



New Regional Hospital Project Update

September 5, 2013

Project Background:

The Five Hills Health Region (FHHR) is embarking on the development of a new Regional Hospital, an undertaking that will not only improve health services for the people of our Health Region but has the potential to change healthcare delivery and service provision across the Province of Saskatchewan. Led by John Black and Associates, our Team has been engaged in the 3P Process (Production Preparation Process). 3P is a Lean method used when dramatically changing or enhancing overall processes.

Early in 2012 our Team consisting of the FHHR, the Ministry of Health (MOH), Graham/Boldt, Stantec/Devenney and Black & McDonald, developed and submitted for review and approval a Validation Report, a process of critical analysis and testing of the functional program and subsequent programmatic and budgetary development undertaken by the FHHR, the MOH and their consulting team including early work with Lean Coaching input provided by David Chambers. The Validation Report provided the basis of design development of planning options, user group reviews and study, and a detailed budget validation and schedule analysis to provide a critical evaluation of the project. The Validation Report documented the key issues of building design and construction approach refinements that have evolved through the collective efforts of the MOH, the FHHR, the Design and Construction Team, our health care professionals and patient/family representatives engaged in the 3P and subsequent program review and validation process. The Report, which was approved by the Ministry of Health, summarized the work completed and provided the Basis for Design upon which the project has proceeded to the detailed design and construction phase.

“Cellular Care” Delivery Model

FHHR’s new Regional Hospital has been designed and is being built to promote and support multidisciplinary integrated team care also referred to in Lean as “cellular care”. The workspaces allow integrated teams made up of multidisciplinary members to complete their work to deliver value as defined by the patient, pulled to the patient, in search of perfection. The model of “cellular care” adopted was developed, studied and introduced by David Chambers when he worked with the Sutter Health System in Northern California.

The new Regional Hospital is organized in different clinical zones. The rapid throughput zone or “Universal Care Unit” provides standard environments for care that allow for the delivery of rapid services (same day). Rather than moving the patient around the concept is to bring the service or care needed to the patient. Services may include a limited range of imaging, exam/patient assessment activities, team consults, phlebotomy, observation, procedural prep, and medical observation. The patients receive care in private, single standard exam rooms.

Second is the “Fixed-Technology Zone”. The Fixed-Technology Zone houses major procedural processes (major surgeries and minor procedures) and advanced diagnostics (e.g. CT and other advanced radiology exams). The “Inpatient Unit Platform” is designed to accommodate patients requiring overnight, longer stays. Inpatients receive care in private, single rooms. These standard rooms are acuity adaptable to provide maximum flexibility. Features include patient, family and provider zones.

The “Collaborative Care Unit” accommodates same-day outpatients requiring phlebotomy, dialysis, patient education and therapies. The New Hospital is designed to enhance and support “the 7 Flows of Medicine”. We believe it has been designed and will be built to accommodate changing technologies

and care delivery methods that will support the Patient First vision and empower and support team collaboration.

3P Week Long Design Workshops

We have had nearly 200 people from across our organization and communities we serve involved in the design of the new Regional Hospital to inform design. During the week, models were constructed and then verified with the construction of actual mock-up of select rooms or areas. The key to the 3P process is direct patient/family member-involvement supporting the staff and physicians that provide the service. A series of three 3P week-long workshop events were held. The 3P participants helped us to design this facility in a way that will ensure that we meet the long term needs of the communities we serve. The 3P teams built actual scaled table top models and full-size mock ups of room or areas to test their ideas and to ensure good flow – the 7 Flows of Medicine. Some of our mock-ups are available and we will tour Minister Duncan and his staff through them.

Integrated Project Delivery (IPD)

We have adopted a unique and new project delivery framework for the new Regional Hospital – Integrated Project Delivery (IPD). We believe this is the first project of this kind to implement this method in Canada. With roots in Lean thinking, IPD offers a design and construction model that serves to maximize the value delivered to the owner, while minimizing the hidden waste that has become endemic in conventional design and construction process. IPD engages a team of Architects, Engineers, General Contractors/Construction Manager (CM/GC) and key Trade Contractors (Mechanical & Electrical) along with the Owners from the early stages of design. Our project’s IPD Team competed as part of a public “RFP” process and was selected on the basis of qualifications and not solely on price (although fee, overhead, and preliminary pricing were also considered). Our Core IPD Team includes the FHHR, MOH, Stantec & Devenney Group Architects & Engineers, Graham and Boldt Construction and Black & McDonald (Mechanical & Electrical).

Target Value Design

The Target Value Design (TVD) process is a method where the project components are decomposed into a detailed pricing assembly (estimate) which is value analyzed as design progresses. Inherent in TVD is a deeply collaborative, team approach where all stakeholders’ opinions are equally weighed. Once in agreement, innovations and production ideas are captured in the drawings and then shared with the team. Design is continually monitored to eliminate design scope “creeps” from the original target value estimate.

IFOA and Risk Pool

The Integrated Form of Agreement (IFOA) is the contract model used for the project that features a single multi party agreement between the Owners, the Architects & Engineers (Designers), the Builder or General Contractor and the major Mechanical & Electrical Contractor. This type of contract is considered a “relational” type versus traditional forms of construction contracts that are considered “adversarial” type. One of the unique things with this agreement is that the Designers and Builders put all, or a significant portion, of their profit at risk. In addition, the Designers and Builders are incentivized

to offer creative, innovative solutions to maximize quality to meet the Owner's needs. Partners are rewarded by sharing in any cost savings with the Owners. Ours is the first project in Canada to adopt this type of construction contract.

Building Information Modeling (BIM)

Using the Revit production platform, Building Information Modeling (BIM) protocols have been established by our IPD team to aid in design coordination, trade coordination and clash detection in systems integration, constructability planning and scheduling. The BIM model will also be used to explore options of prefabrication and preassembly of systems components and lend itself directly to manufacturing and production on and off site. Our Team has established a comprehensive BIM protocol plan.

IPD Lean Tools and Methods Used

Pull Plan: Is a scheduling process used for Integrated Project Delivery (IPD). This method of planning the work uses the Lean principle of creating “pull” vs. “push” in contrast to conventional methods of scheduling. The “Last Planner® System” of scheduling creates a pull plan by working backwards (right to left) from the major milestones and identifying the inputs required to complete each one. In contrast to the critical path method scheduling where activities, durations and logic are identified and an end date calculated, pull planning starts with the end in mind. The desired milestone completion date and/or interim milestones are defined and then the activities and handoffs that are required to meet that desired outcome are identified. The last people to plan the work (i.e., Trade Foreman/Forewoman) are engaged in the planning and scheduling process to define activities, durations and hand-offs between trades necessary to accomplish the activity. The Last Planners also identify any constraints which could prevent the work from happening in an efficient manner. The work cannot be included as part of the Weekly Work Plan until all constraints have been removed.

A3 Reports: The A3 process is a method of identifying, developing and capturing knowledge that the team has collected or shared in order to make key decisions or solving problems. The display of knowledge is required to fit on an A3 international sized-piece of paper. The tool provides a formal recording of all critical decisions and actions and provides a powerful database or information that can be used to inform future projects (lessons learned, standardize).

The Big Room: In projects using Lean project delivery, key members of the design and construction team co-locate in a large single office space known as “the Big Room” and actually produce the entire set of construction documents working collaboratively in this space. Participants in such projects report a number of benefits from working together in this way, from accessibility to other team members for consultation and problem solving, being able to call impromptu meetings to discuss a burning issue, to the kind of bonding and team building that occurs spontaneously in such an environment. Our Team physically comes together to work exclusively on our project for three consecutive days every two weeks. This approach results in the formation of a truly integrated multidisciplinary team focused on providing maximum value to the Project and ultimately to the Owner and their Customers – our Patients.

Core Group, Clusters and Bi-Weekly Cluster Team Lead Calls: The large IPD Team is organized into Sub-Teams or Cluster Groups. Each Cluster has a formal Team Leader. Formal bi-weekly Cluster Team Lead calls are held as part of our “Daily Management” and “Standard Work”. These calls are held during the

non-Big Room weeks to actively manage our IPD process through ongoing communication and dialog. This allows each Lead to report out on their progress and clearly understand what's going on within the other Cluster Teams. If problems are being encountered, support can be provided. If successes are being achieved, these can be shared. Lessons Learned can be shared as we continue to work through our Plan-Do-Check-Act cycles for continuous learning and improvement. The Clusters report formally to the "Core Group". The Core Group leads and directs all project activities and is accountable for the overall delivery of the project. The Core Group reports to the Executives of each of the organizations represented. The Core Group is made up of representatives from FHHR, the MOH, Graham/Boldt, Stantec/Devenney and Black & McDonald. The Clusters report out to the Core Group as part of the IP Team's bi-weekly work, daily management and standard work. We try to keep the meeting moving by asking the following questions:

1. Review of any changes to the Cluster Team costs, Risks & Innovations.
2. Have you lost confidence in your Team's ability to meet Milestones?
3. Are there items which are in danger of becoming constraints?
4. Are there items which need to be coordinated with other Teams?
5. Do any items need to be elevated to the Core Team or Executive Team?

Production Planning: Our IPD Team is transitioning from a Design focus to a Production focus (construction). As part of this phase, the Team will be using a more robust planning system which is meant to focus on sequencing of work, sequencing of supply chain, and elimination of Constraints along with Built-In-Quality (BIQ). Pull Planning is used to understand the relationships of predecessor work. This allows the team to drive toward specific Milestone activities. The results of this planning are documented by updating the project schedule. The on-site Production Team uses a combination of a six-week look-ahead schedule, represented by white boards within the Production Planning trailer, and a Last Planner process also using the boards. Constraints are identified as early as possible (Design, Materials, Equipment, Labor, prerequisite work) so they can be eliminated completely or mitigated as much as possible. Now that our Team's focus is on-site, we have a daily management plan to monitor and track progress, but more importantly, to make sure that commitments promised are achieved. When the project moves into the construction stage, the pull planning continues as it did in the design phase but the information is captured on a scheduling tool called "Primavera P6". From the P6 schedule, the Production Team which consists of Trade Foreman\Forewoman, Superintendents and Suppliers, creates a rolling six-week look ahead and a Weekly Work Plan which reflects daily work activities. The Production Team gets together each morning for a daily 15-minute huddle in order to check the previous days production against the plan and assigns the coming days tasks. Achievement of the accelerated production schedule is achieved by using these Lean methods and tools.

Additional Project Specific Information, videos, latest site pictures can be found at:
<http://www.fhhr.ca/NewHospital.htm>

This video link may also be of interest: http://www.youtube.com/watch?v=kgIEfNOblmA&feature=em-share_video_user

**The footage was taken from a half day learning event hosted in Moose Jaw in our "Big Room" in April this year. There is a group of people that have self formed with an interest to pursue and grow the adoption of Lean methodology, methods and tools in the Construction\Design Industry within the Prairie Provinces and perhaps other parts of Canada (a similar group/forum already exists in the USA – the Lean Construction Institute, LCI). There is a tremendous amount of external interest in our project - what we are doing and how we are doing it. To date our IPD Team has been invited to speak about the project delivery framework we are using for the Five Hills Health Region's new Regional Hospital Project at similar forums in Edmonton (Alberta*

Infrastructure Conference), Toronto (The Institute for BIM in Canada, IBC, Annual Conference), Quebec City (Canadian Construction Association, CCA Annual conference), Niagara Falls (CHES\SCISS National Conference) and Chicago (Healthcare Facilities Symposium & Expo).

We recognize the following contributors for their effort in developing this document and for their willingness to share it for the benefit of interested Peers and Organizations:



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