SECTION 02 21 00
SITE SURVEYS

SPEC WRITER NOTES:
1. Use this section only for NCA projects.
2. Delete between //---// if not applicable to project. Also delete any other item or paragraph not applicable in the section and renumber the paragraphs.

PART 1 - GENERAL

1.1 DESCRIPTION
   A. This section specifies the gathering of research documents, performance of a topographic survey and preparation of a topographic survey map.

1.2 DEFINITIONS
   A. Professional Land Surveyor: One who possesses a valid state license as a "Professional Land Surveyor" from the state in which they practice.
   B. Professional Civil Engineer: One who possesses a valid state license as a "Professional Civil Engineer" from the state in which they practice. For this section, the term "surveyor" shall also include Professional Civil Engineers authorized to practice Land Surveying under the laws of the state in which they practice.

1.3 SUSTAINABILITY REQUIREMENTS
   A. Materials in this section may contribute towards contract compliance with sustainability requirements. See Section 01 81 11, SUSTAINABLE DESIGN REQUIREMENTS, for project // local/regional materials, // low-emitting materials, // recycled content, // certified wood // // requirements.

PART 2 - EXECUTION

A. The surveyor shall research available public records for all mapping, monumentation, plats, governmental surveys etc. that may pertain to the subject property. Research all applicable public utilities for substructure data such as sewers, storm drains, water lines, electrical conduits, gas mains, telephone, etc.

B. The survey shall be performed on the ground in accordance with the current "Accuracy Standards for Land Title Surveys" as adopted, from time to time, by the American Congress on Surveying and Mapping, the National Society of Professional Surveyors, and the American Land Title Association.
C. The surveyor, when applicable, shall consult with the project Architect to
determine scale of plat or map and size of drawings.

D. The surveyor shall furnish two sets of prints of the plat or map of
survey and an electronic CADD file. If the plat or map of survey
consists of more than one sheet, the sheets shall be numbered, the
total number of sheets indicated and the match lines be shown on each
sheet.

E. On the plat or map, the survey boundary shall be drawn to a convenient
scale, or the scale designated by the Architect, with the scale clearly
indicated. A graphic scale, shown in feet or meters or both, shall be
included. A north arrow shall be shown and when practicable, the plat
or map of survey shall be oriented so that north is at the top of the
drawing. Symbols or abbreviations used shall be identified on the face
of the plat or map by use of a legend or other means. Supplementary or
exaggerated diagrams shall be presented accurately on the plat or map
where dimensional data is too small to be shown clearly at full scale.
The plat or map shall be 760 mm by 1060 mm (30 by 42 inches).

F. The survey shall contain the following applicable information:
1. The name, address, telephone number, and signature of the
   Professional Land Surveyor who made the survey, his or her official
   seal and registration number, the date the survey was completed and
   the dates of all revisions.
2. The survey drawing(s) submitted shall bear the following
certification adjacent to the Engineer's official seal:
   1. "I hereby certify that all information indicated on this drawing
      was obtained or verified by actual measurements in the field and
      that every effort has been made to furnish complete and accurate
      information."
3. Vicinity map showing the property surveyed in reference to nearby
   highways or major street intersections.
4. Flood zone designation (with proper annotation based on Federal
   Flood Insurance Rate Maps or the state or local equivalent, by
   scaled map location and graphic plotting only).
5. Land area as defined by the boundaries of the legal description of
   the surveyed premises.
6. All data necessary to indicate the mathematical dimensions and
   relationships of the boundary represented by bearings and distances,
   and the length and radius of each curve, together with elements
necessary to mathematically define each curve. The point of
beginning of the surveyor's description and the basis of bearings
shall also be shown.

7. When record bearings or angles or distances differ from measured
bearings, angles or distances, both record and measured bearings,
angles, and distances shall be clearly indicated. If the record
description fails to form a mathematically closed figure, the
surveyor shall so indicate.

8. Measured and record distances from corners of parcels surveyed to
the nearest right-of-way lines of streets in urban or suburban
areas, together with recovered lot corners and evidence of lot
corners, shall be noted. The distances to the nearest intersecting
street shall be indicated and verified. Names and widths of streets
and highways abutting the property surveyed and widths of rights of
way shall be given. Observable evidence of access (or lack thereof)
to such abutting streets or highways shall be indicated. Observable
evidence of private roads shall be so indicated. Streets abutting
the premises, which have been described in Record Documents, but not
physically opened, shall be shown and so noted.

9. The identifying titles of all recorded plats, filed maps, right of
way maps, or similar documents which the survey represents, wholly
or in part, with their appropriate recording data. The survey shall
indicate platted setback or building restriction lines which have
been recorded in subdivision plats or which appear in a Record
Document which has been delivered to the surveyor. Contiguity,
gores, and overlaps along the exterior boundaries of the survey
premises, where ascertainable from field evidence or Record
Documents, or interior to those exterior boundaries, shall be
clearly indicated or noted. Where only a part of a recorded lot or
parcel is included in the survey, the balance of the lot or parcel
shall be indicated.

10. All evidence of found monuments shall be shown and noted. All
evidence of monuments found beyond the surveyed premises on which
establishment of the corners of the survey premises are dependent,
and their application related to the survey shall be indicated.

11. The character of any and all evidence of possession shall be stated
and the location of such evidence carefully given in relation to
both the measured boundary lines and those established by the
record. An absence of notation on the survey shall be presumptive of no observable evidence of possession. The term "possession" does not imply "ownership".

12. The location of all buildings upon the plot or parcel shall be shown and their locations defined by measurements perpendicular to the boundaries. If there are no buildings, so state. Proper street numbers shall be shown where available.

13. All easements evidenced by a Record Document which have been delivered to the surveyor shall be shown, both those burdening and those benefiting the property surveyed, indicating recording information. If such an easement cannot be located, a note to this affect shall be included. Observable evidence of easements and/or servitudes of all kinds, such as those created by roads, rights-of-ways, water courses, drains, telephone, telegraph, or electric lines, water, sewer, oil or gas pipelines on or across the surveyed property and on adjoining properties if they appear to affect the surveyed property, shall be located and noted. Surface indications, if any, or of underground easements and/or servitudes shall also be shown.

14. The character and location of all walls, buildings, fences, and other visible improvements within five feet of each side of the boundary lines shall be noted. Without expressing a legal opinion, physical evidence of all encroaching structural appurtenances and projections, such as fire escapes, bay windows, windows and doors that open out, flue pipes, stoops, eaves, cornices, areaways, trip, etc., by or on adjoining property or on abutting streets, on any easement or over setback lines shown by Record Documents shall be indicated with the extent of such encroachment or projection.

15. Driveways and alleys on or crossing the property must be shown. Where there is evidence of use by other than the occupants of the property, the surveyor must so indicate on the plat or map. Where driveways or alleys on adjoining properties encroach, in whole or in part, on the property being surveyed, the surveyor must so indicate on the plat or map with appropriate measurements.

16. Location, alignment and dimensions of all roads, curbs, walks, parking and paved areas abutting the subject land. Indicate road centerlines with true bearings and lengths by 15 m (50 foot) stationing. Describe curves by designating the points of curvature.
and tangency by station. Include all curve data as well a location of radius and vertex points. Elevations on 15 m (50') centers on centerline of roads, edges of roads and top and bottom of curbs.

17. As accurately as the evidence permits, the location of cemeteries and burial grounds disclosed in the process of researching title to the premises or observed in the process of performing the field work for the survey, shall be shown.

18. Ponds, lakes, springs, or rivers bordering on or running through the premises being surveyed shall be shown. When a property surveyed contains a natural water boundary, the surveyor shall measure the location of the boundary according to appropriate surveying methods and note on the plat or map the date of the measurement and the caveat that the boundary is subject to change due to natural causes and that it may or may not represent the actual location of the limit of title. When the surveyor is aware of changes in such boundaries, the extent of those changes shall be identified.

19. Contours at a minimum interval of //300 mm (1 foot)//. Modify between //--// if not applicable to project. Base vertical control on the permanent (not assumed) National Geodetic Survey (NGS). Note location, description and datum. Install a permanent National Geodetic Survey (NGS) Bench Mark within the property for use by any future surveyors for projects on the property. Furnish and install two monuments on the property, or property lines, that are tied to the State Plane Coordinate system, and indicate the respective Northing and Easting coordinates for the points in feet, with 3 decimal place accuracy. Provide notes that these two points are the basis for the coordinate system indicated on the CADD survey drawings. Unless specifically noted otherwise, provide CADD drawing of the survey, in DWG format in a version no older that two versions earlier than the most recent version of the software.

20. Identify and show if possible, setback, height, and floor space area restrictions of record or disclosed by applicable zoning or building codes (in addition to those recorded in subdivision maps). If none, so state.

21. Exterior dimensions of all buildings at ground level. Show square footage of exterior footprint of all buildings at ground level and gross floor area of all buildings.
22. Measured height of all buildings above grade at a defined location. If no defined location is provided, the point of measurement shall be shown.

23. Elevations at each entrance to buildings, service docks, building corners, steps, ramps and grade slabs.

24. Substantial, visible improvements (in addition to buildings) such as signs, parking areas, plazas, planter beds, benches, walls, swimming pools, etc.

25. Parking areas and, if striped, the striping and the type (e.g. handicapped, motorcycle, regular, etc.) and number of parking spaces.

26. Indication of access to a public way such as curb cuts and driveways.

27. Location of utilities existing on or serving the surveyed property as determined by observed evidence together with plans and markings provided by utility companies, and other appropriate sources (with references as to the source of information). Locate and show all fire hydrants located within 150 m (500 feet) of the subject property.

28. Railroad tracks and sidings.

29. Manholes, catch basins, valve vaults or other surface indications of subterranean uses.

30. Wires and cables (including their function) crossing the survey premises, all poles on or within ten feet of the surveyed premises, and the dimensions of all cross-wires or overhangs affecting the surveyed premises.

31. Utility company installations on the surveyed premises.

32. Names of adjoining owners of platted lands.

33. Observable evidence of earth moving work, building construction or building additions within recent months.

34. Any changes in street right-of-way lines either completed or proposed, and available from the controlling jurisdiction. Observable evidence of recent street or sidewalk construction or repairs.

35. Observable evidence of site use as a solid waste dump, sump or sanitary landfill.

36. All trees with a minimum diameter of 150 mm (6") measured at 1200 mm (48") above the base of the tree. Perimeter outline only of thickly wooded areas with description of predominant vegetation.