PATHWAY CIRCUIT

PLANTING BED

WABASHA ST

HARC

NDER ALL / FIELD

EXISTING PARKING

PLAYGROUND

SUN DECK

SPRAY PARK MECHANICAL

WADING POOL

BEACH ENTRY

WATERSLIDE

SPRAY PARK EXPANSION

34

35

TRANSCONA POOL SPRAY PARK RENOVATION

CONCEPTUAL MASTER PLAN - PHASE 2 POOL AREA

NOVEMBER 2011
SCALE 1:200

0 1 5 10 15

NORTH

FOR REFERENCE ONLY

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May 31, 2012

McGowan Russell Group Inc.
200 – 120 Fort Street
Winnipeg, Manitoba
R3C 1C7

Re: Transcona Centennial Pool
Mechanical & Electrical Scope of Work and Code Review
Our File: 31-333ME

The following mechanical and electrical review of the indoor and exterior pool mechanical rooms at above project is based on the site visit of April 27, 2012, including subsequent site visits and conversations with the municipal and maintenance staff.

1.0 Document Search:

The following are the design parameters to which the pool system options were prepared.

1. Manitoba Regulation 108/2005 *Swimming Pools and Other Water Recreational Facilities Regulation, amendment*
2. Manitoba Regulation 92/2000 *Swimming Pools and Other Water Recreational Facilities Regulation, amendment*
3. Manitoba Regulation 132/97 *Swimming Pools and Other Water Recreational Facilities Regulation*
4. Virginia Graham Baker Pool and Spa Safety Act, Public Law 110-140 (Jan 2012 Version) – USA
5. Lifesaving Society *Semipublic Swimming Pool Safety Standards*, July 2004
6. B.C. Guidelines for Swimming Pool Design V1.0,
7. Alberta Pool Standards, *2006 for the Swimming Pool, Wading Pool and Water Spray Park Regulation*
8. The Ontario Building Code.
9. Various trade and industry newsletters and design documentation.

2.0 Design Guidelines:

The synopsis of the literature review has indicated the following design requirements for the new spray pad and pool systems:

1. A filtration rate equal to at least 6 volume changes per day is required for public pools.
2. The use of anti-vortex (anti-entrapment or VGB compliant) drains is required, with a minimum of 2 drains at minimum 36" spacing, regardless of pool size. The wading pools will have compliant deck drains suitable for non-suction applications.
3. Sediment filters are required prior to the spray pad return piping connection to the surge tank or either existing pool sand filters to eliminate any solid wastes and biological waste, such as litter, grass, etc.
4. Provision of UV filters in addition to chemical methods of treating the spray pad return water due to the additional level of pollutants that may be returned to the pool or surge tank.
5. Additional water heating capacity to augment the additional level of make-up water required when the spray pad is operating.
6. An emergency diversion system will be implemented with which to discharge the spray pad return to the closest sanitary sewer in the event of fouling.

3.0 Spray Park Connection Options:

The options for providing water to the new spray park features that are available to us are:

Option 1 – Connection to Existing Pool Water Supply Systems:

1. Indoor Pool Connection – Permanent Connection
2. Outdoor Pool Connection – Permanent Connection

Option 2 – Recirculation System for the Water Spray Park

Option 3 – Hybrid Outdoor Pool Connection – Temporary Connection

The scope of work descriptions are as follows:

Option 1.1 Indoor Pool Connection – Permanent Connection

1. The Scope of Work for this option is as follows:

Mechanical

- Upgrade the existing pool drainage to include two (2) new VGB and ASME compliant anti-vortex, or anti-entrapment drains.
- The current pool circulation system averages 3 pool volume changes per day. Upgrade the existing pool circulation system to allow for a minimum of 6 volume changes per day, including the duplex (2) pumps and addition of two (2) new sand filters, with 130 GPM capacity to match existing.
- Provide for a new 4" drain line from the spray feature drains returning to a new sediment interceptor, ideally located in the existing mechanical room, or optionally, on the exterior of the building. This will serve to capture most debris collected by the drain from the splash pad area.
- Provide a new 4" sanitary waste connection to the existing building drain prior to the sediment interceptor, to avoid contamination of the indoor pool system in the event of fouling. The flow will be diverted by a manual operators switch at the spray pad, operating solenoid valve(s) to divert the water to the municipal sanitary sewer, and not the pool water return. As the spray pad drains to the pool, the pool water needs to be protected from external fouling. Processes are in place for internal fouling.
- Provision of a new 2" domestic water line from the municipal services to the new spray feature control box with meter pit and isolation valves. This system is to be manually used to allow for intermittent shoulder season use of the spray features without affecting the indoor pool systems.

Electrical

- Wire & connect new larger pumps (10HP to 15HP pumps) in indoor pool mechanical room to accommodate the upgrade of the existing pool circulation system.
- Wire & connect new UV filters.
- Provide power to splash pad control box.
- Provide grounding in accordance with the Winnipeg Electrical By-law to splash pad and associated fixtures.

2. Advantages and Disadvantages:

- The upgrades to the existing pool drains are required as a result of upgrading the existing pool water treatment system to current regulations and design practice. The upgrades to the pool drains are not reversible, but enhance the existing facility. This work may have been required in the future, as the pool systems aged.
- The new added sand filters could possibly be re-used for the new outdoor pool and spray feature service, but only in part. The piping modifications would require capping to isolate the portions of the system that were serving the spray park.
- New sanitary waste connection required to building main to allow for the spray pad return water to drain to sanitary on event of fouling. The piping may be redundant once the new outdoor pool is constructed.

- Existing equipment room is likely not large enough to accommodate the renovations. Architectural re-work of space may be required, and is not included in the cost estimates.

3. Construction Cost Estimates: $345,000.00 + Architectural Renovations

Option 1.2 Outdoor Pool Connection – Permanent Connection

1. The scope of work for this option is as follows:

Mechanical

- Upgrade the existing pool drainage to include two (2) new VGB and ASME compliant anti-vortex, or anti-entrapment drains.
- The current pool circulation system averages 6 pool volume changes per day, which meets the minimum required filtration rate of the pool. Upgrade of the existing pool filtration system for the addition of the spray features is required to add two (2) new sand filters, with 141 GPM capacity to match existing.
- Retrofitting of the existing pool water heaters to accommodate the new water requirements of the pool and spray park features. The addition of another 610 MBH input heater is required.
- Provide for a new 4" drain line from the spray feature drains returning to a new sediment interceptor, ideally located in the existing mechanical room, or optionally, on the exterior of the building. This will serve to capture most debris collected by the drain from the splash pad area.
- Provide a new 4" sanitary waste connection to the existing building drain prior to the sediment interceptor, to avoid contamination of the outdoor pool system in the event of fouling. The flow will be diverted by a manual operators switch at the spray pad, operating solenoid valve(s) to divert the water to the municipal sanitary sewer, and not the pool water return.
- Provision of a new 2" domestic water line from the municipal services to the new spray feature control box with meter pit and isolation valves. This system is to be manually used to allow for intermittent shoulder season use of the spray features without affecting the outdoor pool systems.

Electrical

- Wire & connect new larger pumps (10HP to 15HP pumps) at outdoor pool mechanical room to accommodate the upgrade of the existing pool circulation system.
- Electrical panel in outdoor mechanical room will require replacement to accommodate new loads.
- Wire & connect new UV filters.
- Provide power to splash pad control box.
- Provide grounding in accordance with the Winnipeg Electrical By-law to splash pad and associated fixtures.

2. Advantages and Disadvantages:
   - The upgrades to the existing pool drains are required as a result of upgrading the existing pool water treatment system to current regulations and design practice. The upgrades to the pool drains are not reversible, but will enhance the existing facility. This piping re-work would be non-recoverable. The replacement of the pool drains may be required in the future, should there be a requirement to upgrade the pool to current standards.
   - The new added sand filters could possibly be re-used for the new outdoor pool and spray feature service, but only in part.
   - New sanitary waste connection required to building main.
   - New sanitary waste connection required to building main to allow for the spray pad return water to drain to sanitary on event of fouling. The piping may be redundant once the new outdoor pool is constructed.
3. Cost Estimates: $266,500.00

Option 2: Recirculation System

1. The scope of work for this option is as follows:

Mechanical

- Provide new 2" water services connection to municipal services complete to the control box within the new building.
- Provide a new 4" sanitary waste service from the municipal services.
- Provision for new 2500 USGal surge tank/reservoir with overflow to the sanitary drain. The spray pad drain return line will also feature a sediment interceptor, which will serve to capture most debris collected by the drain from the splash pad area. The equipment will be designed to incorporate the flow of Phase 2 of the project, which is the expanded spray pad.
- Provide a new 4" sanitary waste connection to the new sanitary drain prior to the sediment interceptor, to avoid contamination of the spray pad system in the event of fouling. The flow will be diverted by a manual operators switch at the spray pad, operating solenoid valve(s) to divert the water to the municipal sanitary sewer, and not the pool water return.
- New sand filtration, UV and chemical water treatment systems are required, independent of other existing pool systems.

Electrical

- Wire & connect new UV filters, independent of any existing pool systems.
- Wire & connect recirculation pump(s). (estimated to be one 5hp pump on VFD control)
- Provide power to splash pad control box.
- Provide grounding in accordance with the Winnipeg Electrical By-law to splash pad and associated fixtures.

Architectural

- A new building/structure will be required to house the mechanical and electrical services and systems for this option.

2. Advantages and Disadvantages:
   - The new building/structure will be required to remain once the existing outdoor pools have been removed.
   - The outside services will need to be planned so that they can remain active once the existing outdoor pools are removed.
   - There will be a duplicate of systems once the new outdoor pool and mechanical systems are put in place, as the recirculation system is dedicated to the spray park.
3. Cost Estimates: $205,000.00 + Architectural

Option 3 Hybrid Outdoor Pool Connection

1. The scope of work for this option is as follows:

Mechanical

- The current pool circulation system averages 6 pool volume changes per day, which meets the minimum required filtration rate of the pool. Upgrade of the existing pool filtration system is required to add two (2) new sand filters, with 141 GPM capacity to match existing.
- Retrofitting of the existing pool water heaters to accommodate the new water requirements of the pool and spray park features. The addition of another 610 MBH input heater is required.
- Provide for a new 4" drain line from the spray feature drains returning to a new sediment interceptor, ideally located in the existing below grade equipment room, or optionally, on the exterior of the below grade equipment room. This will serve to capture most debris collected by the drain from the splash pad area.
- Provide a new 4" sanitary waste connection to the existing building drain prior to the sediment interceptor, to avoid contamination of the outdoor pool system in the event of fouling. The flow will be diverted by a manual operators switch at the spray pad, operating solenoid valve(s) to divert the water to the municipal sanitary sewer, and not the pool water return.
- Upgrade the existing pool water heating system with new gas-fired heaters to handle the current, or new, pool capacities, whichever is greater.

Electrical

- Wire & connect new larger pumps (10HP to 15HP pumps) at outdoor pool mechanical room to accommodate the upgrade of the existing pool circulation system.
- Wire & connect new UV filters.

- Provide power to splash pad control box.
- Provide grounding in accordance with the Winnipeg Electrical By-law to splash pad and associated fixtures.

2. Advantages/Disadvantages:
   - The new equipment put in place to serve the existing pool can be re-used once the new outdoor pool is being constructed, minimizing the amount of re-work and upgrades associated with this phase of construction.
   - Existing pool heaters and sand filters can be re-used in the new outdoor pool mechanical system, providing the units are in working condition at the time of construction.
3. Cost Estimates: $735,000.00. The cost of the new pool site services are included for the final spray park and pool plan at the end of Phase 2, along with re-use of all the equipment.

4.0 Recommendations:

It is our recommendation to provide a stand-alone spray park with circulating water system and surge tank, as this is the most cost effective design.

Sincerely,

Nova 3 Engineering Ltd.

Per.
John H. Guenther, P.Eng. (Mechanical), LEED® AP Dan Zilinski, P.Eng. (Electrical)

PROVINCE OF MANITOBA
J. H. GUENTHER
20/12/04/05
REGISTERED PROFESSIONAL ENGINEER

Certificate of Authorization
Nova 3 Engineering Ltd.
No. 962 Date: 20/12/06/05

PROVINCE OF MANITOBA
D. P. ZILINSKI
20/12/06/05
Member
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REGISTERED PROFESSIONAL ENGINEER

** Mechanical Portion only.

* Electrical Portion Only.