



Monumentation Protection Committee Report Coordinates as Monuments

2022/12/13

Background

- The Monumentation Protection Committee was tasked with reviewing how to implement Deferred Monumentation (which followed two previous extensive projects that did not result in implementation)
- They ended up rejecting deferred monumentation in favour of considering a broader usage of coordinates as monuments
- Over the last year they have reviewed position documents from other jurisdictions and have further considered this matter
- They are making the following recommendations to get further feedback from the membership before making final recommendations for regulatory change

Current Monumentation Situation

- Monumentation requirements are set by Ontario Regulation 525 established under the Surveyors Act
- Essentially monuments (or witnesses) are required at every angle/bend of all lots/blocks/parts and at reasonable intervals for all surveys with a few exceptions (e.g. SRPS's only require front monuments, easements with parallel boundaries can monument one side)
- If it is impossible or impractical to plant a monument required by this Regulation because of the nature of the location of the point, the surveyor shall define the point with a monument that substantially complies with this Regulation
- It is widely known that monuments established in advance of development (subdivision) are generally destroyed and must be replaced. The development community has questioned the needs for these monuments.

Public Protection

- Survey monuments are visible evidence of the location of boundaries that are useable by the public, however they have little to no value if disturbed
- Survey monuments cost time and money to set, which is ultimately paid for by the public (whether directly or indirectly through fees paid by developers)
- Survey monuments assist with development such as laying out streets, utilities, houses and help ensure that encroachments are avoided
- Are there more cost effective approaches to dealing with monumentation or other evidence of the boundary?

Jurisdictional Scan

- Alberta allows delayed monumentation for subdivisions for up to 3 years when construction will take place after subdivision. They require the plan to be integrated and that several well placed control monuments are set in areas that are not likely to be disturbed. They typically expect the external boundaries to be monumented unless they are expected to be destroyed during construction. Additionally they have implemented a hybrid approach to monumentation on crown lands.
- ACLS allows deferred monumentation if agreed to by the agency requesting the survey; coordinates govern until replaced by monuments; a control network is required and coordinates must be shown on the plan
- Nova Scotia does not allow deferred monumentation and requires monuments for points, with provisions for witnesses
- British Columbia allows deferred monumentation for all plan types; an application and signed undertaking is required. Exceptions for individual monuments are allowed for specific cases. Coordinates are for mapping purposes only. They allow explanatory plans for simple cases with no monuments or surveys. Coordinates are used as authoritative evidence for mineral tenure.
- Saskatchewan does not allow deferred monumentation of use of coordinates instead of monuments.

Jurisdictional Scan (continued)

- New Brunswick does not allow deferred monumentation. They use coordinates where survey monuments cannot be set (e.g. party wall).
- Newfoundland does not allow deferred monumentation and requires survey monuments to be set. They do not allow the use of coordinates instead of monumentation.

Selection Criteria

- The public ultimately should have evidence of the location of their boundaries
- Construction/development needs to take place effectively
- Boundaries should be as easy as possible to retrace to keep costs down for the public
- Costs of performing surveys should be in line with the value they provide
- Costs are born by the parties benefiting from the surveying work

Options

- Status Quo – carry on with current monumentation practices
- Deferred Monumentation – use coordinates/dimension and set a time frame for complete monumentation to be completed at a later date
- Coordinates of some points are authoritative on a permanent basis (i.e. they supersede monuments as evidence)
- Coordinates are the best evidence until a monument is set. This could include several sub-options as to when monuments need to be set in subsequent surveys.
- Monuments are not set for some points, coordinates are not shown, and dimensions on the plan are used to establish the monuments, which then become the primary evidence of the location of the point

Analysis – Status Quo

Pro

- Puts monuments in the ground that can assist in construction layout
- Is simple to administer from a regulator's perspective
- Doesn't require any legislative or regulatory change

Con

- Results in monuments being set, with many being destroyed or disturbed
- Can result in equipment damage
- Seen as wasted efforts and costs by some of the development community
- Other than monuments reset as a result of assumption requirements by municipalities, many monuments that are destroyed or disturbed are not reset, resulting in no monuments

Analysis – Deferred Monumentation

Pro

- Doesn't put monuments in that are likely to be destroyed
- Should result in increased monuments once construction is completed
- Can be implemented with regulation change only

Con

- Difficult to implement given the number of reference plans used in the subdivision process (e.g. reference plans set monuments prior to companies coming back to set deferred monumentation)
- Without arbitrary timelines, which may reduce its effectiveness, monumentation timing will be difficult to describe in regulation
- Does add some risk that monuments will never be set due to firm turn-over, etc.
- Increased regulator efforts to ensuring its appropriate use

Analysis – Authoritative Coordinates

Pro

- Corners should be easily retraceable within 5cm
- Does not result in monuments being set that will be destroyed during construction
- Decreases costs of the original subdivision plan

Con

- Requires legislative and regulatory change
- Would be seen as a significant shift in law by surveyors
- Cannot be used to define corners on existing boundaries without extensive legislative changes and new processes being developed (e.g. some form of agreement process)
- Does not result in monuments being set for owners use, unless specifically requested
- May result in increased unauthorized practice leading to boundary issues

Analysis – Coordinates as best evidence until monuments set

Pro

- Doesn't put monuments in that are likely to be destroyed
- Should result in increased monuments once construction is completed
- Can be implemented with regulation change only
- Employs similar processes as used during original subdivisions in Ontario with partial monumentation and therefore easy for surveyors to understand conceptually

Con

- Construction will be required based on coordinates, which may increase layout errors
- Will require careful construction of regulations to ensure that monuments are established at some point
- Could result in monuments not being set depending on municipal practices related to subdivisions
- May result in increased unauthorized practice leading to boundary issues

Analysis – Plan dimensions used as best evidence until monuments placed

Pro

- Doesn't put monuments in that are likely to be destroyed
- Should result in increased monuments once construction is completed
- Can be implemented with regulation change only
- Employs similar processes as used during original subdivisions in Ontario with partial monumentation and therefore easy for surveyors to understand conceptually
- Can be implemented with regulation change only
- Less likelihood for unauthorized practice since coordinates will not be shown on public plans

Con

- Construction will be required based on plan dimensions, which may increase layout errors even more so that just by providing coordinates
- Establishment of monuments may not be as accurate as using coordinates depending on misclosures on the plans
- Will require careful construction of regulations to ensure that monuments are established at some point
- Could result in monuments not being set depending on municipal practices related to subdivisions

Recommendation – Coordinates as best evidence until monuments set

- The status quo doesn't resolve the problems related to wasted efforts and monuments not being in place following subdivision construction
- Deferred monumentation, while feasible and solving some of the problems, is difficult to implement and effectively administer
- Authoritative Coordinates are not yet proven to be in the public interest and require substantial legislative change to implement. They offer many opportunities for savings as positioning technology continues to improve and should be considered again in the future.
- Using Plan Dimensions until monuments are set, has many of the same advantages of using coordinates as best evidence but adds complexity for practitioners and is likely to cause more problems during construction. As such it is not recommended
- Coordinates as best evidence until monuments are set generates many benefits and is feasible to implement. It will require some mitigations to be put in place, which are discussed under risks

Risks – Coordinates as best evidence until monuments set

Risk

- Monuments are never set due to lack of municipal follow-up/development policies
- Surveyors lack proficiency in use of coordinates
- Construction industry has challenges with different coordinate systems
- Additional unauthorized practice due to coordinate being available publicly

Mitigation

- Work with municipalities to ensure appropriate processes are in place; consider limiting the use of coordinates as evidence where inappropriate policies are not in place
- For the most part surveyors have the knowledge and capabilities to work with coordinates – provide additional practical CPD if required
- Consider requiring the use of a single coordinate system across the province; failing that strong communications will be required by members
- Strengthen the definition of cadastral surveying in the Surveyors Act to ensure that unauthorized practice can be addressed (this should be a precursor)

Initial Implementation Ideas

- Coordinates as best evidence can be used where:
 - A subdivision plan is being registered in a municipality that requires as-built surveys to be completed
 - To further divide parcels by reference plan in the above noted subdivision plans
 - To define easements
- To use Coordinates as best evidence the following conditions must be met:
 - All points must be integrated in accordance with urban area requirements (5cm)
 - External boundaries of the subdivision or parcel with easements must be fully monumented
 - Control monuments (which can be external boundary monuments) must be set within 250m of any point established using Coordinates as best evidence (in locations less likely to be disturbed) and shown on the plan and would be considered part of the legal monumentation
 - Coordinates must be shown for all monuments and points to be set as coordinates as best evidence
- As-build plans of survey will require full monumentation and any subsequent plans will require monumentation in accordance with existing requirements. Coordinates will be used to set the initial monuments and then the monuments govern in accordance with existing rules and practices

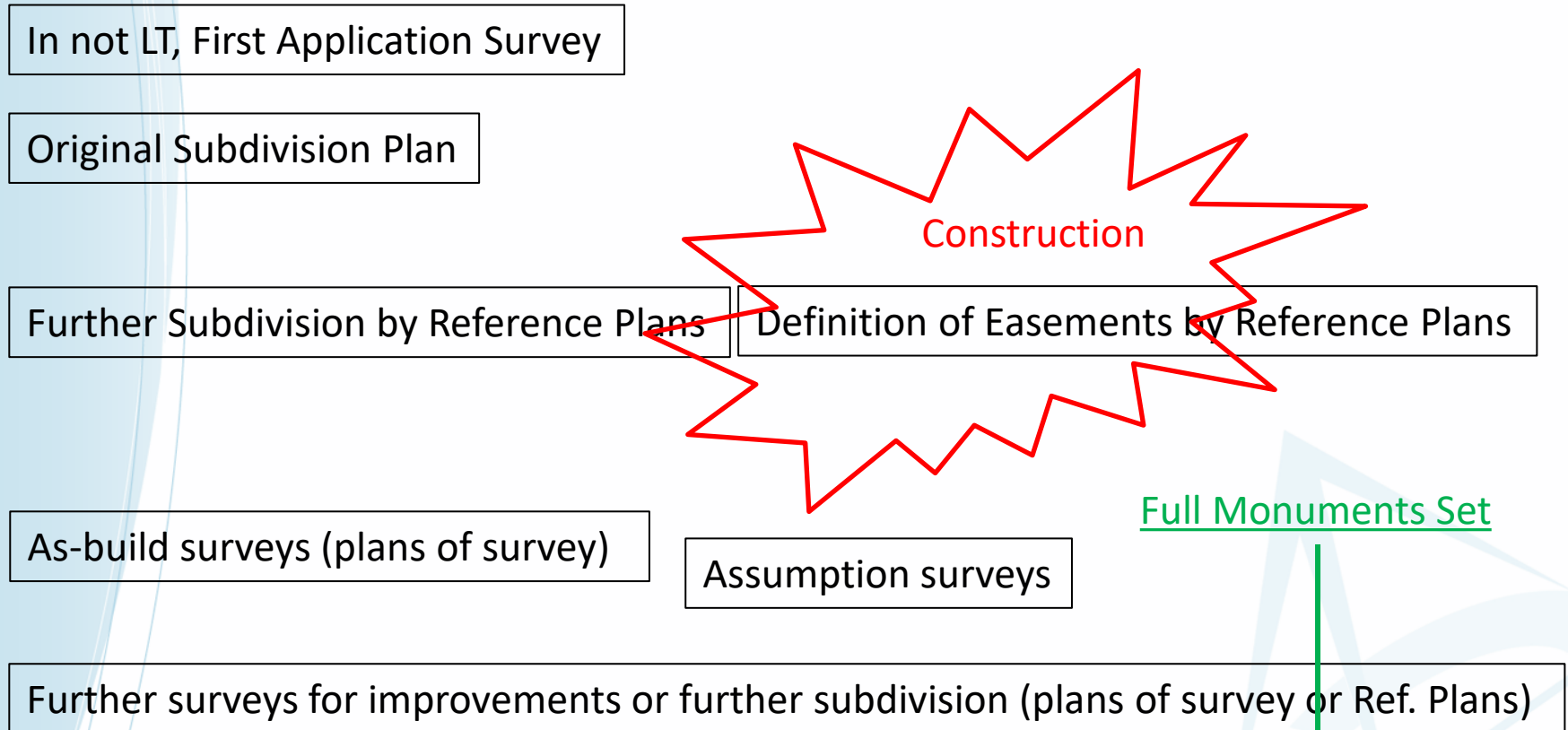
Conclusions

- Given the current abilities of surveyors to establish accurate geodetic positions, it makes sense to relax monumentation requirements in new plans of subdivision and related plans, and for easements.
- These changes will reduce costs for surveying and should result in improved monumentation for home-owners.
- Details for implementation still need to be worked out.

Next Steps

- Consult with the broader membership for feedback and refinement of concepts
- Further develop the conceptual framework and regulation changes specifying how it will be implemented and when it can be used

Appendix – Typical Subdivision Process from a legal surveying perspective



Appendix – State of Geodetic Infrastructure

- PPP Service available throughout Ontario
- Monumented geodetic infrastructure in varying states throughout the province
- Private Network RTK services approved by government are available in most active areas of subdivision
- Surveying technology is available for surveyors to easily achieve coordinates accurate to better than 5cm.
- Several datums, epochs and adjustments still in use across the province which increases the complexity of georeferencing; although this should be easily understood by surveyors, other users such as the construction industry may have increased difficulty