

GUIDELINES FOR REPLACEMENT OF SURVEY MONUMENTS

Legal Survey Boundary Markers

The Contractor shall protect all legal survey boundary markers, including wooden posts, iron posts, lead plugs, or concrete monuments from destruction, damage or disturbance.

In the event of failure to protect any such legal survey post or posts, the Contractor shall retain, at his own expense, a British Columbia Land Surveyor to reestablish such marker(s).

Before acceptance of the work, a complete inspection will be made of all survey markers to insure that the above protection has been given or re-establishment made.

Guidelines for Replacement of Integrated Survey Control Monuments

An ISA monument(s) may be considered to be disturbed or destroyed if the construction for the project;

- 1 Lowers the grade of the road at the location of the ISA monument(s).
- 2 Raises the grade of the road at the location of the ISA monument(s) by more than 0.30 metres.
- 3 Installs any underground utilities (including Terasen, BC Hydro, Telus, GVRD, water, sewer and drainage, etc.), within a 1.50 metre radius of the ISA monument(s) as measured from the edge of any trench.

If any of the above conditions exist then the Survey Section will reference and monitor the ISA monument(s) in question for any disturbances or destruction. If, after the construction is complete, the ISA monument(s) is found to be disturbed or destroyed the Contractor/Developer will be issued a statement or invoice to pay a non-refundable flat rate fee of \$1500 per monument to reset and/or re-establish the ISA monument(s). Should the replacement costs exceed \$1500 per monument the City will absorb the overruns. The Survey Section will administer or carry out to reset and/or re-establish all ISA monuments which have been disturbed or destroyed. The fee will be reviewed annually and adjusted accordingly.

Guidelines for Replacement of HPN Survey Monuments

An HPN monument shall be considered to be disturbed or destroyed if the project construction:

1. Lowers the grade of the road at the location of the HPN monument(s).
2. Raises the grade of the road at the location of the HPN monument by more than 0.30 metres.
3. Installs any underground utilities (including Terasen, BC Hydro, Telus, GVRD, water, sewer & drainage, etc.) within a 2.0 metre of the HPN monument(s) as measured from the edge of any trench.
4. Installs any above ground works or structures within 2.0 metres of the HPN monument(s).

If any of the above conditions exist then the Burnaby Survey Section must be contacted to monitor the HPN monument(s) in question for any disturbance or destruction. The Survey Section must be contacted at least 2 weeks in advance of construction to allow referencing of monument(s).

If, after the construction is complete, the HPN monument(s) is(are) found to be disturbed or destroyed, the Contractor/Developer or City Department will be issued an invoice to pay a non-refundable flat rate fee of \$7,000 (2003) per HPN monument to reset and/or re-establish the HPN monument(s). Burnaby Survey Section will manage the resetting and re-establishment of all HPN monuments which have been disturbed or destroyed.

Practice for Replacement of Survey Monuments

(1) Land Development Projects;

Include location sketches for all HPN/ISA monuments within project area in design package issued to contractor/developer.

- Design Technologist(s) review(s) the project drawings and identifies any ISA/HPN monuments that meet the criteria outlined in Guidelines.
- If criteria is met then Development Technologist will;
- Advise or request Estimating Technician to advise the Developer to budget for replacement costs for disturbed or destroyed monument(s) (\$1500 per ISA monument and \$7000 per HPN monument).
- Make the monument replacement(s) part of the servicing agreement.
- Notify Works Inspector(s) and Survey Section as to possible disturbance or destruction of the monument.
- Works Inspector notifies Survey Section to reference monument(s) (at least 72 hours in advance of construction for ISA monuments and at least 1 week for HPN monuments).
- Works Inspector notifies Survey Section when construction is complete and if monument(s) still exists or is destroyed.
- If monument(s) still exists Survey Section will check for any disturbance and notify Inspector and Estimating Technician.
- If monument(s) is disturbed or destroyed then Works Inspector, and/or Estimating Technician, will notify the Developer by way of a statement or letter that payment is required for replacement of monument(s). Copy of notification letters **must** be forwarded to the Survey Department.

Practice for Replacement of Survey Monuments (cont)

- When funds are received from the Developer they will be directed to the monument account **#35-44730** by Engineering. Notification that funds have been received **must** be given to **City Surveyor**.
 - If Developer refuses to pay, costs will be recovered through the Developer's Letter of Credit and funds directed to monument account **#35-44730**. Notification that Letter of Credit has been drawn will be given to the Developer.
- (2) In-house Capital Works Projects;
- Design Technologists will review design drawings at pre-construction stage and identify any ISA/HPN monument(s) that meet the criteria outlined in Guidelines.
 - If criteria is met then Development Engineer will budget for replacement costs for disturbed or destroyed monument(s).
 - The Construction Engineer will then advise City Surveyor to reference monument(s) (at least 72 hours in advance of construction for ISA monuments and at least 1 week in advance for HPN monuments).
 - Contract Supervisor advises City Surveyor when construction is complete and if monument(s) still exists or is destroyed.
 - If monument(s) still exists, City Surveyor will check for any disturbance and notify Development Engineer.
 - If monument(s) is disturbed or destroyed City Surveyor will advise Development Engineer that funds will be transferred from their project to the monument account **#35-44730** to cover costs of monument(s) replacement.

Practice for Replacement of Survey Monuments (cont)

(3) External Capital Works Projects;

Projects by adjacent Cities/Municipalities

Projects by Utility Companies

- Projects by adjacent Cities/Municipalities will have to be addressed by Project Supervisors when involved with joint cost sharing and brought to the attention of the Survey Section on an as you know basis.
- The adjacent City/Municipality which disturbs or destroys a monument(s) through their project construction will be invoiced directly for the replacement costs of the monument(s) and the funds directed to the monument account #35-44730.
- Projects by Utility Companies being constructed in conjunction with In-house Capital Works Projects and Land Development Projects will be reviewed by Burnaby's Design Technologist. Any monumentation requirements for these type of situations will be dealt with in the same manner previously described.
- Projects by Utility Companies not constructed in conjunction with In-house Capital Works Projects or Land Development Projects will be reviewed by Design Technologists.
- Any monuments which meet the criteria outlined in Guidelines will be forwarded to the Survey Section for a more detailed review of the monument(s) location. If at that time the criteria is still met the Survey Section will then reference and monitor the monument(s).
- The Design Technologists will notify the Utility Company to budget for possible costs to replace monument(s) and that if the monument(s) is found to be disturbed or destroyed they will be invoiced **a non-refundable flat rate fee** for each monument which is to be replaced such as disturbed or destroyed monuments.
- If the monument(s) is found to be disturbed or destroyed after construction the Utility Company will be invoiced for the fixed replacement costs of the monument(s) with the funds going to the monument account #35-44730 (**\$1500 per ISA monument and \$7000 per HPN monument**).

Re: Survey Control Monument and Boundary Marker Replacement Advisory

Survey control monuments and boundary markers are being destroyed at an alarming rate. Many are disturbed or destroyed due to careless disregard of monument location in proximity to proposed construction. The City of Burnaby Engineering Department advises all participants to regard survey control monuments and boundary markers as having significant importance. All effort should be made to avoid interference with these points when working near them. This initiative is meant to preserve both horizontal control, which is critical to maintaining the integrity of our parcel based lot boundaries and GIS system, and vertical reference, which is used for establishment of the elevation datum, used in construction.

For decades, survey control monuments have been placed throughout the city to aid development, and to provide lasting “fixed” points for reference. Legal survey boundary markers (iron posts, lead plugs, etc), are located by professional land surveyors to indicate for owners, and others, where their property rights begin, and end. Recently, the GVRD, and member municipalities, have created a High Precision Network (HPN) of survey monuments.

Location of all ISA monuments are available upon request from the City of Burnaby Survey Office. Location of all HPN monuments within Burnaby are available upon request from City of Burnaby Survey Office. Locations of both ISA and HPN monuments are also available via the City’s Webmap facility on the internet at <http://webmap.city.burnaby.bc.ca> .

The replacement cost per HPN monument is **\$7000** within Burnaby. The City of Burnaby charges **\$1500** for each Integrated Survey Area (ISA) monument to be replaced. For monuments which are both ISA and HPN monuments, only the HPN replacement fee (**\$7000**) applies when the monument is disturbed or destroyed.

Due to the high replacement cost, it is recommended that alternatives in capital project design and construction be used to avoid monument interference, particularly HPN monuments. If disturbance is unavoidable, the contractor or developer must contact the City of Burnaby Survey Section (604- 294-7447) at least 72 hours in advance of construction for legal boundary markers and ISA monuments. For HPN monuments at least 1 week advance notice to Survey Section is required