260701

DATE AUGUST 12, 2026

DRAWING No. 260701-P1

DIVISION "I"
SITE PICTURES



Photo 1 Structure from east approach



Photo 2 Structure from west approach

MUNICIPAL STRUCTURE INSPECTION FORM

CULVERT

SITE PHOTOGRAPHS

Site No.: 007



Photo 3 East approach from centre of structure



Photo 4 West approach from centre of structure

MUNICIPAL STRUCTURE INSPECTION FORM

CULVERT

SITE PHOTOGRAPHS

Site No.: 007



Photo 5 North elevation



Photo 6 South elevation

Both picture 5 & 6 show the existing MultiPlate location, the proposed location for the new MultiPlate will shift seasterly

MUNICIPAL STRUCTURE INSPECTION FORM

CULVERT

SITE PHOTOGRAPHS

Site No.: 007

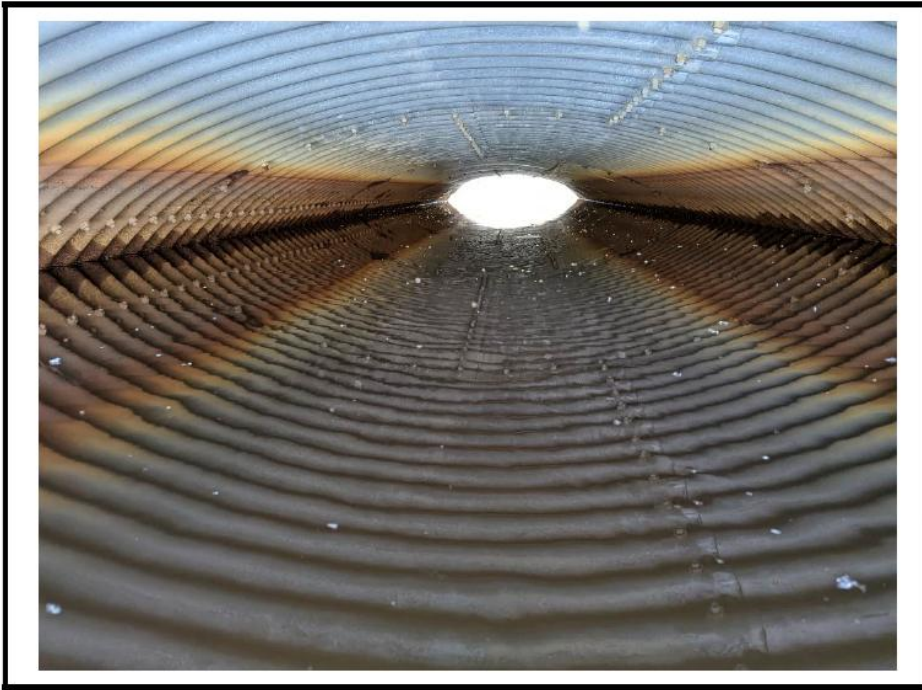


Photo 7 Typical view of interior culvert barrel looking south



Photo 8 Light to moderate corrosion noted at and above waterline



Approximate location of new Multiplate (on north side towards right side of hydro pole)



Approximate location of new Multiplate (on south side by bell line)



Inlet water course



Open hole of failed multiplate (current picture)