TERM AGREEMENT FOR SURVEYING SERVICES

TASS

“SCOPES OF SERVICES”

Dated: August 2006
TERM AGREEMENT FOR SURVEYING SERVICES

I. SCOPE OF SERVICES -

The work of the contract shall consist in whole, or in part, as directed by the Department’s TASS Consultant Manager, of establishing project control, terrain surveying & mapping, and right of way surveying & mapping services required for specific projects or assignments in the Department of Transportation capital program. Work shall be performed and progressed in accordance with the requirements specified in the following documents issued by the Department (including all current updates):

- Land Surveying Standards & Procedures Manual
- Standard Specifications for Construction and Materials
- Highway Design Manual - Volumes 1 and 2
- Manual of Uniform Traffic Control Devices (MUTCD)
- NYSDOT Engineering Instructions & Engineering Bulletins
- Design Procedure Manual
- Specifications for Photogrammetric Stereocompilation
- CADD Standards & Procedure Manual
- Design Consultant Manual
- Regional Design Instructions or Manuals (if applicable)

Work under TASS agreements includes, and is limited to, the work units listed below. All mapping or digital products produced under this agreement shall conform to Consultant Instruction 03-02 and the current CADD Standards & Procedure Manual. All field crews and field collected data shall also conform to Consultant Instruction 04-03. The consultant is completely responsible for all quality control associated with all deliverables submitted to the Department as part of the Task Units listed below. Deliverables provided to the Department shall meet or exceed all accuracy requirements set by the Department.

Unit 1 – Primary Project Horizontal & Vertical Control: This unit consists of field survey operations to extend primary horizontal or vertical control from existing NSRS Control onto a project site, to establish azimuth pairs and/or base stations, benchmarks and other control points (with ties) within the project area. The Department may specify existing control to be used and/or new points to be positioned. This unit includes planning, conducting, processing, adjusting, and reporting surveys accomplished through application of Global Positioning System (GPS) technology or digital levels. Installing new monuments shall be included under Task Unit 10.
Unit 2 – **Secondary Project Horizontal Control:** This unit consists of terrestrial and GPS field survey operations to extend horizontal control from primary project horizontal control through a project site, establish baseline and other control points (with ties) within the project area, and close the survey on primary project horizontal control. The Department may specify existing control monuments to be used and new points to be positioned. This work may include the collection, processing, adjusting, reporting, and CADD production of the control data.

Unit 3 – **Secondary Project Vertical Control:** This unit consists of the terrestrial surveying necessary to establish elevations (orthometric heights) from existing primary vertical control to and through the project site, establish benchmarks (with ties) and other vertical control points within the project area, and close the survey on existing primary vertical control. The Department may specify existing benchmarks to be used and new point elevations to be determined. This work may include the collection, processing, adjusting, and reporting of the control data.

Unit 4 – **Terrain Data (Topographic) Surveys:** This unit consists of the accurate field location and description of terrain and cultural features as specified by the TASS Consultant Manager. Typically, this work includes, but is not limited to the data collection, processing, reporting and CADD production of digital terrain models, base mapping, bridge site surveys, drainage surveys including, but not limited to all drainage structures, (e.g., size, material, type, grate elevation and invert elevation at inlet and outlet), utility features which are readily visible in the field, soundings, scour surveys, railroad crossings, or supplemental field surveys in areas of dense vegetation or in highly urbanized areas. Techniques for this data collection may include radial surveys by total stations, GPS Real Time Kinematic, laser scanning and LIDAR as permitted by the Land Surveying Standards & Procedures Manual.

Unit 5 – **Supplemental Utility & Field Edit Surveys:** This unit includes coordination efforts, field location and office work necessary to identify and locate the existing utilities within the project site which are not initially visible or available through other topographic surveys. This unit may also include the collection of supplemental information to add to photogrammetric mapping. Supplemental underground utility data may be provided through different methods, including utility company mapping, underground utility location service markings, and/or test holes. Pole numbers and wire traces may be obtained by review of individual utility company records and by field investigation. Cables, underground markers, pipe lines, manholes, gas or water valves, underground tanks, etc. shall be identified by type, size, location, and if applicable, by invert elevation. Coordination with utility companies to provide tone-outs (“Dig Safely-New York locating service) of underground utilities may be necessary. Field editing of existing mapping may include the collection and processing of updated or additional field information, which can not be obtained from aerial photographs, for the purpose of
more definitively editing and labeling project mapping. Information collected from these
surveys may need to be digitally processed and merged or edited into existing digital
mapping files.

**Unit 6 – Hydraulic Surveys:** This unit shall include terrestrial survey and reports for all
information required for “Required Cross Sections for Stream Bridges” (bridge site data)
as described in the *Land Surveying Standards and Procedures Manual*. Additional data
may sometimes be required, such as information on watershed areas or channel
profiles, descriptions and cross sections. Field data may need to be processed into file
formats required by the Department

**Unit 7 – Property & ROW Surveys:** This unit includes title research and all field work
necessary to determine property lines, highway boundaries and existing right of way
(ROW). It consists of two sub-units: (7A) property title research and (7B) physical
property survey. Property title research (7A) consists of the tax map, deeds, maps, and
historical research (from county or other offices) necessary for the preparation of a base
map of deed plots and highway boundary locations. Physical property surveys (7B)
include the terrestrial survey of all property line, highway boundary, and right of way
evidence, together with all building types and ownership data within a work area, which
are located from the project control, digitally processed, and incorporated into project
CADD files. All deliverables will be as required by the CADD Standards & Procedure
Manual.

**Unit 8 – ROW Mapping:** This unit includes any or all of the several phases of ROW
mapping including research of existing maps, roadway history, records and deeds;
determination and calculation of the location of existing boundary lines; preparation of
abstract request maps; establishment and computation of proposed right of way lines
and proposed Right of Way Takings; CADD preparation and plotting of individual fee or
easement appropriation maps, maintenance site maps, scenic enhancement maps,
defacto maps, control access maps and appropriation of reserved rights. This unit also
includes preparation of deed maps abandonment maps, conveyance maps, claim maps,
correction maps and transfer maps. Preparation of key maps and/or Highway Boundary
Plans is also included in this unit. All work will be done in accordance with the
Department’s *ROW Mapping Procedure Manual*. The Consultant is completely
responsible for all Quality Control on all ROW Maps prior to their submission to the
Department. All deliverables shall conform to requirements of the CADD Standards &
Procedure Manual.

**Unit 9 – Photogrammetric Control:** Projects to be mapped photogrammetrically
require ground control for the analytical aerotriangulation process. It consists of 2
subunits: (9A) targeting, and (9B) horizontal and vertical control. Targeting, Subunit 9A,
consists of placing targets for photogrammetric control. The configuration of the targets
will be specified by the Department. The locations of targets will be indicated by the
Department on targeting diagrams. These locations may need to be adjusted by the
consultant to allow for existing field conditions. Horizontal and Vertical Control, Subunit 9B, includes the field location and digital processing of control coordinates and/or elevation of targets and/or picture points selected by the Department. Individual photogrammetric control points may serve as horizontal control, vertical control, or both.

**Unit 10 – Control Point Monumentation:** This unit consists of all work and materials involved in physically constructing and setting new survey monuments or benchmarks. It might also involve resetting damaged or destroyed monuments. Survey work required for positioning these monuments would fall under Task Unit 1, Task Unit 2 and Task Unit 3.

**Unit 11 – Special Surveys:** This unit is intended to provide for all other surveying and mapping activities required by Departmental projects, but not specifically covered by one or more of the other task units described above. Most mapping products produced from this work will be created, processed and provided in digital CADD file formats. Examples of such services may be, but are not limited to, construction surveys including stakeout, special site surveys, right of way determination and stakeout, cross sectioning, court appearances, special analysis of survey measurements and adjustments. This work may also include providing specialized data collection for the measurement of specific site data such as, but not limited to: pavement roughness, pavement DTMs, highway asset data collection, reflectivity of signs or pavement markings, and locating underground utilities.

**Unit 12 – Photogrammetric Mapping:** This unit may consist of obtaining metrically controlled aerial photography, performing analytical aerotriangulation adjustments, performing digital stereocompilation, and producing finished digital 2D and 3D mapping products. The delivered products will conform to the Department's existing standards and specifications for photogrammetric mapping.
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II. OPERATIONS PROCEDURE AFTER AGREEMENT IS EXECUTED -

1. The consultant will be notified of a specific project requiring services on behalf of the Department by the Regional Director, through the Regional TASS Consultant Manager.

2. Arrangements will be made by the Department for a scope meeting to be held in a convenient location.

3. All scope meeting(s) will be attended by DOT personnel, the prime consultant and by all sub-consultants that will be working on the project. The project and required services will be reviewed. The consultant will take meeting minutes and submit them to all attendees within one week. Within two weeks the consultant will submit their estimate of the duration and cost of the project, the anticipated start date, the list of personnel to be assigned.

4. The Regional TASS Consultant Manager will provide written notification to the consultant to proceed with the assignment.

5. The consultant will notify the Department, immediately, of any problems that may arise, and send reports and billings per contract requirements. A progress report will be submitted with back billing unless weekly reports are requested by the Department.

6. Upon completion of the required services for each specific project, the consultant will send all deliverables to the Department unless directed otherwise. The office receiving the materials will certify satisfactory completion of the work.

7. The consultant may, with the approval of the Department, bring on another specialized sub-consultant to provide specialized data gathering services not possessed by the team. The Contract Management Bureau (CMB) will provide details on the procedure to be used; consult with CMB before taking any action. The prime consultant still retains full responsibility for timely delivery of products which meet NYSDOT’s specifications and requirements.