Meeting Date:	Monday, September 27, 2021
To:	Mayor Mills and Members of Council
From:	**Stephen Burnett, Municipal Engineer and Carey Holmes, Director of Financial Services/Treasurer**
Report:	SBA 2021-04
Subject:	**Elevated Water Storage Tower Project**

Recommendation

Be it Resolved that Council of the Town of Shelburne;

1. Receives the report SBA 2021-04 Elevated Water Storage Tower Project dated September 27, 2021; and that,
2. Council approves the award of the RFP for the construction of a new elevated water storage tower to Landmark Structures Co. for the base contract value of $5,983,050 plus applicable taxes; and that,
3. Council approves the debt financing plan to borrow $5 Million from Infrastructure Ontario for a term of 20 years.

Background

On July 26, 2012, the Town began a MEA, Schedule B Class Environmental Assessment (EA) to determine the need for increased water storage within the Town of Shelburne.

Work on this EA continued through 2012 and the Notice of Study completion was issued in February 2013 indicating that an additional water storage reservoir was required to meet the Town's existing and future water storage demands.

The shelf life of an environmental assessment is 10 years which would mean that the current storage EA would expire in late 2022/early 2023.

The urgency of this project became more apparent over the past couple years with water storage levels in the existing tower being depleted during the warm summer months requiring the need to issue water use bans for the past several summers.

In 2020, the tower water levels were low enough during August 2020 that minimum water levels for fire protection became a concern. OCWA required special permission from MECP to run Wells 7 & 8 concurrently to bring the water levels back to safe levels.

Based on these factors, a priority was placed on the water storage tower project. Council approved the design to commence in late 2020 with the goal of completing design in mid 2021. The construction of an elevated water storage tower is approximately a 12 month (1 year) project. It is estimated the project will be completed by mid to late 2022 and just prior to the EA expiration.

Analysis

The original budget for this capital project was $3.5 Million.

The Request for Proposal (RFP) process which was undertaken in summer 2021 and is summarized in Appendix 1.

The RFP for a new 3,400 cu.m water storage facility was issued and posted on Merx and Biddingo on June 18, 2021 and closed on July 15, 2021.

23 contractors, subcontractors and suppliers downloaded the documents. However, only one proposal was received by the due date. The number of firms responding was expected to be limited given water tower construction is a specialized construction. While numerous subcontractors are required, there are very limited general contractors that are experienced in this line of work with many of these firms choosing to only complete projects in the USA, especially during the pandemic.

What has Changed

The one bid received for $6,754,000 plus applicable taxes was significantly over the $3.5 Million allocated for the construction budget of this project. A few factors have led to the significant increase in project costs.

Scope Enhancement Items

One factor effecting the price was that during the design phase it was determined that the scope of the site works and watermain connections for the proposed project required additional and expanded work. The water system modeling completed as part of the design phase revealed that two watermain extensions were required to connect the new water tower to the existing water infrastructure and to create a loop watermain connecting to both Luxton Way and Franklyn St./Simon St. to ensure sufficient pressures within the system. Normally a water tower can be connected to just one local watermain connection.

Also, during the design phase, it was concluded with Town staff that the preferred location for the water tower was at the rear of the purchased site. This was strategic with regards to the future use of the public works site as it provides room for expansion on the site for future cold storage, auxiliary buildings, etc. However, this did direction did increase the access road and watermain connection costs to the Luxton Way access location.

Lastly, during the design phase it was determined that the inclusion of a chemical chlorination system, standby generator and water truck fill were items that should be included in the new facility. These have been identified as significant shortcomings of the existing water storage facility, especially during emergencies.

Based on the pricing received, the total site works and watermain component, where most of these enhancements to the project are included, resulted in an increase cost of approximately $900,000 in site works and watermain extensions.

The watermain looping and site works enhancements were not included in the original water storage tower budget of $3.5 Million. Had they been known and then included at the time the project budget would have instead been in the $4.3 to $4.4 Million range.

COVID Effects to Project Costs

The most significant effect on pricing is that COVID has significantly affected several supply chains. Steel makes up a large portion of this facility. The price of steel has risen close to 300% from Spring 2020 to Summer of 2021.

The COVID supply chain effect was also seen earlier this year with wood prices increasing 400% from winter to mid summer. COVID has also caused significant increases in electrical and mechanical components due to supply shortages and delivery delays. These have all had a significant effect on the bid pricing.

RFP Bid Costing

Given the significant project cost overages, SBA recommended negotiating with the bidder to see if any savings could be realized without compromising the intent of the design and water storage facility.

These negotiations were completed by SBA and all proposed value engineering items were reviewed with senior Town staff as well as OCWA. On August 30, 2021, Landmark Structures Co. provided updated proposal costs. Landmark reduced the base price to $5,983,050 excluding taxes and contingency. While this revised value is still approximately $2.5M over the original budget and approximately $1.6M over the anticipated project with the enhanced site works scope, it does appear to be inline with the current COVID pricing.

Prior to negotiations, the proposal received was for $6,754,000 excluding taxes and non-construction costs. This was approximately $3.254M more then the allocated budget and approximately $2.35M more then the pricing taking into consideration the additional required site works and enhancements.

A review of a recent tender which closed in June 2021 for the Township of Mapleton showed a similar increase in pricing due to COVID and steel increases. The water tower in Mapleton which was approximately 30% smaller than the tower proposed for Shelburne. In that case the project cost was approximately $6.5 Million when the estimated budget was $4 Million and this project had little to no site work related costs.

Awarding the Project to Landmark Structures Co.

The bid received from Landmark Structures Co. was reviewed for any mathematical errors and no errors were found. The contractor also provided the required Bid Bond and Agreement to Bond amounts required in the RFP process.

SBA has worked with Landmark Structures Co. on several water tower projects and can confirm both their professionalism and quality of work on previous projects. Landmark was also the contractor hired to complete the refurbishment of the existing water tower in Shelburne.

Based on information reviewed and acknowledging the priority of this project, it is recommended that the project be awarded to Landmark Structures Co. for a base price of $5,983,050.00 plus applicable taxes.

The following is a summary of the anticipated construction and non-construction costs associated with this RFP.

Water Tower Base Construction Costs	$ 5,983,050.00
Construction Contingency (10%)	$ 598,305.00
Engineering (CA & Inspection – 8%)	$ 478,644.00
Total Estimated Project Costs	$ 7,059,999.00
Non-refundable HST (1.76%)	$ 124,255.98
Total Project Funding Required	$ 7,184,254.98

Financial Impact

Following the EA Notice of Study completion that was issued in February 2013, footnotes in the Water Capital Budget have identified annually since 2014 the need for Future Water Storage. The water storage land purchase took place in 2018 and is located on Luxton Way adjacent to the Public Works Yard. The source of financing for the water storage construction has always been identified as long term borrowing.

In the 2021 adopted Water Capital budget, the Water Storage Project was identified at a cost of $3,461,600 with the project being partially funded by Development Charges and Reserves leaving the amount of 2.5 million to be funded by long term debt.

At the July 12, 2021 council meeting, staff report FS 2021-09 outlined that borrowing from Infrastructure Ontario would be the recommended source of financing for the long term debt portion. Although the RFP for the water tower had not closed yet, the following is an excerpt from the motion that was passed allowing staff to proceed with making application once figures were known:

“And That Council directs staff to proceed with the Long-Term Borrowing Loan Application(s) and associated By-Laws with Infrastructure Ontario (IO), to assist with funding the new Water Storage Tower and the upgrades to Well 3.”

In consideration of the significant increase in the cost of the project, staff have not yet applied for any funding and this was delayed until the report and recommendation from the Town’s Engineer was presented to Council.

Below is a summary of budget versus actual with respect to RFP results:

	2021 Budget	2021 Actual
Projected Cost / Actual Cost	$3,461,600	$7,184,255
Less: Development Charges	$ 400,000	$1,169,746
Less: Transfer from Reserves	$ 561,600	$1,014,509
Total to be Borrowed	$2,500,000	$5,000,000
Term of Loan	20 Years	20 Years
Annual Payment	$152,423	$320,579

In addition to the rising costs outlined from the RFP process, one other notable difference is that the non-construction (engineering) costs to facilitate the project have now been added to the total cost of the capital project. In the 2021 budget it was estimated that this cost would be passed on through the water rates operating budget. Due to the now increased interest charges that are associated with the long-term loan and funded through water rates, staff have instead included the engineering fees in the capital cost of the project. The total interest paid for the term of the loan will total approximately $1,411,579.87 or on average $70,579 a year. Infrastructure Ontario now offers monthly payment plans that has helped to reduce the amount of interest costs incurred.

The reserve estimates presented in the fall of 2020 during budget presentations projected that the water reserve would end the year 2021 with $1,723,213.64. This amount has since changed to be an estimated $1,914,448.18 with a larger than anticipated surplus in 2020. Taking the additional $452,909 from the water reserve, needed to bring down the amount of borrowing required, will still leave this reserve with approximately $1,461,539 at year end. Staff feel this is sufficient given that separate water reserves have been established for vehicle replacement and water main breaks. This also still leaves the total reserve balance higher than the total amount of debt once this loan is added to existing loans.

The last Water and Wastewater Rate Review was conducted in 2017 and rates were updated in 2019 due to accelerated growth and increased costs of forecasted capital projects. At that time the water storage project was identified as costing $3.3 million. Reserves are funded through the Rates and during the next Rate Study Review to be conducted in 2022, additional costs of the water tower project will be captured in order to cover the increase in interest debt payments until the end of the 20 year-term.

The 2020 Development Charge (DC) study identified the project cost to be $3.5 million (same as the budget) and identified that amounts collected would be utilized to offset principal debt payments. By taking $1,169,746 initially from the DC water service, in order to decrease the amount of borrowing required, will mean that during the next DC review the additional costs of the project will be captured in order to cover the principal debt payments until the end of the 20-year term.

The lending rates published on the IO site for September 20, 2021 for a 20 year term stated 2.59% which is down slightly from the 2.63% reported in staff report FS 2021-09 from July.

Section 4.3 of the Debt Management Policy, attached as Appendix 2 speaks to the term of loans. For water or wastewater infrastructure the term should be between 15-20 years and not to exceed the expected useful life of the related asset. The useful life of the water tower would be approximately 25 years.

Section 4.7 of the Debt Management Policy states that the maximum permitted amount of long-term borrowing shall not be more than 40% of the amount determined under the Province's Annual Debt Repayment Limit (ARL). The borrowing of $5,000,000 for 20 years at a rate of 2.59% added to the town's existing debt would put that amount at approximately 30.5%. Two loans will be paid out in 2026 freeing up almost 11% of borrowing room.

This still leaves sufficient room for borrowing for the Well 3 arsenic project for which the RFP is closing September 30, 2021 and staff have applied for funding for this project under the Investing in Canada Infrastructure Program (ICIP) Green Stream for up to 4 million.

It continues to be recommended that the Town proceeds with the loan application through Infrastructure Ontario, as approved by motion at the July 12th, 2021 meeting, for a term period of 20 years. Rates will not be locked

in until the date of debenture, therefore all amounts quoted above are subject to change slightly depending on rate fluctuations.

This report has further recommended that a combination of sufficient capital reserves and borrowing be used to fund the construction and non-construction costs for the elevated water storage facility construction.

Policies & Implications

MEA Schedule B Class EA – This project follows from the recommendation made in the MEA Schedule B Class EA study

MECP – Design Guidelines for Drinking Water Systems

MECP – Design Guidelines for Minimum Recommended Water Storage for Peak and Fire Protection

Project Approved by MECP by an Amendment to the Drinking Water Works Permit issued March 31, 2021.

Debt Management Policy – Appendix 2

Consultation and Communications

Initial Consultation commenced during the EA process which included advertising in local newspapers, Public Information Center (PIC) for community members and stakeholders and direct correspondence with agencies, surrounding municipalities and First Nation Stakeholders.

A recent (March 2021) community newsletter was circulated and posted on the Towns website regarding the proposed project.

Council Strategic Priorities

Council's Strategic Priorities has three Goals - Sustainable, Engaged and Livable. There are a total of 12 targets with the three Goals.

This report algins with the following Sustainability and Engaged Goals;

Target T2: Municipal services review and evaluation

Target T3: Invest and fund critical infrastructure for future

Target T4: Promote Balance Growth

Supporting Documentation

Appendix 1 – SBA Elevated Water Storage Tank RFP – Bid Summary
Appendix 2 – Debt Management Policy

Respectfully Submitted:

_____
Stephen Burnett, Municipal Engineer

Respectfully Submitted:

_____
Carey Holmes, Director of Financial Services / Treasurer

Reviewed by:

_____

Denyse Morrissey, CAO

S. BURNETT & ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

September 3, 2021

Town of Shelburne
203 Main Street East
Shelburne, ON L9V 3K7

Attn: Jim Moss, Director, Development and Operations

Re: Town of Shelburne, Elevated Water Storage Tank
Summary of Bids
SBA File No: M20009

Dear Jim,

S. Burnett & Associates Limited (SBA) has prepared the following letter to summarize the bids received from Contractors regarding the Town of Shelburne, Elevated Water Storage Tank Project. The Request for Proposal (RFP) document was uploaded to Merx and Biddingo on June 18, 2021. A total of 23 Contractors, subcontractors and suppliers downloaded the RFP document. The following is the list of plan takers:

- Alltrade Industrial Contractors
- Aquateck
- ASCO Construction Ltd.
- BGL Contractors Corp
- Devine & Associates
- Landmark Structures Co.
- Greatario Engineered Storage Systems
- Interpump Supply Ltd.
- Lafarge Eastern Canada
- Palfour Structural Inc.
- Power Precast Solutions
- PPG Canada Inc. PPG Protective Marine Coatings
- Selectra Inc.
- Sheridan Electric Services Ltd.
- WSN Construction Inc.
- Macdonald Applicators Ltd.
- Horton CBI, Limited
- SELOG
- Vision Construction Group Ltd.
- ULS Medical Supplies
- JDCMI Coatings
- Global Integrity & Specialty Services (GISS)
- H2Flow Equipment Inc.

A pre-tender site meeting was not held for this project as it is a green-field construction project. It was the Bidder's responsibility to familiarize themselves with all aspects of Project's scope and opportunities to view the site were made if requested.

A total of five (5) addenda were issued throughout the RFP process that addressed questions by the Contractors and additional clarifications. Addendum No. 3 extended the close date for one (1) week from the original close date of Thursday, July 8, 2021.

One (1) bid was received by the closing date of Thursday, July 15, 2021, at 2:00 pm local time. The bid submission was sent via email by the Contractor to Jaclyn Pouw-Dagenais at S. Burnett & Associates Limited. The bid received was from the following Contractor:

- Landmark Structures Co.

Table 1 below presents the initial bid summaries received from the Contractor.

Table 1: Summary of Construction Bids by Schedule

SCHEDULE OF ITEMS AND PRICES	
BIDDER	Landmark Structures Co.
SCHEDULE A **Miscellaneous**	$677,000.00
SCHEDULE B **Elevated Storage Reservoir**	$5,998,050.00
SCHEDULE C **Contingency Items**	$78,950.00
Sub-Total	*$6,754,000.00*
HST @ 13%	$878,020.00
Contract Total	**$7,632,020.00**
Ranking by Price	1

SBA has checked the submissions for mathematical errors and found no errors to the bid submitted by Landmark Structures Co. A copy of the submitted bid has been attached for your review and records.

Landmark provided the required Bid Bond and Agreement to Bond amounts as outlined in Part 2: General Terms and Conditions of the RFP document.

As discussed with staff prior to the RFP close, it became apparent that prices would most likely come in greater than the allocated budget for this project. There has been a significant increase in material and supply pricing including steel prices which are up over 300% in 2021 verses 2020 pricing. Similar issues were experience with wood prices over 2021 reaching a high of 400% over 2020 pricing. Just prior to the RFP close, similar results had been seen in other municipalities including Mapleton which closed approximately one (1) month before this RFP at a bid price of approximately $6.5M and being approximately $2.5M over the anticipated budget for a storage facility that is approximately 70% the size of the Shelburne facility.

Given the significant overage, it was recommended by SBA that negotiations be opened up with the low RFP bidder to determine whether there were any savings that could be realized and still make this essential project viable. Several discussions and meetings were held with the low RFP bidder as well as with senior Town staff and OCWA to review any potential savings and negotiations.

Ultimately following this process, Landmark Structures Co. provided an updated Proposal cost on August 30, 2021, which lowered the base bid for the project by $692,000.00. It was agreed to move the dewatering allowance of $95,800.00 from the base bid to the contingency allowance so that it would only be allocated if necessary.

The revised summary of costs are as follows in Table 2.

Table 2: Summary of Construction Bids by Schedule Revised

SCHEDULE OF ITEMS AND PRICES	
BIDDER	Landmark Structures Co.
SCHEDULE A **Miscellaneous**	$551,100.00
SCHEDULE B **Elevated Storage Reservoir**	$5,431,950.00
SCHEDULE C **Contingency Items**	$174,750.00
Sub-Total	*$6,157,800.00*
HST @ 13%	$878,020.00
Contract Total	**$6,958,314.00**
Ranking by Price	1

The revised bid amount was based on negotiated items that did not compromise any of the original design items, nor compromise on safety, security or storage volume and has been reviewed by senior staff and OCWA for acceptance of credit items. Based on this, SBA would recommend that if sufficient funds can be allocated to this project to cover the increased cost, that it be recommended that the Water Storage Tower RFP be awarded to Landmark Structure Co. for a base price of **$5,983,050.00** excluding tax and contingencies.

Should you have any questions, please do not hesitate to call me.

Yours truly,

Stephen Burnett, P.Eng.
Principal
S. Burnett & Associates Limited

Incl.

cc: Carey Holmes, AMCT, Director of Financial Services / Treasurer, Town of Shelburne
Denyse Morrissey, Chief Administrative Officer B.A; M.P.A., Town of Shelburne

M20009_Shelburne Water Tower_Recommendation_FINAL_03Sept21.docx

Value Engineering Proposal - Revision #1 (2021.08.30)

Project: Town of Shelburne, Elevated Water Storage Tank

We are pleased to offer the following value engineering solutions for your consideration:

1.0 - Siteworks

	CREDIT	NOTES
Savings for alternate site subcontractor	$ 93,600	
Relocate Tank SW by 6m (+/-) to permit sufficient access around tank / pedestal	$ 11,800	Adjusting the location will permit more efficient access around the tank
Stockpile 950 m3 +/- surplus topsoil on site (add to berm)	$ 22,200	Quantity shown is estimated
Stockpile 800 m3 +/- surplus excavated material on site (add to berm)	$ 18,700	Quantity shown is estimated
Eliminate dewatering allowance. Owner to complete test digs to confirm ground water elevations	*$ 95,800*	Credit amount to be finalized once test dig is completed
Provide 6m wide manual slide gate in lieu of 10m wide manual slide gate	$ 6,800	
~~Delete overflow discharge headwall and replace with rodent screen~~	~~$ -~~	~~Credit offering was $5,900~~
Replace trench drain with Catch Basin at Truck fill location	$ 2,400	
Sanitary Line - Relocate floor drain lines to soak-away pit in lieu of specified detail	*$ 41,200*	Final credit amount subject to further discussion with SBA on detail
Total road closure during tie-ins	*$ 3,500*	Final credit amount subject to further discussion with SBA on detail
Change CSP culvert to Armtec Big O	$ 2,400	
Eliminate concrete sidewalk and provide granulars	$ 10,600	
~~Change Vinyl coated chain link fence to Hot Dipped Galvanized~~	~~$ -~~	~~Credit offering was $5,900~~

Subtotal $ 309,000

2.0 - Mechanical / Electrical

~~Modify inlet / outlet configuration per the attached drawing~~	~~$ -~~	~~Single inlet / outlet pipe with isolation valve. Includes changing all Stainless Steel piping from 316L to 304L. Credit offering was $271,900~~
Eliminate the storage room and cladding on all masonry walls	$ 34,000	
~~Eliminate recirculation pump and associated piping~~	~~$ -~~	~~Credit offering was $13,400~~
~~Eliminate truck fill line~~	~~$ -~~	~~Credit offering was $32,500~~
~~Eliminate chemical feed system~~	~~$ -~~	~~Credit offering was $49,400~~
~~Eliminate HVAC and plumbing systems~~	~~$ -~~	~~Credit offering was $66,400~~
~~Eliminate standby generator, transfer switch and related civil efforts~~	~~$ -~~	~~Credit offering was $42,400~~
Cost savings for reduction in Electrical scope	$ 6,300	Storage Room electrical including HVAC
Decrease overflow pipe size to 200mm	$ 16,800	200mm is sufficient with specified flow rates
Delete insulation requirement on Overflow riser pipe	$ 7,500	Insulation not required on overflow
Delete 75mm tank drain line including valve, heat trace & insulation	$ 8,500	Drain provided at grade level - bypass to Overflow

Subtotal $ 73,100

3.0 - Elevated Tank Structure

Foundation settlement limit per AWWA D107	$ 85,900	Specified settlement limit is less than that allowed by AWWA D107
Eliminate reverse cone feature at top of tank	$ 22,000	Existing tank has the reverse cone feature
Provide 'standard' roof handrail in lieu of specified architectural handrail	$ 21,300	Existing tank has the architectural handrail
~~Reduce thickness of floor plate from .250" to .188"~~	~~$ -~~	~~Credit offering was $7,500~~
~~Eliminate Cathodic Protection System~~	~~$ -~~	~~Credit offering was $23,100~~
Eliminate pedestal exterior sweep blast	$ 13,000	
~~Eliminate rigging rail at top of pedestal interior~~	~~$ -~~	~~Credit offering was $8,800~~
Eliminate epoxy coated slab on grade except for the Chemical Room	$ 4,400	
~~Eliminate Division 10 items (work bench, chair, cabinet) in valve room~~	~~$ -~~	~~Credit offering was $2,600~~
Reduction of items in Section 01075 – Tools and Safety Equipment per revised specification	$ 2,600	
Eliminate the supply of specified rescue equipment	$ 34,800	Majority of tank owners do not own / maintain fall arrest and rescue equipment. Annual inspections & maintenance required on these items. Maintenance is required per manufacturers instructions.
~~Eliminate the supply of harnesses, trolleys, lanyards~~	~~$ -~~	

Subtotal $ 184,000

4.0 - Miscellaneous

Delete requirement for Consulting Engineer Trailer	$ 22,700	We can provide a larger site office trailer with separate office for SBA representative (Shared trailer)
~~Reduction of Commissioning, start-up / training based on scope reduction~~	~~$ -~~	~~Credit offering was $40,000~~
Reduction of Bonds, Insurance and Overhead based on scope reduction	$ 34,600	5% of credited amount
Contractor, Subcontractor and major supplier credit offering	$ 68,600	
~~Eliminate 2% maintenance holdback~~	~~$ -~~	~~Credit offering was $5,000~~

Subtotal $ 125,900

ORIGINAL BID PRICE	$ 6,754,000	
PROPOSED VALUE ENGINEERING CREDIT OFFER	$ 692,000	Total sum of above credit offering
SUBTOTAL	**$ 6,062,000**	
LESS SCHEDULE 'C' - CONTINGENCY ITEMS	**$ 78,950**	
REVISED CONTRACT VALUE	**$ 5,983,050**	

Landmark Structures Co.

3091 Harrison Court
Burlington, ON L7M 0W4
905.319.7700 Phone
905.319.8247 Fax

www.teamlandmark.com

September 3, 2021

Jim Moss
Director, Development and Operations
Town of Shelburne
203 Main Street East
Shelburne, Ontario
L9V 3K7

and

Stephen Burnett
Principal
S. Burnett & Associates
210 Broadway, Unit 203
Orangeville, Ontario
L9W 5G4

RE: Proposal for Town of Shelburne, Elevated Water Storage Tank
Request for Proposals SBA File No: M20009
Extension of proposal validity to September 30th 2021

Based on the circumstances surrounding the project, we understand the need to extend the validity of our proposal to the end of the September 2021.

This letter serves as Landmark's agreement to extend the validity of our proposal until September 30th 2021.

We look forward to working with you on the Town of Shelburne, Elevated Water Storage Tank project.

Thank you for the opportunity.

Yours sincerely,

Charles Mitchell
Director of Business Development
Landmark Structures Co

Proposal for Town of Shelburne:
Elevated Water Storage Tank

PROJECT: **Town of Shelburne, Elevated Water Storage Tank**

SBA File No: **M20009**

OWNER: **Town of Shelburne**

Landmark Structures Co.

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LANDMARK™
Elevating Expectations

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Section X: Appendices

Landmark Structures Co.

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July 15th, 2021

S. Burnett & Associates
210 Broadway, Unit 203
Orangeville, Ontario
L9W 5G4

Attn: **Jaclyn Pouw-Dagenais**
Executive Assistant

Nibhana Suvarna
Water/Wastewater Engineer

and

Town of Shelburne
203 Main Street East
Shelburne, Ontario L9V 3K7

Attn: **Jim Moss**
Director, Development and Operations

RE: Proposal for Town of Shelburne, Elevated Water Storage Tank
Request for Proposals SBA File No: M20009

We at Landmark appreciate the opportunity to respond to this request for Contractor Selection for the Design Build of a new water storage tank for the Town of Shelburne.

Our proposal presents our dedicated team and describes our broad range of capabilities that align with this project. We trust that you will find our submission favourable and we look forward to a successful project.

The Landmark company originated in Hamilton and is the industry leader in elevated water storage tank construction in North America. We are the largest elevated tank specialist globally. We are very passionate about providing the highest level of safety, quality and service.

Thank you for the opportunity to present this proposal. We look forward to serving you.

Yours sincerely,
Landmark Structures Co,

Brent Marini
Director of Canadian Operations

Company Profile

History

Landmark is an engineering and contracting company founded in 1974 and is the originator of the Composite Elevated Tank (CET). This innovation was a paradigm shift from the way elevated towers had traditionally been constructed, incorporating the use of a concrete pedestal to significantly reduce long-term maintenance costs. Landmark's expertise in this type of construction led to the company passing the industry's established giants to become the market leader in high-capacity elevated storage construction throughout North America.

The Landmark philosophy is simple: Setting and advocating the highest standards delivered on several fronts:

- Comprehensive attention to detail.
- Dedication to collaborative project execution.
- Providing the best ownership cost.

Capability to Perform Project Requirements:

Landmark is one of the largest and most experienced designers, constructors, and maintainers of steel storage tanks and are responsible for the majority of CET installations in North America. Our elevated tank experience includes projects over 3.5 million gallons and heights exceeding 250 feet. Landmark brings over 40 years of leadership to this project.

Landmark is a full-service contractor and self performs most of our work. Highly skilled multi discipline crews employ specialized construction processes, including a highly evolved system of concrete placement, precise assembly of steel plate and detailed coatings application.

Design / Build

As a design-build company, Landmark has a broader perspective on the engineering function, and takes ownership of its work right through to project completion. Our design, engineering and detailing staff are experts on the technical challenges that lie beneath the outwardly simple lines and shapes of tanks. We employ the most advanced tools and our expertise extends to related civil and mechanical systems.

Each project presents its own technical challenges. Landmark's design and engineering groups apply specific knowledge and resources to a wide range of issues, including:

- Finite Element models to assess dynamic forces in high seismic areas
- Non-linear buckling analyses to determine the optimum tank configurations
- Computational fluid dynamics (CFD) to design tank mixing systems
- In depth soil-structure interaction analysis to design the most efficient foundation solutions

Project Management

In addition to the precision of our work, and the value of our best cost solutions, performance is a key Landmark attribute.

It relates to how we perform for you, and to our dedication to collaborative project management, thorough execution, and the resolve to do things right. Beyond how we build, we recognize that how we work with clients and partners can determine the quality of a project, and the resulting referrals and repeat engagements that create long term mutual success.

This philosophy accounts for our design-build orientation, in which we assume responsibility and manage all the concurrent functions to completion. Our approach to business is consistent, regardless of where it is in our extensive portfolio of capabilities.

Fabrication:

Landmark's high capacity steel tank and component operations incorporate the finest equipment, materials and talent. Our extensive use of mill-primed steel plate eliminates mill scale and preserves the blast profile. Plus, the ability to roll wide plate to precise tolerances reduces welding requirements, simplifying production and enhancing results.

Landmark has two state-of-the-art steel fabrication facilities strategically located to serve North America with highway and rail access, multiple staging locations and storage options on site. Locations in Burlington, Ontario and Decatur, Texas provide launch points for turnkey custom component fabrication, all with the latest technology.

Landmark has a broad range of fabrication capabilities to meet the most demanding configurations and requirements. We set a higher standard for quality and productivity.

Site Development

Site selection, analysis and preparation are core competencies for Landmark, refined in civil work and hundreds of design-build projects over the past 40 years. Our knowledge of soil types, drainage and compaction requirements, and close work with geotechnical specialists enables us to provide valuable insights as well as execution on your project.

Foundation Engineering and Construction

Landmark places a significant emphasis on foundation design and engineering, as it provides an opportunity to precisely match a solution to site conditions, while also achieving a balance between functionality and cost. The most efficient recommendation, whether a concrete mat, piers, or other configuration, can provide good value for a project. Landmark has designed and built all types of foundations for composite elevated tanks as well as other projects.

Concrete Structures

Our skill in achieving architectural concrete is testimony to Landmark's commitment to building concrete structures that combine aesthetic as well as functional excellence. Architectural concrete

is comparable to pre-cast concrete in its precision and consistency, and since it is permanently exposed to view, the Portland Cement Association cites the special care required in the selection of concrete ingredients, forming, placing, consolidating and finishing to obtain the desired appearance. This is the standard that Landmark sets for its work.

With more than 10,000 wall placements and one million cubic yards of concrete placed, Landmark's concrete specialists are experts in managing mix designs, the critical impact of environmental conditions on the placement process, rigorous quality control procedures, and the all-important involvement of their supplier partners. The result is a superior track record in an area that has become a true specialty.

Steel Erection

Landmark carries the quality and refinements achieved in fabrication right through to steel erection on the project site, where we consistently implement process improvements for faster, safer and more accurate construction. Recent examples include the cable suspension of steel plate for welding and finishing, which eliminates the need for cumbersome jigs, reducing cycle time and increasing quality. Quality Control / Quality Assurance programs ensure exceptional weld quality in preparation requirements for coatings phase.

Specialty Coatings

Landmark has developed complete surface preparation and coatings services for all the structures that we design, build and repair. This commitment and Landmark's high standards of process and product quality have been recognized by the Society for Protective Coatings with their QP-1 Certification. It evaluates candidate firms in four key areas:

- Management procedures
- Technical capabilities
- Quality control
- Safety procedures and record keeping

This places Landmark in a relatively small group of companies in the world to earn the QP-1 certification. It means that you can depend on the Landmark coatings team and its fully equipped mobile crews for preparation and coating of virtually all types of steel structures, with a wide range of materials.

Mechanical Systems

Landmark's expertise in structures and storage extends to the piping and control systems that serve them. This ranges from the design and fabrication of stainless steel piping for water storage tanks and related tank mixing systems to their control valves, pump stations and monitoring equipment, and cathodic protection. It also includes the piping and controls associated with larger tank farms and systems, making Landmark an integrated resource for a wide range of projects.

Environment, Health & Safety

Landmark's commitment to safe workplaces and jobsites is enabled by a robust Environmental, Health & Safety (EHS) management system. It is designed to prevent harm to people, property and the environment, and is enthusiastically embraced by company principals, line management, employees and contractors. All are empowered and responsible for its success, based on three guiding principles:

- Clearly communicated expectations result in desired outcomes
- Goals and objectives align with defined standards and procedures
- Continuous improvement
- All incidents can be prevented by eliminating their causes

While Landmark's EHS policies are addressed in detail and integrated throughout work practices and procedures, they are managed with four key tools:

- Hazard Identification & Risk Assessment (HIRA)
- Site EHS Evaluation
- Root Cause Analysis
- Comprehensive EHS Training

The goal of Landmark's EHS management system is simple: Incident-free projects and workplaces that maintain the integrity of the environment, utilize attention and care to eliminate cost and delay, and above all, protect the quality of life and futures for those at work.

Safety is our primary commitment - always.

We are very proud to announce that Landmark is COR Certified! – effective January 2021.

Section B: Project Team

B-1: Project Team Introduction

Landmark's head office is located at 3091 Harrison Court in Burlington, Ontario. We have a 10 acre property with office, fabrication, and yard facilities.

Average total # of office employees: 35

Average total # of shop employees: 20

Average total # of field employees: 60

Average total # of employees: **100 – 125**

All are employed directly out of the Burlington head office location. *Additionally*, Landmark has another 300 employees directly employed out of our Fort Worth, Texas location.

Our Burlington office serves as the center for overall Project Management, Engineering, Drafting, Procurement, Fabrication, logistics, control and evaluation functions for operations. All employees who support these services are direct employees of Landmark Structures.

During project operations, command and control functions transfer to the project site, with support operations executed by Landmark's corporate and support staff who are located on-site in Burlington.

This allows Landmark to:

- deploy our corporate resources to meet required response times
- effectively increase capacity as needed
- allow for efficient decision making

Landmark employees will be assigned to the Project Delivery Team and contribute in their area of expertise.

Our team has extensive experience and knowledge specific to elevated tank design, construction and maintenance. Landmark is uniquely qualified to successfully manage this project.

The project is based on concepts Landmark invented and developed in the 1970s. Key team members have been with Landmark throughout the development of this product, and have worked directly with all aspects of management, design, fabrication, construction and maintenance. The proposed team is the most experienced group of individuals available anywhere for this type of project.

Lead Project Engineer – Wes Pogorzelski, P. Eng.

Reporting to the Operations Manager (Don Nikulka), and the President of Landmark (Chris Lamon), Wes Pogorzelski will be the Engineer of Record for the Elevated Tank Project.

Wes will be directly responsible for the structural design of the Shelburne Elevated Water Storage Tank ensuring the Tank is designed in accordance with governing codes and project specifications. Wes and his Engineering Team will deliver complete, comprehensive design calculations and drawings for review and implementation.

Wes is accountable for leading and managing the Project Engineering Team.

Project Engineering Team

- Sr. Design Engineer: Rolf Pawski, P. Eng.
- Project Engineer: Razmyar Ghateh, P. Eng.
- Drafting Manager: Stefan Stelmach, P. Eng.

Please refer to Wes' CV (enclosed)

Operations Manager – Don Nikulka, C.E.T.

Don Nikulka has over 30 years project and construction management experience specific to elevated tanks and is proposed as the primary individual accountable for delivering the project. Don leads the project team and has the accountability to manage the project on a day-to-day basis.

Essential Functions / Major Responsibilities of the Operations Manager:

- Planning and monitoring the project / maintaining project plans
- Managing the production of required deliverables
- Ensuring communication among all stakeholders
- Availability of resources to execute the project scope
- Managing project risks, including the development of contingency plans
- Monitoring overall progress and resources, and initiating corrective actions as required
- Reporting continuously on the project status
- Accountable to lead and manage the Project Management Team

Project Management Team

- Sr. Project Manager: Paul DiPelino
- Project Coordinator: Mina Agaybi
- Project Administrator: Brenda Cantlon

Please refer to Don's CV (enclosed)

Site Management Team

Our site-specific management team consists of Operations Manager (Don Nikulka), Project Manager (Paul DiPelino), Health and Safety Manager (Blake Morton) **and a series of phase-specific Site Managers that are deployed to the project site as work progresses**.

- Site Manager: Chris Levair
- Health and Safety Manager: Blake Morton
- Phase-specific Site Manager – Civil: Rick DeJong
- Phase-specific Site Manager – Steel: Tyler Hindle
- Phase-specific Site Manager – Coatings: Perry Compton
- Site Quality Control Lead: Michael Faubel

Please refer to CV's (enclosed)

President – Chris Lamon, P. Eng.

Chris Lamon is the senior leader of the Landmark group of companies and is accountable for all commercial, technical and operations functions at Landmark. He has over 35 years' direct experience in all aspects of management, project controls, engineering, development, procurement and construction of tall, thin shell, heavily loaded vessels.

Chris, along with Brent Marini (Director Canadian Operations) will be directly engaged in the project, assisting in oversight of project planning, project controls, and ensuring the availability of key resources.

Director of Operations – Brent Marini

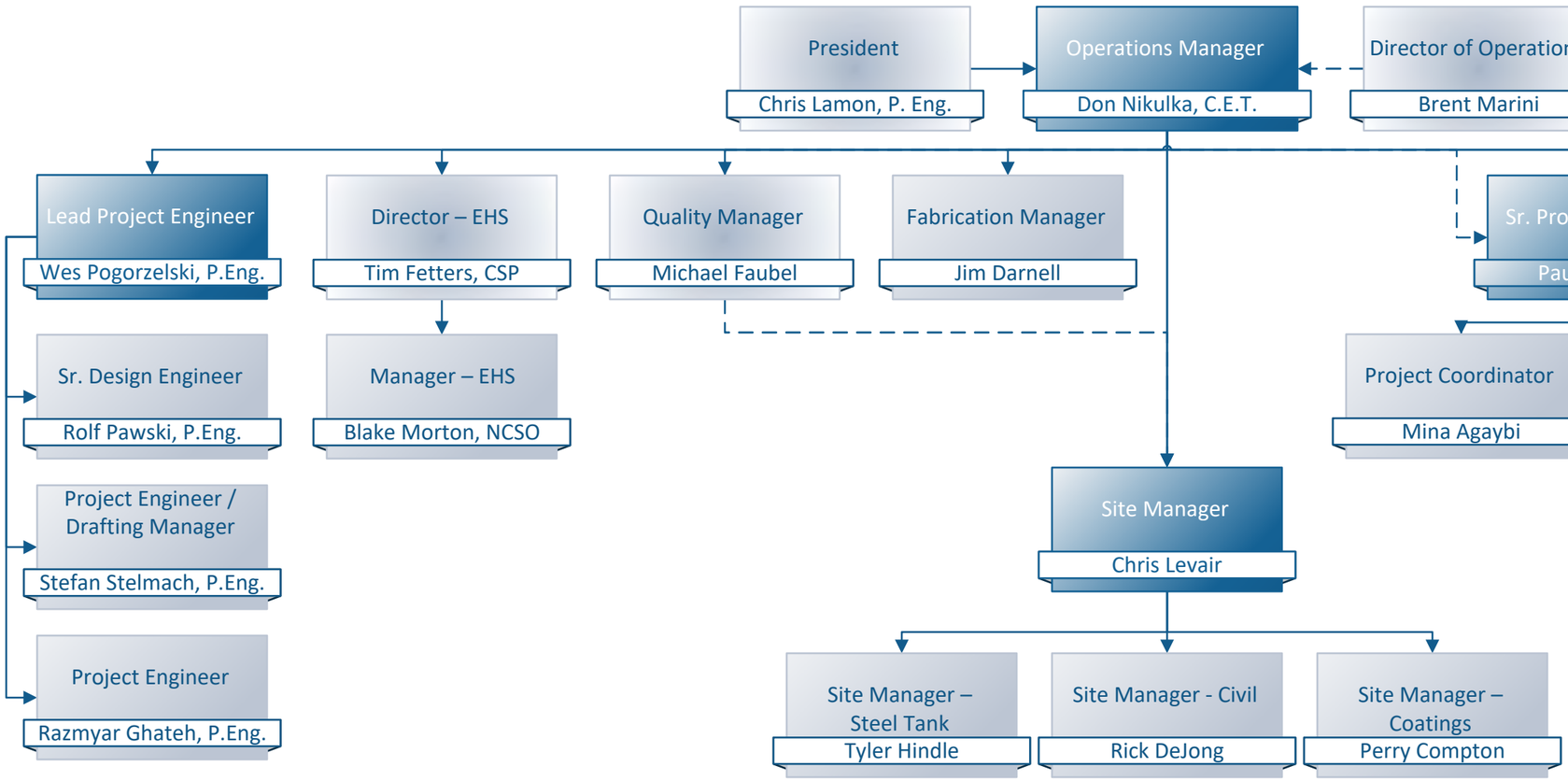
Brent Marini is responsible for the direction and coordination of the Canadian division of the Landmark organization. He has over 20 years of progressive leadership in strategic planning, organizational development, business development, finance, contract negotiation, and all phases of design / build operations. Brent has extensive experience in Project Management and Construction Operations Management.

Brent will be directly engaged in the project, assisting in oversight of project planning, project controls, and ensuring the availability of key resources.

The following organizational chart identifies the Landmark team that will be accountable to deliver the Elevated Tank Project.

The enclosed resumes provide detailed information on members of the proposed team. Key members have 20 to 30+ years each of direct elevated tank experience.

B-2 – Project Specific Organizational Chart – Shelburne Elevated Water Storage Tank



Legend:

Reporting

Coordinating

Collaborating

Key Personnel

Project Team Members

LANDMARK
Elevating Expectations

Chris Lamon, P.Eng.

President

Chris Lamon has over **35 years' experience in all aspects of management, engineering, procurement and construction** with leading specialized design / build organizations. Chris has extensive experience in site specific design, manufacturing, construction, and quality management of tall, thin shell, heavily loaded structures engineered to withstand significant wind and seismic environmental loads.

Chris has been **accountable for legal, financial, risk management, engineering, procurement, project management and operations management functions** on a diverse portfolio of projects over extensive geographical areas. He is responsible for significant contributions in the writing and development of ANSI standards in the elevated water storage space and the design and patent development of numerous products involving fluids and structural designs.

Professional Experience

- Landmark Companies (1983 – Present) – *CEO / Owner*
  - Senior leader of the Landmark group of companies – a leading EPC firm specializing in elevated water storage and large complex industrial vessels.
  - Strategy and direction for business development, engineering, project management, manufacturing, construction and asset management teams.
  - Accountable for all commercial, technical and operations functions.

- ViZiV Technologies Equipment (2016 – Present) – *President*
  - Accountable for engineering and project management teams for research, development, design and construction of large-scale electromagnetic wave transmission structures.
  - Develop solutions for unprecedented highly complex materials and structural challenges.
  - The Zenneck Surface Wave is an electromagnetic wave that uses the surface of the earth as a waveguide enabling it to carry communications signals or electrical power efficiently over long distances.

Education

- University of Waterloo, Ontario – BSc Engineering – 1983

Certifications and Professional Development

- Registered Professional Engineer
- American Concrete Institute (ACI 371 Committee)
- American Water Works Association (AWWA D107 Committee)

Don Nikulka, C.E.T.

Operations Manager

Don Nikulka has over **30 years of experience** in all phases of heavy civil engineering procurement and construction operations, and is **Canada's leading expert** in with respect to elevated tank management and construction.

Don has hands on experience in construction trades, site supervision, field engineering, design, detailing, contract negotiation, project management, construction operations, subcontract management, quality management and safety. Year after year, Don has completed many concurrent multi-million-dollar projects by successfully coordinating trades, developing partnerships and building a positive relationship with customers, consulting engineers, local officials, vendors and staff. Don is well versed in contract negotiations, document preparation, procurement, building codes and regulations.

Professional Experience

- Landmark Structures Co., Burlington, ON (1985 – Present) – *Senior Project and Construction Manager*
  - Responsible for the overall leadership, management, direction, and development of shop, field and office support staff for the execution of construction works in support of near and long- term business objectives
  - Manage multiple project managers across 25+ concurrent projects throughout the United States and Canada
  - Inspect work in progress, both shop and field, to ensure that workmanship conforms to drawings, specifications, company standards, procedures and quality expectations
  - Develop and implement project controls processes (cost, quality and schedule)
  - Develop internal standards, policies, and procedures for execution of construction operations; identify areas for improvement, develop solutions and implement changes
  - Initiate, implement, delegate and monitor special projects involving construction methods and processes to improve the quality, productivity and safety of the organization

Education

- Sir Sandford Fleming College – Degree, Civil Engineering Technology – 1982

Certifications and Professional Development

- Civil Engineering Technology Member of OACETT since 1987

Brent Marini

Director of Operations

Brent Marini is responsible for the direction and coordination of the Canadian division of the Landmark organization. He has over 16 years of progressive leadership in strategic planning, organizational development, business development, finance, contract negotiation, and all phases of design / build operations. Brent has extensive experience in Project Management and Construction Operations Management.

Brent has successfully delivered multi-million-dollar projects while developing partnerships and building a positive relationship with customers, engineering firms, subcontractors and vendors. He has experience leading projects in multiple and diverse business units within Landmark and specializes in Lead Abatement, Structural Rehabilitation, Industrial Coatings and Asset Management. Brent is accountable for all projects from conception to completion.

Professional Experience

- Landmark Structures Co., Burlington, ON (2003 – Present) – *Director of Operations*
  - Manage Landmark Canada – all divisions. Develop and implement standards.
  - Senior manager of EHS, Quality Management and project controls – all divisions.
  - Responsible for the overall leadership and technical direction of Landmark Municipal Services, the leading provider of water storage asset management services in Eastern Canada.
  - Collaborate with clients to design, develop and implement cost effective corrosion management solutions for water and industrial storage
  - Directly manage multiple projects and project managers for the execution of rehabilitation construction works.

Education

- Mohawk College, Architectural Engineering Technologist

Certifications and Professional Development

- Project Management, Mohawk College – 2013
- Ontario Environmental Safety Network, Lead Awareness Training – 2014
- Updated training in the following: WHMIS, Working at heights, Confined Space & High Angle Rescue, Aerial Lift, Suspended Access, First Aid CPR AED Level A
- National Association of Corrosion Engineers (NACE International) Certified Coatings Inspector

Wes Pogorzelski, P. Eng.

Lead Project Engineer

Wes Pogorzelski has extensive **advanced experience** in all aspects of structural behaviour, **analysis and design of tall, thin shell, heavily loaded structures** engineered to withstand significant wind and seismic environmental loads. Wes is an expert in in foundations and soil / structure behaviour and has advanced capabilities in fluid dynamics as it relates to large storage vessel behaviour.

Wes is accountable for the **analysis and design of the tallest free-standing structure** using advanced non-traditional building materials and complex details.

Areas of research and expertise include:

- Non-linear buckling of conical and cylindrical shells due to internal and external pressure
- Buckling of shells due to wind pressure during erection
- Transient analysis of sloshing effects due to seismic loading
- Analysis and design of concrete support structures stress distribution between reinforcement and concrete due to static loads, cracking and creep effects
- Modeling, analysis and design of mixing systems using Computational Fluid Dynamics
- Design of complex construction equipment and engineering of temporary work structures
- Expert reviewer of cone design methods in the AWWA D100 and D170 joint committee

Professional Experience

- Landmark Structures (2002 – Present) – *Senior Design Engineer*
  - Engineer of record for elevated water storage tank structures – Canada
  - Review critical components of complex tanks and vessels – US
  - Automation of application of advanced analysis and design techniques.
  - Development of construction equipment systems to resist heavy wind loading
  - Design and modification of crane, material handling, scaffold, formwork, shoring
  - Invention of Trillium and 2 – Tier 2 – Y mixers for Composite Elevated Water Tanks. Work resulted in 3 US and 1 Canadian Patents for Mixing Systems.
  - Design of hydrodynamic mixing systems for potable water.

- John Otter Engineering Services Ltd., (1991 – 2002) – *Senior Structural Engineer*
  - Design of girder launching gantry equipment for large bridge structures
  - Analysis and design of construction equipment, scaffolding, and shoring
  - Structural design of elevated tanks and bridges

Education

- Poznan Technical University, Poland – Master of Engineering

- University of Toronto Continuing Engineering Education Program – Applied Finite Element Analysis
- University of Toronto Postgraduate Course – Prestressed Concrete Structures

Certifications and Professional Development

- Professional Engineers Ontario
- Association of Professional Engineers and Geoscientists of New Brunswick
- Professional Engineers and Geoscientists Newfoundland and Labrador
- American Concrete Institute
- Chair of ACI Committee 371

Tim Fetters

Director of Environmental Health & Safety

Tim Fetters has over **20 years' experience in health, safety, security and environmental systems management**, with additional expertise in **program development, inspection and management of construction delivery methods**. His extensive education and training in manufacturing as well as industrial, commercial, power generation, chemical, and petroleum industries make him the ideal manager for workplace and jobsite safety and related initiatives for Landmark.

Professional Experience

- Landmark Structures I LP (2007 – present) – *Director of Environmental Health & Safety*
  - Responsible for development, implementation and maintenance of Landmark's corporate EHS System.
  - Developed and executed new, comprehensive EHS program at Landmark; including procedures, training, tracking and analysis, which has resulted in improved performance, while raising awareness and commitment.

- Jacobs Engineering, Houston, TX (2000 – 2007) – *Regional EHS Manager*, British Petroleum (BP) Corporate Headquarters
- Sabre / EDS Corporate Campus (1999 – 2001) – *EHS Manager*
- Fluor Corporation, North Texas (1997 – 1999)
  - EHS Manager, (1998 – 1999) – Texas Utilities Power Plant Maintenance, Multiple Projects
  - EHS Manager, (1997 – 1998) – Amoco Polypropylene Project, Chocolate Bayou Plant, Alvin, TX

Education

- Texas A&M University – MS Construction Management
- Truman State University – BS Industrial Science

Certifications and Training

- Certified Safety Professional (CSP), Board of Certified Safety Professionals
- American Institute of Constructors, Associate Professional Constructor
- Certified Asbestos Facility Inspector, Texas Engineering Extension Service
- Certified Utility Safety Administrator, National Safety Council
- Member of American Society of Safety Engineers (ASSE)
- OSHA 500 Certified 10/30-hour instructor
- MSHA 40 Hour Safety Certificate

Michael Faubel

Quality Manager

Michael Faubel has over 20 years' experience with the technical and design aspects of construction materials and over 10 years' experience specific to quality management. Michael has led the development and implementation of industry standards with organizations such as ASTM, ACI, AWWA, ASQ, NACE and SSPC, and is recognized for his commitment to improving the concrete and tank coatings industries.

Michael has experience leading initiatives for diverse business units within Landmark including certification as an ASME fabricator of pressure vessels and authorization of pressure vessel repairs by the National Board.

Professional Experience

- Landmark Structures, I, LP (2003 – Present) – *Quality and Technical Services Manager*
  - Corporate Quality Manager for Civil construction, industrial coatings, and steel tank fabrication.
  - Responsible for establishing and training of standard Quality Assurance and Quality Control procedures
  - Responsible for selecting material sources, design of concrete mixes and selection of high-performance coatings to maximize quality, efficiency and provide optimum value to each client.

- Chandler Concrete, Burlington, NC (1998 – 2003) – *Quality Control Manager*

Representative Projects

- CNRL – Froth Tank Train 2 – QA/QC – 2016
- Alon Fuels – Isobtane Pressure Sphere – QA/QC & Weld Inspection – 2017
- Dresden CET re-coating/relining and upgrades – 2018
- Cedar Rapids, Iowa, US – Mass concrete foundation – developed concrete design, and executed continuous monitoring, and comprehensive curing plan – 2019
- SAWS (San Antonio Water System) – Texas, US – multiple CET inspections including WPS/PQR review and approval, welder testing, visual weld inspection, and radiographic assessment. – 2016/17

Education

- University of North Carolina at Chapel Hill, BA Business

Certifications and Professional Development

- American Concrete Institute (ACI International & local TX chapter)
- American Water Works Association (AWWA)
- American Society of Tests & Materials (ASTM International)
- American Society for Quality (ASQ)
  - Certified Quality Auditor

- National Ready-Mix Concrete Association (NRMCA)
  - Certified Concrete Technologist – Level 3

- National Association of Corrosion Engineers (NACE International)
  - Certified Coatings Inspector – Level 3 #26243

Jim Darnell

Fabrication Manager

Jim Darnell is an engineer with over **33 years of experience in construction, steel manufacturing and field tank erection**. His extensive experience and strong leadership enable the development of best practice processes, procedures and training across both fabrication and the field which results in world-class quality and efficiency.

Jim has been instrumental in the design and launch of Landmark's fabrication facilities and equipment as well as the expansion of capabilities to include highly complex forming of multi curved vessel components.

Professional Experience

- Landmark Structures Co., (1997 – Present) – *Director of Fabrication*
  - Steel Erection - Field Manager for 10 years prior to being promoted to Director of Fabrication
  - Oversee safety, quality, production and technical activities related to fabrication
  - Accountable for launching Landmark's capability to form complex double-curved components as well as instituting part development processes to ensure precise fit, high quality and efficient shop and field execution.
  - Project Development: Responsible for evaluating, planning and directing technical feasibility, design optimization and production roll-out of improvements to existing products as well as new product development.

- Steelwright Manufacturing / Stephens Pneumatics, Haslet, (1977 – 1981) *General Manager*

Education

- University of Texas at Arlington - Industrial Engineering

Certifications and Professional Development

- OSHA 10 hour
- First Aid
- API 650 and 653 standards
- In- and out-of-service inspection methods
- Repair methods for various types of tanks

Paul DiPelino

Senior Project Manager

Paul DiPelino is a construction professional with **20 years' of project and construction management experience**. He has a successful track record for the planning, execution and completion of concurrent complex multi-million-dollar projects through coordinating and directing trades, subcontractors, and building positive relationships with engineers, local officials, vendors and clients.

Paul is highly experienced in contracts, negotiations, procurement, building codes and regulations.

Professional Experience

- Landmark Structures Co., (August 2014 – Present) – *Senior Project Manager*
  - Manage elevated tank and underground reservoir projects for various clients throughout Ontario and Eastern provinces
  - Manage inspections condition assessments and asset management for various coatings, safety, mechanical, communication & electrical upgrades.
  - Management of and accountability for design and construction projects
  - Project controls (quality, cost and schedule) and management
  - Planning and controlling a multi-disciplined scope of work from kick-off to close-out

- Landmark Structures Co., (May 2001 – August 2014) – *Project Manager*
  - Management and accountability for design and construction projects
  - Execution of cost reduction programs

Representative Projects

- Mississaugas of Scugog Island First Nation CET – 2019
- Nova Scotia Power - Mill Lake Surge Tank – 2019
- North Glengarry - Maxville CET – 2019
- Newmarket East & Stouffville CET Upgrade & Recoating Projects – 2018

Education

- Mohawk College of Applied Arts and Technology
- Registered Applied Science Technologist (OACETT): Ontario

Certifications and Professional Development

- American Concrete Institute (ACI International & local TX chapter)

Ken Cardwell

Estimating Manager

Ken Cardwell is a design / build construction professional with over 25 years' of experience in project engineering, project management and estimating. Specializing in elevated water storage facilities, he has been integrally involved in the estimating, planning, execution and completion of many complex projects.

Ken is well versed in contracts, project management, specification development, procurement, building codes and regulations.

Professional Experience

- Landmark Structures Co., Burlington, Ontario (2010 – Present) – *Senior Estimator*
  - Communicate / negotiate with owners, engineers, subcontractors, and vendors
  - Plan and organize projects for best execution
  - Analyze contract documents and prepare technical and cost proposals
  - Coordinate, analyze, and review vendor proposals
  - Lead and manage multiple teams in project execution
  - Provide supervision and guidance of staff to manage client requests and resolve problems
  - Perform and lead company in quality control, safety, and emergency issues
  - Manage relationships with subcontractors and vendors
  - Develop and document historical production and cost data
- Landmark Structures Co., Burlington, Ontario (1998 – 2010) – *Project Manager/Estimator*

Education

- Mohawk College of Applied Arts and Technology

Rolf Pawski, P. Eng.

Senior Design Engineer

Rolf is one of the **foremost elevated tank design experts in the industry**, with over 50 years' experience. Rolf is active in managing complex design problems and maintaining engineering policy in the face of multiple changing standards and codes. Rolf is well recognized in the industry for his **major contributions to the advancement of elevated tank design**, and for his significant writing efforts on behalf of the industry standards and codes. Rolf also has extensive experience in geotechnical, soil structure interaction, foundations and structural behaviour under severe environmental loading.

Rolf Pawski has served as Landmark's principal engineer for the past 24 years' and is responsible for all tank structural design, design programs and engineering policies for the company.

Professional Experience

- Landmark Structures Co., (April 1995 **–** Present) **–** *Engineering Manager*
  - Establish and maintain design and engineering policy.
  - Provide expert advice to all engineering and construction staff to solve difficult challenges
  - Provide structural designs of elevated tanks and foundations.
  - Develop and maintain design automation programs.
  - Develop and maintain the engineering knowledge base.

- Chicago Bridge & Iron Company, Chicago, IL (1981 – April 1995) **–** *Senior Design Engineer*
  - Led the design of concrete and steel structures, foundations and general civil structures.
  - Civil Design Supervisor for Woodside (Australia) LPG prestressed concrete full containment structures completed in 1995.
  - Involved in the development and use of prestressed concrete structures for the secondary containment of low and cryogenic temperature liquids.
  - Development of design procedures / construction equipment for composite elevated tanks.
  - Led the design of prestressed concrete safety walls, foundations, and concrete and steel framed structures
  - Prepared designs for ammonia and LPG safety walls in Australia, the US and Taiwan.
  - Provided engineering site supervision for prestressing work.
  - Worked for the Chief Structural Engineer (1981-1983) in development and consulting.
  - Prepared designs and studies for Arctic offshore exploration structures, lightweight insulating concrete and composite elevated tanks.

- Kenny Construction Company, Northbrook, IL (Jan 1980 – Nov 1981) **–** Engineer/Estimator
  - Responsible for cost estimating and planning highway and heavy construction work including tunnels, bridges, excavation, earthworks and piling.
  - Led the structural design of cofferdams, shafts and construction trestles.

- Chicago Bridge & Iron Company, Chicago, IL (June 1969 – Jan 1979) – Design Engineer
  - Designed foundations for storage tanks, process equipment, pipelines and equipment.
  - Performed field inspection of piling and drilled pier installation, foundation excavation and earthwork, large concrete placements and geotechnical investigations.
  - Development of construction sites for offshore structures in the US, Venezuela and Brazil.
  - Designed the first prestressed concrete safety wall built by CBI in 1979 at Botany Bay, Australia for the secondary containment of ethylene.

Education

- Cleveland State University – BCE, 1969

Certifications and Professional Development

- Registered Structural Engineer: Illinois
- Registered Professional Engineer: Alabama, Arkansas, Colorado, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maryland, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New York, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Virginia, Wisconsin
- American Concrete Institute: committees 350-F, 371 and 376; past chair of ACI 371
  - While a Member and chairman of ACI 371 committee, completed a recommended Practice for Design and Construction of Composite Elevated Water Tanks in 1998.
  - Participated in updating the 2008 revision.

- American Water Works Association: D 170 Committee
- American Society of Civil Engineers
- Earthquake Engineering Research Institute
- Participated in writing AWWA D107-10, a standard for design and construction of composite elevated water tanks
- US Patent 4 878 329: Structural Panels for Walls, Floors, and Roofs Having Exterior Metal Layers and Insulating Concrete Core

Blake Morton

Manager - Environmental Health and Safety

Blake Morton is an Environmental Health and Safety (EHS) Manager with extensive experience in the construction, industrial and solar energy markets. Blake has specific expertise in the creating and implementation of health and safety policies and programs for companies and has a proven track record of successfully managing health and safety issues to ensure employees are safe on the work site.

Blake works directly with all employees and Landmark leadership: EHS Director (Tim Fetters), Director of Operations (Brent Marini) and Senior Project / Construction Manager (Don Nikulka)

Areas of research and expertise include:

- Safe work procedures, job hazard analysis and incident/accident reporting
- WSIB Case management and compliance with MOL regulations
- Training procedures for equipment and employees, joint health and safety chairman
- COR Certificate of Recognition achieved on January 18, 2021 for Landmark Structures and on February 04, 2021 for Landmark Municipal Services

Professional Experience

- Landmark Structures Co., Burlington, ON (2017 – Present) – *EHS Manager*
- The Donald Group of Companies, Etobicoke, ON (2016 – 2017) - *EHS Manager*
- Algoma Energy Solutions, Sault Ste. Marie, ON (2014 – 2016) - *Senior Health and Safety Advisor*
- H.E.L.P Safety Services, Acton, ON (2011 – 2014) - *Field Manager and Health and Safety Coordinator*
- The Manarin Group of Companies, Toronto, ON (2008 – 2011) - *Construction Services Health and Safety Manager*

Education

- Keiler Mackay Collegiate Institute – Honor Graduate

Certifications and Professional Development

- IHSA: National Construction Safety Officer - 2017
- IHSA: Construction Health & Safety Officer – 2016

Mina Agaybi

Project Coordinator

Mina Agaybi is a recent Civil Engineering Graduate majoring in Structural and Environmental Engineering. Mina has hands-on experience in Project Coordination and Management: reviewing construction schedules, submittal review and tracking, subcontractor management, procurement, scheduling equipment and material deliveries, project closeout documentation and coordination. In addition, he has experience in monitoring quality control, changes in construction procedures, and reviewing drawings & specifications. He has worked on multiple Water Storage Tank Projects and assisted to a successful project close out to the client's satisfaction.

Professional Experience

- Landmark Structures Co., (January 2019 – Present) – *Project Coordinator*

Representative Projects

- Ripley Elevated Water Storage Tank – 2019
- Shediac Elevated Water Storage Tank – 2019
- Elsipogtog First Nation New Water Tower – 2019
- Kettle & Stony Point First Nation Elevated Water Storage Tank – 2019

Education

- Ryerson University, Bachelor of Engineering – Civil Engineering

Certifications and Professional Development

- Registered Engineer in Training – Professional Engineers Ontario (PEO)
- Member of Canadian Society for Civil Engineering (CSCE)

Brenda Cantlon

Project Administrator

Brenda Cantlon has over **20 years' experience in all aspects of design / build construction project administration** from design phase to project completion. Brenda assists with Project Management duties such as procurement, logistics, and coordinating trades. Brenda communicates with functional leads and managers to compile weekly and monthly project progress reports.

Brenda brings high value to the project, with over 12 years direct experience coordinating Landmark elevated tank projects.

Professional Experience

- Landmark Structures Co., (2006 – Present) – *Project Administrator*
  - Directly assist Project and Construction Operation Managers on multiple projects.
  - Status and coordination communication directly with Owner, subcontractors and suppliers.
  - Coordination of day to day operational decisions.
  - Project level procurement

- Algonquin Power (1995 – 2006) – *Office Manager*
  - Development and implementation of office procedures
  - Management of office building and all purchasing
  - Coordinate owners / field operations in construction and management of hydropower plant facilities.

- Conestoga-Rovers & Associates (GHD Inc.) (1989 – 1995) – *Administrative Assistant*
  - Administrative Assistant to the US Environmental Group - environmental remedial projects.

Representative Projects

- Nova Scotia Surge Tank – 2019
- Scugog Island Elevated Tank – 2019
- Warkworth Institute Elevated Tank – 2018
- Maxville Elevated Water Tower – 2018
- Newmarket and Stouffville Zone II Elevated Tank Refurbishments – 2017
- Waterdown South Elevated Tank – 2016

Stefan Stelmach, P. Eng.

Project Engineer & Drafting Manager

Stefan Stelmach has over **30 years' experience in detail design**, engineering coordination, engineering standards development, and management of CAD services. Stefan has provided detail **designs on hundreds of elevated tanks** and other tank vessels and structures in Canada and US. He is a CAD systems expert with specialty in systems programing, implementation and development.

Stefan is accountable to ensure timely and accurate delivery of design drawings associated with Landmark projects.

Professional Experience

- Landmark Structures Co., (1994 – Present) – *Drafting Manager / Structural Designer*
- Nantucket Rebar Service (1993-1994) – *Reinforced Concrete Detailer/CAD Specialist*
- Wm. E. Bennett Surveying Ltd., (1992) – *G.I.S. Technician*

Representative Projects

- Complete comprehensive delivery of engineered drawing packages:
  - Kettle Stony Point FN, Elevated Tank – Current
  - City of Brantford, Composite Elevated Tank – Current
  - Correctional Services Canada, Warkworth Institution Composite Tank – Current
  - Brant County Airport Elevated Tank – Current
  - Town of Bradford, Bondhead Composite Elevated Tank – Current
  - Elsipogtog First Nation, NB Composite Elevated Tank – 2018
  - Township of North Glengarry, Maxville Composite Tank – 2018
  - Municipality of Edmundson, NB - AWWA D100 Tank – 2017
  - Bonavista, NL Composite Elevated Tank – 2017
  - Township of Huron Kinloss, Ripley Elevated Tank – 2017
  - Town of Shediac, NB Composite Elevated Tank – 2017

Education

- Silesian Technical University, Poland - BS, Civil Engineering – 1986

Certifications and Professional Development

- Professional Engineer License: Professional Engineers of Ontario – 2001

Chris Levair

Site Manager

Chris Levair serves as Landmark's primary representative at the project site who interacts and reports internally and to owners, engineers, inspectors. Chris **implements project safety and quality objectives** at the construction trade and subcontractor level, ensuring high quality construction is delivered in a safe and efficient manner.

Chris has extensive experience managing and directing multiple trades workers and subcontractors and is a **proven leader / motivator with excellent interpersonal and managerial skills.**

Professional Experience

- Landmark Structures Co., (October 2010 – Present) – *Site Superintendent*
  - Scheduling and directing work crews and subcontractors
  - Structural, Mechanical, Electrical and Process drawings and geotechnical reports
  - Earthwork, excavations, shoring, deep foundations and site development
  - Demolition, hoisting, rigging and material handling
  - Layout, inspection and project controls
  - Concrete mix designs, admixtures placement and quality control
  - Erection of structural steel and miscellaneous iron

Representative Projects

- Brant County Bolted Elevated Tank Construction – 2019
- Mississauga's of Scugog Island First Nation CET – 2019
- North Glengarry – Maxville Composite Elevated Tank Construction – 2018
- Ripley Composite Elevated Tank Construction – 2018
- Bonavista Composite Elevated Tank Construction – 2017
- Aurora Composite Elevated Tank Construction – 2016
- Additional Projects available upon request

Certifications and Professional Development

- WHMIS
- St. John's Ambulance First Aid/CPR
- Traffic Control
- Propane Safety
- Fall Protection
- Confined Space Entry and Rescue
- High Angle Rescue
- SwingStage

Razmyar Ghateh, PhD, P. Eng.

Project Engineer

Razmyar Ghateh has over 10 years' experience as a Structural Designer. He has analyzed over 100 elevated water storage facilities using finite element analysis and computer modeling programs. Razmyar has extensive knowledge in nonlinear analysis of structures using FEMA methods, and is an expert in Canadian structural design codes and standards.

Professional Experience

- Landmark Structures Co., (2014 – Present) – *Structural Designer*
  - Nonlinear static, nonlinear dynamic and seismic analysis of structures
  - Design of liquid containing and shell structures
  - Retrofitting and rehabilitation of structures and developing strengthening plans
  - Analysis and design of heavy construction lifts

- Ryerson University, Toronto, ON (2009 – 2014) – *Post-doctoral Research Associate*
- Payon Retrofitting Group Co, Tehran, Iran (2006 – 2009) – *Structural Designer*
- Niroo Research Institute, Tehran, Iran (2005 – 2006) – *Structural Engineer*
- Armeh Ara Consultant Engineers, Tehran, Iran (2004 – 2005) – *Structural Designer*

Representative Projects

- Elevated Tank Analysis and Engineer of Record:
  - Regional Municipality of York – Stouffville Elevated Tank Refurbishment – 2018
  - Municipality of Chatham Kent – Dresden Composite Tank Refurbishment – 2018
  - Region of Niagara – Virgil Composite Elevated Tank Telecommunication Support – 2018
  - Others available upon request

Education

- Ryerson University, PhD, Structural engineering – 2013
- International Institute of Earthquake Engineering and Seismology, Tehran, Iran – Master of Applied Science, Earthquake Engineering and Seismology – 2006

Certifications and Professional Development

- Professional Engineers Ontario

Tyler Hindle

Site Manager – Steel Tank

Tyler Hindle has over 15 years' experience specific to fabrication and construction of steel storage tanks. He serves as Landmark's key representative on the jobsite during steel erection / welding phases. Tyler interacts with project and construction management, owners, engineers, inspectors and government agencies to ensure a quality product is produced according to specifications and in a timely and safe manner.

Professional Experience

- Landmark Structures Co., Burlington, ON (April 2014 – Present) – *Site Manager*
  - Layout, material handling, equipment cranes
  - API and AWWA steel tank erection and maintenance
  - Related fabricating skills; torch work, plasma torch cutting, arc gouge, grinding
  - GTAW, SAW SMAW, GMAW and FCAW welding and procedures
  - CWB and TSSA Welder Certifications

- Previous – 10 years fabrication / construction experience on welded steel storage tanks.

Representative Projects

- Site Superintendent – Steel Erection, Recent and Current Project Experience:
  - City of Brantford, Composite Elevated Tank – 2019
  - Correctional Services Canada, Warkworth Institution Composite Tank – 2019
  - Brant County Airport Elevated Tank – 2019
  - Town of Bradford, Bondhead Composite Elevated Tank – 2019
  - Elsipogtog First Nation, NB Composite Elevated Tank – 2018
  - Township of North Glengarry, Maxville Composite Tank – 2018
  - Town of Shediac, NB Composite Elevated Tank – 2017
  - Municipality of Niagara, Port Colborne Composite Tank – 2016
  - University of Guelph Thermal Storage Tank - 2015

Education

- Humber College, Graduate of Boilermaker Apprenticeship Program

Certifications and Professional Development

- Member of the International Brotherhood of Boilermakers Local 128

Rick DeJong

Site Manager - Civil

Rick DeJong has over 20 years heavy construction experience. He is an expert in Civil Construction and is Landmark's key representative on the jobsite for the following phases:

- Site development and preparation
- Excavation and Foundation Construction
- Concrete Pedestal Construction

Rick has a proven track record in delivering high quality projects in a safe and efficient manner. Rick continuously updates and interacts with project and construction management, owners, engineers, inspectors and government agencies.

Professional Experience

- Landmark Structures Co., (1994 – Present) – *Civil Superintendent*

Representative Projects

- Warkworth Composite Elevated Tank – Siteworks and Pedestal Construction – 2019
- Scugog Island Composite Elevated Tank – Foundation and Pedestal Construction – 2019
- Brantford Composite Elevated Tank – Foundation and Pedestal Construction - 2019
- Kettle & Stoney Point Bolted Elevated Tank – Pedestal Construction – 2018
- Ripley Composite Elevated Tank – Foundation and Pedestal Construction – 2018
- Shediac Composite Elevated Tank – Foundation and Pedestal Construction – 2018
- Elsipogtog Composite Elevated Tank – Pedestal Construction – 2018
- Maxville Composite Elevated Tank – Pedestal Construction – 2018

Certifications and Professional Developments

- ACI – CSA Concrete Field–Testing Technician
- 0 – 8 Ton Crane Operator
- WHIMIS
- St. John's Ambulance First Aid/CPR

Perry Compton

Site Manager - Coatings

Perry Compton is a construction professional with over **13 years' of hands-on experience focused on coatings and insulation** in the industrial, petrochemical and municipal construction fields. Perry is an expert in plural component equipment / application and has successfully completed many projects.

Perry is accountable to manage quality, safety and efficiency of all coating's phases. He has a proven work ethic, a solid sense of accountability and excellent leadership qualities.

Professional Experience

- Landmark Structures Co. (2014 – Present) – *General Superintendent - Coatings*
  - Specialist in water storage tank coatings, inspection, maintenance and repair services
  - Knowledge of industry standards including OHSA, AWWA, API, NACE, & SSPC
  - Supervising Owner and Subcontractor relationships from corporate wide viewpoint
- Dalco Services Inc., Bonnyville, AB (2006 – 2014) – *Field Operations and Branch Manager*

Representative Projects

- York Region, Stouffville CET – 2018
- City of Hamilton, Freelton CET – 2018
- Town of Wasaga Beach Spheroid – 2017
- York Region – Kleinburg CET – 2017
- City of Hamilton, Waterdown CET – 2017
- Region of Niagara, Port Colborne CET – 2017
- City of Hamilton Methane Sphere – 2017

Certifications and Professional Development

- NACE Level 2 Coating Inspector
- IOR – Work Management
- Level 2 First Aid
- CSTS; H2S
- OSSA Fall Arrest, Confined Space, Gas Detection
- Suspended Access Equipment & Working at Heights

Section C: Experience

Corporate Experience - Completed Contracts Summary

Landmark has designed and constructed over 1,000 Composite Elevated Tanks and is the leading design/build elevated tank specialist company in North America. This is a small sampling of completed projects that meet your specified criteria; several more references are available upon request.

Elevated Water Storage Tanks in Operation for a minimum Ten Years
(of equal or greater capacity to the Shelburne Elevated Tank)

Year	Capacity	Location	Owner Contact	Phone Number
2010	1.7 MIG	Queensville, ON	York Region - Shivan Narine	(905) 895-1231
2010	1.1 MIG	Georgetown, ON	Halton Region - Cam McDougall	(905) 825-6000
2009	1.8 MIG	Waterdown, ON	City of Hamilton Angela Doyle	(905) 564-2424
2008	0.9 MIG	Bayfield, ON	Mun. of Bluewater - Jeff Newel	(519) 236-4351
2008	2.0 MIG	Caledon, ON	Region of Peel - William Turner	(905) 791-7800
2008	1.0 MIG	Kapuskasing, ON	Town of Kapuskasing - Eric Cote	(705) 335-2341
2008	1.2 MIG	Moncton, NB	City of Moncton - Ensor Nicholson	(506) 853-3333
2007	1.7 MIG	N. Richmond Hill, ON	York Region - Shivan Narine	(905) 895-1231
2007	1.2 MIG	East Woodstock, ON	Oxford County - Paul Eybergen	(519) 539-0015
2006	1.4 MIG	Tilbury, ON	Chatham-Kent PUC - Rob Bernardi	(519) 360-1998
2006	1.0 MIG	Riverview, NB	Town of Riverview - Mike Ouellet	(506) 387-2020
2006	1.2 MIG	Baden, ON	Region of Waterloo - Winnie Chan	(519) 575-4400
2005	1.4 MIG	Stouffville, ON	York Region - Shivan Narine	(905) 895-1231
2005	0.8 MIG	Saint John, NB	City of Saint John - Dean Price	(506) 658-4770
2004	1.5 MIG	Kingston, ON	Utilities Kingston - Chris Phippen	(613) 546-1181
2004	1.0 MIG	Moncton, NB	City of Moncton - Ensor Nicholson	(506) 853-3333

Please note that all tanks listed above are the same Tank design and were constructed using the same methods and forming system as outlined in the RFP.

Section C: Experience

C-2: Experience – Design Engineer: Mr. Wes Pogorzelski, P. Eng.

Wes Pogorzelski is the most experienced elevated tank designer in Canada. The following represents a small sample of projects that he has been involved in as the person responsible for the structural design. Additional projects are available upon request.

Year	Capacity	Location	Owner	Consultant
2020	0.638 MIG	Markdale, ON	Municipality of Grey Highlands	B.M. Ross & Assoc.
2019	0367 MIG	Shannonville, ON	Mohawks of the Bay of Quinte	First Nations Engineering
2019	0.242 MIG	Scugog Island, ON	Mississauga's of S.I.F.N	S. Burnett & Associates
2018	0.5 MIG	Brant County, ON	County of Brant	First Nations Engineering
2018	1.5 MIG	Bondhead, ON	Town of Bradford	WSP
2018	0.3 MIG	Maxville, ON	Glengary RWSS	EVB Engineering
2018	1.3 MIG	Brantford, ON	City of Brantford	GHD
2018	0.4 MIG	Warkworth, ON	Correctional Services	CIMA+
2018	0.4 MIG	Kettle Stony Point, ON	Chippewas of KSP	exp Services
2017	0.3 MIG	Elsipogtog, NB	Elsipogtog First Nation	exp Services
2017	0.6 MIG	Shediac, NB	Town of Shediac	exp Services
2017	0.3 MIG	Ripley, ON	Township of Huron Kinloss	B.M. Ross & Assoc.
2016	0.2 MIG	Bonavista, NL	Municipality of Edmunston	exp Services
2016	1.3 MIG	Havelock, ON	Township of Havelock	R.V. Anderson
2015	1.3 MIG	Waterdown, ON	City of Hamilton	J&M Structural Design
2015	1.2 MIG	Port Colborne, ON	Municipality of Niagara	R.J. Burnside & Assoc.
2015	0.2 MIG	Mitchell, ON	Municipality of West Perth	B.M. Ross & Assoc.
2014	1.4 MIG	Aurora, ON	Region of York	GHD
2014	0.4 MIG	Paris, ON	County of Brant	R.V. Anderson & Assoc.
2013	1.2 MIG	Lakeshore, ON	Town of Lakeshore	Stantec Consulting Ltd.
2012	1.7 MIG	Queensville, ON	Region of York	GHD
2012	1.6 MIG	Waterloo, ON	Region of Waterloo	Genivar Ontario Inc.
2012	1.5 MIG	Kingston, ON	Utilities Kingston	J.L. Richards & Assoc.
2011	0.6 MIG	Lakefield, ON	Twp. Smith-Lakefield	D.M. Wills Assoc. Ltd.
2011	1.3 MIG	Keswick, ON	Region of York	TMIG
2011	0.5 MIG	Amherstburg, ON	Town of Amherstburg	Stantec Consulting Ltd.
2010	0.3 MIG	Thorndale, ON	Municipality of Thames Ctr.	AECOM Canada Ltd.
2010	0.8 MIG	Fergus, ON	Twn. of Centre Wellington	Triton Eng. Services Ltd.
2010	0.4 MIG	Nobleton, ON	Region of York	GHD
2010	0.7 MIG	Alexandria,ON	Twn. of North Glengarry	Greer-Galloway Group
2010	0.8 MIG	Glencoe, ON	Mun. of SW Middlesex	Thompson Rosemount
2010	0.2 MIG	Rockland, ON	City of Clarence-Rockland	CH2M Hill
2010	1.5 MIG	Kingsville, ON	Ontario Clean Water Agency	AECOM Canada Ltd.

Section C: Experience

C-3: Experience – Project Manager: Mr. Paul DiPelino

Paul DiPelino is the most experienced Project Manager in Canada that specializes in elevated tanks. The following represents a sample of projects he has been involved in. Additional projects are available upon request.

Year	Location	Owner	Project Description
2020	Markdale, ON	Municipality of Grey Highlands	New Bolted Elevated Tank
2019	Shannonville, ON	Mohawks of the Bay of Quinte	New Bolted Elevated Tank
2019	Scugog Island, ON	Mississauga's of S.I.F.N	New Composite Elevated Tank
2018	Brantford, ON	City of Brantford	New Composite Elevated Tank
2018	Warkworth, ON	Correctional Services	New Composite Elevated Tank
2018	Freelton, ON	City of Hamilton	Elevated Water Tank Upgrades
2017	Maxville, ON	Township of North Glengarry	New Composite Elevated Tank
2017	Hamilton, ON	City of Hamilton	Methane Sphere Upgrades
2017	Stouffville, ON	Regional Municipality of York	Elevated Water Tank Upgrades
2017	Newmarket, ON	Regional Municipality of York	Elevated Water Tank Upgrades
2015	Port Colborne, ON	Regional Municipality of Niagara	New Composite Elevated Tank
2015	Waterdown, ON	City of Hamilton	New Composite Elevated Tank
2015	Mitchell, ON	Municipality of West Perth	New Composite Elevated Tank
2014	Aurora, ON	Regional Municipality of York	New Composite Elevated Tank
2014	Paris, ON	County of Brant	New Composite Elevated Tank
2014	Georgina, ON	Regional Municipality of York	Elevated Water Tank Recoating
2014	Nobleton, ON	Regional Municipality of York	Elevated Water Tank Recoating
2013	Lakeshore, ON	Town of Lakeshore	New Composite Elevated Tank
2012	Queensville, ON	Regional Municipality of York	New Composite Elevated Tank
2012	Waterloo, ON	Regional Municipality of Waterloo	New Composite Elevated Tank
2012	Kingston, ON	Utilities Kingston	New Composite Elevated Tank
2011	Lakefield, ON	Township of Lakefield	New Composite Elevated Tank
2011	Keswick, ON	Regional Municipality of York	Elevated Water Tank Upgrades
2010	King City, ON	Regional Municipality of York	New Composite Elevated Tank
2010	Georgetown, ON	Region of Halton	New Composite Elevated Tank
2010	Minden, ON	Township of Minden Hills	New Composite Elevated Tank
2010	Kingsville, ON	Ontario Clean Water Agency	New Composite Elevated Tank
2010	Clarence, ON	City of Clarence-Rockland	New Composite Elevated Tank
2010	Glencoe, ON	Municipality of Southwest Middlesex	New Composite Elevated Tank
2010	Alexandria, ON	Township of North Glengarry	New Composite Elevated Tank

PROCESS/CONTENTS

Landmark 1.0 MG composite tank

Please note that the following process outline is representative of most projects, regardless of size and capacity. However, it does not necessary reflect the site and specifications of this proposal.

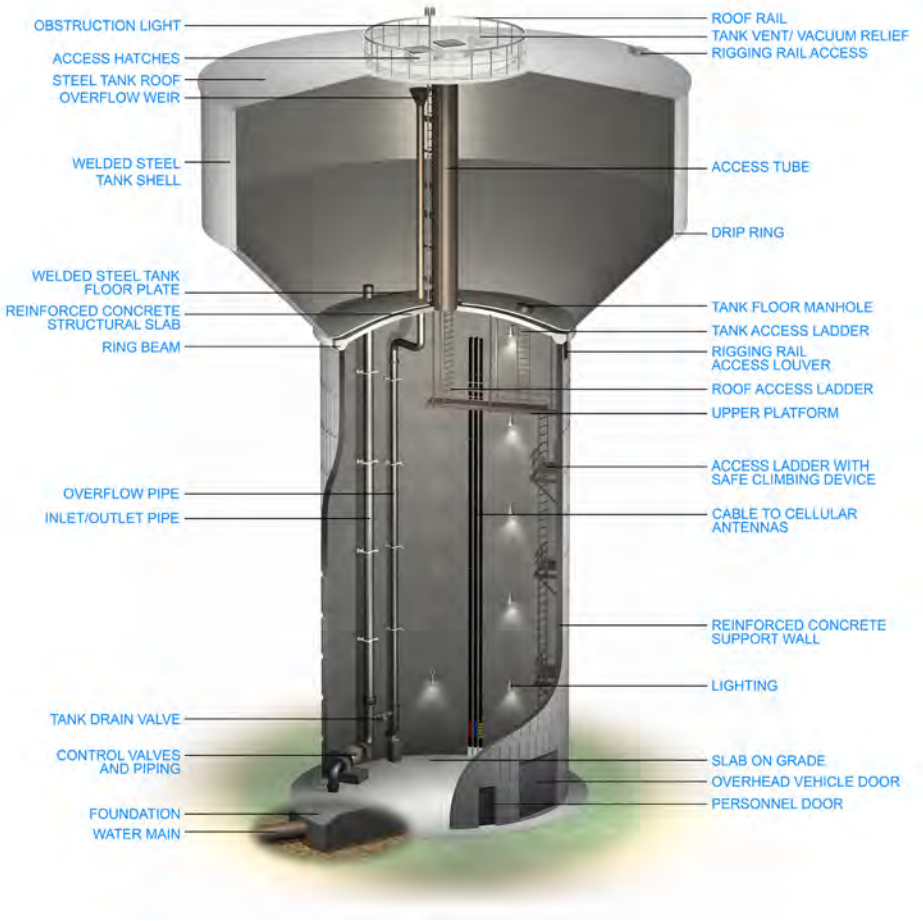
Technical Approach/Work Plan

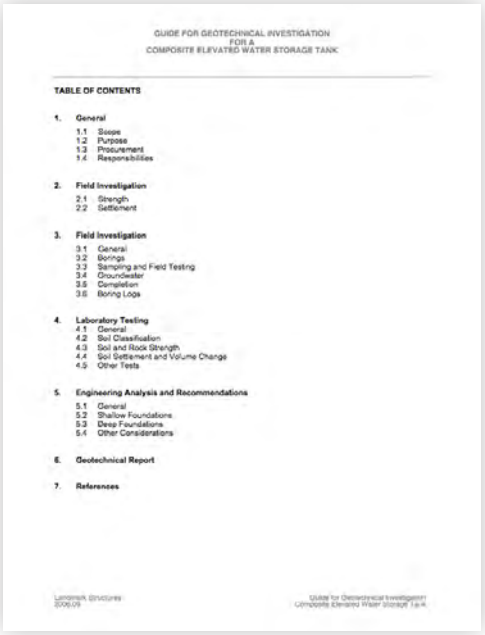
Landmark originated the composite elevated tank, and introduced the design to the U.S. marketplace in 1985. Since then it has become the established standard for large capacity water storage. It offers distinct advantages over all-steel configurations, as the use of materials in their optimum applications—a welded steel tank supported by a reinforced concrete pedestal—provides low capital cost and the lowest maintenance cost. Its clean design also creates superior aesthetics, a critical factor for highly visible structures that should enhance their surroundings.

Landmark self-performs the majority of its work and employs specific processes to achieve a high standard of execution on every job. This begins with a collaborative approach to project management and extends to the details of delivering architectural quality concrete pedestals and QP-1 certified specialty coatings application. Following is a condensed outline of the phases.

LANDMARK
Elevating Expectations

Major Elements of the Landmark Composite Elevated Tank





GUIDE FOR GEOTECHNICAL INVESTIGATION
FOR A
COMPOSITE ELEVATED WATER STORAGE TANK

TABLE OF CONTENTS

Geotechnical investigation

Once a suitable site with the necessary clearances and access has been determined, the project owner or engineer orders a geotechnical investigation from a qualified geotechnical engineer familiar with local soil conditions. The resulting report will suggest the most appropriate foundation type and design, based on factors specific to composite elevated tanks, including pedestal height and diameter, structure and water weight, plus wind and seismic loads. Landmark typically recommends and provides the foundation design as part of its role, with seismic expertise resident within its internal engineering group. With hundreds of projects completed in locations across the country, and close collaboration with all types of geotechnical engineering firms, Landmark applies significant specialized experience to this first stage in the process.

Foundation layout

Foundation rebar and piping

Mat-type foundation

Driven steel piles

Concrete piles

Foundation

Following engineering, submittals and mobilization, site preparation and excavation for the foundation begins. Based on the recommendation, this could involve a mat-type or pile-type foundation, the latter either driven steel or poured concrete as depicted. While site prep and excavation are often subcontracted to local crews with the required equipment, Landmark provides the first of its specialized crews for actual foundation construction, including layout, piping, forms and reinforcement, as well as coordination with the local concrete provider.

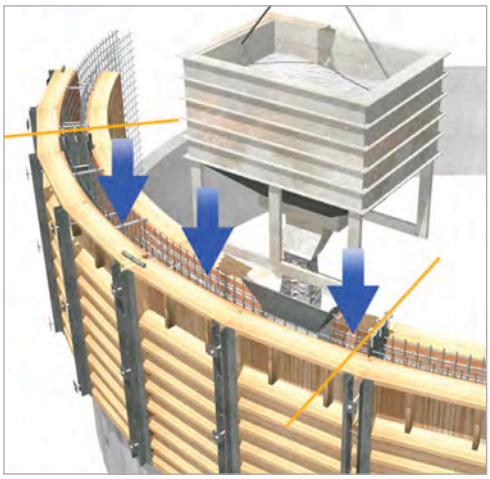
Rebar for pile cap

Rebar for pile cap

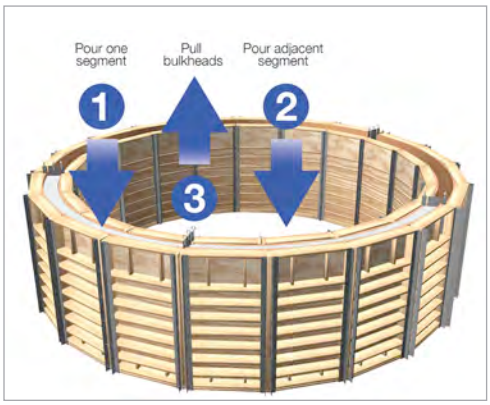
Pile cap

Seven-foot form system

One truckload per form segment



Vertical bulkheads define each segment



Segmented pour process

Pedestal

The pedestal is the most unique element of the composite elevated tank, and the subject of most of its refinements. It not only takes full advantage of concrete's load carrying efficiency in compression for the tank and its contents, but also provides dry, protected interior space for equipment and storage, as well as an attractive maintenance-free exterior surface. The pedestal is constructed in levels or "lifts" approximately seven feet in height, with the number determined by pedestal specifications.

Landmark's standard for all projects is architectural concrete, defined by the American Concrete Institute as having "uniform color, an absence of defects, and aligned and even surfaces." It requires the use of a robust form system in a process that can be summarized as *the rapid vertical placement of one truckload of concrete in to each section of vertically segmented wall forms*. By placing each segment in its entirety, the vertical pour rate is accelerated, eliminating the potential for unsightly pour lines and color variations. In this manner, Landmark provides the added benefit of an architectural standard beyond the well-established structural standard for each project, by virtue of its pedestal construction process.

For each lift, vertical bulkheads are placed inside the wall forms at approx. 25-foot intervals, based on the number of truckloads of concrete required. The bulkheads' three-piece design allows continuous reinforcement to pass through, around the entire wall. When concrete is poured into two adjacent segments, the vertical bulkhead between them is removed, and the concrete is vibrated for consistent surface quality. This process continues on a daily form strip, form set, and concrete placement cycle, until the pedestal wall is finished. Forms are then positioned for the pouring of the concrete dome, which completes the pedestal and provides a strong structural base for the tank.

Process continues for each lift

Tank erect/pre-hoist

In another departure from competitors' processes, Landmark erects the steel tank at grade before raising it into position, rather than building it in position above the pedestal. This procedure is safer, and enables better control of tolerances and quality. One of two methods may be used for tank construction, depending on size—a jig positioned at the base of the pedestal, or a cable and hoisting system for the mill-primed steel panels, which are then welded in place. Once the lower cone, shell, and upper knuckle (if applicable) are completed, the steel tank is ready for surface prep, priming, and coating.

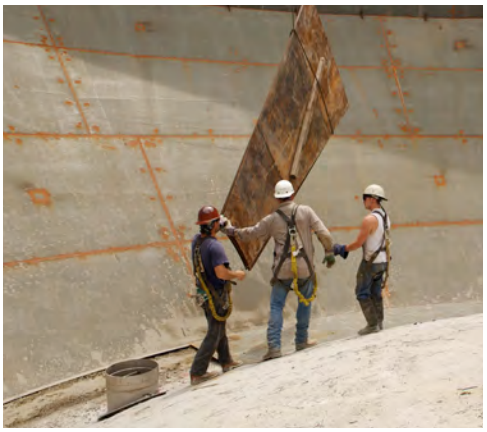
Coatings/pre-hoist

The coatings phase also occurs on the ground, managed according to the requirements of the Society for Protective Coatings' (SSIP) QP-1 standard. Landmark is only one of about 230 companies worldwide to earn this certification, which recognizes management procedures, technical capabilities, quality control, safety procedures and record keeping. In addition to the ability to apply a wide variety of coating types, Landmark can also execute custom logos and graphics that utilize the composite tank's large unobstructed surface areas. Completing the coating phase on the ground also helps control waste and maintains air quality, typically eliminating the need for containment. During this phase, the tank/roof access tube is also positioned, prior to the tank hoist.

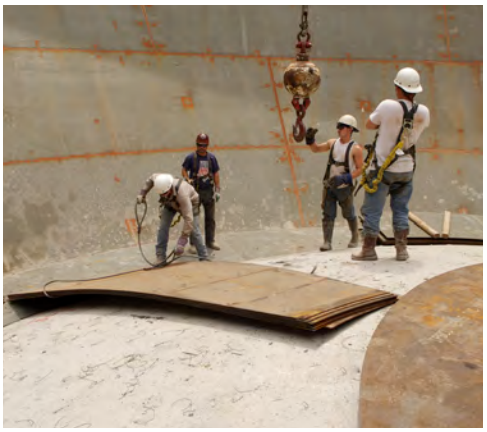
Hoist

Upon completion of exterior coatings, the tank is hoisted with a system of hydraulic jacks and cables, usually a 3-5 hour operation once preparations are completed.

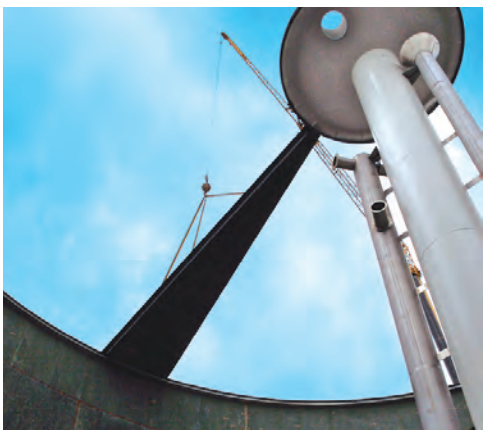
Pouring ring beam



Tank floor plate over pedestal dome



Tank floor plate over pedestal dome

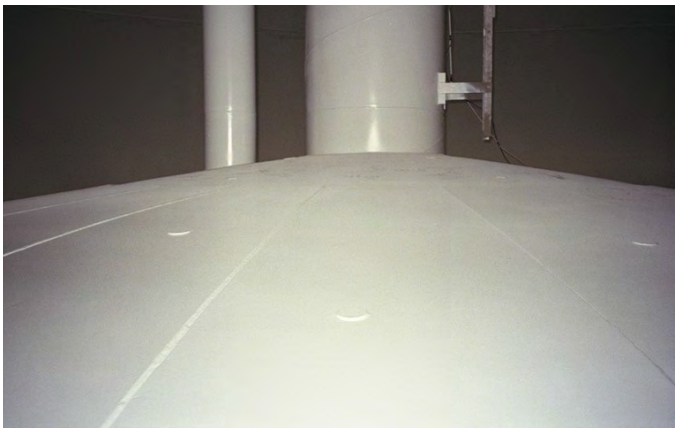


Placing roof panels

Tank erect & coatings/post-hoist

Once in place above the pedestal, the tank is permanently secured by pouring a reinforced concrete ring beam. Next, steel floor plate is grouted and welded in place, serving both as a tank floor and moisture barrier over the concrete dome.

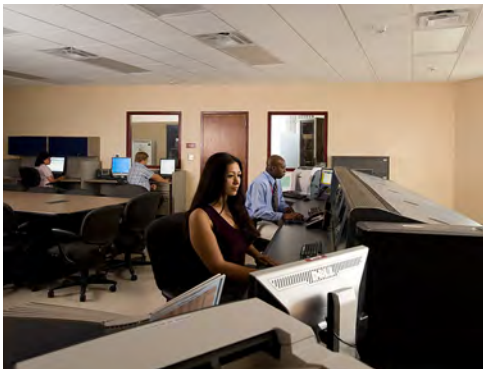
The roof panels are then hoisted into position and welded in place, prior to the application of interior tank coatings, and then application of exterior roof coatings. The flat structural roof provides easy access to roof-mounted appurtenances, which are installed at this stage as well.



Coated tank interior

Tank roof with hatches, vents, and rail

Example of pedestal base finish-out



Example of pedestal floor finish-out

Example of pedestal control room

Electrical/mechanical/site work

As the tank nears completion, electrical work proceeds—typically utilizing a local subcontractor—which includes controls, lighting, cellular antenna systems if specified, etc. This stage may also involve installation and completion of water pumping and treatment systems, valves and controls, typically handled by Landmark depending on specifications…as well as the completion of any interior finish-out in the pedestal base and/or on structural floors that may have been specified. Exterior site work includes decorative or security fencing, irrigation systems, and final landscaping as required.

Commission

At the final commissioning stage, Landmark technicians test all systems, disinfect the tank and address all checklist items before turning the tank over to the owner or operating entity.

Fencing and landscaping per specifications

LANDMARK
Elevating Expectations

Section D: Project Execution / Methodology

D-2: Quality Plan - Concrete Support Structure Construction

Scope

This document describes quality assurance and quality control measures with respect to construction procedures, concrete supply and operations, formwork removal, and general compliance with project specifications.

Responsibilities

Landmark Site Superintendent is responsible for ensuring this Quality Plan is implemented and properly followed.

Landmark Site Superintendent shall designate a competent person(s) to perform construction control measurements, tests, and observations.

Record Forms

Measurements and data shall be recorded in the project field book, dated and initialed, and transferred to record forms.

Form No.	Title
QA_PED1	Strength Calibration Testing - Procedure
QA_PED2	Strength Calibration Testing – Maturity Factor
QA_PED3	Concrete Monitoring – Placement, Testing and Form Removal
QA_PED4	Dimensional Control - Pedestal

Foundation

Shallow Foundation

Implement the following controls prior to and during construction operations:

- Determine elevations according to an established benchmark.
- Verify elevation and dimensions are in accordance with IFC (Issued for Construction) drawings.
- IFC drawings and field as-formed dimensions checked to verify calculated concrete quantity.
- Verify placement of reinforcement, embedment devices and block outs are in accordance with IFC drawings prior to concrete placement.
- See Support Wall for concrete controls.

Support Wall

Support Wall – Form System and Dimensional Control

Implement the following controls prior to and during support wall forming operations:

- Wall Thickness - Prior to concrete placement of the first lift, confirm wall thickness is in accordance with IFC drawings and specification tolerance.
- Radial Position of Forms – Confirm radial dimensions at the exterior form face are in accordance with IFC drawings and specification tolerance. Record prior to concrete placement.
- Vertical Position of Forms – Confirm elevation at the top edge of the form are in accordance with IFC drawings and specification tolerance.
- Wall Plumbness – Check vertical plumb using a transit set up a distance from the pedestal at two points 90 degrees apart.
- Placement of Reinforcement, Embedments and Blockouts – Provide 2 independent checks of reinforcement placement, embeds, and blockouts.
- Temporary bulkheads – Provide temporary steel plates and angles are at strategic points in the wall to allow for individual batch consistency throughout wall height.
- As-Built Radial Dimensions – Following form removal, record as-built radial dimensions.
- Radial Dimension Adjustment - Radial dimension adjustment, in any individual lift, shall not exceed 6 mm from the previous lift, at any given location, without authorization from Landmark management.
- Out-of-Tolerance - Any deviation from the theoretical radius exceeding 12 mm in any one lift is reported immediately and no further concrete placements shall proceed until authorized by Landmark Operations Management.

Support Wall – Concrete Wall Placement

Implement the following controls prior to and during support wall concrete placement operations:

- Batch Plant Capability - Calculate total yards required, size of each batch/load, and visit the plant during batching to confirm supplier capabilities regarding batch to batch consistency.
- Batch Tickets – Verify batch tickets for correct mix design identification and batch weights (if available) prior to placing concrete.
- Total Water Content per Yard – Prior to placing the concrete, total water per volume of each load is calculated using batch weights and/or ‘hold-out water’ indicated on the delivery ticket. This maintains consistency between batches. Contact Landmark Operations Management if variance is out of tolerance.

- Observation and Performance of Concrete Testing – Perform tests for slump, concrete and air temperature, air-entrained content, and unit weight by qualified personnel per CSA A 23.2.19. In case discrepancies are observed in test methods and/or results, re-tests may be performed.
- Cast cylinders per CSA A23.2.19 and as required by project specification.
- Reporting – Record data regarding concrete placement. See Record Form QA_Ped3

Support Wall – Concrete Strength Determination

Independent 3rd party testing shall be used to evaluate concrete strength. Landmark may employ additional methods to establish in-situ strength of concrete in the support wall at ages prior to 7 days. Any of the following methods may be used by Landmark to establish in-situ concrete strength:

- Cast cylinders per CSA A23.2.19 and as required by project specification. In the absence of direction from the specification or Client, Landmark will direct the testing lab as follows:
  - Although check-tests may be made from the first portion of the load, a sample shall be taken from the middle portion of the load to cast cylinders.
  - Cast 8 cylinders per sample.
- Testing schedule for strength assessment in accordance with CSA A23.2.19 Test Method for Compressive Strength of Cylindrical Concrete Specimens:
  - 2 cylinders – test 1-3 days
  - 2 cylinders – test 7 days
  - 2 cylinders – test 28 days
  - 2 cylinders – spare
- CSA A23.2.19 Standard Practice for Estimating Concrete Strength by the Maturity Method

  The following controls are implemented during construction operations using the maturity method:
  - Mix Design Verification – Perform a Strength Calibration Procedure. Record results. Generate a strength-curve graph prior to implementing consecutive-day concrete placements on the support pedestal.
  - Thermocouple Probes – Install thermocouple probes in the wall prior to initial set of the concrete.
  - Correlate and Verify Early Age Strength - The calculated maturity factor (TTF) or PSI estimation provided by the meter demonstrates acceptable concrete strength prior to form removal. The maturity factor or estimated PSI is recorded on the Concrete Control form.
  - Strength Verification Using Strength Curve - Verify the reported maturity factor (TTF) or estimated compressive strength meets the form removal criteria.
  - Recording Data Ongoing – The maturity meter remains in-situ and records throughout the form jump process – the last form to be jumped is the interior form where the thermocouples

are positioned. The maturity factor (TTF) or estimated strength is recorded prior to jumping the last interior form.

- Report any significant anomalies in maturity results. Suspend concrete placements until authorized by Landmark Operations Management.

Support Wall – Early Age Form Removal Criteria

Criteria for form removal shall be established by one of the following methods:

- Use of early-age strength determination methods as documented and outlined in this quality plan. See Record Form QA_Ped2
- Job-specific correspondence written and sealed by the Landmark Engineer of Record.
- Form removal criteria in accordance with the project specifications or contract.

Structural Tank Floor Slab

Dome Slab – Form System and Dimensional Control

Implement the following controls prior to and during construction operations:

- Forms – Verify and record elevation and radial dimensions are in accordance with IFC drawings and specification tolerance.
- Dome Slab Thickness - Verifies the dome inserts and screed will produce the specified dome thickness.
- Reporting – Record data regarding concrete placement and testing on the Concrete Control form. See Record Form QA_Ped3

Protection and Curing of Concrete

Curing

Curing compound can significantly affect aesthetics and, therefore is not used on exposed vertical surfaces designated as architectural concrete unless directed by client and approved by Landmark Operations Management.

- Provide membrane curing compound, wet burlap, plastic sheeting, or other practical curing methods on exposed non-architectural concrete surfaces such as foundation and dome surface.

Cold Weather Concreting

In the event of “cold weather concreting” conditions, incorporate the recommendations of CSA A23.2.19 and the following as required:

- Insulating Blankets – provide construction-grade insulated blankets to protect concrete surfaces from freezing temperatures and maintain the heat produced by the concrete hydration process.

Remove blankets in a systematic manner to regulate the decrease in concrete temperature over time.

- Insulated Wall Forms – Provide closed-cell insulating foam securely attached to the form exterior.
- Supplemental Heat Sources – Provide indirect-fired or high-wattage electrical equipment placed near the concrete to maintain temporary heating of the forms or concrete.
- Combined Protection – Insulated forms, insulated blankets, and supplemental heat shall be combined for use in severe cold weather conditions.
- Concrete Placement Temperature – Concrete temperature at the point of delivery shall be per CSA A23.1.19 Table 14 (10 C minimum) unless supplemental heat is used. If supplemental heat is used for at least 24 hrs after placement, then concrete temperature at placement shall be minimum 4 C.

Hot Weather Concreting

The following controls are implemented prior to and during construction operations in hot weather conditions:

- Monitor Total Water Content – monitor and controls total water content of batched concrete mix design to insure the maximum specified water- cement ratio is not exceeded.
- Concrete Placement Temperature – Place concrete at temperatures conducive in accordance with CSA A23.1.19 Table 14, which notes a maximum concrete temperature at placement of 30 C.
- Control Evaporation - When conditions create a potential for excessive bleed-water evaporation, provide additional controls. Example: cover the top of the wall with a light-colored poly or provide an approved liquid evaporation retardant immediately following concrete placement and finishing operations.

Section D: Project Execution / Methodology

D-3: Quality Plan - Steel Tank Construction

Scope

This document describes Landmark quality assurance measures for steel tank construction.

Responsibilities

Landmark Superintendent designates competent persons to perform construction control measurements, tests, and observations.

Record Forms

Measurements and data of as-built measurements and construction control data are recorded and submitted to the Owner on completion of construction.

Form No.	Title
QA_STL1	Elevation Control – Cone & Shell
QA_STL2	Cone Survey – Dimensional Tolerances
QA_STL3	Welder & Radiograph Location – Cone & Shell
QA_STL4	Shell Survey – Dimensional Tolerances
QA_STL5	Concrete Control
QA_STL6	Welder Location – Roof & Floor Liner

Tank – Cone

The 45-degree cone is made up of multiple courses with each course having multiple segments. The segments are placed in fixtures and fit in preparation for welding.

Implement the following control procedures during cone construction:

- Fit each course and adjust weld gap and plate alignment within tolerance. Record elevations. Contact Landmark Operations Management if elevation tolerance is exceeded. Record data in form QA_STL1.
- After cone welding is complete, perform radial line survey of interior surface at 30-degree intervals. Take measurements every 300 mm along radial. Tolerance shall not exceed AWWA D107 requirements. Record data in form QA_STL2.
- Complete welder location log. Visually inspect all welds for standards compliance and initial by the competent person.
- Perform radiograph inspection per AWWA D107 by a qualified third-party inspection company. Record radiograph locations and inspection results in form QA_STL3.

Tank – Shell (Vertical Wall)

Fit lower shell plate to the 45-degree cone. Prior to welding check for elevation and plumbness tolerance. Use braces to maintain tolerance during welding. Weld vertical and horizontal seams in accordance with Landmark welding procedures.

Fit and adjust subsequent shell plate rings to the top of the previous ring to ensure minimal plumbness deviation from the previous shell. Weld vertical and horizontal seams in accordance with Landmark welding procedures.

Upon completion of the final shell course, fit and weld the exterior roof landing ring using a template to maintain proper angle and radius.

Quality control procedures during shell construction:

- Record elevations after lower shell is adjusted for plumb. A maximum elevation variance of ± should be achieved. Contact Landmark Operations Management if the elevation exceeds ± JA". Record data in form QA_STL1.
- Check shell seams for plumbness and local deviations per API 650 Section 5.5. Record data in form QA_STL4
- Complete welder location log. Visually inspect all welds for standards compliance and initial by the competent person.
- Perform radiograph inspection per AWWA D107 by a qualified third-party inspection company. Record radiograph locations and inspection results in form QA_STL3.

Tank Hoist

Hoist tank to the top of the concrete support pedestal using Landmark's proprietary equipment and procedures.

- Set tank on steel shims at the proper elevation.
- Record elevations at 90-degree intervals prior to and after hoist.

Concrete Ring Beam

Quality control procedures during concrete ring beam placement:

- Check each truck ticket to verify correct mix design prior to placing concrete.
- Test for slump and air content and record the results prior to placing concrete or molding cylinders. Record data in form QA_STL5.
- Sample and mold cylinders from the first truck, and additionally at the frequency required by specifications. Perform additional testing at the Superintendent’s discretion to insure consistent quality.

Dome Floor Plate & Grout

Steel floor liner plates are set and fit after the ring beam is complete. Each plate is set on 1" steel shims to allow a proper void for subsequent grout installation. Plates are seal welded and anchored to the concrete dome.

Quality control procedures during floor plate installation:

- Complete welder location log. Visually inspect all welds for standards compliance and initial by the competent person.
- Record in Form QA_STL6.
- Tested all welds for leaks using air test procedure on drawing 507-A. Repair and re-test repair locations.

Tank Roof Plate

Implement the following control procedures during roof plate installation:

- Set and fit roof plates to provide proper orientation of the access hatch and other penetrations.
- Lap radials nominally 1 1/2" and provide correction on each sheet.
- Visually inspect and initial welds by the competent person.

Section D: Project Execution / Methodology

D-4: Quality Plan – Protective Coatings

1.0 Scope

This specification defines general surface preparation and coating process control and quality assurance requirements for surface preparation and coating activities.

Project specific requirements are contained in the Landmark Protective Coatings Schedule as well as the Project Specification prepared by CIMA+.

2.0 Scope

The focus of this quality assurance document is for the control of the surface preparation and coating application process. Implementation is by jobsite supervision and coatings management.

3.0 Responsibility and Authority

3.1 The coatings manager's duties, responsibilities and authority include but are not limited to the following:

3.1.1 Produce a Landmark Protective Coatings Schedule that implements the requirements of the customer's specifications and the paint manufacturer's requirements

3.1.2 Submit procedures, sample data, inspection reports, daily application reports and other submittals required for contract requirements.

3.1.3 Implement process controls and documentation as required for contract compliance.

3.2 The Coating superintendent's duties, responsibilities and authority include but are not limited to the following:

3.2.1 Implement the specific requirements of this document in coordination with the customer's specifications and the paint manufacturer's requirements.

3.2.2 Verification of coating materials for compliance with applicable specifications.

3.2.3 The coatings superintendent shall have the authority to direct removal and replacement of any defective work.

4.0 Reference and Standards

The work undertaken and products provided in this Specification shall conform in all respects to the latest published revisions of the following standards

4.1 AWWA – American Water Works Association
AWWA D102 Standard – Coating Steel Water Storage Tanks
AWWA D107 Standard – Composite Elevated Tanks for Water Storage

AWWA C652 Standard – Disinfection of Water Storage Facilities

4.2 SSPC – The Society for Protective Coatings

SSPC AB2 – Cleanliness of Recycled Ferrous Metallic Abrasives
SSPC – Guide 6 – Guide for Containing Surface Preparation Debris Generated During Paint Removal Operations
SSPC-PA Guide 11 – Protecting Edges, Crevices Irregular Steel Surfaces by Stripe Coating
SSPC Guide 12 – Illumination of Painting Projects
SSPC PA 1, Shop, Field, and Maintenance Painting of Steel.
SSPC PA 2, Procedure for Determining Conformance to Dry Coating Thickness Requirements.
SSPC PA 3, A Guide to Safety in Paint Application.
SSPC-SP1 – Solvent Cleaning
SSPC-SP2 – Hand Tool Cleaning
SSPC-SP3 – Power Tool Cleaning
SSPC SP 5/NACE No. 1, Joint Surface Preparation Standard: White Metal Blast Cleaning.
SSPC SP 6/NACE No. 3, Joint Surface Preparation Standard: Commercial Blast Cleaning.
SSPC SP 7 / NACE No. 4, Brush-Off Blast Cleaning
SSPC SP 10/NACE No. 2, Joint Surface Preparation Standard: Near-White Metal Blast Cleaning.
SSPC-SP11 – Power Tool Cleaning to Bare Metal
SSPC TR3 / NACE 6A192. Dehumidification and Temperature Control During Surface Preparation, Application, and Curing for Coatings / Linings of Steel Tanks, Vessels, and Other Enclosed Spaces.
Steel Structures Painting Manual Vol. 2 – Systems and Specifications published by SSPC – Steel Structures Painting Council, 1982.

4.3 ASTM – American Society for Testing and Materials

ASTM B117 – Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM D870 - Standard Practice for Testing Water Resistance of Coatings Using Water Immersion
ASTM D1653 – Standard Test Methods for Water Vapor Transmission of Organic Coating Films
ASTM D2200 – Standard Practice for Use of Pictorial Surface Preparation Standards and Guides for Painting Steel Surfaces
ASTM D3359 – Standard Test Method for Rating Adhesion by Tape Test
ASTM D4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM D4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
ASTM D4417 – Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
ASTM D4541 - Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
ASTM D4585/D4585M - Standard practice for Testing Water Resistance of Coatings Using Controlled Condensation
ASTM D4587 - Standard Practice for Fluorescent UV-Condensation Exposures of Paint Related Coatings

ASTM E337 – Standard Test Method for Measuring Humidity with a Psychrometer
ASTM G95 - Standard Test Method for Cathodic Disbondment Test of Pipeline Coatings (Attached Cell Method)

4.4 NACE – National Association of Corrosion Engineers

NACE SP0178 - Design, Fabrication, and Surface Finish Practices for Tanks and Vessels to Be Lined for Immersion Service.
NACE SP0188 - Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.
NACE SP0287 – Field Measurement of Surface Profile of Abrasive Blast Cleaned Surfaces Using a Replica Tape
NACE 6A192 / SSPC-TR – Dehumidification and Temperature Control During Surface Preparation, Application and Curing for Coatings/Linings of Steel Tanks, Vessels and Other Enclosed Spaces.
SSPC / NACE Joint Standards as noted above

4.5 ANSI / NSF – American National Standards institute / NSF International

ANSI / NSF 61 – Drinking Water System Components – Health Effects
ANSI Z117.1 – Safety Requirements for Confined Spaces

4.6 Other

Occupational Safety and Health Act, 1990 and Regulations for Construction Projects.
Environmental Protection Act, R.S.O. 1990 c E. 19, Regulations with regard to abrasive blast cleaning and painting procedures

5.0 Materials

5.1 Coatings

5.1.1 All coating materials shall be handled per manufacturer's instructions and should be stored in original, unopened containers in well ventilated areas protected from damage and extreme temperatures.
5.1.2 All coating containers shall bear legible product designation, batch number and date of manufacture.
5.1.3 Coating material shall be used within the manufacturer's recommended pot life.
5.1.4 Containers of coatings or components shall not be opened unless for immediate use.

5.2 Abrasive

5.2.1 Abrasives for blast cleaning shall be clean and dry and shall be free of oil or contaminants. The particle size shall be identified by the product number or generic formulation.

5.3 Thinner, Solvents and Cleaners

5.3.1 Thinners, solvents and cleaners shall be as recommended by the coating material manufacturer and shall be identified by the product number or generic formulation.

6.0 Equipment

6.1 Application equipment shall be per the coatings manufacturer's recommendation and shall be suitable to apply the coatings as specified.

6.2 Equipment air supply shall have moisture traps and filters to remove water, oil and contaminants.

6.3 Painting equipment shall be selected to provide effective application and acceptable finish for the material being coated.

The following Major Construction Equipment is intended for use during the surface preparation and coating application of the Water Tower:

- 900 CFM Compressors
- Steel Grit Recycling Unit
- Bulk Abrasive Blast Pot
- Plural Component Spray Pump
- Single Leg Spray Pump
- 80 - 120 ft Aerial Lifts
- Dehumidification Equipment
- Diesel Generators
- Diesel Fuel Tank (500 gal)
- 8,000 lbs. Telescoping Fork Lift
- 5,000 psi Power Washer
- 60,000 CFM Dust Collector
- Rigging and Swing stage components

Coating application equipment is in accordance with the coatings manufacturer's recommendation and is suitable to apply the coatings specified. Regulators and fail-safe valves are maintained in good working order and pressure regulator gauges are readable at all times.

Compressed air equipment hoses shall be properly sized. Moisture traps and filters are installed and in good working order to remove water, oil and contaminants.

Abrasive blasting equipment is properly rated, and all couplings are properly connected, pinned with proper whip checks in place at all times. Prior to use, Dead Man Switches are verified as fully functional and not "chocked" or taped in an open position.

Work access equipment such as aerial lifts and swing stages are inspected prior to use each day by Landmark's designated competent worker(s). Personal Protective Equipment such as harnesses, lanyards, rope grabs, life lines, etc. is not used in any manner other than intended by the equipment manufacturer and it is properly stored when not in use.

Inspection equipment is properly maintained, and calibration verified before each use in accordance with the manufacturer's instruction.

7.0 Ambient Conditions

Surface preparation (Abrasive Blasting) shall not be performed if any of the following conditions exist:

- Relative humidity is greater than the manufacturer's published limit,
- Moisture is present on the surface of the item to be blasted
- Abrasive is contaminated or wet
- Equipment has defects that affect safety or quality in any way

Coatings shall not be applied if any of the following conditions exist:

- Surface temperature of the metal is above or below the manufacturer's limit
- Moisture is present on the surface of the item to be coated

8.0 Surface Preparation

1. Oil and Grease:
    a. Prior to blast cleaning, remove all oil or grease contamination in accordance with the requirements of SSPC-SP1 Solvent Cleaning.
2. Blast Cleaning:
    a. Blast clean all interior and exterior surfaces of the elevated tank and exterior of the riser assembly in accordance with the requirements of SSPC-SP10/NACE 2, Near White Blast Cleaning using clean, dry abrasive to produce a surface profile as specified
    b. Surfaces to be coated shall be cleaned in accordance with the project specification. Prior to abrasive blasting, all visible oil, dust, dirt, and grease is removed in accordance with SSPC SP1.
3. Final Cleaning:
    a. Landmark will provide necessary equipment and methods to obtain acceptable levels of dust accumulation of all areas prior to coating application; this includes the use of compressed air blowdown.
    b. Prior to the commencement of the coating application, the assessment of dust on the steel surface shall be performed in accordance with ISO 8502-3:
        i. Tank Interior: The blasted clean surface shall have a dust quantity rating of no greater than 1 with a dust size class not greater than 1 or as recommended by the coating manufacturer.
        ii. Tank Exterior: The blasted clean surface shall have a dust quantity rating of not greater than 2 with a dust size class not greater than 1 or as recommended by the coating manufacturer,
    c. Ensure that the appropriate specified degree of surface preparation exists as each coat is being applied. The ambient conditions will dictate the interval between blasting and painting.
4. Dew Point:
    a. Do not perform cleaning operations for final surface preparation if steel temperatures are less than 3 degrees Celsius above the dew point.

9.0 Coating Application

1. Apply coating materials in successive coats as specified
2. Prior to any field painting, grind all welds and sharp edges, including those revealed by blast

cleaning, prime, and stripe with a topcoat material of a colour contrasting with the primer coat colours.

3. Mixing, application and curing of coating material is in strict accordance with the manufacturer's published instructions. All mixing shall strictly adhere to the ratio specified by the manufacturer. Do not mix partial paint kits.
4. Coating Uniformity:
    a. Apply all coatings uniformly without sags, contamination, or other blemishes.
    b. At the discretion and direction of the 3rd party coatings inspector, remove defects and repair before proceeding with subsequent coat.
    c. Thoroughly mix all ingredients prior to use and agitate often enough during application to keep the pigment in suspension.
5. Application Method:
    a. Apply all coatings by spray according to the manufacturer's published instructions unless prohibited under the OHSA.
    b. Where spray is prohibited, use roller application except that brushing will be accepted where rolling would not be effective.
    c. All rollers shall be lint free.
    d. Mix and thin coatings, including plural-component materials, only in accordance with the manufacturer's instructions.
    e. Keep containers closed when not in use to avoid contamination.
    f. Do not use mixed coatings beyond pot life limits.
    g. Use application equipment, tools, pressure settings, and techniques in accordance with the manufacturer's instructions.
6. Spray Pressure:
    a. Regulate pressures on the spray gun to achieve optimum atomization of the paint at the lowest possible pressure.
7. Spray Technique:
    a. Overlapping (50%) vertical passes followed by overlapping (50%) horizontal passes (or vice versa) with each spray coat to obtain uniform film thickness.
    b. Apply a complete wet coat in each operation
    c. If sagging occurs, use a mist coat/full coat application technique to obtain wet film thickness per coat.
    d. Excessive dry spray, or overspray, will not be accepted.
8. Dew Point
    a. Do not apply coating materials when the surface to be coated is less than 3 degrees Celsius above the dew point.
    b. Use a surface temperature thermometer in intimate contact with the steel for monitoring purposes.
    c. Apply coatings in accordance with maximum Relative Humidity (R.H.) conditions as advised by the coating manufacturer, except do not apply coating above 80% R.H.
    d. Do not apply coating when steel temperature is above 59 degrees Celsius.
9. Curing
    a. Strictly follow manufacturer's published curing schedule, using steel temperature rather than ambient temperature as the basis of cure times.
10. Ventilation
    a. Ventilation shall conform to all applicable requirements of AWWA D102, Section 7.3 and the requirements of the Ontario Ministry of Labour.

b. Adequate and continuous forced air ventilation is maintained in addition to natural convection attained by keeping all tank hatches open during coating operations.
c. Continuous forced air ventilation is achieved at a rate of at least one air change every 4 hours, for a minimum of 48 hours after coating application is completed or until coating is completely cured in accordance with the paint manufacturer's recommendations.

11. Dehumidification
    a. Furnish, install and operate appropriately sized dehumidification equipment to assist in the painting and curing of the coating systems.
    b. Where interior coatings are applied, equipment is provided to maintain a minimum of 6.5 degrees Celsius dew point depression between internal steel surface temperature and internal ambient air dew point temperature and a relative humidity of 40% maximum inside the tank.
    c. Dehumidification is performed in accordance with Contract requirements and manufacturer's recommendations; whichever is more stringent and will not negatively impact the application and curing of the coating system.
    d. Dehumidification equipment operates 24 hours a day during cleaning, priming and painting until the coatings have fully cured.
12. Heating (if required)
    a. Furnish, install, and operate appropriately sized heating equipment to assist in the painting and curing of the interior coating systems when surface temperatures reach below the manufacturer's specified minimum temperature for application and curing.
    b. Heating equipment shall be of a forced air type and is required to increase the interior ambient temperature of the tank enough to result in an increase of the surface temperature.
    c. Heating equipment is operated when surface temperatures are below 4 degrees Celsius or as recommended by the coating manufacturer, whichever is the higher temperature. Heating shall be in operation during cleaning, priming and painting, coating repairs until the coatings have fully cured.

10.0 Inspection and Testing

10.1 Any defects disclosed by inspection shall be re-inspected after correction.

10.2 Inspection points in accordance with Landmark requirements shall be as established as follows:

10.2.1 Prior to the start of work.
10.2.2 Immediately following surface preparation.
10.2.3 Immediately prior to coating.
10.2.4 Following the application of each coat.
10.2.5 Following the curing of the coating
10.2.6 Final inspection and sign off

10.3 Required Daily Records (Detailed in the Daily Surface Preparation and Coating Record)

10.3.1 Compressed air quality
10.3.2 Ambient conditions

10.3.3 Equipment checks
10.3.4 Surface preparation
10.3.5 Dry Film Thickness (Calibration measurement of magnetic dry film thickness gage to be performed per SSPC PA2)
10.3.6 Material batch numbers

10.4 Data Reporting

10.4.1 A Landmark Daily Surface Preparation and Coating Record form shall be completed on each structure to document the data required in this section. This form may be supplemented by additional items to meet specific project or customer requirements.

Section D: Project Execution / Methodology

D-5: Finite Element Analysis Example

The following Finite Element Analysis was performed on a recently completed Elevated Tank Project and will be performed by Wes Pogorzelski and Razmyar Ghateh:

1 MG Elevated Water Tank

Finite Element Analysis of the Interface Region.

1. Analysis Description

The Finite Element Method analysis has been performed by means of ANSYS Release 11.0 program. The linear static type of analysis has been used. The objective of the analysis was to find the response of the interface region of the tank, comprised of dome, steel tank and support pedestal. The results of the analysis are presented in form of plots and listings of the sectional forces (moments, shears and axial loads).

2. Geometry.

The analyzed tank has a usable capacity of 1,000,000 gallons. Important dimensions used in the analysis:

- Shaft radius = 229.5”
- Tank radius = 401.1"
- Break radius = 321.75”
- Shaft thickness = 8”
- Dome thickness = 8”
- Lower cone thickness = 0.67”
- Upper cone thickness = 0.522”
- Average shell thickness = 0.2965”
- Water head = 518.29”

3. Model Description.

Two different axisymmetric FE models have been created.

The first model has been built to analyze sectional forces in the dome and the wall. The elements used are SHELL51 – axisymmetric shell element and PLANE42 –2-D solid element. The dome, the wall and the steel tank have been modeled with the shell elements, the ring beam has been modeled with the plane elements. A set of constraint equations has been used to model rigid connections between the dome, the ring beam and the wall.
The second model has been created with the same elements as the first one except that the dome and the wall have been modeled with the plane elements. The objective of the model was to find a more realistic distribution of the circumferential stresses.

See Fig.1 for description of structural components used in the modeling.

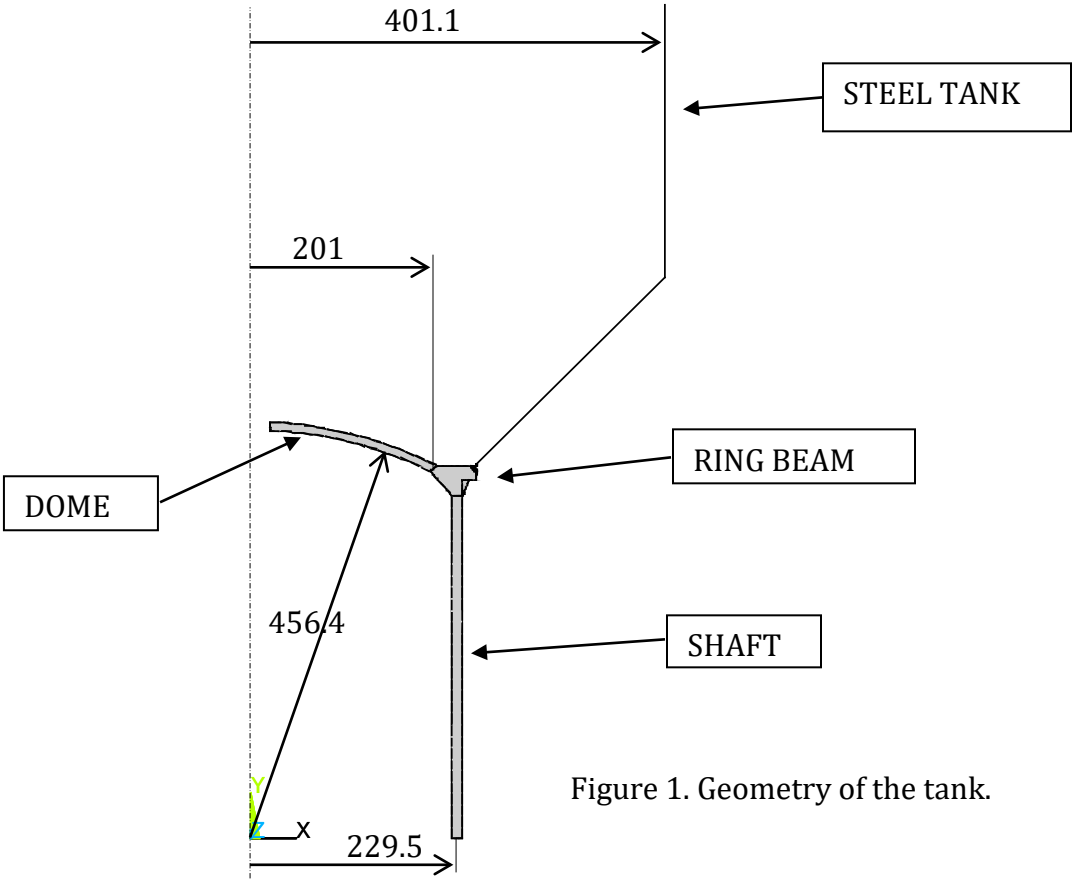


Figure 1. Geometry of the tank.

4. Load Cases.

The following load cases have been considered:

1. Load Case 1 – Dead Load, Roof Load and Water Pressure due to H = 518.29".
2. Load Case 2 – Dead Load, Roof Load and Water Pressure due to H = 130".

Access tube reaction of 70,290 lbs. was applied to the uppermost section of the dome in both load cases. Roof reaction of 86,410 lbs. was applied at the top of shell in both load cases.

Dead loads were applied as gravity loads at the element centroids. Cases 1 and 2 have been run with the modulus of elasticity for concrete of 3605 ksi. All point loads are applied on 360 deg basis. The hydrostatic pressures are applied as unit loads in accordance with Ansys convention for the axisymmetric model.

Constraints applied to the model are: displacement degree of freedom constraints applied in three directions at the base of the wall, circumferential degree of freedom constraint applied at the uppermost section of the dome.

5. Results.

The results of Model 1 analysis for sections at the dome base and the top of the wall are presented in Table 1. Sign convention used: for axial forces – compression negative, for dome moments – positive when tension on top, for wall moments – positive when tension (or lesser compression) inside.

Table 1. Sectional Forces.

LOAD CASE	SECTION	AXIAL LOAD [kips/ft]	SHEAR [kips/ft]	MOMENT [kip-ft/ft]
1	Dome Base	-44.37	3.89	-5.86
	Top of Wall	-74.31	0.46	-0.56
2	Dome Base	-11.40	1.26	-1.59
	Top of Wall	-15.65	-0.88	-1.46

Table 2 lists total circumferential forces in the ring beam and the top lift. The forces have been computed by integrating the circumferential stresses over the area. Sign convention used: compression negative.

Table 2. Circumferential Forces [kips]

LOAD CASE	RING BEAM	WALL
1	-81.4	4.1
2	34.6	18.28

The graphical results are presented in **Appendix A.**

The diagrams show plots of moment, shear and axial force in the dome and in the upper part of the wall. All forces are shown on 360 deg basis, i.e. in order to calculate a force per unit length it has to be divided by the perimeter. The results are shown in Table 1

Figures 1G, 1H, 2G and 2H show plots of circumferential stresses in the ring beam and the upper part of the wall.

5. Strength check

The maximum compressive stress in the ring beam region does not exceed 283 psi and the maximum tensile stress does not exceed 65 psi locally. Plain concrete section is capable of resisting stresses of such magnitude.

Sections at the base of the dome and the top of the wall have been checked for interaction of three forces: axial force, shear and moment (Table 3). All loads were multiplied by a conservative load factor of 1.6 and by the imperfection sensitivity factors based on a large tank study. The interaction has been checked by means of the 'Response 2000' program developed by the University of Toronto. The program is based on the Compression Field Theory. Figures 3B and 3D show the results of the strength check for the governing Load Case 1. Figures 3A and 3C show the section properties used in the analysis. The reinforcement provided is capable of resisting the computed forces.

Table 3. Sectional Forces (Factored)

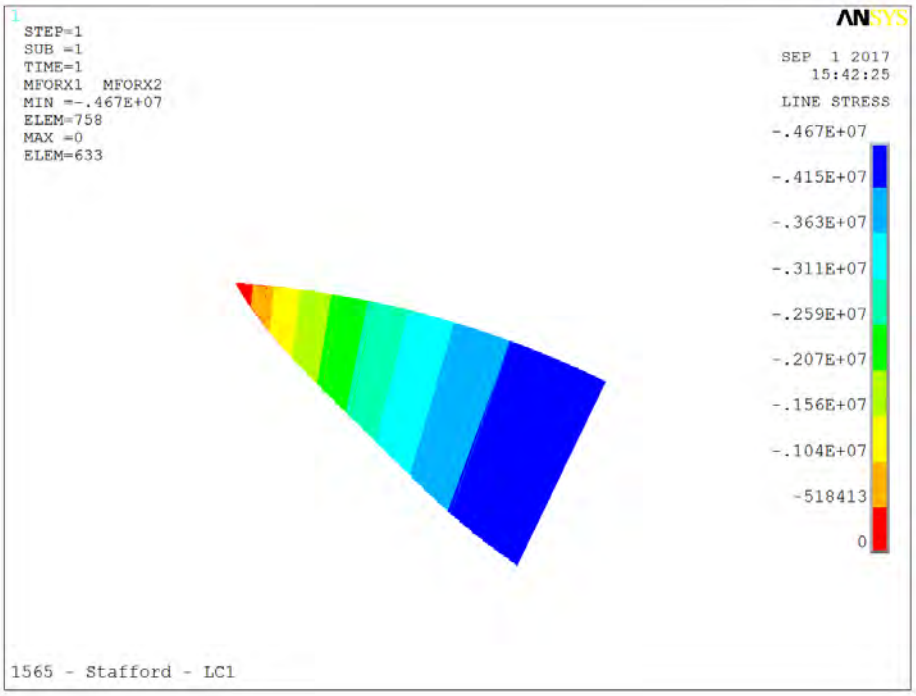
LOAD CASE	SECTION	AXIAL LOAD [kips/ft]	SHEAR [kips/ft]	MOMENT [kip-ft/ft]
1	Dome Base	-71.0	7.5	-13.1
	Top of Wall	-118.9	0.9	-1.3
2	Dome Base	-18.2	2.4	-3.6
	Top of Wall	-25.0	-1.7	-3.3

APPENDIX A

Finite Element Analysis of Interface Region

1 MG Elevated Water Tank

CONTENTS: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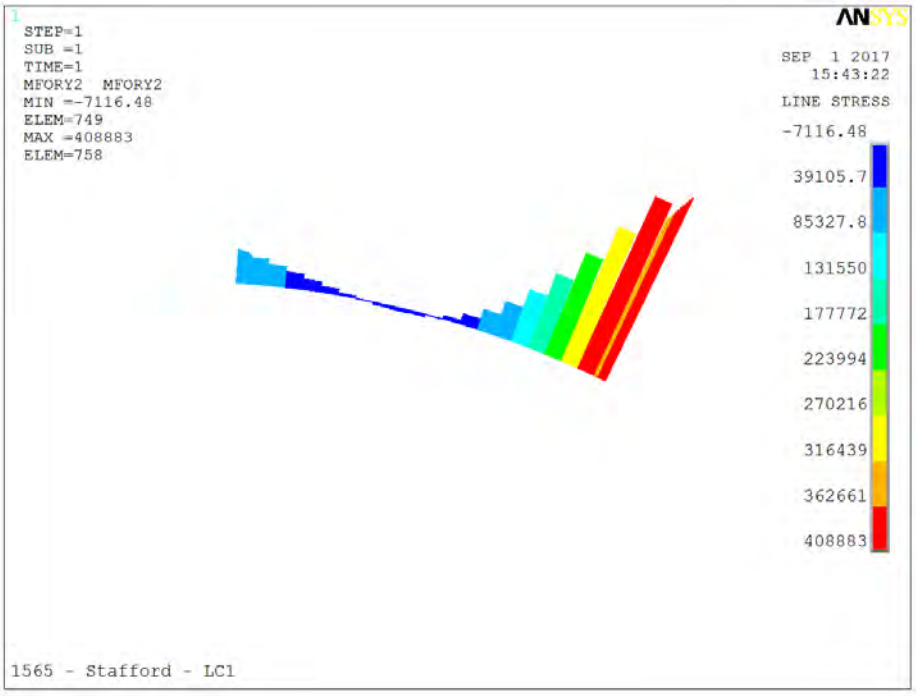
1565 - Stafford - LC1

Fig. 1A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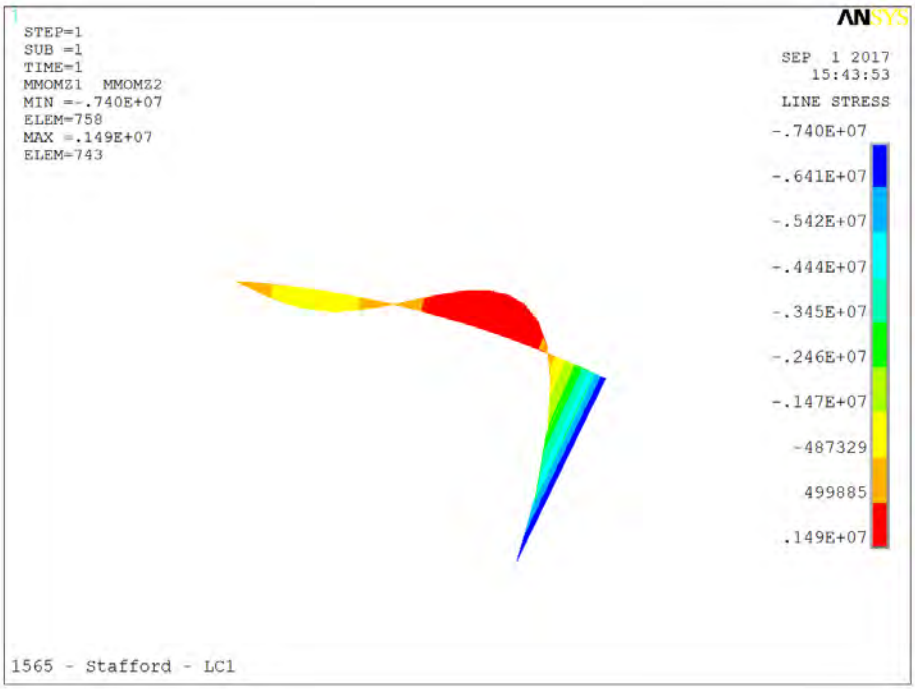
1565 - Stafford - LC1

Fig. 1B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499885
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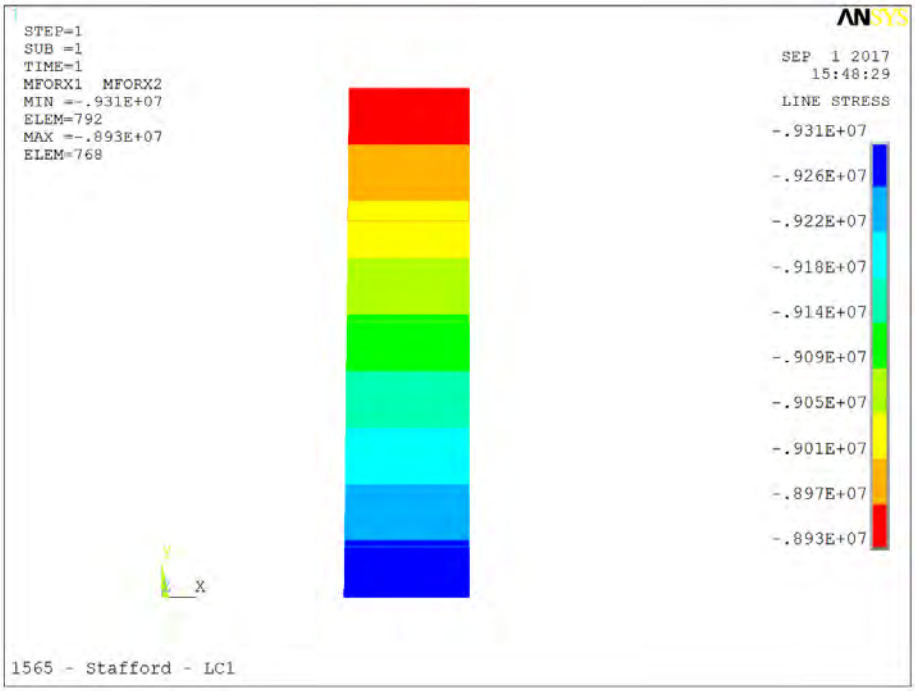
1565 - Stafford - LC1

Fig. 1C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15:48:29
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-.914E+07
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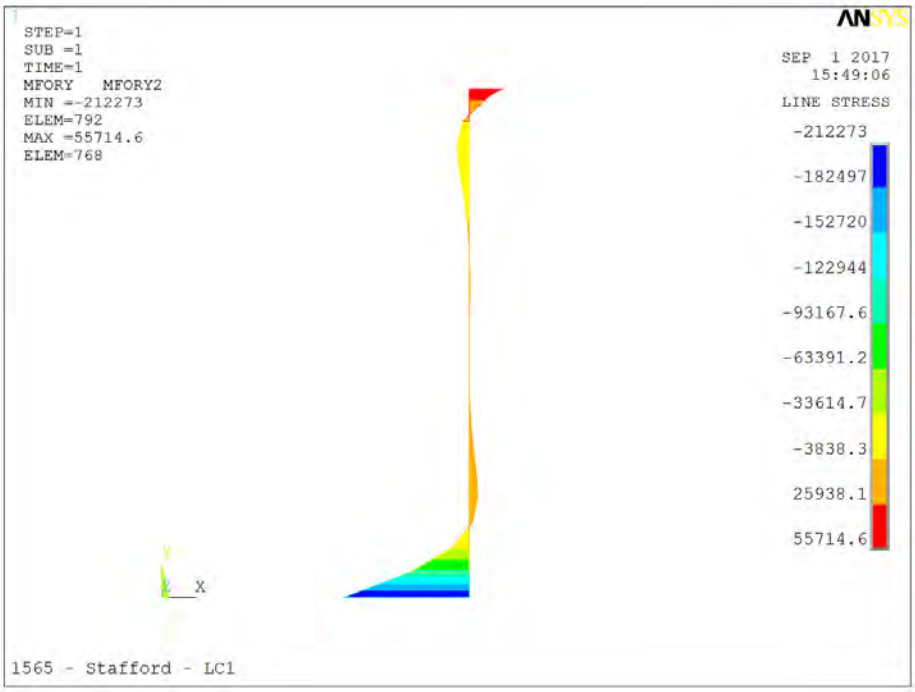
Y
X
1565 - Stafford - LC1

Fig. 1D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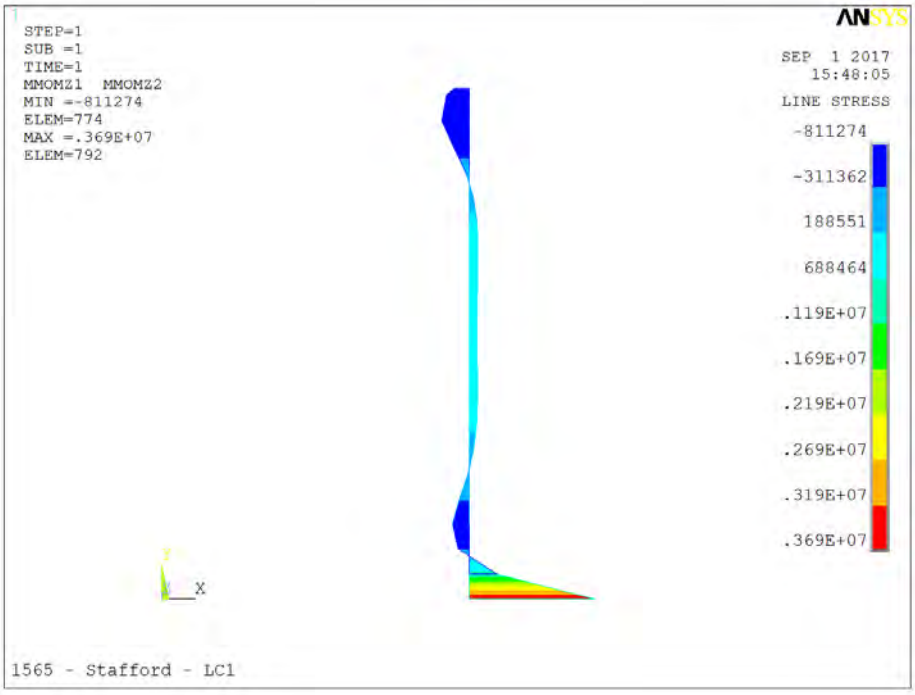
25938.1
55714.6
Y
X
1565 - Stafford - LC1

Fig. 1E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688464
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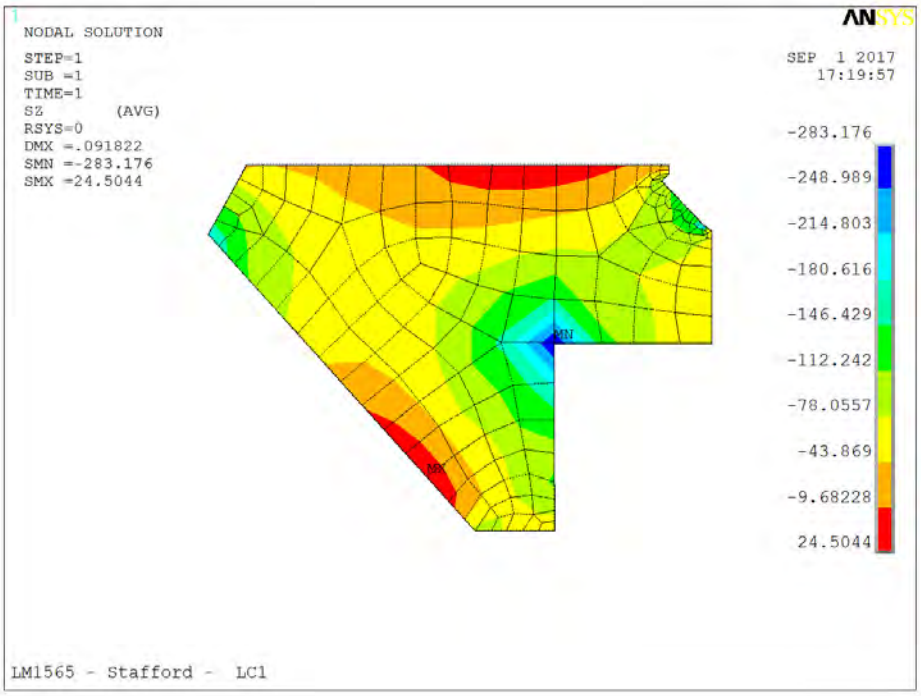
Y
X
1565 - Stafford - LC1

Fig. 1F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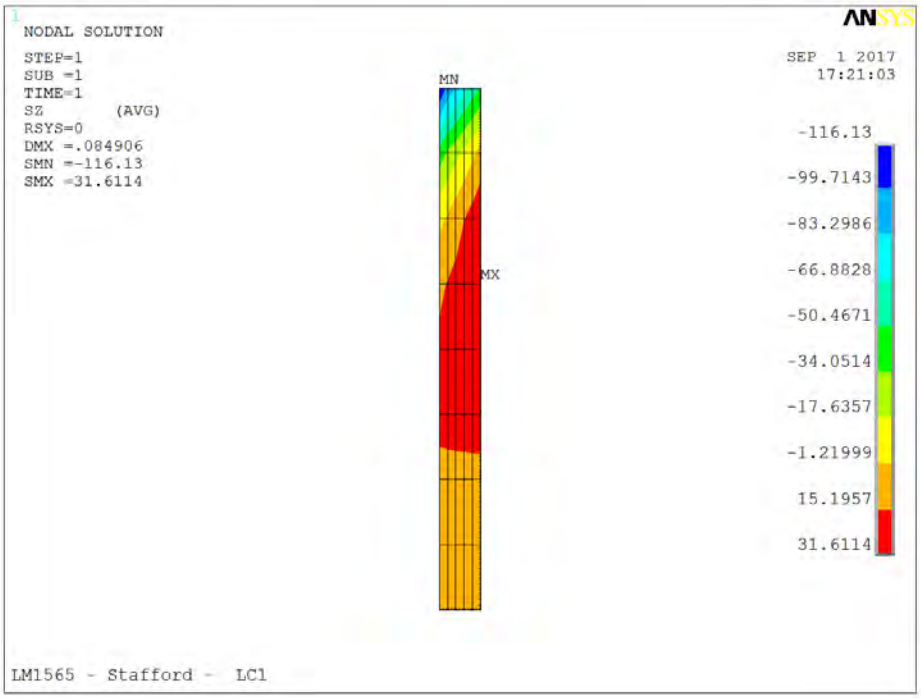
MN
MX
LM1565 - Stafford - LC1

Fig. 1G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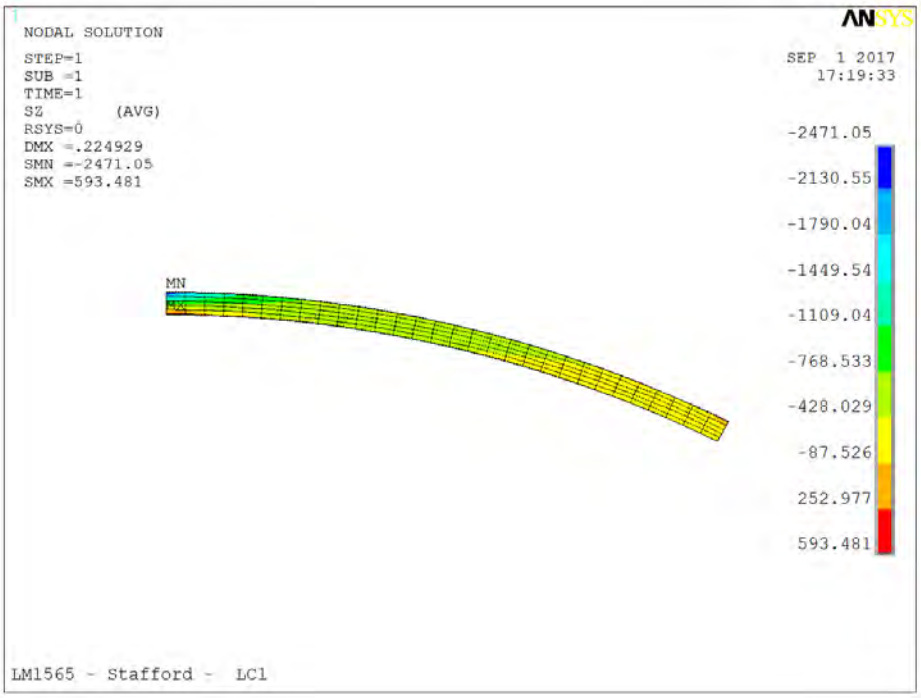
MN
MX
LM1565 - Stafford - LC1

Fig. 1H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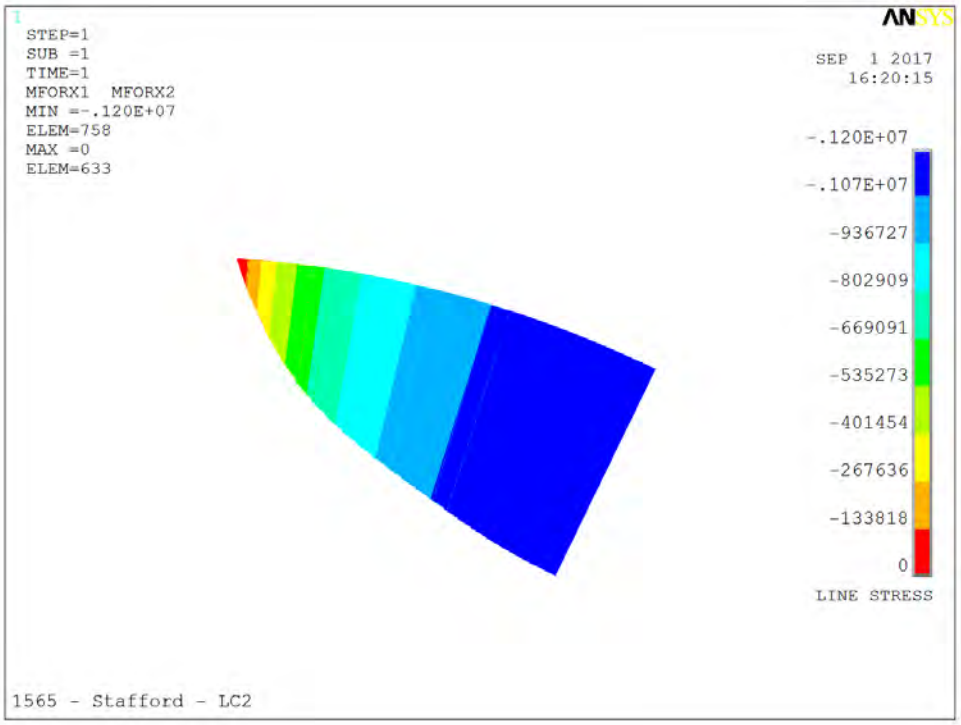
MN
LM1565 - Stafford - LC1

Fig. 1I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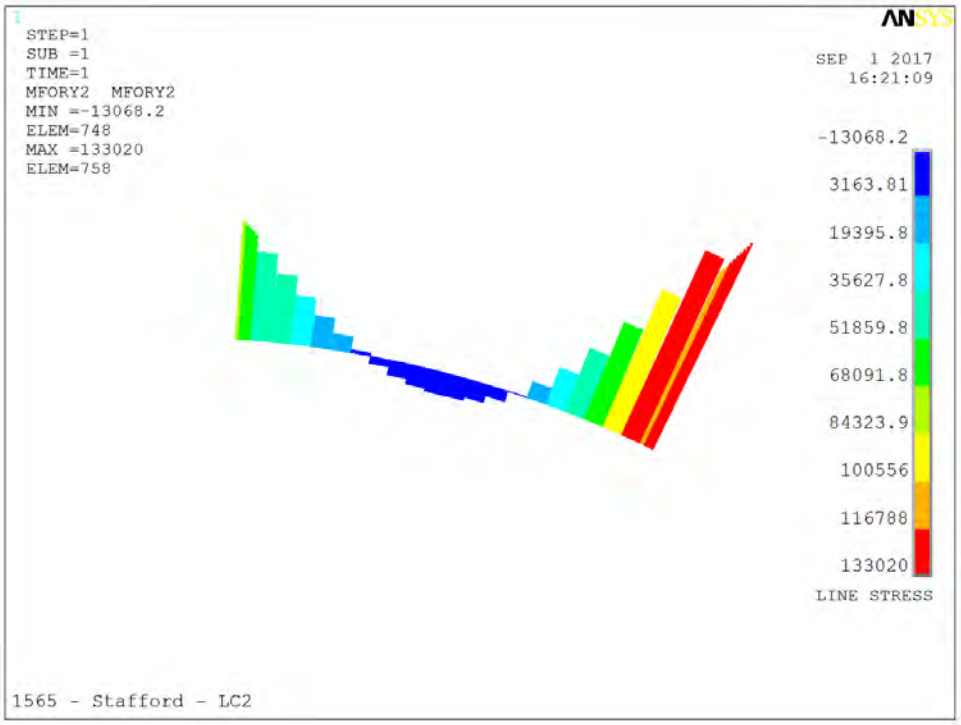
LINE STRESS
1565 - Stafford - LC2

Fig. 2A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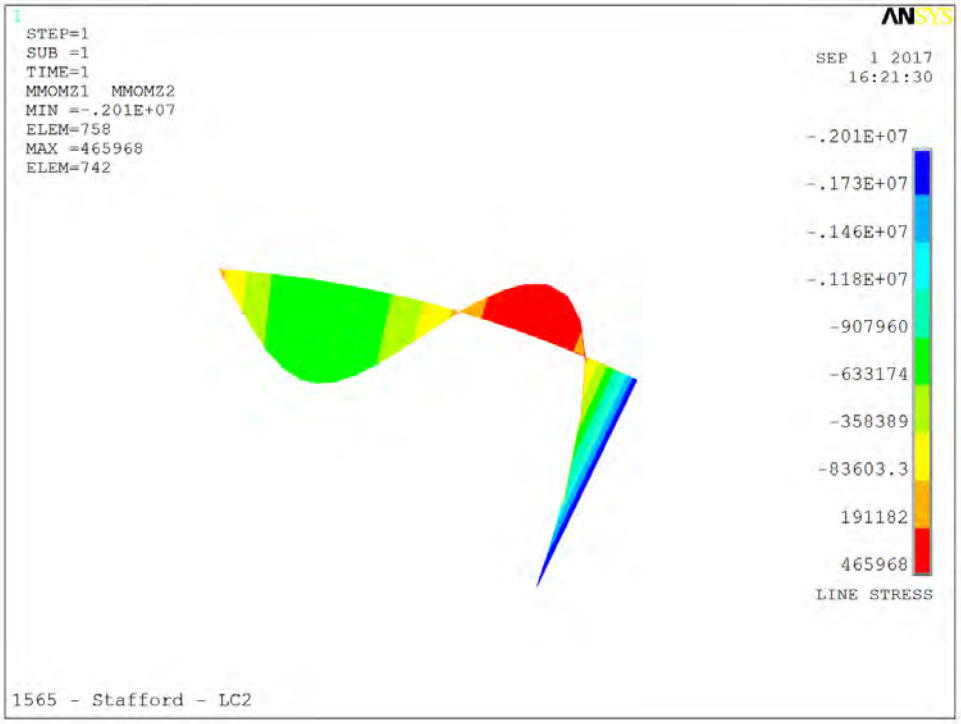
1565 - Stafford - LC2

Fig. 2B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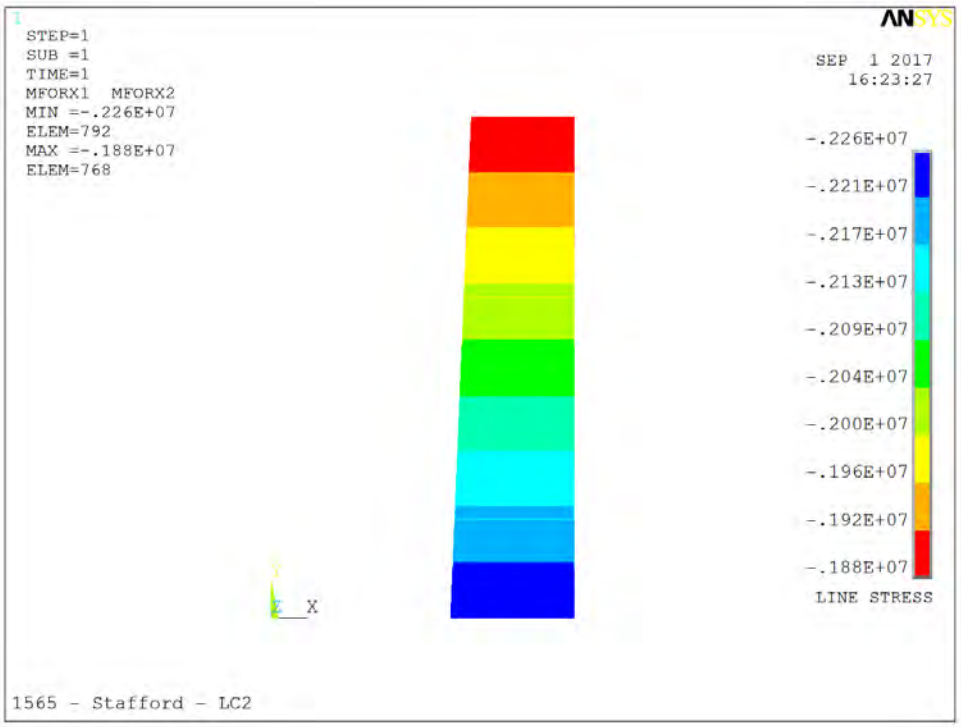
1565 - Stafford - LC2

Fig. 2C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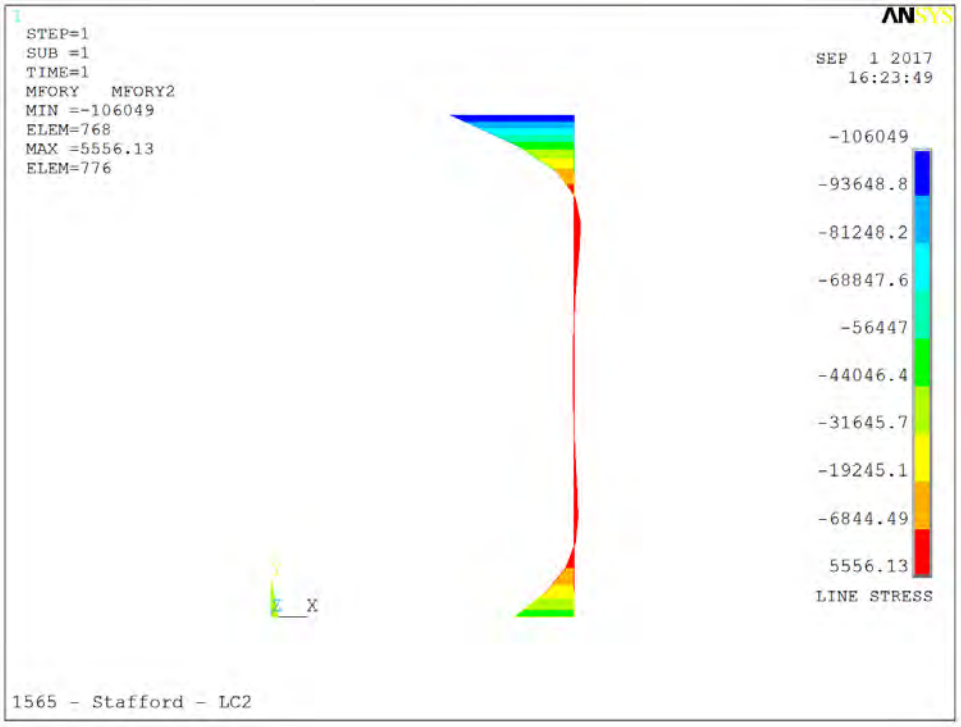
LINE STRESS
Y
Z X
1565 - Stafford - LC2

Fig. 2D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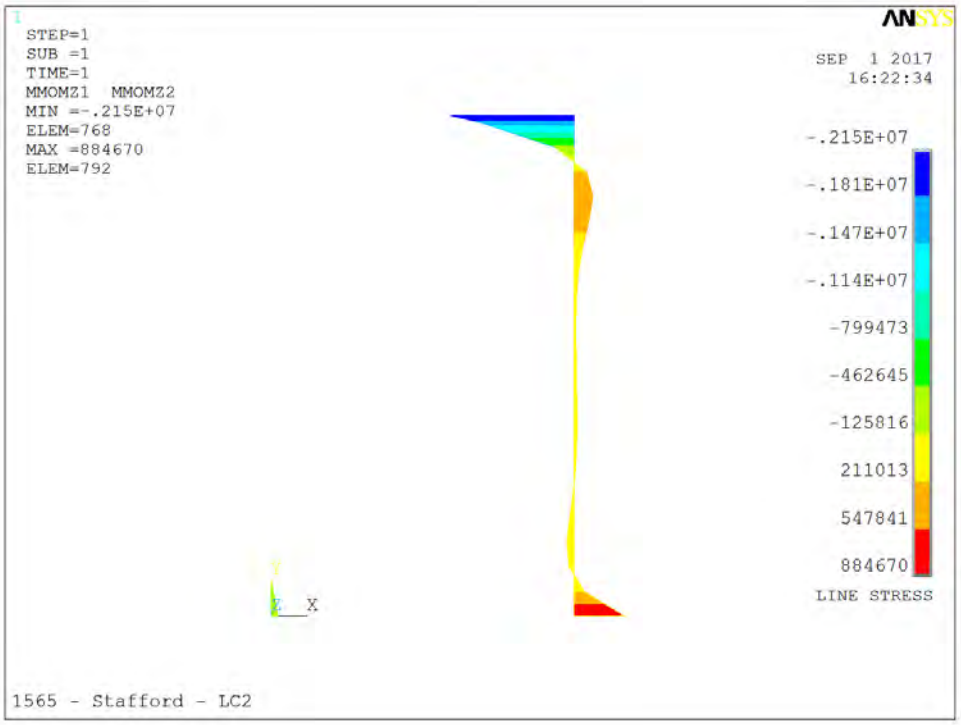
Y
Z X
1565 - Stafford - LC2

Fig. 2E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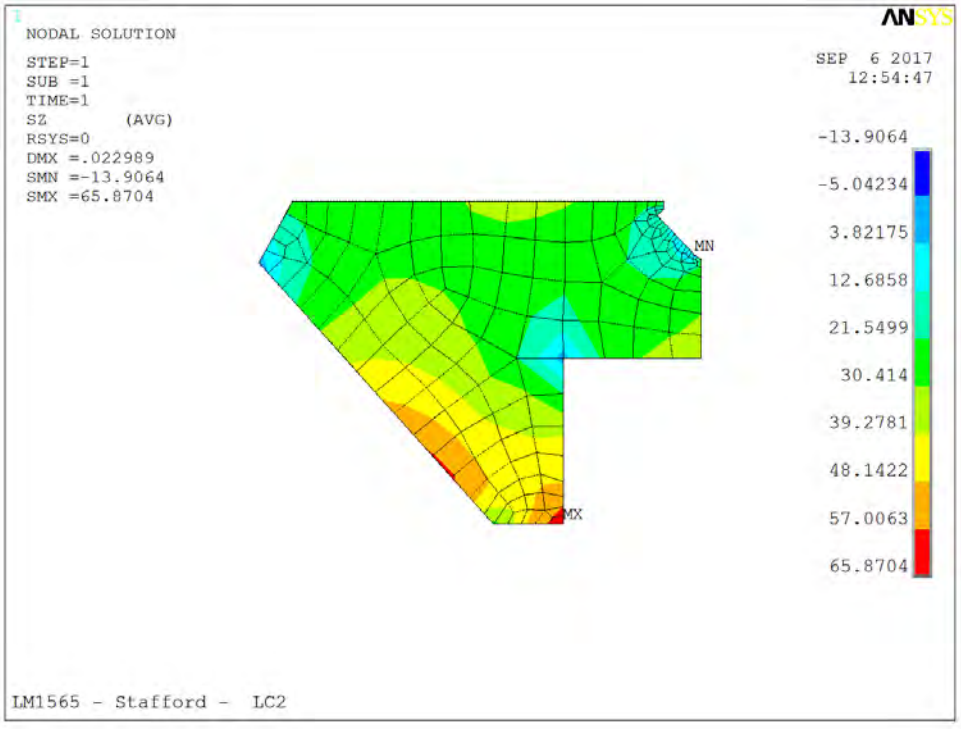
884670
LINE STRESS
Y
Z X
1565 - Stafford - LC2

Fig. 2F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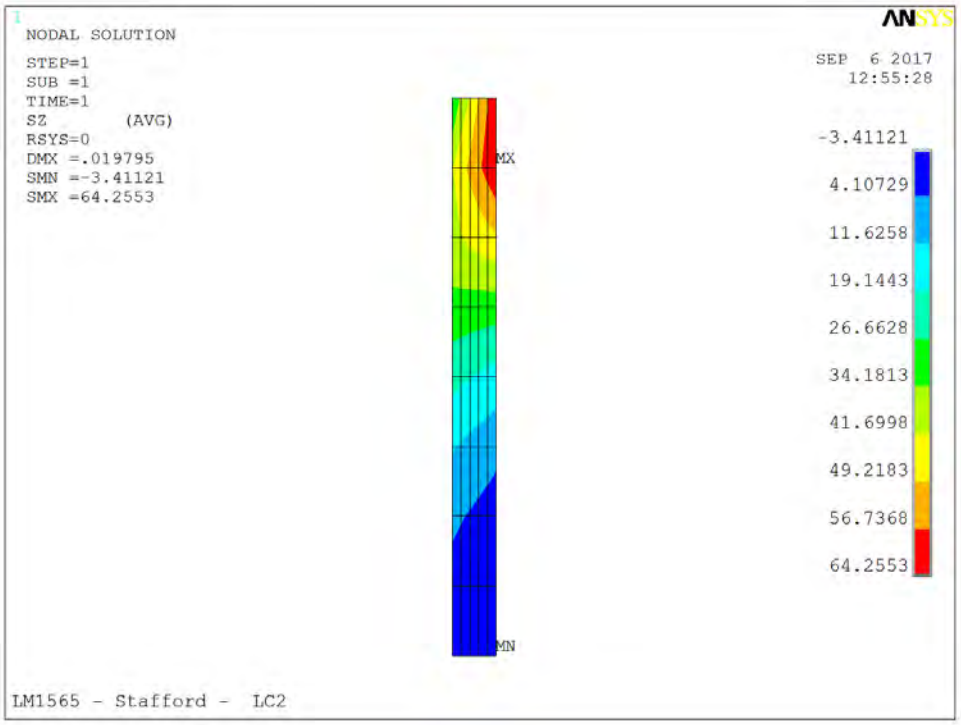
MN
MX
LM1565 - Stafford - LC2

Fig. 2G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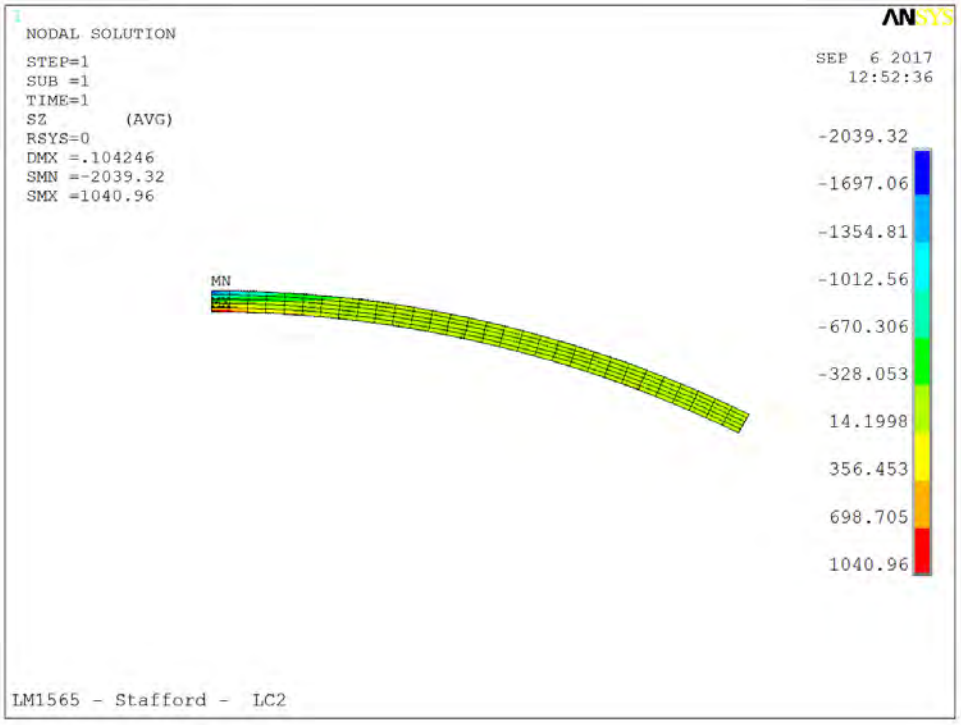
MN
LM1565 - Stafford - LC2

Fig. 2H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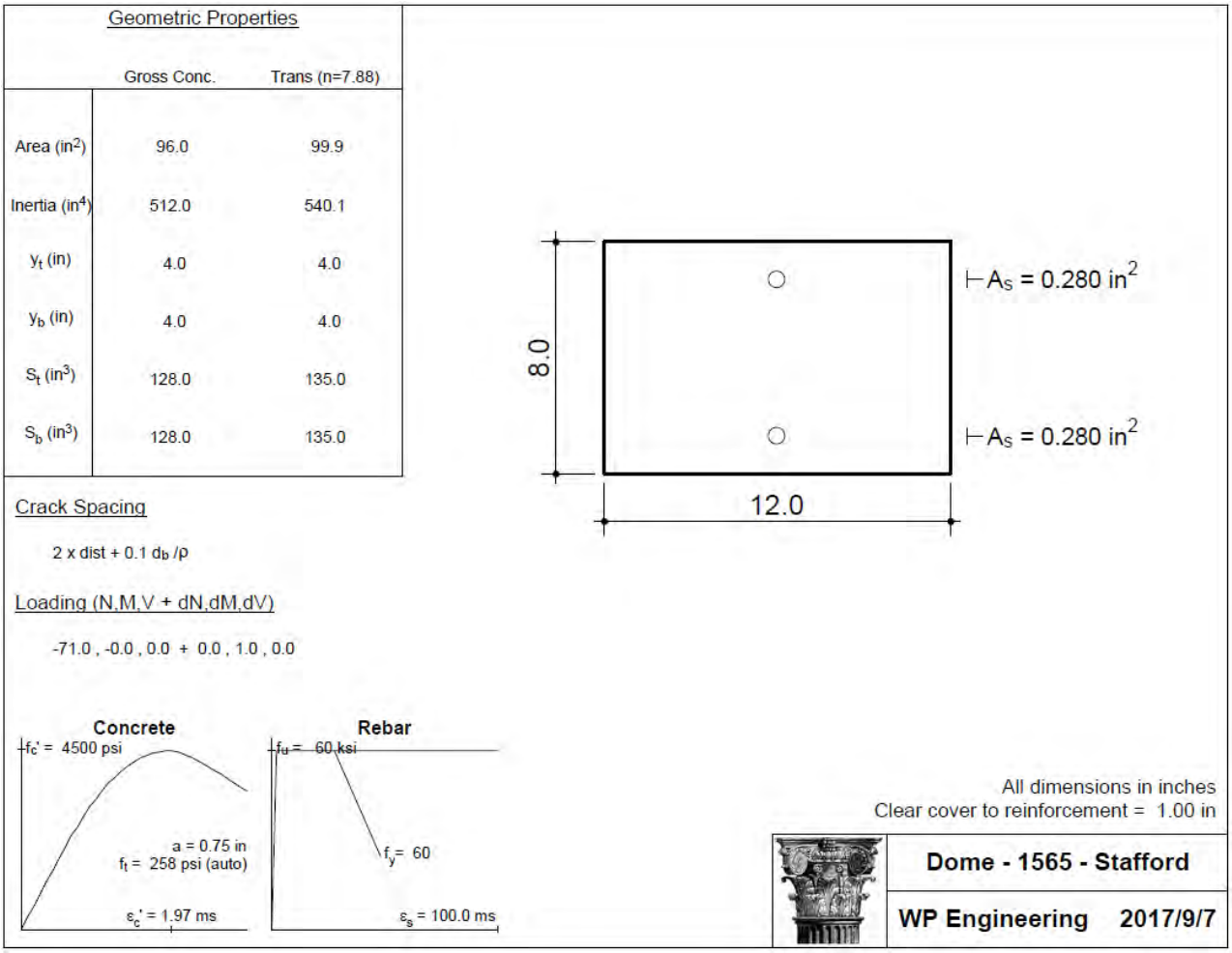
MN
LM1565 - Stafford - LC2

Fig. 2I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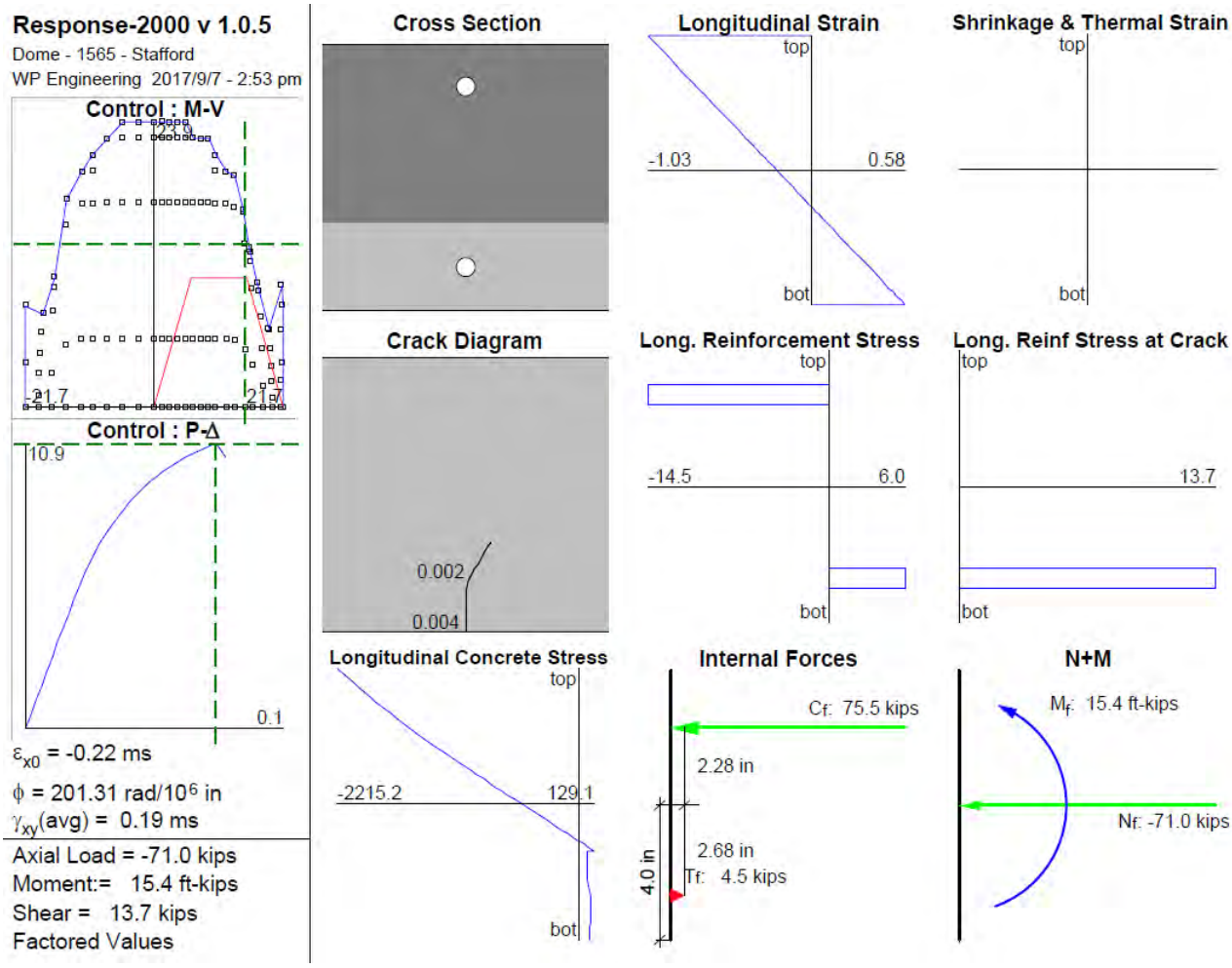
Inertia (in4) 512.0 540.1
yt (in) 4.0 4.0
yb (in) 4.0 4.0
St (in3) 128.0 135.0
Sb (in3) 128.0 135.0
Crack Spacing
2 x dist + 0.1 db /ρ
Loading (N,M,V + dN,dM,dV)
-71.0 , -0.0 , 0.0 + 0.0 , 1.0 , 0.0
Concrete
f'c = 4500 psi
a = 0.75 in
ft = 258 psi (auto)
εc' = 1.97 ms
Rebar
fu = 60 ksi
fy = 60
εs = 100.0 ms
8.0
12.0
As = 0.280 in2
As = 0.280 in2
All dimensions in inches
Clear cover to reinforcement = 1.00 in
Dome - 1565 - Stafford
WP Engineering 2017/9/7

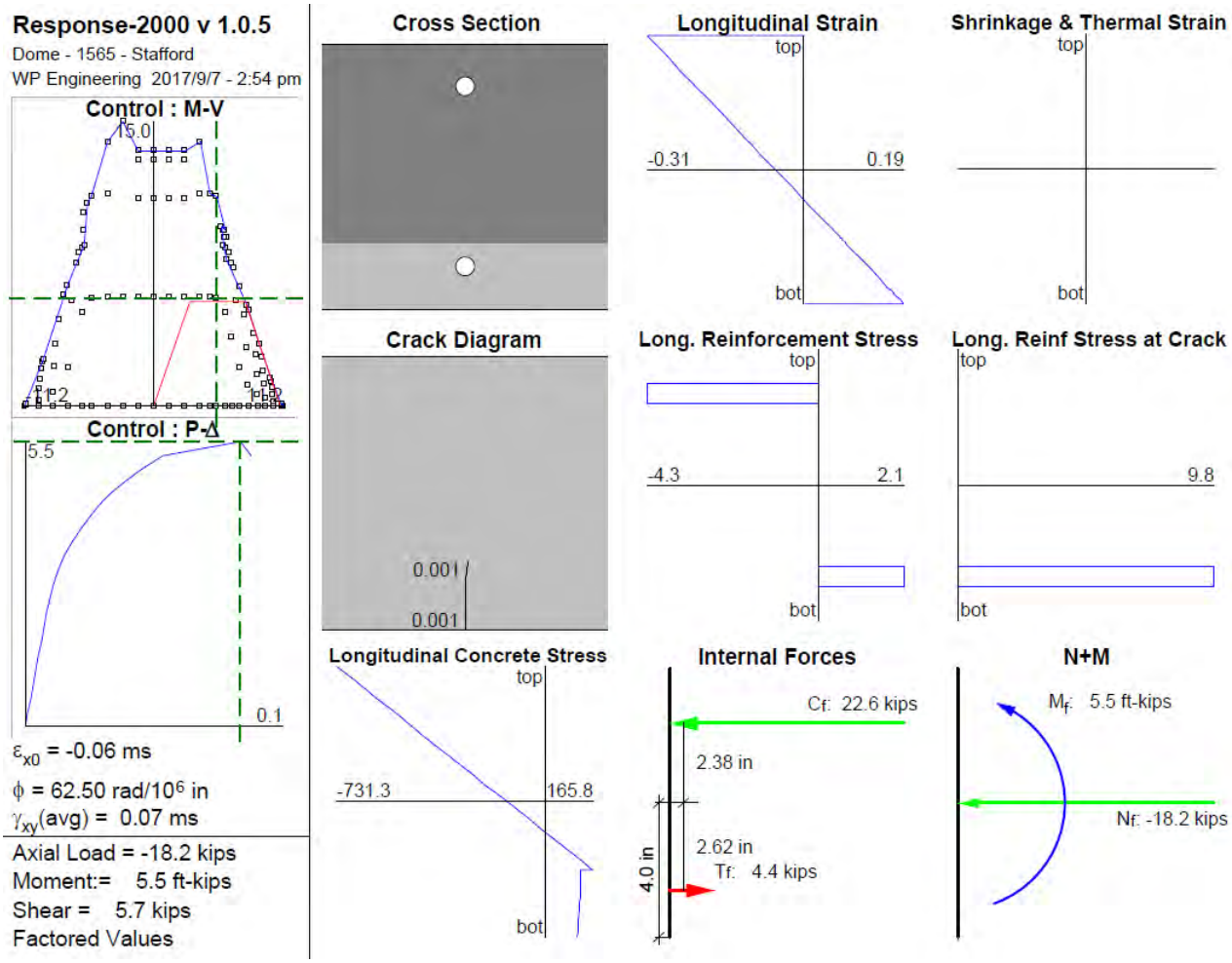
Fig. 3A



Load Case 1:

Pu = -71 k/ft	**=**	**φPn = -71 k/ft**
Mu = -13.1 k-ft/ft	**<**	**φMn = 15.4 k-ft/ft**
Vu = 7.5 k/ft	**<**	**φVn = 13.7 k/ft** **OK**

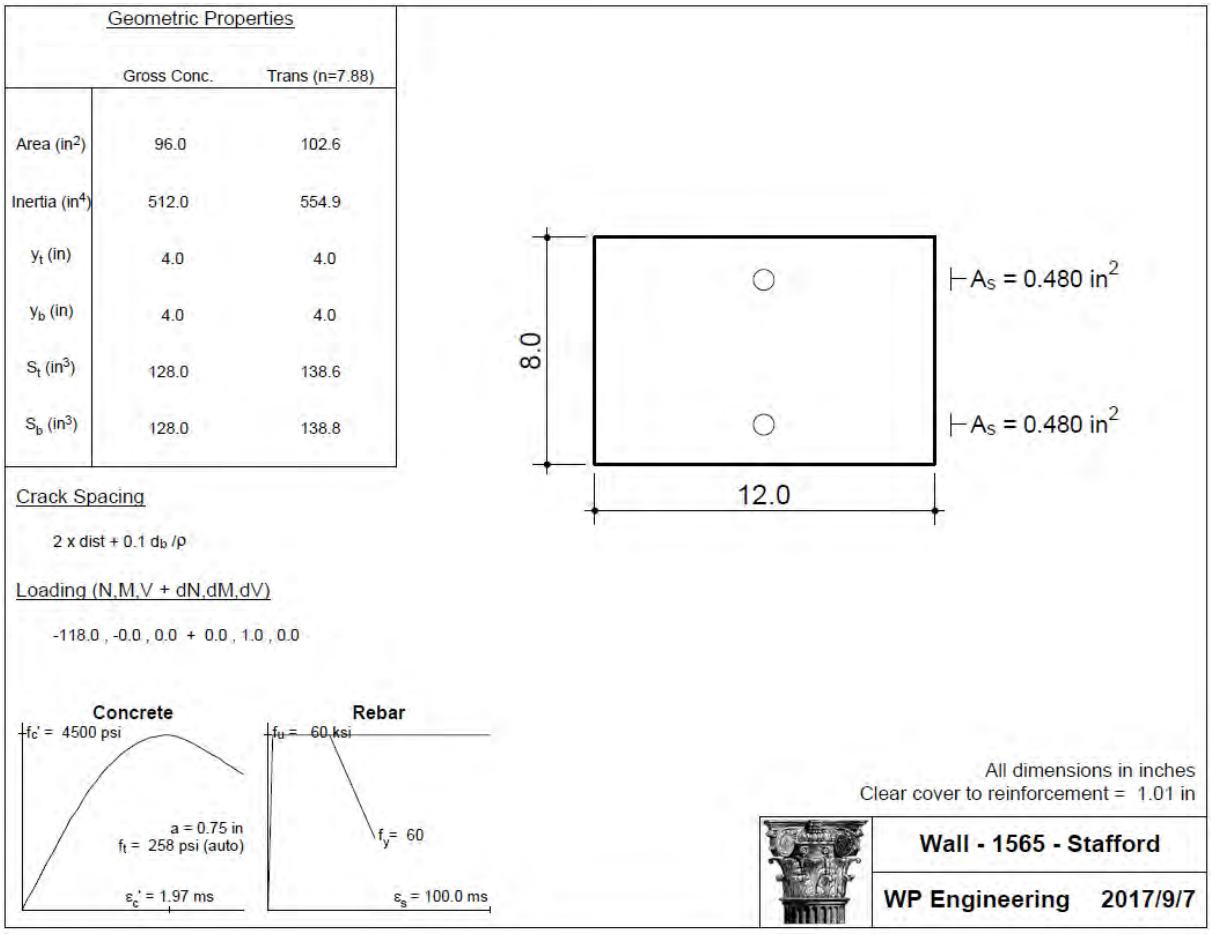
Fig. 3B



Load Case 2:

Pu = -18.2 k/ft	**=**	**φPn = -18.2 k/ft**
Mu = -3.6 k-ft/ft	**<**	**φMn = 5.5 k-ft/ft**
Vu = 2.4 k/ft	**<**	**φVn = 5.7 k/ft** **OK**

Fig. 3C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Gross Conc.
Trans (n=7.88)
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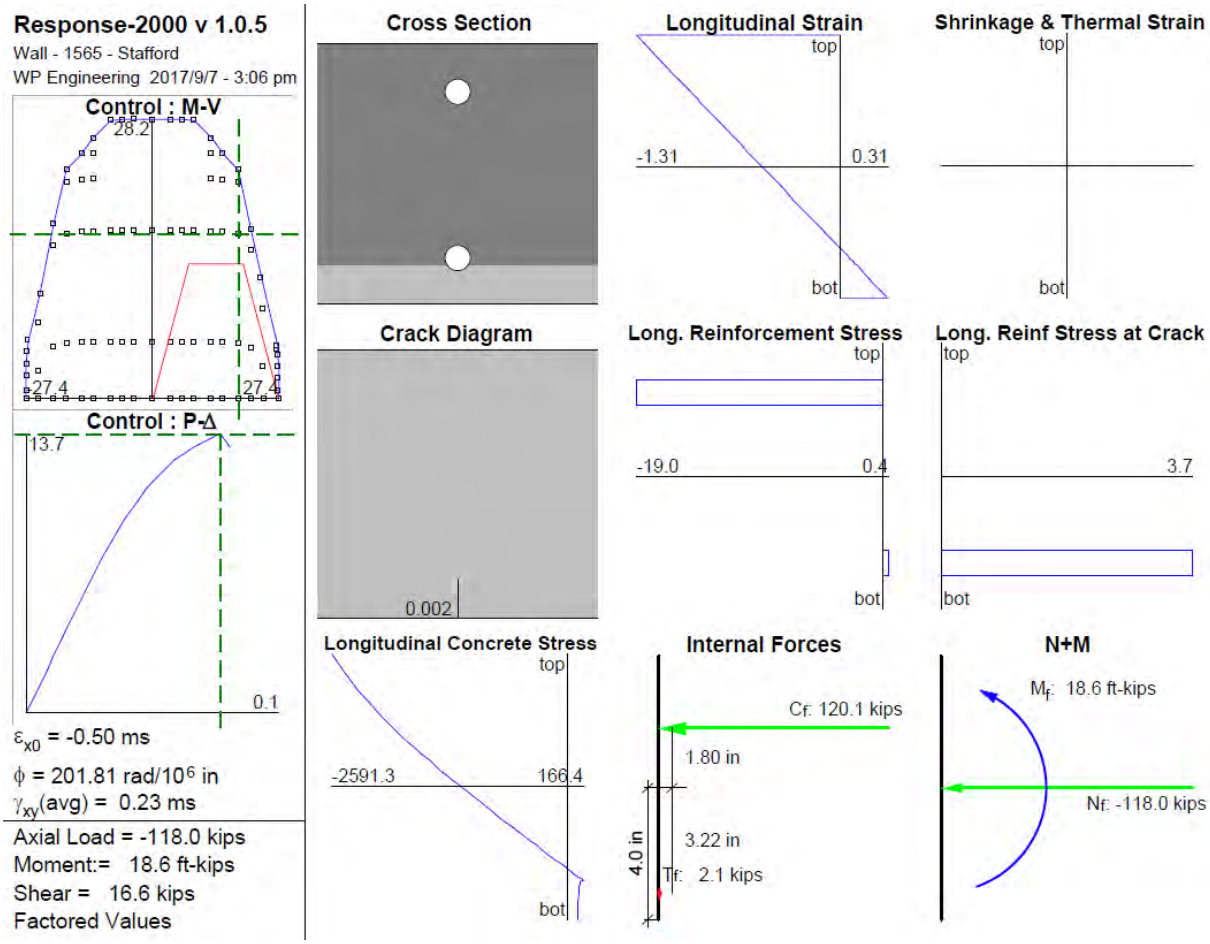
Inertia (in4) 512.0 554.9
yt (in) 4.0 4.0
yb (in) 4.0 4.0
St (in3) 128.0 138.6
Sb (in3) 128.0 138.8
Crack Spacing
2 x dist + 0.1 db /ρ
Loading (N,M,V + dN,dM,dV)
-118.0 , -0.0 , 0.0 + 0.0 , 1.0 , 0.0
Concrete
fc' = 4500 psi
a = 0.75 in
ft = 258 psi (auto)
εc' = 1.97 ms
Rebar
fu = 60 ksi
fy = 60
εs = 100.0 ms
8.0
12.0
As = 0.480 in2
As = 0.480 in2
All dimensions in inches
Clear cover to reinforcement = 1.01 in
Wall - 1565 - Stafford
WP Engineering 2017/9/7

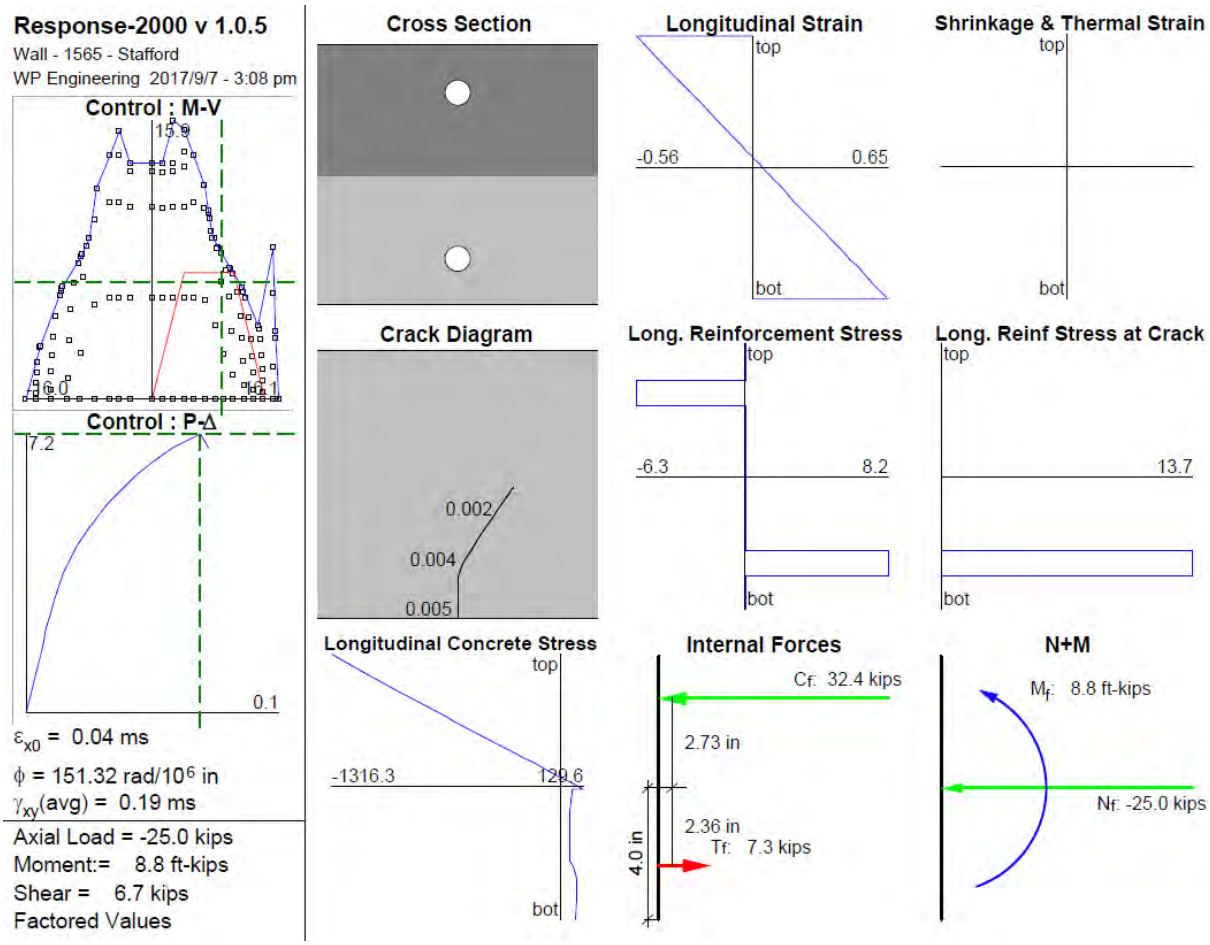
Fig. 3D



Load Case 1:

Pu = -118 k/ft	**=**	**φPn = -118 k/ft**
Mu = -1.3 k-ft/ft	**<**	**φMn = 18.6 k-ft/ft**
Vu = 0.9 k/ft	**<φVn = 16.6 k/ft**	**OK**

Fig. 3E



Load Case 2:

Pu = -25 k/ft	**≈**	**φPn = -25 k/ft**	
Mu = -3.3 k-ft/ft	**<**	**φMn = 8.8 k-ft/ft**	
Vu = -1.7 k/ft	**<**	**φVn = 6.7 k/ft**	**OK**

Fig. 3F

Section D: Project Execution / Methodology

D-6: Access for Inspection and Maintenance

The following plans and procedures are prepared for bid submittal purposes only, and will be refined once the final design is completed.

The owner shall ensure that all personnel accessing the facility receive and satisfy all applicable legislative occupational health and safety and workplace safety requirements and training.

The owner shall ensure that the workplace meets and satisfies all applicable legislative occupational health and safety and workplace safety requirements, including the creation of any accredited health and safety management system.

All workers accessing the facility are required to be adequately trained and qualified as required by all legislative health and safety workplace requirements and training. It is the duty of the owner to ensure that the health and safety of all workers is protected.

It is the duty of the owner to ensure all fall arrest and rescue equipment is inspected and maintained by a competent person in accordance with the recommendations of the manufacturer. All safety equipment must be inspected at the manufacturer's recommended intervals to ensure it is in good working order, by a person with adequate knowledge, training, and experience who is appointed by the owner.

It is recommended that all work procedures, access procedures, and rescue procedures, as well as training, be conducted on a yearly basis. The owner should prepare a written training instruction record for each worker, which should include the worker's name and date of training, and be signed by both the owner and worker.

1.0 Access for Maintenance or Inspection (please refer to enclosed drawing)

A. Access from grade level to the top landing

- A galvanized steel vertical ladder will be installed from grade level up to the top of the concrete pedestal. The ladder will have a CSA Certified Fall arrest system installed / fixed to the ladder. All personnel climbing the ladder must wear a CSA certified, compatible, full body harness, lanyard, and customized trolley to be used with the FRL (fixed rail ladder) fall arrest system. At the top of the ladder will be a "D" Ring anchor point – the climber will secure their lanyard to the "D" Ring prior to disengaging the trolley from the fall arrest system. Once the lanyard is secured, the climber can then transition to the top landing assembly that is installed at the top of the concrete pedestal.

B. Access from the top landing to the tank roof

- There is another galvanized steel vertical ladder provided from the top landing assembly, through the access tube and to the tank roof. The ladder will have a CSA Certified Fall arrest system installed / fixed to the ladder. All personnel climbing the ladder must wear a CSA certified, compatible, full body harness, lanyard, and customized trolley to be used with the FRL (fixed rail ladder) fall arrest system. At the top of the ladder will be a “D” Ring anchor point – the climber will secure their lanyard to the “D” Ring prior to disengaging the trolley from the fall arrest system. Once the lanyard is secured, the climber can then open the access tube hatch, and transition from the vertical ladder onto the tank roof.

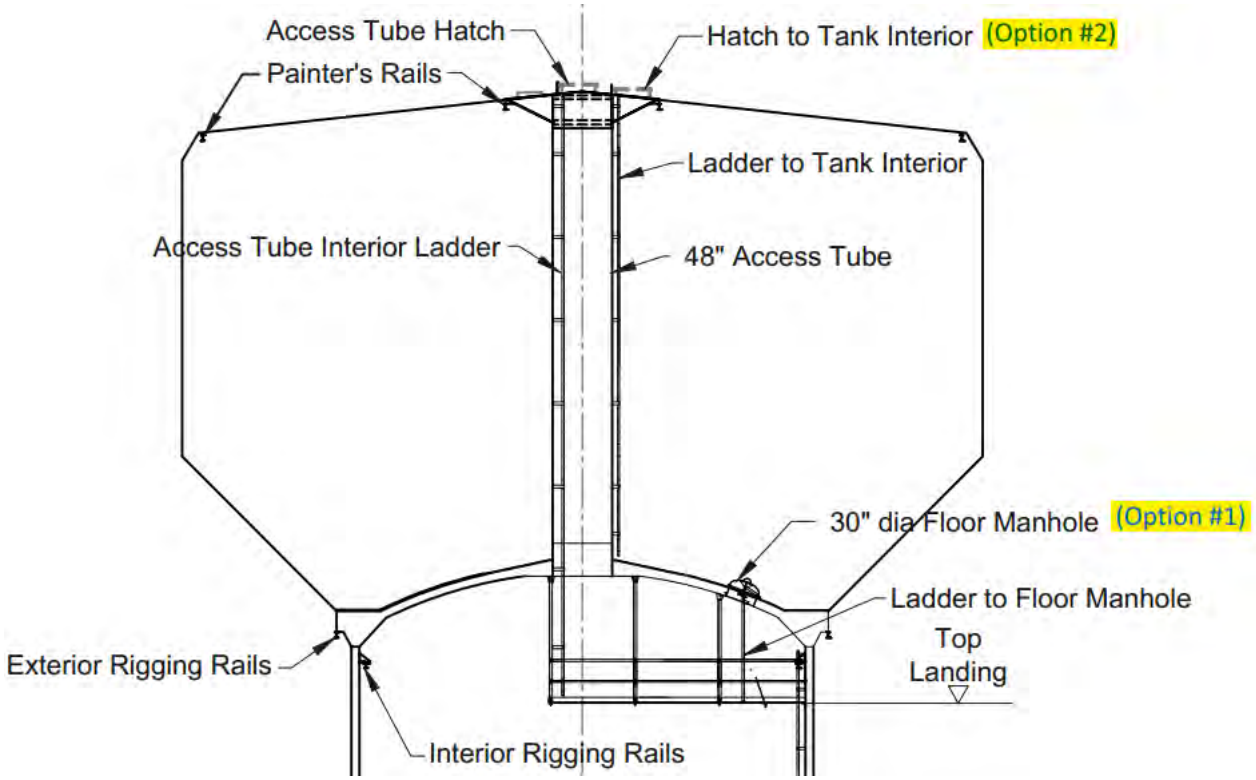
C. Access to the tank interior (2 options)

Option 1 - Access through the floor manhole

- There is a 10’ +/- long vertical ladder from the top landing to the bottom of the elevated tank. The tank interior can be accessed by opening the 30” diameter floor manhole.

Option 2 - Access from the tank roof

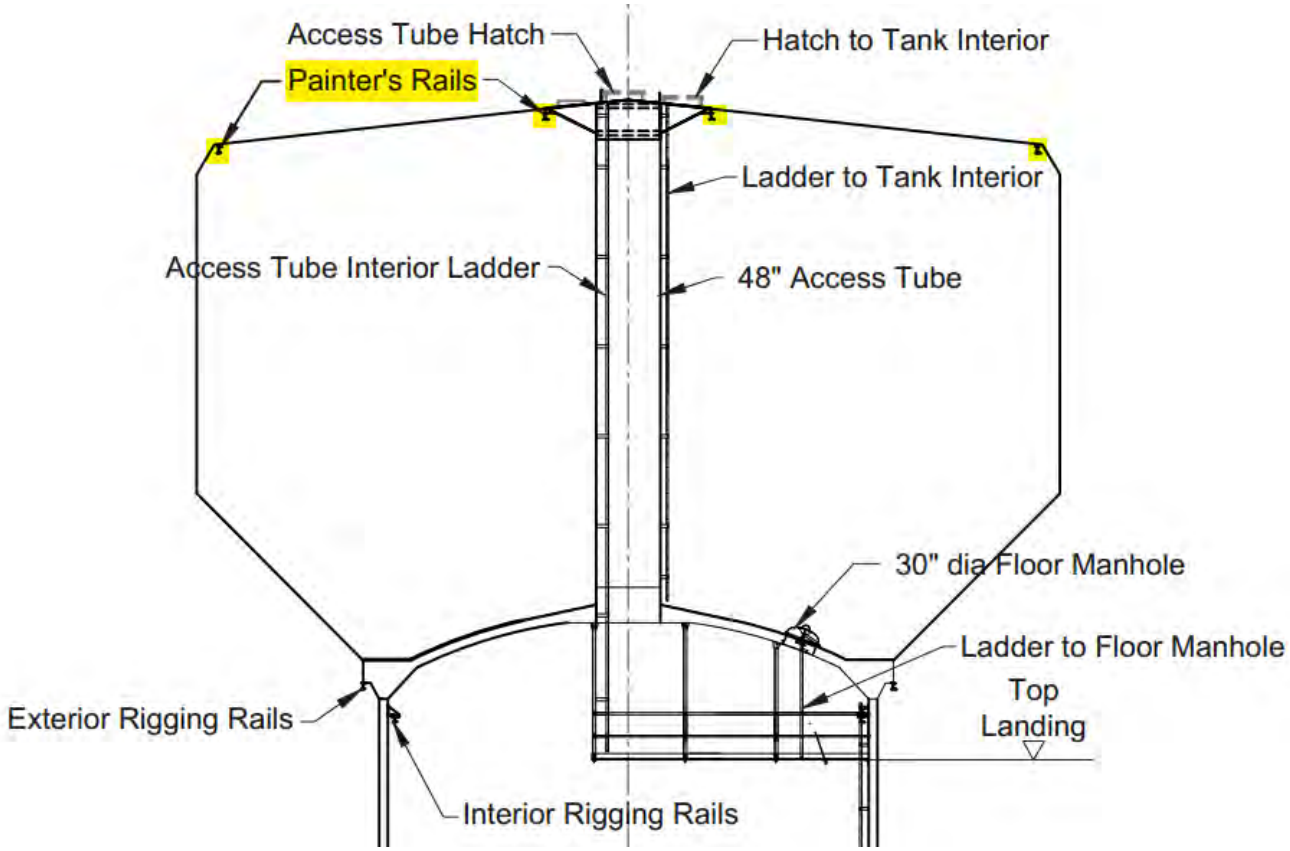
- Once the climber has reached the tank roof, a dedicated ‘Hatch to tank interior’ will be positioned right beside the access tube hatch. The hatch to tank interior can be opened and climbers can access the tank interior via the ‘Ladder to Tank Interior’



2.0 Access provisions for Elevated Tank Inspection and Maintenance

A. Elevated Tank Interior Surfaces (for washing, coating repairs, re-coating, etc.)

- All surfaces within the tank interior can be access by swing stages to perform any inspection, maintenance, coating repairs or coating replacement. There are two (2) circular 'Painter's Rails' located within the tank interior as shown below



- The 'outer' paint rail (edge of tank roof) can be accessed by a dedicated Roof hatch positioned at the outboard edge of the tank roof.
- The 'inner' paint rail (around the access tube) can be access by the Hatch to tank interior

B. Elevated Tank Exterior Surfaces (for washing, coating repairs, re-coating, etc.)

- Typically, the exterior surfaces of an Elevated Tank can be accessed by either of the following:
    - Crane with Personnel Basket / Aerial Lift
    - Swingstage

- The Elevated tank will be constructed with Swing stage anchorage points located on the tank roof for future swing stage / safety line connections. The anchors will be positioned such that all exterior surfaces can be accessed by a swing stage.

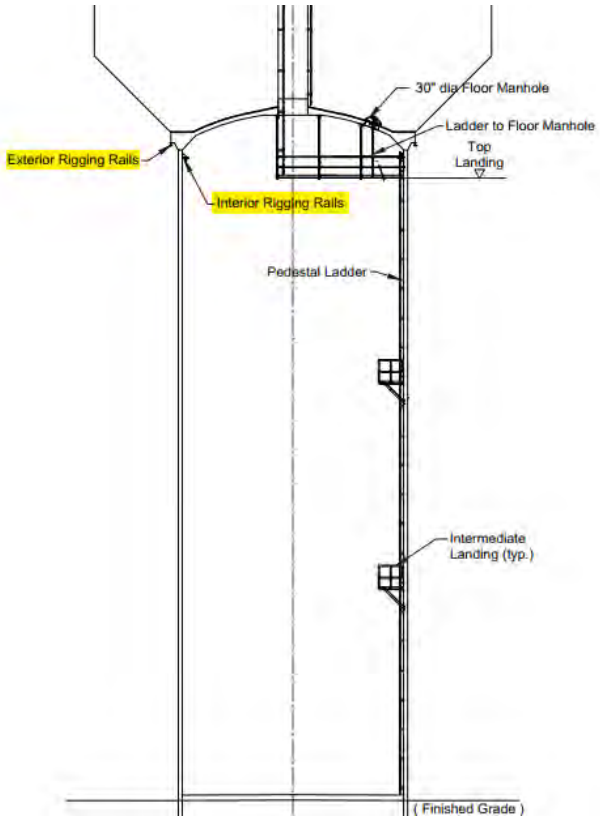
3.0 Access provisions for Concrete Pedestal Inspection and Maintenance

A. Concrete Pedestal Interior Surfaces (Access to riser pipes, concrete inspection)

- At the top of the concrete pedestal, there will be a galvanized steel Rigging Rail (similar to Painter's Rail). The rail will be continuous around the inner circumference of the pedestal. Trolley's to support the swing stage can easily be installed from the Top Landing location. This rail will provide full access to all vertical riser pipes, and will permit inspection of the pedestal interior.

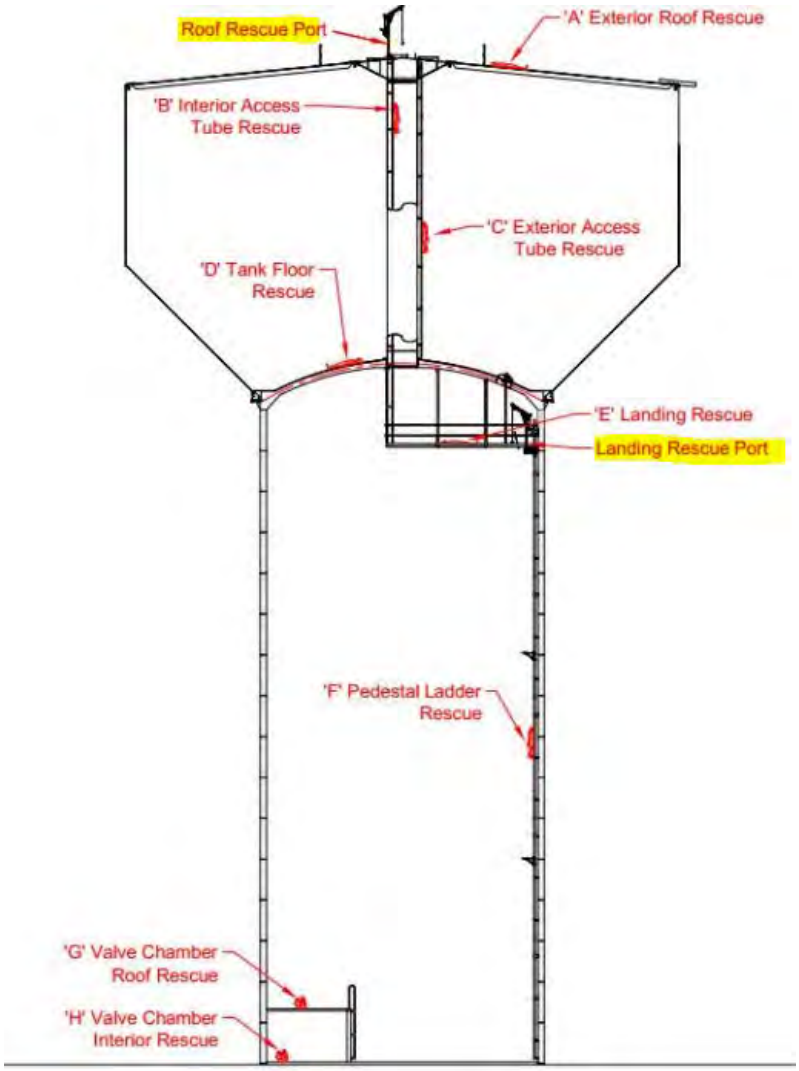
B. Concrete Pedestal Exterior Surfaces (Access exterior surfaces of pedestal)

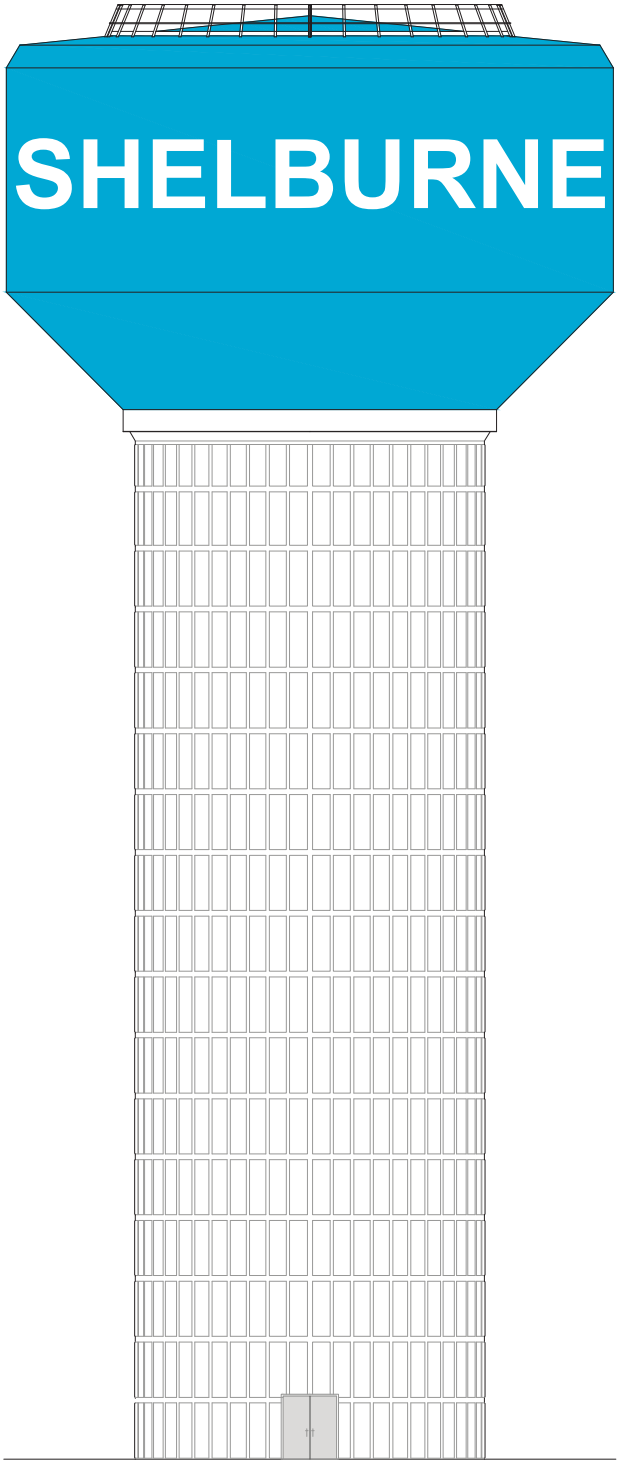
- At the top of the concrete pedestal / bottom of the elevated steel tank, there will be a Painter's rail. The rail will be continuous around the base of the tank. Trolley's to support the swing stage can easily be installed from the Top Landing location – through the Paint Rail Louvre. This rail will provide full access to all exterior surfaces of the concrete pedestal.
- Alternatively, the exterior surfaces of the pedestal can be accessed by Crane w/ Personnel Basket or an Aerial Lift.



4.0 Provisions for Rescue

- A complete set of industry standard rescue equipment will be provided to the owner upon completion of the project. The includes a Davit Arm and Winch system that requires a **Rescue Port Base** to support the placement of the Davit Arm / Winch. Landmark will provide two (2) Rescue Port Base's at the following locations:
    - 1pc – Landing Rescue Port (Beneath top landing grating)
    - 1pc – Roof Rescue Port (At top of tank roof between the access tube hatch and hatch to tank interior)
- The rescue port bases are positioned so that a safe and effective rescue can be performed from **any location within the Elevated Tank**. A fully detailed, customized set of rescue procedures will be provided upon completion of the project.





REGISTERED PROFESSIONAL ENGINEER
W.G.POGORZELSKI
7/14/21
PROVINCE OF ONTARIO

Project:

TOWN OF SHELBURNE

No.:	Date:	By:	Revision:

Description

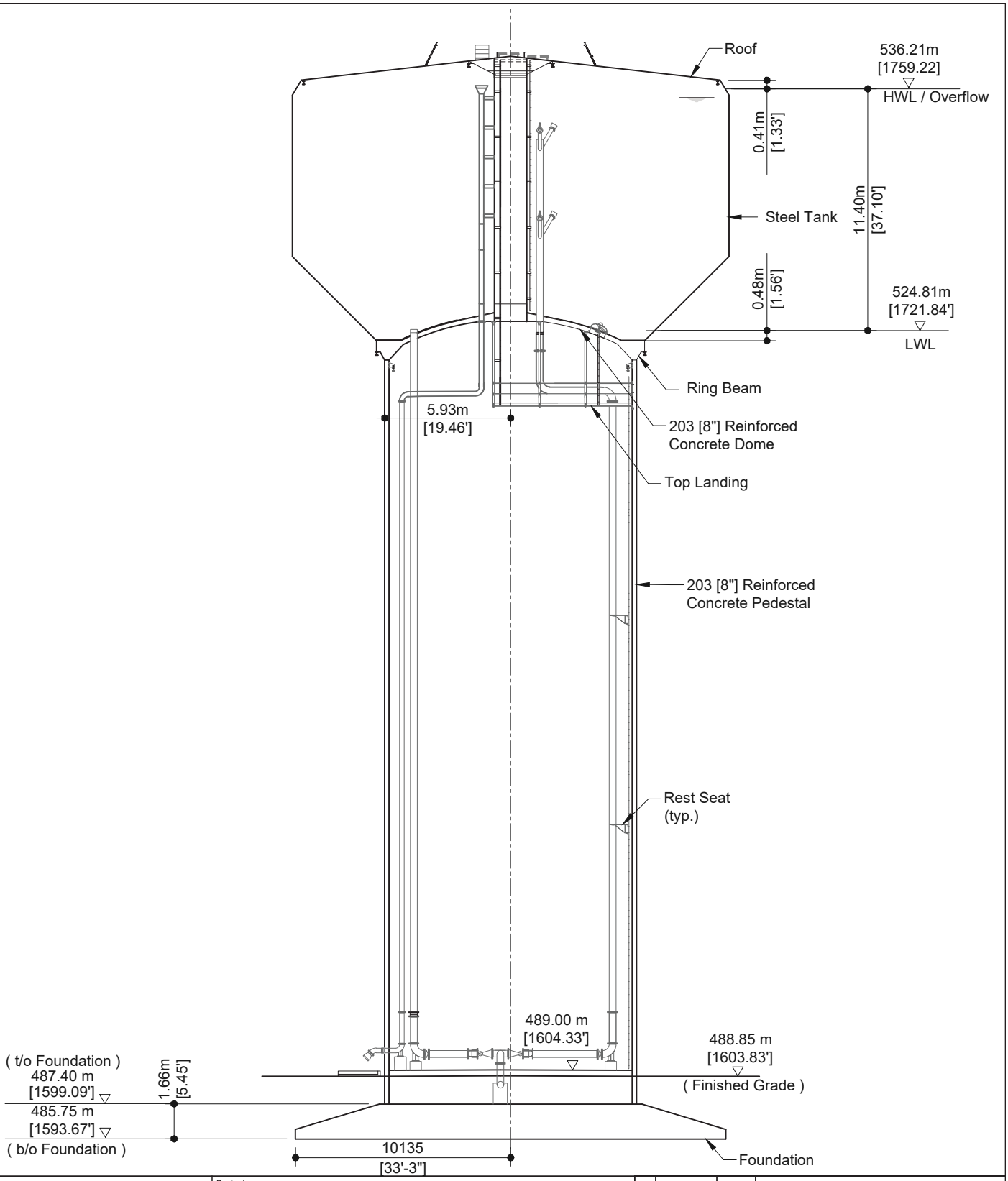
3,410 m³ ELEVATED WATER STORAGE TANK

TANK ELEVATION

Contractor:

LANDMARK
Landmark Structures Co.
3091 Harrison Court Burlington, Ontario, L7M 0W4
Tel: (905) 319-7700 Fax: (905) 319-7706

Design:	Dwn:	Job Number:
WP	WDE	CAN 0391
Chk:	Alloc:	Dwg. Number:
BM		Sk - 1
Released Date:	Scale:	
2021.07.05	N.T.S.	



REGISTERED PROFESSIONAL ENGINEER
W.G.POGORZELSKI
7/14/21
PROVINCE OF ONTARIO

Project:

TOWN OF SHELBURNE

No.:	Date:	By:	Revision:

Description

3,410 m³ ELEVATED WATER STORAGE TANK

TANK SECTION

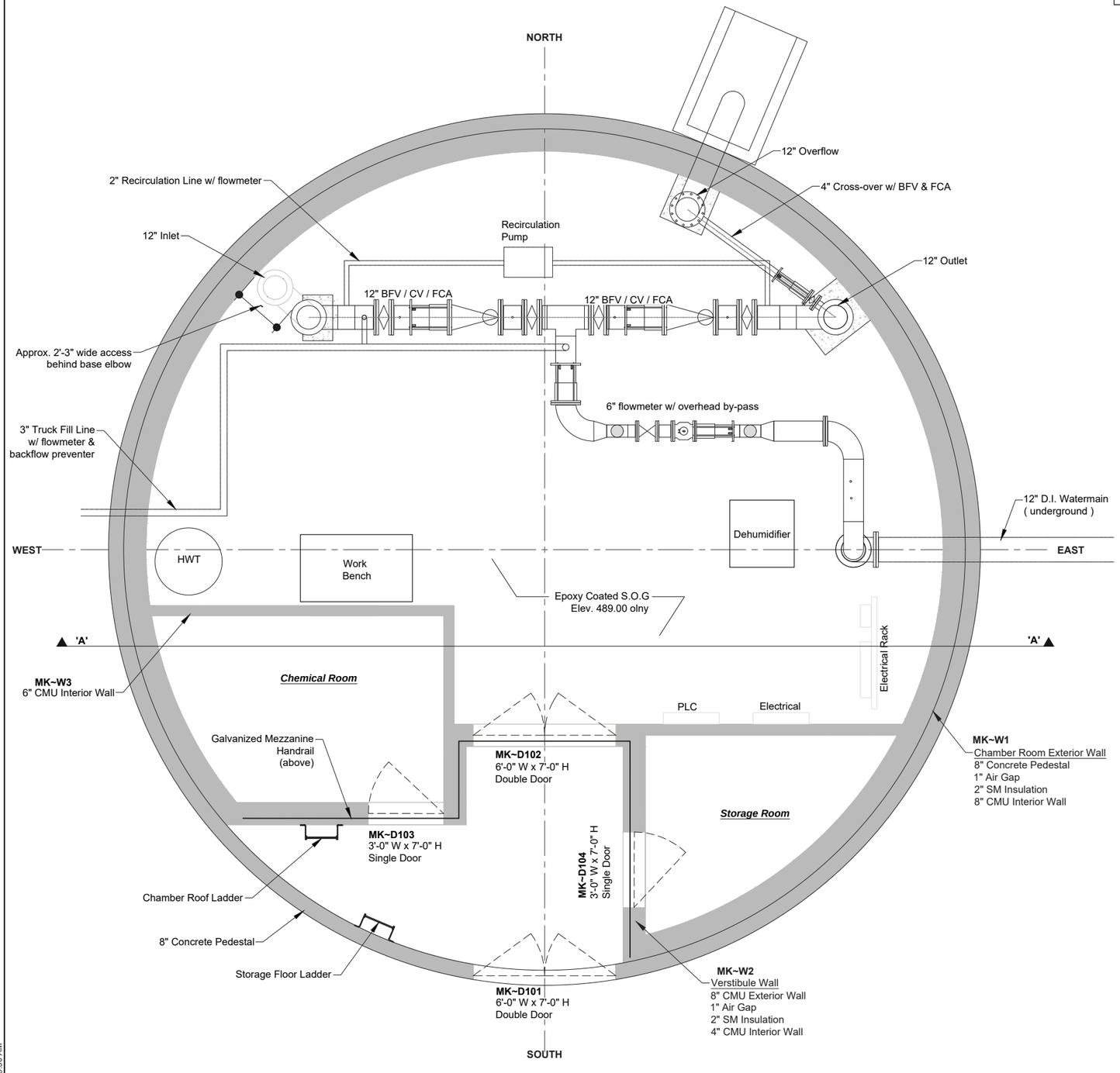
Contractor:

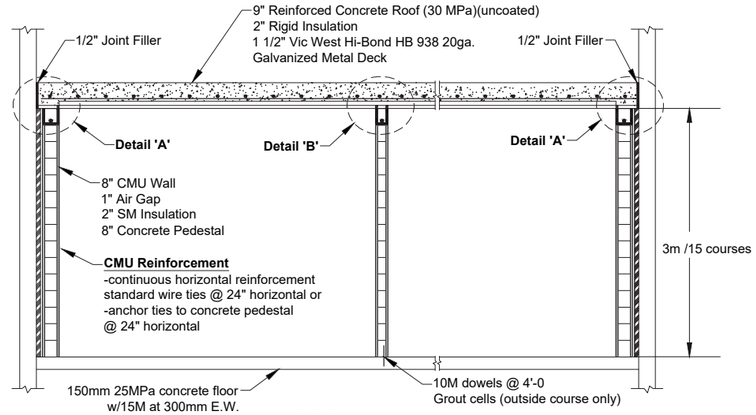
LANDMARK
Landmark Structures Co.
3091 Harrison Court Burlington, Ontario, L7M 0W4
Tel: (905) 319-7700 Fax: (905) 319-7706

Design:	Dwn:	Job Number:
WP	WDE	CAN 0391
Chk:	Alloc:	Dwg. Number:
BM		**Sk - 2**
Released Date:	Scale:	
2021.07.05	N.T.S.	

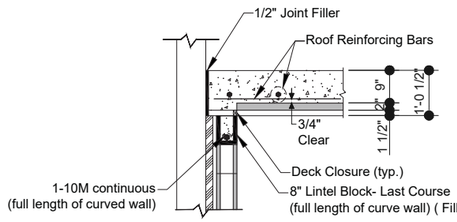
Mk.	Qty.	Description	Length	Spec.	Ref. Dwg.	Wt. (lbs.)

DOOR SCHEDULE					
DOOR MARK	QTY	SIZE		FRAME MATERIAL	FINISH
		WIDTH, W (mm)	HEIGHT, H (mm)		
101	1	1 PR OF 914	2337	HMI-BUTT	PAINTED
102	1	1 PR OF 914	2337	HM-WRAP	PAINTED
103	1	914	2337	HM-WRAP	PAINTED
104	1	914	2337	HM-WRAP	PAINTED

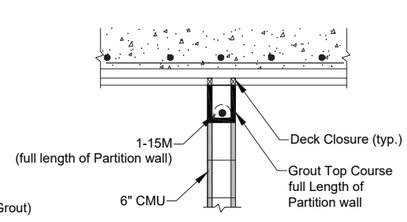




SECTION A-A



DETAIL-A



DETAIL-B

No.:	Date:	By:	Revision:

Contractor:

LANDMARK

Landmark Structures Co.
3091 Harrison Court Burlington, Ontario, L7M 0W4
Tel: (905) 319-7700 Fax: (905) 319-7706

Project:

TOWN OF SHELBURNE
3,410 m³ ELEVATED WATER STORAGE TANK

Description:

GENERAL ARRANGEMENT FLOOR PLAN

Design By:	Release Date:	Project Number:
WP	2021.07.05	CAN 0391
Drawn By:	Status:	Dwg Number:
WDE	-	SK-3
Checked By:	Scale:	
BM	-	

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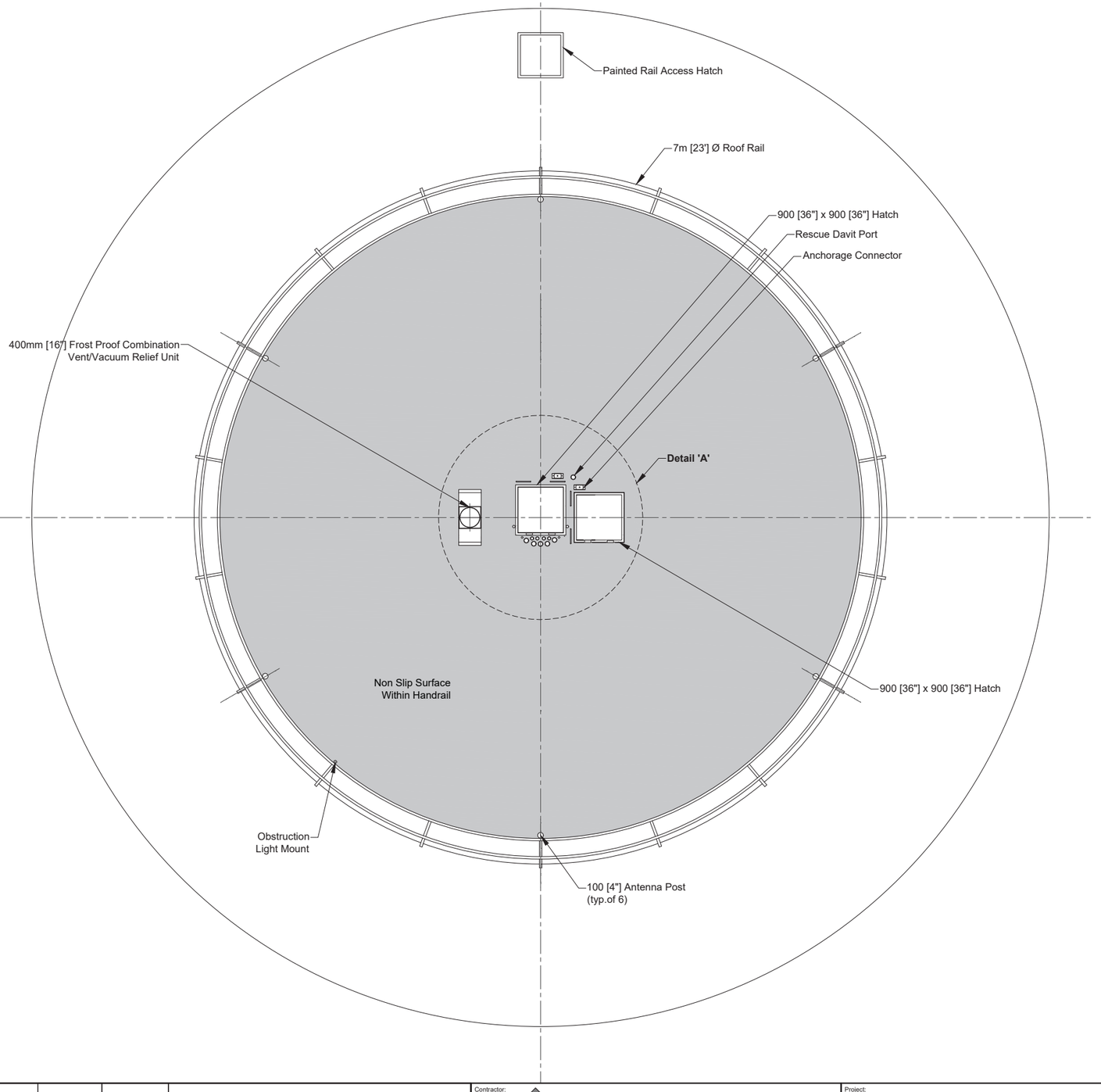
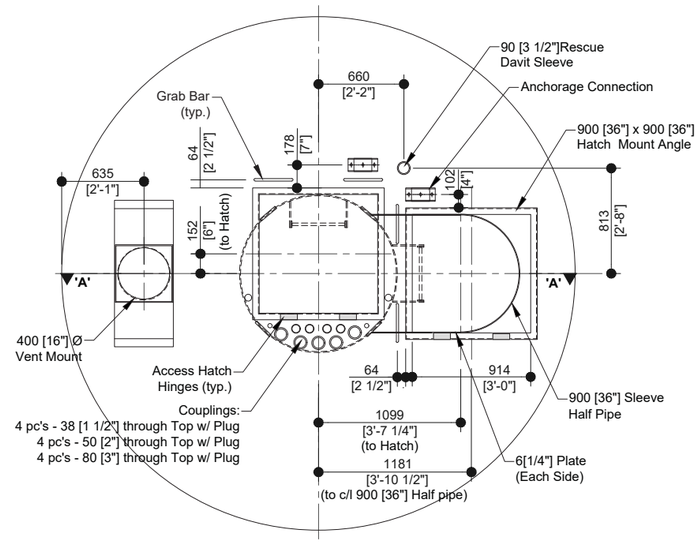
Mk.	Qty.	Description	Length	Spec.	Ref. Dwg.	Wt. (lbs.)





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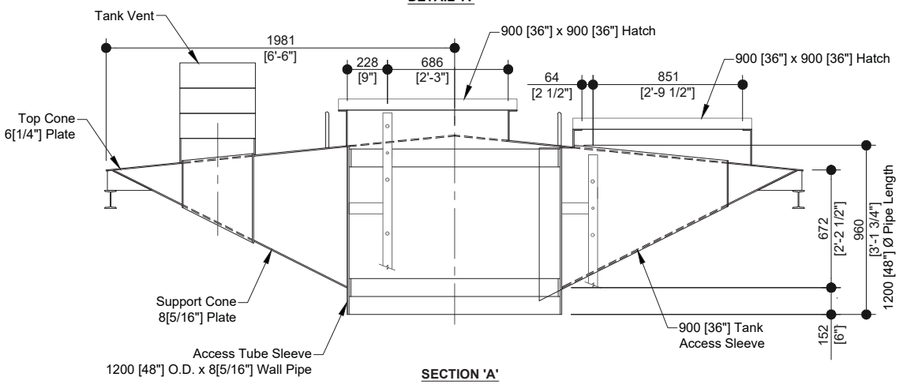

SECTION 'A'

NOTES:

1. In lieu of a raised platform (15001 Item 1.9.15.2) roof plate thickness of 0.250 (exceeds design thickness of 0.1875.) will be provided along with a non slip surface within the handrail.
2. In lieu of a "pod flange" (15001 Item 1.9.9.6.7) couplings are being provided per Item 1.9.9.6.2/3.

No.:	Date:	By:	Revision:

Contractor:
LANDMARK
Landmark Structures Co.
3091 Harrison Court Burlington, Ontario, L7M 0W4
Tel: (905) 319-7700 Fax: (905) 319-7706

Project:
TOWN OF SHELBURNE
3,410 m³ ELEVATED WATER STORAGE TANK

Description:
GENERAL ARRANGEMENT
ROOF PLAN

Design By:	Release Date:	Project Number:
WP	2021.07.05	CAN 0391
Drawn By: WDE	Status: -	Dwg Number: SK-4
Checked By: BM	Scale: -	

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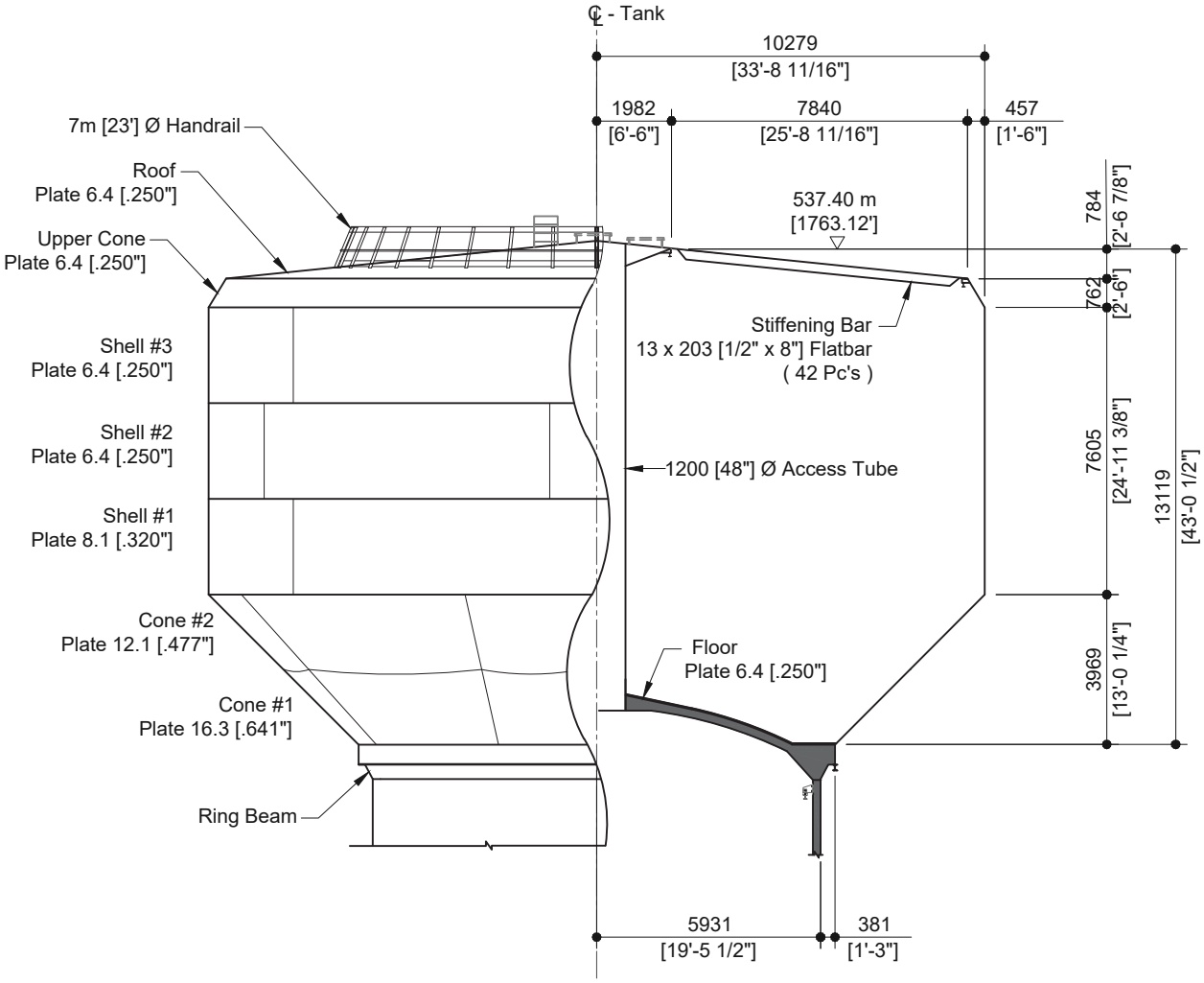


REGISTERED PROFESSIONAL ENGINEER
W.G.POGORZELSKI
7/14/21
PROVINCE OF ONTARIO

Project:
TOWN OF SHELBURNE

No.:	Date:	By:	Revision:

Description
3,410 m³ ELEVATED WATER STORAGE TANK

STEEL TANK
ELEVATION / SECTION

Contractor:

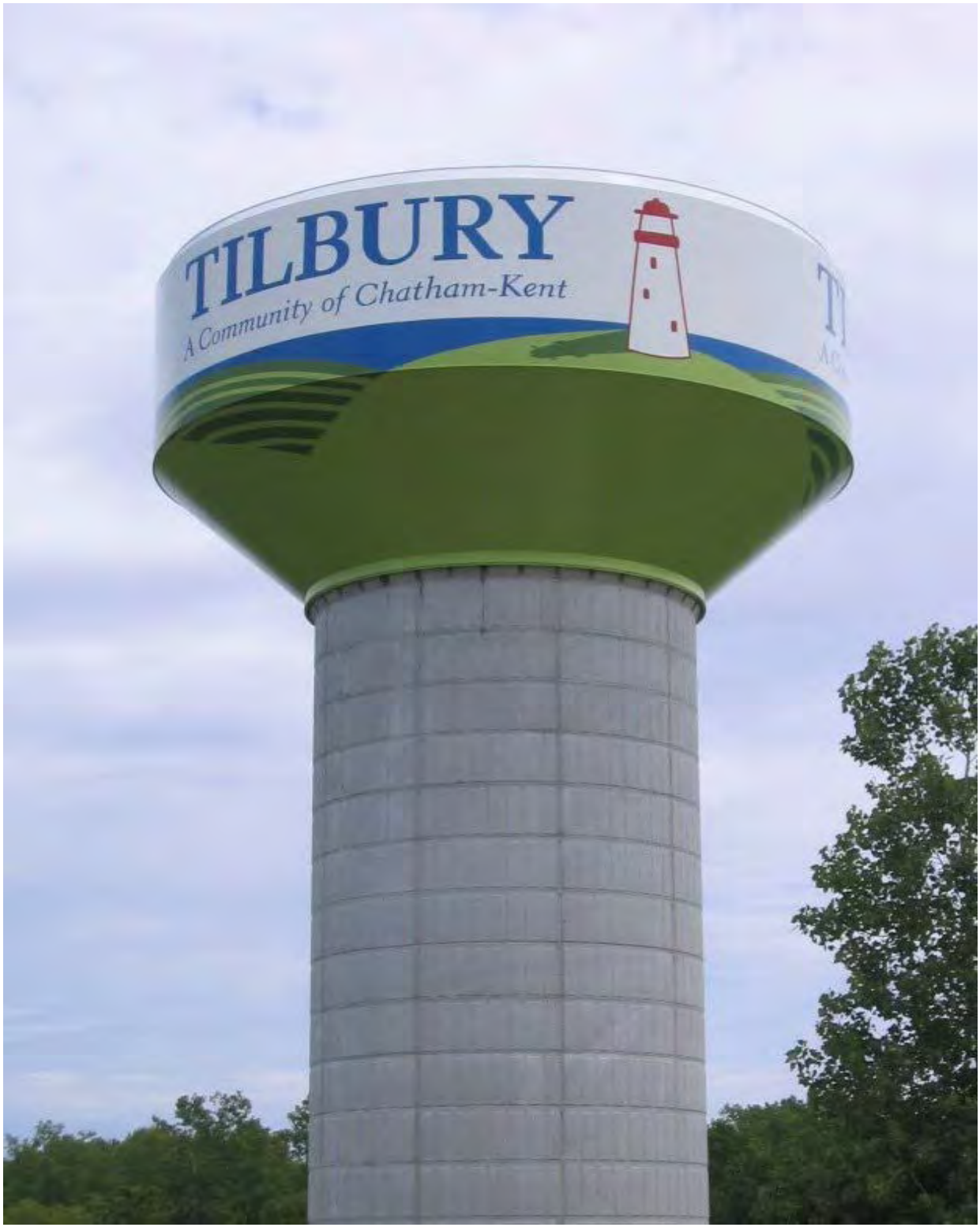
LANDMARK
Landmark Structures Co.
3091 Harrison Court Burlington, Ontario, L7M 0W4
Tel: (905) 319-7700 Fax: (905) 319-7706

Design:	Dwn:	Job Number:
WP	WDE	CAN 0391
Chk:	Alloc:	Dwg. Number:
BM		**Sk - 5**
Released Date:	Scale:	
2021.07.05	N.T.S.	

Photographic Resume – Elevated Tanks

Photos of Landmark Structures Elevated Tanks

Photos of Landmark Structures Elevated Tanks



Request for Proposal
SBA File No: M20009

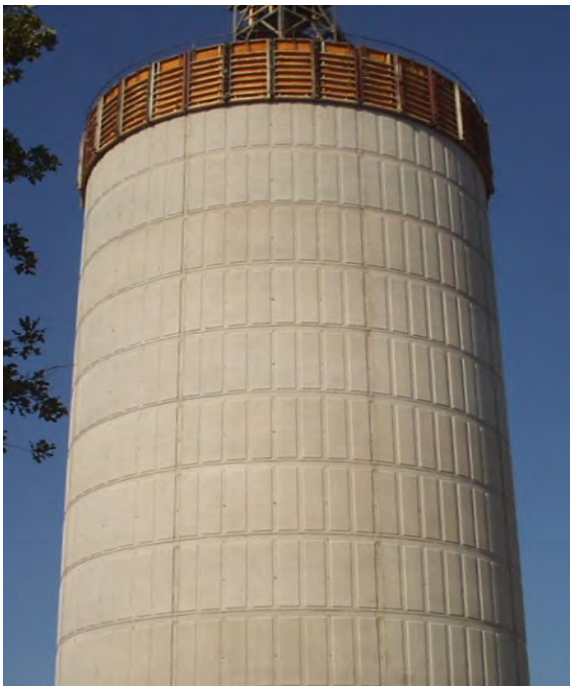
Photos of Landmark Structures Elevated Tanks

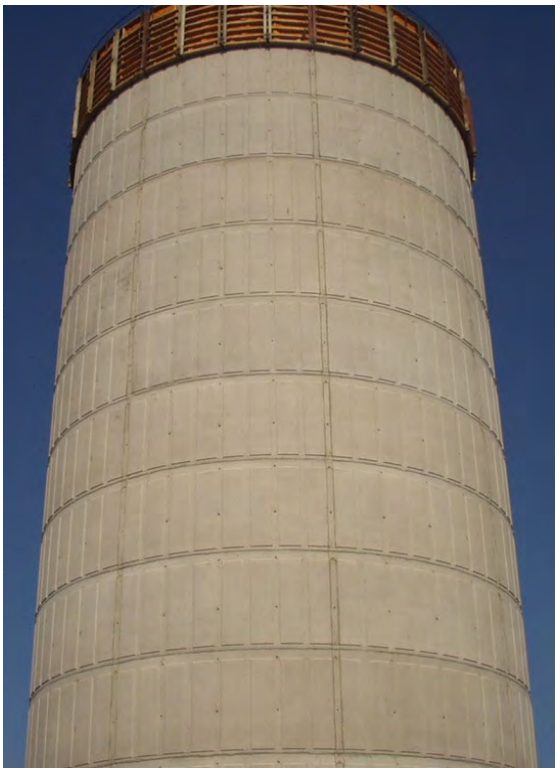
SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

Project# 1124





SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

Project # 1140

SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

Project # 1097

SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

Project # 1160

SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

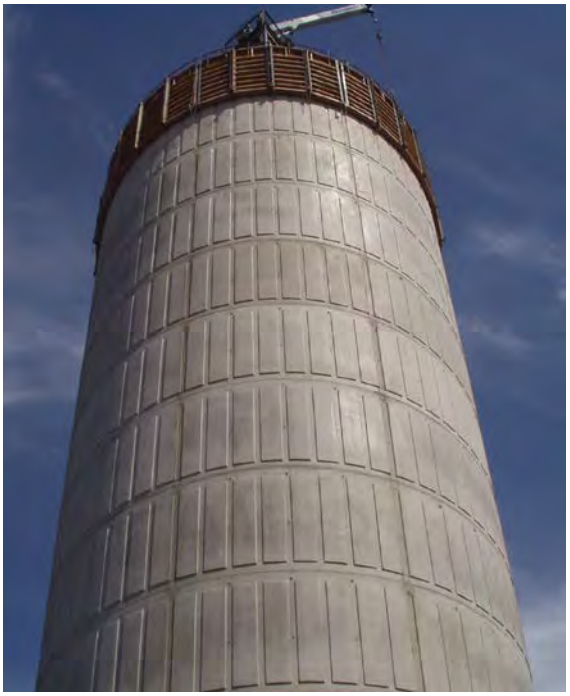
Project #1147

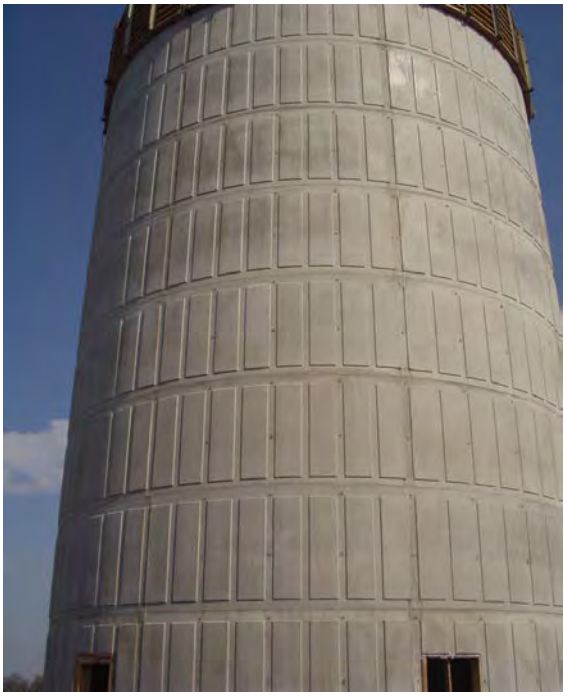
SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

Project # 1050



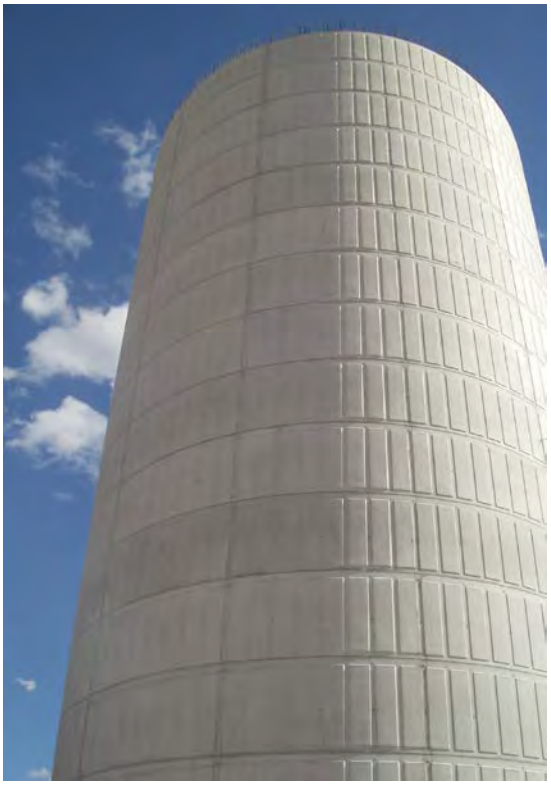


SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

Project # 504

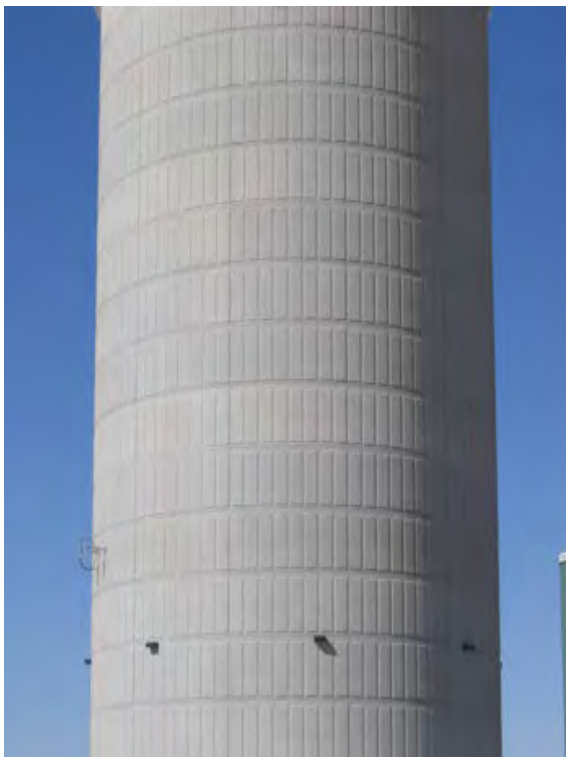


SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

Project # 1065

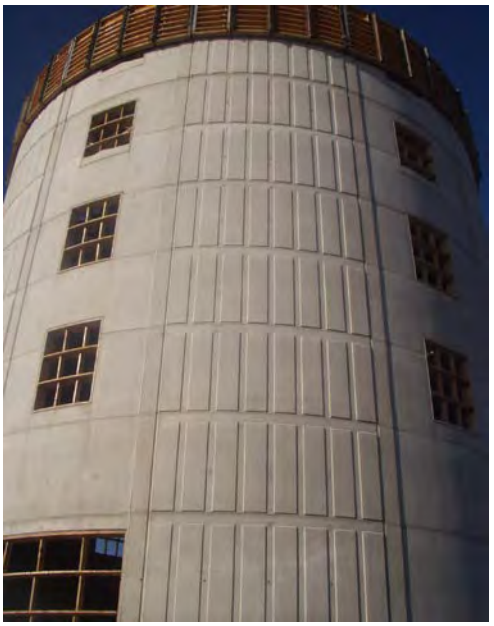


SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

Project # 1089

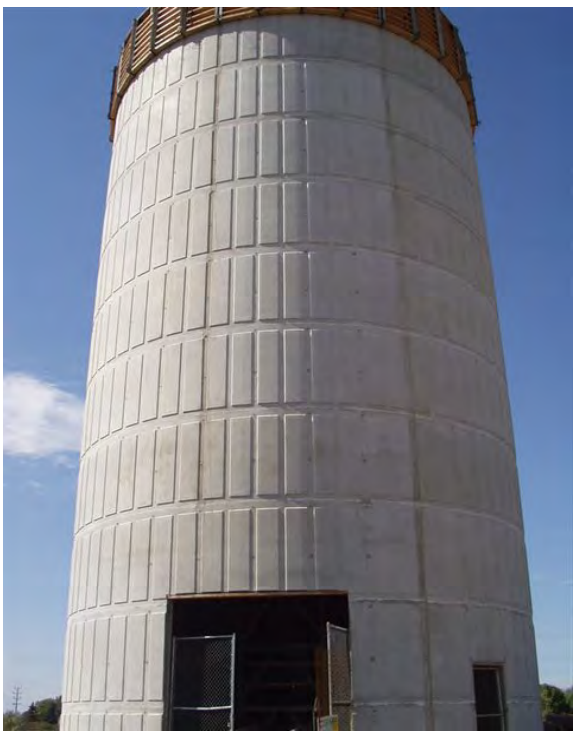


SBA File No: M20009

Section E: Drawings and Photographs

Photographic Resume – Concrete Pedestal

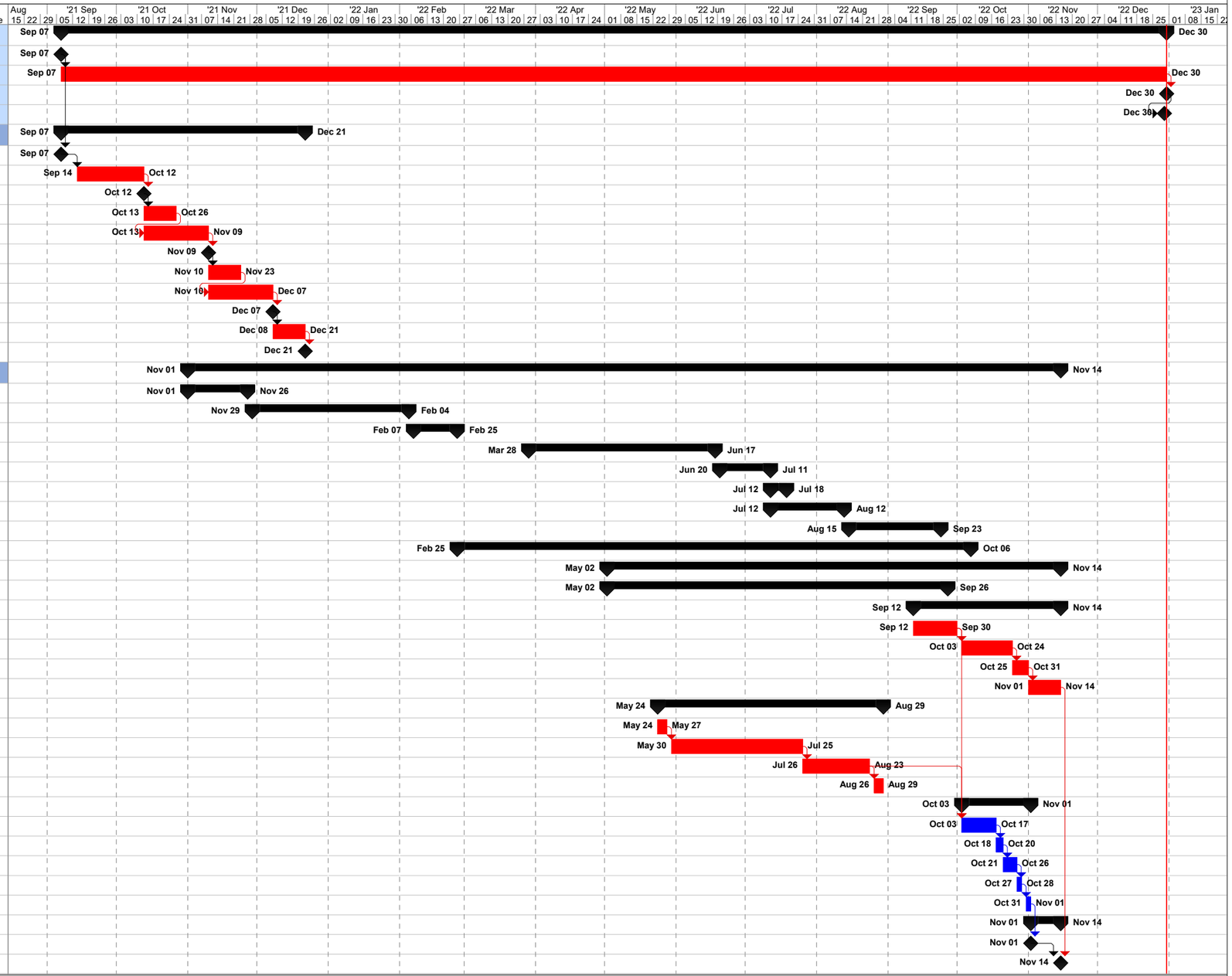
Project # 1051



LANDMARK
Elevating Expectations

Shelburne CET Proposed Bid Schedule
Landmark Structures Co. - 3,410 cu.m. CET

ID	Task Calendar	Task Name	Work Duration	Start	Finish	% Complete
1	None	**OWNER CONTRACT**	331 d	Tue Sep 07	Fri Dec 30	0%
2	5x10 CET	**NOTICE TO PROCEED**	0 d	Tue Sep 07	Tue Sep 07	0%
3	5x10 CET	**CONSTRUCTION DURATION**	331 d	Tue Sep 07	Fri Dec 30	0%
4	5x10 CET	**CONTRACT EXTENSION (from Change Order as required)**	0 d	Fri Dec 30	Fri Dec 30	0%
5	5x10 CET	**SUBSTANTIAL COMPLETION (Contract Milestone)**	0 d	Fri Dec 30	Fri Dec 30	0%
6	5x10 CET	**Engineering**	75 d	Tue Sep 07	Tue Dec 21	0%
7	5x10 CET	Configuration & Design	0 d	Tue Sep 07	Tue Sep 07	0%
8	5x10 CET	Foundation & Pedestal Drawings	20 d	Tue Sep 14	Tue Oct 12	0%
9	5x10 CET	Submission for Approval	0 d	Tue Oct 12	Tue Oct 12	0%
10	5x10 CET	Owner Review & Comment	10 d	Wed Oct 13	Tue Oct 26	0%
11	5x10 CET	Misc Iron & Tank Drawings	20 d	Wed Oct 13	Tue Nov 09	0%
12	5x10 CET	Submission for Approval	0 d	Tue Nov 09	Tue Nov 09	0%
13	5x10 CET	Owner Review & Comment	10 d	Wed Nov 10	Tue Nov 23	0%
14	5x10 CET	Final Drawings	20 d	Wed Nov 10	Tue Dec 07	0%
15	5x10 CET	Submission for Approval	0 d	Tue Dec 07	Tue Dec 07	0%
16	5x10 CET	Owner Review & Comment	10 d	Wed Dec 08	Tue Dec 21	0%
17	5x10 CET	Design Complete	0 d	Tue Dec 21	Tue Dec 21	0%
18	5x10 CET	**Construction**	261 d	Mon Nov 01	Mon Nov 14	0%
19	5x10 CET	**FOUNDATION**	20 d	Mon Nov 01	**Fri Nov 26**	0%
26	5x10 CET	**PEDESTAL**	47 d	Mon Nov 29	Fri Feb 04	0%
34	5x10 CET	**MISC. IRON**	14 d	Mon Feb 07	**Fri Feb 25**	0%
36	5x10 CET	**TANK ERECTION - GROUND PHASE**	57 d	Mon Mar 28	Fri Jun 17	0%
41	5x10 CET	**COATINGS - GROUND PHASE**	15 d	Mon Jun 20	Mon Jul 11	0%
45	5x10 CET	**TANK HOIST**	**5 d**	**Tue Jul 12**	**Mon Jul 18**	**0%**
48	5x10 CET	**TANK ERECTION - AIR PHASE**	23 d	Tue Jul 12	Fri Aug 12	0%
52	5x10 CET	**COATINGS - AIR PHASE**	29 d	Mon Aug 15	Fri Sep 23	0%
57	5x10 CET	**FINISH OUT**	154 d	Fri Feb 25	Thu Oct 06	0%
66	5x10 CET	**SUBCONTRACTORS**	**136 d**	**Mon May 02**	**Mon Nov 14**	**0%**
67	5x10 CET	**Misc. Subcontractors**	**102 d**	**Mon May 02**	**Mon Sep 26**	**0%**
70	5x10 CET	**Sitework & Watermain**	**45 d**	**Mon Sep 12**	**Mon Nov 14**	**0%**
71	5x10 CET	Watermain Installation	15 d	Mon Sep 12	Fri Sep 30	0%
72	5x10 CET	Site Grade & Access Road	15 d	Mon Oct 03	Mon Oct 24	0%
73	5x10 CET	Chainlink Fencing	5 d	Tue Oct 25	Mon Oct 31	0%
74	5x10 CET	Landscaping	10 d	Tue Nov 01	Mon Nov 14	0%
75	5x10 CET	**Electrical & Insrumentation (Post-SOG)**	**68 d**	**Tue May 24**	**Mon Aug 29**	**0%**
76	5x10 CET	Hydro Service	4 d	Tue May 24	Fri May 27	0%
77	5x10 CET	Distribution Work	40 d	Mon May 30	Mon Jul 25	0%
78	5x10 CET	Instrumentation Work	20 d	Tue Jul 26	Tue Aug 23	0%
79	5x10 CET	I/O - Testing of Equipment	2 d	Fri Aug 26	Mon Aug 29	0%
80	5x10 CET	**COMMISSIONING**	**21 d**	**Mon Oct 03**	**Tue Nov 01**	**0%**
81	5x10 CET	Watermain Disinfection/Commissioning	10 d	Mon Oct 03	Mon Oct 17	0%
82	5x10 CET	Disinfect & Fill Tank	3 d	Tue Oct 18	Thu Oct 20	0%
83	5x10 CET	Bactii Sampling	4 d	Fri Oct 21	Wed Oct 26	0%
84	5x10 CET	Manufacturer Start Up	2 d	Thu Oct 27	Fri Oct 28	0%
85	5x10 CET	Manufacturer Commissioning & Training	2 d	Mon Oct 31	Tue Nov 01	0%
86	5x10 CET	**COMPLETION**	**9 d**	**Tue Nov 01**	**Mon Nov 14**	**0%**
87	5x10 CET	Projected Substantial Completion	0 d	Tue Nov 01	Tue Nov 01	0%
88	5x10 CET	Projected Total Completion	0 d	Mon Nov 14	Mon Nov 14	0%



Task
Milestone
Rolled Up Critical Task
Split
Group By Summary
Inactive Milestone
Duration-only
Start-only
Critical Task
Summary
Rolled Up Milestone
External Tasks
Deadline
Inactive Summary
Manual Summary Rollup
Finish-only
Progress
Rolled Up Task
Rolled Up Progress
Project Summary
Inactive Task
Manual Task
Manual Summary

S. BURNETT
& ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

Section A

Form of Proposal

FORM OF PROPOSAL

Town of Shelburne
Elevated Water Storage Tank
SBA File No: M20009

This proposal submitted by:

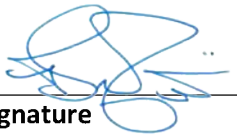
Brent Marini
Name

Landmark Structures Co.
Company Name

3091 Harrison Court, Burlington, ON L7M 0W4
Address

905.319.7700
Telephone Number

bmarini@teamlandmark.com
Email Address



Signature

July 15, 2021
Date of Submission

Having carefully examined all Quotation Documents related thereto, including the General Terms and Conditions, Description of Works, Schedule of Unit Prices and Form of Proposal and Addendum / Addenda No. 1 to 5, I do hereby provide this Proposal in accordance with the Proposal Documents and all specifications, including detailed drawings as may be supplied from time to time, to furnish all materials, labour and equipment and all things necessary within the time specified as described in the following Sections.

The undersigned agrees to accept as full payment, therefore, the sums calculated in accordance with the actual measured quantities.

Notes:

1. Proposal to include Harmonized Sales Tax (HST).
2. Proposal provided is deemed to be valid for a period of **sixty (60)** days from date of closing of proposals.
3. All works to be completed by ~~**mid August 2022**~~ **December 31, 2022**, weather permitting, based on award of Contract within two (2) weeks of date of closing of proposal.

Contractor: Landmark Structures Co.

Address: 3091 Harrison Court, Burlington ON, L7M 0W4

Contract Title: Town of Shelburne, Elevated Water Storage Tank

SCHEDULE OF UNIT PRICES

SCHEDULE A - Miscellaneous Items

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CONTRACT TOTAL
A1	Mobilization / Demobilization	1.00	LS	$295,000.00	$295,000.00
A2	a) Bonding & Insurance	1.00	LS	$114,400.00	$114,400.00
	b) All-Risk Insurance	1.00	LS	$21,000.00	$21,000.00
A3	Supply & Maintain Contractor Site Office	1.00	LS	$20,300.00	$20,300.00
A4	Allowances:				
a)	Hydro One & Bell Canada	1.00	LS	$50,000.00	$50,000.00
b)	Soils & Concrete Testing	1.00	LS	$25,000.00	$25,000.00
c)	Shop Testing	1.00	LS	$5,000.00	$5,000.00
d)	Third Party Testing Services:				
i)	Welding Inspections & Reports	1.00	LS	$15,000.00	$15,000.00
ii)	Coating Inspections & Reports	1.00	LS	$15,000.00	$15,000.00
e)	Natural Gas Connection (Genset)	1.00	LS	$20,000.00	$20,000.00
A5	Manufacturer's Representation At/During:				
a)	Commissioning	1.00	LS	$22,400.00	$22,400.00
b)	Start-Up & Training	1.00	LS	$29,600.00	$29,600.00
c)	(5 Day) Performance Testing	1.00	LS	$9,500.00	$9,500.00
d)	Warranty Period	1.00	LS	$1,000.00	$1,000.00
A7	Supply, Erect and Maintain Signs and Traffic Control Devices and Maintain Traffic Flow	1.00	LS	$12,000.00	$12,000.00
A8	Utility Location & Construction Layout	1.00	LS	$9,500.00	$9,500.00
A9	Environmental Mitigation Measures	1.00	LS	$12,300.00	$12,300.00
				SUBTOTAL:	$677,000.00

Contractor: Landmark Structures Co.

Address: 3091 Harrison Court, Burlington ON, L7M 0W4

Contract Title: Town of Shelburne, Elevated Water Storage Tank

SCHEDULE OF UNIT PRICES

SCHEDULE B - Elevated Storage Reservoir

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CONTRACT TOTAL
B1	**Design. Supply and Construct Elevated Reservoir and Support Structure:**				
a)	Design of Water Tower Structure	1.00	LS	$115,000.00	$115,000.00
b)	Supply All Materials and Construct:				
i)	Clearing, Grubbing & Stockpiling	1.00	LS	$68,000.00	$68,000.00
ii)	Excavation and Backfill	1.00	LS	$53,000.00	$53,000.00
iii)	Dewatering (All Structures)	1.00	LS	$36,000.00	$36,000.00
iv)	Reinforced Concrete Foundation	1.00	LS	$478,000.00	$478,000.00
v)	Reinforced 48 m tall (from grade level to top of tower), Concrete Support Pedestal, Slabs and Other Miscellaneous Concrete Work above Floor Slab	1.00	LS	$1,085,000.00	$1,085,000.00
vi)	Steel Composite Tank (3410 m3) with Mixing System and Other Accessories	1.00	LS	$1,374,000.00	$1,374,000.00
vii)	Interior Process Piping and Mechanical Equipment (300 mm Header Pipe, 300mm dia. Inlet/Outlet Piping and Gate Valve [insulated, heat tracing and cladding], 300mm dia. Overflow **(insulated)**, 100mm dia. Outlet/Overflow Interconnection, and associated valves, fittings, etc., and pipe/equipment supports/housekeeping pads)	1.00	LS	$235,800.00	$235,800.00
viii)	Supply and Install Interior Process Piping, Concrete Support Pads and Pipe Supports (75mm dia. piping and associated valves, fittings, pipe/equipment supports/housekeeping pads, etc.)	1.00	LS	$38,600.00	$38,600.00
ix)	Supply and Install one (1) Vertical In Line Recirculation Pump c/w VFD and Ancillary Equipment	1.00	LS	$9,600.00	$9,600.00
x)	Supply and Install Chemical Feed Equipment (Includes: Sodium Hypochlorite **Chemical Supply (200 L),** All Tankage, Secondary Containment, Storage, Feed Piping, etc.)	1.00	LS	$49,400.00	$49,400.00
xi)	Supply & Install Process Piping, Pump, Magnetic Flow Monitoring, Valves, Fittings, Level Switch, Gauges and Associated Mechanical Equipment	1.00	LS	$24,400.00	$24,400.00
xii)	Supply & Install Plumbing Components (Includes: Piping, Drainage Piping, Plumbing Fixtures, Sink with Counter, Eye Wash Station, etc.)	1.00	LS	$39,000.00	$39,000.00
xiii)	Supply and Install Miscellaneous Metals	1.00	LS	$136,900.00	$136,900.00
xiv)	Supply and Install of Piping, Backflow Preventor, Instruments, Valves, Drain, Hose Connection, Weather Proof Control Panel, Lighting, Splash Pad with Catch Basin etc. for Truck Fill Station	1.00	LS	$32,500.00	$32,500.00
xv)	Communication Support Structure & Navigational Beacon Infrastructure (as per Nav-Can Requirements)	1.00	LS	$10,200.00	$10,200.00
xv i)	Operator Workbench, Chair, Cabinet, etc.	1.00	LS	$2,600.00	$2,600.00
xvii)	Graphics	1.00	LS	$22,800.00	$22,800.00
xviii)	Painting	1.00	LS	$670,400.00	$670,400.00
xix)	Cladding and Insulation for Rooms inside the Shaft (Chemical, Storage and Equipment Room)	1.00	LS	$25,700.00	$25,700.00
xx)	Supply and Install Fire Extinguishers and First Aid Kits	1.00	LS	$1,200.00	$1,200.00
xxi)	Pressure Testing, Swabbing & Flushing and Disinfection	1.00	LS	$8,200.00	$8,200.00
xxii)	As-Builts	1.00	LS	$4,400.00	$4,400.00
xxiii)	Close Out Report	1.00	LS	$1,600.00	$1,600.00
				SUBTOTAL:	$4,522,300.00

Contractor: Landmark Structures Co.

Address: 3091 Harrison Court, Burlington ON, L7M 0W4

Contract Title: Town of Shelburne, Elevated Water Storage Tank

SCHEDULE OF UNIT PRICES

SCHEDULE B - Elevated Storage Reservoir Cont'd

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CONTRACT TOTAL
B1	**Design. Supply and Construct Elevated Reservoir and Support Structure: CONT'D**				
c)	Supply and Installation of HVAC Equipment and Ancillary Components	1.00	LS	$21,600.00	$21,600.00
d)	Supply & Installation of Plumbing Components (Includes: Drainage Piping, Plumbing Fixtures, etc.) in the Equipment, Chemical and Storage Rooms	1.00	LS	$6,800.00	$6,800.00
e)	Supply and Installation of Ventilation Equipment	1.00	LS	$25,300.00	$25,300.00
f)	**Supply and Install:**				
i)	Chlorine analyzers (2), Flowmeters (2), Temperature Transmitter (1), Pressure Transmitter (1)	1.00	LS	$42,000.00	$42,000.00
ii)	Associated process piping, Isolation valves, drain connections etc.	1.00	LS	$12,400.00	$12,400.00
g)	Supply and Installation of Electrical Power Distribution System ~~and Control Equipmcnt~~	1.00	LS	$252,500.00	$252,500.00
h)	Supply and Installation of PLC hardware, **Communication Modem and Antennas**, c/w Panel Door Mounted SCADA Computer ~~and Instrumentation and Associated Components within the Tower~~	1.00	LS	$78,000.00	$78,000.00
i)	Supply and Installation of Standby Natural Gas Power Generator and Concrete Foundation Pad	1.00	LS	$42,400.00	$42,400.00
j)	**Supply and Installation** of All Exterior and Interior Lighting, including Fixtures ~~and Receptables~~	1.00	LS	$86,600.00	$86,600.00
k)	**PLC, SCADA and Alarm Annunciation Programming**	1.00	LS	$42,000.00	$42,000.00
B2	**Yard Piping:**				
a)	Supply and Installation of ~~HDPE/~~PVC Watermain (from Tower to Luxton Way):	105.00	m(l)	$1,000.00	$105,000.00
b)	Supply and Installation of ~~HDPE/~~PVC Watermain (from Tower to Simon St.) by:				
i)	Option No.1 - (*Open~Cut Method)	155.00	m(l)	$1,050.00	$162,750.00
ii)	Option No.2 - ('Horizontal Directional Drill Method)	155.00	m(l)	$5,188.00	
	(*Price both options but only carry forward pricing for Open-Cut Method Only)				
c)	Supply and Installation of All Watermain Isolation Valves, Valve Boxes, Reducers and Fittings, etc.	1.00	LS	$52,000.00	$52,000.00
d)	Final Connections and All Coordination Costs by the General Contractor Associated with Connection of the Distribution Watermain from the Tower to Luxton Way and Simon St.	1.00	LS	$55,800.00	$55,800.00
e)	Supply and Installation of 150mm dia. DR28 PVC Sanitary Sewer	100.00	m(l)	$408.00	$40,800.00
f)	Supply and Installation of 1200 mm dia. Sanitary Manhole (MH-01) on Luxton Way	1.00	LS	$24,400.00	$24,400.00
g)	Final Connections Including All Coordination Costs by the General Contractor Associated with Connection of the Sanitary Sewer (including manhole etc. as shown on the contract drawings) on Luxton Way	1.00	LS	$25,600.00	$25,600.00
h)	Supply and Installation Overflow Structure to Besley Drain (Including: Swale, Drainage Culvert, Rip-Rap/Armorstone Treatment, Concrete Splash Pad, Outfall Headwall, Truck Fill Station Drain Trench, Drainage Piping, etc.)	1.00	LS	$132,600.00	$132,600.00
				SUBTOTAL:	$1,208,550.00

Contractor: Landmark Structures Co.

Address: 3091 Harrison Court, Burlington ON, L7M 0W4

Contract Title: Town of Shelburne, Elevated Water Storage Tank

SCHEDULE OF UNIT PRICES

SCHEDULE B - Elevated Storage Reservoir Cont'd

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CONTRACT TOTAL
B3	**Site Works:**				
a)	Supply and Construct Granular Access Road to Tower Location	1.00	LS	$89,400.00	$89,400.00
b)	Supply and Construct Granular Parking Area	1.00	LS	$27,600.00	$27,600.00
c)	Supply and Installation of Perimeter Fencing Including Entrance Gates	1.00	LS	$53,200.00	$53,200.00
d)	Supply and Construct Concrete Sidewalk/Walkway Around Water Tower	1.00	LS	$14,200.00	$14,200.00
e)	Site Grading and Restoration including Topsoil and Hydroseeding	1.00	LS	$78,800.00	$78,800.00
f)	Supply and Installation of Bollards	1.00	LS	$4,000.00	$4,000.00
~~g)~~	~~Drainage Outfall and Rip Rap Rock Chcck Dam~~	~~1.00~~	~~LS~~		
				SUBTOTAL:	$267,200.00

Contractor: Landmark Structures Co.

Address: 3091 Harrison Court, Burlington ON, L7M 0W4

Contract Title: Town of Shelburne, Elevated Water Storage Tank

SCHEDULE OF UNIT PRICES

SCHEDULE C - Contingency Items

ITEM NO.	DESCRIPTION	CONTRACT QUANTITY	UNIT	UNIT PRICE	CONTRACT TOTAL
C1	Excavation of Unsuitable Soil Below Grade Specified incl. Placement of Additional Granular Bedding Material & Disposal of Excavated Material	100.00	cu.m.	$84.00	$8,400.00
C2	Supply, Place & Compact Granular incl. Excavation & Disposal of Existing Material:				
a)	Granular A	50.00	cu.m.	$84.00	$4,200.00
b)	Granular B	50.00	cu.m.	$82.00	$4,100.00
c)	19mm Clear Stone	25.00	cu.m.	$94.00	$2,350.00
d)	Rip-Rap	50.00	cu.m.	$119.00	$5,950.00
e)	Pre-mixed Concrete (25 MPA)	20.00	cu.m.	$244.00	$4,880.00
C3	Labour Rates for Additional Work: (The rate shall include payroll burden, overhead & profit)				
a)	Site Supervision	40.00	hrs	$85.00	$3,400.00
b)	Foreman	40.00	hrs	$95.00	$3,800.00
c)	Pipe Fitter/Plumber	40.00	hrs	$85.00	$3,400.00
d)	Pipe Fitter/Plumber Apprentice	40.00	hrs	$85.00	$3,400.00
e)	Carpenter	40.00	hrs	$95.00	$3,800.00
f)	Labourer	40.00	hrs	$80.00	$3,200.00
g)	Electrician	40.00	hrs	$104.00	$4,160.00
h)	Electrician Apprentice	40.00	hrs	$102.00	$4,080.00
C4	Additional 8-hour Days for Instrumentation & Control Systems Integrator / Programmer to Provide Additional Training or Program Modifications	5.00	Days	$1,323.00	$6,615.00
C5	Supply & Place Box Insulation (0.6m Wide x 2.4m Long x 50mm Thick)	25.00	m(l)	$144.00	$3,600.00
C6	Removal of Boulders over 1.0 metre in Diameter from Excavation	10.00	cu.m.	$300.00	$3,000.00
C7	**Additional S-hour Days for Instrumentation & Control Systems Integrator / Programmer to Provide Additional Training or Make Program Modifications**	**5.00**	**Days**	$1,323.00	$6,615.00
				SUBTOTAL:	$78,950.00

Cost Summary Schedule of Unit Prices

COST SUMMARY

SCHEDULE OF UNIT PRICES

S. Burnett & Associates Limited **Project No. M20009**

Contractor: Landmark Structures Co.

Address: 3091 Harrison Court, Burlington ON, L7M 0W4

Contract Title: Town of Shelburne, Elevated Water Storage Tank

DESCRIPTION	CONTRACTTOTAL
SCHEDULE A - Miscellaneous Items	$677,000.00
SCHEDULE B - Elevated Storage Reservoir	$4,522,300.00
SCHEDULE B - Elevated Storage Reservoir cont'd	$1,208,550.00
SCHEDULE B - Elevated Storage Reservoir cont'd	$267,200.00
SCHEDULE C - Contingency Items	$78,950.00

SUBTOTAL: $6,754,000.00

HST13%: $878,020.00

TOTAL: $7,632,020.00

Estimated Cost of Material to be incorporated in the work: $4,250,000.00

Estimated Cost of Labour and all Other Charges: $3,382,020.00

Total (Must Equal Total RFP Price): $7,632,020.00

A certified cheque or Bid Bond for the sum of: **10%** _____ is enclosed.
(Minimum of $)

S. BURNETT & ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

ADDENDUM No. 1

Date:	June 25, 20221	**Project No:**	M20009
Project Name:	Request for Proposal: Town of Shelburne, Elevated Water Storage Tank		
To:	All Bidders		

This Addendum consists of 27 pages total.

Please make the following changes / additions to the Request for Proposal Document. Bidders are responsible to ensure that all addenda have been received. Bidders shall be required to acknowledge addenda in the space provided in Section A of the Proposal Form.

This addendum will form part of the terms, conditions and specifications outlined in the above noted Request for Proposal Contract Document. All other components of the Bid documents shall remain unchanged.

REMINDER: BIDDERS MUST IDENTIFY THIS ADDENDA IN THE SPACE PROVIDED IN SECTION A OF THE PROPOSAL FORM

CLARIFICATIONS / MODIFICATIONS / DELETIONS

1. Bidders shall REMOVE AND REPLACE page 15 of 23 of the Request for Proposals Contract Document, with the attached.

2. Bidders shall REMOVE AND REPLACE page 5 of 6 of the Scheduled Unit Prices with the attached.

3. Bidders shall REMOVE AND REPLACE the following Specifications:

- Specification 09002: Painting – Interior & Exterior of Elevated Tank & Appurtenances, page 1 of 3
- Specification 15001: Water Tower Design Criteria, page 5 and page 32 of 39
- Specification 15425: Water Quality Monitoring Equipment, in its entirety

4. Bidders shall ADD the following Specifications to the Contract Documents, in their entirety:

- Specification 16865: Electric Heating & Cooling
- Specification 16920: Process Narrative

5. Bidders shall REMOVE AND REPLACE the following Contract Drawings with the attached:

- Drawing C2.3: Proposed Grading Plan Overflow & Emergency Outlet Plan and Profile
- Drawing W5.2: Standard Details – 2

QUESTIONS AND REPSONSES

Question 1: *With regards to Section 15402 Flowmeters, please confirm if ABB Magnetic Flowmeters supplied by SCG Process (formally Metcon) is approved. These meters have been supplied and serviced locally to OCWA.*

Response 1: Yes, ABB is an acceptable manufacturer for flowmeters.

Question 2: *Section 16900: 2.3 Pressure Transmitter – Please confirm Siemens will be considered as acceptable manufacturer for pressure transmitter. Siemens has been acceptable supplier in past tenders.*

Response 2: Yes, Siemens is an acceptable manufacturer for pressure transmitter.

Question 3: *Section 16900 2.3.13 – Confirm 2000 psi is required range.*

Response 3: 2000 psi is not the range. The measuring device in the pressure transmitter shall be capable of handling a maximum working pressure of 2000 psig.

Question 4: *Section 15402 2.1.3 – Carbon steel housing and flanges acceptable?*

Response 4: Carbon steel housing and flanges with epoxy coating is acceptable. Dielectric couplings should also be provided to prevent corrosion.

Question 5: *We have prepared a specification for a Goulds equivalent to the Grundfos CRN pump that has been specified. We believe that the Goulds product meets the specifications and standards that has been laid out in the RFP. My question is to whether an ODP style motor (OPEN DRIP PROOF) would be acceptable in the installation, or is the preference for a TEPE (Totally Enclosed Premium Efficiency) motor. With the pump being installed in an indoor equipment room, an ODP motor should be acceptable.*

Response 5: TEPE motor is preferred.

I have read the foregoing Addendum and have considered it in my Proposal.

Brent Marini, Director - Landmark Structures Co.	Bidder's Name
	Signature
June 25, 2021	Date

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S. BURNETT & ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

ADDENDUM No. 2

Date:	June 30, 20221	**Project No:**	M20009
Project Name:	Request for Proposal: Town of Shelburne, Elevated Water Storage Tank		
To:	All Bidders		

This Addendum consists of 16 pages total.

Please make the following changes / additions to the Request for Proposal Document. Bidders are responsible to ensure that all addenda have been received. Bidders shall be required to acknowledge addenda in the space provided in Section A of the Proposal Form.

This addendum will form part of the terms, conditions and specifications outlined in the above noted Request for Proposal Contract Document. All other components of the Bid documents shall remain unchanged.

REMINDER: BIDDERS MUST IDENTIFY THIS ADDENDA IN THE SPACE PROVIDED IN SECTION A OF THE PROPOSAL FORM

CLARIFICATIONS / MODIFICATIONS / DELETIONS

1. Bidders are advised that all requests for equivalents will be received and reviewed following Award of Contract.

2. Bidders shall REMOVE AND REPLACE pages 4 and 6 of Section A: Form of Proposal, Schedule of Unit Prices with the attached.

3. Bidders shall REMOVE AND REPLACE the following Specification:
   - Specification 15001: Water Tower Design Criteria, pages 33 and 36 of 39.

4. Bidders shall ADD the following Specification, in its entirety, to the Contract Documents:
   - Specification 16480: Motor Control Centers

www.sbaengineering.com |
Tel (519) 941-2949 | Fax (519) 941-2036 | info@sbaengineering.com
210 Broadway, Unit 203 Orangeville, ON L9W 5G4

QUESTIONS AND REPSONSES

Question 1: *Item .8 Butterfly valves, sub-section .5 torque tube. Please confirm that the torque tube can be made out of schedule 40 steel (epoxy in/out) versus stainless steel. Typically these are made out of stainless steel.*

Response 1: Torque tube shall be made out of stainless steel.

Question 2: *Can CAD files for the Civil Drawings be provided. As a minimum we require the topo/grading plan.*

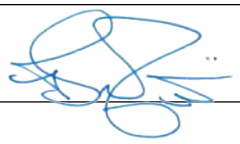
Response 2: CAD files to be provided to the successful Bidder upon award of Contract. However, the Contractor should satisfy themselves of the actual condition of the site, if necessary.

Question 3: *Can an excel version of Section A Form of Proposal be provided?*

Response 3: An Excel version of Section A: Form of Proposal has been included with this Addendum No. 2, as requested.

I have read the foregoing Addendum and have considered it in my Proposal.

Brent Marini, Director - Landmark Structures Co. — Bidder's Name



Signature

June 30, 2021 — Date

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S. BURNETT & ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

ADDENDUM No. 3

Date:	July 5, 20221	**Project No:**	M20009
Project Name:	Request for Proposal: Town of Shelburne, Elevated Water Storage Tank		
To:	All Bidders		

This Addendum consists of 1 page total.

Please make the following changes / additions to the Request for Proposal Document. Bidders are responsible to ensure that all addenda have been received. Bidders shall be required to acknowledge addenda in the space provided in Section A of the Proposal Form.

This addendum will form part of the terms, conditions and specifications outlined in the above noted Request for Proposal Contract Document. All other components of the Bid documents shall remain unchanged.

REMINDER: BIDDERS MUST IDENTIFY THIS ADDENDA IN THE SPACE PROVIDED IN SECTION A OF THE PROPOSAL FORM

CLARIFICATIONS / MODIFICATIONS / DELETIONS

1. Bidders are advised that the closing date for the RFP has been extended until:
   Thursday, July 15, 2021, at 2:00 pm, local time.

   The Question Period has now ended. Responses to questions will be addressed by Wednesday, July 7, 2021.

2. Bidders shall note that the Schedule of Unit Prices Excel document provided in Addendum No. 2 was for reference purposes only and that all formula correctness will be the responsibility of the Bidder.

I have read the foregoing Addendum and have considered it in my Proposal.

Brent Marini, Director - Landmark Structures Co.	Bidder's Name
	Signature
July 05, 2021	Date

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210 Broadway, Unit 203 Orangeville, ON L9W 5G4

S. BURNETT & ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

ADDENDUM No. 4

Date:	July 7, 20221	**Project No:**	M20009
Project Name:	Request for Proposal: Town of Shelburne, Elevated Water Storage Tank		
To:	All Bidders		

This Addendum consists of 37 pages total.

Please make the following changes / additions to the Request for Proposal Document. Bidders are responsible to ensure that all addenda have been received. Bidders shall be required to acknowledge addenda in the space provided in Section A of the Proposal Form.

This addendum will form part of the terms, conditions and specifications outlined in the above noted Request for Proposal Contract Document. All other components of the Bid documents shall remain unchanged.

REMINDER: BIDDERS MUST IDENTIFY THIS ADDENDA IN THE SPACE PROVIDED IN SECTION A OF THE PROPOSAL FORM

CLARIFICATIONS / MODIFICATIONS / DELETIONS

1. Bidders shall REMOVE AND REPLACE pages 1, 3, 4 and 7 of Section A: Form of Proposal, Schedule of Unit Prices with the attached.

2. Bidders shall refer to attached Addendum No. E-03 from Runge & Associates.

3. Bidders shall REMOVE AND REPLACE the following Specifications:
   - Specification 15420: Chemical Fee Pumps & Accessories, in its entirety.
   - Specification 15001: Water Tower Design Criteria, pages 15 and 36-38 of 41.

4. Bidders shall ADD the following Specification, in its entirety:
   - Specification 16915: SCADA Software and Accessories.

5. Bidders shall ADD the following Permits and include them in the Contract Documents:
   - Ministry of the Environment, Conservation and Parks, Drinking Water Works Permit
   - NAV Canada
   - Nottawasaga Valley Conservation Authority.

6. Bidders shall ADD the following Contract Drawings and include them in the Contract Documents:
   - A1.1: Door and Window Schedule
   - E3.2: PLC Instrumentation Loop Diagrams, Sheet 2.

7. Bidders shall REMOVE AND REPLACE the following Contract Drawings and include them in the Contract Documents:
   - E3.3: PLC Panel Layout, Power Distribution & Communication Topology (previously named E2.3).

QUESTIONS AND REPSONSES

Question 1: *Spec section 15100, 1.9.17.5 (overflow piping) – Calls for the use of a duckbill check valve. There is no specification for such valve. I request Proco rubber check valves be included in this spec. Please see the attached literature for details.*

Response 1: Duckbill valve shall be made of NSF-61 certified product elastomers with mounting clamps or retaining rings made of 304 or 316 stainless steel. The valve shall be engineered to crack open at 1"-2" head pressure and shall be designed for a maximum working pressure of 75 psig. Approved Manufacturer: Tideflex, Proco or approved equal.

Question 2: *Drawing C2.4 – please confirm we can extend the location of the silt fence further west and south (keeping within the Project Area) to allow sufficient room to construct the elevated tank.*

Response 2: Yes.

Question 3: *Drawing W2.2 the tank is shown with an "upper return" at the intersection of the tank roof and the side wall. However, it is not dimensioned or described in Section 15001. Is an upper return required? If so, we suggest the following industry standard nominal dimensions of 450 mm H / 750 mm V.*

Response 3: This is a design build contract. Tank design shall be as per Contractor's recommendation for operation as intended to be approved by Engineer.

Question 4: *Part 1 – Description of Works – Item 3.2 requires the Proposal Submission to include a list of all subcontractors as well as names and experience records for each person. We have no issues naming our subcontractors however, we request any experience documentation be made a post bid submission as we will not know who our low subcontractors will be until just prior to bid closing.*

Response 4: This is acceptable with the understanding that the Owner will have the right to review and approve all subcontractors named by the General Contractor for this project.

Question 5: *Part 1 – Description of Works – Item 7.3 describes a 90-day bid validity. However, Section A Form of Proposal Page 1 of 7 describes a 30-day bid validity. Please clarify.*

Response 5: Bid validity shall be 60-days. Please refer to updated Section A: Form of Proposal, Page 1, attached to this Addendum No. 4.

Question 6: *Part 2 – General Terms and Conditions– Item 5 describes a completion of no later than mid-August 2022. Can the completion date be revised to December 31, 2022?*

Response 6: Yes, the Project Completion Date has been extended to December 31, 2022. Please refer to updated Section A: Form of Proposal, Page 1, attached to this Addendum No. 4.

Question 7: *Section A, Form of Proposal - Schedule of Unit Prices Page 5 Item B3.g – Addenda 1 removed this item from the Bid Schedule, but the revised drawings still show the requirement for the outfall and rip rap check dam – please clarify.*

Response 7: Scope of work for the construction of the outfall and rip rap check dam is included under Item B2 h).

Question 8: *Section A, Form of Proposal Page 7 of 7. The Bid Bond amount is not identified. The General Terms and Conditions only require the Bidder to include with their proposal an Agreement to Bond. Please confirm a Bid Bond is not required.*

Response 8: As referenced in Part 2: Item 18: Submissions and Item 20: Insurance and Bonding, a certified cheque or bid bond is required with the Proposal submission. The Bid Bond amount shall be 10% of the Proposal amount and sealed by a corporation duly authorized to transact the business of Surety slip. Please refer to Section A: Cost Summary, attached to this Addendum No. 4.

Question 9: *Section 09002 Item 1.1.2 says the Contractor is responsible for full time coating inspection. However, the Form of Proposal, Schedule of Unit Prices Item A.4.d.ii includes a $15,000 cash allowance for Coating Inspections. Please confirm any 3rd party coating inspection costs will be paid under the cash allowance.*

Response 9: Yes.

Question 10: *Section 15001 Item 1.14.2 says the Contractor is responsible for part time welding inspection. However, the Form of Proposal, Schedule of Unit Prices Item A.4.d.i includes a $15,000 cash allowance for Welding Inspections. Please confirm any 3rd party welding inspection costs will be paid under the cash allowance.*

Response 10: Yes.

Question 11: *Section 15001 Item 1.14.6 - Please confirm 3rd party concrete inspection costs will be paid under the cash allowance.*

Response 11: Yes

Question 12: *Section 15001 Item 1.1 lists the equalization volume as 1064 m^3 and the fire/emergency volume as 1751 m^3 for a total volume of 2,815 m^3. This differs from the Drawings and elsewhere in Section 15001.*

Response 12: These are 20-year estimated equalization, fire/emergency volumes requirements. Volume of tank required is 3,410 m^3 same as the existing Shelburne Water Tower.

Question 13: *Please confirm the tank Volume as 3,410 m^3.*

Response 13: Yes

Question14: *Section 15001, Item 1.9.7.4.5 – please specify the thickness of insulation on the inlet and outlet risers.*

Response 14: Insulation thickness on the inlet and outlet risers shall be 50 mm.

Question 15: *Section 15001, Item 1.9.7.4.5 – please specify the quantity of both duty and standby heat trace cables on the inlet and outlet risers.*

Response 15: Refer to attached Addendum No. E-03 from Runge & Associates.

Question 16: *Section 15001, Item 1.9.7.4.5 – please specify the quantity of controllers for both duty and standby heat trace cables on the inlet and outlet risers.*

Response 16: Refer to attached Addendum No. E-03 from Runge & Associates.

Question 17: *Section 15001, Item 1.9.7.5.4 – please confirm the overflow riser does not require heat trace and insulation.*

Response 17: Insulation is required on the overflow riser. Heat Trace is not required. Thickness of insulation shall be 50 mm.

Question 18: *Section 15001 Item 1.9.5.3 specifies a 5 m diameter roof handrail. Section 15001 Item 1.9.5.4 specifies a 7 m diameter roof handrail. Please confirm only (1) roof handrail is required at 7 m diameter.*

Response 18: We would recommend 7 m, however Contractor to confirm the most appropriate diameter required for size of proposed tank.

Question 19: *Section 15001 Item 1.9.9.3 specifies (4) sets of fall arrest trolleys however Item 1.16.10.7 specifies (3) sets of trolleys. Please clarify.*

Response 19: Provide *(4) sets of fall arrest trolleys.*

Question 20: *Section 15001 Item 1.9.8 (Page 6 of 39) – we suggest this item be struck from the specification as there are no exterior aluminum ladders.*

Response20: Contractor to note Section 15001 items are required as applicable.

Question 21: *Section 15001 Item 1.9.9.6.7 (Page 8 of 39) specifies a "pod flange" this is not required since there are multiple steel spools being installed at the top of the access tube (Item 1.9.9.6.2/3). Please strike Item 1.9.9.6.7 from the specification.*

Response 21: Contractor to note Section 15001 items are required as applicable.

Question 22: *Section 15001 Item 1.9.15.2(Page 13 of 39) describes a raised platform to be used as a walkway without stepping on the roof when accessing the outer rail and the 6 antennae locations. It is common to walk directly on the roof as the roof is more than robust enough to support that activity without cracking any coating. Please strike this item from the specification.*

Response 22: Contractor to note Section 15001 items are required as applicable.

Question 23: *Section 15001 Item 1.14.14.2 (page 22 of 39) references a roof leak test for an aluminum dome room. Please strike this item from the specification.*

Response 23: Contractor to note Section 15001 items are required as applicable.

Question 24: *Section 15001 Item 1.14.14.3 (page 22 of 39) references a tank leak test for a AWWA D103 bolted tank. Please strike this item from the specification.*

Response 24: Contractor to note Section 15001 items are required as applicable.

Question 25: *Section 15001, Item 1.14.19.3.1 (Page 25 of 39) describes an aluminum dome roof per AWWA D108. This sentence should be reworded: Erection of the roof shall be in accordance with the requirements of AWWA D107.*

Response 25: Contractor to note Section 15001 items are required as applicable.

Question 26: *Section 15001, Item 1.14.19.3.2 (Page 25 of 39) describes an aluminum dome roof. This can be corrected by replacing "dome" with "roof".*

Response 26: Contractor to note Section 15001 items are required as applicable.

Question 27: *Section 15001 makes occasional references to AWWA D100, please confirm any reference to AWWA D100 should reflect AWWA D107.*

Response 27: Contractor to note Section 15001 items are required as applicable.

Question 28: *Section 15001, Item 1.16.3 instructs to grind exposed welds smooth and flush. We suggest the following clarification – which is industry standard. Grinding of weld contour shall approximate Condition D of NACE Standard SP0178.*

Response 28: This is acceptable.

Question 29: *Section 15001, Item 1.21.13.2 (Page 36 of 39) – we suggest this item be struck from the specification as there is no requirement for any aviation markings.*

Response 29: Contractor to note Section 15001 items are required as applicable.

Question 30: *Are any roads leading to this tank site (Victoria Street, 2 Line, 30 Side Road, Prentice Drive, Luxton Way) subject to Spring load weight restrictions?*

Response 30: Annual load / weight restrictions will be in effect for: County Road 11, 30th Sideroad and Prentice Drive from March 31 to May 31. In-town municipal roadways are exempt from load restrictions.

Question 31: *Section 15420 Item 2.1.9 – We request you add Blue-White M Series Peristaltic Pumps supplied by SPD sales limited as an acceptable product for chemical feed pumps.*

Response 31: Watson Marlow pumps are a preference of the water tower operating authority (OCWA) and the Town of Shelburne.

Question 32: *Section 015001 Item 1.10 Cathodic Protection – Are Magnesium anodes acceptable?*

Response 32: Yes.

Question 33: *Section 015001 Item 1.10 Cathodic Protection – Are cathodic protection monitoring reference electrodes required?*

Response 33: Yes.

Question 34: *Drawing E3.2 Detail 3 shows a 2000VA UPS, Detail 3 shows a 3000VA UPS. Please clarify.*

Response 34: Refer to attached Addendum No. E-03 from Runge & Associates.

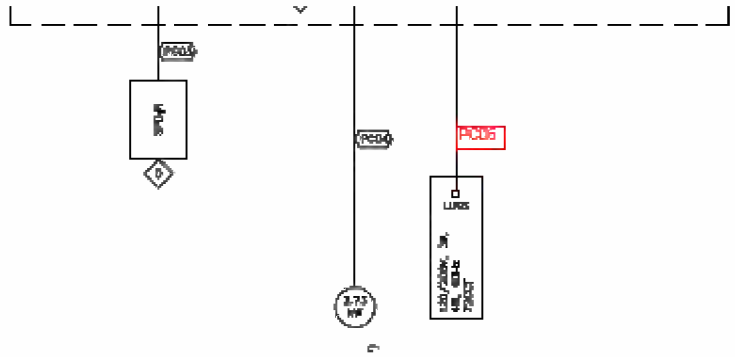
Question 35: *Drawing E3.2 Detail 3 - Please provide a spec and part number for both the cellular dialer and the antennas.*

Response 35: Refer to attached Addendum No. E-03 from Runge & Associates.

Question 36: Drawing E2.1 Detail 1 – should this be titled 208V single line diagram?

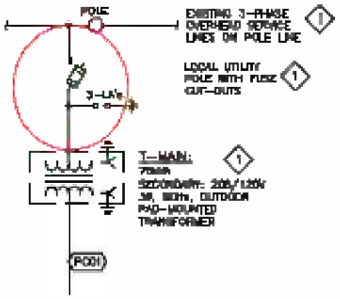
Response 36: Refer to attached Addendum No. E-03 from Runge & Associates.

Question 37: Drawings E2.1 Detail 1 – should this be labeled PC06?



Response 37: Refer to attached Addendum No. E-03 from Runge & Associates.

Question 38: Drawing E2.1 Detail 1 – please provide a specification on the primary feeder.



Response 38: Refer to attached Addendum No. E-03 from Runge & Associates.

Question 39: Section 16400 Item 2.9 – is there shore power to the generator? Currently no breaker shown for this on E1.1.

Response 39: Refer to attached Addendum No. E-03 from Runge & Associates.

Question 40: Can a door schedule be provided?

Response 40: Please refer to Drawing A1.1: Door and Window Schedule attached to this Addendum No. 4.

Question 41: *Does the entire slab on grade receive an epoxy floor finish, including the vestibule?*

Response 41: Yes.

Question 42: *Do the room interior masonry walls receive any coatings?*

Response 42: Yes.

Question 43: *Please specify the block size of the interior masonry walls, both single and double wall.*

Response 43: For structural interior walls 190 mm thickness blocks shall be utilised. For non-structural interior walls 140 mm thickness blocks shall be utilized. All the blocks regardless of being structural or non-structural shall be anchored to the underside concrete slab by 15M bars at 400 mm spacing.

Question 44: *Does the top side of the chamber roof receive any coatings?*

Response 44: No. Refer to Drawing W2.1.

Question 45: *Section 08800 – Item 2.3 – what Is the size of the window between the chemical room and the valve room.*

Response 45: Please refer to Drawing A1.1: Door and Window Schedule attached to this Addendum No. 4.

Question 46: *Section 08800 Item 2.4 – please confirm this is not applicable to this contract.*

Response 46: Yes, not applicable.

Question 47: *Are there and bore hole logs for the anything other than the tank pedestal? – if not what amount/ thickness of topsoil is to be assumed as part of the site preparation.*

Response 47: Minimum of 100 mm thickness of topsoil will be required.

Question 48: *Is a Permit To Take Water needed for the watermain and outfall works north of the proposed tower?*

Response 48: As per the new guidelines, the Contractor does not need to get a PTTW unless dewatering exceeds 400,000 L/day.

Question 49: *There are no details for the road restoration to tie into the exiting sanitary line but for asphalt specifications.*

Response 49: Please refer to Notes for Roadways on Drawing G0.1.

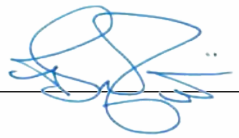
Question 50: *What is the detail for backfilling the trench in the roadway? U-fill/B Gravel.*

Response 50: Granular B, Type III.

Question 51: *Any seasonal or conservation time constraints for when the site servicing works can be affected?*

Response 51: No. Contractor shall review other attached NVCA permit conditions.

I have read the foregoing Addendum and have considered it in my Proposal.

Brent Marini, Director - Landmark Structures Co.	Bidder's Name
	Signature
July 07, 2021	Date

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S. BURNETT & ASSOCIATES LIMITED
ENGINEERING & ENVIRONMENTAL

ADDENDUM No. 5

Date:	July 9, 2021	**Project No:**	M20009
Project Name:	Request for Proposal: Town of Shelburne, Elevated Water Storage Tank		
To:	All Bidders		

This Addendum consists of 3 pages total.

Please make the following changes / additions to the Request for Proposal Document. Bidders are responsible to ensure that all addenda have been received. Bidders shall be required to acknowledge addenda in the space provided in Section A of the Proposal Form.

This addendum will form part of the terms, conditions and specifications outlined in the above noted Request for Proposal Contract Document. All other components of the Bid documents shall remain unchanged.

REMINDER: BIDDERS MUST IDENTIFY THIS ADDENDA IN THE SPACE PROVIDED IN SECTION A OF THE PROPOSAL FORM

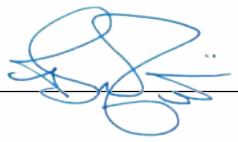
CLARIFICATIONS / MODIFICATIONS / DELETIONS

1. Bidders shall refer to attached Addendum No. E-04 from Runge & Associates.

2. Bidders shall REMOVE AND REPLACE the following Contract Drawings with the attached:
   - E1.2: Electrical Site Plan & Details

I have read the foregoing Addendum and have considered it in my Proposal.

Brent Marini, Director - Landmark Structures Co. — Bidder's Name

 — Signature

July 09, 2021 — Date

M20009_Add#5_FINAL_09July21.docx

CERTIFICATE OF LIABILITY INSURANCE

This certificate is issued as a matter of information only and confers no rights upon the certificate holder and imposes no liability on the insurer. This certificate does not amend, extend or alter the coverage afforded by the policies below.

1. CERTIFICATE HOLDER - NAME AND MAILING ADDRESS			2. INSURED'S FULL NAME AND MAILING ADDRESS		
Town of Shelburne			Landmark Structures Co		
203 Main Street East			3091 Harrison Court		
Shelburne	ON	POSTAL CODE L9V 3K7	Burlington	Ontario	POSTAL CODE L7M 0W4

3. DESCRIPTION OF OPERATIONS/LOCATIONS/AUTOMOBILES/SPECIAL ITEMS TO WHICH THIS CERTIFICATE APPLIES (but only with respect to the operations of the Named Insured)

All operations usual to Insured's business.
SBA File No. : M20009 - Town of Shelburne Elevated Water Storage Tank

4. COVERAGES

This is to certify that the policies of insurance listed below have been issued to the insured named above for the policy period indicated notwithstanding any requirements, terms or conditions of any contract or other document with respect to which this certificate may be issued or may pertain. The insurance afforded by the policies described herein is subject to all terms, exclusions and conditions of such policies.

LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS

TYPE OF INSURANCE	INSURANCE COMPANY AND POLICY NUMBER	EFFECTIVE DATE YYYY/MM/DD	EXPIRY DATE YYYY/MM/DD	LIMITS OF LIABILITY (Canadian dollars unless indicated otherwise)		
				COVERAGE	DED.	AMOUNT OF INSURANCE
COMMERCIAL GENERAL LIABILITY ☐ CLAIMS MADE **OR** ☑ OCCURRENCE ☑ PRODUCTS AND / OR COMPLETED OPERATIONS ☑ EMPLOYER'S LIABILITY ☑ CROSS LIABILITY ☑ TENANTS LEGAL LIABILITY ☐ POLLUTION LIABILITY EXTENSION	Intact Insurance Company - 5A5004801	2021/04/26	2022/04/26	COMMERCIAL GENERAL LIABILITY BODILY INJURY AND PROPERTY DAMAGE LIABILITY - GENERAL AGGREGATE	$2,500	
				- EACH OCCURRENCE		$2,000,000
				PRODUCTS AND COMPLETED OPERATIONS AGGREGATE		$2,000,000
				☐ PERSONAL INJURY LIABILITY OR ☑ PERSONAL AND ADVERTISING INJURY LIABILITY		$2,000,000
				MEDICAL PAYMENTS		$50,000
				TENANTS LEGAL LIABILITY	$500	$500,000
				POLLUTION LIABILITY EXTENSION		
☑ NON-OWNED AUTOMOBILES ☐ HIRED AUTOMOBILES	Intact Insurance Company - 5A5004801	2021/04/26	2022/04/26	NON OWNED AUTOMOBILE		$2,000,000
AUTOMOBILE LIABILITY ☐ DESCRIBED AUTOMOBILES ☑ ALL OWNED AUTOMOBILES ☑ LEASED AUTOMOBILES ** ** ALL AUTOMOBILES LEASED IN EXCESS OF 30 DAYS WHERE THE INSURED IS REQUIRED TO PROVIDE INSURANCE	Intact Insurance Company - AF5701952	2021/05/31	2022/04/26	BODILY INJURY AND PROPERTY DAMAGE COMBINED		$2,000,000
				BODILY INJURY (PER PERSON)		
				BODILY INJURY (PER ACCIDENT)		
				PROPERTY DAMAGE		
EXCESS LIABILITY ☑ UMBRELLA FORM ☐	Intact Insurance Company - 5A5004801	2021/04/26	2022/04/26	EACH OCCURRENCE	$10,000	$15,000,000
				AGGREGATE	$10,000	$15,000,000
OTHER LIABILITY (SPECIFY) ☑ Professional Liability	XL Specialty Insurance Company - CCP744650804	2020/11/08	2021/11/08	Each Act, Error & Ommission/Aggr	$200,000	$10,000,000
☐						
☐						

5. CANCELLATION

Should any of the above described policies be cancelled before the expiration date thereof, the issuing company will endeavour to mail 30 days written notice to the certificate holder named above, but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives.

6. BROKERAGE/AGENCY FULL NAME AND MAILING ADDRESS			7. ADDITIONAL INSURED NAME AND MAILING ADDRESS (but only with respect to the operations of the Named Insured)	
The Mitchell & Abbott Group Insurance Brokers			Town of Shelburne and S. Burnett & Associates Limited	
2000 Garth Street				
Suite 202				
Hamilton	ON	POSTAL CODE L9B 0C1		
BROKER CLIENT ID: 005855				POSTAL CODE

8. CERTIFICATE AUTHORIZATION

ISSUER	The Mitchell & Abbott Group Insurance Brokers	CONTACT NUMBER(S)	
AUTHORIZED REPRESENTATIVE	Taylor Abbott, CAIB	TYPE Main NO. (905) 385-6383	TYPE Fax NO. (905) 385-7905
		TYPE NO.	TYPE NO.
SIGNATURE OF AUTHORIZED REPRESENTATIVE		DATE July 5, 2021	EMAIL ADDRESS tabbott@mitchellabbottgrp.com

DonnaB

ZURICH

Zurich Insurance Company Ltd
100 King St. W., Suite 5500, P.O. Box 290, Toronto, ON M5X 1C9

BID BOND
CCDC 220 - 2002

No. YY-71999966-733 **10% of the Proposal Amount**

Landmark Structures Co. as Principal hereinafter called the Principal, and **Zurich Insurance Company Ltd**, a corporation created and existing under the laws of Switzerland, and duly authorized to transact the business of Suretyship in Canada as Surety, hereinafter called the Surety, are held and firmly bound unto **The Town of Shelburne** as Obligee, hereinafter called the Obligee, in the amount of **ten percent of the proposal amount (10%)** lawful money of Canada, for the payment of which sum the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

WHEREAS, the Principal has submitted a written bid to the Obligee, dated **15th** day of **July**, in the year **2021** for

Town of Shelburne, Elevated Water Storage Tank – RFP – SBA File No. M20009.

The condition of this obligation is such that if the Principal shall have the bid accepted within the time period prescribed in the Obligee's bid documents, or, if no time period is specified in the Obligee's bid documents, within **sixty (60)** days from the closing date as specified in the Obligee's bid documents, and the Principal enters into a formal contract and gives the specified security, then this obligation shall be void; otherwise, provided the Obligee takes all reasonable steps to mitigate the amount of such excess costs, the Principal and the Surety will pay to the Obligee the difference in money between the amount of the bid of the 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 Surety shall not be liable for a greater sum than the Bond Amount.*

It is a condition of this bond that any suit or action must be commenced within seven (7) months of the date of this Bond.

No right of action shall accrue hereunder 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 dated **13th** day of **July**, in the year **2021**.

SIGNED and SEALED
in the presence of

Landmark Structures Co.

Signature
Brent Marini, Director

Zurich Insurance Company Ltd

Signature
Taylor Abbott, Attorney-in-fact

(CCDC 220 – 2002 has been approved by the Surety Association of Canada)

ZURICH

Zurich Insurance Company Ltd
100 King St.W., Suite 5500, P.O. Box 290, Toronto, ON M5X 1C9

AGREEMENT TO BOND

Date: **July 13th, 2021** Bond No. **YY-71999966-733**

WHEREAS **Landmark Structures Co.**

has submitted a written tender to **The Town of Shelburne**

dated the **15th** day of **July 2021** concerning:

Town of Shelburne, Elevated Water Storage Tank – RFP – SBA File No. M20009

and the condition of this obligation being such that the Principal shall have the tender accepted within **sixty (60)** days from the closing date of tender,

we, Zurich Insurance Company Ltd, a corporation created and existing under the laws of Switzerland and duly authorized to transact business of Suretyship in all the Provinces and Territories of Canada, as Surety, agree to issue for the Principal if the Principal shall enter into a written contract with the Obligee, the following bond(s):

1. - a contract performance bond **(100%)** of the contract price

2. - a labour and material payment bond for **(100%)** of the contract price

This consent shall be null and void unless an application for the said bond(s) is made within thirty (30) days following the award of the contract.

Zurich Insurance Company Ltd

Taylor Abbott, Attorney-in-fact

Appendices

Affidavit Confirming No Exceptions

Affidavit

RFP TO: **TOWN OF SHELBURNE**

PROJECT NAME: **SBA FILE NO.: M20009**

RE: **ELEVATED WATER STORAGE TANK**
PART 1 – DESCRIPTION OF WORKS – PAGE 5 – AFFIDAVIT

I, Chris Lamon, being the President of Landmark Structures Co., (Bidder) do hereby confirm that no exceptions are taken to the requirements and procedures described in the specifications for the above noted project.

By: Landmark Structures Co.

Chris Lamon, President

List of Subcontractors

NAME	ADDRESS	TRADE
Selectra Contracting	Stratford, ON	Electrical
Aegion / Corrpro	Mississauga, ON	Cathodic
Royal Fence Limited	Dorchester, ON	Fence

OVERVIEW AND PROCUREMENT GUIDE

Composite Elevated Tanks for Water Storage

LANDMARK
Elevating Expectations

Competitive Capital Cost. Lowest Maintenance Cost. Superior Aesthetics.

The composite elevated tank (CET) invented by Landmark is the industry standard for large capacity water storage in North America. The combination of a reinforced concrete pedestal and welded steel tank provides a cost-effective, low maintenance structure with a dry, secure, multi-purpose interior space and clean, customizable exterior appearance.

Combination of form and function: Engineering efficiencies led to the Composite Elevated Tank replacing older water tank designs. Another benefit of the CET design is the ability to customize the structure to accommodate functionality previously unavailable in an elevated water tank.

Maintenance Cost Advantage

Coating replacement is the biggest maintenance expense on elevated tanks. With only 40% of surface area requiring coating, compared to 100% on other types, the CET has the lowest cost of ownership.

***Blue denotes coated surface**

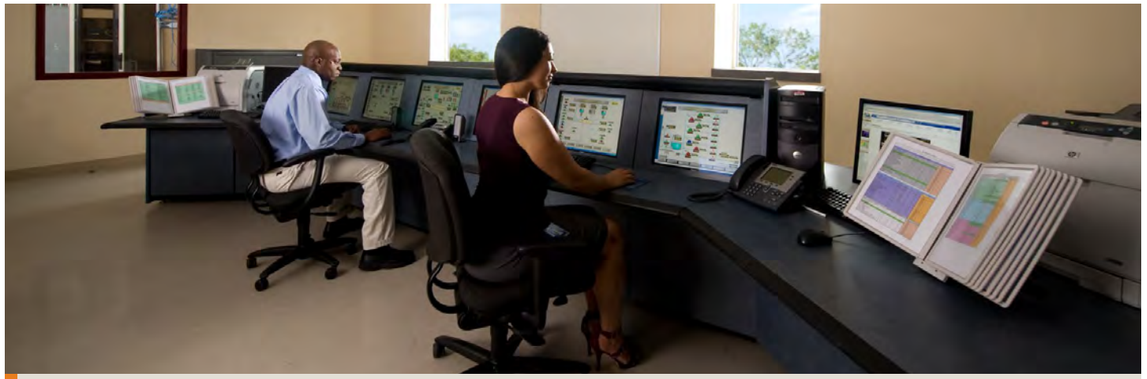
LANDMARK COMPOSITE ELEVATED TANK

SPHEROID

FLUTED COLUMN

MULTI-LEGGED

Multi-purpose Pedestal



The protected space inside the pedestal adds the economic and functional advantages of multiple use opportunities—for pump stations, office space and storage space or control centers, with build-outs to suit a range of applications for full utilization.

Dimensions and Capacities

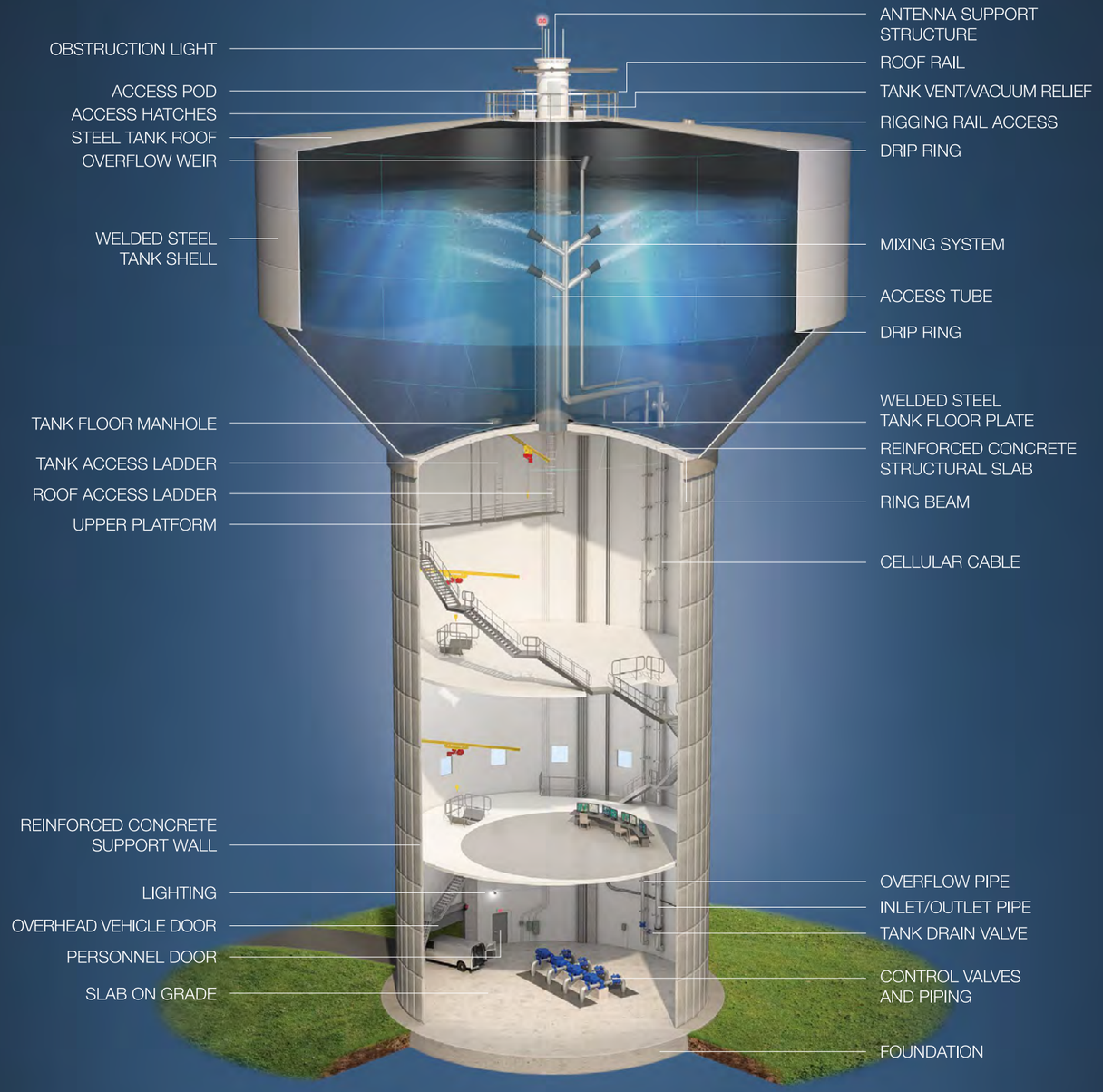
The multi-purpose pedestal, accessible roof design, and complete range of options make the composite elevated tank the most efficient and productive option for water storage. Configurations are available for capacities greater than 4 million gallons. Landmark's structural design team is adept at creating custom designs and treatments.

ELEVATION VIEW

Tank Capacity (US Gallons)	Head Range (Feet)	Tank Diameter (Feet)	Pedestal Dia. (Feet)
200,000	25 - 30	38 - 44	20 - 24
250,000	30 - 35	38 - 44	20 - 24
300,000	30 - 35	44 - 48	20 - 24
400,000	30 - 35	46 - 52	24 - 28
500,000	30 - 38	51 - 55	24 - 28
600,000	30 - 40	53 - 62	24 - 28
750,000	30 - 40	59 - 65	28 - 32
1,250,000	30 - 40	68 - 74	32 - 38
1,500,000	35 - 40	75 - 80	38 - 42
1,750,000	38 - 45	82 - 87	42 - 46
2,000,000	40 - 45	90 - 95	42 - 46
2,250,000	40 - 50	95 - 100	46 - 54
2,500,000	40 - 50	95 - 100	46 - 54
2,750,000	40 - 50	100 - 110	54 - 60
3,000,000	40 - 50	102 - 112	54 - 60
3,250,000	40 - 50	105 - 115	54 - 60
3,500,000	45 - 55	112 - 123	60 - 66
3,750,000	45 - 55	115 - 125	60 - 66
4,000,000	45 - 55	116 - 128	60 - 72

Superior Aesthetics of Architectural Concrete

Landmark consistently delivers the "uniform color, absence of defects, and aligned and even surfaces" defined in the ACI 303R-04 standard for architectural concrete. Heavy-duty forming systems, highly refined placement processes and extensive team experience ensure industry-leading quality control.



The Landmark CET: A Closer Look

Available Appurtenances

Following is a list of available appurtenances to consider for your application:

☐ **STEEL TANK AESTHETICS**
- ___ AWWA D102 Coating Systems
- ___ Special Logos and Treatments
- ___ Upper Knuckle Return

☐ **PEDESTAL AESTHETICS**
- ___ Architectural Enhancements
- ___ Anti-Graffiti Coatings

☐ **EXTERIOR LIGHTING**
- ___ Security Lighting
- ___ Tank Lighting
- ___ FAA Obstruction Lighting

☐ **COMMUNICATIONS**
- ___ Pods
- ___ Antenna Supports
- ___ Cable Brackets
- ___ Conduit

☐ **DOORS**
- ___ Overhead and/or Personnel Doors
  - ○ Manual Overhead
  - ○ Electric Overhead

☐ **PEDESTAL BUILD-OUT**
- ___ Enclosures, Climate Control, Electrical
- ___ Structural Floors, Control Rooms, Access, and Cranes
- ___ Windows
- ___ Pump Station
- ___ Multi-Use Office / First Responder / Storage Facilities

☐ **MECHANICAL AND PIPING**
- ___ Mixing System
- ___ Stainless Steel Inlet/Outlet Piping
- ___ Altitude Valves
- ___ Heat Tracing
- ___ Insulation
- ___ Metal Jacketing

☐ **ACCESS**
- ___ Pod
- ___ Segmented Circular Stairways
- ___ Ladders
- ___ Rest Platforms
- ___ Hatches
- ___ Elevators
- ___ Fall Protection

Segmented circular stairways provide full access to the pedestal interior and tank access ladder.

Landmark Hydrodynamic Mixing Systems

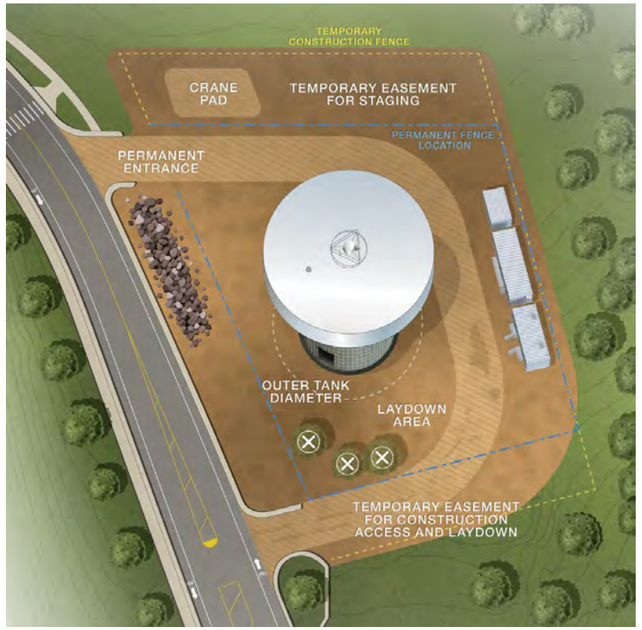
Landmark Hydrodynamic Mixing Systems protect against aging and contamination by forcing movement within the entire storage area each time the tank is filled. Common quality concerns including taste and odor issues, bacterial growth and nitrification are mitigated by creating a homogenous mix of stored and newly added water. Every Landmark mixing system is based on extensive CFD analysis of the tank's unique geometry, operation cycle and flow magnitude. Seasonal demand changes and future operating parameters can also be modeled to ensure proper configuration of the system.

DEVELOPMENT | Siting | Geotech Investigation | Project Specification | Design | Construction | Commissioning

Specification and Construction Process

Landmark offers expert services to assist owners and engineers in the design phase of the project, including preliminary budget estimates, geotechnical report review, site evaluations, and educational seminars covering everything that you need to know about Composite Elevated Tank design and construction.

Siting, budgeting and the geotechnical evaluation are the essential starting points for a new tank project. In general, a square site with 200-foot sides is an ideal location. But many tanks are constructed on sites with a unique set of obstacles.



Access, grades, power lines and trees can greatly affect the price of the project, and potential sites should be carefully considered. Landmark can provide information about the cost impact of these variables as they relate to both initial construction and future maintenance.

Once candidate sites have been prequalified and selected, the responsible party should engage a qualified geotechnical engineer with knowledge of local soil conditions. Landmark's technical bulletin, "Guidelines for Geotechnical Reports" provides recommendations for getting a high-quality geotechnical report to ensure that elevated tank builders can provide the most efficient foundation allowable. Landmark can also provide required information such as tank and pedestal dimensions, structure and water weight, and wind and seismic loads.

Prior to bid advertisement, Landmark can assist with a final documents review and provide a detailed budget based on project specifics.

CONSTRUCTION | Engineering | Mobilize | Foundation | Pedestal | Ground Phase Erection and Coating | Tank Raise | Air Phase Erection and Coating | Electrical, mechanical site work | Commission

Contact Landmark for a preliminary schedule for your project. Schedules are subject to variations in local permitting processes and other factors.

A Sound Infrastructure Investment

A PLATFORM FOR INNOVATION

Public infrastructure can make a bold statement about the community. Landmark works with clients at the design stage to develop unique solutions, and has delivered tanks integrating solar power generation, rain water collection, and other functional advancements…as well as aesthetic enhancements such as custom coatings, lighting and more.

LANDMARK: ELEVATING EXPECTATIONS

A CONTINUING COMMITMENT

Landmark can help you multiply the inherent savings of the composite elevated tank design with expert advice on managing and maintaining your investment. Planning for future needs can facilitate efficient budgeting and predictable costs for your municipality or organization.

CONSULT WITH A LANDMARK EXPERT

A knowledgeable, trusted partner for your project:

USA: 817.439.8888 | 800.888.6816 Toll Free
CANADA: 905.319.7700 | www.teamlandmark.com

The plant features a 450-foot drive-through central truck lane for loading and unloading, with extensive material handling capabilities. Outside, similar crane systems enable efficient management of the main raw material storage area.

Landmark Fabrication's ability to meet the most demanding configurations and requirements sets a higher standard for quality and productivity.

Landmark Fabrication

Contact us for more details

Landmark Fabrication LP • 1665 Harmon Rd.
Fort Worth, Texas 76177 • 817.230.8857 Phone
www.teamlandmark.com • steelfab@teamlandmark.com

Landmark Fabrication LP • 3091 Harrison Court
Burlington, ON L7M 0W4 • 905.319.7700 Phone
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Landmark Fabrication

Specialty Components and Custom Applications

With a unique range of capabilities and flexibility, Landmark Fabrication's high capacity steel, tank and components operations incorporates the finest equipment, materials and talent.

Concept to Completion, CAD to Coatings

Landmark Fabrication's strategic North Texas location is the launch point for turnkey custom component as well as steel tank production. Situated in the 400-acre Decatur Landmark Industrial Park just north of the Dallas/Fort Worth metroplex, the 67,000 square foot facility is adjacent to highway and rail access, with multiple staging and storage options on site.

Safety is the Key

An uncompromising commitment to safety governs all work practices, and includes ongoing training and testing, Hazard Identification and Risk Assessments (HIRA), and root cause analysis to continually drive performance improvement.

Fit and Finish

Landmark Fabrication technicians can provide design assistance for prototyping and production processes in carbon steel, stainless steel, aluminum or other metals; create jigs and fixtures; and recommend the most efficient application of cutting, rolling, press forming, welding and machining resources. They can take a project through subassembly or assembly stages, as well as surface preparation and coatings, including galvanizing and other special requirements. Capabilities are matched to your needs, whether a single critical part or complete production sequence. Our investments in the finest equipment, materials and talent deliver precise results, superior quality and exceptional value for structural elements as well as assembled components.

Cutting

Koike Aronson Plasma Cutting: One of the largest cutting areas available in the United States, at 12' x 108'. High Definition system creates superior edge quality to conventional plasma on mild steel up to 1.5" thick. Contour Beveling saves tremendous time in preparing parts for welding operations.

Rolling

Faccin Four-Roll Double Pinch Bending: Accommodates 12' rolls – cones as well as cylinders. CNC controls can program automatic production of components for wind towers or vessels, as well as automatic feed and positioning from the 13' x 41' table. The ability to roll wide plate to precise tolerances can reduce welding requirements, simplifying production and enhancing results.

Press Forming

Produces precise spherical and double curved shapes, with a 750 ton capacity. Provides the ability to dish plate from 3/16 to 2" thick at any radius or custom-formed shape.

Welding

Landmark employs a wide range of precision welding equipment for large and small components including a 10' x 60' gantry welder equipped with four 350 amp flux core welding machines, ideal for long continuous fillet welds.

Landmark Coatings

Specialty Mobile Operations

Uncompromising commitment to safety. World class technical skill. Go-anywhere mobility. Landmark delivers factory applied quality to your site.

LANDMARK
Elevating Expectations

Developed and refined throughout 25 years of storage tank coatings and lining work, Landmark's specialty crews work wherever you need them…on projects that we design, fabricate and build, or on existing infrastructure requiring repair and recoating. The Society for Protective Coatings (SSPC) has recognized our technical skills and processes with their prestigious QP-1 certification, so you can rely on thoroughly tested multi-craft services on the most demanding jobs, with the added benefits of uncompromising safety and nationwide mobility.

We work in a wide range of applications for the private sector, the military and municipal authorities:

- Industrial facilities
- Terminals
- Petrochemical plants
- Water and wastewater
- Oil and gas exploration and production
- Aircraft fueling facilities
- Lead abatement

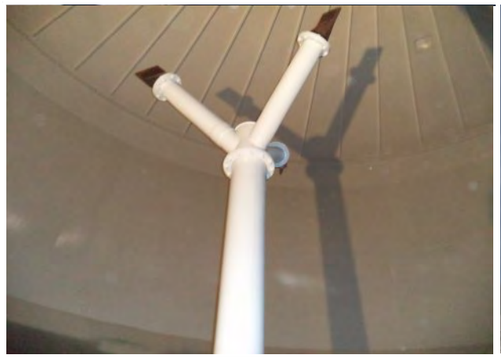
Safety

Safety is the Key

Landmark's uncompromising commitment to safety protects people, property and the environment. We apply equally rigorous standards for all locations, require ongoing training and testing for all crews, and utilize site evaluations, Hazard Identification and Risk Assessments (HIRA) and root cause analysis to continually drive performance improvement. Landmark employs the best available safeguards for the job, such as advanced, self-contained respiratory equipment on many applications. And we stay at the forefront of best practices and efficient reporting with our membership in ISNetworld. Core values and comprehensive safety and health programs, along with SSPC C-3 accredidation for de-leading steel structures, safeguards against environmental impact.

Skill

Landmark's technical capabilities start with specification assistance, based on in-depth knowledge of industry suppliers and their latest products, and insights from our own operations. Our crews are fully equipped to perform surface preparation and coatings work on virtually any type of steel structure, utilizing a broad array of coatings including polyurethanes, 100% solids and fiberglass reinforced systems. Our crews perform all coatings work in accordance with the Landmark Quality Assurance Manual for Surface Preparation and Coating. They are trained to implement all of the required process controls and conduct workmanship inspections to meet or exceed all applicable standards and client expectations.



Routine quality evaluations include but are not limited to:

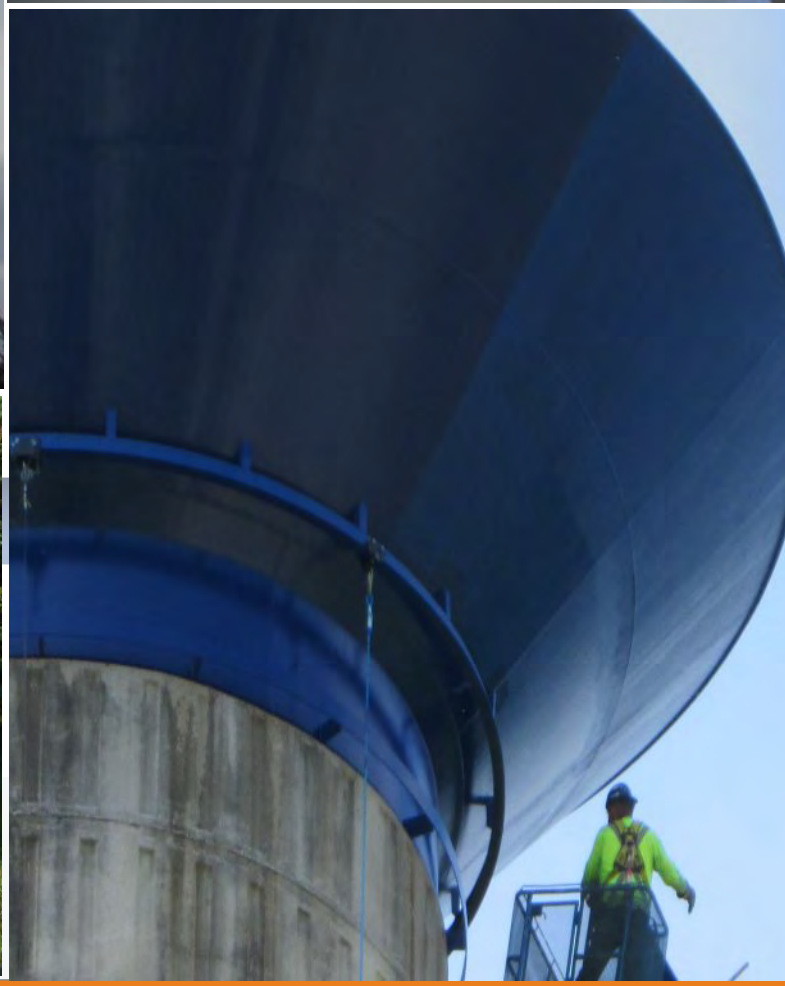
- Measurement of environmental conditions
- Verification of surface cleanliness prior to coating or lining
- Wet and dry film thickness measurement
- Holiday testing (low or high voltage, depending on lining thickness)

Daily logs track all inspection activity, and are available upon request.

Specialized equipment enables Landmark to manage dehumidification on work in enclosed spaces such as tank lining and recoating, and to protect the environment with blast media recycling and a full or partial containment on exterior surface preparation and coating. In addition, site specific plans for environmental monitoring, hazardous material management, and disposal of wastes are developed for all tank rehabilitations where existng coatings contain toxic metals. And for high-profile projects with community impact, Landmark has perfected the art of translating even the most intricate graphics to the public stage with precise reproduction. The utilization of dust collection systems ensures complete extraction of dusts for not only a cleaner surface prior to paint application, but as well as containment of dusts generated. This provides necessary air exchanges for confined space work.

Mobility

Landmark capabilities are completely mobile for deployment nationwide or beyond, without limitations. Specially outfitted trailers move containerized equipment to the project site, and then serve as mobile command centers for the crews. All required assets are at hand, coordinated with local supply lines as appropriate.



You can count on Landmark Mobile Specialty Coatings to reliably protect your investment and extend the life of critical infrastructure. Contact us today to discuss the best solution and a quote on your next project.

LANDMARK
Elevating Expectations

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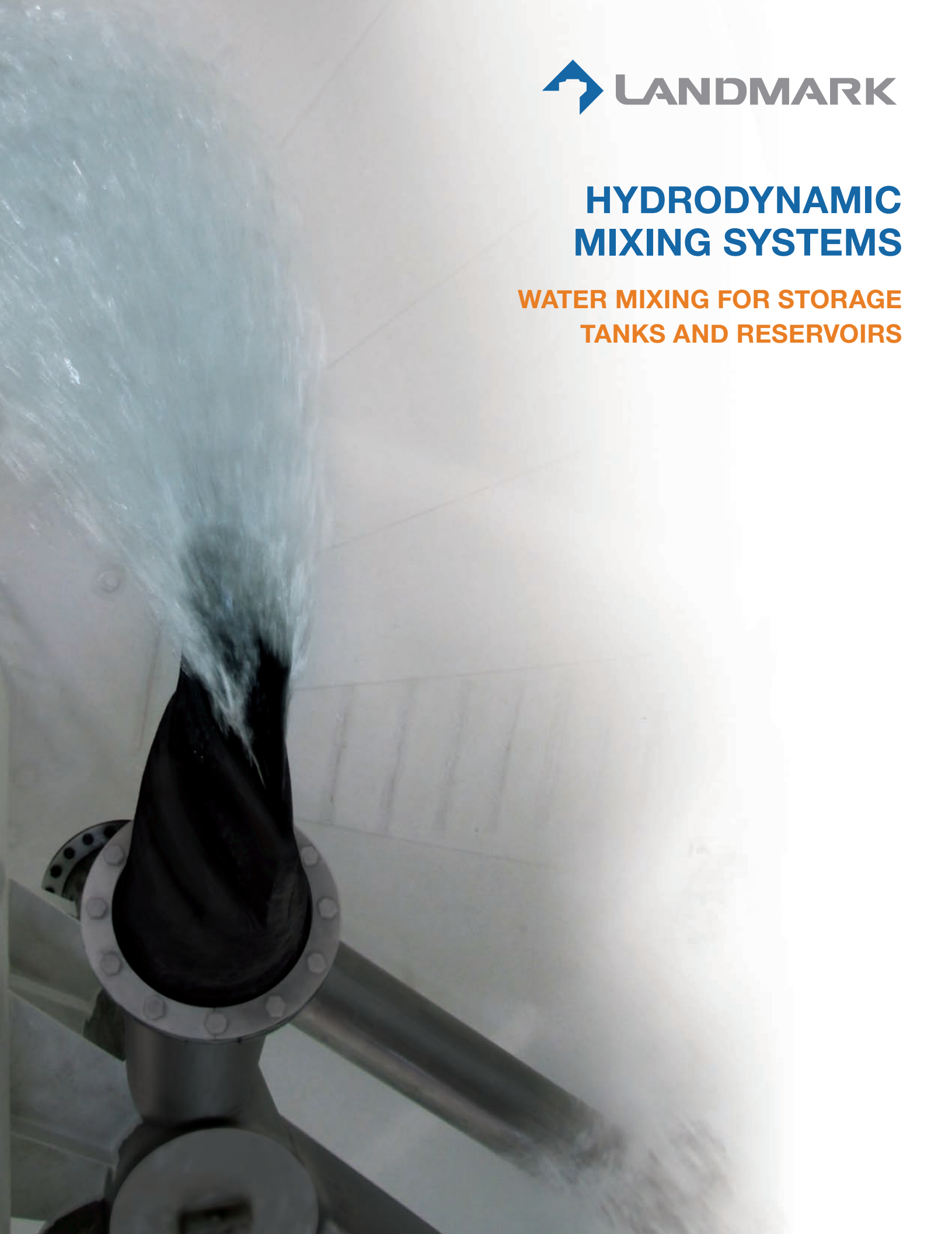


LANDMARK

HYDRODYNAMIC MIXING SYSTEMS

WATER MIXING FOR STORAGE TANKS AND RESERVOIRS

LANDMARK HYDRODYNAMIC MIXING SYSTEM

PROTECT WATER QUALITY WITH AN EFFICIENT, COST EFFECTIVE, TANK SPECIFIC SOLUTION.

The Quality Challenge

System operators manage the integrity of drinking water resources by protecting water from aging and contamination. A properly designed mixing system provides a solution that will automatically mitigate common factors leading to taste and odor issues, bacterial growth, and nitrification:

Low inlet velocity: Inlet pipes designed for maximum flow and low head loss result in low inlet velocity, low dispersion and poor circulation. *High velocity mixing system nozzles equalize and reduce depletion of disinfectant residuals, and preclude ice cap formation and damage.*

Short-circuiting: Common or close inlet and outlet pipes can result in a LIFO (last-in, first out) condition. New water entering the tank during fill is the first removed, leaving the balance to stagnate and age. *Mixing eliminates short-circuiting.*

Thermal Stratification: Stored water may stratify or layer due to differences in temperature and density. Lack of mixing causes cooler, denser water to collect at the bottom, while warmer, less dense water migrates to the top and ages. *Mixing eliminates stratification and "dead zones."*

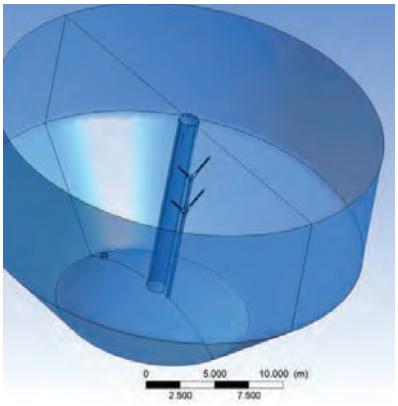
Low cycling: High demand periods require full tanks, however water ages if retained and not cycled adequately. *Hydrodynamic Mixing System design provides for adequate cycling and exchange of water to prevent excessive aging.*

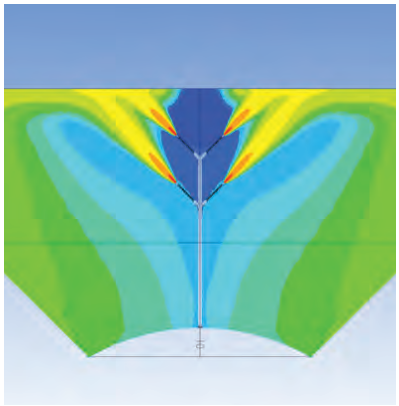
The Integrated Solution: Landmark HMS

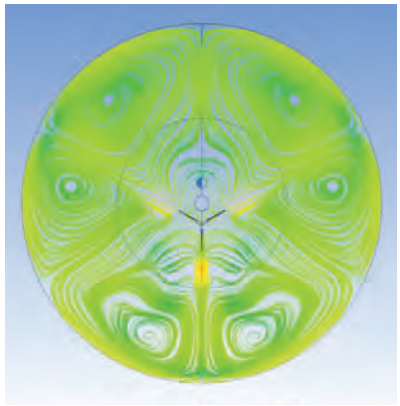
Landmark delivers optimized mixing for all types of new and existing tanks and reservoirs.

Mixing System Function

- Manifold piping, inlet nozzle and outlet port combination utilizes energy of system operation to achieve complete mixing—no external power source required
- Inlet nozzles with variable orifice elastomeric check valves provide turbulent flow and increased momentum flux—harnessing more mixing power
- Outlet ports with wafer check valves are separated from inlet nozzles to maintain circulation







Tank Specific Analysis and Engineering

- Every Landmark mixing system is based on a Computational Fluid Dynamics (CFD) analysis modeled to address specific tank and system operating conditions
- Design considerations include tank geometry, operation cycle and flow magnitude, as well as seasonal, emergency and future demand
- Design submittals include HMS drawings and specifications, hydraulic analysis, mixing analysis, installation instructions, certifications and operation manuals
- Inlet and outlet valves are NSF 61 certified for highest standards of quality and safety
- Materials of construction are selected to meet customer specific needs and provide maintenance–free performance
- Services includes consultation, monitoring and best practice recommendations for maximizing system benefits in everyday operation

Landmark Leadership in Water Quality

- Industry leader in Hydrodynamic Mixing System development, with first systems designed and installed in the 1990s
- Invented the two leading mixer styles: “2-Tier 2-Y” and “Trillium”
- Extensive research, analysis and testing of tank mixing efficiency
- Four mixing system patents —in U.S. and Canada
- Unparalleled warranty and customer support

Landmark is a full service provider of water storage system services which include consultation, design, construction, monitoring, communications, rehabilitation and maintenance. Contact us for complete details.

Dallas/Fort Worth | Toronto | Chicago

Website: landmarkwatermixing.com
Email: watermixing@teamlandmark.com
Phone: 817.439.8888 (U.S.) | 905.319.7700 (Canada)

LANDMARK
Elevating Expectations

A People Place, A Change of Pace
SHELBURNE
ONTARIO, CANADA

CORPORATE POLICY

Schedule A to By-law # 37-2019

DEPARTMENT: **ADMINISTRATION – TREASURY OFFICE**

SECTION: **DEBT MANAGEMENT POLICY**

APPROVAL: **COUNCIL**

POLICY NUMBER: **2019-04**

DATE OF PRESENTATION: **June 10, 2019**

EFFECTIVE DATE: **June 10, 2019**

1. DEFINITIONS:

Annual Debt Repayment Limit – (ARL) Schedule 81 of the Financial Information Return (FIR) provided annually by Ministry of Municipal Affairs and Housing

Annual Debt Servicing Costs – annual required debt payment that includes both principal and interest

Debt – any obligation for the payment of money. Debt would normally consist of debentures as well as either notes or cash loans from financial institutions; Debt includes temporary, short term, and long term borrowing and may also include loans from Reserve Funds or other financial obligations such as leases.

Lease - a contract by which one party conveys land, property, services, etc. to another for a specified time, usually in return for a periodic payment.

Line of Credit - A line of credit can also be referred to as revolving credit. A LOC is a standing amount of money, similar to a loan, that a bank extends to a customer. A customer may draw upon the available line of credit, provided that the amount does not exceed the limit

Own Source Revenues – direct municipal revenues such as property taxes, user fees and charges. Does not include grants, deferred revenue, donated or assumed assets, gain/(loss) on the sale of land or capital assets. *Special note – the town's revenues, as indicated on the Financial Information Return, include revenues from the consolidated boards of the town*

Promissory Note - a financial instrument that contains a written promise by one party (the **note's** issuer or maker) to pay another party (the **note's** payee) a definite sum of money, either on demand or at a specified future date

Reserve – an allocation, at the discretion of council, of accumulated net revenues that can be built up over several years that have no reference to any specific asset or project; or for use specifically for an identified project for a future year – discretionary reserve. Reserves do not require their own bank account, do not earn their own interest. As a general practice, reserve and reserve fund may both be referred to as reserve

Reserve Funds – a fund that has been set aside either by municipal by-law or a requirement of provincial legislation to meet future capital needs (Development Charges, Gas Tax); reserve funds have a separate bank account, earn their own interest, and have annual reporting requirements.

Term Loan - A term loan is a loan from a bank for a specific amount that has a specified repayment schedule and either a fixed or floating interest rate

2. PURPOSE:

To establish a policy that provides guidelines for, and puts limits upon, the use of debt as a method of financing capital projects. This policy will serve to enhance the quality of decisions and rationalize the decision-making process with respect to ensuring compliance with statutory requirements and long-term financial flexibility and sustainability.

3. POLICY STATEMENT:

The Town of Shelburne shall maintain its level of Debt within the guidelines set by the Province of Ontario, by Ont. Regulation 403/02, and further by the internally set guidelines in the Policy. Debt is a financing source, but not a funding source. Debt should only be considered when, after deducting all available funding sources such as Development Charges, Grants, Reserves, is greater than 1% of a tax levy increase. Borrowing from Reserve Funds is not a valid option (see section 4.5 regarding internal borrowing)

4. PROCEDURES:

4.1 Types of Debt:

a. <u>Short Term Debt – Under 1 Year</u>

The town may borrow temporarily for cash flow purposes from any one or a combination of the following resources:

i) Bank Line of Credit
ii) Short-term Promissory Note
iii) Reserve Funds
iv) Any other source of short-term indebtedness

The Town's combined limit of borrowing from the above sources is subject to the limits set in the annual Borrowing By-Law. Effort should be made to have short term debt repaid prior to December 31st, of the year the debt is incurred or within one year thereafter as possible.

b. Medium Term Debt – 1 Year to Under 5 Years

Medium term financing requirements, for periods greater than one year but less than five years will be financed through any one or combination of the following resources:

i) Lease
ii) Term Loan
iii) Promissory Note
iv) Reserve Funds (Internal Loan) (not to exceed 50% of the total fund balance; an interest rate not less than the prime rate at the time of borrowing)
v) Capital Line or Capital Loan as offered by Infrastructure Ontario

c. Long Term Debt – 5 Years or Greater

Long term debt consists of debentures to finance projects or assets for a period of not less than 5 years and not more than 25 years (or 30 years for vacant land)

4.2 The Town shall issue long-term debt for the following purposes only:

- New building construction;
- Building additions;
- New road construction, bridges, culverts, or other roads infrastructure needs;
- Water and wastewater capital projects, or other water and wastewater infrastructure needs;
- Purchase of property, with or without existing structures

4.3 Term of Long-Term borrowing should be 20-25 years for buildings, 15-20 years for new roads, water or wastewater infrastructure, or alternatively to correspond to the expected useful life of the related asset. Flexibility shall be allowed in term length, based on where interest rate levels are in the marketplace (for example, may go to 20 years for roads when rates are low). Terms beyond 25 years are not permitted with the exception of vacant land, which is a non-depreciable asset, and if available, a 30-year term for vacant land is permissible.

4.4 Temporary borrowing during the period of construction, for cash flow purposes, is permitted, and the interest is to be added to the cost of the asset being constructed. The temporary loan amount shall be converted to long-term debt once the project is complete. Interest on the long-term debt becomes an operating budget expense.

4.5 There shall be annual reporting to Council of the Town's long-term debt and remaining borrowing capacity, as required by Ont. Reg. 403/02, before any new debt may be approved.

4.6 When determining the debt level under point 4.6, both external borrowing and internal borrowing, from Town Reserve Funds, will be combined in order to measure the debt capacity remaining. Internal borrowing should only take place when the capital asset can pay for itself within a reasonable time period, not to exceed 10 years or the life expectancy of the asset, whichever is less.

4.7 The maximum permitted amount of long-term debt shall be not more than 40% of the amount determined under the province's Annual Debt Repayment Limit (ARL) calculation, received annually from the Ministry of Municipal Affairs, or 10% of the town's own source revenues. The conversion of the ARL figure for debt-servicing into a gross amount of debt shall be done using an interest rate that is reflective of current market conditions, and a term that conforms to point 4.3 of this Policy.

4.8 The Town shall arrange borrowing through Infrastructure Ontario, through the Town's bank, or through a fiscal agent working in the debenture marketplace. The best loan arrangements available shall determine the choice of the source of borrowing.

4.9 This Policy shall be revisited and updated as circumstances require.