500 West Big Beaver
Troy, MI 48084
troymi.gov

CITY COUNCIL AGENDA ITEM

Date: August 22, 2022

To: Mark F. Miller, City Manager

From: Robert J. Bruner, Assistant City Manager
Robert C. Maleszyk, Chief Financial Officer
Dee Ann Irby, Controller
Kurt Bovensiep, Public Works Director
Emily Frontera, Purchasing Manager

Subject: Standard Purchasing Resolution 5: Approval to Expend Budgeted Funds – Troy Civic Center Pavilion- Design Development, Construction Documents, and Bidding Assistance (Introduced by: Kurt Bovensiep)

History

In response to the community's desires for Civic Center improvements that continue the public's use and desires for winter recreational opportunities, City Council approved a contract with OHM Advisors to begin the Schematic Design of a large pavilion and outdoor ice-skating amenity located at the corner of Civic Center Drive and Town Center Drive, which will be an extension of the Jeanne M. Stine Community Park (RESOLUTION #2022-05-067). During the regular City Council meeting on May 9, 2022, City Council was presented with concepts for the pavilion and ice-skating ribbon. The approved contract with OHM Advisors for Schematic Design built upon the concept for a more refined design. An addition to the refined design, the process also offered an opportunity to better prepare a cost opinion for the entire project.

The Schematic Design Narrative is attached to the memo and highlights the project overview, design goals, analysis of applicable codes and zoning, site and infrastructure requirements, landscaping, and architectural including the necessary trades.

The Opinion of Cost prepared by OHM Advisors is also attached to the memo and further refines the costs by item and provides the best available information of costs at the time it was prepared. Cost prediction continues to be difficult and very fluid. However, after reviewing the opinion with City Staff there is consensus that it fully represents the project accurately. It should also be noted that both OHM Advisors and City Staff have attempted to value engineer the project to present a project that satisfies the project goals and meets the needs of the community. Recognizing that the Opinion of Cost exceeds the total approved budget of $6 million we will not know the total impact to the budget until the project is bid and at that time a budget amendment would be requested.

Purchasing

The current contract for engineering and design services with OHM Advisors was renewed by City Council on May 23, 2022 (Resolution #2022-05-071-J-4b). Under the current contract pricing, OHM proposes a fee for Design Development of $135,000, Construction Documents of $148,000, and Bidding Assistance of $14,000 for a total fee of $297,000.

Financial

Funds are budgeted in the Capital Fund- Parks Development- Land Improvements Stine Community Park and the associated Project Number of 2022CG0004. Expenditures will be charged to 401.751.770.7974.095.

Recommendation

City Management recommends granting the authority to expend budgeted capital funds to *OHM Advisors, of Livonia, MI,* for the Design Development, Construction Documents, and Bidding Assistance of Troy Civic Center Pavilion and Ice-Skating Facility for an estimated total cost of $297,000 but not to exceed budgetary limitations.

OHM Advancing Communities®

Troy Civic Center Pavilion

Troy, Michigan

Schematic Design Narrative

August 2022

OHM Advancing Communities®

Project Team

Client	City of Troy 4693 Rochester Road Troy, MI 48085 p: 248.524.3392 Kurt Bovensiep, Public Works Director
Site/Civil Engineering, Landscape Architecture, Architecture, Interior Design, Structural Engineering	OHM Advisors 34000 Plymouth Road Livonia, MI 48150 p: 734.522.6711 Christopher Ozog
Mechanical, Plumbing, Electrical Engineering, and Specialty Lighting	Peter Basso Associates 5145 Livernois Rd., Suite 100 Troy, MI 48098 p: 248.879.5666 Carmen DiCicco
Building Technologies	Commtech Design 6581 Belding Rd., Suite 101 Rockford, MI 49341 p: 616.863.8132 Bret Emerson

Table of Contents

Basis of Design Cut Sheets

SD_Architectural-CS
SD_Accessories-CS
SD_Mechanical-CS
SD_Plumbing-CS

Exhibit #1 – 2022 0802_Final SD Drawing Set
Exhibit #2 – 2022 0801_Schematic Design_Summary

Project Overview

Currently, there are no buildings on the project site, which is bound by Town Center Drive and Civic Center Drive to the North and West, with wetlands to the East and South. The new development proposes construction of a new 5,000-sf open-air community pavilion, 700-sf utility building for storage of Zamboni and general site equipment, and adjacent 600-sf screened outdoor mechanical space. This design includes complete site and landscape improvements to existing conditions, including an 8,500-sf outdoor skating rink, open public spaces, seating areas and pathways, streambank restoration, culvert and vehicular drop off area.

The applied design basis for this project of 'Consistency through Nature' continues and extends the language of recent City developments into their Civic Center Campus by providing a central community gathering area capable of hosting a variety of events through all four seasons, meeting residents' aspirations.

The intent of this narrative will be to provide a general description of the proposed systems for each aspect of this design. This document is intended to convey overall intent based on currently available information for the purposes of developing an estimated cost of construction. The information contained herein will continue to be refined and developed as the design process continues to progress.

Project Location

Project Design Goals

1. Continue momentum from the Town Center Drive Public Space.
2. Meet community desires.
3. Expand space for larger events and activities.
4. Create connections to surrounding trails, open spaces and recreation facilities.
5. Activate the space through all four seasons.

Code Analysis Summary

Applicable Codes
2015 Michigan Building Code
2015 Michigan Mechanical Code
2018 Michigan Plumbing Code
2015 Michigan Energy Code (incorporating 2013 ASHRAE 90.1 Energy Standard)
2017 Michigan Electrical Code (incorporating 2017 NFPA 70 National Electrical Code)
2015 International Fire Code
2012 NFPA 101
2009 ICC/ANSI A-117.1 Accessible and Usable Buildings and Facilities
2010 Michigan Barrier Free Design
2010 Americans with Disabilities Act Accessible Guidelines (ADAAG)

Occupancy Classification	Mixed Use Group A-5, Assembly Group B, Business (non-separated mixed use) Group U, Utility (non-separated mixed use)
Construction Type Automatic Sprinkler System	Type V-B, unprotected Sprinkler System Provided Throughout: Building 'B' Only
Building Height	**Building 'A': Varies, HP =** 23'-2" **, LP = 14'-0"** **Building 'B' Varies, HP = 17**'-0" , LP = 12'-0"
Building Area	**Building 'A':** Enclosed: 2,545 sq. ft. Open: 3,225 sq. ft. **Building 'B':** **Enclosed:** 672 sq. ft. Open: 600 sq. ft.
Allowable Floor Area Allowable Height	Unlimited; B: 9,000 SF; S-2: 13,500 SF 40'-0"
Maximum Travel Distance	200'- 0", non-sprinklered, Mixed Use Assembly occupancy
Climate Zone	[Table B1-1] 5A: Nonresidential, Prescriptive

Plumbing Fixture Calculations
Classification / Occupancy — **A-5, Assembly** [Table 403.1]
Outdoor municipal venue not larger than 3,000 spectators
Total Occupants: 300

Men				
	WC	[1 per 125]	2 Required	3 Provided
	LAV	[1 per 200]	1 Required	1 Provided
Women				
	WC	[1 per 65]	3 Required	3 Provided
	LAV	[1 per 150]	1 Required	2Provided
Other			1 Service Sink	1 Provided
Drinking Fountains		[1 per 1,000]	1 Required	1 Provided

Site Work

The intent of this narrative is to provide a general overview of the proposed site improvements necessary to construct the proposed Troy Civil Center Pavilion on the site at Town Center Drive and Civic Center Drive in the City of Troy, Michigan. As the design is currently schematic in nature, this information is based upon the current best available information regarding existing conditions, current requirements of authorities having jurisdiction, and design intent for the structure itself. This information is likely to evolve as the design process progresses.

EXISTING CONDITIONS AND DEMOLITION

The site is on the Southeastern side of the intersection of Town Center Drive and Civic Center Drive. Currently, the site is covered mostly with lawn and prairie cover with some trees distributed along the site. Vegetation within the streams is composed of trees, understory shrubs and wetland vegetation. Other than a sculpture, there is no building or structure in the site. Lane drain and a stream drain crosses Civic Center Drive and Town Center Drive with 54" and a 48" culverts, respectively.

There are several Troy Daze electrical conduits on-site that will be required to be disconnected and removed. The overhead electrical and communications line will have to be relocated by DTE and Comcast to clear the conflict with the pavilion. Selective clearing will be required along the streams. The existing sculpture will have to be transferred by the contractor to a new location for storage. Limited pavement and sidewalk demolition will be required for the construction of the improvements described in this narrative.

SITE GRADING AND DRAINAGE

Except for the streams, the site elevation is approximately between 680' and 681'. The highest elevation of the site is at the center at 681' and slopes towards the perimeter of the site at approximately two percent slope. The bottom of the streams are at approximately 673' elevation with an average of twenty-five percent side slopes.

It is anticipated that the pavilion final floor elevation will be 681'. The ice rink and the zamboni building final floor elevation will be 680'. To construct the drop off area and the plaza in the northeast corner of the property, approximately 55' of stream will be required to be filled and the existing 48" culvert beneath Town Center Drive will need to be extended.

Although part of the site will sheet flow toward the streams, the site will require the installation of storm sewer pipes and structures to route the rain garden overflow and the stormwater of some of the areas to the streams. It is anticipated water detention will not be needed on the site.

SITE UTILITIES

Site Electrical
The site will be powered underground from the existing electric rack located on the north side of Town Center Drive.

Site Sanitary
Sanitary sewer service will be provided on-site via a connection to the existing 12" sanitary main running along the south side of Town Center Drive.

Domestic
Domestic water is proposed to be obtained from an existing 12" main running along the north side of Town Center Drive.

Gas
Gas service will be provided on-site via a connection to the existing 2" gas main running along the north side of Town Center Drive. Connection location will be coordinated with the provider during the DD phase.

Communications
Communication facilities will be brought underground from an existing pole or underground box along on the south side of Town Center Drive. Connection location will be coordinated with the provider during the DD phase.

END OF SITE WORK SECTION

Landscaping

The intent of this narrative is to provide a general overview of the proposed landscape site improvements necessary to construct the Troy Pavilion, a 1.6 acre park in the City of Troy, Michigan. The predominant concept of the design is *"Consistency through Nature."* The material selections, overall design and supportive amenities will reinforce this theme. Below is a breakdown of the landscape site improvements:

SITE PLANTINGS AND VEGETATION

Most of the proposed site outside of the building structure, rink and hardscape materials will be ornamental planting beds with complimentary deciduous, coniferous, and ornamental trees, as well as a diverse palette of shrubs, ornamental grasses, perennials, and groundcover. The types of plantings will vary depending upon the site location, with some areas requiring visibility while other areas will be more of a screening application.

Trees, Planting Beds, Restoration Areas

1. Approximately 55 evergreen *and/or* deciduous trees on-site, 3" caliper or 15' height for multi-stems.
2. Approximately 21 ornamental trees proposed, at 12' height.
3. Approximately 4,680 SF of seeded turfgrass lawn area proposed. (Between sidewalk and back of curb.)
4. Approximately 20,800 SF of ornamental planting beds proposed (combination of rain garden beds and planting beds.)
    a. 12" of Planting Mix
    b. 3" of Mulch
5. Approximately 6,300 SF of streambank restoration (seed mix, plug plantings)
    a. 6" of planting mix
    b. Erosion Control Blankets
6. Approximately 10,700 SF of streambank restoration (50% of area with 2-3" caliper trees, the rest tree whips, seed mix and plug plantings)
    a. 6" of planting mix
    b. Erosion Control Blankets

SITE HARDSCAPE/GROUNDPLANE

The proposed site hardscape features several different pavement applications.

Standard Concrete:

1. Adjacent to Civic Center Drive and Town Center Drive, both roadways will have 5' sidewalks with adjacent 4-8' wide tree lawns areas between the sidewalk and back of curb. This will be standard concrete. The total amount of standard concrete in these locations is approximately 3,600 SF.
2. Within the project site, there will be standard concrete applications on the ice rink as well as in plaza areas and pathways. The total amount of standard concrete in these locations is approximately 16,900 SF.

Decorative Concrete:

1. Adjacent to the pavilion, there will be approximately 7,740 SF of decorative concrete. We anticipate this being integral color concrete, with texture applied. This also includes a decorative and stamped concrete application on the proposed culvert near the SE corner of the site.
    a. An alternate in this area to the integral color concrete could be clay or concrete pavers.

Nature Trail:

1. Nature trails exist on-site that wind through planting beds. These trails are anticipated to be either shredded hardwood bark mulch or decomposed granite, with an aggregate base. The total SF of these nature trails (mulch pathway) is 600 SF.

SITE FURNISHINGS AND AMENITIES

The site furnishings will complement the site and offer amenities that make the pedestrian experience a comfortable and unique one. There is a need for ample seating throughout the site. The design also involves custom features (2 fire pits) that will be focal points of plaza areas and act as warming stations in the winter months. Some of the complimentary site furnishings that will help bolster the site design include the following:

1. Entrance Signage, Stone Decorative Engraving; 3-4' height, 2 EA
2. Benches, 6' length, 322 EA
3. Bollards, powder coated
4. Ledgestone Benches (4-6' wide natural seating opportunities)
5. Litter Receptacles, 4 EA
6. Recycle receptacles, 4 EA
7. Seat Walls, 18" height with stone veneer, 120 LF
8. Fire Pits, 6' diameter, 2 EA
9. Decorative Fencing (Curved), 65 LF
10. Boulders/stones (for stream restoration)
11. Rain Chains on Building 'A' (Pavilion), 2 EA
12. Rain Chains on Building 'B' (Utility), 1 EA
13. Rainwater cistern to capture runoff from Pavilion and use to irrigate plant material, 1 for pavilion
14. Decorative powder coated aluminum or steel railings on top of culvert (210 LF)

END OF LANDSCAPING SECTION

Architectural

Foundations

Foundations (ref: structural section): Foundations will incorporate continuous perimeter dampproofing/waterproofing along exterior, with protection board, drainage mats, and foundation drains locations TBD. Foundation drainage system will be backfilled with granular base.

Slab on Grade

Concrete Slab: Concrete slab on grade will contain 2" rigid continuous insulation at the outside perimeter (R-15 minimum, 2'-0" width) of slab edges and will incorporate a continuous vapor barrier (15 mil).

Exterior Walls

Building 'A' (Pavilion)
Exterior Wall Assembly 1 (12" CMU): Pre-insulated, single-wythe concrete masonry wall system with 3-1/2" inserts (R-12 min.), integral water repellent within block and mortar and post-applied sealant; cores grouted solid below grade.

Design basis: Concrete Products Group HI-R-H
CMU 01: Smooth Face, both sides, color TBD
CMU 02 (accent): Split Face exterior, Smooth Face interior, color TBD

Exterior Wall Assembly 2 (TBD): Non-load bearing Cold Formed Metal Studs framed structure with exterior finish TBD, located above Exterior Wall Assembly 1 at 10'-0" AFF to underside of roof deck.

Column Piers (Concrete): 24"x14"x24"H concrete piers with 4" CMU applied finish to match selected Exterior Walls finish) – Located at 22 glulam columns, reference Sheet A-101 Building Plans.

Building 'B' (Utility)
Exterior Walls (12" CMU): Pre-insulated, single-wythe concrete masonry wall system with 3-1/2" inserts (R-12 min.), integral water repellent within block and mortar and post-applied sealant; cores grouted solid below grade.

Design basis: Concrete Products Group HI-R-H
CMU 01: Smooth Face, both sides, color TBD
CMU 02 (accent): Split Face exterior, Smooth Face interior, color TBD

Exterior Doors

Overhead Sectional Doors (2 at Building 'B') Aluminum door and frames 12'-0"W x 12'-0'H; Dark bronze finish. Basis of Design: TBD.

FRP/Aluminum Hybrid Door and frames, insulated. Doors and frames with 4" heads, Dark bronze finish. Basis of Design Special-Lite SL-20.

Exterior Transaction Windows

Pre-finished Aluminum Framed Windows: 1 ¾" x 4" prefinished aluminum frame, dual pane ¾" clear insulated tempered glazing, horizontal sliding.

Basis of Design:

Window 'A':	Ready-Access 650, 2-Service Opening Window – Rental/Transaction 101
Window 'B':	Ready-Access 275, Flush-mount Pass-Thru Window - Concessions 107

Roof Coverings

Standing Seam Metal Roofing: The design intent is to maintain a 2/12 slope at Building 'A' (Pavilion) and 2.5/12 slope at Building 'B' (Utility). Standing Seam Metal roofing assembly with minimum R-30 insulation will be utilized on all roofs for the development (Design basis: TBD).

Interior Partitions

Interior Walls: All interior walls will be constructed of decorative masonry. Demising and Restroom walls to have no less than STC rating of 50.

Interior Doors

FRP/Aluminum Hybrid Door and frames, insulated. Doors and frames with 4" heads, Dark bronze finish. Basis of Design Special-Lite SL-20.

Door Hardware

Public Restroom Doors: TBD

Restricted Access Doors: TBD - Located at Janitor's Closet 106 of Building 'A'.

Secured Access: TBD – Located at Office 102, Concessions 107, Equipment Storage 109 of Building 'A', and Storage 201 of Building 'B'. Refer to Building Technology plans for locations

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Exterior Surface Finishes

Building 'A' (Pavilion): Provide removeable exterior permeable rubber tile surface to be applied during winter months, covering approximately 4,200 SF. Basis of Design: TBD

Exterior concrete to follow Landscape narrative finishing.

Interior Floor Finishes

Exposed Concrete:
Interior Floors: Storage room and offices, sealed.
Restrooms and kitchenette, epoxy floor.

Ceiling Finishes

Exposed ceiling in open areas at great hall and circulation spaces to be tongue and groove wood siding.
Gypsum Board: Moisture resistant, painted — Located at Restrooms.
Lay-in Ceiling: standard acoustical tiles in Offices and Storage Rooms, and Ceramic coated acoustical tile in kitchenette
Exposed to deck: Mechanical rooms

Accessories

Public Bathrooms

4" decorative CMU full-height wall dividers and FRP/Aluminum Hybrid Doors and Frames within Restroom at all locations.

Automated Paper Towel Dispenser – Design basis: GP Pro Georgia Pacific LLC, 59447A
Soap Dispenser – Design basis: GOJO LTX-12
Toilet Tissues Dispenser – Design basis: Bobrick B-2892
Sanitary Napkin Disposal – Design basis: Bobrick B-254
Grab Bars – Design basis: ADA Grab Bars
18" Bar: Bobrick B-6806x18
36" Bar: Bobrick B-6806x36
42" Bar: Bobrick B-6806x42
Mirror – Design basis: Bobrick B-290 2436
Mirror Clips – Design basis: TBD
Baby/Adult Changing Station – Design basis: Koala Kare KB3000
Coat Hooks – Design basis: Bobrick B-6827
Waste Receptacle – Design basis: Bobrick B-277

Janitor's Closet

Utility Shelf and Hooks – Design basis: Bobrick B-239

Millwork

Secure Areas

Rental/Transaction

Countertops – 16'L x 24"D, Solid Surface Countertop with 6 lineal feet of PLAM Base Cabinets Design basis: TBD
Workbench – Design basis: TBD
Open-Shelf Storage – Refer to 'Specialty Conditions' section below.

Office

Worksurface/Workstation – Design basis: TBD
Storage – Design basis: TBD

Public Areas

Restroom

Countertops – Design basis: Wilsonart, Solid Surface (Quartz), color Calm White (Q6016)

Concessions

Countertops – 12' x 24"D, Solid Surface Countertop with 6 lineal feet of PLAM Base Cabinets
Design basis: TBD
Storage – Design basis: TBD

Provide allowance for signage at Building 'A' (Pavilion) exterior for public Restrooms.

Exterior Seating:

Covered Walk 100:	21'-0" L x 24"D Seatwall, with 2" cast stone seat with concealed brackets
Great Hall 151:	28'-0" L x 22"D Seatwall with 2" cast stone seat on decorative CMU base with built-in storage cubbies (1 location)
	12'-6" L x 22"D Seatwall with 2" cast stone seat on decorative CMU base with built-in storage cubbies (2 locations)

Specialty Conditions

There is a dedicated repair/maintenance/work area within Rental/Transaction Room 101, located at the northeast corner of Building "A" (Pavilion). This space should be able to house 100 ice skates within open storage shelving unit and accommodate central workbench repair area.

END OF ARCHITECTURAL SECTION

Structural

Building 'A' (Pavilion) - Design Loads (as outlined by ASCE 7-10)

Risk Category	II
Live Load (Roof)	20 PSF
Snow Load	25 PSF
Wind Load	115 MPH
Seismic Design Category	B
Geotechnical Report	See attached

Building 'A' (Pavilion) - Superstructure

Wood-framed post and beam system utilizing 14"x 19.5" glulam beams and tapered glulam columns (24"x14" at base to 12"x14" at roof) to support the 7.5" thick cross laminated timber or 8 ¼" Structural Insulated Panel roof deck. The roof will have a 2/12 monoslope with the peak on the south side of the building. The glulam columns will sit on 2ft tall concrete piers.

The pavilion walls will be constructed with 12" insulated single wythe CMU to 10ft, and cold-formed metal frame 2x6 walls will extend up to the underside of the roof deck. The CFMF wall assemblies will be sheathed with treated plywood on the exterior face and drywall sheathing on the interior. Interior partitions will be decorative 8" CMU (4" where indicated) up to 10ft. R Refer to Architectural plans.

Building 'A' (Pavilion) - Foundation

The pavilion columns will be supported by 24"x14" concrete piers on 4'x4'x18" spread footings. The bottom of the footings will extend 4ft below grade for frost protection.

The load bearing pavilion walls will be supported by a 12" concrete foundation wall and 24"x12" spread footing. The North and South foundation walls will have four through drains and the East and West foundation walls two through drains, to alleviate differential pressures on the foundation walls. A perforated drain tile will go around the perimeter of the pavilion foundations at footing elevation. These will connect to the storm system or daylight to grade.

The non-load bearing CMU pavilion walls will sit on thickened slab regions within the slab on grade.

The slab on grade is anticipated to be 4" thick reinforced with welded wire fabric with control joints, on vapor barrier over an approved granular base. The slab on grade will have a perforated drain tile around its perimeter draining to daylight.

Building 'B' (Utility) - Design Loads (as outlined by ASCE 7-10)

Risk Category	II
Live Load (Roof)	20 PSF
Snow Load	25 PSF
Wind Load	115 MPH
Seismic Design Category	B
Geotechnical Report	See attached

Building 'B' (Utility) - Superstructure

Wood framed roof system using 9 ½" Wood I-Joists at a 3/12 monoslope with ply-wood sheathing and intermediate blocking. I-Joists will bear on 12" insulated CMU walls. The north and south walls are anticipated to be the load bearing walls, non-load bearing and bearing walls will have the same construction.

The roof will be insulated between the joist spaces.

Building 'B' (Utility) - Foundation

The utility building will sit on spread footings that extend 4ft below grade for frost protection and the interior slab on grade is anticipated to be 4" thick with welded wire fabric reinforcement. The slab will require minimum two control joints and will sit on a vapor barrier over an approved granular base and contain 1 floor drain.

Screen Wall - Foundation and Slab

Screen wall support will be provided by 6x6 treated timber posts. Each individual post will be embedded within 14" wide x 48" deep concrete footings. Exterior rink equipment will rest on a 4" slab on grade, reinforced with welded wire fabric, located on an 18" wide x 4' deep perimeter grade beam. Below the slab on grade and on the inside face of the grade beam, there will be a layer of insulation.

Pads for equipment will be separated from the slab on grade and the thickness will be 6" (depending on equipment selection).

5x5 HSS tubes with a cap are acceptable as a potential alternate to the 6x6 treated timber posts. Acceptance to be reviewed by the architect if proposed.

Culvert - Design Loads (as outlined by AASHTO)

*Ground Snow Load	25 PSF
Vehicle Live Load	AASHTO H-20 Truck
Pedestrian Live Load	90 PSF (not concurrent with Vehicle live load)
Seismic Design Category	B
Wind Load	20 PSF (MIN)
Geotechnical Report	See attached

* Ground snow load is not included as a load case in the AASHTO Bridge Design Manual –the AASHTO code assumes that all snow will be plowed from the bridge surface. The project team is including a snow load case on this project, in addition the typical AASHTO requirements, due to the intended use for the surrounding park area.

Culvert - Superstructure

27ft span x 6.25ft rise x 14ft run aluminum box culvert, full invert. Culvert will have 13ft long concrete wingwalls and 3ft tall concrete headwalls, both with decorative concrete faces. Culvert anticipated to have 2.5ft cover with guardrails attached to the headwalls, and a decorative concrete or paver path over the top.

Design of culvert is a delegated design submittal to be reviewed by the Engineer of Record during construction.

Culvert - Foundation

The full invert aluminum box culvert will have a burry depth of 1.5ft to allow for a natural stream bottom and to protect from scour. The culvert will sit on a 1.5' thick stable well graded granular bedding. Granular bedding shall meet the requirements of AASHTO M 145 for soil classifications. Backfill will be placed symmetrically on each side of the structure in 8" uncompacted lifts, each lift will then be compacted to a minimum 90% density per AASHTO T 180.

Riprap will also be placed around the inlet and outlet of the culvert to protect the wingwalls and culvert base from scour.

END OF STRUCTURAL SECTION

Mechanical

Systems:

Outdoor Conditions

Summer	90.3 F DB
	74.0 F WB
Winter	2.1 F DB
	0% RH
Condensing Units	95 F DB
	78 F WB

Notes:
1. Outdoor design conditions based on 2021 ASHRAE fundamentals climatic design data.

Indoor Conditions

Rooms	Summer °F	Winter °F	Humidification
Toilet Room	75 F DB	72 F DB	
Storage	75 F DB	72 F DB	
Main Entrance	85 F DB	60 F DB	
Concessions	78 F DB	72 F DB	
Mechanical/Electrical Equipment Rooms	OA Temp. plus 10 F DB (max.)	60 F DB	
Offices	75 F DB	72 F DB	

Note: Owner shall review and verify required temperatures.

Outside Air Ventilation Rates

Outside air ventilation rates will be in accordance with the 2015 Michigan Mechanical Code.

Air Change Rates

Minimum air flow rates will be as follows:

Toilet Rooms: 10 air changes/hour or 70 cfm per water closet and urinal, whichever is greater (exhausted to outdoors).

Custodial Closets: 10 air changes/hour or 1 cfm/sq.ft, whichever is greater (exhausted to outdoors).

Thermostatic Zoning

Thermostatic zoning will be as indicated on the drawings.

General Sizing & Utilities:

Duct Sizing Criteria

System	Velocity	Friction per 100 ft.
Supply Air Ductwork	1000 fpm maximum velocity	0.10"/100 ft. maximum air pressure drop
Return/Exhaust Air Ductwork – Overhead in occupied spaces	1000 fpm maximum velocity	0.10"/100 ft. maximum air pressure drop
Return Air Ductwork – Open end duct inlet velocity	700 fpm maximum velocity	0.10"/100 ft. maximum air pressure drop
Transfer Air Ductwork – Overhead in occupied spaces	300 fpm maximum velocity	0.10"/100 ft. maximum air pressure drop

Pipe Sizing Criteria

Domestic Water Feed Mains and Risers	7 fps Maximum velocity	Maximum water pressure drop: 3.0 ft.hd./100 ft. equivalent length
Domestic Water Branch Piping	4 fps Maximum velocity	Maximum water pressure drop: 3.0 ft.hd./100 ft. equivalent length

Utilities

New sanitary, domestic water, fire protection, and gas services will be connected to the street utilities located to the north and west of the site.

Air Handling Systems:

Building 'A' (Pavilion)

The pavilion will be served by a 100 MBH, constant volume, high efficiency, gas-fired condensing furnace. The furnace will be suspended from the structure in the mechanical room. The unit will include a supply fan, a MERV 8 filter, a direct expansion cooling coil, and a gas-fired heat exchanger. Outside air will be delivered to the furnace from a sidewall intake louver on the north side of the pavilion. Supply air will be ducted from the furnace outlet to the ceiling-mounted supply air diffusers in each room. A 5-ton air-cooled condensing unit associated with the direct expansion cooling coil will be located on grade to the north of the pavilion. Refrigerant piping will be connected between the condensing unit and the furnace. The condensing unit will be mounted on a concrete housekeeping pad.

Exhaust air from the restrooms and janitors' closet will be removed from the space through ceiling-mounted grilles. The ceiling-mounted grilles will be connected to an exhaust air duct main that connects to an inline fan. The inline fan will be located above the ceiling of the equipment storage room. The exhaust air will leave the building through a sidewall louver on the north side of the pavilion.

Wall mounted, electric cabinet unit heaters will be provided near the exterior doors of the vestibule and equipment storage room. The vestibule will have an 8-kW heater and the storage room will have a 5-kW heater.

Two 1-kW electric baseboard heaters will be provided within the office below each service window.

1-kW electric fan forced wall heaters will be provided within the men's restroom, women's restroom, and the janitor's closet.

A 5-kW ceiling-mounted cabinet unit heater will be provided above the service window within the concessions area.

A 7.5-kW fan-forced unit heater will be provided within the mechanical room.

Four 65 MBH infrared heaters will be provided for the pavilion overhang. Two will be located above the seating area and two will be located above the skate rental area.

Three 6'-0" high volume, low speed fans will be provided above the seating area.

Building 'B' (Utility)

A 7.5-kW fan forced unit heater will be provided within the Utility building.

A 550 cfm inline exhaust fan will be connected to a gas detection system. Upon activation of the sensor system, a motorized damper connected to a side wall intake louver will be opened and room will be fully exhausted.

Temperature Control Systems:

A 7-day programmable thermostat will be provided with the furnace.

Integral thermostats will be provided for all other heating devices.

END OF MECHANICAL SECTION

Plumbing

Building 'A' (Pavilion) Systems:

A new domestic water service will enter to the north side of the pavilion within the Mechanical room. A water meter and a reduced pressure zone assembly will be provided for the water service. The domestic cold-water piping will be extended and connected to the plumbing fixtures throughout the pavilion. The water will also be connected to the instantaneous gas fired water heater.

The instantaneous water heater will be located on the west wall of the Mechanical room. The heater will be wall mounted. Hot water piping will be extended and connected to the plumbing fixtures within the pavilion. Hot water recirculation piping and pump will be provided for the system.

A complete sanitary waste and vent system will be provided. Sanitary waste from the plumbing fixtures in the pavilion will flow by gravity and connect to the site utilities at the street.

Roof drainage shall be provided by architectural trades.

A natural gas service assembly will be located on the north side of the pavilion. The natural gas piping will be extended to the instantaneous water heater, furnace, and infrared heater around the pavilion. Underground gas will be routed to two fireplaces on the site and to Building 'B'.

The restrooms will be provided with floor mounted water closets, and wall mounted lavatories. The water closets will be equipped with low flow, automatic flush valves. The lavatories will be supplied with automatic faucets.

A dual height water cooler will be provided within Building 'A' (Pavilion), Support Entry 104. The drinking fountain will have a bottle filling station.

The concessions room will have a single bowl, stainless steel hand sink and manual faucet.

Building 'B' (Utility) Systems:

The domestic water service to the Utility building will be routed underground from the pavilion and enter the building from the north side. The water will be connected to a wall mounted hose bibb and the building gas fired water heater.

The high efficiency, gas fired water heater will be located on the north wall of the building. The hot water will be stored in a separate, jacketed storage tank adjacent to the water heater. The hot water piping will be extended to a wall mounted hose bibb. This hose bibb will be used to refill the Zamboni.

A floor drain will be located adjacent to the water heater. A centrally located trench drain will also flow by gravity and connect to site utilities at the street. The trench drain will be heat traced to prevent freezing.

Fire Protection Systems:

Fire protection is not required for the site.

END OF PLUMBING SECTION

Fire Protection

System:

A new fire protection system to be installed in Building 'B' (Utility). A 4" service will be connected from the street to the building. A vertical style backflow preventor will be provided as the service enters the building. The area will be protected by automatic wet pipe sprinkler system per NFPA 13.

END OF FIRE PROTECTION SECTION

Electrical

Power Distribution:

Option 1: There is an existing 300KVA 13.2KV-208/120V DTE transformer across Town Center Drive from the site. Bring a new underground 1,000A feeder from this transformer to a new utility meter located on the outside of the pavilion. This work needs to be verified with DTE.

Option 2: Provide a brand new DTE service feeder from a new DTE transformer and new meter. This is to be coordinated with DTE.

A new 1,000A 208/120V 3 phase distribution panel will be provided within the Pavilion electrical room. This distribution panel will feed a new 400A 208/120V 3 phase panelboard next to it within the Pavilion electrical room. This panel will be used to feed all systems on site including but not limited to mechanical systems, lighting, AV, wiring devices, etc. The distribution panel in the Pavilion electrical room will also feed a new 600A 208/120V 3 phase panelboard in the Utility (Zamboni) building. This panel will be used to feed all systems within the Zamboni room and the ice rink mechanical yard that is adjacent to the building.

Wiring Devices:

New receptacles shall be provided throughout as required and shall be 20 ampere, 125 volt, NEMA 5-20R configuration. A maximum of six receptacles shall be connected per circuit. Special receptacles and dedicated receptacles shall be provided in areas as required. Toilet rooms and all other areas with sinks shall have GFI-protected receptacles within six feet of the sinks. GFCI breakers shall be used for any receptacles concealed by large or immobile equipment. Exterior receptacles shall have a weatherproof while-in-use cover.

Lighting Systems:

Lighting shall be designed to meet the ASHRAE 90.1-2013 Energy Standard for Buildings and the exteriors. All the proposed lighting will be energy-efficient LEDs.

The concepts for lighting solutions will complement the theme for Architectural and Landscape designs, to “Create Consistency Through Nature.” Avoiding the lighting elements with visible light sources will reduce glare and will allow the emphasis on natural-occurring elements such as trees, shadows, wood, and stone finishes on horizontal and vertical elements throughout. Opportunities such as benches, retaining walls, stone caps, etc. will be utilized to integrate and hide the visible light sources and highlight the surrounds for a pleasant glare-free environment.

Four key areas of the site illumination are focused on: pavilion, ice rink, pedestrian park/pathways, and the drop-off zone. Furthermore, layers of lighting for ambient illumination, accent lighting, and visual entertainment lighting will be independently controlled and dimmed to create visual interest such as focal points, good depth perception, and an intuitive visual guide to points of interest.

Vertical Landscape and Architecture lighting: Pedestrian scale light posts nominally 10’ to 12’ high will be of decorative appearance to blend well visually/aesthetically with the vertical landscape.

Posts will be positioned between trees for ambient light and to cast shadows of the trees onto the pathways. Although in grade up-lights can create an appealing appearance, they are not maintenance-friendly and are not recommended. Instead, easily accessible surface-mounted landscape lights on grade within the landscaped areas are recommended to supplement the post top lights and can achieve equally desired effects. Accent lighting will highlight taller trees and new building columns to celebrate the vertical elements of space.

Low, horizontal landscape lighting shall consist of multiple layers of lights complementing each other while supplementing the vertical solution described above. Integrate linear outdoor LED tape-lights into Architectural elements such as benches and other opportunities, to hide from direct view to the public, but to create glow within the landscape and the adjacent walking surfaces. Utilize bollard lights, nominally 40" high (or lower) to illuminate pathway intersections, and to establish visual linearity leading guests to/from the ice surface. Implement adjustable landscape lights as fill-in method, illuminating pathways, or landscape features.

Permanent architectural elements such as benches, half-walls, railings, retaining walls, and stone caps, will provide opportunities to integrate miniature lighting elements to offer ambient illuminance moments throughout the site.

Illumination of the ice surface is recommended to be integrated into the perimeter elements of the ice surface, similar to the permanent methods/lights described above, but with built-in color changing and other dynamic visual effects. Although final methods of integrating color-changing LED lights (RGBW), multiple lighting products, DMX controlled, will be required: Linear outdoor-rated RGBW bendable "rope-lights," aimable LED (RGBW) floodlights, and recessed LED step-light (RGBW). To make sure that the space does not become outdated, or stagnant-feeling venue, such solutions require flexibility to modify the visual appearance from time to time, by method of digital programming, re-aiming, but without physically removing/replacing the lighting fixtures.

Exterior illumination of the building will accent the vertical Architectural features to compliment the surrounding landscape and highlight the wood and stone finishes for warm, inviting inspiration. The open pavilion space will utilize standard LED products for safety with ambient illumination and will include a pendant feature lighting element as a focal point in the space. Interior of the building will utilize standard LED illumination methods using the recessed flat 2x2 LED panels, recessed LED downlights, and pendant linear LED products in the exposed ceiling spaces.

It is the intent to create a lighting system that can create many visual effects, including the ability to modify/update the effects via software/programming. The lighting can be programmed to correspond to changes in season or on a month-to-month basis. Flexibility of the system and the ability to change programming will keep it fresh for years down the road. A small sample of possible effects are monochromatic white or saturated color of light over the ice; slow light color fades, or quick color flashes; visual changes based on time, or on the beat of the music; spontaneous color changes or patterns such as color-chase in one direction, reverse direction, split directions; or classy white/amber glow with intermittent twinkle bursts. With these many options, the limit is only in imagination. It is recommended that 4-6 preprogrammed effects be stored in the memory of the lighting control system with simple pushbutton access to any of them, either automatically by time clock, photocell, or manually at the control pushbutton station inside of the building, or remotely via smartphone or tablet.

Lighting Controls:

Lighting control system shall be located indoors, adjacent to Electrical Panelboards. The user interface consisting of an LCD screen or push-button control station will be located in areas accessible and visible by the staff, but inaccessible to the public. The system shall accommodate multiple dimming protocols, including 0-10V, Triac, ELV, and MLV, for indoor lighting, and outdoor ambient lighting. DMX protocol for the color-changing, including the ice area and other "entertainment" lighting, shall be utilized. Each protocol shall include electronic modules within the same enclosure, capable of communication with other modules and/or protocols as one unified system.

Capacity of the system shall accommodate the individually addressable DMX-controlled color-changing fixtures illuminating the ice, dimmable landscape lights grouped in multiple zones corresponding to areas of the park, and dimmable lighting zones associated with the proposed new building, and the drop-off area.
The preprogrammed "entertainment" lighting at the ice area shall be stored ready to "playback" any one of the 4-6 themes when accessed via preset control interface.

Control system shall be a fully programable system, capable to operate in a fully automatic mode based on inputs from time of day, photocell, and/or motion-sensing options. Owner/user shall be able to manually override automated mode with user-interface LCD screen of pushbutton control station. The override buttons shall be appropriately labeled and programmed to operate each of the 4 key areas individually, raise/lower brightness in each area, and access/playback any one of the preprogrammed, DMX-controlled "entertainment" themes at the ice area. The lighting control station(s) can be password protected or protected with a locking cover to limit unauthorized use.

Lighting control system shall be provided with remote plug-in outlets for use of a laptop needed during programming, manual overrides during special events, for the music interface, and the wi-fi/wireless access to the controls via smartphone or tablet.

Fire Alarm Systems:

A fire alarm system is not required.

Telecommunications / Data Systems:

Raceways and back boxes for telephone and data outlets shall be provided where required. Coordination required with Commtech.

Security Systems:

Raceways, back boxes, and power for security systems shall be provided where required. Equipment and wiring for security shall be provided by the Owner. Coordination is required with Commtech.

Audio / Visual Systems:

Raceways, back boxes, and power for security systems shall be provided where required. Equipment and wiring for security shall be provided by the Owner. Coordination is required with Commtech.

Equipment and wiring for audio/visual systems shall be provided by the Owner.

Grounding Systems:

Grounding systems to meet the requirements of the National Electric Code shall be provided. All feeder and branch circuit conduits shall be provided with an equipment-grounding conductor. Special equipment or system grounding requirements shall not be provided.

END OF ELECTRICAL SECTION

Troy Pavilion		Project Number: 0128-21-0020
Schematic Design		Issue: 08/01/2022
Item	Opinion of Cost	Notes
Site	$ 2,053,407.00	Earthwork, Utilities including sanitary, water, gas, DTE Allowance, and Fiber, Site Specialty Lighting, Hardscapes
Landscaping	$ 441,540.00	Plantings, trees, streambank restoration, trails
Ice Rink	$ 1,370,000.00	Equipment, Concrete work and substructure, Railings
Building	$ 2,229,497.00	Building structures, MEP, interior finishes and millwork, Building Technologies (minus video wall)
Site Furnishings	$ 252,500.00	Wayfinding, fire pits, Screen Walls, Benches and receptacles, Ledgestones benches, Video Display
General Conditions	$ 691,178.00	
Profit	$ 416,394.00	
Contingency	$ 1,249,182.00	15%
Bonds/Insurance	$ 69,809.00	
Construction Total	$ 8,773,507.00	
Zamboni	$ 125,000.00	
Design	$ 425,000.00	
CA-Field	$ 300,000.00	
CA-Office	$ 150,000.00	Testing & Survey in General Conditions Cost
Project Total	$ 9,773,507.00	
Refer to detailed cost break down for associated color coded line items associated with above.		

Location	Description	Takeoff Quantity		Total Amount
A-Staffing				
	Supervision			
	Superintendent - Senior	52.00	wk	**166,400**
	General Superintendent			
	Quality/Production Mgr.	2.60	wk	**8,190**
	Project Scheduling			
	Project Scheduler	1.00	wk	**2,600**
	Project Manager			
	Sr. Project Manager	26.00	wk	**75,400**
	Project Engineer			
	Project Engineer - PE to be full time on projects $10M+	26.00	wk	**52,000**
	BIM Manager			
	Director of Const. Tech	0.50	wk	**1,300**
	Safety Director			
	Safety Manager	2.00	wk	**5,200**
GC's				
	Permits			
	Building Permit (NA)		***ls***	
	Fees			
	Utility Tap Fee - Allowance	1.00	ls	**100,000**
	Procore Software			
	Project Software & Hardware	1.00	ls	**5,000**
	Temp. Project Signage			
	Temporary Project Signage	1.00	ls	**1,750**
	Gang Box Fees			
	Gang Box Fees	1.00	ls	**750**
	Misc. Matls / Tools			
	Misc. Matls / Tools	1.00	ls	**10,000**
	Yard Misc. Trucking			
	Yard Trucking	48.00	hr	**4,992**
	Blueprinting			
	Blueprinting	1.00	ea	**1,000**
	Overnight Mail Charges			
	Overnight Mail Charges	1.00	ls	**500**
	Construction Photos			
	Construction Photos	1.00	ea	**3,500**
	Hazardous Mat'l Testing			
	Employee Testing & Safety	1.00	ls	**5,000**
	Safety Supplies			
	Safety Supplies	1.00	ls	**5,000**
	Surveying & Layout			
	Site Layout	1.00	ls	**75,000**
	Testing & Quality Control			
	Testing & Quality Control	1.00	ls	**50,000**
	Temp. Building Heat			
	Temp Bldg Heat	4.00	mo	**10,000**

Location	Description	Takeoff Quantity		Total Amount
	Temp Site Water			
	Temp Site Water (NA)		***mo***	
	Temp. Electrical Consp.			
	Temp Electrical Consp. (NA)		***mo***	
	Temporary Toilets			
	Temporary Toilets - W/ hand sanitizer	12.00	mo	**2,400**
	Porta Sink - Used for Silica washing station	12.00	mo	**2,400**
	Temp. Barricades			
	Temporary Barricades	200.00	lf	**3,000**
	Temp Fencing			
	Temporary Fencing	1,200.00	lf	**10,800**
	Temp Site Road			
	Temp Site Road	5,000.00	sf	**15,000**
	Field Office			
	Field Office - Monthly Rent 12X60	12.00	mo	**13,200**
	Field Office - Freight/Setup/Takedown/Tie Downs 12X60	1.00	ls	**1,954**
	Field Office - Skirting 12X60	1.00	ls	**2,100**
	Field Office Equip			
	Field Office Equip. ($250 Required on ALL projects)	1.00	ls	**250**
	Copy/Scan/Print Machine-Rental	12.00	mo	**3,600**
	Deliver/Pick Up Copy Machine - One time cost	1.00	ls	**250**
	Field Office Supplies			
	Field Office Supplies	12.00	mo	**600**
	Field Office Telephone			
	Field Office (VOIP) Phone Equipment - Large Projects	1.00	ls	**360**
	Internet Monthly Rate - Large Projects	12.00	mo	**3,600**
	Field Office Utilities			
	Field Office Electrical Hook up	1.00	ls	**1,800**
	Field Office Utilites	12.00	mo	**3,600**
	Field Office Water			
	Field Office Water	12.00	mo	**456**
	Coffee Service	12.00	mo	**480**
	Closeout Superintendent			
	O & M Manual	1.00	ls	**500**
	As Built Drawings	1.00	ls	**500**
	Final Clean up			
	Final Clean-up	80.00	hr	**4,362**
	Infectious Control			
	Walk off Mats	1.00	box	**350**
	Daily Clean-up			
	Daily Clean-up	416.00	hr	**22,684**
	Dumpsters			
	Standard Dumpsters (see notes)	10.00	ea	**3,750**
	Street Sweeping			
	Street Sweeping	16.00	ea	**5,600**
	Snow Removal			
	Snow Removal	4.00	mo	**2,000**

Location	Description	Takeoff Quantity		Total Amount
	Subsurface Investigation			
	GPR - Req. for any underground (see notes)	1.00	ls	**2,000**
Base Bid				
	Selective Demolition			
	Site Demolition	1.00	ls	**108,795**
	Excavation			
	Earthwork	1.00	ls	**342,705**
	Site Utilities	1.00	ls	**685,500**
	Undercut "Allowance"	1.00	ls	**50,000**
	North Culvert	1.00	ls	**80,000**
	South Culvert	1.00	ls	**180,000**
	DTE Allowance			**100000**
	Fiber			**50000**
	Site Improvements			
	3" Caliper Evergreen or decidous trees	31.00	ea	**31,000**
	12' Ornamental trees	8.00	ea	**8,000**
	Turfgrass	4,680.00	sf	**7,020**
	6" Top soil spread	37,800.00	sf	**34,020**
	Ornamental planting beds	20,800.00	sf	**208,000**
	Streambank restoration	6,300.00	sf	**31,500**
	Streambank Restoration w/Trees	10,700.00	sf	**107,000**
	Nature Trails	600.00	sf	**15,000**
	Irrigation Systems			
	Irrigation Systems (NA)		***ls***	
	Site & Street Furnishings			
	Wayfinding signage	1.00	ls	**2,500**
	Entrance decorative stone sign 3'-4"	2.00	ea	**24,000**
	6' Benches	30.00	ea	**36,000**
	Ledgestone Benches	8.00	ea	**24,000**
	Litter Receptacles	4.00	ea	**4,000**
	Recycle receptacles	4.00	ea	**4,000**
	Fire Pits 6' diameter	2.00	ea	**20,000**
	Decorative fencing (Curved)	65.00	lf	**13,000**
	8'-12' Monolith boulders (NA)	***15.00***	***ea***	
	Pour Misc Conc			
	Concrete - Bldg. A	1.00	ls	**281,467**
	Concrete - Bldg. B	1.00	ls	**79,840**
	Concrete - Site Concrete	1.00	ls	**156,407**
	Unit Masonry			
	8" Masonry - Insulated Block	4,300.00	sf	**150,500**
	4" Masonry - Non insulated	440.00	sf	**8,800**
	Stone Veneer - Bldg	2,340.00	sf	**46,800**
	Stone Veneer - Columns	768.00	sf	**23,040**
	Stone Veneer ledge seating	50.00	sf	**2,500**
	Structural Steel			
	Misc Steel	1.00	ls	**10,000**

Location	Description	Takeoff Quantity		Total Amount
	Bollards	10.00	ea	**7,500**
	Handrails & Railings			
	Handrails & Railings	400.00	lf	**70,000**
	Rough Carpentry			
	Install Frames/Doors/HW	6.00	ea	**2,400**
	Roof nailers	80.00	hrs	**6,800**
	Misc. Rough Framing	80.00	hrs	**9,200**
	Finish Carpentry			
	Millwork	113.00	lf	**16,950**
	Waterproofing			
	Waterproofing	1.00	ls	**5,000**
	Membrane Roofing			
	Standing Seam Metal Roofing - Bldg. A	6,500.00	sf	**195,000**
	Standing Seam Metal Roofing - Bldg. B	780.00	sf	**27,300**
	Roof Specialities/ Acces.			
	Rain chains on pavilion	2.00	ea	**3,000**
	Rain chains on Zamboni building	1.00	ea	**1,250**
	Rainwater cistern	1.00	ea	**5,000**
	Joint Sealants			
	Joint Sealants	1.00	ls	**15,000**
	Metal Doors & Frames			
	Metal Doors & Frames	6.00	ls	**100,000**
	Glazing			
	Aluminum Windows	2.00	ea	**7,000**
	Gypsum Board Assemblies			
	Gypsum Board Assemblies	1,500.00	SF	**37,500**
	Resilient Flooring			
	Sealed Concrete	16,900.00	SF	**16,900**
	Painting			
	Painting	1.00	ls	**20,000**
	Fire Protect Specialties			
	Fire Protection Specialities	1.00	ls	**5,000**
	Storage Shelving			
	Storage/Shelving System	1.00	ls	**20,000**
	Pre-engineered Buildings			
	Pre-Engineered Wood Stucture	1.00	ls	**775,000**
	Wet/ CO2 Fire Protection			
	Wet Fire Protection	672.00	sf	
	Plumbing			
	Plumbing	1.00	ls	**101,500**
	Ice Rink System Complete	1.00	ls	**1,300,000**
	HVAC			
	HVAC - Bldg. A	2,400.00	sf	**72,000**
	HVAC - Bldg. A - Infered Heat	1.00	ls	**6,000**
	HVAC - Bldg. B	1.00	ls	**2,500**
	Electrical			
	Pavilion Electrical	1.00	ls	**140,000**

Location	Description	Takeoff Quantity		Total Amount
	Storage Bldg Electrical	1.00	ls	**38,000**
	Site electrical	1.00	ls	**300,000**
	Video Monitor	1.00		**125,000**

ARCHITECTS. ENGINEERS. PLANNERS.

OHM Advancing Communities℠

April 20, 2022

Mr. Kurt Bovensiep
City of Troy
Public Works Director
4693 Rochester Rd.
Troy, MI 48085

RE: Proposal for Professional Design Services
Troy Civic Center Pavilion – Design Documents and Bidding Assistance

Dear Mr. Bovensiep:

Thank you for the opportunity to submit this proposal for the professional design services for Troy Civic Center Pavilion – Design Development and Bidding Phase. This letter presents our understanding of the project and proposed scope of services, time schedule, fee, and Standard Terms and Conditions.

PROJECT UNDERSTANDING

The City wishes to continue development of the approved Final Schematic Design package dated August 2, 2022, into Construction Documents, in order to provide bidding and construction documents for the project.

SCOPE OF SERVICES

With this understanding, our proposed scope of services for this project are as follows:

Task 1: Design Development:

During design development, OHM will develop and complete the design detail necessary to provide a coordinated depiction of the project's Site, Architectural, Structural, Mechanical and Electrical needs. Throughout this process, OHM Advisors will work with the City to review and select facility-specific design features and final product selections. We envision the following tasks to complete the Design Development drawings:

1. Meet with City to review and discuss drawing development of approved schematic design package. Two(2) meetings are assumed for this phase to provide a completed Design Development package. Development of details for the project, including final material and product selections, interior design elements, and discipline specific systems to be selected during this phase.
2. Specialty lighting to conduct local mock-ups using local available sample products, to demonstrate design intent, if required.
3. Includes coordination needed to submit for the following permits / regulatory approvals:
    a. Site Plan (City of Troy)
    b. Engineering Approval (City of Troy)
    c. Stormwater plan review (City of Troy)
    d. Wetland/Stream Discharge Permit / Enclosure Permit (Michigan EGLE)
    e. Soil Erosion plan approval (City of Troy)

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Deliverables:

- Drawings to include:
  - Site Civil drawings suitable for refinement of the scope for final owner approval and permitting / regulatory approval. Includes demolition, soil erosion and sedimentation control (SESC), grading, stormwater management, utilities, and applicable cross-sectional details.
  - Landscape drawings to further develop schematic plan-set to finalize all Landscape features, details and layouts.
  - Architectural drawings to include development of floor, reflected ceiling, and roof plans, elevations, building sections, and associated details, roof finish and hardware schedule, and interior design development. Develop and present up to three (3) color schemes for review and approval by City.
  - Structural drawings to include development of foundation, roof framing, and canopy framing, general structural notes and inspection sheets, slab plan design, site pads for building and ice rink mechanical equipment. Structural drawings will also include development of the North and South culvert structure and foundation.
  - Mechanical and Plumbing scope of work to finalize mechanical, cooling, heating and ventilation load calculations to finalize equipment sizes and selections. Develop mechanical and plumbing distribution plans, including domestic water, sanitary sewer, gas and schedules.
  - Electrical and Low Voltage design scope of work to include finalize electrical load calculations for new equipment. Select final light fixtures and perform photometric calculations to determine the required layout, including emergency lighting locations and exit sign placement. Prepare power distribution drawings and panel layouts and locations. Design fire alarm system. Prepare low voltage plans including Wi-fi locations and hardware data a PA/Sound system (building internal to building and associated with Site). Prepare security layout and indicate locations of cameras and card access doors for power purposes.
  - Specialty lighting to provide lighting calculations to validate applicable lighting design features, document lighting layouts, preliminary specifications, hardware requirements and data sheets.
- Project Manual: Prepare a preliminary Project Manual with the following information:
  - Preliminary construction specification.
  - Landscape and Irrigation narratives
  - Door and hardware sets
  - Interior finish requirements and special elements
  - Monument Site Signage / way finding requirements
  - Requirements for CCTV, card access and security systems
- Project cost with updated opinion of probable construction cost.
- Assist City in development of Design/Bid package for ice rink design and rink mechanical systems as part of RFP or direct bid proposal.

Task 3: Construction Documents

During the Final Design and Construction Documents stage, OHM will further develop the Design Development plans into plans and specifications suitable for construction. The plans will be used to obtain building permits and bidding (obtaining construction pricing from general contractors). Tasks required to complete Final Design and Construction Documents are as follows:

1. Meet with City to review and discuss drawing development of approved Design Development package. Two (2) meetings are assumed for this phase to provide a completed Construction Document package. Development of drawings including finalizing details, specifications, and final project manual.

2. Once the owner has provided their final plan comments, OHM will submit final plans and specifications to local AHJ for plan review. Review may be simultaneous with pricing if dictated by the schedule.

Deliverables:

- Construction drawings including:
  - Site Design/Civil
  - Landscape
  - Architectural
  - Structural
  - Mechanical
  - Plumbing
  - Electrical
  - Specialty Building and Site Lighting
  - Building Technology Systems
- Project Manual: Prepare Project Manual with final specifications (excluding Division 00):
- Project cost with updated opinion of probable construction cost estimate

Task 4: Bidding Assistance:

During the bidding phase, OHM will perform services to obtain pricing from prospective contractors. Specific work efforts include:

1. Assist City in the construction bidding/contracting process including the development of advertisement, assisting in pre-bid meeting, issuing pre-construction addenda, and making revisions to the drawings and specifications as necessary from code review comments if the review is done concurrent with bidding.
2. Respond to Request for Information (RFIs) in writing during the bidding process.
3. Attend the bid opening and evaluate bids. This will include examining the apparent low bidder's bid, checking references, and confirming that the low bidder included all the components of the design in their bid.
4. Attendance of post bid contractor interviews if needed.

COMPENSATION

OHM Advisors will perform the outlined services above based on hourly basis, in accordance with our current contract with the City. The following are the estimated costs for the project:

Task	Estimated Fee	Schedule
Task 2: Design Development	$ 135,000	8/1/2022 – 10/11/2022
Task 3: Construction Documents	$ 148,000	10/17/2022 – 12/16/2022
Task 4: Bidding Assistance	$ 14,000	12/19/2022 – 02/03/2022
Total	$ 297,000	

ASSUMPTIONS, EXCLUSIONS & OWNER RESPONSIBILITIES

OHM Advisors is prepared to complete the work as outlined above per our understanding of the project, which includes the following assumptions, exclusions and identified Owner responsibilities.

- Attendance of public meetings will be provided as services under a separate proposal.
- Coordination with permitting agencies above and beyond a pre-submission meeting, permit application and permit revisions will be provided as an additional service.
- The City will reimburse OHM for or directly pay any permit fees.
- Construction phase professional services and construction staking / layout are not included in this

proposal.
- Building user coordination, public engagement, and impact notification shall be by owner

ADDITIONAL SERVICES

The following services are not included in our compensation but may be desired. Fees for these services can be negotiated later if deemed necessary. Additional services that may be needed are as follows:

- Phasing and logistics plans.
- Traffic control design or memorandum, impact studies, and/or traffic analysis.
- Schedule extension or re-design work (e.g. re-bidding, bid extension, additional design plans and details, additional specifications, and scope change after DD owner review)
- Environmental testing, borings and/or abatement
- Environmental Site Assessments and/or sampling
- Additional regulatory submittals or coordination (MDOT, Road Commission, and County permits are not expected and are therefore excluded)
- Additional meetings or coordination (billed hourly)
- GIS data collection, interpretation, modification, and/or delivery
- Threatened and Endangered species studies and requirements

ACCEPTANCE

Work will be done in accordance with the terms and conditions of the Continuing Services Agreement between OHM and the City. If this proposal is acceptable to you, please provide signature below or e-mail confirming us to proceed on the project.

Thank you for giving us the opportunity to be of service. We look forward to working with you on this project. This proposal is valid for 30 days from the date of this letter.

Orchard, Hiltz, & McCliment, Inc.	**City of Troy**
CONSULTANT	OWNER
_____	_____
(Signature)	(Signature)
Christopher Ozog, AIA	_____
(Name)	(Name)
Project Manager	_____
(Title)	(Title)
April 20, 2022	_____
(Date)	(Date)

Cc: Rhett Gronevelt, Principal, OHM Advisors