APPENDIX A – Sub-Consultant Findings

JPH CONSULTING

Group2
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Our findings from the Saskatchewan Hospital North Battleford audit concluded that the fit and finish of most architectural products is generally well performed, but that there are some overarching concerns which need to be reviewed further and addressed immediately.

Generally, the workmanship in the finishes and construction of the building are complete to a competent level. Deficiencies were observed throughout the facility to varying degrees of magnitude, but this is not unexpected in a facility of this size. Caulking of dissimilar materials, choice and installation of finishes, and building layout and design were generally achieving the requirements of the Project Agreement. However, we had several concerns as follows:

- Several doors in fire separations where the door leaf did not appear to be appropriately fire rated, or the necessary hardware (flanges, seals) were not included. Additionally, doors in fire separations were observed to be propped open in administrative spaces.
- Confused approach to anti-ligature requirements as several doors have anti-ligature handles, but parallel arm door closers mounted to the interior of the frame. Closers concealed in the door frame, floor or a hinge-based closer are more appropriate hardware solutions with respect to meeting anti-ligature needs.
- The X-Y gantry tracks in bariatric patient rooms are to be mounted flush with the ceiling as required in the PA. They are mounted below the ceiling from posts and provide a significant ligature risk. Further to this, only one track appears to have been installed leading into the washroom, whereas other rooms observed have no track passing into the washroom which appears to not meet PA requirements.
- Egress paths were observed to differ from what was planned and no exceptions or variances can be found. Further to this, in the workshop area, a path of egress leads to an overhead door which does not meet National Building Code requirements for an exit. It is expected that these rooms are large enough to also require two means of egress which was not observed. Exiting and life safety

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should be reviewed more thoroughly across the entirety of the facility.

- Sprinkler coverage, specifically in the exit stairwells, appeared to be limited. It was observed that one head was typically provided at the top of the stairwell, and one at the bottom landing, but none at the intermediate landings. This should be reviewed immediately for compliance with the Building Code.

- Staff had noted several concerns with acoustics throughout the facility including the Video Court, Visiting Centre and Administration and Discharge units where rooms for secure conversations can be heard from the lobby and where the acoustics inside the room are so harsh that the judges using the video court system are not able to hear the patient. Additionally, a patient wing was found to be missing acoustic insulation in the walls which separate the washrooms from the corridor – it is not clear how many other locations have been missed as well. Door hardware such as gaskets and sweeps were often ill-fitting or missing entirely.

- Compounding the concerns with acoustics: the majority of ventilation within the building is very loud. The workspace in the Regional Admin suite is very problematic and does not make for a space which is conducive to occupation.

- Wayfinding is very difficult within the building due to a lack of access to views of the exterior for orientation, and the design decision to use a very limited colour palette. The choice to name the wings River or Prairie View, is not terribly effective as there is so little access to exterior views outside of the patient wings.

- The wooden bumper rail throughout the main corridors in the unsecured portion of the facility appears to be required as per the PA but there is a concern that when it receives normal wear and tear it will become a porous material which will lead to IP&C concerns.

It is our view that the above items, specifically concerning life-safety and anti-ligature, should be addressed immediately.

Building Envelope Executive Summary

Bob Korneluk of Read Jones Christoffersen was on site February 18th to 20th. During our site visit access was provided throughout the facility including select interior, exterior locations and roof top areas to review the building envelope. Our site review was primarily visual in nature and therefore limited to areas accessible from the interior, and exterior ground and roof levels. Review of elements which are hidden from view or have limited access including below grade waterproofing, crawlspaces and soffit spaces was limited to areas accessed during this visual review.

Principle Findings

With the exception of the following, the exterior above grade building envelope components are performing similar to buildings of its age and construction:

- Condensation was observed on interior surfaces of the exterior doors and windows. At the exterior doors unsealed junctions were noted between door frames and doors, leading to cold air infiltration and condensation on interior surfaces. Adjustment of the door sweeps and weather stripping would help alleviate this. Adjustments to the humidification and ventilation system is also anticipated. At the windows, condensation forms on colder interior surfaces when interior humidity levels are too high for the exterior temperatures. The thermal breaks between the glazing and frame nosing may also be contributing to this problem. Further review of the thermal breaks and glazing is therefore recommended. This will require selective removal of insulated glass units, at which time the thermal break can be examined and the glazing could be checked for glass type, thicknesses and thermal performance.

- Air leakage was observed below sloped roofs between roof deck and top of walls. This appears to be related to both a material (detailing) and workmanship issue. Spray foam insulation appears to be used as the primary vapour barrier material, which does not appear to adequately seal the junctions between the exterior wall vapour barrier and the sloped roof deck. Detailing of these areas also fails to connect the roof vapour barrier with the spray foam and the exterior wall air vapour barrier membrane, resulting in air leakage at these junctions. Further review and repair of these areas is therefore recommended.

- Isolated leakage at balcony and exterior wall locations was observed. These areas warrant further review and repair including, but not limited to air/vapour barrier, flashing and exterior sealant repairs.

- Exterior sealant deficiencies were noted throughout. This should be addressed during the next warm season to prevent further bulk water entry and potential moisture ingress into the exterior walls and balcony and soffit assemblies.

Limitations

Information for this audit was obtained from the above site review and available drawings and reports. No calculations or testing of the building envelope, assemblies or windows and doors was undertaken. This report reflects the best judgments in the light of the information available at the time of preparation.

Read Jones Christoffersen Ltd. performed a visual and thermographic survey of the exterior building envelope consisting of a review of visibly accessible elements. The majority of the roof areas were covered with snow at the time of our review, therefore limited observations were made in regards to the quality and condition of the roofing.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it are the responsibility of such third parties. RJC accepts no responsibility for damage, if any, suffered by any third party because of decisions made or actions based on this report.

NBHA AUDIT ELECTRICAL SUMMARY

- Some power Teck cables within the electrical rooms require proper cable clamps
- The emergency receptacles should have identifier on them indicating which emergency power class they are served from
- The hallway housekeeping receptacles should not be powered from emergency power
- Place an electrical power 'XRAY IN USE' sign outside any room in which fixed x-ray equipment is installed.
- Shop drawings are required for the majority of electrical equipment.
- Receptacles found located over counter top sinks and mop sinks in numerous locations. Reference CEC 26-712(e)(i): *the receptacles specified in Item (d) shall not be located on the area of the wall directly beings the kitchen sink.*
- **Room C1-132 Elevator Machine Room**: Room does not appear to be adequately sized to properly locate electrical equipment in room. Smoke detector installed at ceiling is not accessible without removing a fan coil unit. House panel installed in elevator machine room should be in an electrical room.
- Electrical Room C1-119: Panel 2P1-SC11 and 2P1-UC11A provide branch circuits to fire alarm panels. Panel feeder and wiring to fire alarm panels are run in conduit, appears to have no fire rating on the feeder conduit or branch circuits.
- **Nurse Call System**: Harding Call System which is an intercom system appears to be installed in lieu of a Nurse Call System as described in 7.8.25 Nurse Call Systems. The system provided is a Harding Call System which does not function as a nurse call system as described in Schedule 3. 7.8.25.3(26): System provided does not include a 'Code Blue' system, or means for other staff call emergencies such as 'Code White'. Provided is a 'Vocera' wireless communication system. Concerns with locating a call, durability and reliability requires further review. Codes: There are three primary codes staff is likely to respond to in the facility: CODE RED, CODE BLUE and CODE WHITE, the later likely the more common code. Staff are each provided the Vocera badge which is a battery operated device. During this audit, it became apparent the badges are as reliant as the life of a battery. Until such time the RTLS system is functional, locating a distress call from a Badge is unclear if all calls are able to be monitored back to the Operation Security Centre, where the operator would be able to determine the location of the distress call and broadcast the appropriate call on the paging system. Staff do have an alternate means to phone the OPC of a distress call.
- 7.9.2.2(1) Notes 'Provide fire rated cable where required by the NBC'. Fire alarm panels fed from Electrical Panels including the panel feeders that contain fire alarm panel circuits are run in conduit will not provide circuit integrity for 1 hour or 2 hours unless other alternative means to protect the conductors is provided. Reference National Building Code, article 3.2.7 10 Protection of Electrical Conductors.
- **Lighting Control:** Gymnasium: When used for showing movies, occupancy sensors turn lighting back after 15 minutes of lighting being turned off.
- **Fire Alarm System:**

- Spot Detectors (smoke detectors): Spacing of detectors, placement of detectors near bulkheads more than 450mm in height, and quantity of detectors in exit stair shafts in reference to CAN/ULC-S524-14 Standard for the Installation of Fire Alarm Systems.
- No pull stations are provided in the Secure Care Unit at any exit though exit doors at stairs are keyed. This concern may be compliant with the NBC for Group B Division 1 occupancy and that the sleeping rooms have the appropriate wall construction rating. Doors both with electromagnetic locks and other electric locks in the Secure and Non-Secure areas remain locked during Stage 1 alarms. Procedures are in place whereby during a pre-signal alarm, the signal devices will not sound, relying on the operator at the OSC be aware of an alarm annunciation and tone at the main fire alarm control and annunciator panel. In the Care Unit, a tone will be heard on the annunciator at the nursing station indicating an alarm, which the staff are expected to determine the location of the alarm if it is their area of responsibility. Staff in the area are expected to confirm if the alarm is real and report back, again reliant either on the Vocera badge or by phone. In the event of a real alarm, the operator OSC is expected to release the appropriate door(s) to commence evacuation.
- It is not clear whether the activation to release electromagnetic locks or other type of locks is via a single or programmed group of relays. The failure of a single relay may prevent the release of the lock(s). It is unclear from this audit if there is a means to manually disrupt power to the locks.
- A review with the Authority Having Jurisdiction may be required to determine if the procedures are compliant.

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North Battleford Hospital Audit

MECHANICAL EXECUTIVE SUMMARY – PHASE 1

Issued by Albert Chang, P. Eng
Date 2020-02-27
yyyy-mm-dd

TYZ Project # 99-20-04

Name	Company	To	CC
James Holtom	JPH Consulting Ltd.	■	☐

TYZ Engineering has been retained to provide a mechanical review of the North Battleford Hospital to determine whether the material and equipment quality and quantities were appropriate and installed based on the contract terms of Schedule 3.

The mechanical review was completed as a visual review of the site that was completed from February 18 – 21, 2020. A brief review of the mechanical contract documents such as operations and maintenance manuals, shop drawings, and drawings was also complete at a very high level to support findings discovered during the site review.

The review did not address environmental issues including, but not limited to, the existence, competence or performance of fuel storage tanks or the existence of asbestos, mold, radon gas, lead paint, urea formaldehyde, toxic or flammable chemicals, water or airborne illness or disease.

The review is not technically exhaustive and is intended only to identify defects in those mechanical systems and components of the property exposed to view and apparent as of the day of inspection.

Out of the approximate 160 mechanical technical requirements from Schedule 3, 118 mechanical items were identified to be reviewed during the Phase 1 visual review. Of the 118 items to be reviewed, 85 items were spot checks / limited reviews.

The following is a summary of review:

- Seventy-five (75) items meet the Schedule 3 requirements.
- Twenty-five (25) items did not meet the Schedule 3 requirements.
- Eighteen (18) items could not be verified during the site review.

Overall, the mechanical installation,material and equipment was typical of a commercial installation.

The reviewed items that did not meet the Schedule 3 requirements spanned all aspects of the mechanical system. Below is a sample of issues that were found to be deficient from the Schedule 3:

- Lack of maintenance clearances to equipment
- Lack of proper vibration isolation on equipment
- Insulation that does not meet the energy code

A number of items could not be verified due to the lack of documentation, and it is recommended that an additional review be performed to ensure that Operations and Maintenance manuals are complete with all equipment cut sheets, maintenance schedules, and test and commissioning forms.

Overhangs greater than 4 ft in depth did not have fire protection. Additional investigation into the overhang construction is recommended to ensure NFPA 13 is met.

It is recommended that the Owners engage Access Prairies Partnership (APP) on the deficient items to discuss next steps. Further investigation may be warranted pending those discussions.

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Memorandum

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To:	**JPH Consulting Ltd.**	Date:	**June 12, 2020**
Attention:	**James Holtom, P.Eng, PMP**	Project No.:	**27545**
Reference:	**North Battleford Hospital Audit: Civil Engineering Summary**		
From:	**Danielle Alfaiate, P.Eng., LEED AP ND**		

ISL Engineering and Land Services Ltd. (ISL) has been retained by JPH Consulting Ltd. to conduct a civil engineering review/audit of the Saskatchewan Hospital North Battleford Hospital to determine whether the material and equipment quality and quantities were appropriate and installed and utilized based upon the contract terms and whether the labour utilized during the construction phase is in alignment with the Project Agreement terms. Enclosed is a summary of our analysis and key findings.

The civil engineering site review was conducted on May 28, 2020. During the site visit, access was provided to the overall site and the outdoor roof top areas. The site review was primarily visual in nature. Review of the elements that were hidden from view, such as subsurface constructability, were not conducted.

Our findings from the Saskatchewan Hospital North Battleford audit concluded that, generally, the workmanship and quality of the soft and hardscapes varied on the site, but overall is considered poor. There were many deficiencies observed throughout and vary depending on the location on the site. Underground utilities could not be observed, however, the as-built drawings indicate many changes from the original design drawings. There are some larger concerns that need to be reviewed further and addressed.

Enclosed is document showing the non-compliant items that were not linked directly to the Schedule 3 Project Agreement. The following is an overview of the civil related systems.

1.0 Utilities

1.1 Sanitary

The sanitary sewers themselves could not be observed. However, a foul odor near the main entrance came from the sanitary grease trap. We note that the specific unit used may be inappropriate for this purpose. While the unit protects against floatables, it also collects sediment and solids. The unit smells as it is likely full of grease, sanitary solid waste and sediment; and needs to be cleaned out. The health authority should reconsider their full need of the device and maintenance obligations.

High groundwater was indicated during installation in the field inspections and had infiltrated into the sanitary sewer and lift station. There are no notes on whether this was remedied. A CCTV video review of the existing sanitary sewer infrastructure is recommended. Significant infiltration will affect the lift station pumping and offsite discharge volumes.

1.2 Lift Station

The underground infrastructure related to the lift station could not be observed. Questions were raised in the review of the as-built drawings.

- Is the lift station is connected to emergency power generator (through electrical)?
- What are the design constraints necessitating the sanitary storage tank?
- The gravity sewer plumbing connections associated with the lift station and storage tank cannot be maintained or cleaned.

1.3 Water

The underground infrastructure of the water system could not be observed. Our review of the as-built drawings indicated:

- Hydrants and connecting pipes are adequately sized for fire flows. No fire flow test results were available.
- The north water connection appears too close to the Sasktel line (as-built).

- A portion of 250mm water line along the creek appears to conflict with the existing bridge (as-built).

1.4 Storm

The underground storm sewer infrastructure could not be observed. However, the surface overland flow and conveyance system demonstrated many substantial issues with the storm drainage. Examples are:

- Improperly located and graded catchbasins.
- Multiple culverts don't have end-treatment or rip rap and erosion is evident.
- The storm design calculations are not correct, however, the pipes appear to be of sufficient size.
- There is standing water where there should be a flowing creek.
- Infrastructure has been used that is not reflected with any design or detail.
- Swale outlet to Pond 1 rip-rap is buried.

1.5 Pond

Overall the ponds are not complete or are missing critical design elements. All ponds are intended to be dry outside of a rainfall event. Items include:

- Pond bottoms are designed flat, and will not drain dry.
- There is standing water in Pond 1, and the east inlet structure is higher than the pond bottom.
- Pond 1 Emergency Escape Route is missing (C01-02.01).
- There is standing water in Pond 2.
- Pond 2 missing emergency escape, end treatment and rip-rap (C01-02.02).
- Pond 2 culvert missing inlet structure, control plate, and rip-rap (C01-02.02).

2.0 Surface Works

Overall the surface works were either of poor quality or created grading and ponding issues. It was noted that a portion of the trail in the SE corner does not provide connectivity with no trail for security checks.

2.1 Site Grading

Overall the site grading has significant grading and drainage issues. Items include:

- Minimal grades in softscapes, causing ponding.
- A lack of positive drainage away from the buildings.
- Roof drainage directed towards building foundation or draining across sidewalks.
- Landscaping grades exceeding 4:1 slopes.
- Many examples of erosion.
- Grading along Pond 2 appears to exceed 4:1 slopes.
- There are many examples of freezing prone areas.
- Lay-by removed for wheelchair ramp addition.

2.2 Concrete

- Rainwater ponds on concrete indicating inadequate slope.
- Workmanship and concrete deterioration at building entrances.
- Concrete heaving at loading dock.
- Ponding on the 2nd level exterior space.
- Concrete cracking, spalling and pitting in various locations around the site.
- Concrete deterioration at bench pads.

2.3 Asphalt

Asphalt surface have many instances of poor grades and ponding water where it's not intended. Though this is not mentioned in the PA, the surface grades would not meet Local Authority guidelines.

- There are no materials testing available, and a determination of the actual pavement structure was not possible. We could not confirm heavy duty vs. light duty asphalt.
- Asphalt longitudinal cracks at loading dock.
- Asphalt pathway width and workmanship is poor.

CROSBY HANNA & ASSOCIATES

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12 June 2020

MEMO TO: James Holtom
JPH Consulting Ltd.

FROM: Laureen Snook
Principal Landscape Architect

RE: 20.002R North Battleford Hospital Assessment

The site audit took place on Thursday, May 28th, 2020. The daily high temperature was 18°C with little wind and mostly sunny conditions. It had rained the day before, so some low areas were holding water.

GRADING

One of the main concerns on the site is the grading of the landscape and some hard surfaces. The grading concerns exist where slopes are too shallow or too steep. Shallow slopes resulted in:

- unwanted ponding on site;
- poor turf establishment and growth;
- inappropriate moisture levels for the design type of turf or plant;
- bare dirt, muddy conditions, high erosion potential and unusable spaces.

The most concerning locations where the above were seen were:

- across and adjacent to walkways on the north side, leading to unsafe conditions at the walk edge for those using wheelchairs or other assistive devices;
- between the building and the landscape berms that are setback from the secure portion of the facility;
- two very shallowly sloped drainage swales directed toward the southeast parking area and the storm pond. Both swales are routed through planting beds where planting and mulch impede flow and high moisture levels affect the health of plant material;
- around the three CRU buildings; poor drainage in this area is resulting in poor turf growth, turf saturation, erosion and concrete surface issues;
- in two parking area areas where pedestrian routes cross parking lots.

Steep slopes and poor grade transitions has resulted in:

- poor turf establishment;
- unsafe conditions for maintenance operations;
- conditions that make mowing operations detrimental to the ongoing health of the turf.

The most concerning locations where the above were seen were:

- sides and tops of berms adjacent to secure portion of the facility, as well as around the Cogen units;
- four non-secure courtyards where the maximum slope allowed for a turfed areas appears to be exceeded; in these areas there is no safe way to carry out maintenance operations without extra safety precautions being employed such as anti-fall harnesses and cleated footwear.

TURF

Generally, turf establishment is poor. The largest area of concern is the area south of the building toward the river. This area has very poor seed establishment. There are large gaps between clumps of grass and large areas of bare dirt. This is an immediate concern due to the very high likelihood of weed species establishing in these areas.

PLANT MATERIAL

Plant material choices are generally in alignment with the Project Agreement as it relates to indigenous species and variety of types. Plant material is generally doing well, however, as noted above, some material is affected by poor grading. One striking example of this is where trees have been planted in the bottom of a swale near the southeast parking lot.

In some locations, trees have been planted too close to each other, to a curb or walk or to traffic signage. Over time, tree growth patterns are likely to affect or interfere with these elements such that safety and condition will be negatively affected.

PEDESTRIAN ROUTE ACCESSIBILITY

Generally, the site is accessible as it relates to pedestrian routes. One exception exists at a walkway from the southeastern most parking lot where pedestrian ramps are missing from either end of the walkway.

EFFECT OF ROOF REPLACEMENT

It should be noted that the ongoing work to replace the roof was impacting the site and its review during the day of the audit. In the area of active construction, we were not able to review the site within the construction fence. Additionally, it is apparent that the roof repair actions have damaged the site where equipment access roads were created as well as crane ways adjacent to and accessing the building. We would expect that once roof replacement tasks are completed all areas will be restored to the condition required in Project Agreement.